Massachusetts Year 2016 Integrated List of Waters

Responses to Comments Pertaining to the Proposed Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act

CN 470.2

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
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Massachusetts Department of Environmental Protection
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NOTICE OF AVAILABILITY

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Prepared by:

Massachusetts Division of Watershed Management
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Introduction

This report presents responses to the comments received on the *Proposed Massachusetts Year 2016 Integrated List of Waters* (2016 Integrated List) that was prepared by the Massachusetts Department of Environmental Protection (MassDEP) in fulfillment of reporting requirements of sections 305(b) (Summary of Water Quality Report) and 303(d) (List of Impaired Waters) of the Clean Water Act (CWA).

The integrated list format provides the current status of all previously assessed waters in a single multi-part list. Each waterbody or segment thereof is placed in one of the following five categories:

1) Unimpaired and not threatened for all designated uses;
2) Unimpaired for some uses and not assessed for others;
3) Insufficient information to make assessments for any uses;
4) Impaired or threatened for one or more uses, but not requiring the calculation of a Total Maximum Daily Load (TMDL); or
5) Impaired or threatened for one or more uses and requiring a TMDL.

Thus, the waters in Category 5 comprise the 303(d) List and, as such, are reviewed and approved by the U. S. Environmental Protection Agency (EPA). The remaining four categories are submitted in fulfillment of the requirements under § 305(b).

The *Proposed Massachusetts Year 2016 Integrated List of Waters* was placed on the MassDEP web site at http://www.mass.gov/dep/water/resources/tmdls.htm. Notice of its availability for public review and comment appeared in Vol. 88, Issue 8 of the Massachusetts Environmental Monitor (August 23, 2017) and was provided by electronic mail to approximately 150 different watershed associations and other interested parties (see Appendix). The public comment period ended on October 23, 2017.

A total of sixteen comment letters were received by the end of the public review period. Several commenters included with their letters data reports, graphical data displays and/or photographs in support of their comments. Three parties submitted data through MassDEP's online data portal. All of the comment letters are included in this responsiveness document, in their entirety, unless otherwise noted. In some cases, lengthy attachments or appendices to the letters were not reproduced here in order to save space. All data submitted in support of the comments were reviewed for consistency with MassDEP's guidelines for *"External Data Submittals to the Watershed Planning Program"* (http://www.mass.gov/eea/agencies/massdep/water/watersheds/external-data-submittals-for-the-wpp.html). Data determined to be scientifically sound and legally defensible ("Level 3 assessment-level" data) were considered when reviewing and responding to the comments.

This response document consists of two parts. Part I presents the responses to general, often recurring comments that convey broad programmatic areas of concern, such as the sources and age of data used for the assessments reflected in the 2016 Integrated List, as well as the lack of transparency with respect to the individual assessment and listing decisions. Questions and/or recommendations of the individual commenting parties regarding the assessment and listing of specific water bodies or assessment units (AU) are addressed in Part II. Here, applicable data and information used to make the original assessments and listing decisions are documented, case-by-case, in response to each site-specific comment. In addition, a determination is made with regard to the usefulness and applicability of any data submitted along with the comments. Finally, an explanation is provided on whether or not adjustments will be made to the final 2016 Integrated List based on each comment received.

MassDEP made a concerted effort to validate and report on its back-logged monitoring data and to streamline the assessment and listing process for the 2016 integrated reporting cycle. This resulted in the statewide assessment (i.e., all watersheds) of the shellfish harvesting, fish consumption, primary and secondary contact recreation and aesthetic uses, as well as the assessment of the aquatic life use-attainment status of fifteen watersheds and/or coastal drainages. It is a goal of the MassDEP to assess the status of the aquatic life use in the remaining watersheds during the next reporting cycle. Therefore, for the 2016 Integrated List, MassDEP is limiting its responses to comments pertaining to the aquatic life use to

those fifteen watersheds for which the aquatic life use was assessed, but is responding to comments related to the other designated uses for all waters statewide. **Comments and related data submitted as part of the 2016 Integrated List review that pertain to the deferred watersheds will be considered when completing the next assessment and listing process.** A list of the watersheds scheduled to be assessed for the aquatic life use support status is presented in the table below. A final version of the 2016 Integrated List, incorporating the comments and responses presented in this document, will be submitted to EPA for final approval of the 303(d) List (i.e., Category 5).

List of watersheds and coastal drainage areas for which the assessment of the aquatic life use support status is scheduled for the next CWA assessment and listing cycle

Blackstone	Connecticut	North Coast
Boston Harbor proper	Housatonic	Parker
Cape Cod	Merrimack	Quinebaug
Charles	Mystic	South Coast
Chicopee	Nashua	Taunton
Concord	Neponset	Weymouth/Weir

Part I - Responses to General or Recurring Comments

MassDEP should provide more documentation supporting the assessment and listing of waters

Several commenters expressed their concern that MassDEP no longer promulgates individual watershed assessment reports, and that this has led to a lack of transparency with respect to the data and standards that were applied when making assessment and listing decisions. Commenters requested that MassDEP provide more information pertaining to the basis and rationale for assessing and listing individual waters so that these decisions can be more easily vetted by reviewers of the Integrated List.

MassDEP Response: MassDEP acknowledges the importance of providing transparency with respect to the basis for assessing and listing waters for 305(b)/303(d) reporting. The introductory narrative of the 2016 IR states that "Following the 2012 integrated reporting cycle the MassDEP discontinued the publication of individual watershed assessment reports in order to streamline the process and complete the assessments in a more timely fashion". This streamlining process was undertaken to address a backlog of watershed assessments that was growing larger with each subsequent assessment and listing cycle. By eliminating the preparation of formal watershed assessment reports and automating the process of evaluating a number of the data flows utilized as part of the assessment decision process, MassDEP was able to complete a statewide assessment and listing decision update for the fish consumption, shellfish harvesting, primary and secondary contact recreation and aesthetic uses. In addition, the support status of the aquatic life use was updated for waters in nearly half of the watersheds and/or coastal drainages in the state.

While not presently formatted for public distribution, MassDEP is maintaining internal watershed "repository" documents where data and information supporting the assessments are stored, and the feasibility of providing more formal, public-facing versions of these documents will be explored in the future. For the 2016 IR cycle, MassDEP is providing documentation for individual assessment and listing decisions on a case-by-case basis as needed to respond to individual EPA and public comments received during the public review period (see Part 2). However, more information pertaining to the assessment and listing of particular waterbodies can be requested at any time by contacting the MassDEP's Watershed Planning Program at (508) 767-2873.

MassDEP should provide more rationale for utilizing data that are over five years old

At least one commenter questioned the rationale for using data over five years old in light of the fact that the 2016 Consolidated Assessment and Listing Methodology (CALM) document states that it is MassDEP's goal "to use the most recently validated data for making the use assessment decisions. Ideally these data are five years old or less."

MassDEP Response: MassDEP strives to use the most recent data available that are deemed by MassDEP to be usable for assessment decisions. In some cases, however, data greater than five years old, and particularly biological, toxicological, and physico-chemical data generated by the MassDEP's Watershed Planning Program (WPP) not yet utilized for assessment and listing decisions, are evaluated for integrated reporting purposes. Consistent with the CALM, unless significant changes in either land uses and/or effluent quality (e.g., WWTP upgrades, etc.) of discharges has occurred, MassDEP analysts typically consider such data to be representative of current conditions. If major changes that could affect water quality conditions in a receiving water occurred after water quality data were collected, then data collected prior to the changes would not be considered to be representative of current conditions and would not be used for assessments.

MassDEP should utilize more data from external sources, such as science-based watershed associations, and provide more guidance with regard to external data qualifications

Several commenters expressed concern that MassDEP is not using data from science-based watershed associations to inform assessment and listing decisions, even though those organizations often provide

data that are much more recent than the data that are used by MassDEP. Commenters requested that MassDEP provide additional guidance with respect to the various levels of data and how watershed organizations can advance their data from Level 2 to level 3.

MassDEP Response: MassDEP recognizes the importance and value of monitoring activities performed by other groups, and strives to use quality-controlled data where appropriate in assessment and listing decisions. In 2014, MassDEP published guidance on submittal and review of external data, and created a mechanism for groups to provide surface water data for potential use in assessments. This external data submittal web "portal" was created to facilitate a more streamlined and standardized data submittal process, to foster greater collaboration between MassDEP and outside monitoring groups, and to provide guidance on QAPP submittal, data submittal, and MassDEP's process for reviewing data submittals for quality and usability. The guidance stresses that submittal of data does not guarantee use by WPP in decision-making, due to possible QA/QC issues identified prior to and during the data reviews.

Within the last four years, WPP's efforts to communicate to watershed monitoring groups in order to solicit data through the "portal" have included:

- Direct emails sent out on 5/20/2014 to ~24 groups announcing the data submittal "portal"
- Direct emails sent in 9/2016 to 10 groups that had previously submitted data to solicit more recent data
- Direct emails sent and/or phone calls made in 9/2016 to ~30 groups that had not previously submitted data
- QAPP review comments recommending submittal of monitoring data through the "portal", and inclusion of text in the QAPP to this effect (on-going since 2014)
- CWA "Vision" workshops
- Miscellaneous correspondence as needed for additional information, clarifications, etc. (on-going)

Work on the 2016 assessments began back in March, 2014. As more data arrived through the "portal" in 2015, our available resources to review these data for usability in assessments were (and remain) limited, especially the capacity to perform these reviews in a timely fashion for use by assessment staff. Many of the data submittals were comprised of multiple years of data (for which we prioritized review of the more recent data) and lacked the necessary QC data. These and other factors prolonged the data review times. As we attempted to build capacity to better utilize external data with confidence, we were also making significant progress in streamlining our assessment procedures using our own data and that from other State agencies. Since we needed to move forward on the process improvement effort and generate a 2016 draft IR, it was decided that use of watershed group data for the 2016 cycle would be limited until we established greater capacity for reviewing and using external data. In order not to circumvent the progression of the assessment work, external data received after the assessment work was initiated for each watershed were generally not utilized in the draft decision-making process.

MassDEP has worked over the last two years to expand its capacity for performing external data reviews through the hiring of a new internal staff person and the formation of a UMass Data Collaborative. In the future, MassDEP intends to establish formal deadlines for data submittal and to increase its use of third-party data for water quality assessment.

For the 2016 reporting cycle, MassDEP conducted a statewide update for the Primary and Secondary Contact Recreational, Aesthetics, Shellfish Harvesting, and Fish Consumption Uses, and a partial update of the Aquatic Life Use for a sub-set of watersheds. Primarily, WPP data and data available from state agencies (MassDEP, MA DPH, MA DFG-DMF) were used. In addition, external data from the following groups were reviewed and evaluated for use in 2016 draft assessments:

- Deerfield RWA (benthic invertebrate, fish, habitat and bacteria data)
- Millers RWA (benthic invertebrate data)
- Buzzards Bay Coalition (WQ data)

Also, water quality data from the following groups were reviewed and evaluated for use in the final 2016 assessments during the public comment period:

- Buzzards Bay Coalition
- Nashua RWA
- Neponset RWA
- Charles RWA
- Congamond Lakes Management Committee
- Connecticut River Conservancy
- USEPA

The following external data submittals were not utilized for the 2016 IR, since MassDEP was already actively engaged in assessments when the data were received. These included:

- Millers RWA bacteria data
- Ipswich RWA 2014 benthic invertebrate and WQ data
- Westport RWA data
- Farmington RWA benthic invertebrate data (reviewed and deemed not usable as submitted)
- Except for data submitted during the 2016 IR public comment period, any other external data submitted after 2015 were also not included in the 2016 reporting cycle due to a streamlining effort that was employed by MassDEP staff to complete a statewide update for the Primary and Secondary Contact Recreational, Aesthetics, Shellfish Harvesting, and Fish Consumption Uses utilizing more standardized data sets available from state agencies (MassDEP, MA DPH, MA DFG-DMF), and to the fact that the Aquatic Life Use was updated for only a sub-set of watersheds for the 2016 IR.

Due to the delay in completing the final 2016 IR, MassDEP is evaluating alternatives for future integrated reporting that will synchronize actual IR publication with EPA's intended publication dates. For the next cycle, MassDEP is striving to make a significant improvement in the amount of external data received, reviewed and utilized for 305(b) assessment decisions. External data submittals from the monitoring groups listed below are currently under review to identify applicable data relating to the assessment of the Aquatic Life Use (ALU) only. MassDEP plans to utilize those data that are deemed to be usable based on WPP's detailed review. Please note that data relating to all other designated uses (only the ALU is being assessed in selected watersheds for the next IR) and to watersheds not currently under review will not be used in the next cycle but will be considered in a future listing cycle.

- Housatonic Valley Association
- Upper Blackstone Water Pollution Abatement District
- Charles RWA
- Neponset RWA
- Nashua RWA
- Organization for the Sudbury, Assabet and Concord Rivers (OARS)

MassDEP should review and update the Massachusetts surface water quality standards every three years as required by the CWA

Several commenters expressed concern about the pace of review and updating of the Massachusetts surface water quality standards and noted that, pursuant to the CWA, states are required to hold public hearings at least once every three years (triennial review) to review and, where appropriate, revise their water quality standards. Details were requested pertaining to the proposed revisions to the standards for 2017 mentioned in the Proposed 2016 Integrated List.

MassDEP Response: MassDEP acknowledges the excessive time that has elapsed since the last revision of the surface water quality standards, as well as the further delay beyond the anticipated release of an updated version in 2017. Nonetheless, MassDEP has been working diligently to complete revisions to the standards that reflect the latest scientific information available, and to release a new version for public review and comment sometime in 2019. While taking longer to prepare than had been hoped, this regulatory package is also more comprehensive than originally planned and will include, among other changes, improvements to the surface water classification tables 1 through 27 (within section 314 CMR 4.06) including the listing of approximately 150 new cold water streams; an update to the Site-specific

Criteria in Table 28; the adoption of EPA's 2012 recommended recreational criteria for bacteria; and the incorporation of a new toxic pollutants table listing EPA ambient water criteria for aquatic life and human health (new Table 29).

General request for more interaction with MassDEP's monitoring and assessment programs

The Massachusetts Rivers Alliance (Mass Rivers), as well as other reviewers, made the following request: "We ask that MassDEP contact relevant watershed associations and Mass Rivers in advance of assessments with the monitoring plan, including field assessments schedules, sampling site locations, and proposed sampling parameters, for both the probabilistic and deterministic monitoring described in the Integrated List. In addition, we ask that the final Integrated List include a complete description of MassDEP's deterministic and probabilistic sampling network, specifically including information on the frequency, number of locations, wet or dry weather monitoring and time of year for monitoring for all sites statewide monitored across the five year wadeable stream survey and the three-year lakes survey. We ask that the final Integrated List also reports which watersheds have received probabilistic and deterministic monitoring since 2012."

MassDEP Response: While some of the recommendations and requests in this comment extend beyond the scope of the integrated reporting requirements for sections 305(b), 303(d) and 314 of the CWA, as defined in EPA guidance, much of the information requested is provided through other reports that can be found on MassDEP's website. For example, summaries of the surface water monitoring activities carried out by MassDEP's Watershed Planning Program every year from 2005 up to and including 2017 are available online at https://www.mass.gov/lists/annual-monitoring-summaries. These annual reports present brief overviews of the monitoring projects completed each year and include site locations, sampling frequency, and analytical coverage for both probabilistic and deterministic monitoring programs. In addition, general information pertaining to MassDEP's water monitoring programs is presented at https://www.mass.gov/service-details/water-quality-monitoring-program..

In March, 2018 MassDEP released *A Strategy for Monitoring and Assessing the Quality of Massachusetts' Waters to Support Multiple Water Resource Management Objectives 2016 – 2025.* This document updates and expands on the 2005 Monitoring Strategy, first released in September, 2005. Major components of the proposed monitoring program fulfill requirements of the CWA and are consistent with design and implementation criteria recommended by EPA in a guidance document entitled *Elements of a State Water Monitoring and Assessment Program.* Descriptions of MassDEP's probabilistic monitoring designs for both shallow streams and lakes and ponds will be provided in appendices to this report. The monitoring strategy can be found online at https://www.mass.gov/files/documents/2018/02/26/dwm-monitoring-strategy-2016-2025.pdf.

Finally, MassDEP has embarked on the development of a long-term vision for the assessment, restoration, and protection of Massachusetts' surface waters under the Clean Water Act (CWA) which is designed to increase communication and collaboration among all interested parties. In December, 2013, EPA announced a new framework for implementing the CWA: A Long-Term Vision for Assessment, Restoration and Protection under the Clean Water Act Section 303(d) Program (the Vision). The Vision was developed using over two decades of experience assessing and reporting on water quality and developing total maximum daily loads or TMDLs for impaired waters. States and EPA used those lessons learned to develop a framework for enhancing efficiency in achieving water quality improvement and protection goals. The framework consists of six key elements: prioritization, monitoring, assessment, alternatives, engagement and integration. Within this context, MassDEP's Watershed Planning Program organized a series of workshops and invited a wide variety of stakeholders to provide input to the development of a 10-year vision for the assessment, restoration, and protection of surface waters in Massachusetts. To promote continued stakeholder engagement in the future, MassDEP intends to form a "Technical Advisory Committee (TAC) for Programs Under the Clean Water Act" comprised of representatives from key organizations interested in MassDEP's water quality management programs including water quality standards, monitoring and assessment and TMDL.

Part II - Responses to Individual Commenters

Congamond Lakes group/Lake Management Committee, Town of Southwick

[**Note:** The following comment was received via email on August 21, 2017 from Mr. Ken Wagner of Water Resource Services, Wilbraham, MA. The report entitled *Development of an Algae Management Plan for the Congamond Lakes, Southwick, Massachusetts and Suffield, Connecticut* (Water Resources Services, Inc., April, 2017) was submitted with this comment.]

On behalf of the Congamond Lakes group, the Lake Management Committee of the Town of Southwick, I am commenting on the listing of the three ponds that make up Congamond Lake.

The proposed listing of North and Middle Ponds in Category 5, which is correct, but only Middle Pond has a complete listing, including low oxygen, harmful algae, and invasive species. North Pond is listed only for oxygen, but also has harmful algae, although not as serious as in Middle and South Ponds. South Pond is listed as Category 4c, with Eurasian watermilfoil present, but has the worst blooms of harmful algae of the 3 ponds, so should also be listed as Category 5. Presumably phosphorus or excessive nutrients are not listed as impairments, but that is the cause of both cyanobacterial blooms and low oxygen. Additionally, while it does not stratify strongly, South Pond suffers from low oxygen at the sediment-water interface, and could be listed for that as well, although it does not have a distinct hypolimnion.

Reports documenting water quality issues are available, and the most recent, cumulative report is attached.

MassDEP response: The Westfield River Watershed was assessed for all designated uses for the 2016 CWA assessment and listing cycle. Therefore, this submittal is addressed as part of the 2016 response.

MassDEP has reviewed the submitted management report supporting the inclusion of additional causes of impairments for the Congamond Lakes - North and South Basins. It is noteworthy that the data referenced in the report were not provided using MassDEP's recommended guidelines for submittal of external data, and the data do not appear to be supported by a site-specific or program-specific Quality Assurance Program Plan (QAPP). In light of the fact that there are no references to data quality assurance or to quality control sample data in the management report, and to expedite the review of the supporting data, MassDEP requested that any quality control sample data generated as part of the Congamond Lakes project be submitted, along with the supporting complete data files.

Congamond Lakes – North Basin (MA32022). MassDEP has no corroboratory data for the North Basin to support the proposed "Harmful Algal Bloom" cause. The data contained in the report show relatively low summer surface TP levels (<20 ug/l), Secchi depths greater than 2 meters, and chlorophyll *a* values typically about 10-25 ug/l (based on the interpretation of figures in the report for estimated chlorophyll collected using a field meter measuring *in situ* fluorescence as a surrogate). While DEP recognizes that cyanobacteria have been observed in the North Basin (e.g., *Dolichospermum* in November, 2015) and that copper algaecide treatments have been used in 2015/16, the information provided for North Basin is insufficient in terms of the magnitude, duration and frequency of bloom conditions to document the severity of harmful algal blooms.

Congamond Lakes – South Basin (MA32023). In addition to the recent data contained in the Congamond Lakes report, MassDEP sampled the South Basin in 2016 as part of a statewide, probabilistic lakes monitoring project. Preliminary data collected in 2016 (three surveys) from May through September do not fully corroborate the proposed inclusion of the Harmful Algal Bloom cause of impairment for the South Basin. These draft MassDEP 2016 data indicate surface TP values less than 22 ug/l, elevated cyanophyta cell counts but <70,000/ml (MA DPH threshold guideline for contact recreation), and no detectable algal toxins (microcystins, anatoxin-a) present. However, the Congamond Lakes report,cites

cyanobacteria observations in the South Basin (e.g., *Aphanizomenon* in November, 2015), and notes many occasions of surface TP concentrations greater than 20 ug/l and spikes (>60 ug/l) in chlorophyll *a* levels on two occasions in 2016. Based on the report, there were numerous occasions in 2015-16 when Secchi disk depth readings were between 1-2 meters. Elevated chlorophyll *a* values (>30 ug/l) were also observed by MassDEP during a July, 2016 survey (Secchi depths observed by MassDEP in 2016 ranged from 2.1-2.4 meters). Although the evidence is not entirely conclusive, and given the fact that copper algaecide was used in 2015/16 to treat blooms, there appears to be sufficient weight-of-evidence to support impairing the Aquatic Life Use for the Nutrient/Eutrophication Biological Indicators cause (Category 5).

With regard to the proposed inclusion of the Dissolved Oxygen cause of impairment for the South Basin, the data from the Congamond Lakes report indicate that a significant percentage of the lake area and volume exhibit dissolved oxygen (DO) levels less than 5 mg/l in the bottom waters. The summer (June, July, Aug) profiles show DO concentrations consistently below 5 mg/l at 5 m and deeper (sometimes slightly shallower at 4 m). Draft MassDEP data collected in 2016 corroborate low levels of dissolved oxygen below approximately 6 meters on each of three surveys. Based on the available information, MassDEP concurs with the addition of Dissolved Oxygen as a cause of impairment to the Aquatic Life Use.

Jones River Watershed Association (JRWA)

Jones River Watershed Association

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Mr. Arthur Johnson
MassDEP
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October 10, 2017

RE: Massachusetts Year 2016 Integrated List of Waters: Proposed Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act

Dear Mr. Johnson:

The Jones River Watershed Association (JRWA) in Kingston, MA offers the following comments relative to the proposed integrated list of waters for 2016. For thirty years the Jones River Watershed Association has been working tirelessly on water quality improvements, habitat improvements, watershed protection, and advocacy for healthy lakes and rivers. As you say in your report, "The benefits to society of clean water can hardly be over-stated." That is a guiding principle of our organization and our work. We collaborate with local municipalities, other NGOs, and the regional community in order to achieve many of the same goals as the Clean Water Act. And we rely on the authority of the CWA to help us achieve those goals.

Specific comments:

- In several of the tables MassDEP defines segments of the Jones River in Kingston relative to, "dam (NATID:MA00396) near Wapping Road". This dam was fully removed in 2011. It no longer exists as a specific feature which would physically define a segment of the Jones River. MassDEP may want to revisit how the Jones River is segmented on the 303(d) list. At a minimum, all references to this dam should either be removed or noted as "former".
- The only lake phosphorus TMDL for this update is for Monponsett Pond. Unfortunately, due to interbasin transfers, this pond is an important driver of water quality in both the Taunton River basin and the South Coastal basin. In January, 2017 JRWA provided extensive comments on the Draft TMDL report for Monponsett Pond. We hope that those comments will be addressed in the Final TMDL for Monponsett Pond, however we have no way to know if that will be the case. As a result, it concerns us that the proposed integrated list of waters does not reflect the changes that may or may not come with the Final Monponsett Pond TMDL. We think it is important that we have an opportunity to review and comment on any changes the TMDL may have to final 2016 integrated list of waters.
- As noted in the report, "Major themes inherent in both the MassDEP's water management programs and the monitoring elements that support them are…the focus on the watershed as the

fundamental planning unit for water quality management." As a watershed association ourselves, JRWA strongly agrees with this approach. It does not appear that this approach is fully embraced when it comes to water transfers. The interbasin transfers from Monponsett Pond to Silver Lake effectively expand Silver Lake's watershed to include the areas around Monponsett Pond. We urge MassDEP to consider the "watershed" implications of allowed water transfers. The pollutants of the Category 5 Monponsett Pond are routinely transferred in to the Category 4C Silver Lake. This runs counter to the goals and principles of the CWA.

General comments:

- MassDEP describes the external sources it uses for available data. MassDEP should consider adding the Department of Conservation and Recreation, Office of Dam Safety (ODS) to the list of sources. There are dozens of dam removals and modifications occurring in Massachusetts that have significant impacts on the quality of our rivers. It should be easy enough for MassDEP to cross check their integrated waters list with ODS in order to have the most up-to-date information about dams that have been removed. MassDER is also a good source of information on dam removals. However, since MassDEP already lists MassDER as a data source but does not seem to be capturing dam removal information, it would be prudent to also confer with ODS.
- The tables in the Draft 2016 Integrated List of Waters include "category" and "impairment" for each assessment unit. The integrated waters data layer on MassGIS also includes a column for "source". This "source" column provides valuable information about what is causing the "impairment" in each assessment unit. For example, in the Jones River there are many listed "impairments" including: Fish-Passage Barrier, Low flow alterations, Aquatic Plants, Macrophytes, Excess Algal Growth, etc. The MassGIS data layer also includes the "source" of these "impairments" including: Hydrostructure Impacts on Fish Passage, Flow Alterations from Water Diversions, etc. These "sources" should be included in the tables of the 2016 Integrated List of Waters. Allowing all stakeholders to know and understand the sources of the impairments will allow for more efficient and focused water quality improvements.

We greatly appreciate your department's efforts towards updating the integrated list of waters. We hope these comments add value to the final document.

Sincerely,

Pine duBois
Executive Director
Jones River Watershed Association

Alex Mansfield
Ecology Program Director
Jones River Watershed Association

<u>MassDEP responses to the JRWA's general comments</u>:

- MassDEP has been working with both the Division of Ecological Restoration (DER) and the Division of Marine Fisheries (DMF) to update information pertaining to dam removals and fish passage issues and is integrating this information case-by-case as each watershed is assessed for aquatic life use support status. New assessment guidance is in development and will be described in the 2018 CALM document, particularly with respect to the status of diadromous fish habitat. The Jones River, situated in the South Shore Coastal Drainage Area, was not assessed for the aquatic life use for the 2016 CWA assessment and listing cycle but will be assessed for 2018. The status of fish passage and dam removals will be updated for the South Shore coastal drainage area in accordance with the new guidance.

- While causes of impairment are presented in categories 4 and 5 of the Integrated Report (IR), MassDEP has never included the information on sources of impairment in this document, primarily due to space constraints. All assessment information (i.e., segment definitions, use-support status, causes and sources of impairment, etc.), for each designated use in every assessment unit, is stored in an EPA-designed electronic database (see below). MassDEP attempts to strike a balance between the amount of information presented for each assessment unit and the overall size of the IR report generated from that database. In doing so, MassDEP selects the output files that it deems most essential to include in the version of the IR released for public review and comment. MassDEP acknowledges that useful information, such as uses that are supported in waters not supporting other uses as well as sources of impairment, is not available in the IR document. As noted in JRWA's comment, however, source information is provided in the MassGIS integrated list datalayer created after the final version of the IR is released and Category 5 (i.e., the 303(d) List) is approved by EPA. Furthermore, please be advised that the assessments reflected in the draft 2016 IR were stored in the Assessment Database (ADB) which is no longer supported by EPA. Therefore, all assessment information will be migrated from the ADB to the new EPA-developed ATTAINS relational database when the final 2016 IR is completed. The new ATTAINS database will provide direct access, through a web-based interface, to the assessment decisions for all designated uses and for all assessment units, including causes and sources of impairment, where applicable.

MassDEP responses to the JRWA's specific comments: The South Shore Coastal Drainage System was not assessed for the Aquatic Life Use during the 2016 CWA assessment and listing cycle. Therefore, the JRWA's comments pertaining to the Aquatic Life Use will be considered when completing the next assessment and listing process. Other comments are addressed below.

- MassDEP will review the descriptions of Jones River segments MA94-12 and MA94-13 and will adjust them to reflect the fact that the dam near Wapping Road has been removed.

- The JRWA expressed some concerns about the phosphorus TMDL for Monponsett Pond and the effect of the TMDL on the listing status of the pond for 2016. The JRWA submitted extensive comments on the Draft TMDL and these will be addressed as part of the response to all comments on the TMDL. However, it should be noted that, based on EPA's review, MassDEP revised the stormwater loading estimates in the Draft TMDL, and this revision will be made available for additional public review and comment in mid-2019. Following this review, a single document will be prepared that addresses all of the public comments received during both the initial review and the review of the revised TMDL. Nonetheless, changes to the TMDL should not affect the 2016 integrated list. When all pollutants associated with Monponsett Pond are covered by one or more TMDLs, the pond will be listed in Category 4A, but the pond will still be considered impaired until it can be demonstrated using actual monitoring data that the designated uses are supported. Once approved by the EPA, the final TMDL will be posted on MassDEP's website.

- JRWA's comment concerning the interbasin transfer of water from Monponsett Pond to Silver Lake is outside of the scope of assessing and listing waters pursuant to sections 305(b) and 303(d) of the CWA. MassDEP acknowledges that, contingent upon the frequency and magnitude of water transfers from Monponsett Pond to Silver Lake, those interbasin transfers may "effectively expand Silver Lake's watershed to include the areas around Monponsett Pond". However, MassDEP does not infer the water quality condition of water bodies from an assessment of their watershed characteristics (e.g., land use). Rather, water quality and/or biological data and information must be available from the actual water body in question in order to make an assessment. Therefore, for assessment and listing purposes, Monponsett Pond and Silver Lake are independently evaluated based on the availability of scientific data from each water body.

Ipswich River Watershed Association (IRWA)

IPSWICH RIVER WATERSHED ASSOCIATION

October 23, 2017

Arthur S. Johnson
MassDEP
Division of Watershed Management
Watershed Planning Program
8 New Bond St.
Worcester, MA 01806

Re: Comments on 2016 Integrated List of Waters

Dear Mr. Johnson,

The Ipswich River Watershed Association has the following comments on the *Proposed Massachusetts Year 2016 Integrated List of Waters*. These comments focus on the removal of impairments for several stream segments and observational evidence to support designating specific impairments.

We note that fishes bioassessments was removed as impairments for Howlett Brook (MA92-17) and Martins Brook (MA92-08). The explanation given is "Applicable WQS attained according to new assessment method." We feel that changes in assessment methods should not result in the removal of the impairment unless there is recent fish community and habitat data showing otherwise. For Martins Brook in particular, habitat and water quality conditions do not support removal of fish bioassessments impairment. The attached photos are observational evidence of dry streambed conditions that prevailed along Martins Brook in 2016. Martins Brook routinely goes dry in the summer and streamflow data for a station on Martins Brook, available through the Mass. Division of Ecological Restoration RIFLS program (www.rifls.org), documents this condition. This evidence would warrant the continued designation of impairments for fish bioassessments in Martins Brook and that impairment for low flow alterations should also be included for Martins Brook.

The Miles River (MA92-03) had fecal coliform impairment removed due to changes in the water quality standard. Changes to the water quality standard from fecal coliform to *E.coli*, should not result in removal of this impairment without data for the new standard showing otherwise.

Norris Brook (MA92-11) had total suspended solids (TSS) and turbidity removed as impairments with the explanation that the original basis for the listing was incorrect. We ask that the data source and criteria be referenced to show why this impairment was re-evaluated.

Wills Brook (MA92-10) had fecal coliform and dissolved oxygen removed as impairments. As stated previously, fecal coliform should not be removed due to a change in the standard without new data showing otherwise. Also, as stated previously, we ask that the explanation for removing dissolved oxygen reference the data and criteria showing why the original basis for listing was incorrect.

Thank you for considering our comments. Please contact us if you have questions.

Sincerely,

Wayne Castonguay
Executive Director
Ipswich River Watershed Association

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Martins Brook dry streambed Taken 8/3/2016, North Reading, MA. Lat. 42.577754, long. -71.129198

Martins Brook dry streambed at Rt. 62 crossing and weir. Taken 8/3/2016, Wilmington, MA. Lat. 42.579646, Long. -71.138928

Martins Brook dry streambed. Taken 7/24/16, North Reading, MA. Lat. 42.571564, Long. -71.101197

MassDEP response: The Ipswich River Watershed was assessed for all designated uses for the 2016 CWA assessment and listing cycle. Therefore, all of the IRWA's comments will be addressed as part of the 2016 response.

- Howlett Brook (MA92-17) was first listed as impaired due to the results of "fishes bioassessment" in 2004, based on MDFW surveys in 1999 and 2002 that found the fish community heavily dominated by macrohabitat generalists with few fluvial fish present. At that time, MassDEP's assessment methodology (later codified in the 2012 CALM guidance document) specified that in

order to be considered in support of the aquatic life use, streams must contain fish communities "well represented by multiple age classes of fluvial specialist/dependent species" (see below).

2012 CALM Guidance:

Use is Supported Cold Water Fishery	Use is Impaired Cold Water Fishery
Multiple age classes (indicative of reproducing populations) of any cold water fish	No fish found or cold water species absent, DELTS with abnormal fish histology
Use is Supported Warm Water Fishery	**Use is Impaired Warm Water Fishery**
In lotic environments the fish population should be well represented by multiple age classes of fluvial specialist/dependents species	No fish found or fluvial fish were absent or relatively scarce (few numbers), DELTS with abnormal fish histology

(**Note:** DELTS refers to "Deformities, Eroded fins, Lesions, Tumors)

The MassDEP assessment methods were refined in the 2016 CALM guidance to differentiate between moderate/high-gradient streams and low-gradient streams when evaluating fish population information. Under the new guidance, fish communities in low-gradient streams need not necessarily be well-represented by fluvial specialist/dependent fishes to be considered in support of the aquatic life use as long as the species present are intolerant or only moderately tolerant of environmental stress (see 2016 guidance in the table below). Howlett Brook is a low-gradient stream along its entire length and, therefore, the above-mentioned fish population data from 1999 and 2002 were re-evaluated in light of the new CALM guidance. Since some fluvial specialist/dependent species, as well as intolerant or moderately tolerant fish, were present in the Howlett Brook samples, a decision of no impairment was rendered and the cause "fishes bioassessment" was removed.

2016 CALM Guidance:

Use is Supported Cold Water Fishery	Use is Impaired Cold Water Fishery
Presence of cold water fishes, multiple age classes (indicative of reproducing populations) of any salmonid, presence of YOY salmonids.	Absence of cold water fishes, or dramatic population reductions relative to historical samples, DELTS with abnormal fish histology.
Use is Supported Warm Water Fishery	**Use is Impaired Warm Water Fishery**
In moderate to high gradient streams the fish community should include fluvial specialist/dependents species or at least one fluvial species in moderate abundance. In low gradient streams, at least one fluvial species, or species which are intolerant or moderately tolerant to environmental perturbations should be present	In moderate to high gradient streams fluvial fish are absent. In low gradient streams no fish found or the absence of fish which are intolerant or moderately tolerant to environmental perturbations. DELTS with abnormal fish histology.

(**Note:** YOY refers to "Young-of-the-year"
DELTS refers to "Deformities, Eroded fins, Lesions, Tumors)

- Martins Brook (MA92-08) was first listed as impaired by "fishes bioassessments" in 2010 when MassDEP migrated its historical assessment information from the Waterbody System (WBS) to the Assessment Database (ADB), as required by EPA. At that time, Martins Brook was listed as impaired by habitat alterations, low dissolved oxygen and pathogens. The application of the impairment code "fishes bioassessments" to Martins Brook during the conversion to the new database was an error. In response to the IRWA's comment, MassDEP reviewed historical fish community information. Fish community sampling was conducted by DFWELE in July 1999. A

total of 139 fish (nine species) were collected. Dominant fish species included creek chubsucker, redfin pickerel, American eel, and white sucker. Pumpkinseed, chain pickerel, swamp darter, yellow bullhead, and a bluegill were also present. Sixty-two percent of the fish collected can be classified as macrohabitat generalists, while fluvial dependents and specialists comprised 38% of the sample. This information would lead to a determination that the aquatic life use was supported under both the 2012 and 2016 CALM guidance (see previous comment). Nonetheless, MassDEP's biological survey of Martins Brook in 2005 revealed a severely impaired *macroinvertebrate* community and this impairment was added to this assessment unit in 2016.

Included with IRWA's comment letter were photographs, taken in 2016, of dry streambed conditions in Martins Brook, and a request to add "low flow alterations" as a cause of impairment. Observations of low or no stream flow, such as those depicted in these photographs, are useful for highlighting streams that may be impaired and are in need of further confirmation. However, long-term stream discharge data and related information pertaining to the frequency, magnitude and duration of low-flow events are needed in order to determine whether observations of extreme low flow are representative of typical conditions. In this case, it is important to note that northeastern Massachusetts, including the Ipswich River Watershed, was subject to a drought warning throughout July – October, 2016 making it difficult to distinguish between anthropogenic impacts from natural conditions. For this reason MassDEP is not currently adding "low flow alterations" to this segment.

It should be emphasized here that stream flow is not effectively managed through the CWA 303(d) listing and TMDL process. Rather, as a part of the Sustainable Water Management Initiative (SWMI), MassDEP along with EEA and its member agencies, worked with numerous stakeholder groups to develop a new policy framework for comprehensively managing water withdrawals in the Ipswich River Watershed and throughout the Commonwealth to ensure an appropriate balance among competing water needs and the preservation of water resources. More information pertaining to SWMI can be found at https://www.mass.gov/guides/sustainable-water-management-swmi-technical-resources.

- Miles River (MA92-03) was originally listed as impaired by "pathogens" in 1998 and, without any new data with which to make an assessment, this cause code was mapped over to "fecal coliform" in 2010 when the transition to the Assessment Database (ADB) was made. Fecal coliform was not removed from this AU in 2016 simply because the indicator in the standards was changed to *E. coli.* Rather, *E. coli* data from five discreet sampling events in 2005, which had not been previously used for assessment, were used to determine that the primary and secondary contact recreational uses were supported in this brook and that the original bacterial indicator, fecal coliform, could be removed (see table below).

Summary of MassDEP Watershed Planning Program *E. coli* data collected in 2005 from Miles River at driveway of #187 County Road, (across from intersection with Lakeman Lane), Ipswich

UniqueID	Year	Date First Sample	Date Last Sample	Sample Count	Geometric Mean	Bacteria Type
W0121	2005	05/24/05	09/27/05	5	114	E. coli

- Norris Brook (MA92-11): This brook was first listed as impaired by suspended solids and turbidity in 1998 and with no new data or information upon which to base new assessments, these cause codes were carried over to each new listing cycle up to and including 2014. The original listings were apparently based on data collected during a MassDEP water quality survey in 1995. However, when these data were re-examined as part of the 2016 assessment and listing process, it was found that the total suspended solids data were low, ranging from < 2.5 mg/L to 3 mg/L (N = 3) (MassDEP WPP Data Warehouse1994-2004), indicating that the original listing was in error. In addition, the turbidity data from 1995 were either censored or qualified as likely

inaccurate (MassDEP WPP Data Warehouse 1994-2004), thus indicating that the original listing decision was inappropriate.

- Wills Brook (MA92-10): Dissolved oxygen was originally added to the 303(d) List in 1998 based on data collected from one site on only two occasions during the summer of 1995. DO was 6.5 mg/l on one survey date and 1.8 mg/l on the other. There were no notes recorded in the database of field observations regarding flow conditions, and no attempt was made to determine whether oxygen depletion may have resulted from natural conditions (e.g., wetland drainage). Whether or not the stream was actually flowing or not would be useful in determining the representativeness of so few samples. Furthermore, it has also been MassDEP policy not to base an impairment decision on a single measurement. It was therefore determined that an unacceptable level of uncertainty exists with respect to the original listing decision and, therefore, dissolved oxygen was removed from this segment.

  Likewise, fecal coliform was originally added to the 303(d) List in 1998 based on one of two samples, collected in 1995, exceeding the fecal coliform standard. This was likely an error because it has never been MassDEP's practice to base an impairment decision on a single violation of a water quality standard. Nonetheless, fecal coliform was not removed from this AU simply because the indicator in the standards was changed to *E. coli.* Rather, *E. coli* data from five discreet sampling events in 2005, summarized in the table below, were used to determine that the primary and secondary contact recreational uses were supported in this brook and that the original bacterial indicator, fecal coliform, could be removed.

Summary of MassDEP Watershed Planning Program *E. coli* data collected in 2005 from Wills Brook at a site near old railroad bed just upstream of confluence with Ipswich River, Lynnfield

UniqueID	Year	Date First Sample	Date Last Sample	Sample Count	Geometric Mean	Bacteria Type
W0135	2005	05/24/05	09/27/05	5	21	E. coli

OARS for the Assabet Sudbury & Concord Rivers

FOR THE ASSABET SUDBURY & CONCORD RIVERS

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October 23, 2017

Arthur S. Johnson
Mass DEP
Division of Watershed Management
Watershed Planning Program
8 New Bond Street
Worcester, MA 01606

Re: Comments on proposed 2016 Integrated List of Waters

Dear Mr. Johnson,

OARS appreciates the opportunity to comment on the proposed Massachusetts Year 2016 Integrated List of Waters. OARS is the watershed organization for the Concord basin, comprising the Sudbury, Assabet and Concord Rivers in a 400-square mile area west of Boston. A non-profit organization founded in 1986, OARS works primarily through science-based advocacy and education to develop a scientific understanding of the causes of river degradation and works with communities to seek effective solutions. Its mission is "to protect, improve and preserve the Assabet, Sudbury, and Concord Rivers, their tributaries and watersheds, for public recreation, water supply, and wildlife habitat."

General Comments:
External Data: We applaud DEP's effort to include external data and hope that the Department will dedicate resources to reviewing and incorporating external data in the future. We understand that DEP will be using our data for the 2018 Integrated list. To that end, we urge DEP to publish additional recommendations for external groups on the parameter-specific methods and data quality objectives that would result in acceptable data for Level 3 "Regulatory/Assessment" use by DEP. In reference to the acceptability of external data, CALM document says "These DQOs are then compared to the MassDEP DWM-WPP's DQOs to look for *any large discrepancies* that could affect acceptability," but does not quantify what a "large discrepancy" might be. OARS' Water Quality Monitoring Program has been collecting data on under an approved QAPP since 2000. Although OARS' data for 2009 – 2016 has been submitted to DEP, we understand that external data, including OARS', is still under review and is not included in the 2016 Integrated List Report.

Transparency: Publishing the 2016 Consolidated Assessment and Listing Methodology and the DEP WPP QAPP 2015-2019 are significant steps towards transparency in the decision-making that goes into the Integrated List. We encourage the department to publish the particular data and standards applied in the assessment decisions for each Assessment Unit.

Surface Water Quality Standards: It is concerning that the Surface Water Quality Standards have not been updated since 2006, although the Integrated List (Pg. 8) refers to an expected update of the standards for 2017. We urge the Department to commit to a review and update of the SWQS, incorporating in particular EPA's nutrient criteria recommendations for numeric nutrient standards.

Specific Comments for the Concord Basin:
Concord River: OARS supports the removal of Total Phosphorus as an impairment from the Concord River sections MA82A-07, MA82A-08, and MA82A-09. Our data indicate that summer (June – August) water column concentrations of total phosphorus at the four Concord River sites tested have decreased between 2004 and 2016 (Fig 1; data submitted to DEP previously), average dissolved oxygen concentrations are generally above 70%, and our observations indicate that the

Concord River does not generally have the significant growths of filamentous algae that are apparent in the Assabet River impoundments (upstream). We request that DEP share the standards and data on which the decision to remove Total Phosphorus as an impairment was based.

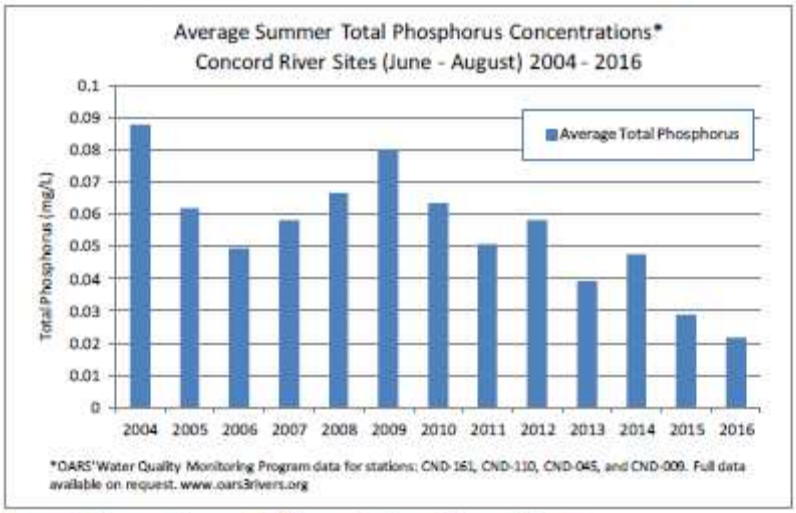

Figure 1: Average Summer TP Concentrations, Concord River

Hop Brook, Sudbury: OARS requests that "Excess Algal Growth" not be removed as an impairment from Hop Brook segment MA82A-06. Our observations from Landham Road of that section suggest that algal growth and excess plant growth in general remains a problem in that section (see Figure 2, below). We request that DEP share the standards and data on which the decision to remove Excess Algal Growth as an impairment was based.

Figure 2: Hop Brook (MA82A-06), Landham Road, Sudbury, August 2016

Cold Water Streams: We request that DEP consider adding the 33 streams identified by Mass. Div. of Fisheries and Wildlife as Coldwater Fishery Resources in the Concord basin (http://www.mass.gov/eea/agencies/dfg/dfw/wildlife-habitat-conservation/coldwater-fish-resources-list.html) to the Assessment Units, and classify them as Class B Cold Water streams. Currently only Jackstraw Brook is identified as a Cold Water Fishery in the standards for the Concord basin. OARS has collected, and is willing to share, continuous temperature data over several years for two streams with surveyed populations of breeding native brook trout: UNT to Hop Brook (Trout Brook) (SARIS #8247830), and Cranberry Brook (SARIS #8247885). \

Thank you for considering these comments. Please contact us if you have any questions.

Sincerely,

Suzanne Flint
Staff Scientist

CC: Massachusetts Rivers Alliance
Mass Division of Fisheries and Wildlife

MassDEP response to OARS' general comments: Responses to OARS' general comments pertaining to external data, transparency and water quality standards can be found in Part I of this document.

MassDEP response to OARS' specific comments: The Concord River Watershed was not assessed for the Aquatic Life Use during the 2016 CWA assessment and listing cycle. Therefore, OARS' comments pertaining to the Aquatic Life Use will be considered when completing the 2018 assessment and listing process. Other comments are addressed below.

- While supporting MassDEP's decision to remove the impairment Total Phosphorus from Concord River AUs MA82A-07, MA82A-08, and MA82A-09, OARs requested that MassDEP share the standards and data on which these delisting decisions were based. MassDEP is responding to this request now because Total Phosphorus had not been applied to the Aquatic Life Use, but to the Aesthetics Use. All three of these AUs were first listed as impaired by Nutrients in 1992 based on results of MassDEP's 1990 Concord River surveys indicating that instream phosphorus concentrations were typically above 0.2 mg/l throughout these segments. When MassDEP converted from the Water Body System (WBS) to the Assessment Database (ADB) in 2010, the Nutrients cause code was mapped over to Total Phosphorus. At that time, data from more recent MassDEP surveys had not yet been utilized to perform new assessments of the Concord River. The assessment and listing decisions reflected in the 2016 integrated list were based on water quality surveys carried out from approximately 2005 – 2011 by MassDEP's Division of Watershed Management (DWM) and Central Regional Office (SMART Program) and are briefly summarized below. Results of the DWM and SMART surveys are reported in technical memoranda online at http://www.mass.gov/eea/agencies/massdep/water/watersheds/water-quality-technical-memoranda.html and http://www.mass.gov/eea/agencies/massdep/water/watersheds/smart-monitoring-technical-memoranda.html, respectively.

  Concord River MA82A-07 – The Aesthetics Use was assessed using data and field observations collected by DWM from four sites in 2006:

  W1482 Monument Street bridge, Concord
  W1483 Route 225 bridge, Carlisle/Bedford

W1484 Route 4 bridge, (Riverside) Billerica
W1485 River Street bridge, Billerica

There were generally no noted objectionable conditions (odors, deposits, algae or other growths, or turbidity) recorded by DWM field sampling crews during the surveys, and the mean total phosphorus concentration from the above four stations (N=16) was 0.078 mg/l which is below EPA's recommended instream criterion of 0.1 mg/l. Therefore, the Aesthetics Use was assessed as fully supporting, and Total Phosphorus was removed as a stressor to this AU.

Concord River MA82A-08 – The Aesthetics Use was assessed using data and field observations from the following two sites:

W1486 Pollard Street bridge, Billerica (2006)
W2227 Rogers Street, Lowell (2011)

There were generally no noted objectionable conditions (odors, deposits, algae or other growths, or turbidity) recorded by MassDEP field sampling crews during the surveys, and total phosphorus concentrations were below 0.1 mg/l. Therefore, the Aesthetics Use was assessed as fully supporting, and Total Phosphorus was removed as a stressor to this AU.

Concord River MA82A-09 – The Aesthetics Use was assessed using data and field observations from the following sites and years:

W0679 USGS gauge downstream from Rogers Street, Lowell (2005, 2006, 2007)
W1487 Route 110 bridge, Lowell (2006, 2008, 2009, 2010)
W2227 Rogers Street, Lowell (2011)

Objectionable conditions, particularly filamentous algae and turbidity, were recorded by MassDEP field sampling crews and, therefore, the Aesthetics Use was assessed as Not Supporting. Nonetheless, total phosphorus concentrations were below 0.1 mg/l, and this impairment was delisted.

- OARS requested that Excess Algal Growth not be removed as an impairment from Hop Brook segment MA82A-06, and that MassDEP share the standards and data on which the decision to remove this impairment was based. Excess algal growth was originally included as an impairment of the Aesthetics Use in 1992 using the cause code available at the time (i.e., Noxious Aquatic Plants). For the 2016 integrated list the Aesthetics Use was assessed using data and field observations collected by DWM from the following site in 2006:

  W0849 Landham Road bridge, Sudbury (formerly reported as Wash Brook) (2006)

  There were generally no noted objectionable conditions (odors, deposits, algae or other growths, or turbidity) recorded by MassDEP field sampling crews during the surveys; however, 2 of 13 observations noted dense populations of macrophytes (arrowhead, emergent grasses, pondweed, milfoil, and pickerelweed). OARs commented that Hop Brook (MA82A-06) often experiences excess algal and plant growth based on their observations at Landham Road. While Total Phosphorus was retained as an impairment that will require a TMDL for this segment, the nutrient/eutrophication biological indicators cause code will be utilized to account for the excessive plant and algal growth noted by OARS staff. This impairment will be retained in the final version of the 2016 Integrated List for the recreational and aesthetic uses for MA82A-06.

- OARS requested that MassDEP consider creating assessment units (AU) for the streams in the Concord Watershed identified by MDFW as Coldwater Fishery Resources (CFR) and classify them as Class B Cold Water streams. In anticipation of the Aquatic Life Use assessment of the Concord Watershed planned for the next reporting cycle, MassDEP reviewed the MDFW's CFR list and selected eight (8) streams for the establishment of new AUs based on the amount of data

and information available for the assessment of those streams. These new AUs are described in the table below and will appear for the first time in the next integrated report.

The process of designating cold water streams in Massachusetts' surface water quality standards (SWQS) differs from that used to create AUs for reporting and listing waters pursuant to CWA sections 305b and 303d. Section 303(c)(1) of the CWA and the EPA's implementing regulations at 40 CFR 131.20 require that states review and revise, as appropriate, applicable SWQS at least once every three years. States may revise their SWQS in a variety of ways including additions of and revisions to designated uses, water quality criteria, antidegradation policies and adopted implementation procedures. Finally, revisions to the SWQS are subject to a formal public review process. MassDEP plans to release a new version of the SWQS for public review and comment sometime in 2019. This new regulatory package will contain improvements to the surface water classification tables including the addition of approximately 150 new cold water streams state-wide. These newly designated cold water streams were selected from the MDFW's CFR list following a careful review of their names, descriptions and geographical settings. Although the remaining CFR waters were not included in the current regulatory package, the SWQS specify that where a cold water fish population has been identified by the MDFW as meeting their protocol for a CFR, but the water has not been documented to meet the cold water criteria in the SWQS, MassDEP will protect that population and its habitat as an existing use. MassDEP intends to designate additional MDFW CFR streams as cold water in future revisions of the SWQS.

AU ID	Name	Description	Unofficial Name
MA82B-24	Unnamed Tributary	Unnamed tributary to Nashoba Brook, headwaters outlet unnamed pond east of Pope Road, Acton to mouth at confluence with Nashoba Brook, Acton.	NA
MA82B-25	Sheep Fall Brook	Headwaters, perennial portion north of Ash Street, Marlborough to mouth at confluence with Flagg Brook, Marlborough.	NA
MA82B-26	Howard Brook	Headwaters, perennial portion east of Green Street, Northborough to mouth at confluence with Assabet River, Northborough.	NA
MA82B-27	Unnamed Tributary	Unnamed tributary to Assabet River Reservoir, headwaters, perennial portion south of Route 30 (Nourse Street), Westborough to mouth at inlet of Assabet River Reservoir, Westborough.	"Nourse Brook"
MA82B-28	Unnamed Tributary	Unnamed tributary to Assabet River Reservoir, headwaters, perennial portion north of Nourse Street (Route 30), Westborough to mouth at inlet of Assabet River Reservoir, Westborough.	"Nourse Brook"
MA82A-36	Unnamed Tributary	Unnamed tributary to Hop Brook, headwaters outlet unnamed pond west of Vega Road, Marlborough to mouth at confluence with Hop Brook, Sudbury.	"Cranberry Brook"
MA82A-35	Unnamed Tributary	Unnamed tributary to Hop Brook, headwaters south of Graham Path, Marlborough to mouth at confluence with Hop Brook, Sudbury.	"Trout Brook"
MA82A-37	Allowance Brook	From outlet small unnamed pond south of Hiram Road, Framingham to mouth at confluence with Hop Brook, Sudbury.	NA

Massachusetts Bays National Estuary Program

Massachusetts Bays National Estuary Program, North & South Rivers Watershed Association

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October 23, 2017

Arthur S. Johnson
MassDEP
Division of Watershed Management
Watershed Planning Program
627 Main Street, Second Floor
Worcester, MA 01608

Re: 2016 Integrated List of Waters Comments

Dear Mr. Johnson,

Thank you for the opportunity to comment on the 2016 Integrated List of Waters. My comments are as follows:

I appreciate that data availability and quality are a crucial part of the decisionmaking that goes into creating this list. As a scientist and technical resource for citizen science groups on the South Shore and beyond, I would like more clarity on the acceptability of citizen-collected water quality data. There is a Catch-22 that exists where MassDEP is short-staffed and more data is needed, but a significant amount of data that is collected is not acceptable to MassDEP. Through the MassBays Citizen Monitoring Network we are working with EPA and MassDEP to assist citizen groups with the effort of creating a QAPP, but greater use of the Level 2 (screening level) data collected by groups like ours would go a long way towards rounding out the findings of MassDEP's official data collection.

I am pleased to see that there has been a transition in freshwater segments to E. coli as appropriate and that impairments like fish passage and algal blooms are being more carefully considered. This holistic approach to stream health will go a long way towards helping communities understand the issues that their water bodies are facing, and provide documented and citable evaluations of these impairments. That said, there are many more stream segments that are impaired for fish passage due to physical obstructions and low flow, and going forward towards the next round it would be worthwhile to ensure that the list is comprehensive.

Changes in category have occurred in segments like Iron Mine Brook and Third Herring Brook for the reason "Applicable WQS attained; due to change in WQS". The data and rationale behind this is unclear, but it sounds as if the bar for the particular impairment (bacteria) has been lowered due to a change in indicator bacteria from fecal coliform to E. coli. If these are truly improvements that are simultaneous to a change in indicator, then that should be made clearer in the document. In general, there should be greater transparency to the data that supports the rationale for the category of each segment.
I look forward to working with MassDEP on improving the way data are collected and checked for quality by citizen groups and fostering a positive relationship that will help inform future versions of the Integrated List.

Sincerely,

Sara Grady

Sara P. Grady
NSRWA Watershed Ecologist
MassBays South Shore Regional Coordinator

MassDEP response to MassBays' general comments: MassBay's general comments pertaining to the use of external data and the need for transparency on individual assessment decisions are addressed in Part I of this document.

MassDEP response to MassBays' specific comments: While it is true that in 2007 MassDEP revised the surface water quality standards to adopt the bacterial indicators *E. coli* and Enterococcus for protecting and assessing primary and secondary contact recreational uses, this did not result in any delistings of fecal coliform as an impairment unless data on these new indicators were available that demonstrated that the recreational uses were attained. MassBay's cites Iron Mine Brook (MA94-24) and Third Herring Brook (MA94-27) as two examples where the bacterial impairment (i.e. fecal coliform) was removed and the AUs were moved from Category 5 to Category 2 with the explanation "Applicable WQS attained; due to change in WQS". Fecal coliform was not removed from these two waterbodies in 2016 simply because the indicator in the standards was changed to *E. coli.* Rather, *E. coli* data from five discreet sampling events in 2006, which had not been previously used for assessment, were used to determine that the primary and secondary contact recreational uses were supported in these brooks and that the original bacterial indicator, fecal coliform, could be removed (see tables below). Finally, it is noted here that both of these brooks are covered by an EPA-approved pathogen TMDL that could be implemented should they exhibit bacterial impairments in the future.

MassDEP Watershed Planning Program Bacteria Data (2006) obtained from Iron Mine Brook at Broadway Road Hanover, MA

UniqueID	Year	Date First Sample	Date Last Sample	Sample Count	Geometric Mean	Bacteria Type
W0910	2006	06/20/06	10/11/06	5	113	E. coli

MassDEP Watershed Planning Program Bacteria Data (2006) obtained from Third Herring Brook at River Street crossing, Norwell/Hanover, MA

UniqueID	Year	Date First Sample	Date Last Sample	Sample Count	Geometric Mean	Bacteria Type
W1509	2006	06/20/06	10/11/06	5	126	E. coli

Massachusetts Rivers Alliance

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October 23, 2017

Arthur S. Johnson
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Watershed Planning Program
8 New Bond Street
Worcester, MA 01606

Re: Comments on 2016 Integrated List of Waters

Dear Mr. Johnson,

Thank you for the opportunity to provide comments on the *Proposed Massachusetts Year 2016 Integrated List of Waters*.

The Massachusetts Rivers Alliance is a non-profit organization whose mission is to protect and restore rivers across the Commonwealth. Mass Rivers currently includes 67 member organizations from across the state, several of whom are submitting comments on their concerns with the listing of water bodies in their individual watersheds. For this reason, our comments will focus on our overarching concerns with the Proposed Integrated List of Waters, as this document plays an important role in the protection and restoration of water bodies across the Commonwealth.

We would like to first acknowledge and express our appreciation for the improvements made to the *Massachusetts Consolidated Assessment and Listing Methodology (CALM) Guidance Manual for the 2016 Reporting Cycle*. We appreciate the addition of appendices A, B, C, D, E and F which provide critical information regarding the assessment of impaired waterbodies. We also applaud MassDEP for the new addition of "presence of active CSO discharges" in evaluating *Primary Contact Recreational Use*. We ask that MassDEP further clarifies in the *Massachusetts Consolidated Assessment and Listing Methodology (CALM) Guidance Manual for the 2016 Reporting Cycle* how CSOs with variances will be assessed for these criteria.

We are aware that substantial budget and staffing cuts at MassDEP have created a significant challenge for water quality monitoring and assessments. While we recognize that the practice of watershed management is resource-intensive, we find it discouraging that MassDEP is not able to produce and validate new data (< 5 years old) for each of the 33 major watersheds for use in

biannual integrated list updates. Furthermore, despite collection of considerable water quality data and field assessment information by science-based watershed associations, MassDEP has also been slow to adopt the use of external data, although in many cases it is the best available data source for a water body. While recognizing that there are many external data sources which inform the Integrated List, more detail should be made public regarding the external data qualifications as described in the *Massachusetts Consolidated Assessment and Listing Methodology (CALM) Guidance Manual for the 2016 Reporting Cycle*. Specifically, more detail is needed for the description of the criteria for each level and how they are used to inform the report. Since Level 3 data is most likely to be used by the report, it would be useful to know how non-MassDEP stakeholders such as watershed associations can advance their data from Level 2 to Level 3.

We ask that MassDEP contact relevant watershed associations and Mass Rivers in advance of assessments with the monitoring plan, including field assessments schedules, sampling site locations, and proposed sampling parameters, for both the probabilistic and deterministic monitoring described in the Integrated List. In addition, we ask that the final Integrated List include a complete description of the MassDEP deterministic and probabilistic sampling network, specifically including information on the frequency, number of locations, wet or dry weather monitoring and time of year for monitoring for all sites statewide monitored across the five year wadable stream survey and the three-year lakes survey. We ask that the final Integrated List also reports which watersheds have received probabilistic and deterministic monitoring since 2012.

In reviewing the list, it is difficult to interpret which data sources are currently informing decisions to alter or remove impairments in the draft Integrated List of Waters. We ask that MassDEP reference specific data sources for its decisions to list and delist any segment or waterbodies in the final Integrated List of Water. For example, it would be useful to know the data sources MassDEP is using when the explanation for removal of a segment is "Applicable WQS attained; reason for recovery unspecified." The New Hampshire Department of Environmental Services draft 303(d) list for 2016 provides an ideal, transparent model for source descriptions in impairment evaluations.

Mass Rivers also noted multiple "delistings" (removal from category 5) for fecal coliform bacteria with the provided explanation "Applicable WQS attained; due to change in WQS." A change in the water quality standards from fecal coliform as the indicator bacteria to *E. coli* should not in itself justify a delisting of this impairment. The waterbody should be listed as impaired for *E.coli* until recent data is available to confirm or negate this listing. If that is the case, the rationale provided in the document should be modified. The Alliance also has concerns regarding segments delisted with the only explanation "Original basis for listing was incorrect." In the final List of Integrated Waters, we ask that MassDEP provide a detailed data-based justification to show that the basis for the original listing was incorrect and provide recent data to show that the water body is not in fact impaired by the relevant impairment.

The list of waters where no assessment has been completed (Category 3) is extensive and many others have been only partly assessed for some designated uses (Category 2). We ask that MassDEP report the percentage of water bodies (river and streams by mile, lakes and ponds by

acre, and estuaries by square mile) that have never been assessed and those that have been assessed within the previous five years by the agency in the final Integrated List. The list of waters in Category 5, where MassDEP needs to develop a Total Maximum Daily Load (TMDL) is also extensive. We ask that MassDEP uniformly include in the final Integrated List of Waters how TMDLs are matched with impairments.

Finally, Mass Rivers and our member groups are extremely concerned about the pace of review and updating of the Massachusetts surface water quality standards (WQS). As noted in the *Proposed List,* the Clean Water Act specifies that states hold public hearings at least once every three years (triennial review) to review and, where appropriate, revise their water quality standards. To our knowledge, Massachusetts has failed to meet this obligation; in fact, page 8 of the Proposed List says that there have been no updates in a decade. The Proposed List also notes proposed revisions for 2017 to the WQS but does not provide adequate detail on the substance of these proposed changes or where this information can be found. Nor does it provide information about when public hearings will be held regarding these changes, which by now should be scheduled if the revisions are truly on track for 2017. The state should commit to the public triennial review.

Thank you for considering our comments. Please contact us if you have any questions.

Sincerely,

Gabby Queenan
Policy Specialist
Massachusetts Rivers Alliance

MassDEP response to Mass Rivers' general comments: Responses to Mass Rivers' general comments pertaining to external data, transparency, water quality standards and MassDEP's monitoring and assessment programs can be found in Part I of this document.

MassDEP response to Mass Rivers' specific comments:

- Mass Rivers commented "We also applaud MassDEP for the new addition of "presence of active CSO discharges" in evaluating *Primary Contact Recreational Use*. We ask that MassDEP further clarifies in the *Massachusetts Consolidated Assessment and Listing Methodology (CALM) Guidance Manual for the 2016 Reporting Cycle* how CSOs with variances will be assessed for these criteria." In contrast with the presumptive impairments applied to waters receiving CSOs with no variances, MassDEP assesses water bodies that receive CSOs with variances in the same way as it assesses waters where no CSOs are present at all. These methods are outlined in the 2016 CALM guidance document.

- Mass Rivers noted multiple "delistings" from category 5 for fecal coliform bacteria with the provided explanation "Applicable WQS attained; due to change in WQS," and argued, correctly, that a change in the water quality standards from fecal coliform as the indicator bacteria to *E. coli* should not in itself justify a delisting of this impairment. MassDEP agrees, and no delistings of fecal coliform as an impairment have been made unless data on the new indicators were available that demonstrated that the new standards were attained.

- Mass Rivers requested that "MassDEP report the percentage of water bodies (river and streams by mile, lakes and ponds by acre, and estuaries by square mile) that have never been assessed and those that have been assessed within the previous five years by the agency in the final Integrated List". While not included in the public review draft, EPA's guidance on the development of the 305(b)/303(d) integrated report calls for a summary table containing the sizes of waters in each list category and this will be provided in the final version of the 2016 report. When this table becomes available, a rough approximation of the "percentage of waters that have never been assessed" ***for any designated use,*** could be obtained by dividing the total number of river miles, lake acres and coastal areas contained in all five list categories into the state total sizes of these waters presented in the Surface Water Atlas for Massachusetts included in the integrated report. The accuracy of the state-wide totals likely varies considerably by water type and information source. Nonetheless, MassDEP acknowledges that many waters have never been assessed and that the preferred method for determining the use-support status of all waters is through the use of random sampling designs, such as those employed for the shallow stream and lake probabilistic surveys. Finally, since the only substantive changes in the 2014 integrated list related to new TMDL approvals and fish edibility advisories, the 2016 report encompasses the assessments MassDEP has completed in the past five years; namely, a state-wide assessment (i.e., all watersheds) of the shellfish harvesting, primary and secondary contact recreation and aesthetic uses, as well as the assessments of the aquatic life use-attainment status of 15 watersheds and/or coastal drainages. Figure 3 in the 2016 integrated report depicts the uses assessed in each watershed for the 2016 listing cycle.

- Mass Rivers asked that "MassDEP uniformly include in the final Integrated List of Waters how TMDLs are matched with impairments." While the CWA distinguishes between "pollutants" such as nutrients, metals, pesticides, solids and pathogens that all require TMDLs and "pollution" such as low flow, habitat alterations or non-native species infestations that do not require TMDLs, it is often the case that the implementation of a TMDL for a specific pollutant will correct other associated impairments. For example, it is generally expected that an implemented TMDL for phosphorus will address such nutrient-related impairments as "excess algal growth", "chlorophyll a" and "nutrient-eutrophication biological indicators". Therefore, these impairments would also be included as covered by a TMDL for phosphorus. However, this determination is made case-by-case, often as part of the TMDL development process, and, therefore, cannot be universally applied to all waters impaired by nutrients. For this reason, MassDEP cannot uniformly match impairments with TMDLs that have not yet been completed. As always, waters with approved TMDLs for all pollutants and related stressors are placed in Category 4a where they are still considered impaired until there is sufficient data and information to indicate that the impairments have been corrected and applicable designated uses are supported.

United States Environmental Protection Agency (EPA)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 1
5 Post Office Square, Suite 100
Boston, MA 02109-3912

October 19, 2017

Arthur S. Johnson
MassDEP
Division of Watershed Management
Watershed Planning Program
8 New Bond Street
Worcester, MA 01606

Re: Comments on the Proposed Massachusetts Year 2016 Integrated List of Waters related to the Cambridge Reservoir Watershed

Dear Mr. Johnson,

The United States Environmental Protection Agency, Region 1, Drinking Water Quality and Protection Unit is pleased to provide the enclosed report and associated data submittal to support the addition of waters within the Cambridge Reservoir Watershed onto the Final Massachusetts Year 2016 Integrated List of Waters pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act. Data presented in the report provide evidence that all four major tributaries, and the Cambridge Reservoir itself, are impaired by chloride according to the federal standards and 314 CMR 4.05(e); and therefore, these waters should be added to the Final Year 2016 Integrated List of Waters as impaired for chloride.

Through collaborative monitoring efforts by the City of Cambridge Water Department and the U.S. Geological Survey, the Cambridge Reservoir Watershed has been extensively studied for road salt impacts for nearly ten years. The impacts revealed by these monitoring programs show a hydrologic system and drinking water supply severely impacted by road salt. For example, as described in the attached report, during one year of monitoring from Dec 2013 to Dec 2014, 767 events of both chronic and acute chloride toxicity occurred throughout the watershed. During this period, chloride concentrations as high as 6,332 mg/l were recorded in the watershed, a value which is more than seven times the acute standard for aquatic life according to federal standards and 314 CMR 4.05(e).

EPA Region 1 is providing this report and data submission as a comment on the Proposed Massachusetts Year 2016 Integrated List of Waters (CN 470.0) released in June 2017. Data have also been submitted to MassDEP via WQData.Submit@state.ma.us following MassDEP's Data Submittal Guidelines for External Data. If you have any questions about this submission, please contact me at Belaval.marcel@epa.gov or 617-919-1239.

Sincerely,

Marcel Belaval, Hydrologist
Drinking Water Quality and Protection Unit

CC:
Jamie O'Connell, City of Cambridge Water Department
Bryan Dore, EPA R1
Denise Springborg, EPA R1
Newton Tedder, EPA R1
Andrea Traviglia, EPA R1

City of Cambridge, Cambridge, MA

CITY OF CAMBRIDGE
MASSACHUSETTS
Water Department
250 Fresh Pond Parkway
Cambridge, MA 02138
617 349 4770
fax 617 349 6616

October 23, 2017

Arthur S. Johnson
MassDEP
Division of Watershed Management
Watershed Planning Program 8 New Bond Street
Worcester, MA 01606

Via email

Re: Comments in support of EPA Region 1 data submission and report regarding the Cambridge Watershed chloride impairment

Dear Mr. Johnson,

The City of Cambridge Water Department (CWD) appreciates the opportunity to submit comments in support of adding waters within the Cambridge Reservoir Watershed onto the Final Massachusetts Year 2016 Integrated List of Waters as impaired by chloride. CWD has reviewed the United States Environmental Protection Agency Region 1 (EPA) data submission package and report. CWD agrees with EPA's conclusion that the four major tributaries, and the Cambridge Reservoir itself, are impaired by chloride. According to federal water quality criteria developed under Clean Water Act, as well as criteria for chloride set under 314 CMR 4.05(e), waters in the Cambridge Reservoir Watershed regularly exceeded both the acute and chronic toxicity standard for chloride. During the reporting period of December 2013 through December 2014, a combined 767 events exceeded one or both of these chloride standards. As results from the collaborative CWD-United States Geological Survey demonstrate, chloride pollution is a persistent water quality problem in the Cambridge Reservoir Watershed. Adding the Cambridge Reservoir Watershed to the Final Massachusetts Year 2016 integrated List of Waters is an important step towards addressing this longstanding water quality impairment.

Sincerely,

Jamie O'Connell
Watershed Protection Supervisor, City of Cambridge
joconnell@cambridgema.gov
617-349-4781

David Kaplan, Watershed Manager, CWD
Sam Corda, Managing Director, CWD
Cambridge Water Board

MassDEP response: EPA's and the City of Cambridge's comments pertaining to chlorides in Cambridge Reservoir and its tributary streams primarily concern the Drinking Water and Aquatic Life uses. MassDEP does not assess drinking water for reporting under the CWA, and the Charles River Watershed was not assessed for the Aquatic Life Use during the 2016 CWA assessment and listing cycle. However, this issue will be addressed as a special case during this (2016) CWA reporting cycle. MassDEP must make this exception because these comments and supporting data were submitted to MassDEP by the EPA. As the federal agency authorized to oversee the states' water management programs pursuant to the CWA, all of EPA's comments must be satisfactorily addressed before that agency can approve the states' 303(d) lists.

EPA submitted a report summarizing specific conductivity and chloride data collected by USGS and the Cambridge Water Department from Cambridge Reservoir and its tributaries, and requested that these water bodies be listed as impaired by chlorides. MassDEP reviewed this submittal and made the following determinations.

Stream segments: EPA estimated chloride concentrations from specific conductivity measurements recorded by sondes deployed in Hobbs Brook upstream and downstream from Cambridge Reservoir and from three unnamed feeder streams. Since MassDEP had not previously assessed any of these streams, new assessment units (AU) were established for all but "Unnamed Tributary 2" which was determined to be intermittent. Sampling locations and AU designations are presented in the table below.

Location of stream sampling sites in the Cambridge Reservoir Watershed where specific conductivity/temperature sondes were deployed from December 1, 2013 – December 1, 2014

USGS Gauge No.	Monitoring Site Description	Drainage Area (mi^2)	AU added for 2016 reporting cycle
01104405	Hobbs Brook- Upstream of Cambridge Reservoir near culvert at Mill St.	2.16	MA72-45
01104410	Unnamed Tributary 1- In Lexington MA, a.k.a. Salt Depot Brook.	0.35	MA72-47
01104415	Unnamed Tributary 2- Upstream of Lincoln St, a.k.a Lexington Brook	0.41	--*
01104420	Unnamed Tributary 3- 20 feet downstream of culvert on State Highway 128, a.k.a. Tracer Lane Monitoring Station.	0.73	MA72-48
01104430	Hobbs Brook- Downstream of Cambridge Reservoir. Downstream of Culvert on Winter St.	6.86	MA72-46

* not added as an AU because it is an intermittent stream

EPA estimated chloride concentrations in tributaries from continuous specific conductivity data according to a regression equation developed for the watershed. The regression was derived from 293 paired measurements of specific conductivity and chloride collected by USGS from 1997 to 2014. The regression equation used was: Chloride (in mg/l) = (0.361* Specific Conductivity (in uS/cm)) - 99.162, R2=0.9964. Field samples can be compared to determine one relationship for the entirety of the watershed because of general similarities in ion concentrations due to rock type, soil characteristics, and other factors.

EPA calculations employing the watershed-specific regression model predicted exceedances of the chronic aquatic life criterion for chloride from specific conductivity measurements to varying degrees in all of the monitored streams. Therefore, the Aquatic Life Use is being assessed as impaired primarily as a result of road salt application and runoff from impervious surfaces within the watershed. Assessment units MA72-45, -46, -47 and -48 will be added to the final 2016 303(d) list of impaired waters (Category 5) as impaired by chlorides.

Cambridge Reservoir: This water body comprises two assessment units in MassDEP's assessment database – the main basin (MA72014) and upper basin (MA72156). Although no continuous measurements were taken from within either basin, the Cambridge Water Department collects regular grab samples from Trapelo Road in Lexington (within the main basin) and the Gatehouse near the outlet of the main basin in Waltham. During December, 2013 – December, 2014, five samples were taken at the Trapelo Road site, and 50 samples were obtained from the Gatehouse site. Over 60% of the samples collected at both sites exceeded the chronic aquatic life chloride criterion of 230 mg/l. Therefore, the Aquatic Life Use in the main basin (MA72014) is being assessed as impaired primarily as a result of road salt application and runoff from impervious surfaces within the watershed. Finally, although no chloride data are available from the upper basin proper, elevated chloride concentrations were documented in streams feeding this basin, as well as in the main basin and for this reason MassDEP will also impair the upper basin (MA72156) for chlorides.

Buzzards Bay National Estuary Program

Buzzards Bay

National Estuary Program

October 23, 2017

Arthur S. Johnson
MassDEP
Division of Watershed Management
Watershed Planning Program
627 Main Street, Second Floor
Worcester, MA 01608
via email: Arthur.Johnson@state.ma.us

Re: Comments on 2016 Integrated List

Dear Mr. Johnson:

The Buzzards Bay National Estuary Program (NEP) has conducted a review of the Proposed Massachusetts Year 2016 Integrated List of Waters with respect to bacterial pollution related impairments in Buzzards Bay. In particular, we looked at historical and existing bacteria related closures to shellfish growing areas reported by the Massachusetts Division of Marine Fisheries (DMF)[1], and bacteria related swimming beach closures reported by municipalities to the Massachusetts Department of Public Health[2].

In our review of this data, it is apparent that some boundaries of bacterial impaired waters on the proposed Integrated List do not reflect existing conditions, or water quality improvements made during the past decade or more. To illustrate the scope of this problem, Figure 1 shows the bacterial impairments defined in the proposed 2016 Integrated List, and Figure 2 shows actual shellfish growing area closures (seasonally, conditionally, or permanently closed circa 2015) due to bacterial pollution. Please take note of the inconsistencies between the designations, particularly on the south coast of Dartmouth, Nasketucket Bay in Fairhaven, Mattapoisett Harbor, areas of Wareham, areas in Pocasset Bourne, and Megansett Harbor at the Bourne-Falmouth boundary. Based on our review, we recommend that MassDEP reexamine the Integrated List boundaries for bacterial impaired surface waters in Buzzards Bay to determine where they should be made more consistent with actual bacteria-caused impairments.

The inconsistencies between closures and impairments arose in part because, when the Buzzards Bay bacterial TMDL was adopted in 2009 (with our support), MassDEP generally used a whole embayment approach in defining bacterial impairments. This approach had some utility, because in the 1990s and early 2000s, some embayment shellfish closures were more expansive than today, and many of these embayments were also classified as nitrogen-impaired at the whole

[1] See www.mass.gov/eea/agencies/dfg/dmf/programs-and-projects/designated-shellfish-growing-areas.html
[2] See http://ma.healthinspections.us/public_21/beaches.cfm

embayment level. It would have been complicated to use different segments for each impairment at the time. The 2009 bacterial TMDL also heavily relied on a DMF dataset with data from 1997-2001 that the Buzzards Bay NEP used in our 2003 Atlas of Stormwater Discharges to Buzzards Bay. Since then, water quality has improved in some embayments.

In the intervening years, we have begun to appreciate the inadvertent adverse consequences of classifying whole embayments as impaired by bacteria, especially when these impairments affect a small percentage of the water body.

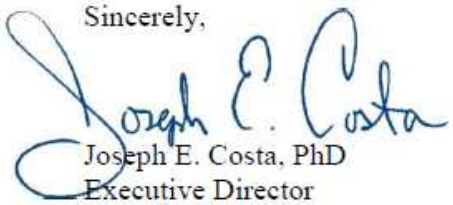
In particular, the Buzzards Bay NEP has been working with municipalities to ensure their compliance with the U.S. EPA's new MS4 permit that will go into effect in July of 2018. A new requirement under this permit is the testing of stormwater discharges to impaired waters for the contaminants causing the impairment as defined in the Integrated List. The bacterial TMDL also imposes a challenging bacteria limit for stormwater discharges to bacterial impaired waters (the fecal coliform waste load allocation is only a geometric mean of 14 organisms per 100 ml and 10% of the samples cannot exceed 28 organisms per 100 ml). There is a high cost of meeting these requirements, and municipalities have limited resources. Where a whole embayment is designated for a bacterial pollution impairment, when only a small percentage of the water body is impaired, will result in municipal monitoring efforts in what should be low priority areas, and for the treatment of stormwater discharges not causing impairments, and diverting attention away from areas actually impaired by bacterial pollution.

One possible solution is to resegment affected estuaries to more closely reflect actual bacterial impairments like shellfish bed closures. Updating the Integrated List in this way would remove potentially hundreds of acres of Buzzards Bay that are listed as bacterially impaired, but are in fact not impaired by bacteria, as they are open for shellfishing. Such action is important not only in focusing resources onto waters that are actually impaired, but would also acknowledge the successes of DMF, MassDEP, and municipalities to reduce point and non-point sources contributing to shellfish bed and swimming beach closures.

We recognize that resegmenting of the estuaries will involve consultation with MA DMF to define more meaningful boundaries based on a review of existing water quality data, and such an evaluation will require considerable effort. To that end, the Buzzards Bay NEP is willing to provide GIS and data analysis assistance to MassDEP in such an undertaking.

If you have any questions about these comments, please do not hesitate to call me.

Sincerely,



Joseph E. Costa, PhD
Executive Director

cc. Bruce Carlisle, MCZM
Mike Hickey, DMF

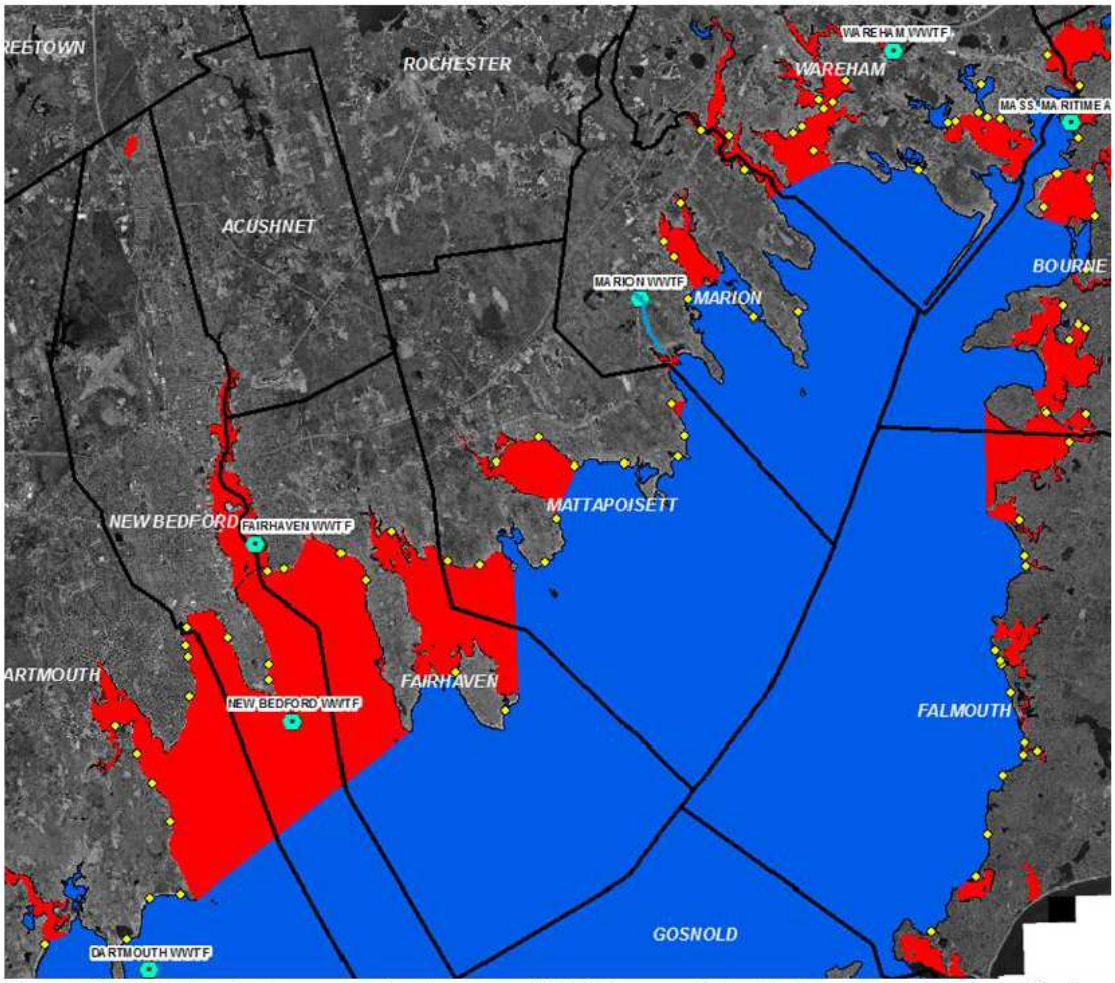


Figure 1. Bacteria impaired waters under the proposed 2016 Integrated List. Yellow dots are locations of swimming beaches.

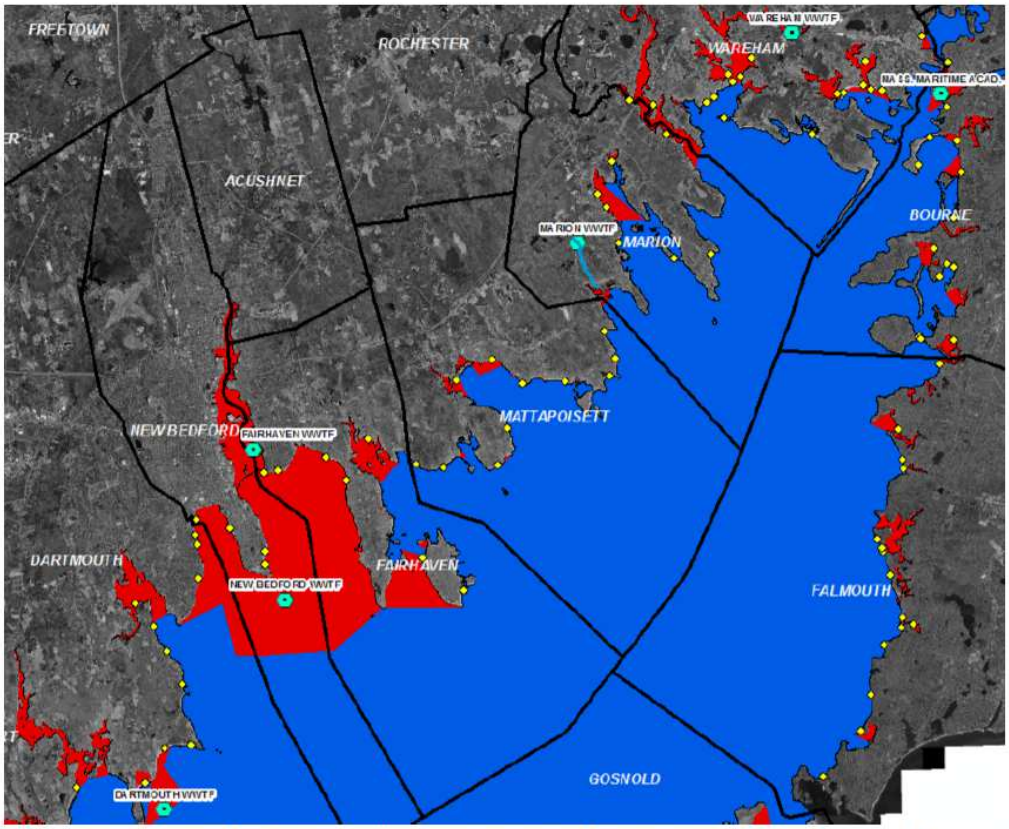


Figure 2. Bacteria impaired designated shellfish growing areas (2015 classification, based on from MA DMF reports, red shaded areas include seasonal and rainfall conditional closures). Yellow dots are locations of swimming beaches. Note that there are some small closures that are associated with discharges from specific pipes or streams that are too small to be seen on a map of this scale.

MassDEP response:

MassDEP acknowledges that portions of assessment units (AUs) may support designated uses, such as shellfish harvesting and primary contact recreation, while other areas of the same AUs do not, and that adding up the status of waters state-wide, for multiple designated uses, overestimates the total river miles, lake acres or coastal square miles that may actually be impaired. It is also true that information pertaining to smaller-scale improvements in water quality within existing AUs is lost when reporting on a state-wide scale. However, the Clean Water Act (CWA) mandates that any and all verified impairments be identified in the integrated list and that those caused by pollutants be prioritized for TMDL development. The extent, magnitude and source(s) of the impairments are often not completely known when AUs are listed and their determination becomes part of the TMDL development process. Restoration measures are then targeted at confirmed sources of pollutants.

The 2016 integrated report provides a brief description of how AUs have been developed and refined over the years for purposes of reporting on the status of Massachusetts' waters in accordance with the requirements of the Clean Water Act. Almost 2,500 AUs currently exist and new ones are created as assessments of previously unassessed waterbodies are completed. While adjustments to AU boundaries are sometimes made, it is MassDEP's goal to limit changes to existing AUs as much as possible, with the ultimate goal of having relatively fixed boundaries which will allow for more efficient management and reporting through EPA's ATTAINS (formerly ADB) assessment database. Periodic or ad-hoc re-segmentation of AUs to account for individual beaches, shellfish beds, eelgrass meadows, etc. would be impractical and unmanageable when presenting the condition of all of Massachusetts' surface waters on a state-wide or major watershed scale, particularly when multiple designated uses are considered.

MassDEP's system of AUs has been in place since the 1970s, long before a decision was made to apply their impairments as monitoring requirements in individual MS4 stormwater permits, and the issues raised in this comment are an unintended consequence of doing so. Nonetheless, readjusting the boundaries of MassDEP's AUs is not a workable solution for preventing costly monitoring in low-priority areas. Wherever applicable MS4 permits, BMPs, or other water quality improvement projects should be individually targeted to those areas where actual beach closures and/or closed shellfish beds are known to occur.

Neponset River Watershed Association (NepRWA)

neponset river
WATERSHED ASSOCIATION
1967-2017 Celebrating 50 years

October 23, 2017

Arthur S. Johnson
Massachusetts Department of Environmental Protection
Division of Watershed Management
Watershed Planning Program
627 Main Street, Second Floor
Worcester, MA 01608

RE: Comments on 2016 Integrated List of Waters

Dear Mr. Johnson:

The Neponset River Watershed Association (NepRWA) submits the following comments on the Massachusetts Department of Environmental Protection's (DEP) proposed 2016 Integrated List of Impaired Waters. NepRWA is a nonprofit conservation organization working to clean up and protect the Neponset River, its tributaries and surrounding watershed .

In general, NepRWA urges DEP to more clearly identify the data sources used when developing the list, and describe how and when the department collects its data. Moreover, we ask that DEP identify if and under what circumstances the department uses external information submitted by science-based watershed associations like ours. We also urge DEP to use external data whenever possible to supplement their own data collection. Finally, we request specific changes to the proposed Integrated List concerning waterbodies in the Neponset River watershed, as described below. We have included supportive data within this comment and submitted raw data separately as instructed for this comment process.

Neither DEP data nor external data requirements are transparent; moreover, data appears to be significantly outdated for the Neponset River watershed.

Accompanying the proposed 2016 Integrated Waters List is DEP's Consolidated Assessment and Listing Methodology (CALM), which describes DEP's assessment methods. However, the CALM does not provide adequate detail explaining what data sources were used to compile the proposed list.. While this document helpfully provides an overview of the process DEP uses to develop the integrated list, it does little to assure the public that recent (and most relevant) data is being used. Indeed, the last assessment for the Neponset River posted to DEP's website is from 2009. It is alarming that DEP is using data more than 5 years old to assess our watershed, particularly since our organization submits data every year (through 2015).

Federal law requires that states evaluate "all existing and readily available water quality-related data and information" to develop the integrated list. (40 CFR 130.7(b)(5).) It is not clear that DEP actually uses external data, however. DEP

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describes criteria for data acceptability in the CALM, and indicates that data from organizations such as ours are "often considered." We are a science-based organization and maintain a high-level QAPP, approved by both DEP and EPA, governing our data collection and analysis, but it is unclear whether our data (or any external data) has actually been used in the assessments (we suspect not, for the reasons described below). Aligning our QAPP with DEP's monitoring program QAPP, or otherwise apprising organizations like ours about external data qualifications, would benefit DEP in that that data we regularly submit may qualify as "Level 3" data, the most likely to be used for regulatory and water quality assessment purposes. Incorporating well planned and rigorously collected external monitoring data will fill critical data gaps that currently exist within DEP's assessment data set. With this data, DEP can make better informed decisions regarding the status of the many waterbodies in the state of Massachusetts.

The data used to inform decisions about adjustments to the list have not been adequately communicated. DEP should reference specific data sources for its decisions to list, alter and delist any segment or waterbodies in the final Integrated List of Water. For example, it would be useful to know the data sources DEP is using when the explanation for removal of a segment is "Applicable WQS attained; reason for recovery unspecified." The New Hampshire Department of Environmental Services draft 303(d) list for 2016 provides an excellent model for source descriptions in impairment evaluations.

Additionally, the CALM indicates that DEP bases its assessments of primary and secondary contact impairment only on the geometric mean of bacteria samples, violating the WQS regulations and further limiting the data available for accurate water quality assessments. 314 CMR 4.05 requires the department to apply maximum bacteria concentrations to both the geometric mean of the 5 most recent samples during the same bathing season and single samples taken during the bathing season. The department does not have the discretion to disregard the regulations, which establish an important safeguard relative to the preferred method of evaluating bacterial impairments.

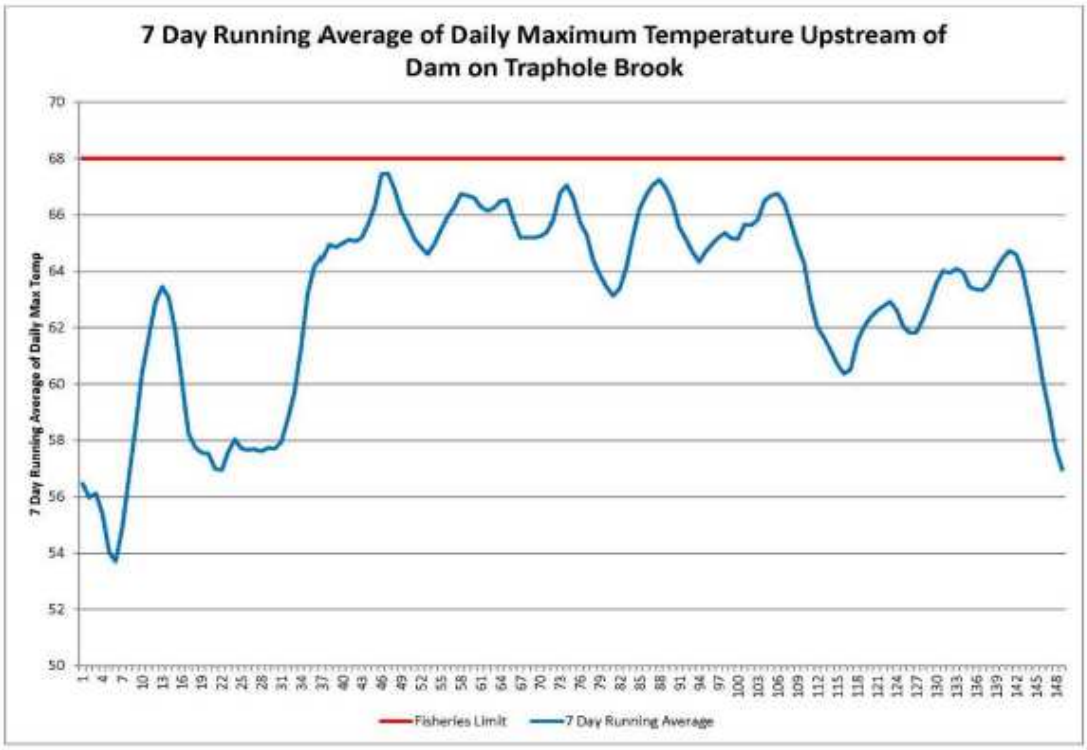
Finally, NepRWA is concerned about the department's failure to timely review and update the Massachusetts Surface Water Quality Standards (WQS). As noted in the Proposed Integrated List, the Clean Water Act requires states hold public hearings at least once every three years to review and revise its water quality standards. In the list itself, DEP indicates that there have been no revisions to these standards since 2006. Failure to update the standards may significantly impact activities to improve and protect water quality throughout the state. In particular, the Massachusetts Department of Fish and Game Division of Fisheries and Wildlife (DFW) recognizes 10 waterbodies within the Neponset River watershed as being Cold Water Fisheries; however, the current WQS do not identify any Cold Water Fisheries within the watershed. And while the CALM's Focus Topic is Cold Waters and indicates that such waters identified by DFW are considered by DEP to have an "existing use" as a Cold Water Fishery that will be protected, the lack of data transparency does not reassure us that DEP has, in fact, recognized these cold water resources for protection (as described below). The department must update the WQS using current data.

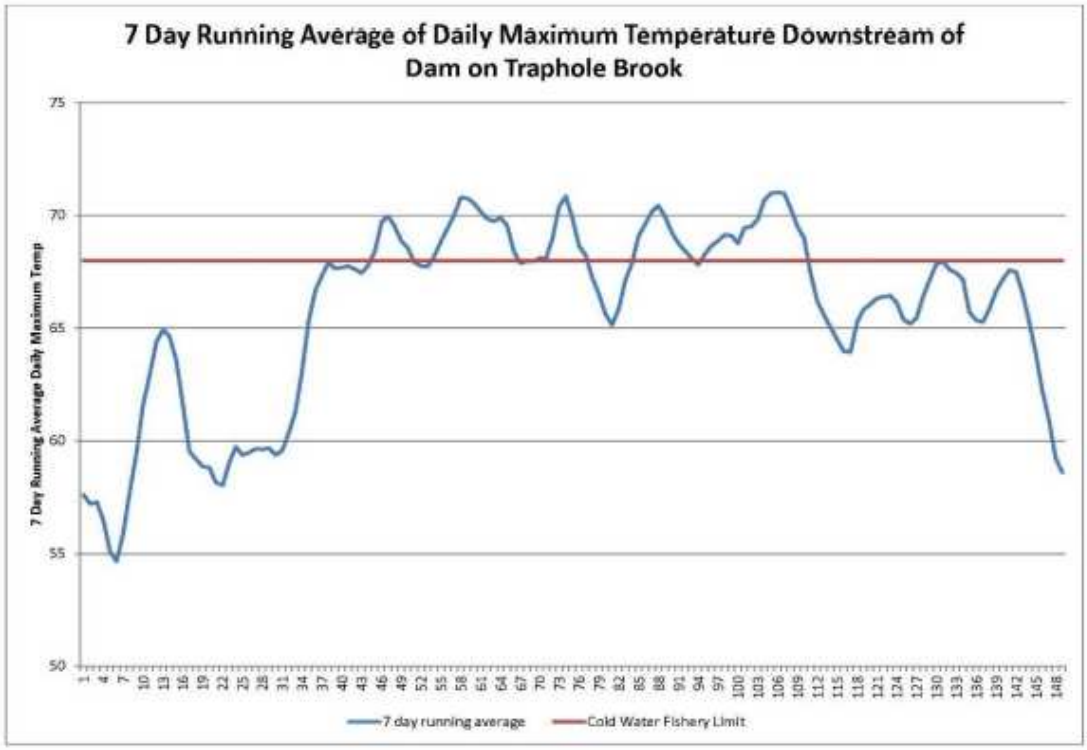
Several impairments within the Neponset River watershed have been omitted and should be included the 2016 Integrated List.

Several waterbodies within the Neponset River watershed demonstrate quality impairments, yet have not been included in the 2016 Proposed Integrated List. We urge DEP to consider more recent data (included below and separately submitted) and include the following in the 2016 Integrated List:

- Traphole Brook (MA73-17) is a valuable Cold Water Fishery (identified by DFW) and should be included as a Category 5 waterbody impaired by temperature. According to the WQS, the average daily maximum temperature over seven consecutive days should not exceed 68 °F for a Cold Water Fishery.. Our data show that the vast majority of Traphole Brook upstream of the mill pond dam in Norwood meet the temperature criteria of a cold water fishery. However, the mill pond dam and associated pond are causing significant detrimental warming effects on the brook downstream of them.. As you can see in the figure below, running 7-day average meets the temperature criteria upstream from a mill pond dam in Norwood, the running 7-day average demonstrates a temperature impairment below the dam (see Figure 1).

Figure 1 Temperature of Traphole Brook





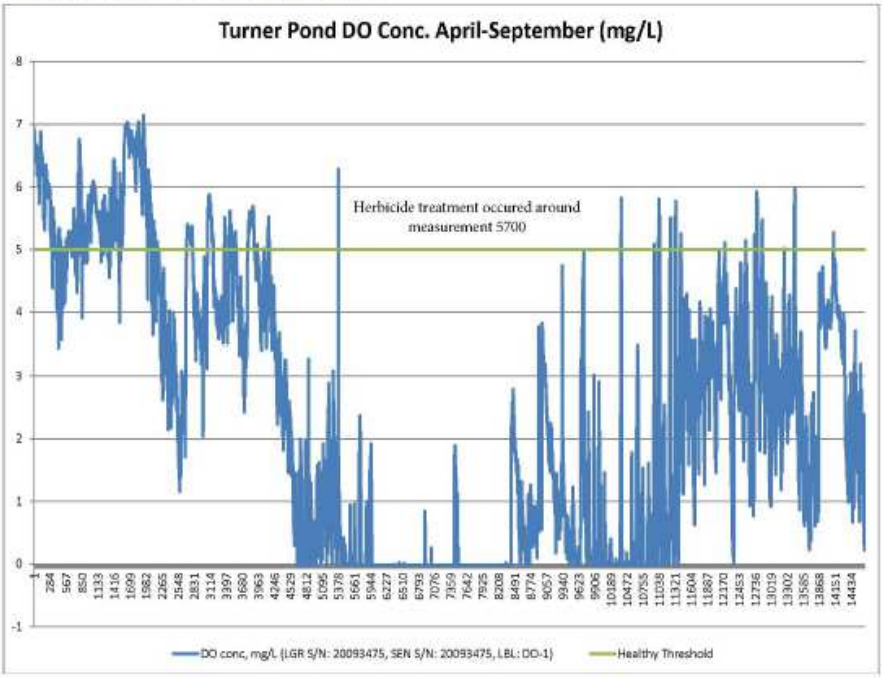
- The lower Neponset and Neponset estuary (MA73-03 and MA73-04) should be listed as a Category 4C waterbody impaired due to a fish passage barrier (the Baker dam). DEP asserts through the CALM that barriers caused by dams are not assessed as impairments to anadromous fish passage unless a fish passage structure has been built, but this strategy completely misses significant impairments to aquatic life. We urge DEP to recognize this impairment in the final Integrated List.

- Turner Pond (MA73-58) should be listed as a Category 5 waterbody impaired for dissolved oxygen levels, nutrient pollution and eutrophication. Under the WQS, dissolved oxygen should remain at or above 5.0 mg/l for Class B waters. In Turner Pond, however, dissolved oxygen levels regularly dropped to zero in 2017; in fact, there was an extended period in June and July 2017 during which the daily maximum levels failed to reach 5.0 mg/L. Moreover, total phosphorous concentrations regularly exceeded the EPA "Gold Book" standard of ≤ 0.025, and secchi disk depths in 2016 were 0.8 and 0.65 meters (whereas the criteria for impairment assessment is <1.2m).

Table 1 Turner Pond Pollutant Data

Date	Secchi Depth (m)	Total Phosphorus (mg/l)	Chlorophyll A (µg/l)
5/11/2017	ND	0.02	3.28
5/30/2017	0.8	0.04	ND
6/22/2017	0.65	0.06	ND
7/13/2017	ND	0.075	7.03
7/27/2017	ND	0.06	ND
8/10/2017	ND	0.075	88.4
8/24/2017	0.61	0.05	ND
9/27/2017	0.71	0.03	ND

Figure 2 Turner Pond Dissolved Oxygen

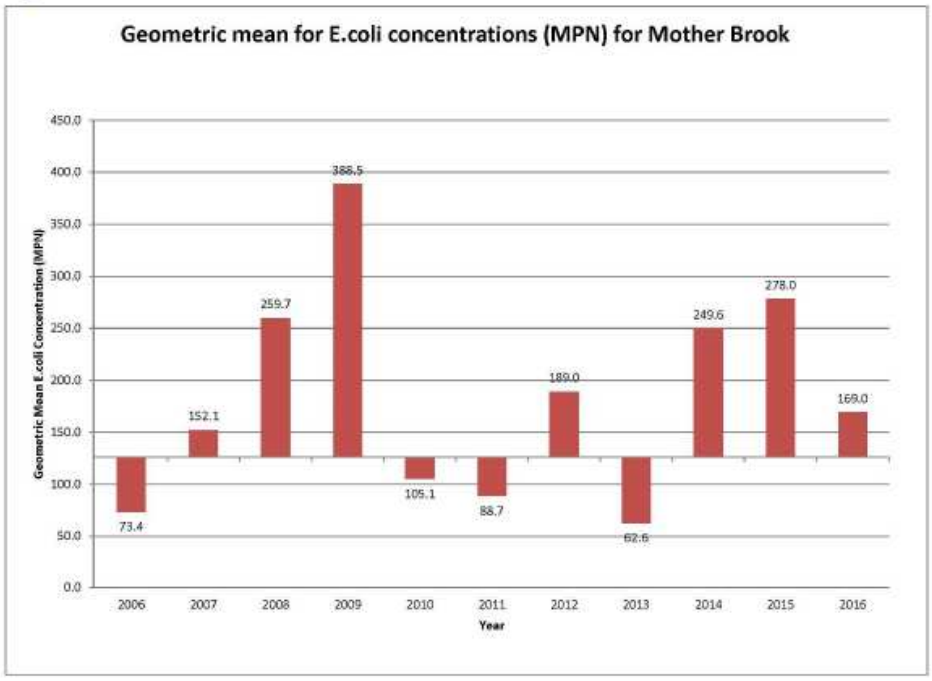


Several impairments within the Neponset River have been erroneously removed from Categories 4 or 5 of the integrated list.

Several waterbodies within the Neponset River watershed have been identified in the Proposed Integrated List as no longer impaired for *E. coli* contamination and algal growth. However, our data indicate that several of these waterbodies remain impaired and should therefore be included in the 2016 Integrated List.

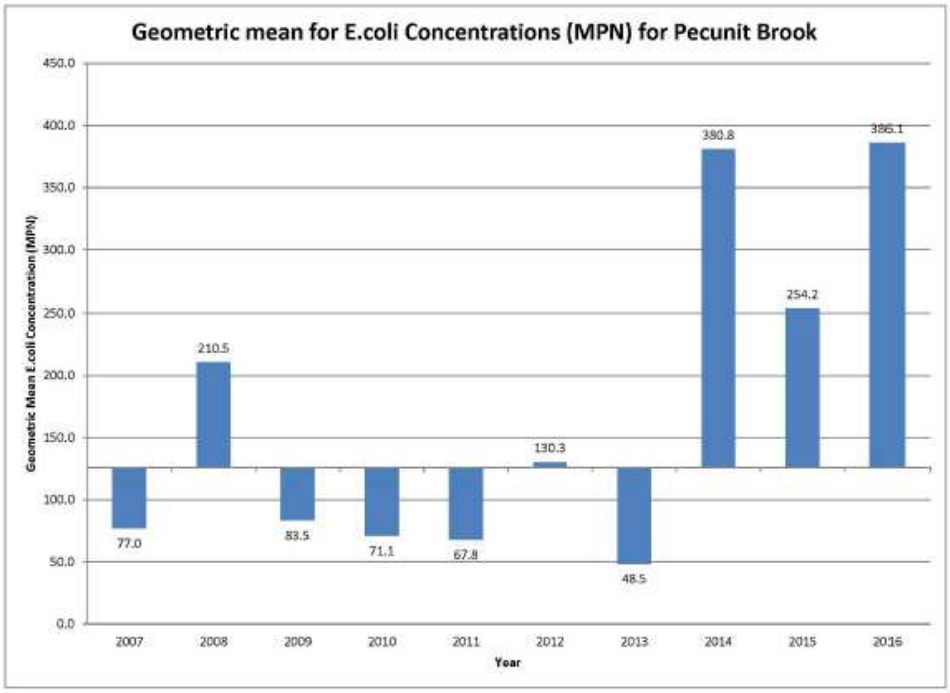
- The WQS establishes that for Class B waters, the geometric mean of the 5 most recent samples during the same bathing season shall not exceed 126 colonies per 100 ml, and that no single sample shall exceed 235 colonies per 100 ml. Our data demonstrates that:
  - Mother Brook (MA73-28) should remain as a Category 5 waterbody impaired for E.coli contamination. Specifically, based on the geometric mean criteria, Mother Brook has been impaired during 7 out of the last 11 years. Using the single sample criteria, it has been impaired every year for the past 11 years.

Figure 3 Mother Brook E.coli Concentration



- Pecunit Brook (MA73-25) should remain listed as a Category 4A waterbody impaired for E.coli contamination. Based on geometric mean criteria, it has been impaired during 5 out of the last 10 years. Using single sample criteria, it has been impaired during 8 of the last 10 years.

Figure 4 Pecunit Brook E.coli Concentration



The fact that there is a significant amount of inter-annual variability in *E.coli* concentrations within the brooks illustrates that sampling a watershed one year every 15 years is insufficient to make any reliable assessment of a waterbody's status. Including external sources of data would immensely improve assessment accuracy.

- The Neponset River from the Neponset Reservoir to East Branch (MA73-01) should remain listed as a Category 5 water impaired for nutrient and sediment/siltation pollutants. By way of illustration, Crack Rock Pond annually suffers excess algal and duckweed blooms. Figure 1 illustrates 100% coverage by duckweed, while the criteria for aesthetic impairment is >25% coverage (see Figure 5).

Figure 5. Crack Rock Pond 2016

- Unquity Brook (MA73-26), Germany Brook (MA73-15) and Hawes Brook (MA73-16) should remain listed as impaired for Trash/Debris as such pollution is still a major issue in each waterbody as evident by visiting these waterbodies many times over the last several years.
- Unnamed Tributary (Meadow Brook) (MA73-33) should remain impaired for Taste/Odor and Trash/Debris, as we have no data to support it being removed for having met the WQS criteria as evident by visiting these waterbodies many times over the last several years.

Conclusion

In sum, it is clear that DEP lacks the resources to collect and validate water quality data on a regular basis. DEP should clarify standards for external data to be used in assessment decisions so that regularly submitted data from science-based watersheds may be used to supplement DEP's data collection and better inform development of both the integrated list and WQS. Additionally, the WQS must be updated triennially as required by federal law in order to ensure that Massachusetts waters are protected for their most beneficial uses. Finally, NepRWA urges DEP to add or maintain several waterbodies within the Neponset River watershed on the 2016 Integrated List, as supported by current data.

Thank you for the opportunity to comment on the Proposed Integrated List. Should you have any questions, or require additional information, please don't hesitate to contact me.

Sincerely,

Kerry M. Snyder
Advocacy Director

MassDEP response to NepRWA's general comments: Part I of this document presents responses to NepRWA's general comments pertaining to the age of data used in assessments, external sources of data, transparency of assessment decisions and the pace with which water quality standards are revised.

MassDEP response to NepRWA's specific comments: NepRWA submitted monitoring data in support of their comments through MassDEP's data portal, and a review of these data found them to be generally usable for making assessment and listing decisions. The Neponset River Watershed was not assessed for the Aquatic Life Use during the 2016 CWA assessment and listing cycle. Therefore, NepRWA's comments pertaining to the Aquatic Life Use (i.e., MA73-03, MA73-04, MA73-17 and MA73058) will be considered when completing the next assessment and listing process. Other comments are addressed below.

- NepRWA commented that Mother Brook (MA73-28) should remain listed as a Category 5 waterbody impaired for *E.coli* contamination. MassDEP's assessment of Mother Brook was based on its water quality survey data from 2009 that indicated that the recreational uses were supported and, therefore *E. coli* was delisted (see table below).

Summary of MassDEP Watershed Planning Program *E. coli* data collected in 2009 from Mother Brook at Reservation Road, (Hyde Park) Boston

UniqueID	Year	Date First Sample	Date Last Sample	Sample Count	Geometric Mean	Bacteria Type
W1949	2009	04/28/09	09/15/09	5	74	E. coli

NepRWA's *E. coli* data collected from 2007 - 2016 at two sites on Mother Brook provide evidence that the brook is still impaired (data summarized below). Based on NepRWA data, therefore, *E. coli* will be retained as a cause of impairment in the final version of the 2016 Integrated List. Note: Mother Brook is covered by an EPA-approved pathogen TMDL, but remains in Category 5 due to other impairments.

Summary of NepRWA *E. coli* data collected from 2007-2016 from Mother Brook at Reservation Road, Boston. Note: Data are summarized from those years for which five or more counts were available from within the primary contact recreation season (April 1 – October 15). Exceedances of the water quality standard are in bold.

Year	Geometric Mean	Year	Geometric Mean	Year	Geometric Mean
2007	**167**	2012	**128**	2016	**186**
2008	102	2014	**326**		
2011	**128**	2015	**169**		

Summary of NepRWA *E. coli* data collected from 2008-2016 from Mother Brook at Washington Street, Dedham. Note: Data are summarized from those years for which five or more counts were available from within the primary contact recreation season (April 1 – October 15). Exceedances of the water quality standard are in bold.

Year	Geometric Mean	Year	Geometric Mean	Year	Geometric Mean
2008	**561**	2012	**347**	2016	**161**
2010	102	2013	64		
2011	118	2015	**457**		

- NepRWA commented that Pecunit Brook (MA73-25) should remain listed as a Category 4A waterbody impaired for *E.coli* contamination. MassDEP's assessment of Pecunit Brook was based on its water quality survey data from 2009 that indicated that the recreational uses were supported and, therefore *E. coli* was delisted (see table below).

Summary of MassDEP Watershed Planning Program *E. coli* data collected in 2009 from Pecunit Brook approximately 360 feet upstream of Interstate 95, Canton

UniqueID	Year	Date First Sample	Date Last Sample	Sample Count	Geometric Mean	Bacteria Type
W1948	2009	04/28/09	09/15/09	6	80	E. coli

NepRWA's *E. coli* data collected from 2007 - 2016 provide evidence that Pecunit Brook is still impaired (data summarized below) and, therefore, this brook will be returned, as requested, to Category 4A (covered by an EPA-approved pathogen TMDL) in the final version of the 2016 Integrated List.

Summary of NepRWA *E. coli* data collected from 2007-2016 from Pecunit Brook at Elm Street, Canton. Exceedances of the water quality standard are in bold.

Year	Geometric Mean	Year	Geometric Mean	Year	Geometric Mean
2007	93	2011	99	2015	**254**
2008	**226**	2012	**218**	2016	**386**
2009	96	2013	66		
2010	84	2014	**686**		

- NepRWA commented that "Unquity Brook (MA73-26), Germany Brook (MA73-15) and Hawes Brook (MA73-16) should remain listed as impaired for Trash/Debris as such pollution is still a major issue in each waterbody as evident by visiting these waterbodies many times over the last several years". These brooks were first listed for trash and debris on the 2002 integrated list, based primarily on field observations made by NepWRA during their monthly monitoring surveys. For example, at a site along Germany Brook there was evidence of a local resident dumping yard waste. When MassDEP performed monitoring surveys of these streams in 2009 there were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by WPP field sampling crews, and so the impairment Trash/Debris was removed. Trash and debris are not pollutants requiring TMDLs and are more appropriately managed by enforcing litter laws and performing river cleanups. Because the improper disposal of trash and debris is ubiquitous and episodic throughout Massachusetts, MassDEP is attempting to limit the application of this impairment to the most egregious and long-standing cases of illicit solid waste dumping. As stated in the 2016 CALM document, "a waterbody will not be assessed as impaired for the occasional presence of litter or debris, but rather for persistent and/or other more serious indicators of aesthetic degradation".

  In response to this comment, MassDEP requested, on two separate occasions, that NepRWA provide further documentation, in the form of field notes, dates and times, that trash and debris remain serious impairments of designated uses in these three streams. However, no new information was provided and "Debris/Floatables/Trash" will remain delisted from these three streams in the final version of the 2016 Integrated List.

- NepRWA commented that "Unnamed Tributary (Meadow Brook) (MA73-33) should remain impaired for Taste/Odor and Trash/Debris, as we have no data to support it being removed for having met the WQS criteria as evident by visiting these waterbodies many times over the last several years". This assessment unit has never been listed as impaired for trash/debris and, therefore, was not delisted for 2016. The brook was first listed for Taste and Odor on the 2002 integrated list, based on a field reconnaissance conducted by MassDEP in 2001 that revealed grey water and sewage odors. However, when MassDEP performed monitoring surveys of

Meadow Brook in 2009 there were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by WPP field sampling crews.

In response to this comment, MassDEP requested that NepRWA provide further documentation in the form of field notes, dates and times, that odors in this brook were noted by their sampling crews. NepRWA promptly submitted records of field observations made during the years 2006-2016 and these are summarized as follows. Sewage odors were noted in only 2 of 66 records (15 November 2006 and 12 August 2009), suggesting that objectionable odors were neither frequent nor persistent throughout the ten years of observations. In terms of clarity, 86% of the records were indicative of good conditions (e.g., clear, slightly turbid). Five of 66 (8%) observations noted suspended solids/murky or highly cloudy conditions (6 August 2008, 11 August 2010, and 29 May, 26 June, and 24 July 2014). No objectionable conditions were noted after July 2014. Based on the general lack of objectionable odors or turbidity noted by both NepRWA volunteers and MassDEP field staff the Taste/Odor impairment will not be applied to Unnamed Tributary (Meadow Brook) (MA73-33).

- NepRWA commented that the Neponset River (MA73-01) should remain listed in Category 5 impaired for nutrient and sediment/siltation pollutants citing that Crack Rock Pond, an impounded reach of this assessment unit annually suffers from excess algal and duckweed blooms (100% cover). MassDEP's assessment of this segment of the Neponset River was based on its water quality survey data in 2009 that indicated that the aesthetic use was supported based on observations at two stations and, therefore sedimentation/siltation was delisted as an impairment for reasons described below.

  Sedimentation/siltation issues in the Neponset River were documented around the Foxboro Park raceway in 1994. Specifically runoff from the horse race track and associated areas was the cause of sedimentation/siltation in this segment. This business has since closed and the Neponset River has been both daylighted and moved to the east of the current Patriots football stadium which occupies the former raceway location. Sedimentation and siltation originating from the former raceway are no longer ongoing. Downstream from the former raceway MassDEP field crews noted the water column was either "clear" or "slightly turbid" during 2009 sampling at two stations in the MA73-01 segment. Water quality samples had an average turbidity of less than 3 NTU at both 2009 sampling stations (W1943 in 2009 had an average turbidity of 2.2 NTU and W1933 average turbidity was 2.6 NTU). These observations and water quality sampling data provide further evidence which supports the delisting of the sediment/siltation impairment for MA73-01 which will be maintained in the final version of the 2016 Integrated List.

  While MassDEP sampling in 2009 did not document any objectionable levels of algae or nuisance growths at either free-flowing sampling station W1933 or W1943 in this segment, MassDEP acknowledges NepRWA's concern that the impounded reach of the Neponset River in Crack Rock Pond (the upper-most reach of this segment) does continue to exhibit problems with excessive growth of duckweed. While Total Phosphorus is listed as an impairment that will require a TMDL for this segment, the nutrient/eutrophication biological indicators cause code will be utilized to account for both duckweed and the excess algal growth. This impairment will be retained in the final version of the 2016 Integrated List for the recreational and aesthetic uses for MA73-01.

Connecticut River Conservancy (CRC)

Connecticut River Conservancy

Clean water. Healthy habitat. Thriving communities.

15 Bank Row, Greenfield, MA 01301
413.772.2020 · www.ctriver.org

October 23, 2017

Arthur S. Johnson
Massachusetts Department of Environmental Protection
Division of Watershed Management
8 New Bond St.
Worcester, MA 01606

Subject: Proposed Massachusetts Year 2016 Integrated List of Waters

Dear Mr. Johnson,

I am submitting comments on the proposed Massachusetts Year 2016 Integrated List of Waters on behalf of the Connecticut River Conservancy (CRC), formerly known as the Connecticut River Watershed Council. CRC is the principal nonprofit environmental advocate for protection, restoration, and sustainable use of the Connecticut River and its watershed. The Connecticut River and its tributaries (including the Deerfield, Millers, Chicopee, Farmington, and Westfield River basins) take up approximately one-third of the land area of Massachusetts.

Overall comments

It has now been a decade since MassDEP has written a TMDL that had anything to do with impairments in our section of the state (the most recent being the Northeast regional mercury TMDL in 2007). Table 4 on page 35 lists long-awaited Bacteria TMDLs for the Connecticut, Deerfield, Westfield, Chicopee, and Millers basins coming in FY2017-2018. We note that the 2014 Integrated List promised these TMDLs were coming out in FY2015-2016. CRC hopes that whenever these TMDLs do get drafted, the "TMDL Count" column will be updated to include the newly impaired segments proposed in 2016. Below is a table that compiles the river segments proposed for inclusion in category 5 in 2012 vs. proposed in 2016. We are using the proposed 2012 numbers because that is when we last tallied up the pathogen impairments by basin; five years ago we prepared a comment letter for the 2012 Integrated List requesting that DEP prepare bacteria TMDLs for our water bodies. Now, except for the Farmington and Millers basins, the number of impaired river miles for pathogens is greater.

	Proposed 2012	Proposed 2016
Basin	**E. coli/ Fecal coliform**	**E. coli/ enterococcus**
Chicopee	55.9	95.8
Connecticut	117.4	138.8
Deerfield	27.8	45.7
Farmington	0	0
Millers	30.7	5
Westfield	27.4	66.6
Total river miles impaired	**259.2**	**351.9**

Appendices 2 and 3 do not provide any data and not enough rationale for us to evaluate proposed additions or removals to categories 4 or 5. We recommend MassDEP review the New Hampshire Department of Environmental Service's equivalent document (online at https://www.des.nh.gov/organization/divisions/water/wmb/swqa/2016/index.htm). In many cases, NHDES provides graphs of actual data points and explains its rationale for listing or delisting in detail. With MassDEP no longer publishing water quality assessment reports, CRC recommends that DEP consider overhauling the way it presents information in the Integrated List. Data and rationale should be presented in a way that the public can understand what data MassDEP is using and the rationale for changes in the list. The source and year of data should be included for all assessment listings.

CRC includes a list as an attachment to our letter with the global request that the data or rationale for listing or delisting be provided in detail. We did not have time to look up all the monitoring data that is available online, but even if we did, the information is not available in one place.

CRC requests that MassDEP administrative staff take a few extra minutes to format the Integrated List documents in Acrobat such that someone can click on a section of the Table of Contents and jump to that section. As someone who regularly consults this document for multiple basin, I find it very time-consuming to have to scroll through pages and pages. Also, providing the tables in Excel could help in the preparation of comments.

Chicopee River Basin comments

MassDEP appears to be slipping further behind in assessing water bodies of the Chicopee basin. There are 9 segments that were formerly assessed in some way in the 2014 Integrated List, but are now in category 3. Three of them are tributaries that drain into the Quabbin Reservoir, which is the Commonwealth's largest drinking water supply. Does the Department of Conservation and Recreation (DCR) conduct water quality monitoring of streams that drain into the Quabbin Reservoir, and does DCR share data with MassDEP? Nine segments in category 2 lost uses attained, potentially due to lack of water monitoring data. Eight segments are newly listed in category 5 and three impairments were added to already impaired waters.

Connecticut River Basin comments

MassDEP proposes to remove the total suspended solids impairment for segment MA34-05, the CT River downstream of the Holyoke Dam to the CT state line. A look at the DEP water quality database indicates no sampling in this stretch of river. There is a station in Suffield, CT, which was sampled on three dates in 2008. Is MassDEP basing its assessment on a sample that lies outside of the segment that is being delisted?

MassDEP proposes to remove the E. coli impairment for the Mill River, Northampton, segment MA34-28. CRC has conducted weekly E. coli sampling for 19 weeks of the year since 2012 at a location along the Mill River a bit upstream of Paradise Pond on the Smith College campus. This site has frequently not met water quality standards. We have worked to find the bacteria source and think we have identified the general area of one, and have been in touch with the Northampton DPW. We have not had the time to format the data into DEP database format, but the data is readily viewed and downloadable online at http://www.connecticutriver.us/site/node/18?city=Northampton&state=MA&status_red=1&status_yellow=1&status_blue=1&status_white=1&status_gray=1&search=1. We do not agree that this segment be

delisted for E. coli.

West Brook has been added as a new segment to this year's list and is in Category 3. MassDEP may be interested to hear that the USGS Conte Anadromous Fish lab has been conducting a multi-year brook trout study on this water body and may have water quality data. A brief intro to the study and contact names can be found online at http://felek.cns.umass.edu:4444/indTagViz/WB/dev/wbTagVizSplash.html.

CRC requests that the description of Barton Cove (MA34122) include information to indicate that this is the section of the Connecticut River that is just upstream of the Turners Falls Dam.

CRC requests that the description of Log Pond Cove (MA34124) include information to indicate that this is a cove of the Connecticut River that is just upstream of the Holyoke Dam.

CRC notes that Sugarloaf Brook, which flows through Deerfield and Whately and discharges into the CT River near Herlihy Park, is still not listed in the Integrated List as a water body. We recommend that DEP add it to the list and include it in your monitoring strategy. Sugarloaf Brook is impacted by groundwater withdrawals from Chang Farms, may be used for irrigation water from other farms, and formerly received illegal discharge from Chang Farms wastewater until the USEPA required Chang Farms to get a NPDES permit and discharge to the Connecticut River. CRC sampled Sugarloaf Brook a few times in 2010 and 2011, and never found a bacteria problem. Temperature readings met coldwater standards during the summer we sampled.

Spelling corrections:
Sodom Brook, MA34-53, "Westampton" should be "Westhampton."
Unnamed Tributary, MA34-60. "Willamanett Brook" should be "Willimansett Brook." CRC confirms that this water body is known as Willimansett Brook.

Deerfield River Basin comments

MassDEP has added 100 new river segments in the Deerfield basin to the 2016 Integrated List that have not been listed before. All new segments were assessed for the fish and aquatic life use only. It would be helpful if DEP provided more information on what data was collected during this large effort to assess much of this watershed. Of the 100 newly listed segments, four are considered impaired. There are seven segments previously listed that are newly considered impaired, and 2 impairments added to already impaired water bodies. Two impairments are proposed to be removed.

The Deerfield River Watershed Association conducted a water quality program in the Deerfield basin in 2017. Data are preliminary, but samples in several tributaries and the Deerfield mainstem were tested for E. coli, total phosphorus, total nitrogen, total suspended solids, chloride, and volunteers took temperature readings during sampling events.

Spelling corrections:
Creamery Brook MA33-46, "Steady Line Road" should be "Steady Lane Road."
Fuller Brook, MA33-118, "Debuque State Forest" should be "Dubuque State Forest."
"Katley Brook", MA33-99 should be "Kately Brook."
South River, MA33-07 and MA33-101. "Emments Road" should be "Emmet Road."

Farmington River Basin comments

MassDEP has added 23 new river segments in the Farmington basin to the 2016 Integrated List that have not been listed before. Most new segments were assessed for the fish and aquatic life use only. It would be helpful if DEP provided more information on what data was collected.

Millers River Basin comments

This basin contains numerous additions and removals of impairments. Several segments are being delisted for "fecal coliform" with the rationale in Appendix 3 explained as "Applicable WQS attained; due to change in WQS." This sounds to us like there has been no recent sampling for E. coli now that the state water quality standard has changed from fecal coliform to E. coli. However, the MassDEP database indicates that Beaver Brook (MA35-09) was sampled on six separate dates in 2011 for E. coli and all samples tested low. If recent data are available, DEP's rationale should possibly be based on water quality standards now being attained.

In Appendix 2, it would be useful to refer people to page 28 of the Integrated List document to better understand the rationale behind the new segments listed for PCB in fish tissue.

Westfield River Basin comments

MassDEP has added 25 new river segments in the Westfield basin to the 2016 Integrated List that have not been listed before. Water temperature and E. coli bacteria seem to be the most common new water quality impairment. It would be helpful if DEP provided more information on what data was collected.

Thank you for the opportunity to comment. I can be reached at adonlon@ctriver.org or (413) 772-2020 x. 205.

Sincerely,

Andrea F. Donlon
Massachusetts River Steward

Attachment: List of segments that CRC is requesting data/rationale to be fully explained

MassDEP Note: To save space, CRC's list of all of the assessment units in need of further assessment and listing documentation is not included here.

MassDEP response:

Overall comments

- Appropriate spelling corrections/updates noted by the CRC have been made to segment descriptions in the Connecticut and Deerfield watersheds.

- As requested by the CRC, those assessment units that were newly impaired by bacteria in the proposed 2016 Integrated List will be included in the development of the planned Bacteria TMDLs for the Connecticut River and its tributaries (Deerfield, Millers, Chicopee, Farmington, and Westfield river watersheds).

- MassDEP acknowledges the need for greater transparency with respect to the basis for assessing and listing waters included in the proposed 2016 Integrated List. In fulfillment of this need, MassDEP has compiled its assessment and listing decisions, along with supporting data and information, into "data compendia" for the Connecticut watersheds where all of the designated use assessments were updated for the 2016 reporting cycle (i.e., Deerfield, Millers, Farmington, and Westfield) and these will be made available to the CRC. Data compendia were not prepared for the Chicopee and Connecticut watersheds because these two watersheds were not assessed for the Aquatic Life Use. However, the basis and rationale for listing and delisting decisions pertaining to those segments in the Connecticut and Chicopee watersheds that were specifically identified in the appendix to CRC's comment letter have been documented and will also be made available to the CRC.

- The Integrated List document has been reformatted to include a Table of Contents with improved navigation capabilities to sections within the document.

Chicopee River Basin comments

See details pertaining to listing and delisting decisions in the document entitled "Basis and rationale for listings and delistings in the Chicopee River Watershed for the proposed 2016 Integrated List" provided to the CRC under separate cover. MassDEP analysts will consider all third party data that meets data acceptability and usability requirements when completing the evaluation of the Aquatic Life Use planned for the 2018 reporting cycle. This may include DCR water quality monitoring data.

Connecticut River Basin Comments

Details for listing and delisting decisions have been provided in the document entitled "Basis and rationale for listings and delistings in the Connecticut River Watershed for the proposed 2016 Integrated List" provided to the CRC under separate cover.

- Analysts did utilize sampling data collected from the mainstem Connecticut River (at the USGS gaging station in Thompsonville, CT) to assess the Connecticut River mainstem, segment MA34-05, from the Holyoke Dam Holyoke/South Hadley to Massachusetts/Connecticut border, Longmeadow. This sampling location offers good access and has long been considered representative of the condition of the Connecticut River in the segment upstream from the Massachusetts boundary. MassDEP sampled this location on multiple occasions (total of 6 visits) during the summer of 2008. Additional data including evaluations by CTDEEP as part of their IR reporting were also utilized.

- The CRC does not agree with MassDEP's decision to remove *E. coli* as an impairment of the Mill River in Northampton (MA34-28), and they provided a link to bacteria data that they have collected since 2012 in support of their request to retain this impairment. The data were not submitted through MassDEP's data portal at External Data Submittal to Watershed Planning Program MassDEP. Nonetheless, MassDEP downloaded and reviewed the referenced CRC data. These weekly *E. coli* data, collected during approximately June-October from 2012 to 2017

and generated using the “Colilert” enzyme substrate analysis method, indicate impairment of the primary contact recreational use, based on a seasonal average of 234 MPN/100 ml for the six years of data and given that each seasonal geometric mean exceeded the criterion of 126 MPN/100 ml. While these data were not collected under a MassDEP-approved (or EPA-approved) QAPP, nor submitted through its data portal, MassDEP recognizes past efforts by the CRWC (now CRC) to conduct quality-assured monitoring (e.g., approved QAPP for 604b Project # 2009-13/ARRA 604 for *E.coli* monitoring; an approved 2008-09 QAPP). Given this and other considerations, there appears to be sufficient evidence to suggest that the online data are usable (with caveat) for 305(b) decision-making. Based on these recent data, MassDEP will revise its primary recreational use determination for the Mill River and will retain the *E.coli* impairment for segment MA34-28.

Deerfield River Basin comments
A 2016 Deerfield Watershed Integrated Report Data Compendium document has been developed to provide the basis and rationale for assessing and listing waters in this watershed as part of the 2016 reporting cycle. All data sources utilized, including Deerfield River Watershed Association (DRWA) data, are provided in this document.

Farmington River Basin comments
A 2016 Farmington Watershed Integrated Report Data Compendium document has been developed to provide the basis and rationale for assessing and listing waters in this watershed as part of the 2016 reporting cycle. All data sources utilized are provided in this document.

Millers River Basin comments
A 2016 Millers Watershed Integrated Report Data Compendium document has been developed to provide the basis and rationale for assessing and listing waters in this watershed as part of the 2016 reporting cycle. All data sources utilized are provided in this document.

- No delistings for fecal coliform bacteria were made without sampling to demonstrate that bacteria levels were meeting the assessment guidance. Data summaries are provided in the Millers Watershed Integrated Report Data Compendium.

- At the request of the CRC, reference will be made in Appendix 2 of the final integrated report to the earlier text describing the rationale for listing new segments in the Millers River Watershed as impaired by PCB in fish tissue.

Westfield River Basin comments
A 2016 Westfield Watershed Integrated Report Data Compendium document has been developed to provide the basis and rationale for assessing and listing waters in this watershed as part of the 2016 reporting cycle. All data sources utilized are provided in this document.

Nashua River Watershed Association (NRWA)

NASHUA RIVER WATERSHED ASSOCIATION

Protecting our water, our land, our communities

October 23, 2017

Arthur S. Johnson
Massachusetts Department of Environmental Protection
Division of Watershed Management
Watershed Planning Program
627 Main Street, Second Floor
Worcester, MA 01608

Re: Comments on Draft *Proposed MA Year 2016 Integrated List of Waters*

Dear Mr. Johnson,

The Nashua River Watershed Association (NRWA) submits the following comments on the MassDEP's *Proposed Massachusetts Year 2016 Integrated List of Waters*. The NRWA is a regional leader in natural resource protection and environmental education for our 32 watershed communities in north central Massachusetts and southern New Hampshire. NRWA's Water Monitoring Program has been monitoring rivers and streams in the Nashua River watershed under the auspices of an EPA, MassDEP, and New Hampshire Department of Environmental Services (NHDES)-approved QAPP since 2001. Data was provided to MassDEP from 2008 through 2015 in accordance with DEP's requirements for data submission. NRWA also takes part in the NHDES Volunteer River Assessment Program (VRAP); data generated from rivers and streams in New Hampshire are regularly used by NHDES in their integrated list of waters.

General Comments: Massachusetts Rivers Alliance (RA) is submitting a letter outlining some overarching comments regarding the Proposed 2016 Integrated List. NRWA supports RA's comments, including the timeliness for data acquisition and evaluation, the concern regarding the diminishing resources MassDEP has for accomplishing the tasks needed to perform evaluations, and especially with regard to the transparency of data sources MassDEP uses to decide which segments will be listed or delisted. NRWA has expended considerable time in preparing data for submission to MassDEP to conform to data submission requirements. MassDEP staff have been in contact with us regarding the data. It is unclear if any of NRWA's data have been used for this Integrated List. It's also unclear where and when MassDEP has conducted sampling on their own in the watershed to support the decisions. More information would be helpful regarding the probabilistic and deterministic monitoring conducted by MassDEP.

592 Main Street, Groton, MA 01450-1230 p 978.448.0299 f 978.448.0941 www.nashuariverwatershed.org

Regarding impairments *added* to Categories 4 and 5: NRWA agrees with the addition of Baker (MA81-62) and Falulah (MA81-63) Brooks, and Wekepeke Brook (MA81-72) to Category 5 for E.coli. NRWA's data support the listing of these streams for E.coli, though it would help to have MassDEP clarify which data was used for the listing of these water bodies. We note that Pearl Hill Brook (MA81-80) and Willard Brook (MA81-79), both fresh water streams, were listed for Enterococcus. We presume this is a result of the MA Department of Conservation and Recreation conducting Enterococcus sampling at Pearl Hill State Park and Willard Brook State Park swimming beaches. Enterococcus is not listed as an impairment for any other freshwater streams in the Nashua River watershed.

Regarding impairments *removed* from Categories 4 and 5: NRWA questions the removal of Squannacook River segment MA81-18 for E.coli, given the explanation: "Applicable WQS attained; reason for recovery unspecified." It is unclear what data were used to determine that the WQS were attained. NRWA E.coli geomean data for 3 sites on the Squannacook, sampled 7 months each year from 2013 through 2015, support primary contact recreation. However, secondary contact recreation WQS were exceeded 6 out of 21 sampling events at one site, and 2 out of 21 events at a second site. Data have been provided to the DEP. Given the NRWA results, and the fact that two tributary streams to the Squannacook River are being *listed* for the first time for Enterococcus impairment (Pearl Hill Brook, and Willard Brook – see comment above), it seems prudent to leave the Squannacook River on the Category 5 list at this time.

The lack of comments regarding the remaining water bodies added or removed is not a comment on these actions; NRWA has no data to support or refute the changes.

Thank you for this opportunity to comment.

Sincerely,

Elizabeth Ainsley Campbell
Executive Director

Martha S. Morgan
Water Programs Director

MassDEP response to NRWA's general comments: Responses to the NRWA's general comments pertaining to the age and sources of data used in assessments and the transparency of the assessment decisions are presented in Part I of this document.

MassDEP response to NRWA's specific comments:

- While the NRWA agreed with MassDEP's decision to add Baker Brook (MA81-62), Falulah Brook (MA81-63) and Wekepeke Brook (MA81-72) to the 303(d) list as impaired by *E. coli*, they requested that MassDEP furnish the data that were used to support the decisions, and these data are summarized below.

  Baker Brook – The assessment of Baker Brook was based on MassDEP's water quality survey data from 2008. The geometric mean of six bacteria counts from samples collected at Crawford Road, Fitchburg exceeded the criterion for the Primary Contact Recreational Use, as outlined in the Consolidated Assessment and Listing Methodology (CALM) document and, therefore, Baker Brook was listed as impaired by *E. coli* (see table below).

Summary of MassDEP Watershed Planning Program *E. coli* data collected in 2008 from Baker Brook at Crawford Road, Fitchburg

UniqueID	Year	Date First Sample	Date Last Sample	Sample Count	Geometric Mean	Bacteria Type
W1836	2008	05/13/08	09/16/08	6	161	*E. coli*

  Falulah Brook – MassDEP sampled Falulah Brook as part of its 2008 water quality surveys of the Nashua River Watershed and the geometric mean of the samples collected from Fisher Road, Fitchburg between April and September met the water quality standard for the Primary Contact Recreational Use (see table below). Nonetheless, there are two combined sewer overflow (CSO) outfalls that discharge to Falulah Brook downstream from MassDEP's 2008 sampling site. MassDEP's CALM document specifies that, unless otherwise authorized, "the presence of an active (i.e., open to discharge at some point) CSO discharge will be utilized by MassDEP analysts to make a presumptive impairment decision for the Primary Contact Recreational Use". In the case of Falulah Brook, therefore, a **presumptive impairment** decision was applied since this waterbody does not have a CSO variance in place.

Summary of MassDEP Watershed Planning Program *E. coli* data collected in 2008 from Falulah Brook at Fisher Road, Fitchburg

UniqueID	Year	Date First Sample	Date Last Sample	Sample Count	Geometric Mean	Bacteria Type
W1837	2008	05/15/08	09/18/08	6	42	*E. coli*

  Wekepeke Brook – This brook is defined as assessment unit (AU) MA81-72 for the first time in this integrated reporting cycle (2016) because MassDEP monitoring data were available from sites sampled in 2008 (Flanagan Hill Road, Sterling) and 2011 (Route 190 crossing, Lancaster) that had not been previously used for assessment. Data from these two sites indicated that the Primary Contact Use was supported (see table below). However, when creating the new AU for Wekepeke Brook, former segments MA81-61 ("Unnamed tributary…from outlet of Bartlett Pond to the North Nashua River") and MA81009 ("Bartlett Pond") were included within it. Segments MA81-61 and MA81009 had been previously listed as impaired in 2010 and 2012, respectively, based on elevated *E. coli* levels reported by the NRWA and, therefore, these historic impairments were applied to the new segment in 2016.

Summary of MassDEP Watershed Planning Program *E. coli* data collected from Wekepeke Brook at Flanagan Hill Road, Sterling (W1831) and at Route 190 crossing, Leominster (W2212)

UniqueID	Year	Date First Sample	Date Last Sample	Sample Count	Geometric Mean	Bacteria Type
W1831	2008	05/13/08	09/16/08	6	45	*E. coli*
W2212	2011	5/17/11	9/19/11	6	85	*E. coli*

- DCR collects enterococci bacteria samples at all of its beaches and the NRWA is correct that Pearl Hill Brook (MA81-80) and Willard Brook (MA81-79) were both listed as impaired based on the frequency of beach closures in Pearl Hill and Willard Brook state parks.

- The NRWA has questioned the removal of *E. coli* as an impairment from the Squannacook River (MA81-18) and has indicated that their data occasionally exceed the bacteria standards for recreational uses. As explained in the CALM document, MassDEP utilizes the geometric mean of datasets to make its recreational use assessment and listing decisions. MassDEP removed the impairment *E. coli* based on its water quality survey data obtained each year from 2007 – 2011 at a site west of Townsend Road in Groton (W0487) and at a second site, in 2008 only, located at Elm Street (Rte. 13) in Townsend. The Primary Contact Recreation Use was assessed in accordance with the CALM, using *E. coli* data collected during the recreational season (April 1 – October 15), while the Secondary Contact Recreational Use assessment considered data collected at any time of the year. As indicated in the tables below, the geometric mean values met the water quality standards for both recreational uses.

Summary of MassDEP Watershed Planning Program *E. coli* data collected from two sites on the Squannacook River during the primary contact recreational season (April 1 – October 15) from 2007 – 2011

UniqueID	Year	Date First Sample	Date Last Sample	Sample Count	Geometric Mean	Bacteria Type
W0487	2007	08/22/07	10/10/07	2	36	*E. coli*
W0487	2008	05/15/08	09/18/08	5	57	*E. coli*
W0487	2009	04/22/09	09/02/09	3	104	*E. coli*
W0487	2010	07/15/10	09/22/10	2	6	*E. coli*
W0487	2011	04/25/11	08/24/11	3	55	*E. coli*
W1283	2008	05/13/08	09/16/08	6	87	*E. coli*

Summary of MassDEP Watershed Planning Program *E. coli* data collected from two sites on the Squannacook River at any time of the year from 2007 – 2011

UniqueID	Year	Date First Sample	Date Last Sample	Sample Count	Geometric Mean	Bacteria Type
W0487	2007	08/22/07	10/10/07	2	36	*E. coli*
W0487	2008	01/16/08	11/12/08	8	28	*E. coli*
W0487	2009	02/18/09	10/21/09	5	48	*E. coli*
W0487	2010	07/15/10	11/09/10	3	10	*E. coli*
W0487	2011	03/09/11	10/19/11	5	38	*E. coli*
W1283	2008	05/13/08	09/16/08	6	87	*E. coli*

MassDEP completed a review of NRWA's *E. coli* data in response to this comment and determined that they were usable for assessment and listing purposes. As indicated in their letter, the NRWA collected bacteria samples from three stations along the Squannacook River (SQ2400, SQ1788, and SQ1329 ordered from upstream to downstream) from 2013 through 2015. Station descriptions are provided in the following table.

Station ID	Station Description	Latitude	Longitude
SQ1329	Downstream from Shepards Autobody	42.6521	-71.6724
SQ1788	Off Elm Circle, west of Route 13	42.663	-71.7086
SQ2400	At Mason Road, at Stone Bridge	42.6789	-71.7401

MassDEP reviewed NRWA's data in accordance with the CALM as described above for its own data, and the results are summarized below.

Summary of NRWA's *E. coli* data collected from three sites on the Squannacook River during the primary contact recreational season (April 1 – October 15) from 2013 – 2015

Station ID	Year	Date First Sample	Date Last Sample	Sample Count	Geometric Mean	Bacteria Type
SQ1329	2013	04/20/13	09/21/13	6	45	*E. coli*
SQ1329	2014	05/17/14	09/20/14	5	45	*E. coli*
SQ1329	2015	05/16/15	09/19/15	5	32	*E. coli*
SQ1788	2013	04/20/13	09/21/13	6	99	*E. coli*
SQ1788	2014	04/19/14	09/20/14	6	53	*E. coli*
SQ1788	2015	04/20/15	09/19/15	6	111	*E. coli*
SQ2400	2013	04/20/13	09/21/13	6	54	*E. coli*
SQ2400	2014	04/19/14	09/20/14	6	63	*E. coli*
SQ2400	2015	04/20/15	09/19/15	6	40	*E. coli*

Summary of NRWA's *E. coli* data collected from three sites on the Squannacook River at any time of the year from 2013 – 2015

Station ID	Year	Date First Sample	Date Last Sample	Sample Count	Geometric Mean	Bacteria Type
SQ1329	2013	04/20/13	10/19/13	7	34	*E. coli*
SQ1329	2014	05/17/14	10/18/14	6	70	*E. coli*
SQ1329	2015	05/16/15	10/17/15	6	25	*E. coli*
SQ1788	2013	04/20/13	10/19/13	7	81	*E. coli*
SQ1788	2014	04/19/14	10/18/14	7	92	*E. coli*
SQ1788	2015	04/20/15	10/17/15	7	114	*E. coli*
SQ2400	2013	04/20/13	10/19/13	7	50	*E. coli*
SQ2400	2014	04/19/14	10/18/14	7	98	*E. coli*
SQ2400	2015	04/20/15	10/17/15	7	38	*E. coli*

The geometric mean values calculated from the NRWA's data met the applicable criteria for both primary and secondary contact recreation at all three sampling stations during all three sampling years and, therefore, the decision to delist the *E. coli* impairment is considered appropriate.

City of New Bedford, New Bedford, MA.

CITY OF NEW BEDFORD
Jonathan F. Mitchell, Mayor

Department of Public Infrastructure

Manuel H. Silva
Acting Commissioner

Water
Wastewater
Highways
Engineering
Cemeteries
Park Maintenance
Forestry
Energy

October 23, 2017

Arthur S. Johnson
MassDEP
Division of Watershed Management
Watershed Planning Program
8 New Bond Street
Worcester, MA 01606
Arthur.Johnson@state.ma.us

Dear Mr. Johnson:

The City of New Bedford, Massachusetts is writing in support of MassDEP's determination to remove Segment ID MA95-63, Outer New Bedford Harbor, from the *Draft Massachusetts Year 2016 Integrated List of Waters* for the estuarine bioassessments, nitrogen (total), other, and dissolved oxygen impairments.

The City has made significant progress related to receiving water quality improvements over the past 25 years. Since 1990, the City has constructed a new, secondary wastewater treatment plant and has implemented over $283 million (in 2016 dollars) in improvements to its wastewater and stormwater systems. This infrastructure investment and commitment to environmental stewardship has resulted in significant and consequential reductions on BOD and nutrient loadings, a more than 90-percent reduction in combined sewer overflows, and the opening of 12,000 acres of shellfish beds that were previously closed. The City is pleased to see that its efforts have paid off, and that water quality has improved in the Outer Harbor. And while this significant improvement in water quality in the Outer Harbor is notable, the City remains committed to further improving water quality in its area receiving waters. The City has developed an Integrated Capital Plan, currently submitted as a draft to EPA and MassDEP, that outlines a 20-year plan consisting of WWTP, CSO, and stormwater improvements that will continue this positive trend in water quality that is so well demonstrated by the Department's determination to remove these impairments from the Outer New Bedford Harbor assessment unit.

Given the substantial nutrient load reduction achieved by the City as a result of its upgrade and maintenance of the WWTP and an almost 17-fold reduction in CSO discharges to area receiving waters, it is unsurprising that water quality in the Outer New Bedford Harbor has improved. These reductions are durable, founded as they are in permanent infrastructure improvements, and will be supplemented with additional improvements as the City implements it 20-year Integrated Capital Plan, which focuses both on maintenance of the existing system and additional upgrades.

WWTP Improvements

New Bedford constructed a new, secondary WWTP in 1996 at a cost of $179.6 million (2016 dollars). The new plant reduced BOD, TSS, TKN, and TN loading to the Outer Harbor by 96%, 83%, 94% and 79%, respectively, relative to pre-WWTP upgrade conditions. The 2017 monthly average effluent total nitrogen concentrations for the first 6 months of the year (January through June) are shown in Figure 1, and represent a significant decline in effluent total nitrogen concentrations compared with the pre-upgrade WWTP performance. The eutrophication-related impairments have been on the MassDEP *Integrated List* since at least the 1998 reporting cycle, suggesting that the data used to list this segment pre-dates the secondary WWTP[1]. Given the age of the data used to list this segment, the improvement in water quality is both expected and will persist given the substantial water quality improvements that the City has made and will continue to make.

As described in the draft Integrated Capital Plan, the City is working to further reduce nitrogen by optimizing the current plant operations. In 2017, the City finished a replacement project for the diffusers in the aeration basins which will allow them to be cycled to provide process control to this optimization process.

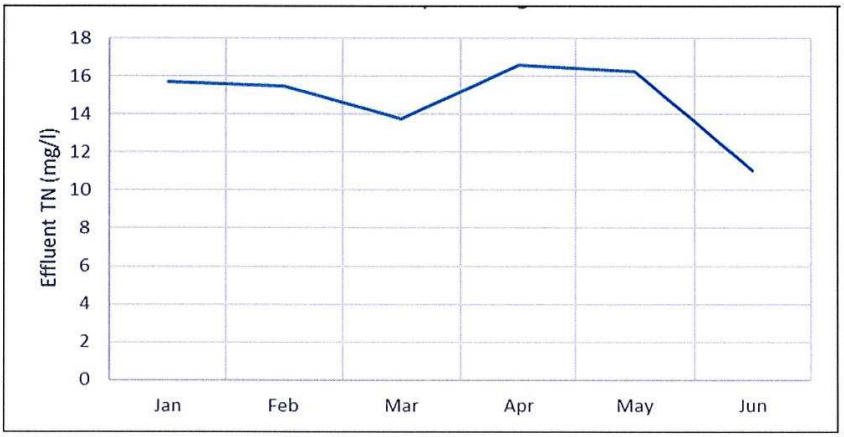


Figure 1: Recent Monthly Average Effluent Total Nitrogen Concentrations for the New Bedford WWTP

CSO Improvements

As noted above, the City has made a $283 million (2016 dollars) investment in its infrastructure since 1990, and has eliminated 13 CSO regulators and 11 CSO outfalls. This investment has significantly reduced bacteria and nutrient contributions to New Bedford Inner Harbor, New Bedford Outer Harbor, Clarks Cove, and Buzzards Bay waterbody segments. The sewer separation and CSO control efforts have significantly reduced system overflows from pre-1990 levels. As shown in Figure 2, estimated average annual untreated discharge volumes have been significantly reduced from an estimated 3.1 billion gallons in 1990 to approximately 183 million gallons in 2016. Similarly, the capture rate – the percentage of flow captured and retained within the system for treatment – has risen from roughly 59 percent to approximately 93 percent, well above the 85

[1] *Buzzards Bay Watershed 2000 Water Quality Assessment*, MassDEP, 2003. http://www.mass.gov/eea/docs/dep/water/resources/71wqar09/95wqar2.pdf (see page 105)

percent target used in EPA's presumptive approach for achieving water quality standards. CSO discharge frequencies to the Outer Harbor have been reduced from daily, continuous dry weather overflows due to collection and treatment system capacity issues to a total of 21 wet weather occurrences per year from discharges in the Outer Harbor.

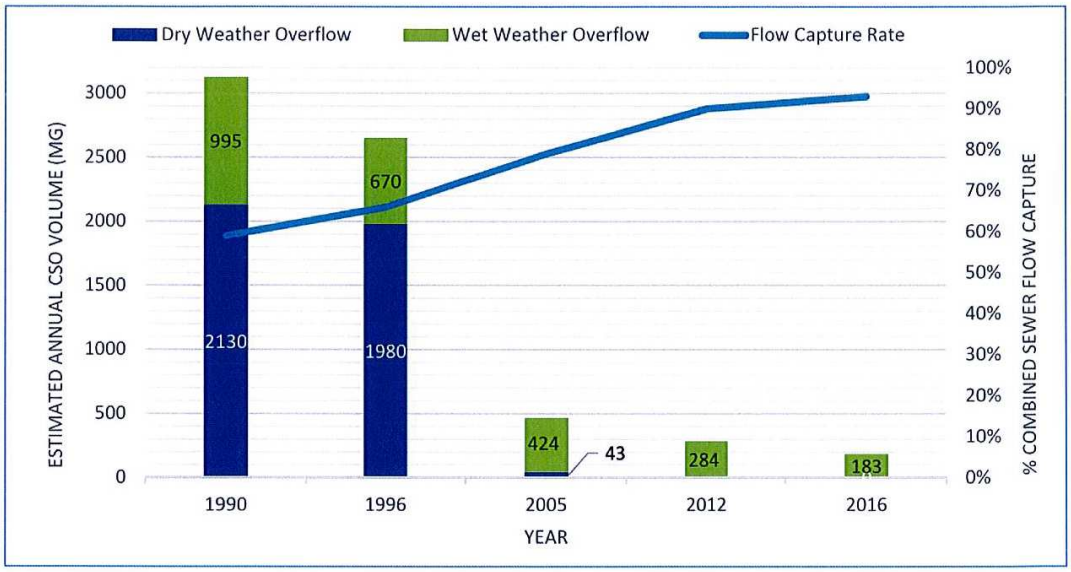


Figure 2: Estimated New Bedford Collection System Combined Sewer Overflow Statistics (1990 – 2016)

While this improvement is notable, the City recognizes that additional progress needs to be made to further reduce CSO discharge to area receiving waters. The City's has Draft Integrated Capital Plan projects a further 45 percent reduction in CSO volume from 2016 conditions over its 20-year planning period – in addition to reductions in pollutant loads attributable to updates to the WWTP and the stormwater collection system.

Eelgrass Extent

The City's fundamental upgrade of its treatment plant and success to date in reducing CSOs have resulted in significant water quality improvements measured by expanding eelgrass extent within New Bedford Outer Harbor. The 2016 *Massachusetts Consolidated Assessment and Listing Methodology (CALM) Guidance Manual* describes how eelgrass mapping data are used to determine whether an assessment unit is meeting water quality standards. The CALM states:

> Assessment decisions for the 2016 reporting cycle will be based on a comparison between the data derived from the first phase of the Eelgrass Mapping Project with the most recent available data (2010-2013) to determine whether or not the eelgrass beds within the AU are stable or are being lost. If the areal coverage of the beds is fairly stable or increasing (i.e., minimal {<10%} or no loss) the AU is considered to be supporting the *Aquatic Life Use*. Loss of eelgrass beds equal to or exceeding 10% is considered to be a "substantial decline" and the *Aquatic Life Use* is not supporting.
>
> MassDEP, 2016 CALM, Page 19

We computed the eelgrass coverage area within the Outer New Bedford Harbor assessment unit (MA95-63) from shapefiles obtained from MassGIS for the 1995 and 2013 eelgrass extent[2]. The data were clipped to only include the area within the Outer New Bedford Harbor assessment unit. Figure 1 shows a comparison of the mapped eelgrass extent from the MassDEP Eelgrass Mapping Project surveys conducted in 1995 and 2013. The eelgrass coverage extent visible in Figure 3 is summarized in Table 1.

Table 1: Comparison of the 1995 and 2013 Eelgrass Extent from the MassGIS MassDEP Eelgrass Mapping Project Data in the Outer New Bedford Harbor Assessment Unit

Year	Eelgrass Extent (acres)
1995	180
2013	400
Change	+220 acres/120%

Figure 3: Comparison of Eelgrass Areal Extent between 1995 and 2013 in the Outer New Bedford Harbor Assessment Unit (MA95-63)

[2] Available at http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/massdep-eelgrass-project.html.

The information shown in Table 1 and Figure 3 supports MassDEP's determination that the Outer New Bedford Harbor assessment unit meets the *Aquatic Life Use* based on the eelgrass bed mapping criteria listed in the CALM.

The City is pleased that its efforts on improving its WWTP water quality, reducing its CSO frequency and improvements to its stormwater and wastewater conveyance systems have resulted in the significant water quality improvements evidenced by the Department's decision to remove the Outer New Bedford Harbor from the draft 2016 *Integrated List of Waters*. The City looks forward to working with MassDEP and EPA to continue making improvements to New Bedford Harbor water quality.

Please let me know if you have any questions on this document.

Sincerely,

Manuel H. Silva

Manuel H. Silva
Acting Commissioner

cc: Jamie Ponte, Mikaela McDermott – City of New Bedford

MassDEP response: During the public review of the *Proposed Massachusetts Year 2016 Integrated List of Waters,* MassDEP received comments from parties in favor of and parties against the removal of the impairments "Estuarine Bioassessments", "Nitrogen, Total" and "Dissolved Oxygen" from MA95-63 (Outer New Bedford Harbor). Furthermore, the Buzzards Bay Coalition (BBC) submitted more recent water quality monitoring data from this water body that had not been available at the time that the last assessment and 303(d) listing/delisting decisions were made. The BBC contended that, based on their monitoring data, it was inappropriate at this time to remove "Dissolved Oxygen" and "Nitrogen, Total" from Outer New Bedford Harbor. MassDEP reviewed the BBC's data submittal and reassessed whether or not the proposed impairment delistings remained warranted in light of those data. All of the BBC's comments and MassDEP's responses can be found in the public responsiveness document. Please review MassDEP's concurrence with the BBC's rationale for retaining "Dissolved Oxygen" and "Nitrogen, Total" as causes of impairment in Outer New Bedford Harbor, while reaffirming its decision to delist "Estuarine Bioassessments" as a consequence of continued improvements in the health and extent of eelgrass populations. MassDEP recognizes the City of New Bedford's many efforts to improve water quality in the harbor, and acknowledges the improvements in water quality that have been realized to date. MassDEP will continue to assess designated uses using the best available quality-assured data.

Charles River Watershed Association (CRWA)

CRWA

Saving the Charles River since 1965

Arthur S. Johnson
MassDEP
Division of Watershed Management
Watershed Planning Program
627 Main Street, Second Floor
Worcester, MA 01608

October 23, 2017

Charles River Watershed Association (CRWA) has reviewed the Proposed 2016 Massachusetts Integrated List of Waters (IL) and provides the following comments.

Data Collection and Use

CRWA appreciates the explanation MassDEP has provided regarding catching up on a back log of data in advance of the 2016 IL development process. Nevertheless, it is discouraging that MassDEP is not able to produce and validate new data (< 5 years old) for each of the 33 major watersheds across the state for use in biannual integrated list updates. MassDEP should provide a clear schedule for their data collection, review and analysis timelines. Presently, it is unclear how it is possible to utilize data that are less than 5 years old in the listing process given the lead time required to start the listing process and the delay from when data is collected to when it is final and validated.

Furthermore, despite collection of considerable water quality data and field assessment information by science-based watershed associations, MassDEP has also been slow to adopt the use of our data, although, in many cases, it is the best available data source for segments of the Charles River and other waterbodies in our watershed. CRWA requests more detail regarding the criteria for each level of data. In particular, since Level 3 data are most likely to be used in the report, it would be useful to know how non-MassDEP stakeholders such as watershed associations can advance their data from Level 2 to Level 3. CRWA's data collection programs meet all the preliminary criteria for external data noted on p. 24 of the IL. We would like to work directly with MassDEP to make adjustments to our sampling program, as necessary, to comply with any requirements for Level 3 data.

CRWACRWA also requests that MassDEP contact us in advance of assessments in the Charles with the details of its monitoring plan, including field assessments schedules, sampling site locations, and proposed sampling parameters, for both the probabilistic and deterministic monitoring programs described in the ILIL. In addition, we ask that the final ILIL include a complete description of MassDEP's deterministic and probabilistic sampling network, specifically including information on the monitoring frequency, number of locations, wet or dry weather, and time of year for monitoring for all sites statewide monitored across the five year wadeable stream survey, the three-year lakes survey, and targeted watershed monitoring.

CRWACRWA requested and received more detailed information regarding the specific data sources used for listing decisions on the Charles River. We appreciate that MassDEP was able to respond to this request,; however, we would encourage MassDEP to be more transparent and specific about data sources and data collection date ranges timeframes for all waterbodies across the state.

Listing/Delisting Decisions

We ask that MassDEP reference specific data sources used to support its decisions to list or delist any segment or waterbodies in the final ILIL. For example, it would be useful to know the data sources MassDEP is using when the explanation for removal of a segment is, "Applicable WQS attained; reason for recovery unspecified." By comparison, the New Hampshire Department of Environmental Services draft 303(d) list for 2016 provides an ideal, transparent model for source descriptions in impairment evaluations.

We also noted multiple "de-listings" (removal from category 5) for fecal coliform bacteria with the explanation provided as, "Applicable WQS attained; due to change in WQS." A change in the water quality standards from using fecal coliform to using *E.coli* as the indicator bacteria should not in itself justify a delisting of this impairment. The waterbody should be listed as impaired for *E.coli* until recent data is available to confirm or negate this listing. In the final list, MassDEP should provide a detailed, data-based explanation to show that the water body is not in fact impaired by the relevant impairment.

MassDEP also needs to be more transparent in their revision of historical listings. Removing or changing a listing based on a claim that the *"Original basis for listing was incorrect"* should not occur without a detailed explanation. Furthermore, this explanation appears to be contrary to the listing methodology described in the *Consolidated Assessment and Listing Methodology* (CALM). Waterbody listings should only be altered when recent data (<5 years old) is available to support that change. Data used to make that decision should be published along with the list. On the final 2016 IL, MassDEP should replace any water body segment listing that was changed using the claim "Original basis for listing was incorrect."

The list of waters in Category 5is extensive. We ask that MassDEP uniformly include in the final ILIL how TMDLs are matched with impairments.

Assessment Units

The list of waters where no assessment has been completed (Category 3) should be comprehensive for all waters statewide. While developing assessment units for all unassessed water bodies is likely a time consuming and labor -intensive task, CRWA requests that all Category 3 waterbodies be listed by name, location, and "size" (length or area) on Category 3 to provide a general idea of the state's progress in meeting its requirement to assess all waterbodies. Unassessed waterbodies can be broken into assessment units as they are assessed. We request that MassDEP report the percentage of rivers and streams (by mile), and lakes and ponds (by acre), (1)that have ever been assessed and (2) that have been assessed within the previous five years

State Surface Water Quality Standards (SWQS)

CRWA is dismayed about the process for review and update of the SWQS. As noted in the *Proposed ILIL,* the Clean Water Act requires that states hold public hearings at least once every three years (triennial

review) to review and, where appropriate, revise their water quality standards. To our knowledge, the state has not been meeting this obligation. The Proposed ILIL also notes proposed revisions to the SWQS for 2017, but does not provide adequate detail regarding these proposed changes or where that information can be found; it also does not provide information about when public hearings will be held regarding these changes. Review of SWQSs should be done in an open, transparent, public process.

With limited staff and resources, it appears that the agency is unable to assess all waterbodies in the state and develop adequate plans for addressing impairments.

Additionally, CRWA submits the following comments regarding waterbodies within our watershed:

CRWA disagrees with the delisting of Stop River in Wrentham/Norfolk/Medfield for *E.coli* bacteria impairment. We monitor the Stop River River from the Noon Hill Avenue bridge on a monthly basis following field and laboratory procedures delineated in a Quality Assurance Project Plan (QAPP) approved by MassDEP and U.S. EPA . We routinely submit our *E. coli* bacteria sampling results to DEP on an annual basis. We have included a table of exceedances of the Massachusetts Water Quality Standards for *E.coli* bacteria for primary and secondary contact recreation during the recreation season (AprilApril 1st –– October 15th) between 2012 and 2016 (Table 1). The geometric mean for samples collected at this site from 2016 April – September monitoring events is 178 MPN/100 mL, which exceeds the state swimming standard. Please provide the data that were used to propose this delisting.

CRWA disagrees with the placement of Bogastow Brook in the Category 2 list as attaining its use requirements for fish and wildlife use. In 2016, Bogastow Brook was dry in August and September, and empty freshwater clam shells littered the dry streambed (see photos below, taken September 12th, 2016). Bogastow Brook should be listed as impaired for flow alterations for fish and wildlife use. Refer to our macroinvertebrate monitoring data, previously submitted and included in the appendix to this letter.

In the summer of 2016, many Charles River segments experienced historically low flows during the nearly statewide drought. While low flow conditions are to be expected during a drought, it is clear that river flow conditions were further exacerbated by watershed development and an increase in impervious cover. The USGS flow gauges in Dover and Waltham, located along assessment units MA72-06 and MA72-07, both logged all-time lows for their extensive periods of record. At the Dover gauge,

mean daily flow was below the 79-year daily average for every day between June and December of 2016. On average, there was a 75% difference between 2016 mean daily flow and the 79-year mean daily flow. Record low flows were recorded in July (12 days), August (9 days), and September (13 days) (Table 4). At the Waltham gage, mean daily flow was below the 85-year average from June to December 2016. On average, there was a 79% difference between 2016 mean daily flow and the 79-year mean daily flow. Record low flows were recorded in June (5 days), July (8 days), and September (1 day). MassDEP should weigh these impacts in this and future evaluations of flow alteration impairments at these locations.

Alder Brook in Needham, Trout Brook in Dover, and Fuller Brook in Wellesley are listed as requiring a TMDL for nutrient/eutrophication biological indicators; however, they are not listed for any impairments that might indicate nutrient pollution or eutrophication, such as excess algal growth, macrophytes, or phosphorus. This makes it difficult to develop a plan to address the impairment. Similarly, Powissett Brook in Westwood/Dover is listed as impaired for combined biota/habitat bioassessments, but no other parameters. Transparency regarding the data that were used to make these listings would help address this concern.

MA72-04, the Charles River from Box Pond to Populatic Pond, is the only segment of the Charles River that is not listed as impaired for total phosphorus. This is particularly surprising, as Populatic Pond exhibits extreme symptoms of eutrophication, including routine algal blooms and a report of a possible cyanobacteria bloom during the summer of 20172017. The 2007 and 2011 nutrient TMDLs that were developed for the Upper/Middle and Lower Charles River Watershed encompass all segments of the Charles River. All segments of the Charles River should be categorized in the same way with respect to phosphorus impairments.. We monitor the Charles River at the Route 126 Crossing in Bellingham on a quarterly basis following field and laboratory procedures delineated in ourour QAPP routinely submitour phosphorus sampling results to DEP on an annual basis. We have included a table of exceedances of recommended phosphorus levels between 2012 and 2016 (Table 2).

Segments MA72-05 and MA72-06 in the middle of the Charles River are not listed as impaired due to *E. coli* bacteria. We monitor these river segments from several bridges on a monthly basis following field and laboratory procedures delineated in our QAPPour QAPP. We have included a table of exceedances of the Massachusetts Water Quality Standards for *E.coli* bacteria for primary and secondary contact recreation during the recreation season (May-October) between 2012 and 2016.As with the nutrient TMDLS, The geometric mean for *E.coli* bacteria levels in 2014 across both segments was 147 MPN/100 mL. The geometric mean for *E.coli* bacteria levels in 2016 was 197 MPN/100 mL. As with the nutrient TMDLS the 2007 TMDL for pathogens should be applied uniformly to all segments of the Charles River.

Segment MA72-38 of the Charles River is not listed as impaired for bottom deposits. This is typically one of the primary reasons given for not allowing swimming in this section of the Charles River. The USGS study, “Distribution and Potential for Adverse Biological Effects of Inorganic Elements and Organic Compounds in Bottom Sediment, Lower Charles River, Massachusetts” (2000) identified contaminants that could impact aquatic life in the sediments of the Charles, and, to our knowledge, no further study has been conducted to determine that this condition has changed. If this area has not been monitored, it should be integrated into MassDEP’s river sediment sampling schedule.

CRWA would also like to see the data DEP used to determine that Rock Meadow Brook in Westwood is no longer impaired for macrophytes and Beaver Brook in Waltham is no longer impaired for taste and odor. Because Beaver Brook is impaired due to excess algae, low dissolved oxygen, organic enrichment biological indicators, *E. coli* bacteria, and sedimentation/siltation, it seems likely that the brook would exhibit odors from time to time. CRWA’s benthic macroinvertebrate monitoring conducted on the brook within the past five years suggests that the brook has poor water quality.

According to a recent USGS publication, *Loads and yields of deicing compounds and total phosphorus in the Cambridge drinking-water source area, Massachusetts, water years 2009–15 (*Scientific Investigations Report 2017-5047):

Concentrations of dissolved Cl and Na in samples and those concentrations estimated from continuous records of specific conductance (particularly during base flow) often were greater than the U.S. Environmental Protection Agency (EPA) secondary drinking-water standard for Cl (250 mg/L), the chronic aquatic-life guideline for Cl (230 mg/L), and the Massachusetts Department of Environmental Protection drinking-water guideline for Na (20 mg/L). Concentrations of TP (range from 0.008 to 0.69 mg/L in all sub-basins) in tributary samples did not differ substantially between the Cambridge Reservoir and Stony Brook Reservoir Basins. About one-half of the concentrations of TP in samples collected during water years 2013–15 exceeded the EPA proposed reference concentration of 0.024 mg/L.

The Stony Brook Basin, within the Charles River watershed and currently included on the Category 2 and 3 lists, should be listed as impaired for Cl, Na and Total Phosphorus . Furthermore, the Stony Brook Basin, as a public water supply reservoir includes more protection than other surface water bodies in the watershed. It is noted in the USGS report that the Stony Brook watershed includes a large amount of transportation infrastructure, which is not unique to this subwatershed. It is likely that numerous water bodieswaterbodies throughout the watershed and the mainstem of the Charles are also impaired by the application of road salt and other de-icing products. MassDEP should publish all available data for these pollutants to demonstrate that other surface water bodies are not experiencing the same impacts from roadway runoff as the more highly-protected Stony Brook reservoir.

Thank you for this opportunity to provide public comments on the Massachusetts 2016 Integrated List of Waters. If you have any questions regarding these comments, please feel free to contact us at 781-788-0007 or ecianciola@crwa.org. CRWA looks forward to working with DEP to use this tool to protect and preserve our waterbodies.

Sincerely,

Elisabeth Cianciola

Aquatic Scientist

MassDEP Note: To save space, the following tables appended to the CRWA's letter were not reproduced here:
Table 1. *E. coli* bacteria results from the Stop River in Medfield, 2012-2016.
Table 2. Phosphorus results from the Charles River in Bellingham, 2012-2016.
Table 3. *E. coli* bacteria results from the Charles River, Populatic Pond, Norfolk/Medway to Chestnut Street, Needham/Dover, 2012-2016.
Table 4. Summer 2016 Flows at USGS Gauge Charles River, Dover.
Table 5. 2016 Summertime Flows at USGS Gage Charles River, Waltham
Table 6. Benthic macroinvertebrate Class I sampling results in the Charles River Watershed, 2013-2016.
Table 7. Benthic macroinvertebrate Class II sampling results in the Charles River Watershed, 2013-2016.
Table 8. Benthic macroinvertebrate Class III sampling results in the Charles River Watershed, 2013-2016.
Table 9. Water quality scores from CRWA's benthic macroinvertebrate sampling program, 2013-2016.

MassDEP response to CRWA's general comments: Part I of this document presents responses to CRWA's general comments pertaining to the age of data used in assessments, external sources of data, transparency of assessment decisions and the pace with which water quality standards are revised. A response to CRWA's request for more interaction with MassDEP's monitoring, assessment and restoration programs under the CWA is also provided in Part I.

MassDEP response to CRWA's specific comments: The Charles River Watershed was not assessed for the Aquatic Life Use during the 2016 CWA assessment and listing cycle. Therefore, CRWA's comments pertaining to the Aquatic Life Use (i.e., MA72-16, MA72-22, MA72-18, MA72-19, MA72-20, MA72014, MA72156, and MA72114) will be considered when completing the next assessment and listing process. Other comments are addressed below.

- The CRWA noted delistings from category 5 for fecal coliform bacteria with the provided explanation "Applicable WQS attained; due to change in WQS," and argued, correctly, that a change in the water quality standards from fecal coliform as the indicator bacteria to *E. coli* should not in itself justify a delisting of this impairment. MassDEP agrees, and no delistings of fecal coliform as an impairment have been made unless data on the new indicators were available that demonstrated that the new standards were attained.

- The CRWA requested that "MassDEP report the percentage of water bodies (river and streams by mile, lakes and ponds by acre, and estuaries by square mile) that have never been assessed and those that have been assessed within the previous five years by the agency in the final Integrated List". While not included in the public review draft, EPA's guidance on the development of the 305(b)/303(d) integrated report calls for a summary table containing the sizes of waters in each list category and this will be provided in the final version of the 2016 report. When this table becomes available, a rough approximation of the "percentage of waters that have never been assessed" ***for any designated use,*** could be obtained by dividing the total number of river miles, lake acres and coastal areas contained in all five list categories into the state total sizes of these waters presented in the Surface Water Atlas for Massachusetts included in the integrated report. The accuracy of the state-wide totals likely varies considerably by water type and information source. Nonetheless, MassDEP acknowledges that many waters have never been assessed and that the preferred method for determining the use-support status of all waters is through the use of random sampling designs, such as those employed for the shallow stream and lake probabilistic surveys. Finally, since the only substantive changes in the 2014 integrated list related to new TMDL approvals and fish edibility advisories, the 2016 report encompasses the assessments MassDEP has completed in the past five years; namely, a state-wide assessment (i.e., all watersheds) of the shellfish harvesting, primary and secondary contact recreation and aesthetic uses, as well as the assessments of the aquatic life use-attainment status of 15 watersheds and/or coastal drainages. Figure 3 in the 2016 integrated report depicts the uses assessed in each watershed for the 2016 listing cycle.

- CRWA requested that "MassDEP uniformly include in the final Integrated List of Waters how TMDLs are matched with impairments." While the CWA distinguishes between "pollutants" such as nutrients, metals, pesticides, solids and pathogens that all require TMDLs and "pollution" such as low flow, habitat alterations or non-native species infestations that do not require TMDLs, it is often the case that the implementation of a TMDL for a specific pollutant will correct other associated impairments. For example, it is generally expected that a TMDL for phosphorus will address such nutrient-related impairments as "excess algal growth", "chlorophyll a" or "nutrient-eutrophication biological indicators", to name a few. Therefore, these impairments would also be included as covered by a TMDL for phosphorus. However, this determination is made case-by-case, often as part of the TMDL development process, and, therefore, cannot be universally applied to all waters impaired by nutrients. For this reason, MassDEP cannot uniformly match impairments with TMDLs that have not yet been completed. As always, waters with approved TMDLs for all pollutants and related stressors are placed in Category 4a where they are still considered impaired until there is sufficient data and information to indicate that the impairments have been corrected and applicable designated uses are supported.

- CRWA requested the data that were used to propose the delisting of *E.coli* bacteria impairment from Stop River assessment unit MA72-10. MassDEP's assessment of Stop River was based on its water quality survey data from 2007 that indicated that the recreational uses were supported and, therefore *E. coli* was delisted (see table below).

Summary of MassDEP Watershed Planning Program *E. coli* data collected in 2007 from Stop River at Noon Hill Road, Medfield (W1151) and at Causeway Street, Medfield (W1716)

UniqueID	Year	Date First Sample	Date Last Sample	Sample Count	Geometric Mean	Bacteria Type
W1151	2007	05/15/07	10/02/07	5	88	*E. coli*
W1716	2007	06/19/07	06/19/07	1	100	*E. coli*

CRWA submitted *E. coli* data collected from 2009 – 2016 at Causeway Street in Medfield in support of their contention that Stop River is still impaired and, therefore, should not have been delisted. MassDEP reviewed this submittal and determined that CRWA's data were generally usable for assessment and listing purposes. As outlined in the Consolidated Assessment and Listing Methodology (CALM) document, MassDEP calculated geometric means for each year included in CRWA's data for which at least five individual bacteria counts were available during the recreational season (April 1 – October 15). Geometric means were calculated for the recreational season and year-round (if available) to assess primary and secondary contact recreational use support, respectively. CRWA's data are summarized below.

Summary of CRWA *E. coli* data collected from Stop River at Causeway Street, Medfield during 2009-2016. Note: Data are summarized from those years for which five or more counts were available from within the primary contact recreation season (April 1 – October 15). One exceedance of the water quality standard for the primary contact recreational use is indicated in bold.

Year	Annual geometric mean	Recreational Season geometric mean	Number of samples (annual, recreational season)
2009	36	82	12, 6
2010	48	104	11, 6
2011	31	81	11, 6
2012	46	67	12, 6
2013	43	46	6, 5
2014	79	81	12, 6
2015	52	77	11, 6

2016	89	**178**	10, 6

One uncharacteristically high (2,990 MPN/100ml) *E. coli* sample was collected on June 21, 2016, and this single value elevated the geometric mean for that year (178 mpn/100ml) to a level above the water quality standard for primary contact recreation. No violations of the secondary contact criterion were noted. Drought conditions were prevalent in 2016 and monitoring data were not considered representative of typical conditions in Stop River. For example, this sample was associated with dry weather, whereas for all other sampling events, elevated counts were only associated with wet weather conditions. In any case, this single sample resulted in the only exceedance of the allowable geometric mean value (i.e. 126 cfu/100ml) in the eight years represented by CRWA's data. Furthermore, with this one exception, the criterion for the primary contact recreational use was met in all other years sampled by both CRWA and MassDEP since 2007. For this reason, MassDEP does not find compelling the argument that the recreational use of Stop River is still impaired, and further maintains that the delisting of the *E. coli* impairment from this assessment unit is warranted.

- CRWA contends that the Charles River segments MA72-05 and MA72-06 are impaired by bacteria, and they submitted *E. coli* data in support of their request to list these impairments. MassDEP assessed the recreational and aesthetic use support status of these two segments as part of the 2016 reporting cycle. MassDEP's assessment of these segments was based on its water quality survey data from 2007 that indicated that the recreational and aesthetic uses were supported. There were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by WPP field sampling crews during the surveys. *E. coli* data were available from the sampling sites presented in the following table:

Assessment Unit	UniqueID	Station Description
MA72-05	W1136	Dean Street, Millis (downstream from the Charles River Pollution Control District (MA0102598) discharge)
MA72-05	W1137	Route 27, Medfield/Sherborn
MA72-05	W1138	approximately 1000 feet upstream of Davis Brook confluence, Natick (informal boat launch off Route 16)
MA72-06	W1141	approximately 500 feet downstream of Willow Street/South Street, Dover/Needham (approximately 1000 feet upstream of USGS Dover gage #01103500)

MassDEP's water quality survey data from 2007 that indicated that the recreational uses were supported in segments MA72-05 and MA72-06 are presented in the following two tables.

Summary of MassDEP Watershed Planning Program *E. coli* data collected in 2007 from three sites in Charles River Assessment Unit MA72-05. See table above for site locations.

UniqueID	Year	Date First Sample	Date Last Sample	Sample Count	Geometric Mean	Bacteria Type
W1136	2007	05/15/07	10/02/07	5	106	*E. coli*
W1137	2007	05/15/07	10/02/07	5	26	*E. coli*
W1138	2007	05/15/07	10/02/07	5	28	*E. coli*

Summary of MassDEP Watershed Planning Program *E. coli* data collected in 2007 from one site in Charles River Assessment Unit MA72-06. See table above for site location.

UniqueID	Year	Date First Sample	Date Last Sample	Sample Count	Geometric Mean	Bacteria Type
W1141	2007	05/15/07	10/02/07	5	16	*E. coli*

MassDEP reviewed CRWA's *E. coli* data collected from 2009 – 2016 at eight sites along the Charles River and determined that they were generally usable for assessment and listing purposes. As outlined in the Consolidated Assessment and Listing Methodology (CALM) document, MassDEP calculated geometric means for each year included in CRWA's data for which at least five individual bacteria counts were available during the recreational season (April 1 – October 15). Geometric means were calculated for the recreational season and year-round to assess primary and secondary contact recreational use support, respectively. CRWA's data are summarized in the table below.

Summary of CRWA *E. coli* data collected from the Charles River in assessment units MA72-05 (five sites) and MA72-06 (three sites) during 2009-2016. Note: Data are summarized from those years for which five or more counts were available from within the primary contact recreation season (April 1 – October 15). Exceedances of the water quality standard for the primary contact recreational use are indicated in bold.

MassDEP Segment	CRWA Station ID	Year	Number of samples during Recreation Season	Recreation Season Geometric mean	Number of samples during year	Annual Geometric mean
MA72-05	**229S**	2009	6	50	12	135
		2010	5	50	10	96
		2012	7	44	12	53
		2013	6	43	7	63
		2014	5	65	10	69
		2016	6	88	12	105
	267S	2009	6	42	12	86
		2010	5	55	11	86
		2011	6	94	11	68
		2012	7	26	11	47
		2013	6	34	7	49
		2014	6	56	11	66
		2015	6	33	10	46
		2016	6	94	12	61
	290S	2009	6	41	10	43
		2010	5	29	10	58
		2011	6	67	11	47
		2012	7	38	12	56
		2013	6	33	7	48
		2014	6	47	12	78
		2015	6	46	10	43

		2016	6	77	12	68
	318S	2009	6	38	10	60
		2010	5	57	10	60
		2011	6	43	10	42
		2012	7	30	12	47
		2013	6	37	7	52
		2014	6	40	10	57
		2015	6	29	10	36
		2016	6	59	12	117
	343S	2009	6	18	12	59
		2010	5	37	11	51
		2011	6	75	11	52
		2012	7	21	12	46
		2013	6	22	7	32
		2014	6	43	12	85
		2015	6	33	11	40
		2016	6	23	11	37
MA72-06	**387S**	2009	5	35	10	38
		2010	5	62	11	51
		2011	5	65	10	46
		2012	7	38	12	61
		2013	6	48	7	63
		2014	6	52	11	87
		2015	6	47	10	40
		2016	6	109	11	124
	400S	2009	6	41	11	57
		2010	5	56	10	60
		2011	6	55	11	41
		2012	7	26	11	33
		2013	5	53	6	71
		2014	6	92	11	109
		2015	6	57	11	55
		2016	6	84	12	105
	447S	2009	6	**160**	8	177
		2011	6	91	8	66
		2012	7	60	9	47
		2013	5	20	5	20
		2014	6	29	9	42
		2015	6	37	7	39
		2016	5	**167**	8	95

When analyzed in accordance with MassDEP's CALM methodology, none of the five sampling sites in assessment unit MA72-05 exhibited exceedances of the *E. coli* criterion in any of the eight years represented by CRWA's data. These results corroborate MassDEP's determination that the recreational uses in this segment of the Charles River are supported. Likewise, two of the three sampling sites in MA72-06 exhibited no exceedances of the *E. coli* criterion throughout the eight years represented by the CRWA's data. The geometric means at the third site (447S) were slightly elevated above the criterion of 126 in 2009 and 2016 but, within the context of the entire data set for MA72-06, these two values do not present sufficient evidence that the recreational uses are impaired in this assessment unit. As further rationale for this decision, MassDEP calculated geometric means for pooled data from all three sampling sites. Geometric mean values for the pooled *E. coli* data were 65 and 113 for the years 2009 and 2016, respectively.

- CRWA requested that "Bottom Deposits" be applied to Charles River segment MA72-38 as an impairment, and cite the 2000 USGS study entitled "Distribution and Potential for Adverse Biological Effects of Inorganic Elements and Organic Compounds in Bottom Sediment, Lower Charles River, Massachusetts" as evidence to support their case. MassDEP utilized the USGS study results to impair this assessment unit back in 2008, but chose the impairment code "Sediment Screening Value (Exceedence)" as a more accurate and representative description of how the sediment data were analyzed and interpreted. MassDEP typically uses "Bottom Deposits" as a general reference to any flocs, sheens, or other objectionable substances observed in the field for which no further information, such as chemical composition, are usually available. In the case of the USGS Charles River study, sediments were actually sampled and chemically analyzed and the results were compared to applicable criteria or other guidelines. Therefore, the more specific term "Sediment Screening Value (Exceedence)" is preferable to the "Bottom Deposits" impairment based on field observations alone.

- CRWA requested the data and information used by MassDEP to determine that Rock Meadow Brook (MA72-21) is no longer impaired by macrophytes. The impairment "Aquatic Plants (Macrophytes)" was originally applied to Rock Meadow Brook because objectionable growths of filamentous algae and macrophytes were noted in the lower 1.2 mile reach of this stream during the 2002 MassDEP water quality surveys. In recent years it has been MassDEP's practice to subsume the impairment "Aquatic Plant (Macrophytes)" into the broader impairment code "Nutrient Eutrophication Biological Indicators" in cases where excessive macrophyte growth is believed to be in direct response to elevated nutrient levels. This serves to clarify that the water body is impaired by a pollutant (e.g., phosphorus) and requires a TMDL. While Rock Meadow Brook is covered by an approved TMDL for phosphorus, "Nutrient Eutrophication Biological Indicators" will continue to be applied to this segment until macrophytes, algal growth, etc. no longer indicate that the stream is impaired.

- The CRWA questioned the removal of the impairment "Taste and Odor" from Beaver Brook (MA72-28). They contend that "Because Beaver Brook is impaired due to excess algae, low dissolved oxygen, organic enrichment biological indicators, *E. coli* bacteria, and sedimentation/siltation, it seems likely that the brook would exhibit odors from time to time". While such a presumption could probably be made for many impaired waters, MassDEP restricts the use of this impairment to waters exhibiting frequent and persistent odor problems that have been documented and verified in the field. During its water quality surveys in 2007 MassDEP sampling crews made 24 independent field observations at two locations along Beaver Brook and recorded no objectionable conditions (odors, deposits, growths, etc.). For this reason, the stream was determined to be supporting the Aesthetics Use and the impairment "Taste and Odor" was removed.

- In general, CRWA's comments pertaining to Cambridge (MA72014, MA72156) and Stony Brook (MA72114) reservoirs concern the Drinking Water and Aquatic Life uses. As noted in the IR document, MassDEP does not assess drinking water for reporting under the CWA, and the Charles River Watershed was not assessed for the Aquatic Life Use during the 2016 CWA

assessment and listing cycle. Therefore, questions pertaining to the effects of phosphorus on these reservoirs will be addressed as part of the 2018 aquatic life use assessments.

CRWA's concerns relative to the impacts of road salt on these reservoirs is acknowledged by the MassDEP and, while primarily affecting aquatic life, this issue will be addressed as a special case *for Cambridge Reservoir system only* (i.e., MA72014, MA72156, as well as four new AUs MA72-45, MA72-46, MA72-47, and MA72-48) during this (2016) CWA reporting cycle. MassDEP must make this exception because similar comments and supporting data pertaining to the impact of chlorides on the Cambridge Reservoir subwatershed were submitted to MassDEP by the EPA. As the federal agency authorized to oversee the states' water management programs pursuant to the CWA, all of EPA's comments must be satisfactorily addressed before that agency can approve the states' 303(d) lists. MassDEP's response to comments with regard to chlorides in the Cambridge Reservoir subwatershed is found following the EPA and City of Cambridge comment letters earlier in this response document. Stony Brook Reservoir will be assessed as part of the 2018 assessment and listing cycle.

Upper Blackstone Water Pollution Abatement District (UPWPAD)

UPPER BLACKSTONE
WATER POLLUTION ABATEMENT DISTRICT

Engineer Director / Treasurer Karla H. Sangrey, P.E.

October 23, 2017

Mr. Arthur S. Johnson
MassDEP
Division of Watershed Planning Program
627 Main Street, Second Floor
Worcester, MA 01608

Subject: Comments on Proposed Massachusetts Year 2016 Integrated List of Waters - *Blackstone River*

Via Email: Arthur.johnson@state.ma.us

Dear Mr. Johnson,

Upper Blackstone (the Upper Blackstone Water Pollution Abatement District) appreciates the opportunity to comment on the Proposed Massachusetts Year 2016 Integrated List of Waters (Draft Integrated Waters List) as it pertains to the Blackstone River. In addition to our comments provided below, we have included a brief summary of Upper Blackstone's ongoing monitoring activities in the Blackstone River watershed.

Ongoing Monitoring Summary

Upper Blackstone has funded water quality monitoring of the Blackstone River since 2004, when sampling was initiated to provide necessary data to develop updated river modeling. More recently, sampling programs were performed in 2012, 2013, 2014, 2015, 2016, and ongoing in 2017. This recent water quality monitoring has been focused on evaluating the river's response to reduced nutrient concentrations in the wastewater treatment facility effluent. The river monitoring program includes:

- April – November monthly water quality sampling for nutrients and chlorophyll-a at 8 monitoring locations in Massachusetts;
- July – September monthly periphyton surveys at 3 locations in Massachusetts;
- Macroinvertebrate surveys in 2014 and 2015 at five locations in Massachusetts.

All of the Upper Blackstone backed river water quality monitoring has been

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completed under a Quality Assurance Project Plan (QAPP) prepared jointly by CDM Smith and the University of Massachusetts Amherst, and shared with Mass DEP. The MassDEP has officially accepted the QAPP for sampling years 2014, 2015, 2016 and 2017. Every year the scope of the sampling program is shared with MassDEP, in advance, in our effort focus limited resources on monitoring parameters that would be useful to add to the body of evidence necessary to understand current water quality in the Blackstone River.

The nutrient loads to the river from Upper Blackstone have decreased significantly as a result of biological nutrient removal (BNR) upgrades constructed between 2007 and 2009. The resulting nutrient concentrations in river samples are much lower than historical values. The loads decreased further since 2013 when Upper Blackstone began additional BNR optimization projects. In response to lower nutrient concentrations, phytoplankton chlorophyll-a concentrations have also decreased. In fact, nutrient and chlorophyll-a concentrations at several monitoring locations have shown statistically significant decreasing trends over the past five years (*Blackstone River Water Quality Monitoring Program 2015-2016 Sampling Seasons Report;* Massachusetts Water Resources Research Center, May 2017; available at ubwpad.org). Attachment A contains a summary of the District's river monitoring activities and results for 2015 – 2016, and a map showing Upper Blackstone's river sampling locations which are located in MassDEP segments MA51-03, MA51-04, MA51-05 and MA51-06.

Comments

Upper Blackstone offers the following comments to the Draft Integrated Waters List:

- It is not clear in the Draft Integrated Waters List what data were used to perform the water quality assessments for the Blackstone River. Table 3 (page 27) of the document suggests that the latest information used was from 2008. If this is the case, this precedes the plant upgrades completed at Upper Blackstone in 2009, and the 2008 data would not reflect the river improvements that have been noted since then. Upper Blackstone suggests making this point clear in the section "Monitoring and Related Activities for the Blackstone River."

- Under the heading "Monitoring and Related Activities for the Blackstone River", there is reference to a USGS study documented in Zimmerman et al. (2015). This report presents analysis of water quality data collected in the Blackstone River from 2007 – 2009. As such, the interpretations of river conditions presented in this report do not reflect current conditions, and Upper Blackstone suggests deleting this reference from the document, unless it is the basis of the current assessment in which case clarification should be provided to indicate the data were from before the Upper Blackstone plant upgrade.

- Upper Blackstone has made the river quality data from its monitoring programs available to MassDEP via MassDEP's data portal (complete data set for 2014 – 2016, and selected data from 2012 – 2013 per MassDEP's request), and continues to work with MassDEP to implement monitoring programs that are targeted towards characterizing river water quality conditions. Suggested text to emphasize these points is presented below in the summary section.

- The Draft Integrated Waters List lists impairments associated with nutrient enrichment for Blackstone River segments MA51-03, MA51-04, MA51-05 and MA51-06. The District's river sampling locations are located within these segments. A comparison of water quality monitoring results from Upper Blackstone's monitoring program and the Massachusetts Consolidated Assessment and Listing Methodology (CALM) nutrient enrichment indicator screening

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guidelines (MassDEP, 2016) is presented in Table 1, and indicates that river concentrations for most of the indicators are below the guideline values, while the diurnal DO indicator is slightly over the guideline value. Similarly, total phosphorous concentrations, which according to the CALM are used to confirm (not indicate) nutrient enrichment, are either below or slightly above guideline values. Upper Blackstone's river monitoring program constitutes a comprehensive data set, and Upper Blackstone strongly advocates reporting that new information is available since the impairments were originally designated and that recent data suggest water quality improvements.

Summary

Nutrient loads to the river from the Upper Blackstone effluent discharge have decreased significantly since 2009. The loads decreased further since 2013 with the most recent plant optimization effort. The reduced nutrient loads have resulted in lower instream total phosphorous concentrations and lower chlorophyll-a concentrations compared with pre-upgrade, concentrations (Massachusetts Water Resources Research Center, May 2017).

Upper Blackstone has been conducting river monitoring programs since 2004, and routine monitoring since 2009. Water quality sampling results from the District's program indicate that river conditions are improving. The Proposed Massachusetts Year 2016 Integrated List of Waters (MassDEP, 2016) does not make reference to any changes in river quality in the Blackstone River. Furthermore, it is not clear in the current Draft Integrated List when water quality assessments were completed for the Blackstone River and what data the assessments were based on.

Considering these points, Upper Blackstone recommends adding additional clarifying text to supplement the section "Monitoring and Related Activities for the Blackstone River".

Current text: *"MassDEP staff members continue to work collaboratively with the watershed associations, the Upper Blackstone Water Pollution Abatement District (UBWPAD) and their consultants on an ambient monitoring program for the Blackstone River. Future activities will focus on building partnerships with interested parties at all levels of government, as well as the private citizenry, to manage point and nonpoint sources of pollution throughout the Blackstone Watershed."*

Proposed Text: "*In addition to engaging watershed associations, MassDEP staff members continue to work collaboratively with the Upper Blackstone Water Pollution Abatement District (Upper Blackstone) and their consultants on an ambient monitoring program for the Blackstone River. Since 2004, Upper Blackstone has conducted water quality monitoring of the Blackstone River. Following plant upgrades in 2009, Upper Blackstone implemented a routine water quality monitoring program with the goal of assessing the river's response to reduced nutrient concentrations in the wastewater treatment facility effluent. The program has consisted of monthly monitoring, from April – November, at eight river mainstem monitoring locations and typically three periphyton surveys at four locations. Macroinvertebrate sampling was also conducted in 2014 and 2015. The river sampling has been completed under a MassDEP approved Quality Assurance Project Plan since 2014. The 2014 – 2016 data have been provided to MassDEP via its data portal, and will be utilized for future watershed monitoring, assessment, and management activities.*

Future watershed monitoring and management activities in the watershed will focus on building partnerships with interested parties at all levels of government, as well as the private citizenry, to manage point and nonpoint sources of pollution throughout the Blackstone Watershed."

50 Route 20, Millbury, Massachusetts 01527 - 2199 tel 508 755 1286 Fax 508 755 1289

Upper Blackstone looks forward to continuing to work collaboratively with MassDEP in the future to track the improvement in the Blackstone River water quality. We respectfully hope that the Department will consider and incorporate the comments presented above.

Very truly yours;
UPPER BLACKSTONE WATER
POLLUTION ABATEMENT DISTRICT

Karla H. Sangrey, P.E.
Engineer Director / Treasurer

c: Kristina K. Masterson, CDM Smith
Dr. Paula Sturdevant Rees, University of Massachusetts

MassDEP Note: To save space, the Upper Blackstone's 2015-2016 Blackstone River Monitoring Summary was not reproduced here.

MassDEP response: As explained in the general responses, MassDEP conducted a statewide assessment (i.e., all watersheds) of the shellfish harvesting, fish consumption, primary and secondary contact recreation and aesthetic uses, as well as the assessment of the aquatic life use-attainment status of fifteen watersheds and/or coastal drainages for the 2016 IR. Due to resource constraints, the Blackstone Watershed was not assessed for the aquatic life use in the 2016 cycle. Because MassDEP plans to assess the aquatic life use for the Blackstone watershed in the 2018 reporting cycle, the more recent nutrient-related data collected by the UBWPAD were not evaluated for the 2016 IR. Please note that comments and related data submitted as part of the 2016 Integrated List review that pertain to the Blackstone Watershed will be considered when completing the 2018 assessment and listing process.

Concerning the reference to the 2015 USGS data report for the Blackstone River, this project (and the 2012-16 USGS project) was noted only to describe the on-going MassDEP-USGS collaboration on nutrient and metals water quality in the Blackstone Watershed. The assessment of nutrient- and metals-related causes of impairment fall under the aquatic life assessment protocols, and the Aquatic Life Use for the Blackstone watershed was not included in the 2016 IR. Nonetheless, MassDEP maintains that these types of projects are relevant to include in the IR in order to describe the nature and extent of collaboration efforts.

Regarding suggested changes to the text description for "Monitoring and Related Activities for the Blackstone River", MassDEP will revise the 2016 IR language in this section of the report to reflect UBWPAD's past and on-going monitoring efforts. Specifically, the text will be revised as follows:

> *In addition to engaging watershed associations, MassDEP staff members continue to work collaboratively with the Upper Blackstone Water Pollution Abatement District (Upper Blackstone) staff and their consultants on an ambient monitoring program for the Blackstone River. Since 2004, Upper Blackstone staff have conducted water quality monitoring of the*

Blackstone River. Following plant upgrades in 2009, Upper Blackstone staff implemented a routine water quality monitoring program with the goal of assessing the river's response to reduced nutrient concentrations in the wastewater treatment facility effluent. The program has consisted of monthly monitoring, from April – November, at eight river mainstem monitoring locations and typically three periphyton surveys at four locations. Macroinvertebrate sampling was also conducted in 2014 and 2015. The river sampling has been completed under a MassDEP approved Quality Assurance Project Plan since 2014. Recent (e.g., 2014 – 2016) data have been provided to MassDEP via its data portal, and will be evaluated for potential use in assessment decisions in the 2018 cycle.

Future watershed monitoring and management activities in the watershed will focus on building partnerships with interested parties at all levels of government, as well as the private citizenry, to manage point and nonpoint sources of pollution throughout the Blackstone River Watershed."

Lastly, MassDEP recognizes and supports the on-going efforts by the UBWPAD to monitor the Blackstone River and provide the resulting data to MassDEP. With respect to the recent data collected by UBWPAD that may suggest that nutrient-related conditions are improving, these data will be evaluated for potential use in the 2018 IR reporting cycle.

Buzzards Bay Coalition (BBC)

October 23, 2017

Arthur Johnson
Massachusetts Department of Environmental Protection
Division of Watershed Management
627 Main Street, Second Floor
Worcester, MA 01608

Re: **Proposed Massachusetts Year 2016 Integrated List of Waters**

Dear Mr. Johnson,

Please accept the following as the Buzzards Bay Coalition's ("Coalition's") comments on the Department of Environmental Protection's ("MassDEP's") proposed Massachusetts Year 2016 Integrated List of Waters. The Coalition is a non-profit membership organization dedicated to the restoration, protection, and sustainable use and enjoyment of Buzzards Bay and its watershed. We represent over 8,500 individuals, families, organizations and businesses in southeastern Massachusetts who are committed to maintaining the health and ecological vitality of the Bay.

Pursuant to §303(d) of the Clean Water Act, each state shall identify waters within its boundaries for which the effluent limitations are not stringent enough to maintain water quality standards applicable to such waters. 33 USC §1313(d)(1)(A). Furthermore, federal regulations dictate that in promulgating the 303(d) list the state shall assemble and evaluate all existing and readily available water quality-related data and information. Such information includes, but is not limited to, waters where water quality problems have been reported by local, state, or federal agencies; members of the public; or academic institutions. These organizations and groups should be actively solicited for research they may be conducting or reporting. 40 CFR 130.7(b)(5)(iii). As a membership organization conducting on-going water quality monitoring in Buzzards Bay, it is pursuant to this legal framework that the Coalition submits these comments.

In summary, the Coalition asserts that:

(1) The following water bodies are impaired and should remain on the 303(d) list:

- Outer New Bedford Harbor
- Acushnet River
- Westport River
- Nasketucket River
- Little River
- Wild Harbor River

(2) The following water bodies should be listed on the 303(d) list as impaired for total nitrogen:

- Fiddlers Cove
- Rands Harbor
- Wild Harbor

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I. Background on Buzzards Bay Data Provided

A. Data Supporting These Comments

The Coalition's 303(d) submittal substantially conforms to the MassDEP Data Submittal Guidelines CN 0.72 (January, 2014). In support of this letter, a separate data submission will be transmitted electronically following the procedure outlined in the Data Submittal Guidelines. The Coalition notes that the MassDEP Data Submittal Guidelines are recommended guidelines and are intended to serve as guidance in order to help evaluate the accuracy, precision and representativeness of the data and are not intended to serve as regulations or requirements. Therefore, the Coalition expects that if MassDEP finds additional information necessary, they will present the Coalition with an opportunity to comply.

The Coalition submits dissolved oxygen data (concentration and saturation), chlorophyll data, and total nitrogen data in graphic presentation in this narrative. The raw data for these waterbodies is included in the accompanying electronic submission. Furthermore, this data was collected consistent with the 1996, 2001, 2006, 2009 and 2014 MassDEP and U.S. Environmental Protection Agency (EPA) - approved QAPP. This data clearly support the listing of the above identified waterbodies. If you have any questions or concerns with this request, please contact us as soon as possible so we may clarify any issues.

B. Introduction to the Baywatchers Monitoring Program

The Coalition's water quality monitoring program, Baywatchers, was established in 1992 as a joint effort between the Coalition, the Buzzards Bay National Estuary Program and scientists from the Woods Hole Oceanographic Institution. After 1997, the water quality monitoring program was continued as a joint effort between the Coalition and the School of Marine Science and Technology at UMass-Dartmouth (SMAST). Beginning in 2009, the Coalition partnered with the Marine Biological Laboratory (Ecosystems Center MBL) in Woods Hole, MA to run the water quality monitoring program. The Project Quality Assurance Officer is now Dr. Chris Neill, Fellow of the MBL Ecosystems Center, who also serves as Principle Science Advisor. Over the past 26 years the program has developed into a premier model for citizen monitoring programs and consistently provides annual bay-wide data.

The monitoring program was initiated to document and evaluate nutrient-related water quality and long-term ecological trends in Buzzards Bay and remains the primary source of long-term data used to assess the health of each of the Bay's 30 major harbors and coves from the Westport Rivers around to Quissett Harbor in Falmouth and the Elizabeth Islands. Until the inception of the program, no comprehensive database existed on nutrient concentrations and the extent of eutrophication in the most sensitive areas of the Bay ecosystem. It is designed to provide the information needed to make informed, scientifically-based decisions about the restoration and protection of Buzzards Bay.

Coalition volunteers measure early morning dissolved oxygen levels, temperature, salinity, and water clarity on a set schedule approximately once a week from May to September. These basic

parameters provide an immediate snapshot of the health of the Bay and are an excellent first warning system. From these measurements volunteers can determine the percentage of oxygen saturation in the water and conditions in their specific Bay location for marine organisms throughout the summer months.

In addition to weekly oxygen testing, staff and volunteers collect samples for nutrient and chlorophyll analysis. These samples are collected from the inner to the outer portions of each embayment approximately four times between July and August. These samples are collected in the field and brought to the Ecosystems Center MBL Laboratories in Woods Hole, MA for analysis of dissolved and particulate forms of nitrogen, phosphorous, and chlorophyll-a and pheophytin content. The Ecosystems Center MBL routinely participates in quality control samples as part of QC related to on-going National Science Foundation and other federally-funded projects. Coalition staff and Ecosystems Center MBL scientists collaborate on data QA/QC, data synthesis and interpretation relative to written documents, reports, and presentations. All data collection and analysis is conducted in accordance with an EPA- and MassDEP-approved Quality Assurance Project Plan (see the accompanying data submission).

C. Where Baywatchers Data is Being Used and Relied On.

The Massachusetts Estuaries Project ("MEP"), a collaboration between the MassDEP and the UMass School for Marine Science and Technology to evaluate water quality conditions in southeastern Massachusetts' estuaries, relies on the Coalition's data as background water quality data for Buzzards Bay and its 30 harbors and coves. The Coalition is often recognized in MEP reports as a partner essential in supporting nutrient assessment efforts around the Bay.

In addition, the Coalition is often directly solicited by regulatory agencies for our water quality data. In order to determine the impact a discharge may have on the receiving waters, state and federal regulatory agencies contact the Coalition to review our water quality data to assess a discharge's impact and will establish effluent limitations accordingly.

Since the Coalition's data is actively solicited and used by both state and federal regulators, as well as an academic institution it clearly meets the threshold of water quality data to be considered established by the EPA under 40 CFR 130.7(b), and should be considered in promulgating this 303(d) list. Moreover, the Coalition's Quality Assurance Project Plan ("QAPP") has been reviewed and approved multiple times by the EPA and MassDEP; approved in 1996, reviewed and approved in 2001 and reviewed and approved in 2006 and 2009 and reviewed and approved most recently in 2014.

D. Quality Assurance, Quality Control and Data Validation

The Coalition provides the June 18, 2014 QAPP entitled "The Buzzards Bay Coalition Citizen's Water Quality Monitoring Program, 'Baywatchers'" EPA RFA No. 14053 in the accompanying electronic data submission. The Baywatchers Program is committed to providing continuous and scientifically validated data on the nutrient health of the waters of Buzzards Bay. All monitoring data was collected as documented from our 2014 approved QAPP. The Coalition partnered with

the Ecosystems Center MBL Laboratories to analyze water quality samples, assist with data interpretation, and provide assistance with training to the citizens on proper sample collection and analysis techniques and equipment to meet the 2014 QAPP requirements in order to ensure precise and accurate data results.

The personnel managing the monitoring program includes the Project Officer, Tony Williams, Director of Monitoring Programs at the Buzzards Bay Coalition; Project Quality Assurance Officer; Dr. Chris Neill, Ecosystems Center MBL; EPA Project Officer, Ann Rodney, EPA; EPA Quality Assurance Officer, Steve DiMattei, EPA; and MassDEP Quality Assurance Officer Richard Chase, MassDEP. Their contact information is provided in the QAPP as part of accompanying electronic data submission.

More information regarding QA/QC is provided in the QAPP as part of the accompanying electronic data submission. The Coalition expects that if MassDEP finds additional information necessary, they will present the Coalition with an opportunity to comply.

II. The Coalition Opposes the Delisting of the Following Buzzards Bay Waters. Abundant Data Show that these Waters Must Remain Listed as Impaired on the 2016 List of Category 5 Waters

The Coalition's water quality monitoring data is regularly used and relied upon by state and federal regulators and meets the MassDEP's and EPA's reliability requirements as discussed above and detailed below. That data clearly shows that delisting of these waters is inappropriate. The Coalition requests that the following waters remain on the Commonwealth of Massachusetts' 303(d) list of Category 5 waters as impaired.

Water Segment	Impairment	Municipality
Outer New Bedford Harbor	**Nitrogen (Total)**	**Fairhaven/New Bedford**
Outer New Bedford Harbor	**Oxygen, Dissolved**	**Fairhaven/New Bedford**
Acushnet River	**Oxygen, Dissolved**	**Acushnet**
Little River	**Nitrogen (Total)**	**Dartmouth**
Nasketucket River	**Nitrogen (Total)**	**Fairhaven**
Wild Harbor River	**Nutrient/Eutrophication Biological Indicators**	**Falmouth**

The Massachusetts Surface Water Quality Standards designates the Acushnet River as a Class B water and all the other water segments as Class SA waters. Class SA waters are waters with excellent habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreation. The standards also clearly state that these waters shall have excellent aesthetic value (314 CMR 4.05(4)(a)), have dissolved oxygen levels not below 6.0mg/l (314 CMR 4.05(4)(a)(1)(a)) requiring that natural seasonal and daily variations above this level be maintained (314 CMR 4.05(4)(a)(1)(b)). Class B waters are waters designated as habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreation. The standards also clearly state that these waters shall have consistently good aesthetic value (314 CMR

4.05(3)(b)), have dissolved oxygen levels not less than 6.0 mg/l in cold water fisheries and not less than 5.0 mg/l in warm water fisheries (314 CMR 4.05(3)(b)(1)(a)).

The following submittal demonstrates that the waterbodies listed above fall short of meeting these Massachusetts Surface Water Quality Standards.

A. The Department Must Maintain Outer New Bedford Harbor as a Category 5 Water, Impaired for Total Nitrogen and Dissolved Oxygen on the 2016 Integrated List of Waters

The proposed delisting of Outer New Bedford Harbor (MA95-63) is unsupported by data and inappropriate at this time. Outer New Bedford Harbor, in the towns of New Bedford and Fairhaven, must remain on the Commonwealth of Massachusetts' 303(d) list of Category 5 waters as impaired for total nitrogen and dissolved oxygen requiring a nutrient Total Maximum Daily Load (TMDL). The Coalition's water quality monitoring data support its listing. Outer New Bedford Harbor demonstrates water quality decline related to excess nutrients.

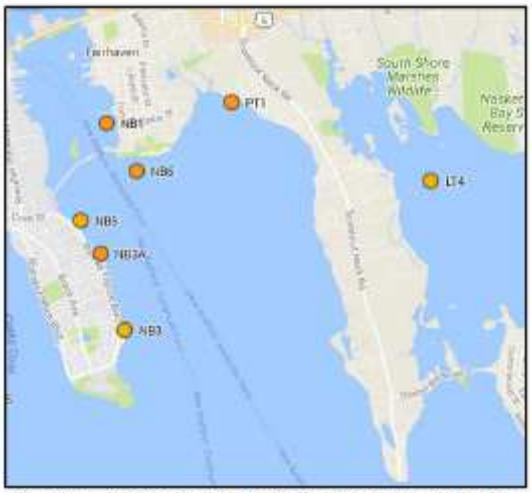


Figure 1. Outer New Bedford Harbor Site Map

Excessive levels of nitrogen can lead to loss of eelgrass beds, algae blooms, fish kills and reductions in important marine life.[1] Increases in nitrogen levels stem from point sources, non point sources as well as natural sources.[2] Most estuaries in southeastern Massachusetts are impacted by excessive amounts of nitrogen[3]. In order to target areas that are suffering from excessive levels nitrogen, like Outer New Bedford Harbor, and remove as much nitrogen as

[1] Total Maximum Daily Load (TMDL) Basics. http://www.mass.gov/eea/agencies/massdep/water/watersheds/total-maximum-daily-loads-tmdls-basics.html
[2] Id.
[3] Id.

possible from these areas, it is imperative that MassDEP list Outer New Bedford Harbor as impaired for dissolved oxygen and total nitrogen, requiring a TMDL for nutrients.

1. Outer New Bedford Harbor Dissolved Oxygen

The Coalition submits multiple years of oxygen data taken from two locations depicting water quality impairment due to nutrient over-enrichment. The Coalition's dissolved oxygen data show that Outer New Bedford Harbor consistently falls below the numeric criteria of 6mg/l as designated in 314 CMR 4.05(4)(a)(1)(a) and warrants listing on the 303(d) list.

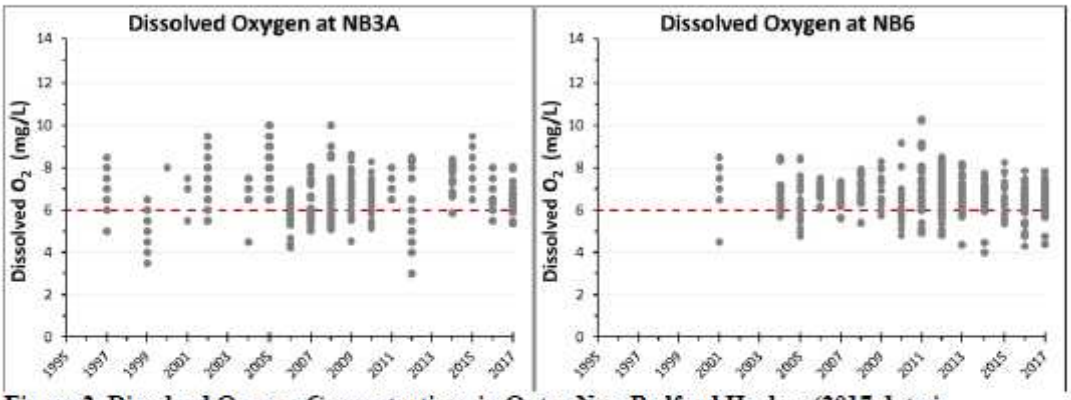


Figure 2. Dissolved Oxygen Concentrations in Outer New Bedford Harbor (2017 data is preliminary)

The dissolved oxygen concentrations in Figure 2 at sampling sites NB3A and NB6 clearly show a significant number of samples below the numeric dissolved oxygen criteria established in the Massachusetts Surface Water Quality Standards. The dissolved oxygen saturation graphic for this site is presented in Attachment A.

2. Outer New Bedford Harbor Chlorophyll Data

The Coalition's chlorophyll data show that Outer New Bedford Harbor does not possess the excellent aesthetic values required of SA waters pursuant to 314 CMR 4.05(4)(a), "These waters shall have excellent aesthetic value" and warrants listing on the 303(d) list.

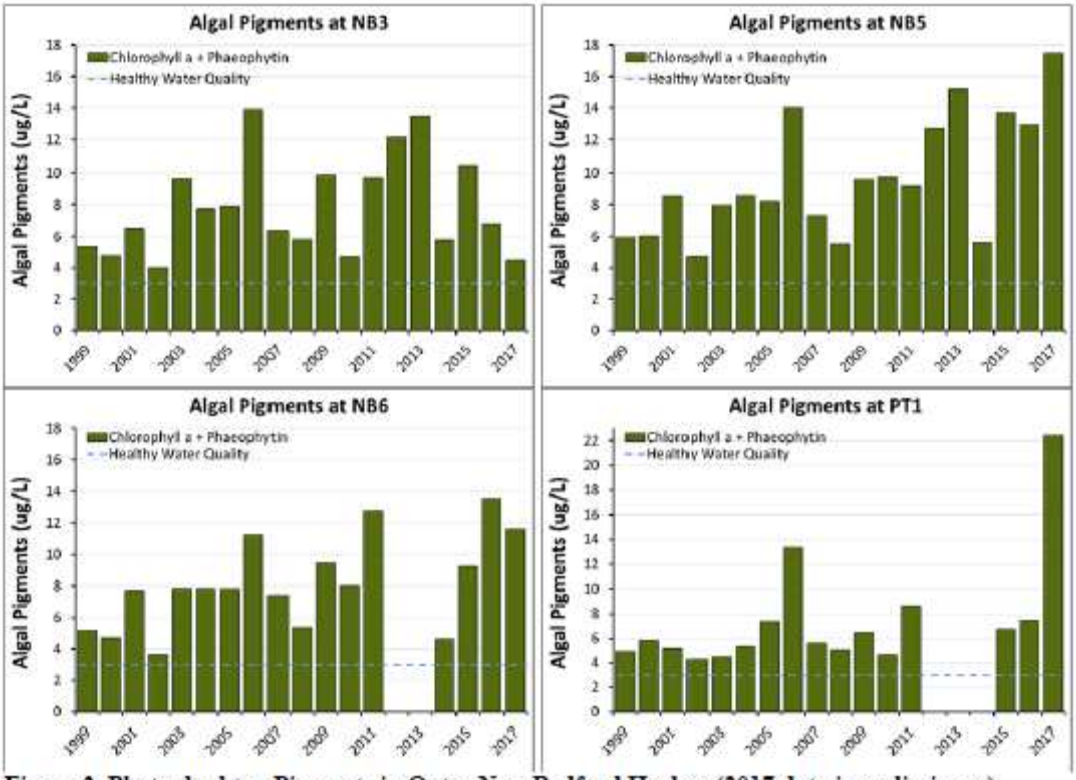


Figure 3. Phytoplankton Pigments in Outer New Bedford Harbor (2017 data is preliminary)

The phytoplankton pigment data presented in Figure 3 show high levels in pigment concentrations at sampling stations NB3, NB5, NB6, and PT1. Some of the highest chlorophyll values observed over the last twenty years occurred in 2017.

Furthermore, there have been blooms of the harmful algae species *Cochlodinium polykriodes* in Outer New Bedford Harbor. Blooms of *Cochlodinium polykriordes* are also known as rusty tide because the density of algal cells is so high that it gives the water a cloudy, reddish-brown color. In 2016, rusty tides was particularly prevalent and persistent in Outer New Bedford Harbor. Rusty tide was first reported in New Bedford Harbor on 8/15/16 and lasted through at least 9/12/16.

The high concentrations of chlorophyll and the incidence of rusty tide blooms indicates degraded water clarity in violation of the excellent aesthetic value required in Massachusetts Surface Water Quality Standards.

Figure 4. Images of widespread rusty tide outside adjacent Apponagansett Bay and in the Acushnet River in 2017.

3. Outer New Bedford Harbor Total Nitrogen Data

The Coalition's data for Outer New Bedford Harbor indicates that the nitrogen levels are causing low dissolved oxygen numbers and promoting the algae growth depicted in Figure 3.

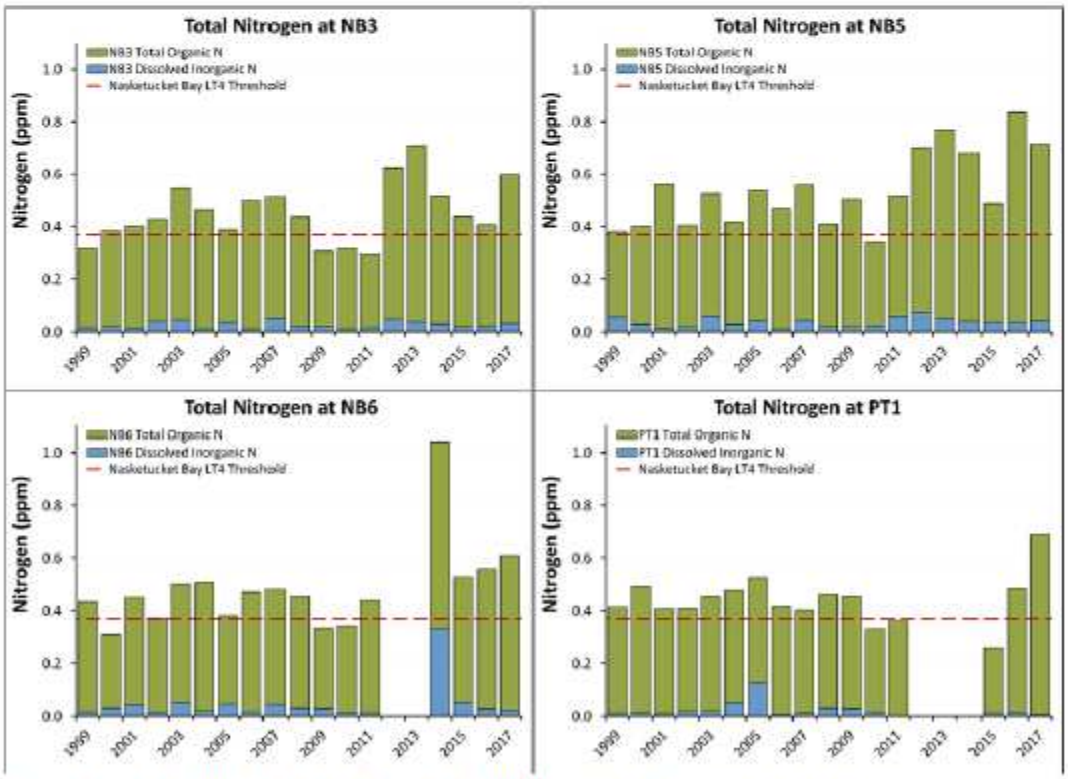


Figure 5. Total Nitrogen in Outer New Bedford Harbor (2017 data is preliminary)

Figure 5 exhibits elevated total nitrogen concentrations in Outer New Bedford Harbor at sampling sites NB3, NB5, NB6, and PT1. It is important to note that the total nitrogen concentrations measured in Outer New Bedford Harbor regularly exceed those levels identified to support healthy benthic communities and eelgrass meadows in other systems. For instance, the EPA has established nitrogen limits for Phinneys Harbor in Bourne, MA through approved TMDLs at a level of 0.35mg/L total nitrogen. The MEP set a threshold nitrogen limit of 0.37 mg/L total nitrogen for the adjacent embayment, Nasketucket Bay. Since 1999 there is only one year in our entire data record when the total nitrogen at all four stations dropped below 0.37 mg/L. Since then, total nitrogen concentrations have increased. At all stations, the highest total nitrogen concentrations of the entire record have occurred after 2010. The incidences of high total nitrogen concentration and high chlorophyll indicate that the water quality in Outer New Bedford Harbor is not improving. Outer New Bedford Harbor fails to attain state water quality standards and must remain on the 303(d) list as impaired for total nitrogen.

Taken together, the data above clearly indicate that Outer New Bedford Harbor is suffering from eutrophication due to excess nutrients and must be listed on the Commonwealth of Massachusetts' 303(d) list of Category 5 waters requiring a TMDL for total nitrogen and dissolved oxygen. Dissolved oxygen data for sampling sites NB3A and NB6 are in clear violation of surface water quality standards, falling below dissolved oxygen levels of 6mg/l. Sampling sites NB3, NB5, NB6, and PT1 have significantly elevated chlorophyll levels that degrade water clarity and aesthetic value, as well as total nitrogen concentrations higher than similar estuaries with established TMDLs or nitrogen thresholds. A total nitrogen TMDL must be established for this water body.

B. The Department Must Maintain Acushnet River as a Category 5 Water, Impaired for Dissolved Oxygen on the 2016 Integrated List of Waters

The proposed delisting of the Acushnet River (MA95-32) is unsupported by data and inappropriate at this time. The Acushnet River, in Acushnet and New Bedford, must remain on the Commonwealth of Massachusetts' 303(d) list of Category 5 waters as impaired for dissolved oxygen and requiring a nutrient TMDL. The Coalition's water quality monitoring data support its listing.

Figure 6. Acushnet River Site Map

The Acushnet River demonstrates water quality decline related to excess nutrients. The Coalition submits multiple years of oxygen data taken from sampling sites ARH and AR0 (Figure 7) depicting water quality degradation.

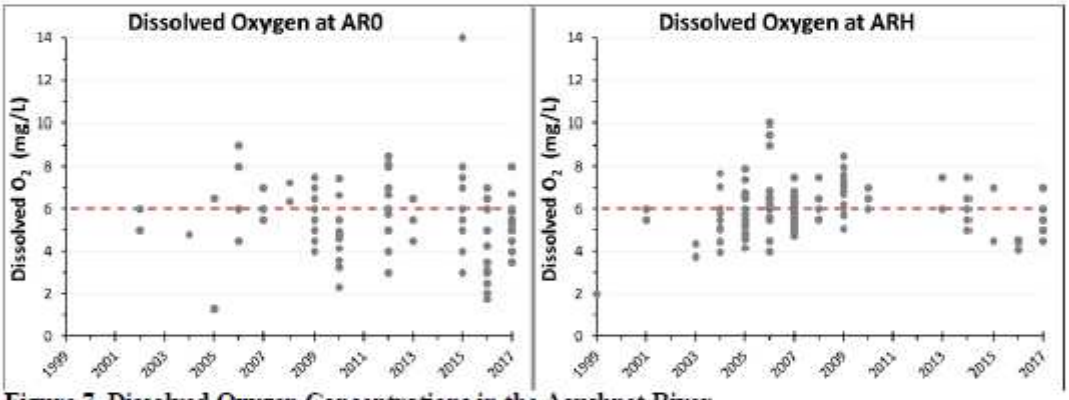


Figure 7. Dissolved Oxygen Concentrations in the Acushnet River

1. Acushnet River Dissolved Oxygen

The Coalition's dissolved oxygen data show that the Acushnet River consistently falls below the numeric criteria of both 6 mg/l for cold water fisheries and 5 mg/l for warm water fisheries. The low dissolved oxygen concentrations warrants listing the Acushnet River on the 303(d) list for failing to meet Massachusetts Surface Water Quality Standards. The dissolved oxygen saturation graphic for these sites are presented in Attachment A.

In 2016, extremely low dissolved oxygen concentrations were observed at site AR0. A large fish kill occurred in September 2016 near site AR0 following the extended period of extremely low dissolved oxygen concentrations. Low dissolved oxygen concentrations were stated as a likely reason for the fish kill by a biologist from the state Division of Marine Fisheries.

Figure 8. Images taken on the Acushnet Sawmill property in September 2016.

The Acushnet River continues to suffer impairment from low dissolved oxygen concentrations. The Acushnet River does not meet surface water quality standards, falling below dissolved oxygen levels of 6mg/l the majority of the time in summer. **The Acushnet River must remain listed on the Commonwealth of Massachusetts' 303(d) list of Category 5 waters as impaired for dissolved oxygen and requiring a TMDL.**

C. Westport River Fails to Attain State Water Quality Standards and Remains Impaired for Total Nitrogen.

The 2016 303(d) list indicates that the Westport River (MA95-54) should be listed as a category 4A water, because the applicable water quality standard was attained. Category 4A is the designation for water bodies where a TMDL is completed. A nitrogen TMDL was finalized by EPA in April 2017 for the entire Westport River Estuarine System[4]. This TMDL applies to the Westport River (MA95-54), the East Branch of the Westport River (95-40), and the West Branch of the Westport River (MA95-37).

However, the Coalition's data indicates that water quality standards have not been attained in the Westport River. The TMDL anticipates improvement in downstream water quality in the Westport River as actions are taken upstream to reduce nitrogen loading. The data presented here indicate that water quality impairment continues in the Westport River related to excess nutrients.

[4] Westport River Estuarine System Total Maximum Daily Loads For Total Nitrogen (CN-375.1) dated April 2017

Figure 9. Westport River Site Map

1. Westport River Dissolved Oxygen

The Coalition submits multiple years of oxygen data taken from three locations depicting water quality impairment due to nutrient over-enrichment. The Coalition's dissolved oxygen data show that Westport River often falls below the numeric criteria of 6mg/l as designated in 314 CMR 4.05(4)(a)(1)(a).

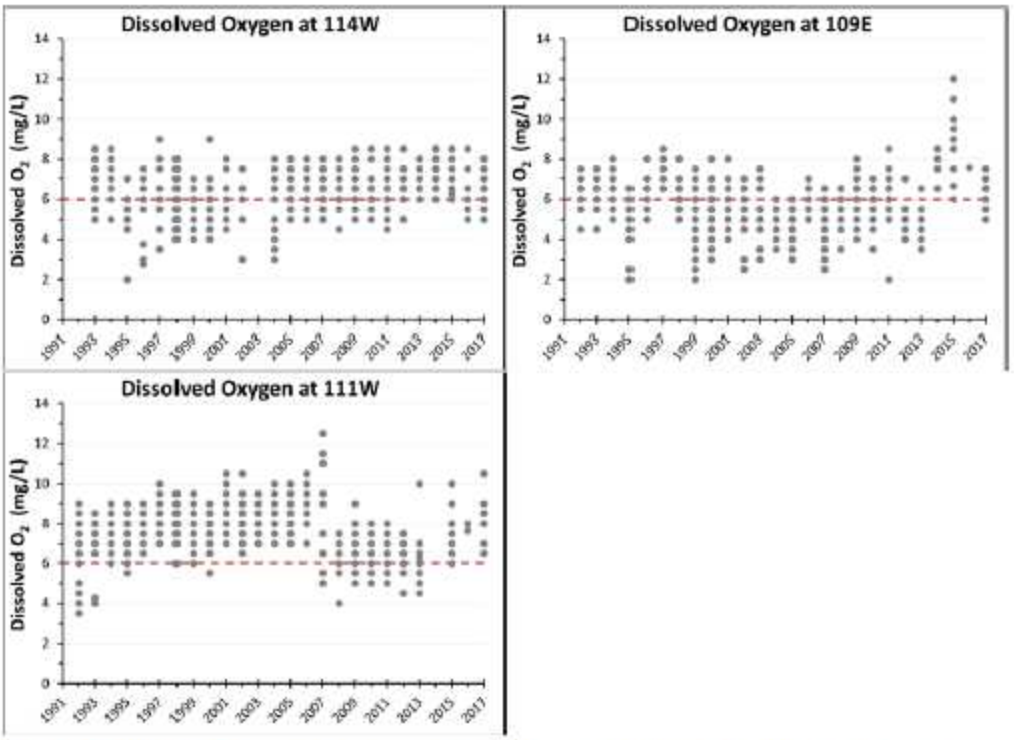


Figure 10. Dissolved Oxygen Concentrations in Westport River (2017 data is preliminary)

The dissolved oxygen concentrations in Figure 10 at sampling sites 114W, 109E, and 111W show a number of samples below the numeric dissolved oxygen criteria established in the Massachusetts Surface Water Quality Standards. The dissolved oxygen saturation graphic for this site is presented in Attachment A.

2. Westport River Chlorophyll Data

The Coalition's chlorophyll data show that the Westport River does not possess the excellent aesthetic values required of SA waters pursuant to 314 CMR 4.05(4)(a), "These waters shall have excellent aesthetic value" and warrants listing on the 303(d) list.

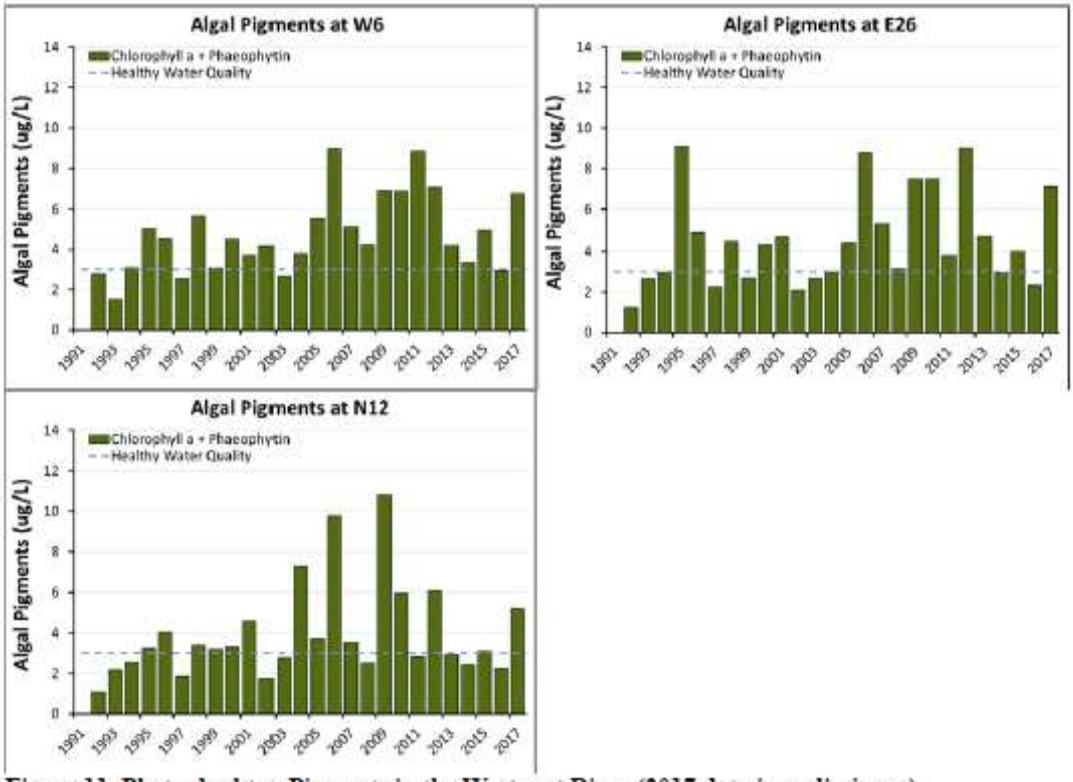


Figure 11. Phytoplankton Pigments in the Westport River (2017 data is preliminary)

The data presented in Figure 11 show periodic high levels of chlorophyll pigments at sampling stations W6, E26, and N12.

3. Westport River Total Nitrogen Data

Figure 12 exhibits elevated total nitrogen concentrations in the Westport River at sampling sites W6, E26, and N12. The nitrogen concentrations observed in the Westport River are higher than the concentrations identified in the MEP report for the threshold scenario.

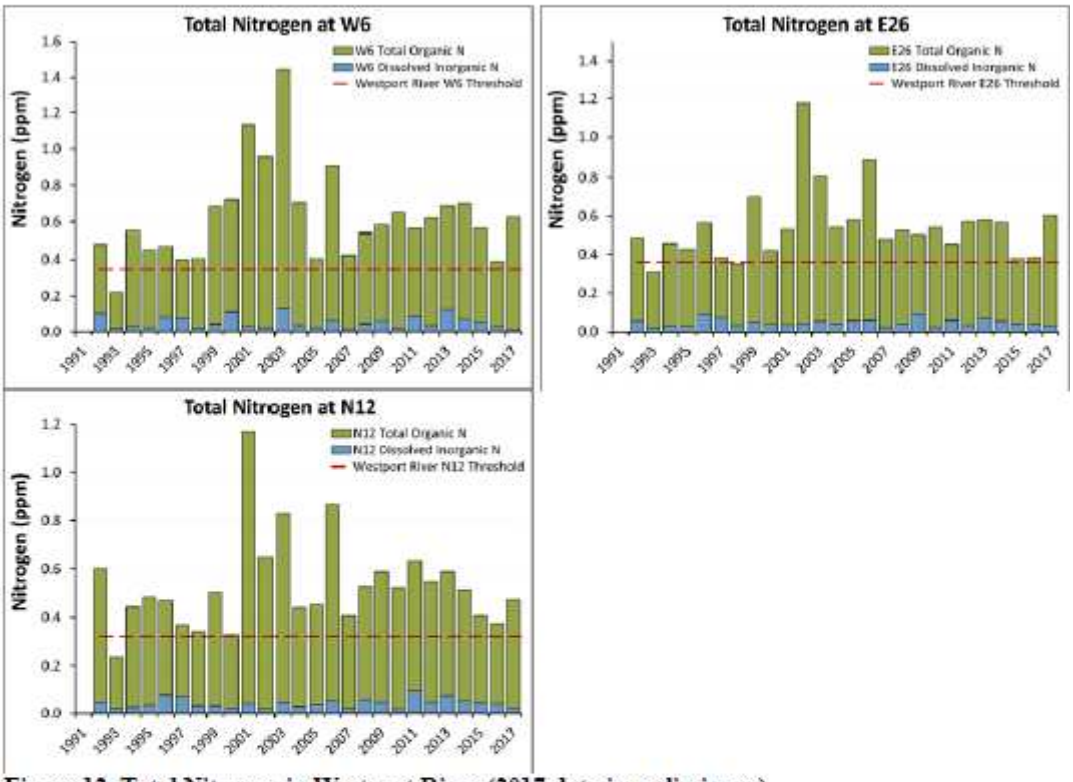


Figure 12. Total Nitrogen in Westport River (2017 data is preliminary)

The Westport River fails to attain state water quality standards. Dissolved oxygen data for sampling sites 111W, 114W, and 109E are in clear violation of surface water quality standards, falling below dissolved oxygen levels of 6mg/l. Sampling sites W6, E26, and N12 have chlorophyll levels that degrade water clarity and aesthetic value, as well as total nitrogen concentrations higher than the modelled nitrogen concentrations when the TMDL is met. The implementation of the Westport nitrogen TMDL will lead to the attainment of surface water quality standards in the Westport River but the water quality standards have not been met yet. **The incidences of high total nitrogen concentration and high chlorophyll indicate that the water quality the Westport River is still impaired for nitrogen.**

D. Wild Harbor River Does Not Consistently Meet State Water Quality Standards and Must be Listed on the 2016 List of Category 5 Waters for Total Nitrogen.

Wild Harbor River is subject to impairment from total nitrogen and it is premature to remove this water body from the 303(d) List. The MEP report for Wild Harbor indicates the Wild Harbor River is a salt marsh environment that is expected to have higher levels of nitrogen and lower levels of dissolved oxygen than an open embayment and that it is supporting high quality habitat and not impaired by nitrogen. The MEP shows that when the total nitrogen threshold is met at the sentinel station in Wild Harbor (WH1), the total nitrogen concentration in Wild Harbor River (WH2) should be 0.44 mg/L. While recent data show encouraging results that nitrogen concentrations may be meeting this threshold (Figure 13), it is premature to delist this waterbody.

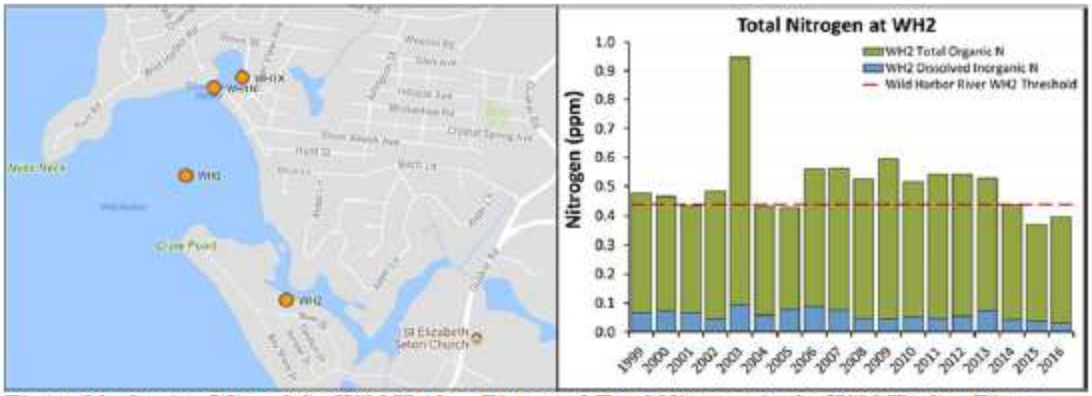


Figure 13. Station Map of the Wild Harbor River and Total Nitrogen in the Wild Harbor River.

Year to year variability in water quality conditions make removal from the 303(d) list now, premature. MassDEP requires a number of years of data before it considers adding a water body to the 303(d) list and the same standard must be applied for removing a water body from the list. **MassDEP should maintain Wild Harbor River on the 303(d) list as a Category 5 water and review the data in two years to determine whether it continues to exhibit low nitrogen concentrations.**

E. Nasketucket River Does Not Consistently Meet State Water Quality Standards and Must be Listed on the 2016 List of Category 5 Waters for Total Nitrogen.

The MEP report indicates that the Nasketucket Bay system is currently receiving the maximum amount of nitrogen it can handle while remaining healthy. Any additional nitrogen loading will push the system out of balance and result in degradation of water quality and benthic habitat. The Coalition's water quality data indicates that nitrogen in the Nasketucket River is oscillating around the threshold that was set in the MEP report that reflects existing conditions required to support a healthy ecosystem (Figure 14). It is premature to remove Nasketucket River from the 303(d) List.

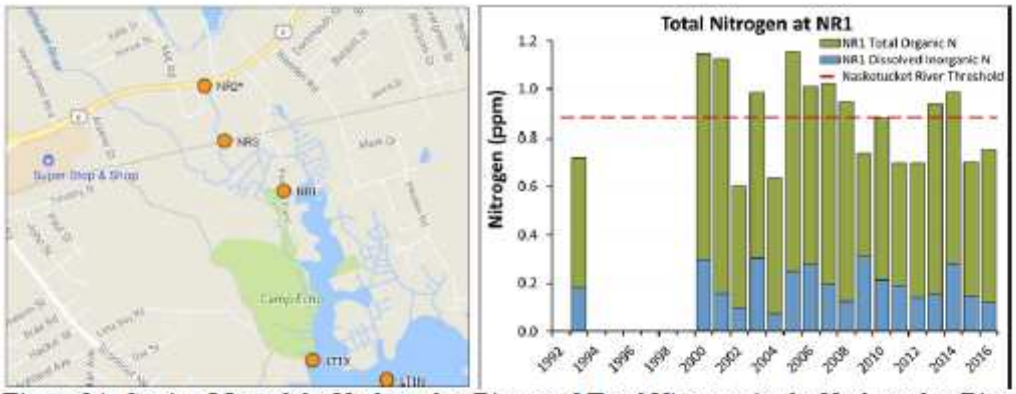


Figure 14. Station Map of the Nasketucket River and Total Nitrogen in the Nasketucket River.

Any additional development or new sources of nitrogen to the Nasketucket River Watershed may increase nitrogen in the Nasketucket River beyond the threshold and lead to nitrogen impairment. Considering that and the year to year variability in water quality conditions, it is premature to remove the Nasketucket River from the 303(d) list. **MassDEP should maintain the Nasketucket River on the 303(d) list as a Category 5 water and review the data in two years to determine whether it continues to exhibit low nitrogen concentrations.** Monitoring of this system will be essential to determine whether increases in nitrogen and associated impairments occur.

F. Little River Does Not Consistently Meet State Water Quality Standards and Must be Listed on the 2016 List of Category 5 Waters for Total Nitrogen.

The MEP report describes the Little River as a healthy salt marsh system that is capable of some additional nitrogen assimilation. The Little River receives nitrogen from the Slocums River. The Slocums River is impaired for nitrogen, and the MEP indicates that a 24% reduction of watershed loads are required to restore water quality. The nitrogen concentrations in the Little River should decrease as nitrogen reductions are achieved in the Slocums River. If the reductions in the Slocums River are not achieved or if there are any new sources of nitrogen added to the Little River Watershed, nitrogen concentrations may increase beyond the threshold and lead to nitrogen impairment.

The MEP report establishes a 0.5 mg/L total nitrogen threshold for the Little River and it does not anticipate that the threshold will be reached at build-out. However, the Coalition's water quality data indicates that the 0.5 mg/L threshold is occasionally exceeded (Figure 15). The variability from year to year in water quality conditions and the recent nitrogen values above the 0.5 mg/L threshold demonstrate that it is premature to remove the Little River from the 303(d) list. Monitoring of this system will be essential to determine whether increases in nitrogen and associated impairments occur. **MassDEP should maintain the Little River on the 303(d) list as a Category 5 water and review the data in two years.**

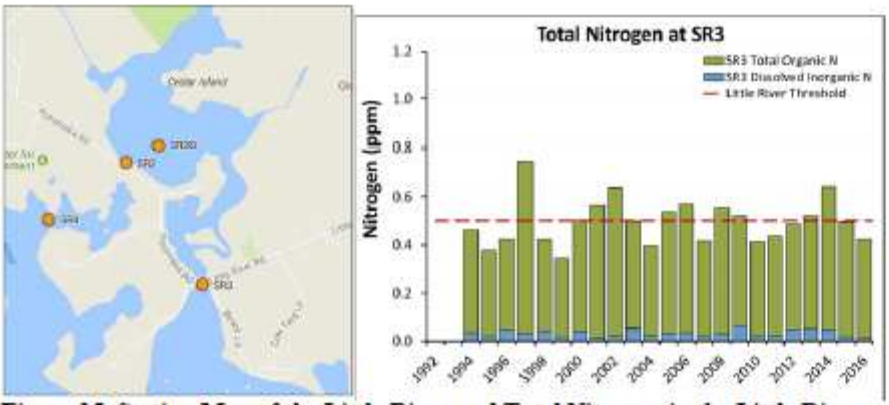


Figure 15. Station Map of the Little River and Total Nitrogen in the Little River.

III. The Coalition Requests the Listing of the Following Buzzards Bay Waters. Abundant Data Show that these Waters should be Listed as Impaired for Nitrogen on the 2016 List of Category 5 Waters

The Coalition's water quality monitoring data is regularly used and relied upon by state and federal regulators and meets the MassDEP's and EPA's reliability requirements as discussed above. That data clearly shows that listing of these waters is appropriate. The Coalition requests that the following waters be added to the Commonwealth of Massachusetts' 303(d) list of Category 5 waters as impaired for total nitrogen. The Coalition's water quality monitoring data and the MEP support these listings, and MassDEP has prepared draft nitrogen TMDLs[5] for these water bodies.

Water Segment	Impairment
Fiddlers Cove (95-79)	**Nitrogen (Total)**
Rands Harbor (95-78)	**Nitrogen (Total)**
Wild Harbor (95-20)	**Nitrogen (Total)**

The Massachusetts Surface Water Quality Standards designate these waterbodies as Class SA waters. Class SA waters are waters with excellent habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreation. The standards also clearly state that these waters shall have excellent aesthetic value (314 CMR 4.05(4)(a)), have dissolved oxygen levels not below 6.0mg/l (314 CMR 4.05(4)(a)(1)(a)) requiring that natural seasonal and daily variations above this level be maintained (314 CMR 4.05(4)(a)(1)(b)).

[5] Draft Fiddlers Cove and Rands Harbor Embayment Systems Total Maximum Daily Loads for Total Nitrogen CN #394.0 dated August 2017; Draft Wild Harbor Estuarine System Total Maximum Daily Load for Total Nitrogen CN #397.0 dated September 2017

The following submittal demonstrates that the waterbodies listed above fall short of meeting these Massachusetts Surface Water Quality Standards. The Coalition recognizes that while Fiddlers Cove, Rands Harbor, and Wild Harbor all have had additional related impairments (dissolved oxygen, nutrient/eutrophication biological indicators, and/or estuarine bioassessments) added on the 2016 list, it is critical that the regulatory agencies recognize that this water segment is impaired for nitrogen and list it as such.

Nutrient-specific assessments lead to direct removal of nutrients from the coastal waters of Buzzards Bay. Bioassesments or biomonitoring look at various factors to determine the overall health of a body of water.[6] While these types of assessments are important and provide a general condition of the ecosystem, they are not focused enough to lead to action items or the actual immediate removal of pollutants, such as nitrogen, from the Bay.

MassDEP has classified nitrogen as a pollutant that requires a TMDL in many areas of southeastern Massachusetts.[7] In order to target areas that are suffering from excessive nitrogen levels and remove as much nitrogen as possible from these areas, it is imperative that MassDEP list Fiddlers Cove, Rands Harbor, and Wild Harbor as impaired for nitrogen areas requiring a TMDL for nitrogen.

A. Fiddlers Cove Fails to Meet State Water Quality Standards and Must be Listed as Impaired for Total Nitrogen on the 2016 List of Category 5 Waters.

The Coalition supports the addition of Fiddlers Cove (MA95-79), in the town of Falmouth to the Commonwealth of Massachusetts' 303(d) list of Category 5 waters as impaired for dissolved oxygen and estuarine bioassessments requiring a TMDL. The Coalition requests that, in addition, Fiddlers Cove be listed as impaired for total nitrogen. The Coalition's water quality monitoring data support its listing.

[6] Environmental Monitoring: Bioassesments. http://www.mass.gov/eea/agencies/massdep/water/watersheds/environmental-monitoring-biomonitoring.html

[7] Total Maximum Daily Load (TDML) Basics. http://www.mass.gov/eea/agencies/massdep/water/watersheds/total-maximum-daily-loads-tmdls-basics.html

Figure 16. Fiddlers Cove Site Map

Fiddlers Cove demonstrates water quality decline related to excess nutrients. As described above, excessive levels of nitrogen are common in southeastern Massachusetts and result in ecosystem degradation with impacts including loss of eelgrass beds, algae blooms, fish kills and reductions in important marine life. In order to target areas that are suffering from excessive levels nitrogen, like Fiddlers Cove, and remove as much nitrogen as possible from these areas, it is imperative that MassDEP list Fiddlers Cove as impaired for total nitrogen, requiring a TMDL for nitrogen.

1. Fiddlers Cove Dissolved Oxygen

The Coalition submits multiple years of oxygen data taken from site FC1X depicting water quality impairment due to nutrient over-enrichment. The Coalition's dissolved oxygen data show that Fiddlers Cove consistently falls below the numeric criteria of 6mg/l as designated in 314 CMR 4.05(4)(a)(1)(a) and warrants listing on the 303(d) list.

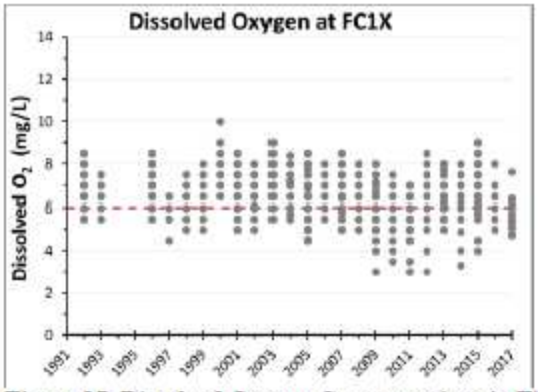


Figure 17. Dissolved Oxygen Concentrations in Fiddlers Cove (2017 data is preliminary)

The dissolved oxygen concentrations in Figure 17 at sampling site FC1X clearly shows a significant number of samples below the numeric dissolved oxygen criteria established in the Massachusetts Surface Water Quality Standards. The dissolved oxygen saturation graphic for this site is presented in Attachment A.

2. Fiddlers Cove Chlorophyll Data

The Coalition's chlorophyll data show that Fiddlers Cove does not possess the excellent aesthetic values required of SA waters pursuant to 314 CMR 4.05(4)(a), "These waters shall have excellent aesthetic value" and warrants listing on the 303(d) list.

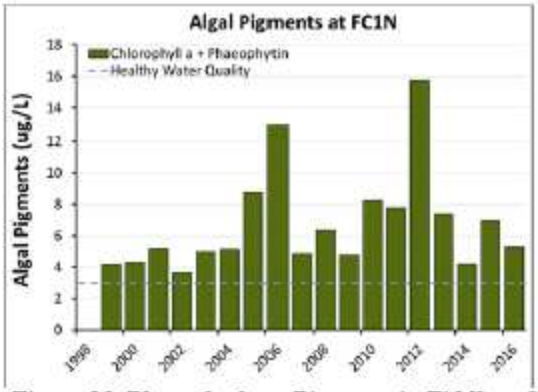


Figure 18. Phytoplankton Pigments in Fiddlers Cove

The phytoplankton pigment data presented in Figure 18 show high concentrations at sampling station FC1N. The high concentrations of chlorophyll indicates degraded water clarity in violation of the excellent aesthetic value required in Massachusetts Surface Water Quality Standards.

3. Fiddlers Cove Total Nitrogen Data

The Coalition's total nitrogen data for Fiddlers Cove (Figure 16) exhibits total nitrogen concentrations that are typically above the level modelled for the threshold scenario in the MEP report. Excess nitrogen levels will cause low dissolved oxygen numbers and promote algae growth, results that are illustrated above. The incidences of high total nitrogen concentration and high chlorophyll indicate that Fiddlers Cove fails to attain state water quality standards and must also be listed on the 303(d) list as impaired for total nitrogen.

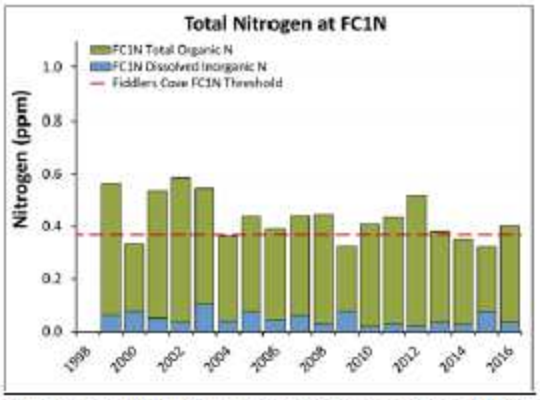


Figure 19. Total Nitrogen in Fiddlers Cove Harbor

In summary, the dissolved oxygen data at sampling site FC1X are in clear violation of surface water quality standards, falling below dissolved oxygen levels of 6mg/l. Sampling site FC1N has elevated chlorophyll levels that degrade water clarity and aesthetic value, as well as total nitrogen concentrations higher than the threshold scenario identified in the Fiddlers Cove MEP report. **The data above show that Fiddlers Cove is suffering from eutrophication due to excess nutrients and must be listed on the Commonwealth of Massachusetts' 303(d) list of Category 5 waters requiring a TMDL for total nitrogen in addition to the impairments added in 2016 for dissolved oxygen and estuarine bioassessments.** MassDEP has shown the need for a total nitrogen TMDL by issuing a draft nitrogen TMDL for Fiddlers Cove in August 2017.

B. Rands Harbor Fails to Meet State Water Quality Standards and must be Listed as Impaired for Total Nitrogen on the 2016 List of Category 5 Waters.

The Coalition supports the addition of Rands Harbor (MA95-78), in the town of Falmouth to the Commonwealth of Massachusetts' 303(d) list of Category 5 waters as impaired for estuarine bioassessments requiring a TMDL. The Coalition requests that, in addition, Rands Harbor be listed as impaired for total nitrogen. The Coalition's water quality monitoring data support its listing.

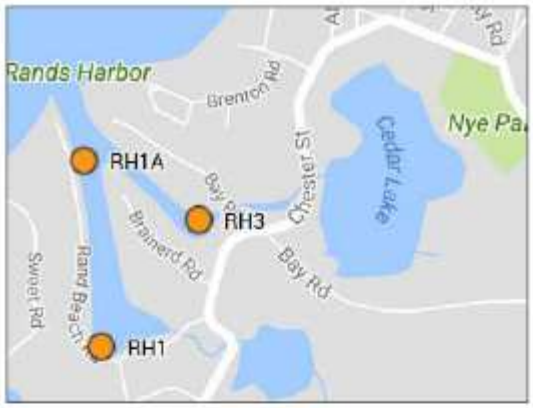


Figure 20. Rands Harbor Site Map

Rands Harbor demonstrates water quality decline related to excess nutrients. As described above, excessive levels of nitrogen are common in southeastern Massachusetts and result in ecosystem degradation with impacts including loss of eelgrass beds, algae blooms, fish kills and reductions in important marine life. In order to target areas that are suffering from excessive nitrogen levels, like Rands Harbor, and remove as much nitrogen as possible from these areas, it is imperative that MassDEP list Rands Harbor as impaired for total nitrogen, requiring a TMDL for nutrients.

1. Rands Harbor Dissolved Oxygen

The Coalition submits multiple years of oxygen data taken from one location illustrating water quality impairment due to nutrient over-enrichment. The Coalition's dissolved oxygen data show that Rands Harbor consistently falls below the numeric criteria of 6mg/l as designated in 314 CMR 4.05(4)(a)(1)(a) and warrants listing on the 303(d) list.

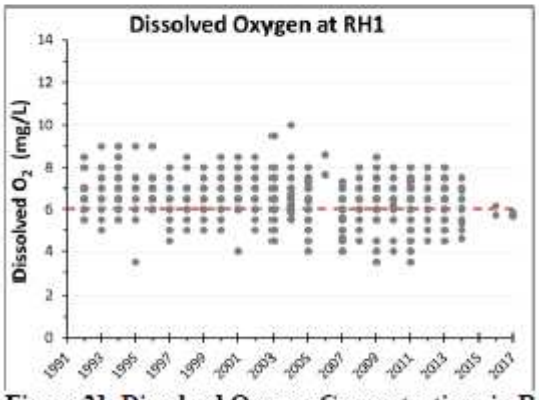


Figure 21. Dissolved Oxygen Concentrations in Rands Harbor (2017 data is preliminary)

The dissolved oxygen concentrations in Figure 21 at sampling site RH1 clearly shows a significant number of samples below the numeric dissolved oxygen criteria established in the Massachusetts Surface Water Quality Standards. The dissolved oxygen saturation graphic for this site is presented in Attachment A.

2. Rands Harbor Chlorophyll Data

The Coalition's chlorophyll data show that Rands Harbor does not possess the excellent aesthetic values required of SA waters pursuant to 314 CMR 4.05(4)(a), "These waters shall have excellent aesthetic value" and warrants listing on the 303(d) list.

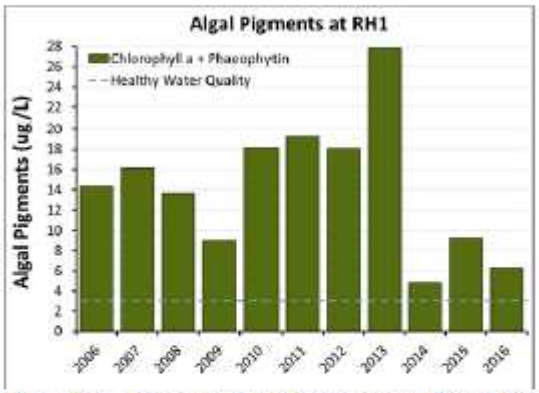


Figure 22. Phytoplankton Pigments in Rands Harbor

The data presented in Figure 22 show high levels of phytoplankton pigments at sampling station RH1. The high concentrations of chlorophyll indicates degraded water clarity in violation of the excellent aesthetic value required in Massachusetts Surface Water Quality Standards.

3. Rands Harbor Total Nitrogen Data

The Coalition's total nitrogen data for Rands Harbor suggests that the nitrogen levels promote the algae growth and the low dissolved oxygen numbers shown above. Figure 23 exhibits total nitrogen concentrations in Rands Harbor that are typically above those for the threshold scenario set in the MEP report. The incidences of high total nitrogen concentration and high chlorophyll indicate that Rands Harbor fails to attain state water quality standards and must also be listed on the 303d list as impaired for total nitrogen.

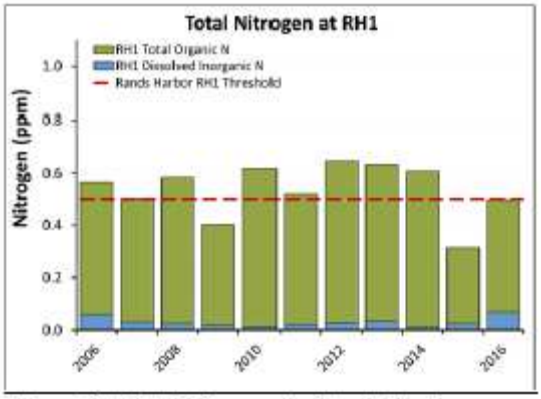


Figure 23. Total Nitrogen in Rands Harbor

The above data clearly indicate that Rands Harbor is suffering from eutrophication due to excess nutrients and must be listed on the Commonwealth of Massachusetts' 303(d) list of Category 5 waters requiring a TMDL for total nitrogen, in addition to the impairment added for estuarine bioassessments. Dissolved oxygen data at sampling site RH1 are in clear violation of surface water quality standards, falling below dissolved oxygen levels of 6mg/l. Sampling site RH1 also has elevated chlorophyll levels that degrade water clarity and aesthetic value, as well as total nitrogen concentrations higher those for the nitrogen threshold scenario identified in the Rands Harbor MEP report. MassDEP has shown the need for a total nitrogen TMDL by issuing a draft nitrogen TMDL for Rands Harbor in August 2017.

C. Wild Harbor Fails to Meet State Water Quality Standards and Must be Listed on the 2016 List of Category 5 Waters for Total Nitrogen.

The Coalition supports the addition of Wild Harbor (MA95-20), in the town of Falmouth, to the Commonwealth of Massachusetts' 303(d) list of Category 5 waters as impaired for estuarine bioassessments and nutrient/eutrophication biological indicators requiring a TMDL. The Coalition requests that, in addition, Wild Harbor be listed as impaired for total nitrogen. The Coalition's water quality monitoring data support its listing.

Figure 24. Wild Harbor Site Map

Wild Harbor demonstrates water quality decline related to excess nutrients. As described above, excessive levels of nitrogen are common in southeastern Massachusetts and result in ecosystem degradation with impacts including loss of eelgrass beds, algae blooms, fish kills and reductions in important marine life. In order to target areas suffering from excessive levels of nitrogen, like Wild Harbor, and remove as much nitrogen as possible from these areas, it is imperative that MassDEP list Wild Harbor as impaired for total nitrogen, requiring a TMDL for nitrogen.

1. Wild Harbor Dissolved Oxygen

The Coalition submits oxygen data from multiple years from station WH1X depicting water quality impairment due to nutrient over-enrichment. The Coalition's dissolved oxygen data show that Wild Harbor consistently falls below the numeric criteria of 6mg/l as designated in 314 CMR 4.05(4)(a)(1)(a) and warrants listing on the 303(d) list.

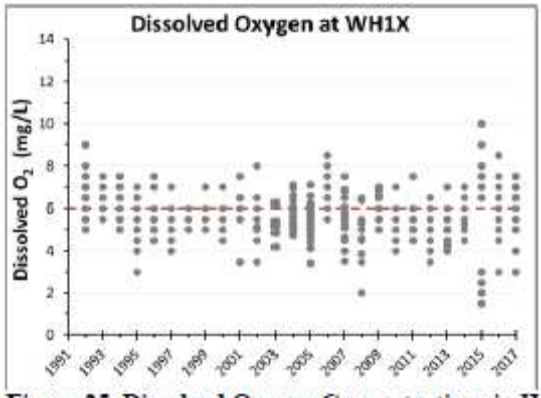


Figure 25. Dissolved Oxygen Concentrations in Wild Harbor (2017 data is preliminary)

The dissolved oxygen concentrations in Figure 25 at sampling site WH1X clearly shows a significant number of samples below the numeric dissolved oxygen criteria established in the

Massachusetts Surface Water Quality Standards. The dissolved oxygen saturation graphic for this site is presented in Attachment A.

2. Chlorophyll Data

The Coalition's chlorophyll data show that Wild Harbor does not possess the excellent aesthetic values required of SA waters pursuant to 314 CMR 4.05(4)(a), "These waters shall have excellent aesthetic value" and warrants listing on the 303(d) list.

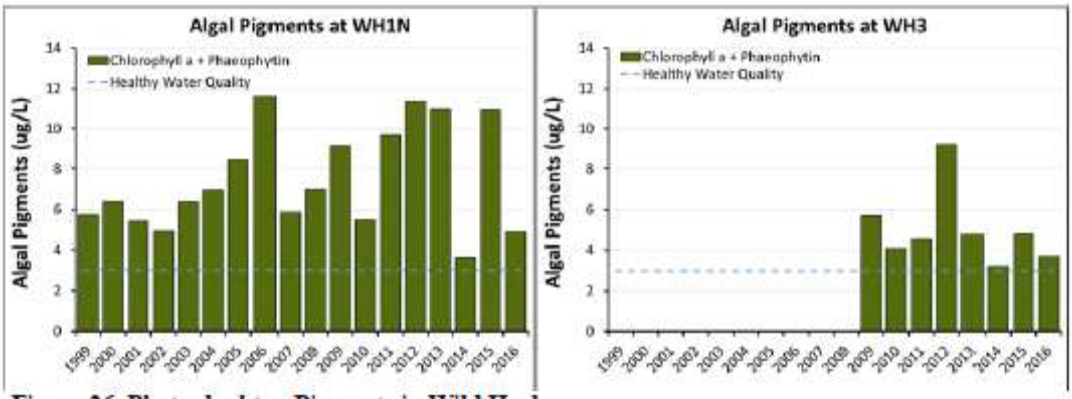


Figure 26. Phytoplankton Pigments in Wild Harbor

The data presented in Figure 26 show high levels of algal pigments at sampling stations WH1N and WH3. The high concentrations of chlorophyll indicate degraded water clarity in violation of the excellent aesthetic value required in Massachusetts Surface Water Quality Standards.

3. Wild Harbor Total Nitrogen Data

The Coalition's total nitrogen data for Wild Harbor suggests that the nitrogen levels are leading to the low dissolved oxygen numbers and promoting the algae growth depicted above.

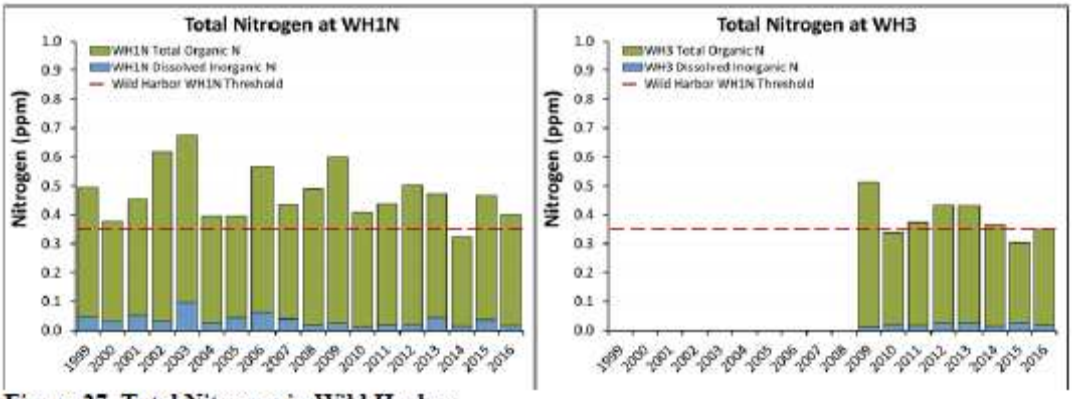


Figure 27. Total Nitrogen in Wild Harbor

Figure 27 exhibits total nitrogen concentrations in Wild Harbor that are above the concentrations set for the threshold scenario in the MEP report. The incidences of high total nitrogen concentration and high chlorophyll indicate that Wild Harbor fails to attain state water quality standards and must be listed on the 303d list as impaired for total nitrogen.

The combined data above demonstrate that Wild Harbor is suffering from eutrophication due to excess nutrients and must be listed on the Commonwealth of Massachusetts' 303(d) list of Category 5 waters requiring a TMDL for total nitrogen in addition to the impairment added for estuarine bioassessments. Dissolved oxygen data at sampling site WH1N are in clear violation of surface water quality standards, falling below dissolved oxygen levels of 6mg/l. Sampling sites WH1N and WH3 also have elevated chlorophyll levels that degrade water clarity and aesthetic value, as well as total nitrogen concentrations higher than the nitrogen threshold identified in the Wild Harbor MEP report. MassDEP has shown the need for a total nitrogen TMDL by issuing a draft nitrogen TMDL for Wild Harbor in September 2017.

Summary

It is critical that impaired water bodies are appropriately identified so that resources are appropriately focused on areas in need of water quality restoration. **Sufficient data exists demonstrating degraded water quality in the above identified waterbodies.** The Coalition's data illustrate impaired health, requiring immediate action on the part of MassDEP. We respectfully request that these waters be listed as Category 5 waters on the 2016 list of impaired waters for nitrogen, nutrients and habitat alterations requiring a TMDL.

The quality assured raw data supporting this submission is submitted electronically.

Thank you for this opportunity to submit this request.

Sincerely,

Rachel W Jakuba

Rachel Jakuba, PhD
Science Director

Attachments: A. Dissolved Oxygen Saturation Graphics

Contents of Supporting Electronic Data Submission:

1. Statement of Data Integrity
2. Excel Raw Data File
3. MassDEP- and EPA-approved Quality Assurance Project Plan for the Coalition's Water Quality Monitoring Program.

Cc: Dr. Chris Neill, Marine Biological Laboratory, Ecosystems Center
Ann Rodney, US EPA Region 1

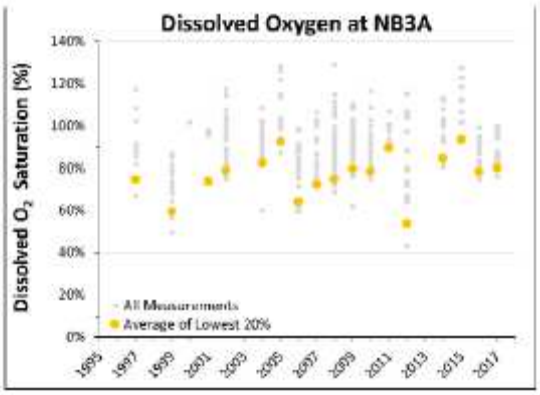
Dr. Joseph E. Costa, Buzzards Bay National Estuary Program
David Janik, MA Office of Coastal Zone Management

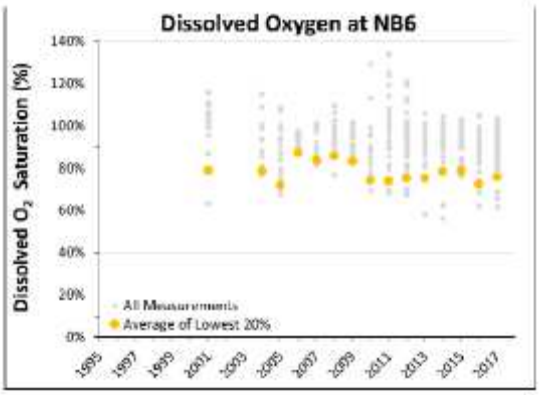
Senator Mark Montigny
Senator Michael Rodrigues
Senator Vinny deMacedo

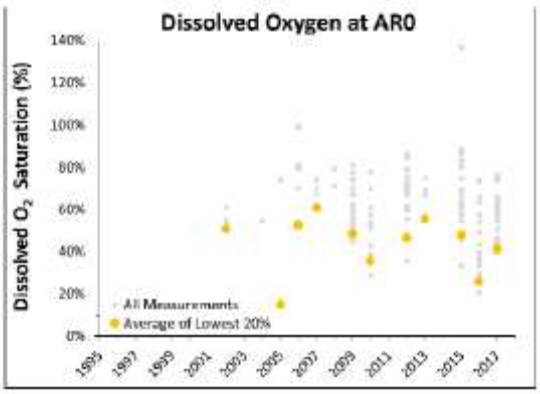
Representative Antonio Cabral
Representative Dylan Fernandes
Representative Robert Koczera
Representative Christopher Markey
Representative Paul Schmid
Representative William Straus

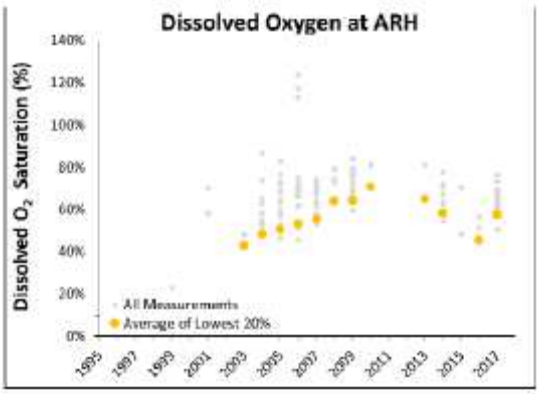
Mayor Jon Mitchell, City of New Bedford
Fairhaven Board of Selectmen
Acushnet Board of Selectmen
Westport Board of Selectmen
Dartmouth Select Board
Falmouth Board of Selectmen

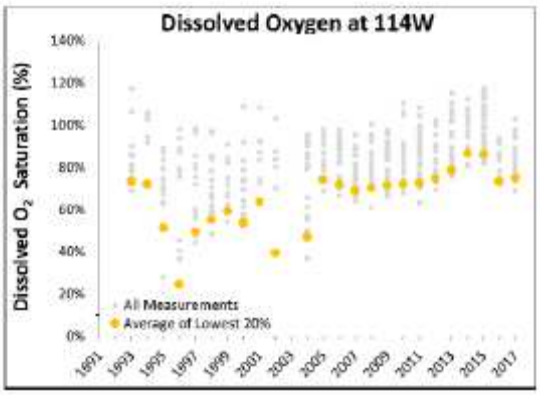
Attachment A. Dissolved Oxygen Saturation Graphics

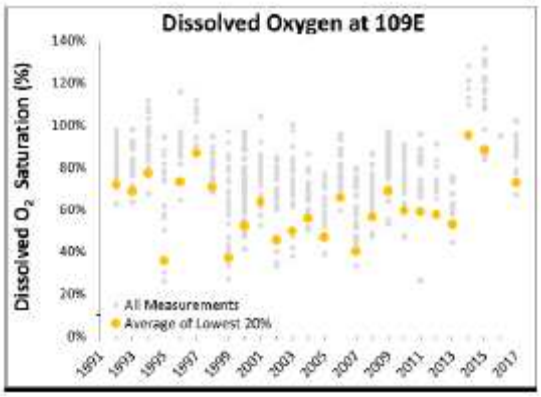


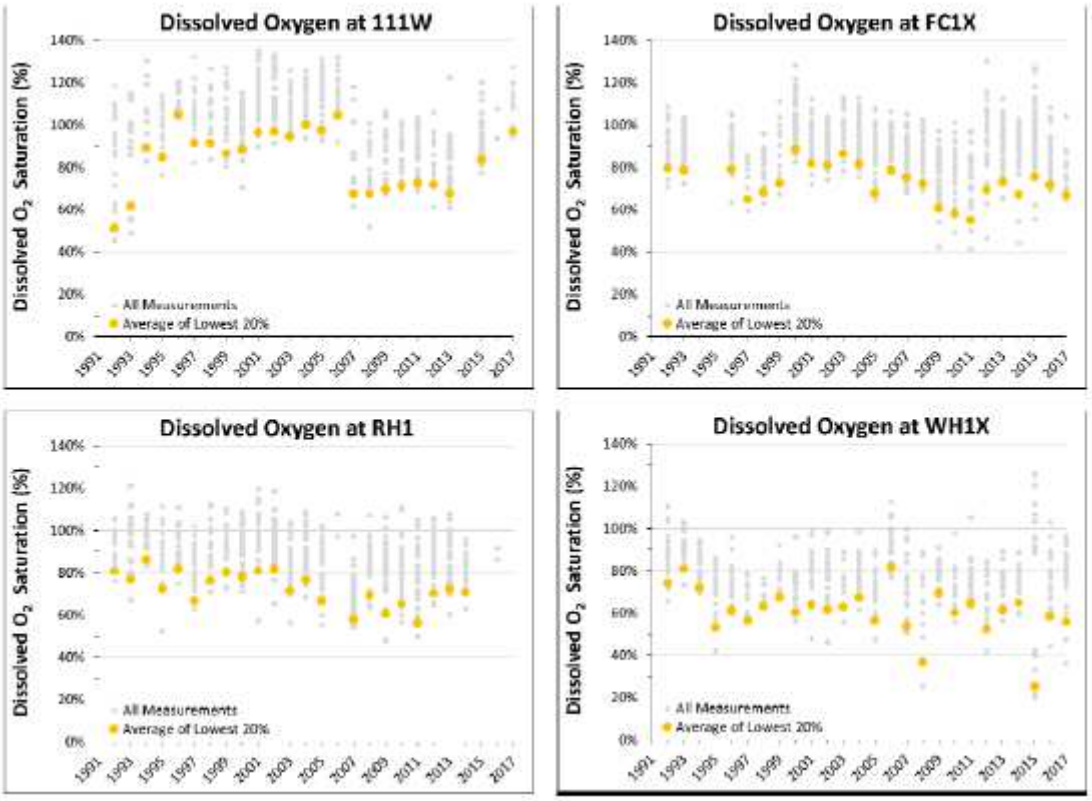






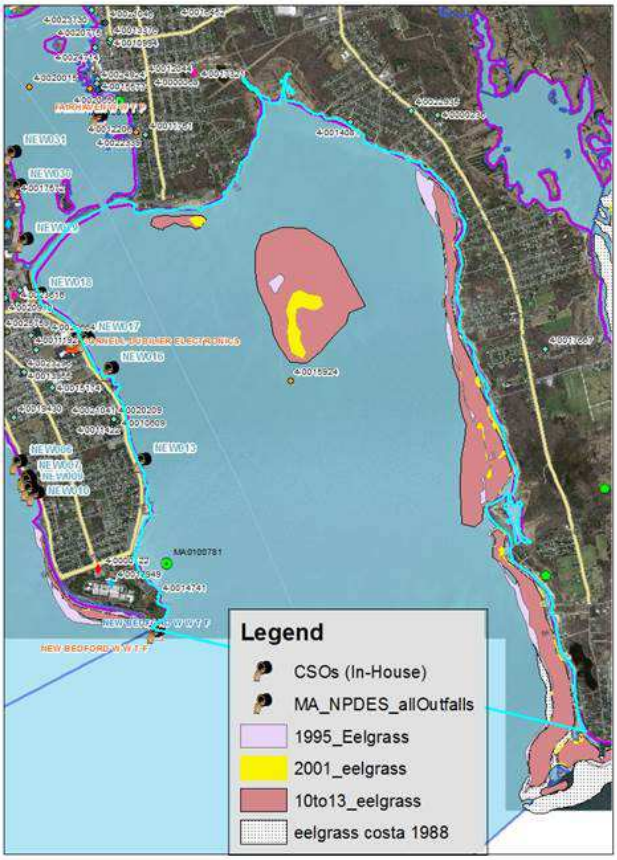






MassDEP response: The following responses are provided to the BBC's comments on individual assessment units.

- Outer New Bedford Harbor (MA95-63). When completing the most recent assessment of the Buzzards Bay coastal drainage system, MassDEP concluded that Outer New Bedford Harbor (MA95-63) supports the Aquatic Life Use based primarily on data from its eelgrass monitoring program and EPA's long-term harbor monitoring program. When assessing the Aquatic Life Use, MassDEP relies on the use of biological response indicators that integrate the exposure effects of pollutants such as nitrogen and other conditions over time and provide a direct measurement of the status of individual communities. The impairments "Estuarine Bioassessments", "Nitrogen, Total" and "Dissolved Oxygen" were added to this segment during the 2010 reporting cycle, but organic enrichment had been identified as an impairment of Outer New Bedford Harbor as far back as the original 303(d) list in 1992. Mapping efforts in 1995 indicated that the spatial distribution of eelgrass beds had declined along the eastern shore of this segment near Sconticut Neck and had been lost between the Fort Phoenix Beach State Reservation and Harbor View (Farmfield Lane) (see figure below). According to the eelgrass mapping 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). The increase in eelgrass bed habitat evident in Outer New Bedford Harbor between 1995 and 2010-2013 is indicative of typically good water quality conditions.



EPA calculated the Environmental Monitoring and Assessment Program's (EMAP) benthic index for benthic infauna data collected as part of its long-term monitoring program for New Bedford Harbor. Index values for EPA's outer harbor stations are almost all positive for every study year, which is indicative of good benthic conditions. (See "New Bedford Harbor (NHB) Long Term Monitoring Program: Comparative analysis 2014 LTM collection" by Dr. Barbara Bergen, EPA Atlantic Ecology Division, National Health and Environmental Effect Laboratory, Narragansett, RI, September, 2015). Based on the sensitive biological indicators eelgrass and benthic infauna, water quality conditions were presumed to be good and "Estuarine Bioassessments", "Nitrogen, Total" and "Dissolved Oxygen" were removed as causes of impairment from the proposed 2016 303(d) list. It should also be noted that an upgrade to the New Bedford WWTP from primary to secondary treatment was completed in August/September, 1996. The discharge is now located 3,000 ft. offshore and outside of the Outer New Bedford Harbor assessment unit.

In their comment letter the BBC stated that the delisting of Outer New Bedford Harbor was inappropriate and that their data supported its continued 303(d) listing. The BBC provided monitoring data in support of this comment, separately, through MassDEP's data portal for external data submittals, and these data were reviewed in order to determine whether there was sufficient evidence to overturn MassDEP's decision to delist the above mentioned impairments from MA95-63. BBC monitored five sites in the Outer New Bedford Harbor assessment unit between 2006 and 2016 (see figure below). It should be noted that all of these sites were sampled either from a boat ramp or pier, or from a boat just off shore. This raises some questions pertaining to the representativeness of these sampling sites within the context of the water quality of the assessment unit in its entirety. For example, stations NB3, NB3A, NB5 and NB6 are located in the vicinity of CSOs, and water quality at NB5 and NB6 is likely influenced by the proximity of these sampling sites to the inner New Bedford Harbor. Open water sampling locations are generally preferred over

nearshore/dock locations and none of the BBC's stations are situated in open water or in proximity to the eel grass expansion areas. Nonetheless, MassDEP summarized and considered the BBC's data as described below.

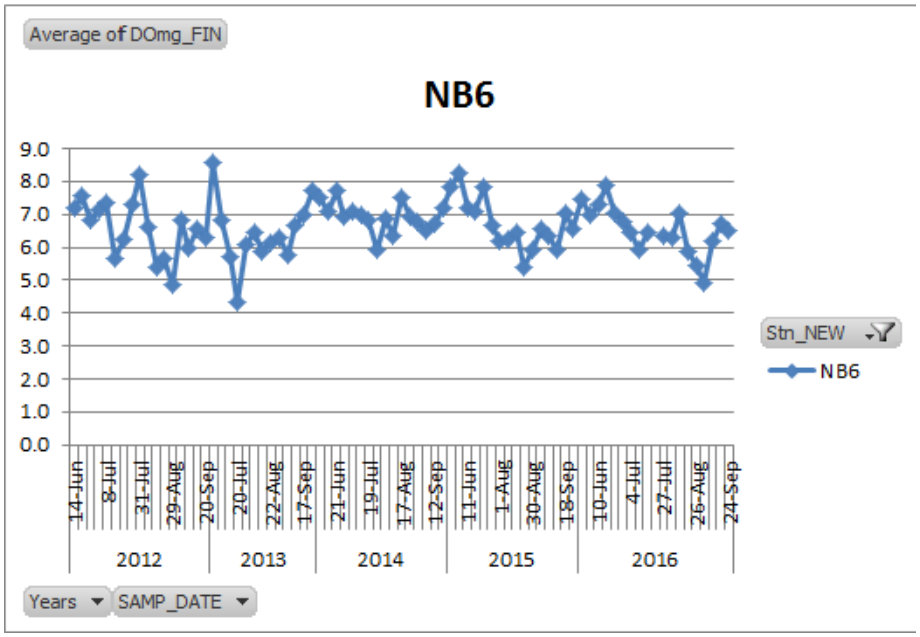
BBC's submitted, through MassDEP's data portal, total nitrogen, dissolved oxygen (DO) and chlorophyll data collected from multiple sites during the period 2006 - 2016 (see above map). General guidance pertaining to the use of these indicators for assessing waters pursuant to sections 305(b) and 303(d) of the CWA is provided in MassDEP's 2016 Consolidated Assessment and Listing Methodology ("CALM") document. Because there are no numerical water quality standards for many constituents in water, MassDEP relies on general guidelines obtained from various sources, such as criteria documents, literature values, etc. For example, threshold values above which risk of impairment exists for total nitrogen (<0.4 mg/L) and chlorophyll (> 10 mg/L) suggested by the Massachusetts Estuaries Project (MEP) are included in the CALM to provide some context for reviewing estuarine water quality data, but they are not water quality standards, and are not intended to be strictly applied when making use assessments. Furthermore, as explained in the CALM document, response indicators carry more weight than individual chemical variables. Consistent with general guidance provided in the CALM document,

MassDEP focused its review on the BBC's data collected within the last five to six years, as they were considered more representative of current conditions.

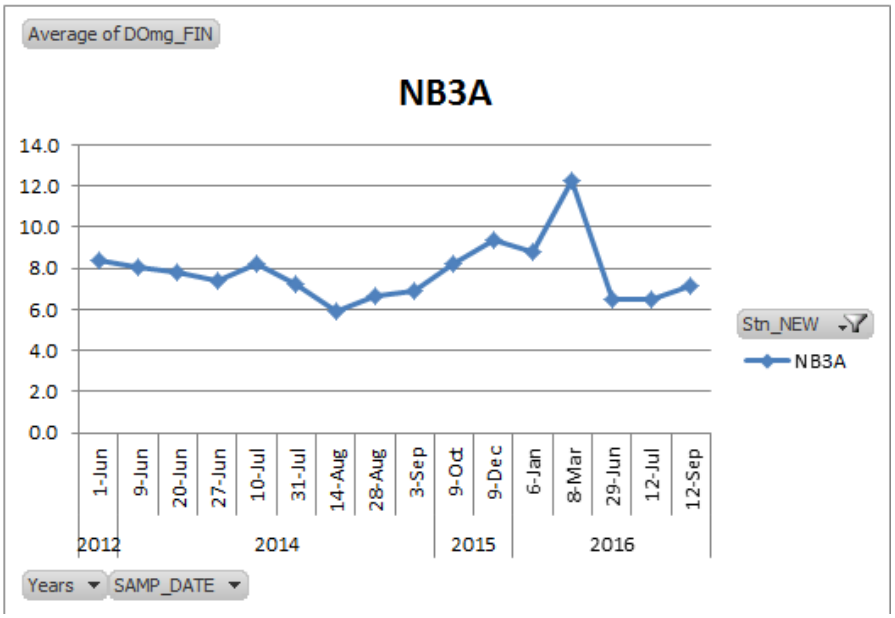
Dissolved Oxygen: The DO data obtained by the BBC from stations NB6 and NB3A during the last five years (2012 - 2016) suggest that DO concentrations are generally acceptable in Outer New Bedford Harbor, but approximately 21% of the DO measurements at Station NB6 were below the applicable standard (6.0 mg/L). DO levels were better at Station NB3A, where only one of the 16 total DO measurements was below 6.0 mg/L during the same period of record. DO data from both sites are summarized in the figures below. Although the weight-of-evidence (i.e., more emphasis on biological response indicators) would suggest that the aquatic life in this segment may not be impaired, the observed violations of the DO standard in the BBC data from the NB6 location indicate that it may be prudent to keep DO listed as a cause of impairment.. As a result of MassDEP's reevaluation, this segment will retain the impairment "Dissolved Oxygen" and Outer New Bedford Harbor will remain on the 303(d) list (Category 5).

It should be noted that MassDEP is currently investigating changes to the state water quality standards for marine DO, including allowable durations and frequencies of exceedances. If more intensive DO data collection (e.g., continuous data loggers) were to occur in Outer New Bedford Harbor, it would better capture the max/min magnitudes, and the frequency and duration of exceedances of the DO standard. Notwithstanding potential changes to the marine DO standards, the discrete BBC sampling data show violations of the current DO standard.

Station	Count DO measurem	Minimum DO (mg/L	Average DO (mg/L)	Count of DO <5mg/L	Count of DO <6mg/L	% Below 5 mg/L	% Below 6 mg/L
NB6	80	4.4	6.6	3	17	4%	21%



Station	Count DO measurem	Minimum DO (mg/L	Average DO (mg/L)	Count of DO <5mg/L	Count of DO <6mg/L	% Below 5 mg/L	% Below 6 mg/L
NB3A	16	5.9	7.8	0	1	0%	6%



Total Nitrogen: MassDEP reviewed BBC's total nitrogen data obtained from five sampling stations in Outer New Bedford Harbor during 2011-2016 (see table below). A numerical standard for nitrogen has not been promulgated in the Massachusetts' surface water quality standards, nor has a site-specific target nitrogen concentration been derived for outer New Bedford Harbor as part of the Massachusetts Estuaries Project (MEP). However, a total nitrogen threshold has been set at 0.50 mg/L by the MEP for New Bedford Inner Harbor (MA95-42). Examination of the BBC total nitrogen data reveals that, while not directly applicable to Outer New Bedford Harbor, the 0.5 mg/L target value developed for the adjacent inner harbor was consistently exceeded at stations NB3, NB5 and NB6 over the past six years. Total nitrogen concentrations observed at BBC sampling sites NB3A and PT1 were found to be at acceptable levels. The variable nitrogen concentrations exhibited among the BBC's sampling sites may be further evidence that some sites may not be representative of the overall condition of Outer New Bedford harbor. Nonetheless, the nitrogen data from several sites suggest that it is premature to remove nitrogen as a stressor from this assessment unit at this time. Therefore, the impairment code "Nitrogen, Total" will be restored to Outer New Bedford Harbor in the final 2016 integrated list.

BBC Total Nitrogen Data from Five Sampling Sites in Outer New Bedford Harbor (2011-2016)

Station	Year	Sample count	Min	Max	Mean
NB3	2011	3	0.28	0.33	0.30
	2012	4	0.49	0.88	0.63
	2013	3	0.42	0.94	0.70
	2014	2	0.45	0.58	0.52
	2015	3	0.26	0.64	0.44
	2016	3	0.38	0.45	0.41
NB5	2011	2	0.37	0.65	0.51
	2012	4	0.51	0.98	0.70

	2013	3	0.48	1.17	0.75
	2014	3	0.40	0.98	0.68
	2015	3	0.29	0.71	0.49
	2016	3	0.48	1.35	0.84
NB6	2011	1	0.44	0.44	0.44
	2014	1	1.04	1.04	1.04
	2015	3	0.25	0.88	0.53
	2016	3	0.35	0.64	0.53
NB3A	2015	7	0.25	0.50	0.34
	2016	8	0.28	0.40	0.32
PT1	2011	1	0.36	0.36	0.36
	2015	1	0.26	0.26	0.26
	2016	1	0.48	0.48	0.48

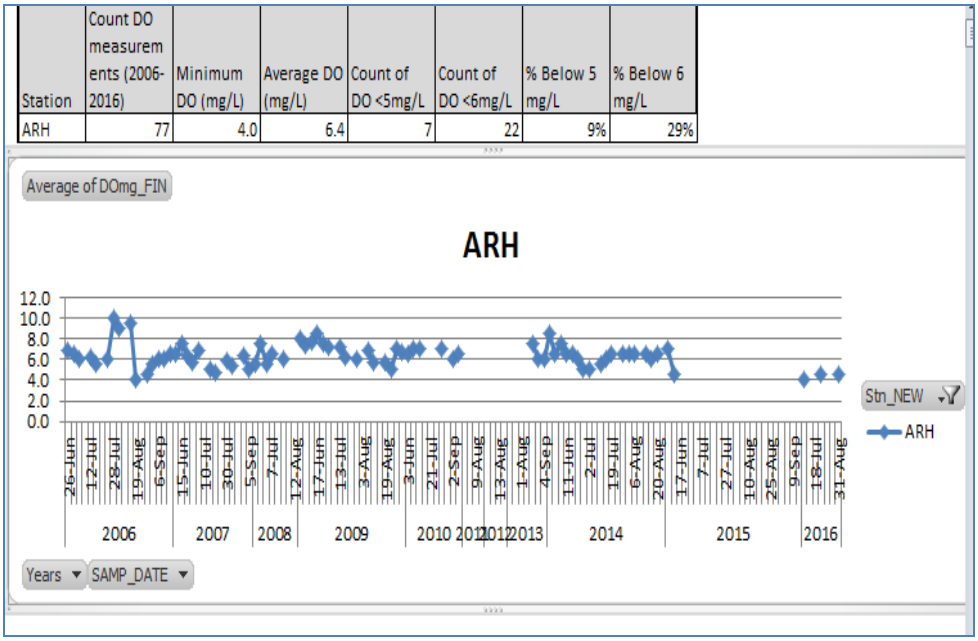
Chlorophyll: Although "Chlorophyll-a" was not previously listed as a cause of impairment to the New Bedford Outer Harbor, MassDEP reviewed the BBC's chlorophyll data submittal to determine whether they provide corroborating evidence for the BBC's comment that this waterbody is impaired by nutrients and should remain listed for "Total Nitrogen". The BBC submitted separate chlorophyll and phaeophytin data through MassDEP's data portal. However, when graphically displaying the phytoplankton pigment data in their comment letter, the BBC combined both chlorophyll a and phaeophytin values and depicted the total as "Algal Pigments". Phaeophytin is a compound formed by the degradation of chlorophyll and, as such, it is indicative of dead algae biomass. Therefore, it is inappropriate to compare "Algal Pigments" to guidance threshold values for chlorophyll a. MassDEP's review of the BBC's algal pigment data revealed that, in many instances, the phaeophytin concentrations represented a significant portion of the total algal pigment levels. MassDEP calculated annual mean chlorophyll concentrations for all BBC data collected at five sites (NB3, NB3A, NB5, NB6 and PT1) from 2011 – 2016 and compared these values to the CALM threshold value (> 10 mg/L). Individual samples exceeded the threshold value sporadically over the six years at all but one sampling station; however, the seasonal average chlorophyll levels were only exceeded in one year (2016) at two sites (NB5 and NB6). So while the chlorophyll data are not inconsistent with the decision to retain "Total Nitrogen" as a stressor to this AU, MassDEP does not consider this to be sufficient evidence to add "Chlorophyll-a" as a separate cause of impairment.

In summary, MassDEP typically relies on the use of biological response indicators that integrate the exposure effects of pollutants and, when completing the most recent assessment of the Buzzards Bay coastal drainage system, it was concluded that Outer New Bedford Harbor (MA95-63) supports the Aquatic Life Use based primarily on data from its eelgrass monitoring program and EPA's long-term harbor monitoring program. After reviewing the BBC's comment letter and accompanying data submittal, however, MassDEP acknowledges that the multiple lines of evidence available for determining the Aquatic Life Use support status of Outer New Bedford Harbor are not entirely consistent and, when viewed separately, can lead to different conclusions. Furthermore, entire waterbodies and/or individual impairments should not be removed from the 303(d) list when differing lines of evidence lead to uncertainty in the assessment and listing decision process. Therefore, while MassDEP contends that the Aquatic Life use is usually supported in Outer New Bedford Harbor, the DO depletion and elevated nitrogen concentrations exhibited in the BBC's monitoring data suggest that the removal of these two impairments from the 303(d) list is not warranted at this time. The removal of the impairment "Estuarine Bioassessments" is defensible because eelgrass coverage has increased approximately 130% between 2010 and 1995, and recent EPA biomonitoring has characterized the benthic community as healthy. Outer New Bedford Harbor will be returned to the 2016 303(d) list as impaired by "Dissolved Oxygen" and "Nitrogen, Total" and will be the subject in the future of a detailed analysis under the Massachusetts Estuaries Program.

- Acushnet River (MA95-32). As part of the aquatic life use assessment of the Buzzards Bay drainages, MassDEP removed the stressor "Oxygen, Dissolved" from the Acushnet River segment MA95-32. While the aquatic life use was still not supported because the aquatic macroinvertebrate community was found to be impaired, continuous dissolved oxygen (DO) measurements recorded by MassDEP in 2005 from a site just upstream of Tarkiln Hill Road/Main Street in New Bedford/Acushnet were all above the water quality standard of 5 mg/L. In their comment on the Proposed 2016 IR, the BBC disagreed with MassDEP's decision to delist "Oxygen, Dissolved" from this assessment unit, and submitted their own DO data in support of their request to retain the "Oxygen, Dissolved" impairment of this segment.

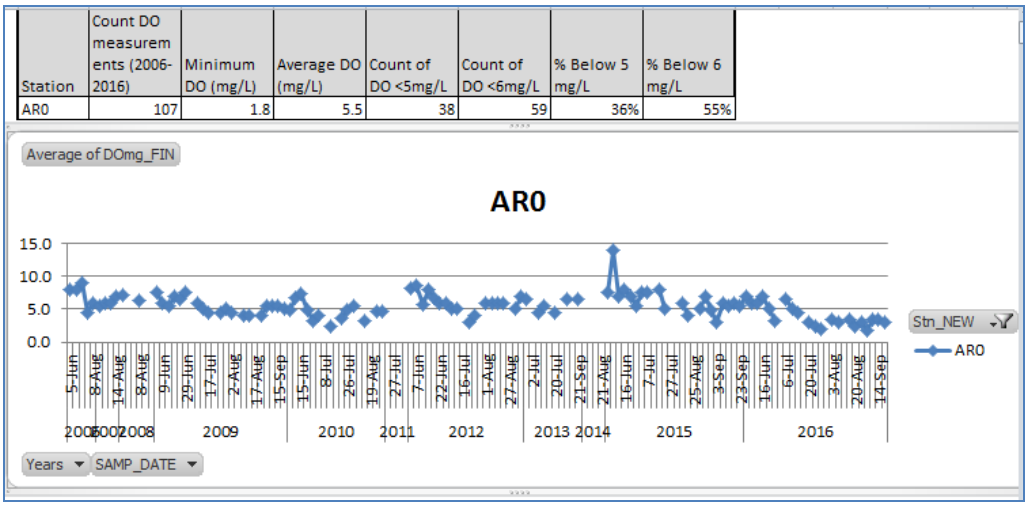
  BBC sampling was conducted at two stations: ARH at the Hamlin Street crossing in Acushnet and AR0 (behind the Mill Pond dam site), also in Acushnet. BBC measured dissolved oxygen on 77 occasions between 2006 and 2016 at station ARH. Over this time period the minimum dissolved oxygen was 4.0 mg/L and the average was 6.4 mg/L. Seven of 77 measurements were below 5.0 mg/L (~9%). At least three of the seven low measurements were taken during the severe drought in the summer of 2016. BBC's DO data for station ARH are summarized below.

Station	Count DO measurements (2006-2016)	Minimum DO (mg/L)	Average DO (mg/L)	Count of DO <5mg/L	Count of DO <6mg/L	% Below 5 mg/L	% Below 6 mg/L
ARH	77	4.0	6.4	7	22	9%	29%



BBC also sampled the Acushnet River further downstream along the shoreline in the slightly impounded area upstream from the former Mill Pond Dam (Station AR0). DO measurements taken at this location (n=107) between 2006 and 2016 averaged 5.5 mg/L and 38 of the 107 measurements were less than 5.0 mg/L (36%). The lowest measurements were recorded during the extreme drought conditions that occurred during the summer of 2016 (minimum DO of 1.8 mg/L recorded on 8/31/2016), which also corresponded with the fish kill in September 2016 referred to in BBC's comment. It is likely that the extreme drought resulted in low flow and stagnant conditions at AR0, resulting in the low DO. Between July 20th and September 18th DO was measured on 12 occasions and no values exceeded 3.0 mg/L; however, this sampling location in the former impounded reach was not necessarily representative of conditions in the main channel of the river. BBC's DO data for Station AR0 are summarized below.

Station	Count DO measurements (2006-2016)	Minimum DO (mg/L)	Average DO (mg/L)	Count of DO <5mg/L	Count of DO <6mg/L	% Below 5 mg/L	% Below 6 mg/L
AR0	107	1.8	5.5	38	59	36%	55%



In summary, BBC reported infrequent occurrences of low dissolved oxygen at the upstream end of this segment at station ARH between 2006 and 2016. Downstream, at station AR0, DO concentrations were typically lower than at ARH, although the sampling station location was not considered ideal. Nonetheless, BBC's report of the September, 2016 fish kill in the vicinity of the Sawmill property, as well as an earlier report by the MA Division of Marine Fisheries of a fish kill in the lower Acushnet River the month before, are indicative of unfavorable water quality conditions caused, or exacerbated by, low DO levels. The above evidence, combined with the impaired aquatic macroinvertebrate community, suggests that MassDEP's decision to remove low DO as a cause of impairment from this segment of the Acushnet River is inappropriate at this time. Therefore, the cause code "Oxygen, Dissolved" will remain as a listed impairment for assessment unit MA95-32 in the final version of the 2016 integrated report.

- The Westport River (MA95-54) was originally listed for nutrients (i.e., nitrogen) in 2002 at BBC's request, based on a preliminary assessment by the staff of the SMAST Coastal Systems Group who assisted the BBC with the review and interpretation of available data. At that time, it was recommended that the Westport River System be considered for 303(d) listing. This decision was documented in *Technical Memorandum Buzzards Bay 303(d) List-Embayment Analysis* (Howes and Samimy 2003). Subsequently, a more detailed analysis of this system was performed as part of the MEP Project and documented in *Massachusetts Estuaries Project Linked Watershed - Embayment Approach to Determine Critical Nitrogen Loading Thresholds for the Westport River Embayment System, Town of Westport, Massachusetts (Howes et al. 2013).* The results of this analysis indicated that, while the west and east branches of the Westport River were impaired, the Westport River (referred to by SMAST as either "Westport River Estuary" or "Westport Harbor") was assessed as healthy: "Westport Harbor has high water quality and stable eelgrass beds and sandy oxidized sediments with a low organic matter content". Furthermore, "The benthic animal communities throughout most of the Westport River Estuary (except upper to mid East Branch) indicated generally healthy infaunal habitat, consistent with the tidally averaged nitrogen levels and levels of oxygen depletion which were in line with the ecosystem types represented." Finally, SMAST acknowledged elevated total nitrogen concentrations, consistent with values reported by the BBC. However, SMAST concluded that "These TN levels supportive of eelgrass habitat in the Westport River Estuary are higher than generally found in high quality eelgrass habitat such as within deeper systems (>2 m)…however, in shallow systems like most of the areas that support eelgrass in the Westport River Estuary (with eelgrass generally at <1 m depth), eelgrass beds are sustainable at higher TN (higher chlorophyll-*a*) levels than in deeper waters…". MassDEP contends that all of the evidence cited above supports the decision to delist "Nitrogen, Total" and "Estuarine Bioassessments" from the Westport River. The assessment unit MA95-54 remains in Category 4A, however, due to the impairment "Fecal Coliform" which is covered by an EPA-approved TMDL.

- The Wild Harbor River (MA95-68) was originally listed in 2008 as impaired by "Nutrient/Eutrophication Biological Indicators" in response to the BBC's request during the public review and comment process. Although SMAST concluded, in 2003, that there was insufficient evidence to place this river on the 303(d) list, the BBC submitted water quality data and photographic evidence of abundant algal growth that suggested that nutrient enrichment may have been contributing to the impairment of the aquatic life use in the Wild Harbor River. In 2013, SMAST published *Massachusetts Estuaries Project Linked Watershed - Embayment Model to Determine Critical Nitrogen Loading Thresholds for the Wild Harbor Embayment System, Town of Falmouth, Massachusetts* which concluded that Wild Harbor River is not impaired by nitrogen loading. SMAST reported "The Wild Harbor River is functioning as a non-nitrogen impaired salt marsh system with productive benthic communities typical of Cape Cod marsh creeks". There is no water quality standard for total nitrogen, and MassDEP would not make an assessment decision based solely on nitrogen concentration. Rather, MassDEP determined that the Wild Harbor River was not impaired from SMAST's review of response indicators, such as dissolved oxygen, chlorophyll *a*, and benthic infauna and, therefore, removed "Nutrient/Eutrophication Biological Indicators" from this water body during the 2016 assessment and listing cycle.

  The BBC commented that the restoration of Wild Harbor (MA95-20) requires reductions in nitrogen loadings to the Wild Harbor River watershed and that those reductions will help to achieve the target nitrogen concentration established by the MEP TMDL for Wild Harbor. They acknowledged that recent data suggest that nitrogen concentrations in Wild Harbor River may be low enough to achieve the threshold value set for the Wild Harbor sentinel station, but suggested that it is premature to remove the Wild Harbor River from the 303(d) list. Instead, they requested that MassDEP maintain Wild Harbor River on the 303(d) list and continue to review nitrogen data for two more years to confirm that nitrogen concentrations remain at acceptable levels. MassDEP has concluded that this is a reasonable request, and will return Wild Harbor River (MA95-68) to the 303(d) list (Category 5) with the associated cause code "Nutrient/Eutrophication Biological Indicators".

- The Nasketucket River (MA95-67) was originally listed for nutrients (i.e., nitrogen) in 2004 at BBC's request. At that time, it was initially recommended in *Technical Memorandum Buzzards Bay 303(d) List-Embayment Analysis* (Howes and Samimy 2003) that the Nasketucket Bay System be considered for 303(d) listing. A more recent, detailed analysis of the entire system was performed as part of the MEP Project and documented in *Massachusetts Estuaries Project Linked Watershed - Embayment Approach for Determination of Critical Nitrogen Loading Thresholds for the Nasketucket Bay Embayment System, Town of Fairhaven, Massachusetts* (Howes et al. 2013) This report concluded that benthic infaunal communities within each of the major tributary basins to Nasketucket Bay, including Little Bay just downstream of the Nasketucket River, were generally indicative of high quality habitat (Little Bay has not historically supported eelgrass coverage), and that these conditions are largely due to the well-flushed basin characteristics of the Nasketucket embayment system. The report also concluded that within the tidal channel of the mouth of the Nasketucket River and its tidal wetlands (downstream of segment MA95-67) a "different benthic habitat was present, as seen in the dominance of organisms typical of salt marshes on Cape Cod, and the habitat was not impaired", but that "the appearance of stress indicator species at some sites (e.g. capitellids) and dominance of polychaetes at others, coupled with periodic oxygen depletion, suggest that Little Bay is near or at its habitat threshold related to nitrogen enrichment". The report also noted DO excursions below 5 mg/l downstream of NR1 at the head of Little Bay, likely due to nutrient transport from the river during ebb tides. To protect against nutrient-related impairments in the Little Bay/Nasketucket Bay system, the MEP report set a TN threshold for the Nasketucket River of 0.88 mg/l at station NR1. BBC data for mean TN at station NR1 indicate that the threshold value has been exceeded as recently as 2014 and from 2005-2008, although mean TN data appear to be trending in the right direction based on the two most recent years of data (i.e., 2015 and 2016).

BBC has stated that the Nasketucket Bay system is “receiving the maximum amount of nitrogen it can handle while remaining healthy”, and that it is “premature to remove Nasketucket River from the 303(d) List.” Based on some degree of uncertainty regarding the variability in TN concentrations for MA95-67, MassDEP agrees that it may be premature to delist the river segment for “Nitrogen, Total” until additional data are available to verify that TN concentrations are consistently and significantly below the MEP threshold value for the Nasketucket River. The 2016 Integrated Report will be revised to retain the “Nitrogen, Total” cause of impairment for this segment.

- The Little River (MA95-66) was originally listed for nutrients (i.e., nitrogen) in 2004 at BBC’s request. Since then, the Little River was studied, along with Slocums River, as one of the initial 70 embayments included in the Massachusetts Estuaries Project (MEP) for which MassDEP partnered with SMAST to assess and, if necessary, complete TMDLs. The study report was first completed in 2007 (2000-2006) and then finalized in 2012 (*Massachusetts Estuaries Project Linked Watershed - Embayment Model to Determine Critical Nitrogen Loading Thresholds for the Slocum’s and Little River Estuaries, Dartmouth, Massachusetts* (Howes et al. 2012). . At the time of the publication of the MEP report SMAST concluded that the Little River Estuary was functioning primarily as a salt marsh dominated tidal basin that did not represent potential eelgrass habitat. Natural salt marshes, like the Little River, have extensive emergent vegetated areas and tidal creeks which have virtually complete flushing on each tide. The result is a high assimilative capacity for nitrogen, particularly when compared to shallow coastal embayments. The Little River estuary exhibited low levels of nitrogen enrichment (TN<0.4 mg/L), low to moderate chlorophyll-a concentrations, and rare occurrences of dissolved oxygen depletion. The infaunal communities in the Little River system were found to be consistent with a wetland dominated, organic matter enriched estuarine sediment, with moderate to high numbers of individuals and species and generally moderate to high diversity and evenness. The presence of high quality infaunal habitat is consistent with the generally low total nitrogen and chlorophyll-a levels. The excursions of dissolved oxygen concentrations observed are considered a natural condition typical of salt marshes, and not caused by cultural enrichment. Finally, accumulations of drift macroalgae were not typical of the Little River basin. Based on the above evidence, MassDEP determined that the aquatic life use was supported in the Little River and removed the stressor “Nitrogen, Total” from the proposed 2016 IR.

  BBC is requesting that the Little River remain on the 303(d) List of Impaired Waters, in part, due to occasional exceedances of the 0.5 mg/L target total nitrogen threshold established for sentinel station SRT-15 in the Little River by the MEP TMDL analysis. BBC provided monitoring data in support of this comment through MassDEP’s data portal for external data submittals, and these data were reviewed in order to determine whether there was sufficient evidence to overturn MassDEP’s decision to delist MA95-66. MassDEP places more weight on biological response indicators of nitrogen enrichment than on water-column nitrogen concentrations when making aquatic life use-support decisions for coastal waters. Therefore, MassDEP focused on the BBC’s dissolved oxygen and chlorophyll *a* data collected from 2006 – 2016. The BBC submitted data from four sampling stations in the Little River (see photo below) but MassDEP has concerns about the representativeness of the data from Station SR2, which is a shoreline site and remote from the main flow of the river.

The BBC's dissolved oxygen and chlorophyll data from the three more representative sampling stations are summarized in the table below.

Summary of BBC dissolved oxygen (DO) and chlorophyll *a* (Chl a) data obtained from the three most representative sampling sites in the Little River during the period 2006 – 2016. Note that Station SR2B corresponds to the MEP-designated sentinel station SRT-15.

Station	No. of DO Readings	Average DO (mg/L)	No. of DO <5mg/L	% of DO <5mg/L	No. of Chl a samples	Average Chl a (ug/L)	No. Chl a > 5 ug/L	No. Chl a > 10 ug/L
SR2A	128	6.0	7	5.5	--	--	--	--
SR2B	--	--	--	--	4	6.31	2	1
SR3	222	6.0	28	13	43	6.35	27	3

The average chlorophyll concentrations between 2006 and 2016 were 6.31 ug/L and 6.35 ug/L (below the threshold of 10 ug/L) at stations SR2B and SR3, respectively, and dissolved oxygen levels at SR2A and SR3 were typical for a salt marsh dominated tidal basin, as concluded during the MEP analysis. From the review of the BBC's data, MassDEP does not find compelling new evidence to suggest that the Little River segment is impaired by nitrogen.

In summary, the water and habitat quality of the Little River was found by the MEP assessment process to be "healthy" and no reductions of nitrogen loading were recommended for this system. Based on this evidence, MassDEP determined that the aquatic life use was supported in the Little River and removed the stressor "Nitrogen, Total". Salt marshes are considered natural systems and some excursions of dissolved oxygen to concentrations below standards are considered to be a natural condition. A draft Total Nitrogen TMDL analysis for Slocums and Little rivers was published in September 20, 2018. While the report calls for specific reductions in nitrogen to the Slocums River, it also includes a protective or pollution prevention TMDL for the Little River that

recommends that nitrogen loadings be maintained as closely as possible to present conditions in order to prevent impairment in the future. The final *Slocums and Little Rivers Embayment System Total Maximum Daily Loads for Total Nitrogen* report has been submitted to EPA for review and approval.

- Fiddler's Cove (MA95-79), Rands Harbor (MA95-78) and Wild Harbor (MA95-20). BBC requested that the cause "Nitrogen (Total)" be added to three water bodies that are already on the 303(d) list for nutrient-related impairments. These are Fiddler's Cove (MA95-79), Rands Harbor (MA95-78) and Wild Harbor (MA95-20). Because there is currently no numerical standard for nitrogen in the Massachusetts Surface Water Quality Standards, MassDEP usually does not include nitrogen concentration as a cause of impairment on the 303(d) List. Instead, the MassDEP relies, for assessment and listing purposes, on a number of indicators that represent biological responses to excessive nutrient enrichment. For example, the cause "Estuarine Bioassessments" is applied in cases where impairment from nutrient enrichment is indicated by the loss of sea grasses (e.g., eelgrass) over time. Furthermore, such nutrient-related "response indicators" as DO depletion and supersaturation, elevated chlorophyll concentrations and noxious algae blooms are all encompassed in the cause code "Nutrient/Eutrophication Biological Indicators", which, when appearing on the 303(d) List, does imply that a TMDL for nitrogen is needed.

  The development of site-specific critical total nitrogen (TN) thresholds for coastal embayments is an essential element of the Massachusetts Estuaries Project (MEP) and on February 13, 2018 EPA approved TMDLs for TN for all three of these embayments, which was long after the release of the 2016 integrated list for public review and comment. The TMDLs establish target nitrogen concentrations that need to be achieved at designated sentinel stations in order to restore water quality and biological condition in the embayments. Model outputs also identify target TN concentrations for additional sites within the assessment unit that would need to be achieved to meet the threshold at the sentinel site. The final TMDL for Fiddler's Cove and Rands Harbor set target concentrations at 0.50 mg/L TN, while a threshold of 0.35 mg/L TN was established by the Wild Harbor TMDL. Target TN concentrations derived through the TMDL process were compared to BBC TN data to determine the appropriateness of adding "Nitrogen (Total)" as a cause of impairment to each embayment.

  While the BBC did not monitor the sentinel station in Fiddler's Cove, they submitted TN data collected from a site (FC1) for which a target concentration of 0.37 mg/L was established by the TMDL modeling effort. These data are summarized in the following table.

Summary of BBC total nitrogen data collected at Fiddler's Cove Site FC1 between 2006 and 2016. Exceedances of the target concentration established by the TMDL (0.37 mg/L) are indicated in bold.

Year	Count TN	Mean TN (mg/L)
2006	4	**0.39**
2007	4	**0.44**
2008	4	**0.44**
2009	4	0.32
2010	4	**0.41**
2011	4	**0.44**
2012	4	**0.52**
2013	2	**0.38**
2015	3	0.32
2016	4	**0.40**

Although Fiddler's Cove was already listed for "Estuarine Bioassessments", "Nutrient/Eutrophication Biological Indicators" and "Oxygen, Dissolved", BBC's data provide

evidence that the addition of “Nitrogen, Total” as a cause is also warranted, and this impairment will be added to assessment unit MA95-79 in the final version of the 2016 integrated report.

The BBC sampled Rands Harbor at a station (RH1) near the target sentinel station, as identified by the TMDL project. The target TN concentration to restore benthic habitat at this location is 0.50 mg/L. BBC sampled RH1 thirty-eight times between 2006 and 2016 and reported an average TN value of 0.54 mg/L. This segment was listed for “Estuarine Bioassessments” and “Nutrient/Eutrophication Biological Indicators”. These impairments are all due to nitrogen loading. From a review of the BBC data, the addition of “Nitrogen, Total” as a cause is justified, and this impairment will be added to assessment unit MA95-78 in the final version of the 2016 integrated report.

The BBC sampled Wild Harbor at a station (WH1) that corresponds with the target sentinel station, as identified by the MEP project. The target concentration needed to restore eelgrass at this location is 0.35 mg/L TN. BBC sampled WH1 on forty occasions between 2006 and 2016 and reported an average TN concentration of 0.46 mg/L. This segment was listed for “Estuarine Bioassessments” and “Nutrient/Eutrophication Biological Indicators”. These impairments are all due to nitrogen loading. From a review of the BBC data, the addition of “Nitrogen, Total” as a cause is justified, and this impairment will be added to assessment unit MA95-20 in the final version of the 2016 integrated report.

Appendix

Notice of Availability: Proposed Massachusetts Year 2016 Integrated List of Waters

MassDEP has available for public review and comment the ***Proposed Massachusetts Year 2016 Integrated List of Waters*** ("Integrated List"), which represents the most recent update on the status of Massachusetts' waters. This report is submitted to the United States Environmental Protection Agency (EPA) every two years in fulfillment of the reporting requirements of sections 305(b) (Summary of Water Quality Report) and 303(d) (List of Impaired Waters) of the Clean Water Act (CWA).

Section 303(d) of the CWA and the implementing regulations at 40 CFR 130.7 require states to identify those waterbodies that are not expected to meet surface water quality standards after the implementation of technology-based controls and to prioritize and schedule them for the development of a total maximum daily load (TMDL). A TMDL establishes the maximum amount of a pollutant that may be introduced into a waterbody and still ensure attainment and maintenance of water quality standards. The development of the 303(d) List includes a public review and comment process, and the final version of the list must be formally approved by the EPA.

The 2016 "Integrated List" is available for review and comment on MassDEP's web site at https://www.mass.gov/total-maximum-daily-loads-tmdls. If you do not have access to the Internet, please contact MassDEP at (508) 767-2873.

Written comments on the 2016 "Integrated List" should be submitted no later than ***October 23, 2017*** to:

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MassDEP
Division of Watershed Management
Watershed Planning Program
8 New Bond Street
Worcester, MA 01606
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Data submittals in support of comments should be submitted through MassDEP's on-line data portal in accordance with the guidelines for ***"External Data Submittals to the Watershed Planning Program"*** which can be found at:

https://www.mass.gov/guides/external-data-submittals-to-the-watershed-planning-program.

NOTE: For those choosing to submit data in support of their comments to WQData.Submit@state.ma.us**,** please include **"Comments on 2016 Integrated List"** on the Subject line.