

Stormwater Management Program (SWMP)

Town of Boylston

221 Main Street MA 01505

EPA NPDES Permit Number MAR041095

This Stormwater Management Plan is based on the EPA's Template and is designed to be updated annually based on the progress of the Town's Stormwater Management Program. Tighe & Bond has added language and information and made minor adjustments to the template based on our best professional judgement. Page numbers have not been noted in the Table of Contents below because they will change annually.

FY 2019-2023 Small MS4 Permit 5-Year Workplan

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Town of Boylston
FY2019-2023 Small MS4 Permit 5-Year Workplan

A hardcopy version of this Workplan may be retained by the Town and contain the most up-to-date documentation of completed requirements

FY19 Permit Year 1 May 2018 - June 2019	FY20 Permit Year 2 July 2019 - June 2020	FY21 Permit Year 3 July 2020 - June 2021	FY22 Permit Year 4 July 2021 - June 2022	FY23 Permit Year 5 July 2022 - June 2023		
Reporting	Deadline	FY19 Permit Year 1	FY20 Permit Year 2	FY21 Permit Year 3	FY22 Permit Year 4	FY23 Permit Year 5
Notice of Intent	Oct. 1, 2018	<input checked="" type="checkbox"/>				
Annual Report	Annually on Sept 30		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Prepare Stormwater Management Plan	June 30, 2019 - update annually	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
MCM 1: Public Education	Deadline	FY19 Permit Year 1	FY20 Permit Year 2	FY21 Permit Year 3	FY22 Permit Year 4	FY23 Permit Year 5
MCM 1 Requirement: Message to residents on stormwater topics of significance.	Distribute two messages at least one year apart by June 30, 2023. Target to distribute in PY1 and PY3 per NOI.	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		
Impaired Waters/TMDL Requirement: Assabet River and Northern Blackstone Lakes Phosphorus TMDLs. Seasonal Message on stormwater topics of significance. Annual spring messages will encourage proper disposal of grass clippings and the use of slow release and phosphorus-free fertilizers. Annual summer messages will encourage proper pet waste management, noting applicable Town Bylaws where appropriate. Annual fall messages will encourage proper disposal of leaf litter.	Distribute three messages per year each year, one in the spring, summer and fall	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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MCM 1: Public Education (cont.)	Deadline	FY19 Permit Year 1	FY20 Permit Year 2	FY21 Permit Year 3	FY22 Permit Year 4	FY23 Permit Year 5
MCM 1 Requirement: Message to businesses, institutions and commercial facilities on stormwater topics of significance.	Distribute two messages at least one year apart by June 30, 2023. Target to distribute in PY2 and PY4 per NOI.		<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
MCM 1 Requirement: Message to developers and construction companies on stormwater topics of significance, including proper sediment and erosion control management practices.	Distribute two messages at least one year apart by June 30, 2023. Target to distribute in PY1 and PY3 per NOI.	<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>
MCM 1 Requirement: Message to industrial facilities on stormwater topics of significance, including proper maintenance of parking lot surfaces.	Distribute two messages at least one year apart by June 30, 2023. Target to distribute in PY2 and PY4 per NOI.		<input type="checkbox"/>		<input type="checkbox"/>	
MCM 2: Public Participation	Deadline	FY19 Permit Year 1	FY20 Permit Year 2	FY21 Permit Year 3	FY22 Permit Year 4	FY23 Permit Year 5
Comply with State Public Notice Requirement (MGL Ch 30A, Sections 18-25) for all public involvement and participation	Ongoing	<input checked="" type="checkbox"/>				
Provide an opportunity to participate in SWMP review and implementation	Annually by June 30	<input checked="" type="checkbox"/>				
Make Annual reports and SWMP available to the public in person and online	Ongoing	<input checked="" type="checkbox"/>				
Annual Stormwater Committee Meetings	As Needed	<input checked="" type="checkbox"/>				

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MCM 3: Illicit Discharge Detection and Elimination	Deadline	FY19 Permit Year 1	FY20 Permit Year 2	FY21 Permit Year 3	FY22 Permit Year 4	FY23 Permit Year 5
Adopt bylaw prohibiting illicit discharges and authorizing investigation, repair, and enforcement	Due on May 1, 2008 as part of 2003 Permit	<input checked="" type="checkbox"/>				
Identify all known SSOs that occurred during last five years	June 30, 2019 and update annually thereafter	N/A	N/A	N/A	N/A	N/A
Notify EPA / DEP of SSO orally in 24hrs and in writing in 5 days	Ongoing	N/A	N/A	N/A	N/A	N/A
Notify responsible party immediately upon identification of illicit discharge or illegal connection	Ongoing	<input checked="" type="checkbox"/>				
Eliminate known illicit or set expeditious schedule in 60 days	Ongoing	<input checked="" type="checkbox"/>				
Outfall/interconnection inventory and ranking	June 30, 2019 and update annually thereafter	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	To be completed in PY4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Written IDDE Program document, including statement of responsibilities and written outfall screening and sampling procedure	June 30, 2019	<input checked="" type="checkbox"/>				
Written catchment investigation procedure	Dec. 30, 2019		<input checked="" type="checkbox"/>			
Annually train IDDE staff	Annually by June 30	<input checked="" type="checkbox"/>	Completed in PY3 due to COVID-19	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Dry weather outfall and interconnection screening	June 30, 2021			To be completed in PY4	<input checked="" type="checkbox"/>	
Investigation of problem catchments must begin, including wet weather screening	June 30, 2020		N/A - no problem catchments			

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MCM 3: Illicit Discharge Detection and Elimination (cont.)	Deadline	FY19 Permit Year 1	FY20 Permit Year 2	FY21 Permit Year 3	FY22 Permit Year 4	FY23 Permit Year 5
Finish "Phase I" system mapping requirements, including the following elements: <ul style="list-style-type: none"> - Outfalls and receiving waters - Open channel conveyances - Interconnections with other MS4s and other storm sewer systems - Municipally owned stormwater treatment structures - Waterbodies identified by name and indication of all use impairments as identified in the most recent EPA Approved Massachusetts Integrated List - Initial catchment delineation 	June 30, 2020		<input checked="" type="checkbox"/>			
Update system map with available "Phase II" information (see permit for detailed list)	Annually after Phase I mapping is completed			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
MCM 4: Construction Site Erosion & Sedimentation	Deadline	FY19 Permit Year 1	FY20 Permit Year 2	FY21 Permit Year 3	FY22 Permit Year 4	FY23 Permit Year 5
Bylaw for sediment, erosion, debris, litter and sanitary waste	Due on May 1, 2008 as part of 2003 Permit	<input checked="" type="checkbox"/>				
Written procedure for site plan review/inspection/enforcement	June 30, 2019	<input checked="" type="checkbox"/>				
MCM 5: New Development and Redevelopment	Deadline	FY19 Permit Year 1	FY20 Permit Year 2	FY21 Permit Year 3	FY22 Permit Year 4	FY23 Permit Year 5
Bylaw meeting 2003 post-construction requirements	Due on May 1, 2008 as part of 2003 Permit	<input checked="" type="checkbox"/>				

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MCM 5: New Development and Redevelopment (cont.)	Deadline	FY19 Permit Year 1	FY20 Permit Year 2	FY21 Permit Year 3	FY22 Permit Year 4	FY23 Permit Year 5
<p>MCM 5 Requirement: Update post-construction stormwater bylaw (see permit for detailed list)</p> <p>Impaired Waters/TMDL Requirement: Include a requirement that new development and redevelopment BMPs be optimized for phosphorus removal.</p>	June 30, 2020		Proposed Permit modifications extend schedule	To be completed in PY4	<input checked="" type="checkbox"/>	
Report evaluating street design, parking guidelines and related rules	June 30, 2022 and update annually thereafter				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Report evaluating allowing green roofs, infiltration, rain harvesting	June 30, 2022				<input checked="" type="checkbox"/>	
Identify/rank five or more existing permittee-owned sites that could be retrofitted with structural BMPs	June 30, 2022 and update annually thereafter				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
MCM 6: Good Housekeeping	Deadline	FY19 Permit Year 1	FY20 Permit Year 2	FY21 Permit Year 3	FY22 Permit Year 4	FY23 Permit Year 5
Inventory permittee-owned parks/open space, buildings/facilities and vehicles/equipment	June 30, 2020 and update annually thereafter		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Initial catch basin optimization plan	June 30, 2019	<input checked="" type="checkbox"/>				
Written O&M procedures for parks, buildings, facilities, vehicles and equipment, and infrastructure operations and maintenance (i.e., street sweeping, catch basin cleaning, winter road maintenance and stormwater treatment structure inspections) including requirements for the proper management of grass cuttings and leaf litter	June 30, 2020 and update annually thereafter		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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MCM 6: Good Housekeeping (cont.)	Deadline	FY19 Permit Year 1	FY20 Permit Year 2	FY21 Permit Year 3	FY22 Permit Year 4	FY23 Permit Year 5
Clean catch basins per plan	Annually by June 30	<input checked="" type="checkbox"/>				
Impaired Waters/TMDL Requirement: Sweep streets two times per year, once in the spring and once in the fall. For rural streets with no curbs or catch basins, the Town must sweep at least once per year or develop a targeted inspection and sweeping plan for those streets, per Section 2.3.7.a.iii.3 of the permit.	Annually by June 30	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Inspect all municipally owned mapped stormwater treatment structures (excluding catch basins)	Annually by June 30	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Implement winter road maintenance program including road salt use optimization.	Develop by June 30, 2019 and implement every winter thereafter	<input checked="" type="checkbox"/>				
Develop and implement a written SWPPP for permittee-owned or operated facilities	June 30, 2020 and implement continuously thereafter		N/A	N/A	N/A	N/A
Cover or enclose salt piles	June 30, 2020 and implement continuously thereafter	<input checked="" type="checkbox"/>				
Assabet River Phosphorus TMDL ¹	Deadline	FY19 Permit Year 1	FY20 Permit Year 2	FY21 Permit Year 3	FY22 Permit Year 4	FY23 Permit Year 5
Northern Blackstone Lakes Phosphorus TMDL	Deadline	FY19 Permit Year 1	FY20 Permit Year 2	FY21 Permit Year 3	FY22 Permit Year 4	FY23 Permit Year 5
Complete Lake Phosphorus Control Plan (LPCP) Legal Analysis	June 30, 2020		<input checked="" type="checkbox"/>			
Complete LPCP funding source assessment	June 30, 2021			<input checked="" type="checkbox"/>		

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Northern Blackstone Lakes Phosphorus TMDL (cont.)	Deadline	FY19 Permit Year 1	FY20 Permit Year 2	FY21 Permit Year 3	FY22 Permit Year 4	FY23 Permit Year 5
Define LPCP area and scope	June 30, 2022				<input checked="" type="checkbox"/>	
Calculate baseline phosphorus, allowable phosphorus load, and phosphorus reduction requirements	June 30, 2022				<input checked="" type="checkbox"/>	
Complete all remaining elements of the written LPCP plan (see permit for detailed list)	June 30, 2023					<input checked="" type="checkbox"/>

This Workplan was prepared by Tighe & Bond to facilitate completion of EPA Phase II Small MS4 General Permit requirements. This document is not intended to replace the MS4 General Permit, and requirements of the General Permit shall prevail.

¹ Previous versions of this workplan included Assabet River TMDL requirements to complete a Phosphorus Source Identification Report, tracking structural BMPs for estimated phosphorus removal, and installation of a demonstration BMP. However, these items are not required for Boylston based on the Town's current TMDL and impairment requirements and were removed from this workplan.

Certification

Authorized Representative (Optional): All reports, including SWPPPs, inspection reports, annual reports, monitoring reports, reports on training and other information required by this permit must be signed by a person described in Appendix B, Subsection 11.A or by a duly authorized representative of that person in accordance with Appendix B, Subsection 11.B. If there is an authorized representative to sign MS4 reports, there must be a signed and dated written authorization.

The authorization letter is:

Attached to this document (document name listed below)

Delegating an "Authorized Representative" Attached in Appendix A.

Publicly available at the website below

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Printed Name April Steward, Town Administrator

Signature



Date

9/30/19

[Click Here for Revisions](#)

Background

Stormwater Regulation

The Stormwater Phase II Final Rule was promulgated in 1999 and was the next step after the 1987 Phase I Rule in EPA's effort to preserve, protect, and improve the Nation's water resources from polluted stormwater runoff. The Phase II program expands the Phase I program by requiring additional operators of MS4s in urbanized areas and operators of small construction sites, through the use of NPDES permits, to implement programs and practices to control polluted stormwater runoff. Phase II is intended to further reduce adverse impacts to water quality and aquatic habitat by instituting the use of controls on the unregulated sources of stormwater discharges that have the greatest likelihood of causing continued environmental degradation. Under the Phase II rule all MS4s with stormwater discharges from Census designated Urbanized Area are required to seek NPDES permit coverage for those stormwater discharges.

Permit Program Background

On May 1, 2003, EPA Region 1 issued its Final General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (2003 small MS4 permit) consistent with the Phase II rule. The 2003 small MS4 permit covered "traditional" (i.e., cities and towns) and "non-traditional" (i.e., Federal and state agencies) MS4 Operators located in the states of Massachusetts and New Hampshire. This permit expired on May 1, 2008 but remained in effect until operators were authorized under the 2016 MS4 general permit, which became effective on July 1, 2018.

Stormwater Management Program (SWMP)

The SWMP describes and details the activities and measures that will be implemented to meet the terms and conditions of the permit. The SWMP accurately describes the permittees plans and activities. The document should be updated and/or modified during the permit term as the permittee's activities are modified, changed or updated to meet permit conditions during the permit term. The main elements of the stormwater management program are (1) a public education program in order to affect public behavior causing stormwater pollution, (2) an opportunity for the public to participate and provide comments on the stormwater program (3) a program to effectively find and eliminate illicit discharges within the MS4 (4) a program to effectively control construction site stormwater discharges to the MS4 (5) a program to ensure that stormwater from development projects entering the MS4 is adequately controlled by the construction of stormwater controls, and (6) a good housekeeping program to ensure that stormwater pollution sources on municipal properties and from municipal operations are minimized.

Town Specific MS4 Background (optional)

Attached in Appendix B.

Small MS4 Authorization

The NOI was submitted on

The NOI can be found at the following (document name or web address):

Also attached in Appendix C.

Authorization to Discharge was granted on

The Authorization Letter can be found (document name or web address):

Also attached in Appendix C.

Stormwater Management Program Team

SWMP Team Coordinator

Name	April Steward	Title	Town Administrator
Department	Town of Boylston		
Phone Number	(508) 869-0143 ext. 221	Email	asteward@boylston-ma.gov
Responsibilities	Oversees the Town of Boylston's Stormwater Management Program and compliance with the Small MS4 General Permit. Manages the public education and outreach of Boylston's stormwater program, and provides opportunities for public participation and involvement.		

SWMP Team

Name	Chip Burkhardt	Title	Conservation Commission Member
Department	Conservation Commission		
Phone Number	(508) 869-6127	Email	chipburkhardt@yahoo.com
Responsibilities	Implements construction and post-construction bylaws, policies, and procedures. Oversees IDDE Program.		

Name	Joe McGrath	Title	Conservation Commission Member
Department	Conservation Commission		
Phone Number	(508) 869-6127	Email	jmcgrath@boylston-ma.gov
Responsibilities	Implements construction and post-construction bylaws, policies, and procedures. Oversees IDDE Program.		

Name	Steve Mero	Title	Superintendent
Department	Highway Department		
Phone Number	(508) 869-2261	Email	smero@boylston-ma.gov
Responsibilities	Oversees the Highway Department stormwater operations, including IDDE employee training and the good housekeeping program.		

Name	Dennis Costello	Title	Health Agent
Department	Board of Health		
Phone Number	(508) 869-6828	Email	dcostello@boylston-ma.gov
Responsibilities	Implements and enforces IDDE Bylaw.		

Add SWMP Member

Eligibility: Endangered Species and Historic Properties

*Reminder: The proper consultations and updates to the SWMP must be conducted for construction projects related to your permit compliance where Construction General Permit (CGP) coverage, which requires its own endangered species and history preservation determination, is NOT being obtained.

Attachments:

- The results of Appendix C U.S. Fish and Wildlife Service endangered species screening determination
- The results of the Appendix D historic property screening investigations
- If applicable, any documents from the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO), or other Tribal representative to mitigate effects

These attachments are required within one year of the permit effective date and are:

- Attached to this document (document names listed below)

Endangered Species Act Eligibility Certification is attached in Appendix D. National Historic Preservation Act Certification is attached in Appendix E.

- Publicly available at the website listed below

Under what criterion did permittee determine eligibility for ESA?

- Criterion A Criterion B Criterion C

Under what criterion did permittee determine eligibility for Historic Properties?

- Criterion A Criterion B Criterion C

Below add any additional measures for structural controls that you're required to do through consultation with U.S. Fish and Wildlife Service (if applicable):

Not applicable

Below add any additional measures taken to avoid or minimize adverse impacts on places listed, or eligible for listing, on the NRHP, including any conditions imposed by the SHPO or THPO (if applicable):

Not applicable

MCM 1

Public Education and Outreach

Permit Part 2.3.2

Objective: The permittee shall implement an education program that includes educational goals based on stormwater issues of significance within the MS4 area. The ultimate objective of a public education program is to increase knowledge and change behavior of the public so that the pollutants in stormwater are reduced.

Examples and Templates:

[EPA's Stormwater Education Toolbox](#)

[MassDEP's Stormwater Outreach Materials](#)

Other templates relevant to MCM 1 can be found here: <https://www.epa.gov/npdes-permits/stormwater-tools-new-england#peo>

BMP:Multi-media Public Education and Outreach

BMP Number (Optional) 1A _____

Document Name and/or Web Address: To be included in Appendix H when complete.

Description:

Education and outreach on stormwater management using multi-media methods including web and print materials. Distribute seasonal messages to residents related to impaired waterbodies in the spring, summer and fall. Annual spring messages will encourage proper disposal of grass clippings and the use of slow release and phosphorus-free fertilizers. Annual summer messages will encourage proper pet waste management, noting applicable Town Bylaws where appropriate. Annual fall messages will encourage proper disposal of leaf litter.

Targeted Audience: Residents

Responsible Department/Parties: Town Administrator with support from DCR

Measurable Goal(s):

Distribute a minimum of two (2) educational messages to residents spaced at least one year apart and supplement this message with an annual message on proper pet waste management. The Town may also wish to measure results in more specific ways, like the percent of residents reached or changes in behaviors impacting stormwater management.

Message Date(s): 2018 (PY1) & 2020 (PY3)

BMP:Multi-media Public Education and Outreach

BMP Number (Optional) 1B _____

Document Name and/or Web Address: To be included in Appendix H when complete.

Description:

Education and outreach on stormwater management using multi-media methods including web and print materials. Distribute seasonal messages to businesses, institutions and commercial facilities related to impaired waterbodies in the spring, summer and fall. Annual spring messages will encourage proper disposal of grass clippings and the use of slow release and phosphorus-free fertilizers. Annual summer messages will encourage proper pet waste management, noting applicable Town Bylaws where appropriate. Annual fall messages will encourage proper disposal of leaf litter.

Targeted Audience: Businesses, institutions and commercial facilities

Responsible Department/Parties: Town Administrator with support from DCR

Measurable Goal(s):

Distribute a minimum of two (2) educational messages to businesses, institutions and commercial facilities spaced at least one year apart. The Town may also wish to measure results in more specific ways, like the percent of businesses, institutions and commercial facilities reached or changes in behaviors impacting stormwater management.

Message Date(s): 2019 (PY2) & 2021 (PY4)

BMP:Multi-media Public Education and Outreach

BMP Number (Optional) 1C

Document Name and/or Web Address: To be included in Appendix H when complete.

Description:

Education and outreach on stormwater management using multi-media methods including web and print materials. The Town shall consider the following topics when developing educational messages and focus on topics most relevant to the Town of Boylston: proper sediment and erosion control management practices, information about Low Impact Development (LID) principles and technologies, and information about EPA's construction general permit (CGP).

Targeted Audience: Developers (construction)

Responsible Department/Parties: Town Administrator with support from DCR

Measurable Goal(s):

Distribute a minimum of two (2) educational messages to developers spaced at least one year apart. The Town may also wish to measure results in more specific ways, like the percent of developers reached or changes in behaviors impacting stormwater management.

Message Date(s): 2018 (PY1) & 2020 (PY3)

BMP:Multi-media Public Education and Outreach

BMP Number (Optional) 1D

Document Name and/or Web Address: To be included in Appendix H when complete.

Description:

Education and outreach on stormwater management using multi-media methods including web and print materials. The Town shall consider the following topics when developing educational messages and focus on topics most relevant to the Town of Boylston: equipment inspection and maintenance, proper storage of industrial materials, proper management and disposal of wastes, proper management of dumpsters, minimization of use of salt or other de-icing/anti-icing materials, proper storage of salt or other de-icing/antiicing materials, benefits of on-site infiltration of stormwater runoff from areas with low exposure to industrial materials, proper maintenance of parking lot surfaces, and requirements for coverage under EPA's Multi-Sector General Permit.

Targeted Audience: Industrial facilities

Responsible Department/Parties: Town Administrator with support from DCR

Measurable Goal(s):

Distribute a minimum of two (2) educational messages to industrial facilities spaced at least one year apart. The Town may also wish to measure results in more specific ways, like the percent of industrial facilities reached or changes in behaviors impacting stormwater management.

Message Date(s): 2019 (PY2) & 2021 (PY4)

BMP: N/A

BMP Number (Optional) _____

Document Name and/or Web Address:

Description:

N/A

Targeted Audience:

Responsible Department/Parties:

Measurable Goal(s):

Message Date(s):

BMP: N/A

BMP Number (Optional) _____

Document Name and/or Web Address:

Description:

N/A

Targeted Audience:

Responsible Department/Parties:

Measurable Goal(s):

Message Date(s):

BMP: N/A

BMP Number (Optional) _____

Document Name and/or Web Address:

Description:

Targeted Audience:

Responsible Department/Parties:

Measurable Goal(s):

Message Date(s):

BMP: N/A

BMP Number (Optional) _____

Document Name and/or Web Address:

Description:

Targeted Audience:

Responsible Department/Parties:

Measurable Goal(s):

Message Date(s):

Add BMP

MCM 2

Public Involvement and Participation

Permit Part 2.3.3

Objective: The permittee shall provide opportunities to engage the public to participate in the review and implementation of the permittee's SWMP.

BMP: Public Review of Stormwater Management Program

BMP Number (Optional) 2A _____

Location of Plan and/or Web Address: Available at Town Hall and online at: <https://www.boylston-ma.gov/conservation-commission>

Responsible Department/Parties: Town Administrator, Stormwater Committee

Measurable Goal(s):

Annually provide the public with an opportunity to participate in the review and implementation of the SWMP.

BMP: Public Participation in Stormwater Management Program Development

BMP Number (Optional) 2B _____

Description:

Provide opportunities for public involvement and participation in Boylston stormwater program (including clean up events).

Responsible Department/Parties: Town Administrator, Stormwater Committee

Measurable Goal(s):

Ongoing compliance and reporting of events and activities organized for public participation in Annual Reports.

BMP: Public Review of Stormwater Management Program

BMP Number (Optional) 2C _____

Document Name and/or Web Address: N/A

Description:

Organize meetings of Interdepartmental Stormwater Committee, consisting of representatives from departments including Conservation Commission, Highway Department, Board of Health and Town Administrator's Office.

Responsible Department/Parties: Town Administrator

Measurable Goal(s):

At a minimum, stormwater working group will meet annually.

Add BMP

MCM 3

Illicit Discharge Detection and Elimination (IDDE) Program

Permit Part 2.3.4

Objective: The permittee shall implement an IDDE program to systematically find and eliminate illicit sources of non-stormwater discharges to its municipal separate storm sewer system and implement procedures to prevent such discharges.

Examples and Templates:

[IDDE Program Template and SOPs](#)

Other templates relevant to IDDE can be found here: <https://www.epa.gov/npdes-permits/stormwater-tools-new-england#idde>

BMP: IDDE Legal Authority

BMP Number (Optional) 3A

Completed (by May 1, 2008)

Ordinances Link or Reference:

Department Responsible for Enforcement:

BMP: Sanitary Sewer Overflow (SSO) Inventory

BMP Number (Optional) N/A

Completed (by year 1)

Document Name and/or Web Address:

Description:

Responsible Department/Parties:

Measurable Goal(s):

SSO Reporting:

In the event of an overflow or bypass, a notification must be reported within 24 hours by phone to MassDEP, EPA, and other relevant parties. Follow up the verbal notification with a written report following MassDEP's Sanitary Sewer Overflow (SSO)/Bypass notification form within 5 calendar days of the time you become aware of the overflow, bypass, or backup.

BMP: Map of Storm Sewer System

BMP Number (Optional) 3B

Phase I Completed
(by year 2)

Phase II Completed
(by year 10)

Document Location and/or Web Address:

Description:

Responsible Department/Parties: Stormwater Committee

Measurable Goal(s):

By June 30, 2020, complete Phase I mapping: map 100% of known outfalls and receiving waters, open channel conveyances, interconnections with other MS4s and other storm sewer systems, municipally-owned stormwater treatment structures, waterbodies identified by name and indication of all use impairments, and initial catchment delineations. By June 30, 2028, complete Phase II mapping: map 100% of outfall spatial locations, pipes, manholes, catch basins, refined catchment delineations, municipal sanitary sewer system (if applicable), and municipal combined sewer system (if applicable).

BMP: IDDE Program

BMP Number (Optional) 3C/3D1-3

Written Document Completed (by year 1)

Document Name and/or Web Address: IDDE Program Update, 2019

Description:

Update written IDDE Plan. Complete outfall/interconnection inventory and initial ranking, dry weather outfall screening and sampling, and catchment investigations.

Responsible Department/Parties: Stormwater Commitee

Measurable Goal(s):

By June 30, 2019, update written IDDE program and complete outfall/interconnection and initial ranking. Boylston completed the initial outfall/interconnection inventory and dry weather screening in 2009 and 2010. The "Drainage System Mapping and Dry-Weather Stormwater Outfall Investigations Summer 2009 Summary Report" and "Fall 2010 Addendum" detail program procedures and results. By June 30, 2021, conduct 100% of outfall screening on High and Low Priority Outfalls. By June 30, 2025, complete catchment investigations for 100% of the Problem Outfalls. By June 30, 2028, complete 100% of all catchment investigations. Track number of illicit discharges identified and volume removed. This BMP will be coordinated with requirements for TMDLs and Water Quality Limited Waters.

The outfall/interconnection inventory and initial ranking and the dry weather outfall and interconnection screening and sampling results can be found:

At the Town Hall, Conservation Department.

BMP: Employee Training

BMP Number (Optional) 3E

Description:

Train employees on IDDE implementation.

Responsible Department/Parties:

Measurable Goal(s):

The Town's Highway Department staff annually attend training with the DCR. Track employees trained, training topics, date/time, and materials presented.

BMP: N/A

BMP Number (Optional) _____

Completed

Document Name and/or Web Address:

Description:

N/A

Responsible Department/Parties:

Measurable Goal(s):

Add BMP

MCM 4

Construction Site Stormwater Runoff Control

Permit Part 2.3.5

Objective: The objective of an effective construction stormwater runoff control program is to minimize or eliminate erosion and maintain sediment on site so that it is not transported in stormwater and allowed to discharge to a water of the U.S. through the permittee's MS4.

Examples and Templates:

Examples and templates relevant to MCM 4, including model ordinances and site inspection templates, can be found here: <https://www.epa.gov/npdes-permits/stormwater-tools-new-england#csrc>

BMP: Sediment and Erosion Control Ordinance

BMP Number (Optional) 4A

Completed (by May 1, 2008)

Ordinances Link or Reference:

Department Responsible for Enforcement:

BMP: Site Plan Review Procedures

BMP Number (Optional) 4B

Written procedures completed (by year 1)

Document Name and/or Web Address:

Description:

Responsible Department/Parties:

Measurable Goal(s):

BMP: Site Inspections and Enforcement of Sediment and Erosion Control Measures Procedures

BMP Number (Optional) 4B

Completed (by year 1)

Document Name and/or Web Address:

Description:

Responsible Department/Parties:

Measurable Goal(s):

BMP: N/A

BMP Number (Optional) _____

Completed

Document Name and/or Web Address:

Description:

Responsible Department/Parties:

Measurable Goal(s):

BMP: N/A

BMP Number (Optional) _____

Completed

Document Name and/or Web Address:

Description:

Responsible Department/Parties:

Measurable Goal(s):

Add BMP

MCM 5

Post Construction Stormwater Management in New Development and Redevelopment

Permit Part 2.3.6

Objective: The objective of an effective post construction stormwater management program is to reduce the discharge of pollutants found in stormwater to the MS4 through the retention or treatment of stormwater after construction on new or redeveloped sites and to ensure proper maintenance of installed stormwater controls.

Examples and Templates:

Examples and templates relevant to MCM 5, including model ordinances and bylaw review templates and guidance can be found here: <https://www.epa.gov/npdes-permits/stormwater-tools-new-england#pcsm>

BMP: Post-Construction Ordinance

BMP Number (Optional) 5A

Completed (by year 2)

Town Ordinances Link or Reference:

Department Responsible for Enforcement:

BMP: Street Design and Parking Lot Guidelines Report

BMP Number (Optional) 5B

Completed (by year 4)

Document Name and/or Web Address:

Description:

Responsible Department/Parties:

Measurable Goal(s):

BMP: Green Infrastructure Report

BMP Number (Optional) 5C

Completed (by year 4)

Document Name and/or Web Address:

Description:

Responsible Department/Parties:

Measurable Goal(s):

BMP: List of Municipal Retrofit Opportunities

BMP Number (Optional) 5D

Completed (by year 4)

Document Name and/or Web Address:

Description:

By June 30, 2022, conduct detailed inventory of Town-owned properties and rank for retrofit potential. At a minimum, the Town shall consider municipal properties with significant impervious cover that could be modified or retrofitted to reduce the frequency, volume or pollutant loads of stormwater discharges.

Responsible Department/Parties:

Measurable Goal(s):

Complete report no later than four (4) years of permit effective date, beginning in year 5 keep a running list of at least five (5) retrofit sites.

BMP: N/A

BMP Number (Optional) _____

Completed

Document Name and/or Web Address:

Description:

N/A

Responsible Department/Parties:

Measurable Goal(s):

Add BMP

MCM 6

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

Permit Part 2.3.7

Objective: The permittee shall implement an operations and maintenance program for permittee-owned operations that has a goal of preventing or reducing pollutant runoff and protecting water quality from all permittee-owned operations.

Examples and Templates:

Examples and templates relevant to MCM 6, including SOP templates for catch basin cleaning, street sweeping, vehicle maintenance, parks and open space management, winter deicing, and Stormwater Pollution Prevention Plans can be found here: <https://www.epa.gov/npdes-permits/stormwater-tools-new-england#gh>

PERMITTEE OWNED FACILITIES

BMP: Parks and Open Spaces Operations and Maintenance Procedures

BMP Number (Optional) 6A

Written Document Completed (by year 2)

Document Name and/or Web Address:

Description:

Responsible Department/Parties:

Measurable Goal(s):

Properties List (Optional):

BMP: Buildings and Facilities Operations and Maintenance Procedures

BMP Number (Optional) 6A

Written Document Completed (by year 2)

Document Name and/or Web Address:

Description:

Responsible Department/Parties:

Measurable Goal(s):

Properties List (Optional):

BMP: Vehicles and Equipment Operations and Maintenance Procedures

BMP Number (Optional) 6A

Written Document Completed (by year 2)

Document Name and/or Web Address: To be updated when complete.

Description:

Inventory and create O&M procedures for all permittee-owned vehicles and equipment

Responsible Department/Parties: Highway Department

Measurable Goal(s):

Develop the SOP listed above for 100% of vehicles and equipment within two (2) years after permit effective date, implement in following years.

Properties List (Optional):

INFRASTRUCTURE

BMP: Infrastructure Operations and Maintenance Procedures

BMP Number (Optional) 6B

Written Procedure Completed (by year 2)

Document Name and/or Web Address: To be updated when complete.

Description:

Establish and implement program for repair and rehabilitation of MS4 infrastructure.

Responsible Department/Parties: Highway Department

Measurable Goal(s):

Develop the SOP listed above for 100% of infrastructure within two (2) years after permit effective date, implement in following years.

BMP: Catch Basin Cleaning Program

BMP Number (Optional) 6D-1

Written Procedure Completed (by year 1)

Document Name and/or Web Address: To be updated when complete.

Description:

By June 30, 2019, begin to improve procedures to optimize catch basin cleaning developed under BMP 6B. Formalize procedures in Town-wide Operations and Maintenance Plan described in BMP 6A by June 30, 2020.

Responsible Department/Parties: Highway Department

Measurable Goal(s):

In first Annual Report and in SWMP, document plan for optimizing catch basin cleaning. Track frequency and material quantity of catch basin cleaning in town.

BMP: Street Sweeping Program

BMP Number (Optional) 6D-2

Written Procedure Completed (by year 1)

Document Name and/or Web Address: To be updated when complete.

Description:

Implement procedures for street and parking lot sweeping developed under BMP 6B.

Responsible Department/Parties: Highway Department

Measurable Goal(s):

Annually track number of miles cleaned or the volume or mass of material removed.

BMP: Winter Road Maintenance Program

BMP Number (Optional) 6D-3

Written Procedure Completed (by year 1)

Document Name and/or Web Address: To be updated when complete.

Description:

Implement procedures for use and storage of deicing materials developed under BMP 6B

Responsible Department/Parties: Highway Department

Measurable Goal(s):

Implement program for winter road maintenance throughout permit term.

BMP: Stormwater Treatment Structures Inspection and Maintenance Procedures

BMP Number (Optional) 6D-4

Completed (by year 1)

Document Name and/or Web Address: To be updated when complete.

Description:

Implement procedures to inspect and maintain Town-owned structural stormwater BMPs

Responsible Department/Parties: Highway Department

Measurable Goal(s):

Develop an inventory of Town-owned BMPs within two (2) years of permit effective date. Report on inspection and maintenance conducted annually.

BMP: SWPPP

BMP Number (Optional) N/A **Completed (by year 2)**

Document Name and/or Web Address: N/A

Description:

N/A - The Town has determined that no facilities located within the MS4 require a site-specific SWPPP.

Responsible Department/Parties: N/A

Measurable Goal(s):

N/A

BMP: N/A

BMP Number (Optional) _____ **Completed**

Document Name and/or Web Address: _____

Description:

N/A

Responsible Department/Parties: _____

Measurable Goal(s):

Add BMP

Annual Evaluation

Year 1 Annual Report

Document Name and/or Web Address:

Insert link to EPA website or include copy in Appendix H when complete.

Year 2 Annual Report

Document Name and/or Web Address:

Insert link to EPA website or include copy in Appendix H when complete.

Year 3 Annual Report

Document Name and/or Web Address:

Insert link to EPA website or include copy in Appendix H when complete.

Year 4 Annual Report

Document Name and/or Web Address:

Insert link to EPA website or include copy in Appendix H when complete.

Year 5 Annual Report

Document Name and/or Web Address:

Insert link to EPA website or include copy in Appendix H when complete.

Document Name and/or Web Address:

Add a Year

TMDLs and Water Quality Limited Waters

Select the applicable Impairment(s) and/or TMDL(s).

Impairment(s)

Bacteria/Pathogens Chloride Nitrogen Phosphorus

Solids/oil/grease (hydrocarbons)/metals

TMDL(s)

In State:

Assabet River Phosphorus Bacteria and Pathogen Cape Cod Nitrogen

Charles River Watershed Phosphorus Lake and Pond Phosphorus

Out of State:

Bacteria and Pathogen Metals Nitrogen Phosphorus

Phosphorus

Combination of Impaired Waters Requirements and TMDL Requirements as Applicable

Applicable Receiving Waterbody(ies)	TMDL Name (if applicable)	Add/Delete Row
Cold Harbor Brook, MA82B-18	Assabet River Total Maximum Daily Load for Total Phosphorus	<input type="checkbox"/> + <input type="checkbox"/> -
Rocky Pond, MA82095 (no known MS4 outfalls discharge to Rocky Pond)	Assabet River Total Maximum Daily Load for Total Phosphorus	<input type="checkbox"/> + <input type="checkbox"/> -

Annual Requirements Beginning Year 1

Public Education and Outreach

(Public education messages can be combined with other public education requirements as applicable (see Appendix H and F for more information))

 Distribute an annual message in the spring(April/May) that encourages the proper use and disposal of grass clippings and encourages the proper use of slow-release and phosphorus-free fertilizers

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

The Town of Boylston will supplement its residential and business/commercial/institution public education programs described in BMPs 1A and 1B with an annual spring message encouraging the proper disposal of grass clippings and the use of slow-release and phosphorus-free fertilizers.

 Distribute an annual message in the summer (June/July) encouraging the proper management of pet waste, including noting any existing ordinances where appropriate

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

The Town of Boylston will supplement its residential and business/commercial/institution public education programs described in BMPs 1A and 1B with an annual summer message encouraging the proper management of pet waste.

 Distribute an annual message in the fall (August/September/October) encouraging the proper disposal of leaf litter

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

The Town of Boylston will supplement its residential and business/commercial/institution public education programs described in BMPs 1A and 1B with an annual fall message encouraging the proper disposal of leaf litter.

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

Increase street sweeping frequency of all municipal owned streets and parking lots subject to Permit part 2.3.7.a.iii.(c) to a minimum of two times per year (spring and fall)

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

As part of the Town's Operation & Maintenance procedures for street and parking lot sweeping established as part of BMP 6D-2, Boylston will increase street and parking lot sweeping in the urbanized portion of the SuAsCo watershed to a minimum of two occurrences per year, once in the spring and once in the fall. For rural streets with no curbs or catch basins, the Town must sweep at least once per year or develop a targeted inspection and sweeping plan for those streets, per Section 2.3.7.a.iii.3 of the permit.

Establish procedures to properly manage grass cuttings and leaf litter on permittee property, including prohibiting blowing organic waste materials onto adjacent impervious surfaces

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

BEGIN IN PERMIT YEAR 2 (Note: EPA template provides incorrect deadline).
As part of the Town's Operations & Maintenance procedures for Town-owned properties established as part of BMP 6A, the Town of Boylston will establish a program to properly manage grass cuttings and leaf litter on Town-owned properties. This program will prohibit blowing organic waste onto impervious surfaces.

Stormwater Management in New Development and Redevelopment

Retrofit inventory and priority ranking under 2.3.6.1.b. shall include consideration of BMPs to reduce phosphorus discharges

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

DUE IN PERMIT YEAR 4 (Note: EPA template provides incorrect deadline, this requirement is included under the Requirements for Permit Year 4).The Retrofit Feasibility Assessment described in BMP 5D will include consideration of BMPs to reduce phosphorus discharges.

Requirements Due by Year 2

Stormwater Management in New Development and Redevelopment

The requirement for adoption/amendment of the permittee's ordinance or other regulatory mechanism shall include a requirement that new development and redevelopment stormwater management BMPs be optimized for phosphorus removal

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

As described in BMP 5A, the Post-Construction Regulations shall be modified to require that new development and redevelopment stormwater management BMPs be optimized for phosphorus removal.

Requirements Due by Year 4

Stormwater Management in New Development and Redevelopment

Retrofit inventory and priority ranking under 2.3.6.1.b. shall include consideration of BMPs that infiltrate stormwater where feasible

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are:

The retrofit inventory and priority ranking described in BMP 5D will include consideration of BMPs that infiltrate stormwater where feasible.

Lake and Pond Phosphorus TMDL

Begin Phase 1 of the Lake Phosphorus Control Plan during year 1 and complete by year 5.

Applicable Receiving Waterbody(ies)	PCP Complete	Document Location	Add/Delete Row
Newton Pond (MA51110)	<input checked="" type="checkbox"/>	Appendix I (when complete)	<input type="button" value="+"/> <input type="button" value="-"/>

Appendix A

Delegation of Authority Letter



TOWN OF BOYLSTON
221 MAIN STREET
BOYLSTON, MA 01505-1930

September 10, 2018

Ms. Thelma Murphy
U.S. Environmental Protection Agency
5 Post Office Square, Suite 100 (OEP06-1)
Boston, MA 02109-3912

Re: NPDES MA Small MS4 General Permit
Delegating an "Authorized Representative"

Dear Ms. Murphy:

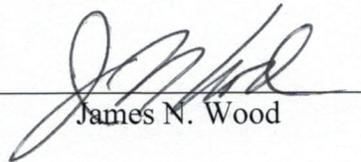
This letter serves to designate the Town of Boylston **Town Administrator** as an authorized person for signing the Stormwater Management Plan (SWMP), stormwater pollution prevention plans (SWPPPs), inspection reports, annual reports, monitoring reports, reports on training and other information required under the General Permit. This authorization cannot be used for signing a NPDES permit application (e.g., Notice of Intent (NOI)) in accordance with 40 CFR 122.22.

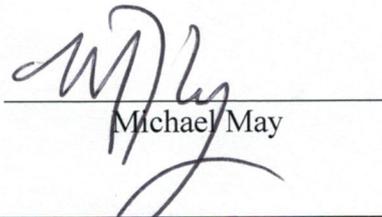
By signing this authorization, I confirm that the Board of Selectmen meets the following requirements to make such a designation as set forth in Appendix B, Subparagraph 11 of the Small MS4 General Permit:

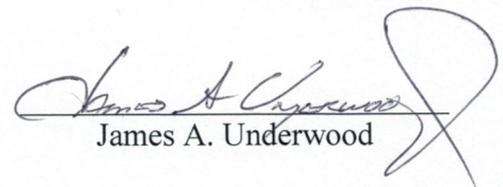
For a municipality, state, federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this subsection, a principal executive officer of a federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA).

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Sincerely,
Boylston Board of Selectmen


James N. Wood


Michael May


James A. Underwood

508/869-2093 • FAX: 508/869-6210

EMAIL - ASTEWARD@BOYLSTON-MA.GOV

Appendix B

Town Specific MS4 Background

Boylston is located in Worcester County, approximately 11 miles northeast of Worcester. There are approximately 3.6 square miles of open water within its 19.7 square mile footprint. According to the 2010 United States Census, Boylston is home to approximately 4,350 residents in more than 1,600 households. The southwestern portion of the Town is within the urbanized area and therefore regulated by EPA under the MS4 program, as shown in Figure 2.



Figure 1 Location of Boylston, Massachusetts

The Town of Boylston is located within the Nashua River Watershed, the Sudbury-Assabet-Concord Rivers Watershed and the Blackstone River Watershed. Protecting the quality of Boylston’s water resources, including lakes, ponds, rivers and groundwater supplies, is a priority for the Town of Boylston. Pollutants from stormwater runoff are a contributing factor to the impairment of Boylston’s waterbodies, including high phosphorus levels.

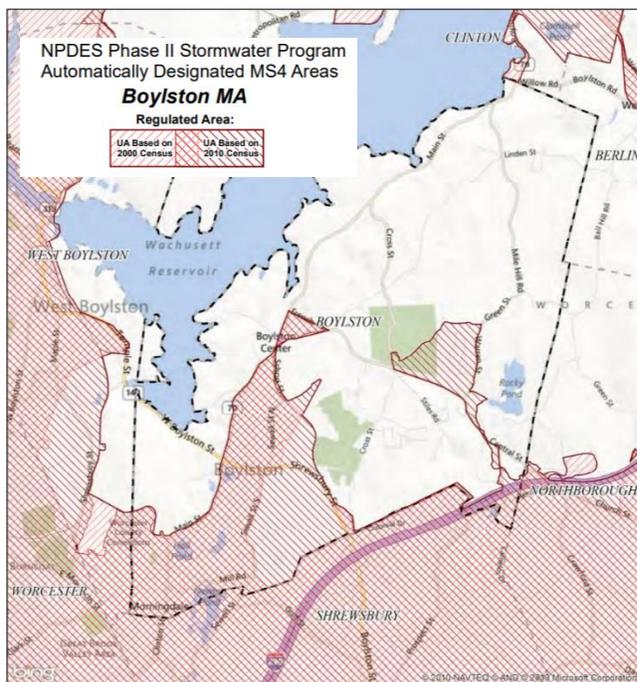


Figure 2 Boylston’s Urbanized Area

The Town of Boylston has achieved all of the measurable goals for the BMPs selected in the 2003 Notice of Intent and those added in subsequent years to reflect unplanned stormwater activities by the Town. A list of BMPs completed under the 2003 Small MS4 Permit is included on the next page.

The Town of Boylston has taken advantage of low-cost approaches to provide stormwater education and outreach, primarily to residential audiences, businesses and developers. The Massachusetts Department of Conservation and Recreation (DCR) supports the Town in their public education efforts as the Wachusett Reservoir and its watershed is partially located in the Town of Boylston. The Town distributed brochures related to stormwater topics and featured information on stormwater on the local cable station.

The Town has made progress in mapping the stormwater system. The total number of MS4 outfalls within Boylston's urbanized area has changed due to the 2010 U.S. Census. The preliminary outfall locations in the new urbanized area are from DCR's drainage mapping and will be field verified over the permit term. The outfalls and associated receiving waters in the Town’s NOI are based on mapping as of September 2018 and are subject to change during implementation of the Stormwater Management Program as newly constructed outfalls are added to the map and inventory; locations are adjusted; or

outfalls are removed if they are determined to be non-municipally owned/operated or reclassified as a BMP inlet, culvert, or other structure. Changes to the outfall inventory and mapping will be formalized in Annual Reports to EPA.

The Town has adopted the Storm Drain Bylaw prohibiting illicit discharges and the Stormwater Control Bylaw regulating Construction and Post-Construction stormwater management.

Lastly, the Town has established an active Good Housekeeping Program for stormwater pollution prevention including active street sweeping, catch basin cleaning, and regular employee training.

Summary of 2003 and 2016 MS4 General Permit BMPs

BMPs identified in the 2003 General Permit NOI have evolved over the permit term due to staff changes and Stormwater Program modifications. The intent of the 2003 BMPs are being met under the following proposed 2016 General Permit BMPs (BMPs current as of 2018 Annual Report):

- PE-1: Partner with Local Organization – now under BMPs 1A-D
- PE-2: Stormwater Brochure – now under BMPs 1A-D
- PE-3: Provide Stormwater Information at Town buildings – now under BMPs 1A-1D
- PE-4: Pet Waste – now under BMPs 1A and 1B
- PE-5: Feature SW info on town public access cable station – now under BMPs 1A-1D
- PE-6: Stormwater presentations at school – now under BMP 1A
- PP-1: Partner with Local Organization – now under BMPs 1A-D
- PP-2: Place Traveling Display at various locations – now under BMPs 1A-1D
- PP-3: Incorporate SW into public meetings – now under BMPs 2A and 2B
- PP-4: Stormwater Events with School-aged Residents – now under BMP 1A and 2B
- PP-5: Stormwater Committee – now under BMP 2C
- PP-6: DCR Sponsored Events – now under BMPs 1A-1D and 2B
- ID-1: Drainage mapping – now under BMP 3B
- ID-2: Eliminate illicit discharges – now under BMPs 3C and 3D
- ID-3: Develop and implement an illicit discharge bylaw – now under BMP 3A
- ID-4: Educate citizens – now under BMPs 1A-1D
- CS-1: Develop and implement Construction Site Runoff Control Program – now under BMPs 4A and 4B
- CS-2: Develop and implement Erosion and Sediment Control Bylaw – now under BMP 4A
- PS-1: Develop and implement Post-Construction Runoff Control Program – now under BMP 5A
- PS-2: Develop and implement Post-Construction Regulations – now under BMP 5A
- GH-1: Employee Training Program – now under BMP 3E and BMPs 6C and 6D1-4
- GH-2: Catch basin Cleaning – now under BMP 6D-1
- GH-3: Street sweeping – now under BMP 6D-2
- GH-4: Recycling program – now under MCM 2B
- GH-5: Municipal Operations and Maintenance Plan – now under BMPs 6A and 6B
- GH-6: Reporting – now under BMP 2C

Appendix C

Notice of Intent, System Map and
Authorization to Discharge Letter from EPA

Part I: General Conditions

General Information

Name of Municipality or Organization: State:

EPA NPDES Permit Number (if applicable):

Primary MS4 Program Manager Contact Information

Name: Title:

Street Address Line 1:

Street Address Line 2:

City: State: Zip Code:

Email: Phone Number:

Fax Number:

Other Information

Stormwater Management Program (SWMP) Location (web address or physical location, if already completed):

Eligibility Determination

Endangered Species Act (ESA) Determination Complete? Eligibility Criteria (check all that apply): A B C

National Historic Preservation Act (NHPA) Determination Complete? Eligibility Criteria (check all that apply): A B C

Check the box if your municipality or organization was covered under the 2003 MS4 General Permit

MS4 Infrastructure (if covered under the 2003 permit)

Estimated Percent of Outfall Map Complete? If 100% of 2003 requirements not met, enter an estimated date of completion (MM/DD/YY):

Web address where MS4 map is published:
If outfall map is unavailable on the internet an electronic or paper copy of the outfall map must be included with NOI submission (see section V for submission options)

Regulatory Authorities (if covered under the 2003 permit)

Illicit Discharge Detection and Elimination (IDDE) Authority Adopted? <small>(Part II, III, IV or V, Subpart B.3.(b.) of 2003 permit)</small>	<input type="text" value="Yes"/>	Effective Date or Estimated Date of Adoption (MM/DD/YY):	<input type="text" value="05/04/09"/>
Construction/Erosion and Sediment Control (ESC) Authority Adopted? <small>(Part II, III, IV or V, Subpart B.4.(a.) of 2003 permit)</small>	<input type="text" value="Yes"/>	Effective Date or Estimated Date of Adoption (MM/DD/YY):	<input type="text" value="10/16/06"/>
Post- Construction Stormwater Management Adopted? <small>(Part II, III, IV or V, Subpart B.5.(a.) of 2003 permit)</small>	<input type="text" value="Yes"/>	Effective Date or Estimated Date of Adoption (MM/DD/YY):	<input type="text" value="10/16/06"/>

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part II: Summary of Receiving Waters

Please list the waterbodies to which your MS4 discharges. For each waterbody, please report the number of outfalls discharging into it and, if applicable, the segment ID and any impairments.

Massachusetts list of impaired waters: [Massachusetts 2014 List of Impaired Waters- http://www.mass.gov/eea/docs/dep/water/resources/07v5/14list2.pdf](http://www.mass.gov/eea/docs/dep/water/resources/07v5/14list2.pdf)

Waterbody that receives flow from the MS4 and segment ID if applicable	Number of outfalls into receiving water segment	Chloride	Chlorophyll-a	Dissolved Oxygen/ DO Saturation	Nitrogen	Oil & Grease/ PAH	Phosphorus	Solids/ TSS/ Turbidity	E. coli	Enterococcus	Other pollutant(s) causing impairments
Sewall Brook	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Unnamed Tributary (Boylston Brook) MA81-34	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Wetland/Tributary to French Brook MA81-48	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Wetland/Tributary to Malagasco Brook MA81-29	2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Aquatic Macroinvertebrate Bioassess., Nutrient/Eutrophication Biological Indicators
Wetland/Tributary to Newton Pond MA51110	2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Non-Native Aquatic Plants, Aquatic Plants (Macrophytes)
Wetland/Tributary to Cold Harbor Brook MA82B-18	2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Outside Receiving	26	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary

Identify the Best Management Practices (BMPs) that will be employed to address each of the six Minimum Control Measures (MCMs). For municipalities/organizations whose MS4 discharges into a receiving water with an approved Total Maximum Daily Load (TMDL) and applicable waste load allocation (WLA), identify any additional BMPs employed to specifically support the achievement of the WLA in the TMDL section at the end of Part III.

For each MCM, list each existing or proposed BMP by category and provide a brief description, responsible parties/departments, measurable goals, and the year the BMP will be employed (public education and outreach BMPs also require a target audience).

MCM 1: Public Education and Outreach

BMP ID	BMP Media/Category	BMP Description	Targeted Audience	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation
1A	Multi-media methods (including web content and print materials)	Education and outreach on stormwater management topics of significance in Boylston (including proper pet waste management, proper use of pesticides and fertilizers). Educational topics will include but are not limited to those in Part 2.3.2.d.i	Residents	Town Administrator with support from DCR	Distribute a minimum of two (2) educational messages spaced at least a year apart	2018 (PY1)
1B	Multi-media methods (including web content and print materials)	Education and outreach on stormwater management topics of significance in Boylston (including proper lawn maintenance, parking lot sweeping). Educational topics will include but are not limited to those in Part 2.3.2.d.ii	Businesses, Institutions, and Commercial Facilities	Town Administrator with support from DCR	Distribute a minimum of two (2) educational messages spaced at least a year apart	2019 (PY2)

Notice of Intent (NOI) for coverage under Small MS4 General Permit

BMP ID	BMP Media/Category	BMP Description	Targeted Audience	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation
1C	Multi-media methods (including web content and print materials)	Education and outreach on stormwater management topics of significance in Boylston (including proper erosion and sedimentation control, permit requirements, and design standards). Educational topics will include but are not limited to those in Part 2.3.2.d.iii	Developers (Construction)	Town Administrator with support from DCR	Distribute a minimum of two (2) educational messages spaced at least a year apart	2018 (PY1)
1D	Multi-media methods (including web content and print materials)	Education and outreach on stormwater management topics of significance in Boylston (including pollution prevention, Multi-Sector General Permit). Educational topics will include but are not limited to those in Part 2.3.2.d.iv	Industrial Facilities	Town Administrator with support from DCR	Distribute a minimum of two (2) educational messages spaced at least a year apart	2019 (PY2)

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary

MCM 2: Public Involvement and Participation

BMP ID	BMP Category	BMP Description	Responsible Department/Parties	Measurable Goal	Beginning Year of BMP Implementation
2A	Public Review	SWMP review (Plan and reports available on web and at public meetings)	Town Administrator, Stormwater Committee	Annually provide the public with an opportunity to participate in the review and implementation of the SWMP	2018 (PY1)
2B	Public Participation	Provide opportunities for public involvement and participation in Boylston' stormwater program (including clean up events). Specific activities, schedule, and lead departments are included in the SWMP.	Town Administrator, Stormwater Committee	Ongoing compliance	2018 (PY1)
2C	Public Review	Continue Stormwater Committee (Conservation Commission, Highway, Town Administrator, Board of Health)	Town Administrator	At a minimum, stormwater working group will meet annually.	2018 (PY1)

Notice of Intent (NOI) for coverage under Small MS4 General Permit

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Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary

MCM 3: Illicit Discharge Detection and Elimination (IDDE)

BMP ID	BMP Category	BMP Description	Responsible Department/Parties	Measurable Goal	Beginning Year of BMP Implementation
3A	IDDE Bylaw	Complete. Continue to enforce and update if necessary.	Board of Health	Track illicit discharges identified and removed.	2018 (PY1)
3B	Storm sewer system map	Outfall Inventory Complete. Improve map during IDDE Program implementation	Stormwater Committee	Update map within two (2) years of effective date of permit and complete full system map 10 years after effective date of permit	2018 (PY1)
3C	Written IDDE program	Update written IDDE Plan.	Stormwater Committee	Complete within one (1) year of the effective date of permit and update as required	2018 (PY1)
3D-1	Assessment and Priority Ranking of Outfalls & Interconnections	Outfall/ Interconnection Inventory and Initial Ranking as part of BMP 3D	Stormwater Committee	Complete within one (1) year of the effective date of permit and update as necessary	2018 (PY1)
3D-2	Assessment and Priority Ranking of Outfalls & Interconnections	Dry Weather Outfall Screening & Sampling in accordance with IDDE Plan and permit conditions	Stormwater Committee	Complete three (3) years after effective date of permit. Track # of illicit discharges identified & volume removed. Summarize screening/ sampling results.	2018 (PY1)

Notice of Intent (NOI) for coverage under Small MS4 General Permit

BMP ID	BMP Category	BMP Description	Responsible Department/Parties	Measurable Goal	Beginning Year of BMP Implementation
3D-3	Assessment and Priority Ranking of Outfalls & Interconnections	Catchment Investigations according to IDDE Program and permit conditions	Stormwater Committee	Complete 10 years after effective date of permit. Track # and percentage of MS4 catchments evaluated. Track # of illicit discharges identified & volume removed. Summarize screening/sampling results.	2019 (PY2)
3E	Employee Training	Train employees on IDDE implementation	Stormwater Committee	Train annually. Track employees trained, training topic, date/time, and materials presented.	2018 (PY1)

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary

MCM 4: Construction Site Stormwater Runoff Control

BMP ID	BMP Category	BMP Description	Responsible Department/Parties	Measurable Goal	Beginning Year of BMP Implementation
4A	Construction Regulations	Modify local regulations, if necessary, to contain new MS4 provisions per section 2.3.5.	Conservation Commission	Review current procedures and modify if necessary within one (1) year of permit effective date	2018 (PY1)
4B	Construction Policy and Procedures	Develop and implement written procedures for site inspections and enforcement procedures per section 2.3.5.	Conservation Commission	Review current procedures and modify if necessary within one (1) year of permit effective date	2018 (PY1)

Notice of Intent (NOI) for coverage under Small MS4 General Permit

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Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary

MCM 5: Post-Construction Stormwater Management in New Development and Redevelopment

BMP ID	BMP Category	BMP Description	Responsible Department/Parties	Measurable Goal	Beginning Year of BMP Implementation
5A	Post-Construction Regulations	Modify local regulations to contain new MS4 provisions per section 2.3.6.a.	Conservation Commission	Modify existing regulations if necessary within two (2) years of permit effective date	2019 (PY2)
5B	Assess street and parking lot guidelines	Develop a report assessing requirements that affect the creation of impervious cover. The assessment will help determine if changes to design standards for streets and parking lots can be modified to support low impact design options.	Conservation Commission	Complete report no later than four (4) years of permit effective date	2020 (PY3)
5C	Assess allowing green infrastructure	Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist.	Conservation Commission	Complete report no later than four (4) years of permit effective date	2020 (PY3)

Notice of Intent (NOI) for coverage under Small MS4 General Permit

BMP ID	BMP Category	BMP Description	Responsible Department/Parties	Measurable Goal	Beginning Year of BMP Implementation
5D	Retrofit Feasibility Assessment	Conduct detailed inventory of Town-owned properties and rank for retrofit potential	Conservation Commission	Complete report no later than four (4) years of permit effective date. Beginning in year 5 keep running list of at least five (5) retrofit sites	2020 (PY3)

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary

MCM 6: Municipal Good Housekeeping and Pollution Prevention

BMP ID	BMP Category	BMP Description	Responsible Department/Parties	Measurable Goal	Beginning Year of BMP Implementation
6A	Operation & Maintenance Program	Inventory and create O&M procedures for all permittee-owned parks and open spaces, buildings and facilities (including their storm drains), and vehicles and equipment	Highway	Complete two (2) years after permit effective date, implement in following years	2019 (PY2)
6B	Operation & Maintenance Program	Establish and implement program for repair and rehabilitation of MS4 infrastructure	Highway	Complete two (2) years after permit effective date, implement in following years	2019 (PY2)
6C	Stormwater Pollution Prevention Plans (SWPPP)	Develop and implement SWPPP for the Highway Garage	Highway	Complete SWPPPs within two (2) years of permit effective date, implement in following years	2019 (PY2)
6D-1	Operation & Maintenance Program	Implement procedures to optimize catch basin cleaning developed under BMP 6B	Highway	Track frequency and material quantity of catch basin cleaning in town. In first Annual Report and in SWMP, document plan for optimizing catch basin cleaning.	2018 (PY1)

Notice of Intent (NOI) for coverage under Small MS4 General Permit

BMP ID	BMP Category	BMP Description	Responsible Department/Parties	Measurable Goal	Beginning Year of BMP Implementation
6D-2	Operation & Maintenance Program	Implement procedures for street and parking lot sweeping developed under BMP 6B	Highway	Annually track number of miles cleaned or the volume or mass of material removed.	2018 (PY1)
6D-3	Operation & Maintenance Program	Implement procedures for use and storage of deicing materials developed under BMP 6B	Highway	Implement program for winter road maintenance throughout permit term.	2018 (PY1)
6D-4	Operation & Maintenance Program	Implement procedures to inspect and maintain Town-owned structural stormwater BMPs	Highway	Develop an inventory of Town-owned BMPs within two (2) years of permit effective date. Report on inspection and maintenance conducted annually.	2018 (PY1)

Part IV: Notes and additional information

Use the space below to indicate the part(s) of 2.2.1 and 2.2.2 that you have identified as not applicable to your MS4 because you do not discharge to the impaired water body or a tributary to an impaired water body due to nitrogen or phosphorus. Provide all supporting documentation below or attach additional documents if necessary. Also, provide any additional information about your MS4 program below.

1. BMPs identified in the 2003 General Permit NOI have evolved over the permit term due to staff changes and Stormwater Program modifications. The intent of the 2003 BMPs are being met under the proposed 2016 General Permit BMPs included in the Stormwater Management Plan. The Plan will describe how the BMPs under the 2003 permit fit into the new program, particularly where BMPs and/or measurable goals that are outdated or no longer appropriate have been replaced or updated.
2. The National Endangered Species Eligibility Determination screening process has been completed and the Town of Boylston meets Criterion C. The Town's stormwater discharges and discharge related activities will have no affect on listed species or critical habitat. The Town will consult with U.S. Fish and Wildlife as needed during the permit term.
3. The National Historic Preservation Act Eligibility Determination screening process has been completed and the Town of Boylston meets Criterion A. The Town's stormwater discharges do not have the potential to cause effects on historic properties. The Town will consult with the State Historic Preservation Officer as needed during the permit term.
4. The total number of MS4 outfalls within Boylston's urbanized area has changed due to the 2010 U.S. Census. This will be further explained in the SWMP. The preliminary outfall locations in the new urbanized area are from DCR's drainage mapping and will be field verified over the permit term. The outfalls and associated receiving waters in Part II are based on mapping as of September 2018 and are subject to change during implementation of the Stormwater Management Program as newly constructed outfalls are added to the map and inventory; locations are adjusted; or outfalls are removed if they are determined to be non-municipally owned/operated or reclassified as a BMP inlet, culvert, or other structure. Changes to the outfall inventory and mapping will be formalized in Annual Reports to EPA.

Detailed explanations of the above notes will be included in the Town's Stormwater Management Plan.

Part V: Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

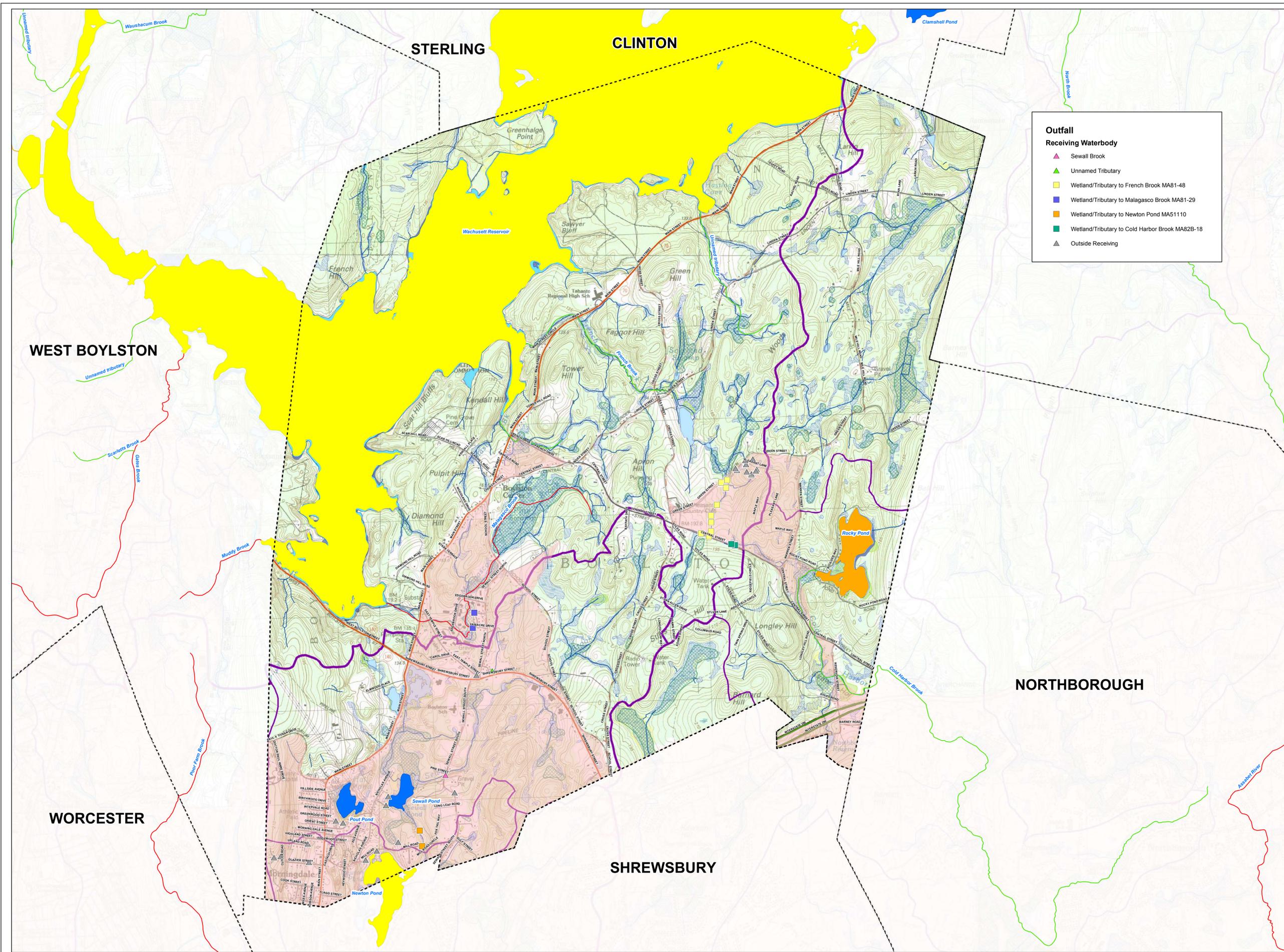
Name:

Title:

Signature:
[To be signed according to Appendix B, Subparagraph B.11, Standard Conditions]

Date:

Note: When prompted during signing, save the document under a new file name



Outfall

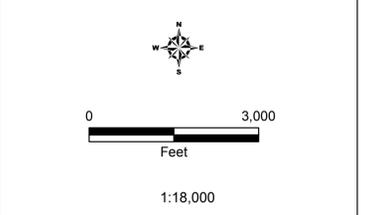
Receiving Waterbody

- ▲ Sewall Brook
- ▲ Unnamed Tributary
- Wetland/Tributary to French Brook MA81-48
- Wetland/Tributary to Malagasco Brook MA81-29
- Wetland/Tributary to Newton Pond MA51110
- Wetland/Tributary to Cold Harbor Brook MA82B-18
- ▲ Outside Receiving

OUTFALLS AND RECEIVING WATERBODIES

LEGEND

<p>Roads</p> <ul style="list-style-type: none"> — Limited Access Highway — Multi-Lane Highway, NOT Limited Access — Other Numbered Highway — Major Road - Collector — Minor Street or Road <p>Flood Zone Designations</p> <ul style="list-style-type: none"> ■ 100 Year Flood Zone <p>MassDEP 25K Hydrography (PSWS)</p> <ul style="list-style-type: none"> ■ Public Surface Water Supply ■ Water Bodies ■ Inland Wetlands — Stream/Intermittent Stream <p>National Wetlands Inventory Wetland Areas</p> <ul style="list-style-type: none"> ■ Freshwater Emergent Wetland ■ Freshwater Forested/Shrub Wetland ■ Freshwater Pond ■ Lake ■ Riverine — NWI Rivers and Streams 	<p>Water Body Segments - Rivers</p> <p>Category</p> <ul style="list-style-type: none"> — 2 - Attaining some uses; other uses not assessed — 3 - No uses assessed — 4A - Impaired - TMDL is completed — 4C - Impairment not caused by a pollutant — 5 - Impaired - TMDL required <p>Water Body Segments - Lakes, Estuaries</p> <p>Category</p> <ul style="list-style-type: none"> ■ 2 - Attaining some uses; other uses not assessed ■ 3 - No uses assessed ■ 4A - Impaired - TMDL is completed ■ 4C - Impairment not caused by a pollutant ■ 5 - Impaired - TMDL required
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- NOTES**
1. Based on USGS Topo Map (1988 and 1983)
 2. MassGIS: 2014 Integrated List Data (2016), Major Drainage Basins (2003), Subbasins (2007), Community Boundary (2017), National Wetlands Inventory (2007), FEMA National Flood Hazard (2017), MassDOT Major Roads (2014)
 3. Town of Boylston: Outfalls

Notice of Intent
Boylston, Massachusetts

September 2018





**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MA 02109-3912**

VIA EMAIL

April 5, 2019

James N. Wood
Chairman

And;

April Steward
Town Administrator
Town Hall
221 Main Street
Boylston, MA. 01505
asteward@boylston-ma.gov

Re: National Pollutant Discharge Elimination System Permit ID #: MAR041171, Town of
Boylston

Dear April Steward:

The 2016 NPDES General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts (MS4 General Permit) is a jointly issued EPA-MassDEP permit. Your Notice of Intent (NOI) for coverage under this MS4 General Permit has been reviewed by EPA and appears to be complete. You are hereby granted authorization by EPA and MassDEP to discharge stormwater from your MS4 in accordance with the applicable terms and conditions of the MS4 General Permit, including all relevant and applicable Appendices. This authorization to discharge expires at midnight on **June 30, 2022**.

For those permittees that certified Endangered Species Act eligibility under Criterion C in their NOI, this authorization letter also serves as EPA's concurrence with your determination that your discharges will have no effect on the listed species present in your action area, based on the information provided in your NOI.

As a reminder, your first annual report is due by **September 30, 2019** for the reporting period from May 1, 2018 through June 30, 2019.

Information about the permit and available resources can be found on our website: <https://www.epa.gov/npdes-permits/massachusetts-small-ms4-general-permit>. Should you have any questions regarding this permit please contact Newton Tedder at tedder.newton@epa.gov or (617) 918-1038.

Sincerely,

A handwritten signature in blue ink that reads "Thelma Murphy". The signature is fluid and cursive, with a long horizontal flourish extending to the right.

Thelma Murphy, Chief
Stormwater and Construction Permits Section
Office of Ecosystem Protection
United States Environmental Protection Agency, Region 1

and;

A handwritten signature in black ink that reads "Lealdon Langley". The signature is cursive and somewhat stylized, with a prominent loop at the end.

Lealdon Langley, Director
Wetlands and Wastewater Program
Bureau of Water Resources
Massachusetts Department of Environmental Protection

Appendix D

Endangered Species Act Eligibility Criteria Documentation

Endangered Species Act Eligibility Certification

TO: Town of Boylston Stormwater Management Program Files
FROM: Tighe & Bond
COPY: Boylston Stormwater Committee
DATE: February 27, 2019

Tighe & Bond has completed the National Endangered Species Eligibility Determination screening process in accordance with Part 1.9.1 and Appendix C of U.S. EPA's National Pollutant Discharge Elimination System (NPDES) General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) in Massachusetts (see Attachment A), effective July 1, 2018, and determined that the **Town of Boylston** meets **Criterion C**, where informal consultation with U.S. Fish and Wildlife Service (USFWS) resulted in a finding that the stormwater discharges and discharge related activities will have "no affect" on listed species or critical habitat.

Tighe & Bond followed EPA's screening process required by the 2016 Small MS4 General Permit as follows:

Tighe & Bond went to the USFWS Information for Planning and Consultation (IPaC) website¹ and requested an Official Species List from the USFWS New England Ecological Services Field Office, included in Attachment B. The Official Species List includes the following species that may occur or could potentially be affected by activities in the Town:

- Northern Long-eared Bat.

The Official Species List documents that there are no critical habitats in Boylston.

Tighe & Bond then went to the USFWS New England Field Office website for Endangered Species Reviews/Consultations² and selected the Massachusetts state list³ to review which Towns have federally-listed species. A copy of the list of Federally Listed Endangered and Threatened Species in Massachusetts is included in Attachment C. Based on review of this list, the Northern Long-eared Bat is listed statewide.

Tighe & Bond then reviewed Step 1 Part B of the USFWS endangered species consultation, and visited the Massachusetts Natural Heritage and Endangered Species Program (NHESP) species information and conservation website about the Northern Long-eared Bat⁴. The NHESP website included a map showing the known locations of the Northern Long-eared Bat within Massachusetts. Attachment D includes a map showing there are no roost trees or hibernating locations within Boylston.

Based on the results of the NHESP website review, Tighe & Bond determined there is no potential habitat for any USFWS listed endangered species within the action area and therefore no further coordination is required with the USFWS. Attachment E provides the results of Tighe & Bond's informal consultation on behalf of the Town of Boylston with USFWS,

¹ <http://ecos.fws.gov/ipac/>

² https://www.fws.gov/newengland/EndangeredSpec-Consultation_Project_Review.htm

³ <https://www.fws.gov/newengland/pdfs/MA%20species%20by%20town.pdf>

⁴ <http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/species-information-and-conservation/rare-mammals/northern-long-eared-bat.html>

including a “no species present” letter that states “no species are known to occur in the project area”.

Step 1 – Determine if you can meet USFWS Criterion A

“USFWS Criterion A: You can certify eligibility, according to USFWS Criterion A, for coverage by this permit if, upon completing the Information, Planning, and Conservation (IPaC) online system process, you printed and saved the preliminary determination which indicated that federally listed species or designated critical habitats are not present in the action area. See Attachment 1 to Appendix C for instructions on how to use IPaC.”

No, the Town of Boylston’s IPaC action area potentially contains the Northern Long-eared Bat.

Step 2 – Determine if You Can Meet Eligibility USFWS Criteria B

“USFWS Criterion B: You can certify eligibility according to USFWS Criteria B for coverage by this permit if you answer “Yes” to **all** of the following questions:

- 1) Does your action area contain one or more of the following species: Sandplain gerardia, Small whorled Pogonia, American burying beetle, Dwarf wedgemussel, Northeastern bulrush, Piping Plover, Northern Red-bellied cooter, Bog Turtle, Roseate Tern, Puritan tiger beetle, and Northeastern beach tiger beetle?”

No, the Town of Boylston’s action area does not contain any of the above species based on the Official Species List provided by the USFWS New England Ecological Services Field Office.

Step 3 – Determine if You Can Meet Eligibility USFWS Criteria C

“You can certify eligibility according to USFWS Criterion C for coverage by this permit if you answer “Yes” to both of the following questions:

- 1) Does your action area contain one or more of the following species: Northern Long-eared Bat, Sandplain gerardia, Small whorled Pogonia and/or American burying beetle and does not contain any following species: Dwarf wedgemussel, Northeastern bulrush, Piping Plover, Northern Red-bellied cooter, Bog Turtle, Roseate Tern, Puritan tiger beetle, and Northeastern beach tiger beetle?

Yes, the Town of Boylston’s action area potentially contains the Northern Long-eared Bat, but none of the other subsequent species.

- 2) Did the assessment of your discharge and discharge related activities indicate that there would be “no affect” on listed species or critical habitat and EOA provided concurrence with your determination?

Yes, Tighe & Bond performed an informal consultation with USFWS and determined that the Town’s discharges and discharge related activities will have “no affect” on listed species or critical habitat (see discussion above).

- 3) Do you agree that if, during the course of the permit term, you plan to install a structural BMP not identified in the NOI that you will conduct an endangered species screening for the proposed site and contact the USFWS if you determine that the new activity “may

affect” or is “not likely to adversely affect” listed species or critical habitat under the jurisdiction of the USFWS.”

Yes, during the course of the permit term the Town of Boylston agrees to conduct an endangered species screening for the proposed site and contact USFWS if they plan to install a structural BMP not identified in the NOI.

Tighe & Bond’s review of all questions under Step 3 resulted in “Yes” and thereby we determined the Town of Boylston’s action area meets the endangered species’ eligibility requirements included in Criterion C.

J:\B\B0768 Boylston Stormwater Assistance\REPORT\NOI\ESA\Endangered Species Act Eligibility Certification.docx

Attachment A

Appendix C of EPA's Small MS4 General Permit

APPENDIX C ENDANGERED SPECIES GUIDANCE

A. Background

In order to meet its obligations under the Clean Water Act and the Endangered Species Act (ESA), and to promote the goals of those Acts, the Environmental Protection Agency (EPA) is seeking to ensure the activities regulated by this general permit do not adversely affect endangered and threatened species or critical habitat. Applicants applying for permit coverage must assess the impacts of their stormwater discharges and discharge-related activities on federally listed endangered and threatened species (“listed species”) and designated critical habitat (“critical habitat”) to ensure that those goals are met. Prior to obtaining general permit coverage, applicants must meet the ESA eligibility provisions of this permit by following the steps in this Appendix¹.

Applicants also have an independent ESA obligation to ensure that their activities do not result in any prohibited “take” of listed species². The term “Take” is used in the ESA to include harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. “Harm” is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering. “Harass” is defined as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Many of the measures required in this general permit and in these instructions to protect species may also assist in ensuring that the applicant’s activities do not result in a prohibited take of species in violation of section 9 of the ESA. If the applicant has plans or activities in an area where endangered and threatened species are located, they may wish to ensure that they are protected from potential take liability under ESA section 9 by obtaining an ESA section 10 permit or by requesting formal consultation under ESA section 7. Applicants that are unsure whether to pursue a section 10 permit or a section 7 consultation for takings protection should confer with the appropriate United States Fish and Wildlife Service (USFWS) office or the National Marine Fisheries Service (NMFS), (jointly the Services).

Currently, there are 20 species of concern for applicants applying for permit coverage, namely the Dwarf wedgemussel (*Alasmidonta heterodon*), Northeastern bulrush (*Scirpus ancistrochaetus*), Sandplain gerardia (*Agalinis acuta*), Piping Plover (*Charadrius melodus*), Roseate Tern (*Sterna dougallii*), Northern Red-bellied cooter (*Pseudemys rubriventis*), Bog Turtle (*Glyptemys muhlenbergii*), Small whorled Pogonia (*Isotria medeoloides*), Puritan tiger beetle (*Cicindela puritana*), American burying beetle (*Nicrophorus americanus*), Northeastern beach tiger beetle (*Cicindela dorsalis*), Northern Long-eared Bat (*Myotis septentrionalis*), Atlantic Sturgeon (*Acipenser oxyrinchus*), Shortnose Sturgeon (*Acipenser brevirostrum*), North Atlantic Right Whale (*Eubalaena glacialis*), Humpback Whale (*Megaptera novaengliae*), Fin Whale (*Balaenoptera physalus*), Kemp’s Ridley Sea Turtle (*Lepidochelys kempii*), Loggerhead Sea Turtle (*Caretta caretta*), Leatherback Sea Turtle (*Dermochelys coriacea*), and the Green Turtle (*Chelonia*

¹ EPA strongly encourages applicants to begin this process at the earliest possible stage to ensure the notification requirements for general permit coverage are complete upon Notice of Intent (NOI) submission.

² Section 9 of the ESA prohibits any person from “taking” a listed species (e.g. harassing or harming it) unless: (1) the taking is authorized through an “incidental take statement” as part of completion of formal consultation according to ESA section 7; (2) where an incidental take permit is obtained under ESA section 10 (which requires the development of a habitat conversion plan; or (3) where otherwise authorized or exempted under the ESA. This prohibition applies to all entities including private individuals, businesses, and governments.

mydas). The Atlantic Sturgeon, Shortnose Sturgeon, North Atlantic Right Whale, Humpback Whale, Fin Whale, Loggerhead Sea Turtle, Kemp's Ridley Sea Turtle, Leatherback Sea Turtle and Green Turtle are listed under the jurisdiction of NMFS. The Dwarf wedgemussel, Northeastern bulrush, Sandplain gerardia, Piping Plover, Northern Red-bellied cooter, Bog Turtle, Small whorled Pogonia, Roseate Tern, Puritan tiger beetle, Northeastern beach tiger beetle, Northern Long-eared Bat and American burying beetle are listed under the jurisdiction of the U.S. Fish and Wildlife Service.

Any applicant seeking coverage under this general permit, must consult with the Services where appropriate. When listed species are present, permit coverage is only available if EPA determines, or the applicant determines and EPA concurs, that the discharge or discharge related activities will have "no affect" on the listed species or critical habitat, or the applicant or EPA determines that the discharge or discharge related activities are "not likely to adversely affect" listed species or critical habitat and formal or informal consultation with the Services has been concluded and results in written concurrence by the Services that the discharge is "not likely to adversely affect" an endangered or threatened species or critical habitat.

EPA may designate the applicants as non-Federal representatives for the general permit for the purpose of carrying out formal or informal consultation with the Services (See 50 CFR §402.08 and §402.13). By terms of this permit, EPA has automatically designated operators as non-Federal representatives for the purpose of conducting formal or informal consultation with the U.S. Fish and Wildlife Service. EPA has not designated operators as non-Federal representatives for the purpose of conducting formal or informal consultation with the National Marine Fisheries Service. EPA has determined that discharges from MS4s are not likely to adversely affect listed species or critical habitat under the jurisdiction of the National Marine Fisheries Service. EPA has initiated informal consultation with the National Marine Fisheries Service on behalf of all permittees and no further action is required by permittees in order to fulfill ESA requirements of this permit related to species under the jurisdiction of NMFS

B. The U.S. Fish and Wildlife Service ESA Eligibility Process

Before submitting a notice of intent (NOI) for coverage by this permit, applicants must determine whether they meet the ESA eligibility criteria by following the steps in Section B of this Appendix. Applicants that cannot meet the eligibility criteria in Section B must apply for an individual permit.

The USFWS ESA eligibility requirements of this permit relating to the Dwarf wedgemussel, Northeastern bulrush, Sandplain gerardia, Piping Plover, Northern Red-bellied cooter, Bog Turtle, Small whorled Pogonia, Roseate Tern, Puritan tiger beetle, Northeastern beach tiger beetle, Northern Long-eared Bat and American burying beetle may be satisfied by documenting that one of the following criteria has been met:

USFWS Criterion A: No endangered or threatened species or critical habitat are in proximity to the stormwater discharges or discharge related activities.

USFWS Criterion B: In the course of formal or informal consultation with the Fish and Wildlife Service, under section 7 of the ESA, the consultation resulted in either a no jeopardy opinion (formal consultation) or a written concurrence by USFWS on a finding that the stormwater discharges and

discharge related activities are “not likely to adversely affect” listed species or critical habitat (informal consultation).

USFWS Criterion C: Using the best scientific and commercial data available, the effect of the stormwater discharge and discharge related activities on listed species and critical habitat have been evaluated. Based on those evaluations, a determination is made by EPA, or by the applicant and affirmed by EPA, that the stormwater discharges and discharge related activities will have “no affect” on any federally threatened or endangered listed species or designated critical habitat under the jurisdiction of the USFWS.

1. The Steps to Determine if the USFWS ESA Eligibility Criteria Can Be Met

To determine eligibility, you must assess the potential effects of your known stormwater discharges and discharge related activities on listed species or critical habitat, PRIOR to completing and submitting a Notice of Intent (NOI). You must follow the steps outlined below and document the results of your eligibility determination.

Step 1 – Determine if you can meet USFWS Criterion A

USFWS Criterion A: You can certify eligibility, according to USFWS Criterion A, for coverage by this permit if, upon completing the Information, Planning, and Conservation (IPaC) online system process, you printed and saved the preliminary determination which indicated that federally listed species or designated critical habitats are not present in the action area. See Attachment 1 to Appendix C for instructions on how to use IPaC.

If you have met USFWS Criterion A skip to Step # 4.

If you have not met USFWS Criterion A, go to Step # 2.

Step 2 – Determine if You Can Meet Eligibility USFWS Criteria B

USFWS Criterion B: You can certify eligibility according to USFWS Criteria B for coverage by this permit if you answer “Yes” to **all** of the following questions:

- 1) Does your action area contain one or more of the following species: Sandplain gerardia, Small whorled Pogonia, American burying beetle, Dwarf wedgemussel, Northeastern bulrush, Piping Plover, Northern Red-bellied cooter, Bog Turtle, Roseate Tern, Puritan tiger beetle, and Northeastern beach tiger beetle?
AND
- 2) Did your assessment of the discharge and discharge related activities indicate that the discharge or discharge related activities “may affect” or are “not likely to adversely affect” listed species or critical habitat?
AND
- 3) Did you contact the USFWS and did the formal or informal consultation result in either a “no jeopardy” opinion by the USFWS (for formal consultation) or concurrence by the

USFWS that your activities would be “not likely to adversely affect” listed species or critical habitat (for informal consultation)?

AND

- 4) Do you agree to implement all measures upon which the consultation was conditioned?
- 5) Do you agree that if, during the course of the permit term, you plan to install a structural BMP not identified in the NOI that you will re-initiate informal or formal consultation with USFWS as necessary?

Use the guidance below Step 3 to understand effects determination and to answer these questions.

If you answered “Yes” to all four questions above, you have met eligibility USFWS Criteria B. Skip to Step 4.

If you answered “No” to any of the four questions above, go to Step 3.

Step 3 – Determine if You Can Meet Eligibility USFWS Criterion C

USFWS Criterion C: You can certify eligibility according to USFWS Criterion C for coverage by this permit if you answer “Yes” to both of the following question:

- 1) Does your action area contain one or more of the following species: Northern Long-eared Bat, Sandplain gerardia, Small whorled Pogonia and/or American burying beetle and **does not** contain one any following species: Dwarf wedgemussel, Northeastern bulrush, Piping Plover, Northern Red-bellied cooter, Bog Turtle, Roseate Tern, Puritan tiger beetle, and Northeastern beach tiger beetle?³
- OR
- 2) Did the assessment of your discharge and discharge related activities and indicate that there would be “no affect” on listed species or critical habitat and EPA provided concurrence with your determination?
- 3) Do you agree that if, during the course of the permit term, you plan to install a structural BMP not identified in the NOI that you will to conduct an endangered species screening for the proposed site and contact the USFWS if you determine that the new activity “may affect” or is “not likely to adversely affect” listed species or critical habitat under the jurisdiction of the USFWS.

Use the guidance below to understand effects determination and to answer these questions.

If you answered “Yes” to both the question above, you have met eligibility USFWS Criterion C. Go to Step 4.

If you answered “No” to either of the questions above, you are not eligible for coverage by this permit. You must submit an application for an individual permit for your stormwater discharges. (See 40 CFR 122.21).

USFWS Effects Determination Guidance:

If you are unable to certify eligibility under USFWS Criterion A, you must assess whether your stormwater discharges and discharge-related activities “may affect”, will have “no affect” or are “not likely to adversely affect” listed species or critical habitat. “Discharge-related activities” include: activities which cause, contribute to, or result in point source stormwater pollutant discharges; and measures to provide treatment for stormwater discharges including the siting, construction and operational procedures to control, reduce or prevent water pollution. Please be aware that no protection from incidental take liability is provided under this criterion.

The scope of effects to consider will vary with each system. If you are having difficulty in determining whether your system is likely to cause adverse effects to a listed species or critical habitat, you should contact the USFWS for assistance. In order to complete the determination of effects it may be necessary to follow the formal or informal consultation procedures in section 7 of the ESA.

Upon completion of your assessment, document the results of your effects determination. If your results indicate that stormwater discharges or discharge related activities will have “no affect” on threatened or endangered species or critical habitat and EPA concurs with your determination, you are eligible under USFWS Criterion C of this Appendix. Your determination may be based on measures that you implement to avoid, eliminate, or minimized adverse effects.

If the determination is “May affect” or “not likely to adversely affect” you must contact the USFWS to discuss your findings and measures you could implement to avoid, eliminate, or minimize adverse effects. If you and the USFWS reach agreement on measures to avoid adverse effects, you are eligible under USFWS Criterion B. Any terms and/or conditions to protect listed species and critical habitat that you relied on in order to complete an adverse effects determination, must be incorporated into your Storm Water Management Program (required by this permit) and implemented in order to maintain permit eligibility.

If endangered species issues cannot be resolved: If you cannot reach agreement with the USFWS on measures to avoid or eliminate adverse effects then you are not eligible for coverage under this permit. You must seek coverage under an individual permit.

Effects from stormwater discharges and discharge-related activities which could pose an adverse effect include:

- *Hydrological:* Stormwater discharges may cause siltation, sedimentation, or induce other changes in receiving waters such as temperature, salinity or pH. These effects will vary with the amount of stormwater discharged and the volume and condition of the receiving water. Where a discharge constitutes a minute portion of the total volume of the receiving water, adverse hydrological effects are less likely.
- *Habitat:* Excavation, site development, grading and other surface disturbance activities, including the installation or placement of treatment equipment may adversely affect listed species or their habitat. Stormwater from the small MS4 may inundate a listed species habitat.

- *Toxicity*: In some cases, pollutants in the stormwater may have toxic effects on listed species.

Step 4 - Document Results of the Eligibility Determination

Once the USFWS ESA eligibility requirements have been met, you shall include documentation of USFWS ESA eligibility in the Storm Water Management Program required by the permit. Documentation for the various eligibility criteria are as follows:

- USFWS Criterion A: A copy of the IPaC generated preliminary determination letter indicating that no listed species or critical habitat is present within your action area. You shall also include a statement on how you determined that no listed species or critical habitat are in proximity to your stormwater system or discharges.
- USFWS Criterion B: A dated copy of the USFWS letter of concurrence on a finding of “no jeopardy” (for formal consultation) or “not likely to adversely affect” (for informal consultation) regarding the ESA section 7 consultation.
- USFWS Criterion C: A dated copy of the EPA concurrence with the operator’s determination that the stormwater discharges and discharge-related activities will have “no affect” on listed species or critical habitat.

C. Submittal of Notice of Intent

Once the ESA eligibility requirements of Part C of this Appendix have been met you may submit the Notice of Intent indicating which Criterion you have met to be eligible for permit coverage. Signature and submittal of the NOI constitutes your certification, under penalty of law, of eligibility for permit coverage under 40 CFR 122.21.

D. Duty to Implement Terms and Conditions upon which Eligibility was Determined

You must comply with any terms and conditions imposed under the ESA eligibility requirements to ensure that your stormwater discharges and discharge related activities do not pose adverse effects or jeopardy to listed species and/or critical habitat. You must incorporate such terms and conditions into your Storm Water Management Program as required by this permit. If the ESA eligibility requirements of this permit cannot be met, then you may not receive coverage under this permit and must apply for an individual permit.

E. Services Information

United States Fish and Wildlife Service Office

National websites for Endangered Species Information:

Endangered Species home page: <http://endangered.fws.gov>

ESA Section 7 Consultations: <http://endangered.fws.gov/consultation/index.html>

Information, Planning, and Conservation System (IPAC): <http://ecos.fws.gov/ipac/>

U.S. FWS – Region 5

Supervisor

New England Field Office
U.S. Fish and Wildlife Services
70 Commercial Street, Suite 300
Concord, NH 03301

Natural Heritage Network

The Natural Heritage Network comprises 75 independent heritage program organizations located in all 50 states, 10 Canadian provinces, and 12 countries and territories located throughout Latin America and the Caribbean. These programs gather, manage, and distribute detailed information about the biological diversity found within their jurisdictions. Developers, businesses, and public agencies use natural heritage information to comply with environmental laws and to improve the environmental sensitivity of economic development projects. Local governments use the information to aid in land use planning.

The Natural Heritage Network is overseen by NatureServe, the Network's parent organization, and is accessible on-line at: http://www.natureserve.org/nhp/us_programs.htm, which provides websites and other access to a large number of specific biodiversity centers.

U.S. Fish and Wildlife IPaC system instructions

Use the following protocol to determine if any federally listed species or designated critical habitats under USFWS jurisdiction exist in your action area:

Enter your project specific information into the “Initial Project Scoping” feature of the Information, Planning, and Conservation (IPaC) system mapping tool, which can be found at the following location:

<http://ecos.fws.gov/ipac/>

- a. Indicate the action area¹ for the MS4 by either:
 - a. Drawing the boundary on the map or by uploading a shapefile.
Select “Continue”

- c. Click on the “SEE RESOURCE LIST” button and on the next screen you can export a trust resources list. This will provide a list of natural resources of concern, which will include an Endangered Species Act Species list. You may also request an official species list under “REGULATORY DOCUMENTS” Save copies and retain for your records

¹ The action area is defined by regulation as all areas to be affected directly or indirectly by the action and not merely the immediate area involved in the action (50 CFR §402.02). This analysis is not limited to the "footprint" of the action nor is it limited by the Federal agency's authority. Rather, it is a biological determination of the reach of the proposed action on listed species. Subsequent analyses of the environmental baseline, effects of the action, and levels of incidental take are based upon the action area.

The documentation used by a Federal action agency to initiate consultation should contain a description of the action area as defined in the Services' regulations and explained in the Services' consultation handbook. If the Services determine that the action area as defined by the action agency is incorrect, the Services should discuss their rationale with the agency or applicant, as appropriate. Reaching agreement on the description of the action area is desirable but ultimately the Services can only consult when an action area is defined properly under the regulations.

For storm water discharges or discharge related activities, the action area should encompass the following:

- The immediate vicinity of, or nearby, the point of discharge into receiving waters.
- The path or immediate area through which or over which storm water flows from the municipality to the point of discharge into the receiving water. This includes areas in the receiving water downstream from the point of discharge.
- Areas that may be impacted by construction or repair activities. This extends as far as effects related to noise (from construction equipment, power tools, etc.) and light (if work is performed at night) may reach.

The action area will vary with the size and location of the outfall pipe, the nature and quantity of the storm water discharges, and the type of receiving waters, among other factors.

Attachment B
Boylston IPaC Official Species List



United States Department of the Interior



FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
<http://www.fws.gov/newengland>

In Reply Refer To:
Consultation Code: 05E1NE00-2018-SLI-2946
Event Code: 05E1NE00-2019-E-01296
Project Name: Boylston NOI

December 19, 2018

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
-

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office

70 Commercial Street, Suite 300

Concord, NH 03301-5094

(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2018-SLI-2946

Event Code: 05E1NE00-2019-E-01296

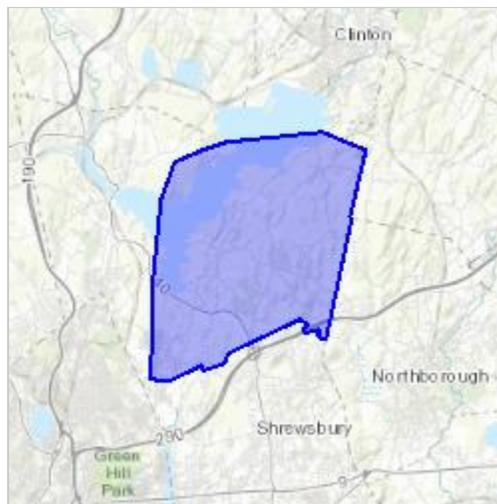
Project Name: Boylston NOI

Project Type: Regulation Promulgation

Project Description: This project is applying for coverage under the 2016 small municipal separate storm sewer systems (MS4) General Permit. The project consists of the entire area of the Town of Boylston's MS4 that falls within the urbanized area of the town. Based on EPA's 2016 MS4 General Permit, Boylston must assess the impacts of the stormwater discharges and discharge-related activities on endangered and threatened species and designated critical habitats that fall within the MS4.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/42.35225180398102N71.72120639300658W>



Counties: Worcester, MA

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Attachment C
Federally Listed Endangered and Threatened Species in
Massachusetts

**FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN
MASSACHUSETTS**

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Barnstable	Piping Plover	Threatened	Coastal Beaches	All Towns
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	All Towns
	Northeastern beach tiger beetle	Threatened	Coastal Beaches	Chatham
	Sandplain gerardia	Endangered	Open areas with sandy soils.	Sandwich and Falmouth.
	Northern Red-bellied Cooter	Endangered	Inland Ponds and Rivers	Bourne (north of the Cape Cod Canal)
	Red Knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Berkshire	Bog Turtle	Threatened	Wetlands	Egremont and Sheffield
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Bristol	Piping Plover	Threatened	Coastal Beaches	Fairhaven, Dartmouth, Westport
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Fairhaven, New Bedford, Dartmouth, Westport
	Northern Red-bellied Cooter	Endangered	Inland Ponds and Rivers	Taunton
	Red Knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Dukes	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	All Towns
	Piping Plover	Threatened	Coastal Beaches	All Towns
	Northeastern beach tiger beetle	Threatened	Coastal Beaches	Aquinnah and Chilmark
	Sandplain gerardia	Endangered	Open areas with sandy soils.	West Tisbury
	Red Knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

**FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES
IN MASSACHUSETTS**

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Essex	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Gloucester, Essex and Manchester
	Piping Plover	Threatened	Coastal Beaches	Gloucester, Essex, Ipswich, Rowley, Revere, Newbury, Newburyport and Salisbury
	Red Knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Franklin	Northeastern bulrush	Endangered	Wetlands	Montague, Warwick
	Dwarf wedgemussel	Endangered	Mill River	Whately
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Hampshire	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Hadley
	Puritan tiger beetle	Threatened	Sandy beaches along the Connecticut River	Northampton and Hadley
	Dwarf wedgemussel	Endangered	Rivers and Streams.	Hatfield, Amherst and Northampton
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Hampden	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Southwick
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Middlesex	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Groton
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Nantucket	Piping Plover	Threatened	Coastal Beaches	Nantucket
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Nantucket
	American burying beetle	Endangered	Upland grassy meadows	Nantucket
	Red Knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

**FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES
IN MASSACHUSETTS**

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Plymouth	Piping Plover	Threatened	Coastal Beaches	Scituate, Marshfield, Duxbury, Plymouth, Wareham and Mattapoissett
	Northern Red-bellied Cooter	Endangered	Inland Ponds and Rivers	Kingston, Middleborough, Carver, Plymouth, Bourne, Wareham, Halifax, and Pembroke
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Plymouth, Marion, Wareham, and Mattapoissett.
	Red Knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Suffolk	Piping Plover	Threatened	Coastal Beaches	Revere, Winthrop
	Red Knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Worcester	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Leominster
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

¹Migratory only, scattered along the coast in small numbers

-Eastern cougar and gray wolf are considered extirpated in Massachusetts.

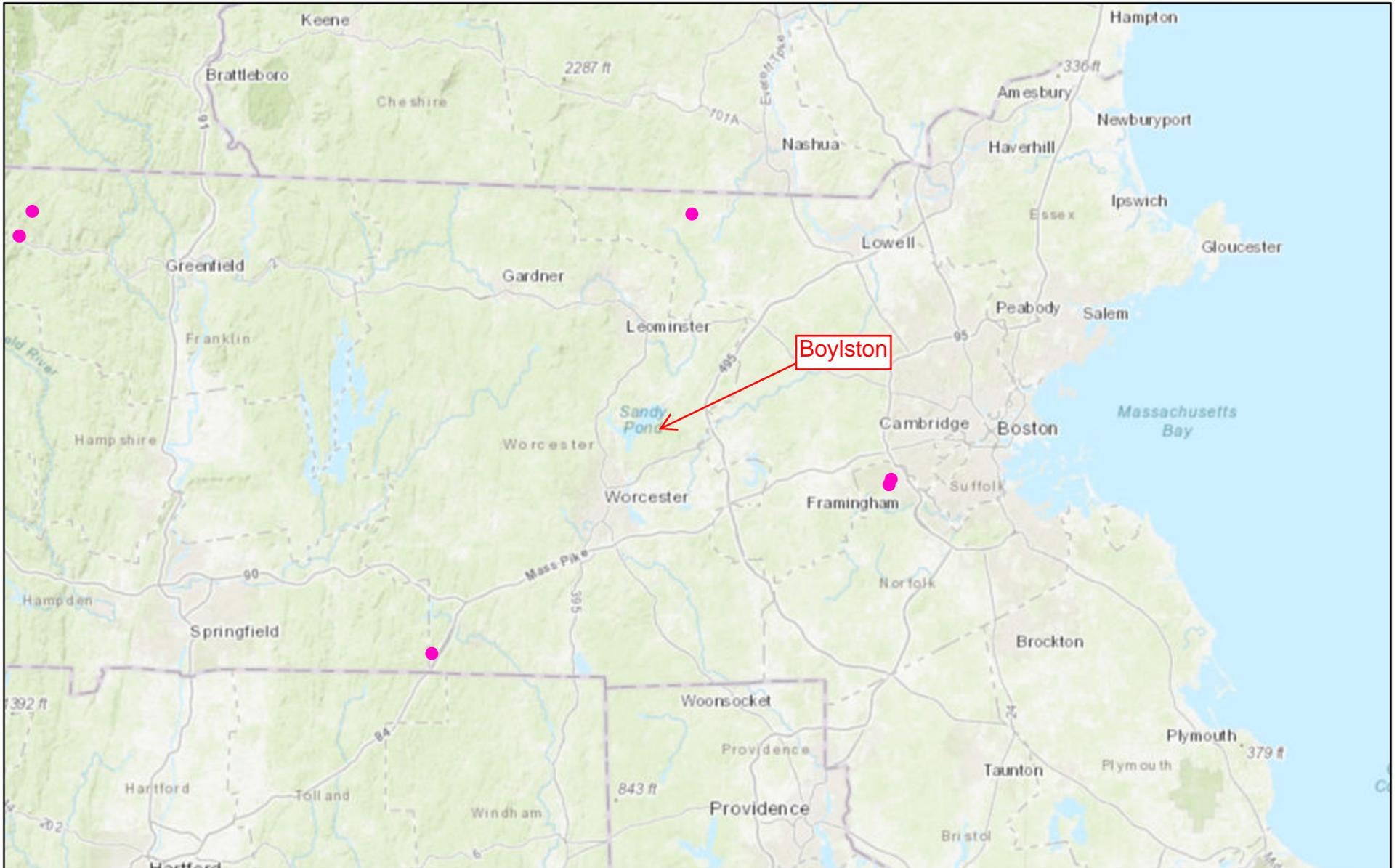
-Endangered gray wolves are not known to be present in Massachusetts, but dispersing individuals from source populations in Canada may occur statewide.

-Critical habitat for the Northern Red-bellied Cooter is present in Plymouth County.

Attachment D

Northern Long-eared Bat Location Map

Northern Long-eared Bat Locations

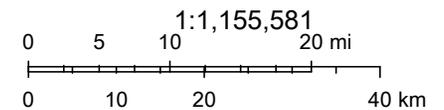


August 31, 2018

Statewide NLEB Symbology

● Hibernaculum

■ MA Northern Long-eared Bat Winter Hibernacula (with 1/4 mile buffer)



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri

Attachment E
U.S. Fish and Wildlife Review Letter



United States Department of the Interior



FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087
<http://www.fws.gov/newengland>

January 31, 2019

To Whom It May Concern:

This project was reviewed for the presence of federally listed or proposed, threatened or endangered species or critical habitat per instructions provided on the U.S. Fish and Wildlife Service's New England Field Office website:

<http://www.fws.gov/newengland/EndangeredSpec-Consultation.htm> (accessed January 2019)

Based on information currently available to us, no federally listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project area(s). Preparation of a Biological Assessment or further consultation with us under section 7 of the Endangered Species Act is not required. No further Endangered Species Act coordination is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

Thank you for your cooperation. Please contact David Simmons of this office at 603-227-6425 if we can be of further assistance.

Sincerely yours,

Thomas R. Chapman
Supervisor
New England Field Office

Appendix E

Historic Properties Eligibility Criteria Documentation

National Historic Preservation Act Eligibility Certification

To: Town of Boylston Stormwater Management Program Files
FROM: Tighe & Bond
COPY: Boylston Stormwater Committee
DATE: February 27, 2019

Tighe & Bond has completed the National Historic Preservation Act Eligibility Determination screening process in accordance with Part 1.9.2 and Appendix D of U.S. EPA's National Pollutant Discharge Elimination System (NPDES) General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) in Massachusetts (see Attachment A), effective July 1, 2018, and determined that the **Town of Boylston** meets **Criterion A**, where the discharges do not have the potential to cause effects on historic properties.

Tighe & Bond followed the screening process included in Appendix D and has determined Boylston is an existing facility authorized by the previous permit and therefore meets Criterion A (see Question 1 in Appendix D of the Permit) and is not, as part of developing and submitting the Notice of Intent for permit coverage, undertaking any activity involving subsurface land disturbance less than an acre.

Based on this screening process, the Town of Boylston's stormwater discharges, allowable non-stormwater discharges, and stormwater discharge-related activities will not have an effect on a property that is listed or eligible for listing on the National Register of Historic Properties (NRHP) and no further action is necessary at this time.

Attachment B includes a list of the federal- and state-listed historic areas, buildings, burial grounds, objects, and structures downloaded from the Massachusetts Cultural Resource Information System (MACRIS) that is current as of August 31, 2018. If the Town undertakes construction on or around a property that is listed or eligible for listing, the Town will coordinate with the Tribal Historic Preservation Officer (THPO) or State Historic Preservation Officer (SHPO) (i.e. the Massachusetts Historical Commission) by submitting a Project Notification Form and associated documentation for the project. As applicable for each project, the Town will implement measures to avoid or minimize adverse impacts on places listed, or eligible for listing, on the NRHP, including any conditions imposed by the SHPO or THPO. If the Town fails to document and implement such measures, those discharges are ineligible for coverage under EPA's Small MS4 General Permit.

Attachment A

Appendix D of EPA's Small MS4 General Permit

Appendix D

National Historic Preservation Act Guidance

Background

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to take into account the effects of Federal “undertakings” on historic properties that are either listed on, or eligible for listing on, the National Register of Historic Places. The term federal “undertaking” is defined in the NHPA regulations to include a project, activity, or program of a federal agency including those carried out by or on behalf of a federal agency, those carried out with federal financial assistance, and those requiring a federal permit, license or approval. See 36 CFR 800.16(y). Historic properties are defined in the NHPA regulations to include prehistoric or historic districts, sites, buildings, structures, or objects that are included in, or are eligible for inclusion in, the National Register of Historic Places. This term includes artifacts, records, and remains that are related to and located within such properties. See 36 CFR 800.16(1).

EPA’s issuance of a National Pollutant Discharge Elimination System (NPDES) General Permit is a federal undertaking within the meaning of the NHPA regulations and EPA has determined that the activities to be carried out under the general permit require review and consideration, in order to be in compliance with the federal historic preservation laws and regulations. Although individual submissions for authorization under the general permit do not constitute separate federal undertakings, the screening processes provides an appropriate site-specific means of addressing historic property issues in connection with EPA’s issuance of the permit. To address any issues relating to historic properties in connection with the issuance of this permit, EPA has included a screening process for applicants to identify whether properties listed or eligible for listing on the National Register of Historic Places are within the path of their discharges or discharge-related activities (including treatment systems or any BMPs relating to the discharge or treatment process) covered by this permit.

Applicants seeking authorization under this general permit must comply with applicable, State, Tribal, and local laws concerning the protection of historic properties and places and may be required to coordinate with the State Historic Preservation Officer (SHPO) and/or Tribal Historic Preservation Officer (THPO) and others regarding effects of their discharges on historic properties.

Activities with No Potential to Have an Effect on Historic Properties

A determination that a federal undertaking has no potential to have an effect on historic properties fulfills an agency’s obligations under NHPA. EPA has reason to believe that the vast majority of activities authorized under this general permit will have no potential effects on historic properties. This permit typically authorizes discharges from existing facilities and requires control of the pollutants discharged from the facility. EPA does not anticipate effects on historic properties from the pollutants in the authorized discharges. Thus, to the extent EPA’s issuance of this general permit authorizes discharges of such constituents, confined to existing channels, outfalls or natural drainage areas, the permitting action does not have the potential to cause effects on historical properties.

In addition, the overwhelming majority of sources covered under this permit will be facilities that are seeking renewal of previous permit authorization. These existing dischargers should have already addressed NHPA issues in the previous general permit as they were required to certify that they were either not affecting historic properties or they had obtained written agreement from

the applicable SHPO or THPO regarding methods of mitigating potential impacts. To the extent this permit authorizes renewal of prior coverage without relevant changes in operations the discharge has no potential to have an effect on historic properties.

Activities with Potential to Have an Effect on Historic Properties

EPA believes this permit may have some potential to have an effect on historic properties the applicant undertakes the construction and/or installation of control measures that involve subsurface disturbance that involves less than 1 acre of land. (Ground disturbances of 1 acre or more require coverage under the Construction General Permit.) Where there is disturbance of land through the construction and/or installation of control measures, there is a possibility that artifacts, records, or remains associated with historic properties could be impacted. Therefore, if the applicant is establishing new or altering existing control measures to manage their discharge that will involve subsurface ground disturbance of less than 1 acre, they will need to ensure (1) that historic properties will not be impacted by their activities or (2) that they are in compliance with a written agreement with the SHPO, THPO, or other tribal representative that outlines all measures the applicant will carry out to mitigate or prevent any adverse effects on historic properties.

Examples of Control Measures Which Involve Subsurface Disturbance

The type of control measures that are presumptively expected to cause subsurface ground disturbance include:

- Dikes
- Berms
- Catch basins, drainage inlets
- Ponds, bioretention areas
- Ditches, trenches, channels, swales
- Culverts, pipes
- Land manipulation; contouring, sloping, and grading
- Perimeter Drains
- Installation of manufactured treatment devices

EPA cautions applicants that this list is non-inclusive. Other control measures that involve earth disturbing activities that are not on this list must also be examined for the potential to affect historic properties.

Certification

Upon completion of this screening process the applicant shall certify eligibility for this permit using one of the following criteria on their Notice of Intent for permit coverage:

Criterion A: The discharges do not have the potential to cause effects on historic properties.

Criterion B: A historic survey was conducted. The survey concluded that no historic properties are present. Discharges do not have the potential to cause effects on historic properties.

Criterion C: The discharges and discharge related activities have the potential to have an effect on historic properties, and the applicant has obtained and is in compliance with a written agreement with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (TPHO), or other tribal representative that outlines measures the applicant will carry out to mitigate or prevent any adverse effects on historic properties.

Authorization under the general permit is available only if the applicant certifies and documents permit eligibility using one of the eligibility criteria listed above. Small MS4s that cannot meet any of the eligibility criteria in above must apply for an individual permit.

Screening Process

Applicants or their consultant need to answer the questions and follow the appropriate procedures below to assist EPA in compliance with 36 CFR 800.

Question 1: Is the facility an existing facility authorized by the previous permit or a new facility and the applicant is not undertaking any activity involving subsurface land disturbance less than an acre?

YES - The applicant should certify that fact in writing and file the statement with the EPA. This certification must be maintained as part of the records associated with the permit.

The applicant should certify eligibility for this permit using Criterion A on their Notice of Intent for permit coverage. The applicant does not need to contact the state Historic Commission. Based on that statement, EPA will document that the project has “no potential to cause effects” (36 CFR 800.3(a)(1)). There are no further obligations under the Section 106 regulations.

NO- Go to Question 2.

Question 2: Is the property listed in the National Register of Historic Places or have prior surveys or disturbances revealed the existence of a historic property or artifacts?

NO - The applicant should certify that fact in writing and file the statement with the EPA. This certification must be maintained as part of the records associated with the permit.

The applicant should certify eligibility for this permit using Criterion B on their Notice of Intent for permit coverage. The applicant does not need to contact the state Historic Commission. Based on that statement, EPA will document that the project has “no potential to cause effects” (36 CFR 800.3(a)(1)). There are no further obligations under the Section 106 regulations.

YES - The applicant or their consultant should prepare a complete information submittal to the SHPO. The submittal consists of:

- Completed Project Notification Form- forms available at <http://www.sec.state.ma.us/mhc/mhcform/formidx.htm>;

- USGS map section with the actual project boundaries clearly indicated; and
- Scaled project plans showing existing and proposed conditions.

(1) Please note that the SHPO does not accept email for review. Please mail a paper copy of your submittal (Certified Mail, Return Receipt Requested) or deliver a paper copy of your submittal (and obtain a receipt) to:

State Historic Preservation Officer
Massachusetts Historical Commission
220 Morrissey Blvd.
Boston MA 02125.

(2) Provide a copy of your submittal and the proof of MHC delivery showing the date MHC received your submittal to:

NPDES Permit Branch Chief
US EPA Region 1 (OEP06-1)
5 Post Office Square, Suite 100
Boston MA 02109-3912.

The SHPO will comment within thirty (30) days of receipt of complete submittals, and may ask for additional information. Consultation, as appropriate, will include EPA, the SHPO and other consulting parties (which includes the applicant). The steps in the federal regulations (36 CFR 800.2 to 800.6, etc.) will proceed as necessary to conclude the Section 106 review for the undertaking. **The applicant should certify eligibility for this permit using Criterion C on their Notice of Intent for permit coverage.**

Attachment B

MACRIS list of federal- and state-listed historic areas, buildings,
burial grounds, objects, and structures

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Boylston; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year
BOY.A	Boylston Historic District		Boylston	
BOY.B	Windsor Park and City Gardens		Boylston	
BOY.902	Bay Path Road	Bay Path Rd	Boylston	1630
BOY.55	Johnson, Claus Oscar House	11 Belair St	Boylston	c 1919
BOY.56	Lund, Caren House	15 Belair St	Boylston	1917
BOY.3	Boylston Town Hall and Museum	Central St	Boylston	1830
BOY.1	Bond Corner Store	1 Central St	Boylston	1929
BOY.24	Collier, Ezra - Crossman, Abishai Jr. House	11 Central St	Boylston	c 1819
BOY.5	Winchester, H. House	15 Central St	Boylston	r 1805
BOY.25	White, Henry House	20 Central St	Boylston	c 1869
BOY.26	Chinnery, Dr. Thaddeus - Andrews, Dr. John House	29-31 Central St	Boylston	c 1804
BOY.33	Abbot, Capt. Jason - Boyden, George House	92 Central St	Boylston	r 1825
BOY.42	Whitney, Lt. Timothy - Babcock, Peter House	119 Central St	Boylston	1742
BOY.43	Longley, Charles I. House	219 Central St	Boylston	r 1865
BOY.44	Hastings, James House	239 Central St	Boylston	1815
BOY.31	Hastings, Daniel House	246 Central St	Boylston	c 1728
BOY.6	Boylston First Congregational Church	Church St	Boylston	1927
BOY.29	First Congregational Church Parsonage	Church St	Boylston	1950
BOY.14	Abbott Tavern	4 Church St	Boylston	c 1805
BOY.16	Cotton, Rev. Ward House	Cottonwood Pl	Boylston	c 1800
BOY.38	Howe, Phineas - Howe, Capt. John House	30 Cross St	Boylston	c 1727
BOY.17	Kendall, Caleb House	18 Diamond Hill Ave	Boylston	1794
BOY.41	Keyes, Dea. Cyprian House - Barlin Acres	284 East Temple St	Boylston	c 1790
BOY.52	Flagg, Montraville - Hastings, Lt. John House	Elmwood Pl	Boylston	c 1800
BOY.45	Brigham, Joel and John House	439 Green St	Boylston	
BOY.35	Brigham, Dr. Samuel - Ball, Dr. Stephen House	Linden St	Boylston	r 1775

Inv. No.	Property Name	Street	Town	Year
BOY.904	Bigelow, Dr. Andrew Gold Mine	Linden St	Boylston	r 1875
BOY.37	Howe, Parker House and Blacksmith Shop	39 Linden St	Boylston	r 1815
BOY.36	Bennett, Samuel House	142 Linden St	Boylston	c 1725
BOY.30	Houghton, Solomon House	330 Linden St	Boylston	r 1750
BOY.903	Rocky Pond Ledges	330 Linden St	Boylston	
BOY.34	Ball, William - Longley, Ira House	426 Linden St	Boylston	r 1795
BOY.21	Sawyer Memorial Library	Main St	Boylston	1904
BOY.51	Morningdale School	Main St	Boylston	1926
BOY.800	Boylston Old Burial Ground	Main St	Boylston	1745
BOY.900	Boylston Powder House Marker	Main St	Boylston	1972
BOY.50	Saint Mary of the Hills Roman Catholic Church	148 Main St	Boylston	1926
BOY.64	Eldridge, Clifford T. House	149 Main St	Boylston	r 1875
BOY.58	Bond, Dea. Jonathon Jr. House	178 Main St	Boylston	c 1800
BOY.59		181 Main St	Boylston	c 1910
BOY.48	Bond, Dea. Jonathan House	183 Main St	Boylston	1757
BOY.47	Gough, John Bartholomew House	221 Main St	Boylston	1848
BOY.60	Bunker, Eva M. House	264 Main St	Boylston	1921
BOY.53	Flagg, Stephen - Holland, Lt. James House	307 Main St	Boylston	r 1775
BOY.23	Brigham, Stephen House	565 Main St	Boylston	c 1812
BOY.10	Boylston Men's Club Hall	599 Main St	Boylston	1923
BOY.22	Bush, Jotham - Kendall, Caleb House	620 Main St	Boylston	r 1780
BOY.7	Stratton, Phineas House	644 Main St	Boylston	c 1849
BOY.20	Taylor Tavern	651 Main St	Boylston	c 1760
BOY.8	Taylor, David - White, Aaron Tavern Ell	661 Main St	Boylston	c 1770
BOY.9	Hastings, Silas Tavern	701 Main St	Boylston	1818
BOY.61	Johnson, Albert C. House	21 Melrose St	Boylston	1924
BOY.32	Ball, Elijah House	211 Mile Hill Rd	Boylston	1778
BOY.62	Gasek, Walter M. House	72 Nicholas Ave	Boylston	1935
BOY.63		40 Poe Ave	Boylston	c 1920
BOY.46	Fassett, Capt. Jonathan House	64 Reservoir Rd	Boylston	r 1775
BOY.40	Rocky Pond Farm	25 Rocky Pond Rd	Boylston	1784
BOY.11		1 Scar Hill Rd	Boylston	c 1925
BOY.12	Boylston Telephone Exchange	5 Scar Hill Rd	Boylston	r 1925
BOY.15	Bigelow Parsonage	9 Scar Hill Rd	Boylston	1873
BOY.13	Andrews, Capt. John T. House	10-12 Scar Hill Rd	Boylston	c 1859
BOY.4	Fairbanks, Rev. Eleazor House	5 School St	Boylston	1779
BOY.2	Chinnery, Dr. Thaddeus - Bigelow, Rev. Andrew Hse	15 School St	Boylston	1793

Inv. No.	Property Name	Street	Town	Year
BOY.19	Glazier, Calvin House	16 School St	Boylston	c 1770
BOY.18	Boylston Second Noon House	22 School St	Boylston	1799
BOY.27	Keyes, Amasa House	30 School St	Boylston	1809
BOY.28	Strawberry Hill Farm	111 School St	Boylston	c 1743
BOY.54	Partridge, Simon House	298 Sewall St	Boylston	1850
BOY.57	Leyon, Ernest A. House	32 Stockton St	Boylston	1917
BOY.39	Maynard, Elisha House	30 Tower Hill Rd	Boylston	r 1735
BOY.901	Wachusett Reservoir	Wachusett Reservoir	Boylston	r 1905

Appendix F

Plan Amendment Log



STORMWATER MANAGEMENT PLAN AMENDMENT LOG

Amend. No.	Description of the Amendment	Date of Amend.	Amendment Prepared by
1	<p>The Stormwater Management Plan was updated to include:</p> <ul style="list-style-type: none"> • Updated Workplan for Permit Year 3 activities • Updated MS4 Record Keeping log in Appendix H • Year 1, Year 2, and Year 3 Annual Reports and attachments in Appendix H • Phase I MS4 System Map in Appendix H • MS4 General Permit "Lake Phosphorus Control Plan (LPCP)" for Newton Pond: <i>Legal Analysis</i> in Appendix I <p>The Illicit Discharge Detection and Elimination Plan was updated to include:</p> <ul style="list-style-type: none"> • Phase I MS4 System Map in Appendix C • Catchment Investigation Procedures in Appendix E • Summary of TMDLs and Impaired Waters based on the 2016 303(d) List in Appendix F. This supersedes information provided in Section 7.1.1 of the IDDE Plan regarding the 2014 Integrated List of Waters. • Annual IDDE Program employee training records in Appendix G • Year 3 Illicit Discharge Removal Reports in Appendix H • Year 3 Water Quality Monitoring data from DCR in Appendix H 	November 2021	Cassandra LaRoche, PE Project Engineer Tighe&Bond
2	<p>The Stormwater Management Plan was updated to include:</p> <ul style="list-style-type: none"> • Updated Workplan for Permit Year 4 activities • Updated MS4 Annual Reporting Log in Appendix H • Year 4 Annual Report and attachments in Appendix H • Local Code Assessment in Appendix H • <i>Lake Phosphorus Control Plan (LPCP) for Newton Pond</i> in Appendix I <p>The Illicit Discharge Detection and Elimination Plan was updated to include:</p> <ul style="list-style-type: none"> • Summary of TMDLs and Impaired Waters based on the 2018/2020 303(d) List and latest Integrated List of Waters in Appendix F. This supersedes information provided in Section 7.1.1 of the IDDE Plan regarding the 2014 and 2016 Integrated List of Waters. • Annual IDDE Program employee training log in Appendix G 	October 2022	Cassandra LaRoche, PE Project Manager Tighe&Bond



STORMWATER MANAGEMENT PLAN AMENDMENT LOG

3	<p>The Stormwater Management Plan was updated to include:</p> <ul style="list-style-type: none"> • Updated MS4 Annual Reporting Log in Appendix H • Year 5 Annual Report and attachments in Appendix H <p>The Illicit Discharge Detection and Elimination Plan was updated to include:</p> <ul style="list-style-type: none"> • Summary of TMDLs and Impaired Waters based on the 2022 303(d) List and latest Integrated List of Waters in Appendix F. This supersedes information provided in Section 7.1.1 of the IDDE Plan regarding the 2014, 2016, and 2018/2020 Integrated List of Waters. • Annual IDDE Program employee training log added to Appendix G. • IDDE Program Update for Permit Year 5 memorandum, dated September 2023, added to Appendix H. 	October 2023	Cassandra LaRoche, PE Project Manager Tighe&Bond
4			
5			
6			
7			
8			
9			
10			

Appendix G

Reference Documents

Pollutant Impacts on Water Quality

Sediment	Sediment is a common component of stormwater, and can be a pollutant. Sediment can be detrimental to aquatic life (primary producers, benthic invertebrates, and fish) by interfering with photosynthesis, respiration, growth, reproduction, and oxygen exchange in water bodies. Sediment can transport other pollutants that are attached to it including nutrients, trace metals, and hydrocarbons. Sediment is the primary component of total suspended solids (TSS), a common water quality analytical parameter.
Nutrients	Nutrients including nitrogen and phosphorous are the major plant nutrients used for fertilizing landscapes, and are often found in stormwater. These nutrients can result in excessive or accelerated growth of vegetation, such as algae, resulting in impaired use of water in lakes and other sources of water supply. For example, nutrients have led to a loss of water clarity in Lake Tahoe. In addition, un-ionized ammonia (one of the nitrogen forms) can be toxic to fish.
Bacteria and Viruses	Bacteria and viruses are common contaminants of stormwater. For separate storm drain systems, sources of these contaminants include animal excrement and sanitary sewer overflow. High levels of indicator bacteria in stormwater have led to the closure of beaches, lakes, and rivers to contact recreation such as swimming.
Oil and Grease	Oil and grease includes a wide array of hydrocarbon compounds, some of which are toxic to aquatic organisms at low concentrations. Sources of oil and grease include leakage, spills, cleaning and sloughing associated with vehicle and equipment engines and suspensions, leaking and breaks in hydraulic systems, restaurants, and waste oil disposal.
Metals	Metals including lead, zinc, cadmium, copper, chromium, and nickel are commonly found in stormwater. Many of the artificial surfaces of the urban environment (e.g., galvanized metal, paint, automobiles, or preserved wood) contain metals, which enter stormwater as the surfaces corrode, flake, dissolve, decay, or leach. Over half the trace metal load carried in stormwater is associated with sediments. Metals are of concern because they are toxic to aquatic organisms, can bioaccumulate (accumulate to toxic levels in aquatic animals such as fish), and have the potential to contaminate drinking water supplies.
Organics	Organics may be found in stormwater at low concentrations. Often synthetic organic compounds (adhesives, cleaners, sealants, solvents, etc.) are widely applied and may be improperly stored and disposed. In addition, deliberate dumping of these chemicals into storm drains and inlets causes environmental harm to waterways.
Pesticides	Pesticides (including herbicides, fungicides, rodenticides, and insecticides) have been repeatedly detected in stormwater at toxic levels, even when pesticides have been applied in accordance with label instructions. As pesticide use has increased, so too have concerns about the adverse effects of pesticides on the environment and human health. Accumulation of these compounds in simple aquatic organisms, such as plankton, provides an avenue for biomagnification through the food web, potentially resulting in elevated levels of toxins in organisms that feed on them, such as fish and birds.
Gross Pollutants	Gross Pollutants (trash, debris and floatables) may include heavy metals, pesticides, and bacteria in stormwater. Typically resulting from an urban environment, industrial sites and construction sites, trash and floatables may create an aesthetic "eye sore" in waterways. Gross pollutants also include plant debris (such as leaves and lawn-clippings from landscape maintenance), animal excrement, street litter, and other organic matter. Such substances may harbor bacteria, viruses, vectors, and depress the dissolved oxygen levels in streams, lakes and estuaries sometimes causing fish kills.
Vector Production	Vector production (e.g., mosquitoes, flies, and rodents) is frequently associated with sheltered habitats and standing water. Unless designed and maintained properly, standing water may occur in treatment control BMP's for 72 hours or more, thus providing a source for vector habitat and reproduction (Metzger, 2002).

Source: California Stormwater Quality Association, Stormwater BMP Handbook, 2003.

Potential pollutants likely associated with specific *municipal facilities*

Municipality Facility Activity	Potential Pollutants								
	Sediment	Nutrients	Trash	Metals	Bacteria	Oil & Grease	Organics	Pesticides	Oxygen Demanding Substances
Building and Grounds Maintenance and Repair	X	X	X	X	X	X	X	X	X
Parking/Storage Area Maintenance	X	X	X	X	X	X	X		X
Waste Handling and Disposal	X	X	X	X	X	X	X	X	X
Vehicle and Equipment Fueling			X	X		X	X		
Vehicle and Equipment Maintenance and Repair				X		X	X		
Vehicle and Equipment Washing and Steam Cleaning	X	X	X	X		X	X		
Outdoor Loading and Unloading of Materials	X	X	X	X		X	X	X	X
Outdoor Container Storage of Liquids		X		X		X	X	X	X
Outdoor Storage of Raw Materials	X	X	X			X	X	X	X
Outdoor Process Equipment	X		X	X		X	X		
Overwater Activities			X	X	X	X	X	X	X
Landscape Maintenance	X	X	X		X			X	X

Source: California Stormwater BMP Handbook (<http://www.cabmphandbooks.com/>)(slightly modified)

Potential pollutants likely associated with *municipal activities*

Municipal Program	Activities	Potential Pollutants								
		Sediment	Nutrients	Trash	Metals	Bacteria	Oil & Grease	Organics	Pesticides	Oxygen Demanding Substances
Roads, Streets, and Highways Operation and Maintenance	Sweeping and Cleaning	X		X	X		X			X
	Street Repair, Maintenance, and Striping/Painting	X		X	X		X	X		
	Bridge and Structure Maintenance	X		X	X		X	X		
Plaza, Sidewalk, and Parking Lot Maintenance and Cleaning	Surface Cleaning	X	X			X	X			X
	Graffiti Cleaning	X	X		X			X		
	Sidewalk Repair	X		X						
	Controlling Litter	X		X		X	X			X
Fountains, Pools, Lakes, and Lagoons Maintenance	Fountain and Pool Draining		X					X		
	Lake and Lagoon Maintenance	X	X	X		X			X	X
Landscape Maintenance	Mowing/Trimming/Planting	X	X	X		X			X	X
	Fertilizer & Pesticide Management	X	X						X	
	Managing Landscape Wastes			X					X	X
	Erosion Control	X	X							
Drainage System Operation and Maintenance	Inspection and Cleaning of Stormwater Conveyance Structures	X	X	X		X		X		X
	Controlling Illicit Connections and Discharges	X	X	X	X	X	X	X	X	X
	Controlling Illegal Dumping	X	X	X	X	X	X	X	X	X
	Maintenance of Inlet and Outlet Structures	X		X	X		X			X
Waste Handling and Disposal	Solid Waste Collection		X	X	X	X	X	X		X
	Waste Reduction and Recycling			X	X					X
	Household Hazardous Waste Collection			X	X		X	X	X	
	Controlling Litter			X	X	X		X		X
	Controlling Illegal Dumping	X		X		X	X		X	X
Water and Sewer Utility Operation and Maintenance	Water Line Maintenance	X				X	X			
	Sanitary Sewer Maintenance	X				X	X			X
	Spill/Leak/Overflow Control, Response, and Containment	X	X			X		X		X

Source: California Stormwater BMP Handbook (<http://www.cabmphandbooks.com/>)

IDDE Implementation Timeline

Effective Date

Date

1 yr

2 yr

3 yr

4 yr

5 yr

6 yr

7 yr

8 yr

9 yr

10 yr

Annual Report

Phase I map due

Phase II map due

Mapping

Update map w/ outfalls, receiving waters, certain other structures

Update mapping information, including catchment delineations, outfalls, and infrastructure locations (pipes, manholes, catch basins) based on information collected during catchment investigations

Initial Outfall Ranking due

Updated Outfall Ranking due

Dry Weather outfall screening and sampling

Wet weather screening of outfalls and interconnections will be performed as necessary during catchment investigations

Written catchment investigation procedure due

100% problems and catchments with sewage evidence investigated

100% catchments investigated

Perform **catchment investigations** for Problem Outfalls and outfalls/interconnections where dry weather testing indicates sewer input

Perform catchment investigations for remaining outfalls

Written IDDE program, SSO inventory due

Ordinance must be in place for new permittees

Written programs

Outfall Screening

Catchment Work

Tips for Organizing and Conducting Volunteer Clean-up Events

By: Jen Drociak –Acting Coordinator / Volunteer, Manchester Urban Ponds Restoration Program (UPRP)

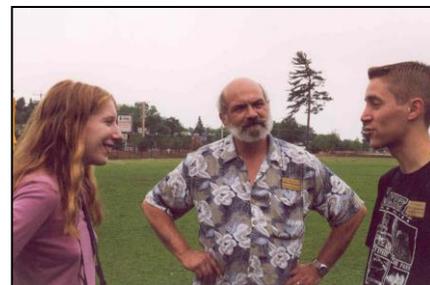
Step 1: Plan Your Clean-Up Event

- A. Land and / or Shore? Determine the Location(s):** Determine where, in proximity to the waterbody, your group wishes to concentrate its efforts on during a clean-up event. To find heavily-littered areas, and / or areas that are prone to illegal dumping, walk along the shore, in advance, to identify location(s) for the clean-up event. Identify accessible paths along the shoreline and / or on public trails that are easy for people to walk. The location(s) may be largely determined by public (or lake / homeowner association) access points such as a public beach, boat-launch, or park. If the location is large, consider identifying smaller locations within the larger location which can be managed by individual group leaders and groups. Determining the location(s) will provide you with an idea of the footwear that may be needed for the task based upon the terrain. If the clean-up event will be located at a beach or a dry area, sandals or sneakers may be adequate. If it will be located in a wetland or mucky area, knee-boots may be appropriate. If it will be located in water, hip-boots may be most appropriate. Determining the location(s) will also provide you with a sense of how many volunteers your group is seeking for the clean-up event.



The UPRP typically focuses clean-up efforts in the parks adjacent to the ponds by skirting around the ponds themselves. This involves differing terrain, and thus footwear. There have been occasions, however, where one or more volunteers have also used a small fishing boat to retrieve trash from the water that is too deep to obtain via hip-waders.

- B. Obtain Landowner Permission:** Whether the location(s) of your clean-up event is / are municipally-owned or privately-owned, determine who owns the property in advance in order to obtain permission. If you do not know who the property owner is, visit your municipality's on-line assessor's website to review the tax map(s) and property card(s) associated with the area. It is typically easy to obtain permission to organize a clean-up on municipally-owned / public land. If the location(s) are on privately-owned land, talk to the land owner(s) and explain why you are organizing a clean-up in that area, along with the benefits of doing so. Obtain permission from them in writing, if you can, by considering they sign a form. Verbal permission may be adequate, however.



The UPRP organizes clean-up events on land owned by Public Works and Parks, Recreation, and Cemetery Departments. We have not had to seek private landowner permission. We simply notify the Manchester Public Works Department and Parks, Recreation, and Cemetery Department of the dates of the clean-up events.

- C. Determine the Task(s) at Hand:** Determine what you will request of your volunteers. Will it be the removal of trash only? If so, will it be the removal of large items only or all items including the minutia? Will it be the removal of yard waste only? Graffiti removal or other vandalism? All of the above? Determining the task(s) at hand will provide you with an idea of the supplies (and hours) you will need to perform the task(s).

The UPRP typically removes trash only. We typically do not pick up the minutia (cigarette butts, bottle caps, etc.) due to the large volume of trash we collect and the limited amount of time and volunteers we have at each clean-up event.



D. Determine the Check-In Location: Based upon the chosen location(s) of the clean-up event, consider and determine the most appropriate location for volunteers to initially gather to check in and obtain supplies, as well as to reconvene at the end of the clean-up event. This may be a kiosk, boat-launch, or specific location on a beach or in a park. Try to stay away from busy roads or areas that are difficult to access.

The UPRP typically requests that volunteers meet in one central / well-known location such as a kiosk in a parking lot or boat-launch. We have kept the initial meeting location at each clean-up event consistent over the years.



E. Determine the Most Appropriate Age(s) of Your Volunteers: Based upon the task(s) at hand, determine the most appropriate age(s) of your volunteers. Are you seeking adults only? Children? Both? Do you have tasks that all can partake in, or are the tasks age-specific?

The UPRP generally seeks volunteers of all ages for clean-up events and encourage everyone, despite their age or ability, to participate in a manner of how they most feel comfortable.

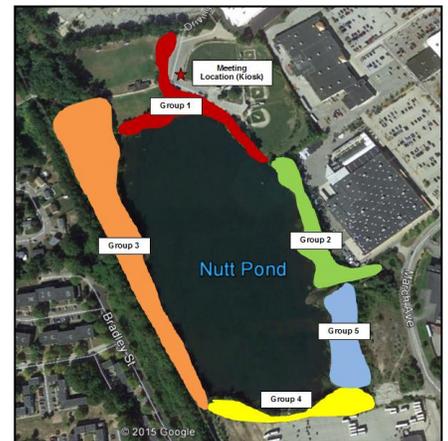


F. Determine the Desired Number of Volunteers: Based upon the number and location(s) that are chosen for the clean-up event, determine the desired number of volunteers to partake in the event.

The UPRP typically splits the area adjacent to the ponds into several areas, or groups of volunteers.

G. Create Map(s) of the Location(s) OR Plan on Designating a “Group Leader” for Each Location: If the location(s) is / are large enough to break into more than one group during the clean-up event, consider making aerial photographic “maps” (or using topographic maps) of each group’s area, indicating on the map the original meeting location, and the group’s start and end point.

The UPRP has created aerial maps to use in the past. However, what we consider to be more helpful is having a “group leader” (returning volunteer or someone familiar with the area) lead a small group of other volunteers in each designated area.



Step 2: Schedule Your Clean-Up Event

A. Choose a Date: Choose a date for the clean-up event at a time of year that makes the most sense to your group. Keep in mind that while lakes and ponds have year-round residents, the majority of residents are likely seasonal and may not arrive for the season, or on or around Memorial Day weekend. Thus, a late-spring or late-fall cleanup may not be the most appropriate time as it may not garner the most volunteers. An early or mid-summer cleanup may be the most appropriate. Consider, perhaps, scheduling the event in conjunction with an annual lake association meeting or holiday barbeque. Also consider scheduling the date of the clean-up event at least a month in advance to allow time to prepare (gather supplies and recruit volunteers). Lastly, consider a rain date.



The UPRP typically schedules annual pond and park cleanups on Saturday mornings during the last two weeks in April and the first one or two weeks in May. This is because a) this time of year is typically after the snow has melted and b) this time of year is typically before “leaf-in” (and in the case of some of these areas, this is important, as the areas are overtaken with thick stands of invasive species). We do not offer rain dates.

- B. Choose a Time:** Determine the amount of time it may take to clean up the area(s) of your choosing. Will it take one hour? Two hours? More? This is also a factor of the number of volunteers that attend (typically the more volunteers that attend the least amount of time the clean-up will take). If you believe the area(s) may take more than two hours, it may be best to schedule a two-part clean-up event. Also consider the time of day most appropriate to your group, especially if it is scheduled in conjunction with (or before or after) another event such as an annual meeting or holiday barbecue.



The UPRP has realized that 1 ½ - 2 hours is a sufficient amount of time to allot to clean-up events. We also realize that volunteers typically do not have the time or patience to commit to any more time in one day than that. We have also typically scheduled the clean-up events from 9:00AM to 11:00AM, with a meeting time of no later than 8:50AM. Early-morning clean-up events afford volunteers to have the remainder of the day for other things.

Step 3: Determine and Obtain Necessary Supplies

- A. Determine the Necessary Supplies:** Determining the task(s) at hand will determine your necessary supplies. If your clean-up event is strictly a trash removal cleanup, you may only need to obtain latex gloves and trash bags. If your clean-up event also includes yard-waste removal, you may need to obtain paper yard-waste bags, rakes and / or other tools.

Since the UPRP clean-up events are strictly focused on trash-removal, the only supplies we must procure are latex gloves (medium sized) and trash bags. We also have a few hand-held trash-grabbers since some volunteers find them helpful in reaching difficult areas and / or to prevent excessive bending.



- B. Obtain the Necessary Supplies:** Determine how you will obtain the necessary supplies. Does your group have a budget? Will your group be purchasing your supplies? Will your group fundraise to purchase supplies? Will your group borrow supplies, from perhaps the town or city?

The UPRP typically obtains supplies from the Manchester Parks, Recreation, and Cemetery Department. These supplies typically only include latex gloves and trash bags, but have included, in the past, rakes, other tools and yard waste bags. We also typically have a large container of hand-sanitizer available.

- C. Obtain a First-Aid Kit:** Consider obtaining one or more First Aid kits (for one or more groups of volunteers) in case it is needed. It is better to be proactively safe!

The UPRP has one First-Aid kit for use.

- D. Consider Providing Water and Snacks:** If your group has the financial means, consider providing water and snacks to your volunteers for afterwards. If your group does not have the financial means, consider soliciting donations from local establishments or having your group bake some treats, and bring a large cooler of ice water (or iced-tea) and some paper (or reusable plastic) cups.

The UPRP does not regularly provide water and snacks to volunteers since we do not have a budget to do so. On occasion, we have been able to obtain donations for yogurt snacks from Stonyfield Farm. On occasion we have also brought or made a baked good.



Step 4: Determine Your Waste Disposal Options

- A. Determine Your Waste Disposal Options:** At the end of your clean-up event, determine how and where you will dispose of the trash that was collected. Is there a dumpster on site that your group has permission to use? Are there already trash and / or recycling carts on site that your group has permission to use? If not, consider contacting your municipality's Highway Department, Parks & Recreation Department, or Road Agent, at least a month in advance, who may be able to coordinate trash and / or recycling pickup from your municipality's vendor (i.e. Waste Management, Pinard, etc.). Determine when the trash and / or recycling will be picked up and what the requirements for pickup are (especially with items such as vehicular tires and batteries, etc.). In addition, consider recruiting volunteers with pick-up trucks, especially if your group is cleaning multiple areas, and trash must be stockpiled in one area at the end of the event. Similarly, if you cannot obtain trash pick-up services, volunteers with pick-up trucks, and a municipal sticker (or permission) may be able to haul the trash and / or recycling to your local landfill or transfer station for free.



The UPRP typically sends notification of the clean-up schedule to the Manchester Public Works Director as soon as the dates are calendared. The Public Works Director, or staff, has coordinated with Manchester's solid waste collection staff to collect the trash on the Monday following the cleanup event (which have been held on Saturdays). While there have been a few times the Public Works Department has made one or more 95-gallon recycling carts available for the clean-up events, they are generally not available, and therefore, recycling is not typically sorted from other debris. All (tied / secure) bags of trash have been neatly placed in the same locations over the years; typically underneath or adjacent to the informational kiosks. Trash collected that does not fit into bags is also neatly placed adjacent to the bagged trash. We also recruit volunteers with pick-up trucks so that trash from different areas of the cleanup can be taken to one designated location at the end of the event. In addition, one of our volunteers separates steel and other scrap metal and takes it to a scrap metal recycling facility.

Step 5: Advertise Your Clean-Up Event / Recruit Volunteers

- A. Determine Any Project Partners:** In addition to volunteers who live around the waterbody, and any other residents of the town, determining any existing local groups or clubs that may be able to assist with the clean-up event is always helpful. Is there a local middle school, high school, or even college (if nearby) environmental club? A local chapter of the Student Conservation Association (SCA)? Any other organization, volunteer group, or club? A lot of these groups and / or clubs seek new community service projects and can help you garner additional / new volunteers.



The UPRP has partnered with the Student Conservation Association, local high school ecology clubs, local boy-scout troops, trout-fishing clubs, geo-caching groups, and others in the past. This has helped garner additional / new volunteers.

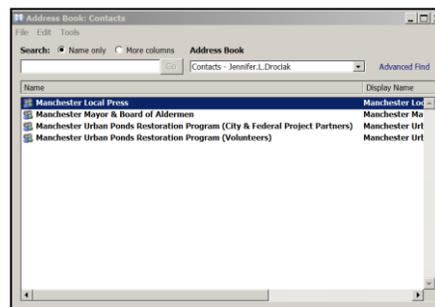
- B. Determine the Best Way(s) to Advertise Your Clean-Up Event:** Determine the target audience of volunteers and consider the best way(s) to advertise your clean-up event. Is it by e-mail? Website? Post-card? Posting of a flyer on a community bulletin board and / or kiosk? An annual lake association newsletter? An advertisement in a local newspaper? TV? Radio? facebook / social media? All of the above? Remember, printed materials and postage cost money, as typically do newspaper and radio advertisements. If your group has available funds for this, that is one thing. If not, instead of



simply placing a paid advertisement in a newspaper, try reaching out to a local news reporter to see if s/he will write a story about your cleanup (or write and submit an op-ed piece). This is usually good, free, advertisement. Also determine the most appropriate time to advertise for the clean-up event. Will you be advertising only once, or multiple times before the event?

The UPRP has typically advertised clean-up events in the following manners: 1) The UPRP webpage, 2) The City of Manchester website "Calendar of Events", 3) the UPRP facebook page, and 4) E-newsletter / e-mail. Local newspapers are also always gracious to cover the event(s) in a story beforehand. The UPRP typically sends posts the clean-up events on the website, and sends out an e-mail approximately three weeks in advance of the cleanup. The UPRP will then send weekly e-mails.

C. Create an E-Mail Distribution List: If you don't already have an e-mail distribution list, consider creating one. This may include names and e-mail addresses of lake association members, conservation commissioners, selectmen, municipal employees / department heads and others you know who may be interested. You can add to this with each clean-up event your group coordinates. If you have access to Constant Contact, Mailer, Mail Chimp, or other similar e-mail platform, this may be easier and more appropriate to use. If not, e-mail is a good starting place.



The UPRP has an e-mail distribution list which consists of approximately 200 individuals consisting of city aldermen, city department heads, conservation commissioners, media contacts, active school groups and other environmental organizations, and former volunteers. With every e-mail sent, an option is sent to opt-out of receiving e-mails by having a name and e-mail address removed from the list. This list is updated at least twice a year.

D. Before You Mail, Post, (or Hit the Send Button): Before you mail or post your flyer, or hit the send button to your e-mail distribution list, be sure to include the Who, What, Where, When, Why, and How to ensure all information is readily available. Why are you seeking volunteers? Who are you seeking as volunteers? What tasks are you seeking of volunteers? Where (general location and specific meeting location) are you seeking volunteers? When (date / time) are you seeking volunteers? Is there a rain date? How will the tasks be conducted? What should the volunteers wear or bring? What will be provided? Are you requesting an RSVP? For more information, who should they contact? Prepare your volunteers by letting them know what time to arrive, what to wear (clothes that can get dirty or wet, long pants, work gloves, boots or sturdy shoes, etc.), what to bring (sunscreen, insect repellent, water) and what to do in case of bad weather (rain date or cancellation information / phone number).



For Example: Seeking volunteers of all ages to assist in an annual trash clean-up at Black Brook and Blodget Park in Manchester on Saturday, April 23, 2016 from 9:00AM – 11:00AM. Volunteers will partner to clean the park and skirt the edges of the brook and wetland complex to remove accumulated trash. Please dress appropriately for weather as no rain date is scheduled. Latex gloves and trash bags will be provided, but please wear knee-boots, or hip-waders if you have them. No RSVP necessary. For more information, please visit www.manchesternh.gov/urbanponds or contact Jen Drociak at email@gmail.com or (603) ### - ####. We look forward to seeing you there!

Step 6: Conduct Your Clean-Up Event

A. Arrive Early: Consider arriving 15 minutes to one hour earlier than your volunteers so that you can set up at your check in location. Consider setting up the following: "Clean-Up Attendance Sheet", water and / or refreshments, first aid and safety, trash bags and clean-up supplies, organizational information (flyers, fact sheets, reports, etc.). Consider also walking around the location(s) to identify any new trash and / or safety concerns that may have accrued / arisen since your last visit.

F. Provide Necessary Supplies to Your Volunteers: Ensure your volunteers have ample supplies for the duration of the clean-up event. If they did not bring their own work gloves, request that they take two pairs of Latex gloves (in case one pair rips), and more than one trash bag, depending on the designated location(s). If your group is also removing yard waste, provide your volunteers with rakes and lawn-waste bags. Request that they return any unused pair of gloves, trash bags, and any supplies to you at the end of the clean-up event. Consider also leaving supplies out in a designated location along with the “Clean-Up Attendance Sheet” for volunteers who may show up late.



Many of the UPRP bring their own work gloves. We then issue two pairs of Latex gloves to each volunteer as well as multiple trash bags, depending on the specific area they will be cleaning up. We request that all unused supplies be returned at the end of the clean-up.

G. Provide Your Volunteers with Instructions for the Clean-Up Event: Provide your volunteers with instructions for the clean-up event such as what they will be retrieving (large trash only, all trash, etc.) what not to pick up (hypodermic needles, cigarette butts, etc.), if they are to separate trash from recycling or not (in which case they may carry two bags at once – different colors may be helpful - one for trash and one for recycling), what is considered recyclable if they are separating recycling from trash (this differs in each community and some vendors may not accept unclean / dirty recyclables from clean-up events), etc. Also provide your volunteers with safety tips and a general schedule of the clean-up event including the location to reconvene at the end and where to place trash. Ensure everyone knows there to focus their efforts and then to stop.

The UPRP typically only picks up large items, and does not typically separate trash from recycling, due to limited means. However, we have done so in the past and have provided volunteers with two trash bags – one for recycling, and one for trash.

H. Make It Fun! Play One or More Games While You’re at It! Why not make things fun while you’re out there picking up trash? Consider playing one or more games (especially if some of the volunteers are children) such as a scavenger hunt, who can find the most interesting or unusual piece of trash, who can find the largest piece of trash, who collects the most trash, etc. Consider offering a prize and / or certificate to the winner(s) of one or more of the games you play.

The UPRP has, for many years, asked volunteers to find the “Most Interesting or Unusual Piece of Trash” at each clean-up event. At the end of the clean-up, volunteers will place their found items in one location for “judging” by the coordinator(s) of the clean-up event. Certificates and / or prizes have been awarded to the winner(s), and photos have been taken. We have found some really interesting and unusual pieces of trash over the years, and have kept a list!



I. Relinquish Groups of Volunteers / Group Leader(s) to Designated Area(s): If you are separating volunteers into more than one group for your clean-up event, relinquish the groups to their designated location(s). If you don’t have a group leader for each group, relinquish them with their maps in hand. If you have a group leader be sure to introduce the volunteers in each group to their group leader before relinquishing them to their designated location(s). Remember to consider that not all locations may need the same number of volunteers.

The UPRP typically asks one or more returning volunteers if they would agree to be group leaders. Not all locations require the same amount of volunteers, however. This is decided based upon the area of the designated location(s), as well as the amount of trash to be removed in the designated location(s). For example, one small area along the shoreline may only require two volunteers, but a larger area in another location with a lot of trash may require 4-6 or more volunteers.



J. Reconvene at Initial Check-In Area at Designated Time: After the allotted period of time has elapsed for the clean-up event, reconvene at your initial check-in area. Account for all volunteers that did not sign out early.

The UPRP always meets at our initial check-in area. We then account for each group leader and group of volunteers (who did not sign out early) to ensure all have safely returned.



K. Count Full Bags of Trash (or Weigh All Trash): Count all full bags of trash that were collected and returned. If one or more bags are returned and are not considered full, consider consolidating them to make full bags of trash. That way, your measurements of “full bags” collected for this, and any other clean-up events, are consistently measured / counted. If your group has access to a scale, you consider weighing your bags of trash, and any other trash, to account for pounds of trash collected. Another option is to ask if the vendor who is charged with collecting the trash after the event can inform your group of the weight of the collection when the truck enters the scale at the weigh-station before drop-off at the refuse facility.



Since trash collected at UPRP clean-up events has not been weighed by a scale, and trash has been weighed by vendor truck only occasionally, to be consistent, we always count full bags at the site, and consolidate bags of trash that are returned not full in order to make full bags.

L. Account for and Count Other Items: Account for and count the quantity of other items of trash collected that cannot fit into bags.

The UPRP always accounts for and counts any trash that is collected that cannot be bagged. This typically includes vehicular tires, shopping carts, wood debris, construction debris, or any other items that have been illegally dumped.



M. Share the Data with Volunteers: Once you have tallied the final numbers of bags of trash and other items collected during the clean-up event, announce them to your volunteers so they know just how much trash and other debris they removed from the area, know how important their contribution of time and efforts were, and have immediate results of their work!



N. Tally Final Numbers on Clean-Up Attendance Sheet: Once you have tallied everything collected, write these numbers on your “Clean-Up Attendance Sheet”.

O. Take Photographs: To commemorate the success of your clean-up event, take a photo of the trash collected, and of the group of volunteers who helped collect it!

The UPRP always photographs the trash collected (in and out of bags), as well as takes a group photograph in front of or aside the trash collected.



P. Award a Prize, or Two, or Three: If you played one or more games during the clean-up event, consider awarding a certificate or prize to your winner(s) and photographing them with their winning piece of trash!

The UPRP has, for many years, asked volunteers to find the “Most Interesting or Unusual Piece of Trash” at each clean-up event. At the end of the clean-up, volunteers will place their found items in one location for “judging” by the coordinator(s) of the clean-up. Certificates and / or prizes have been awarded to the winner(s), and photos have been taken.



Q. Thank the Volunteers: Before parting ways, be sure to thank your volunteers for their assistance! Encourage them to volunteer again. Be sure to individually thank any special guests (aldermen / selectmen, city employees, media, etc.).

At the end of each clean-up event, the UPRP notes upcoming clean-up events in order to encourage volunteers to return for the next event.



Above Left: Volunteers at the 100th Cleanup of the Manchester Urban Ponds Restoration Program.

Above Right: Cake served to volunteers at the 100th official cleanup of the Manchester Urban Ponds Restoration Program .

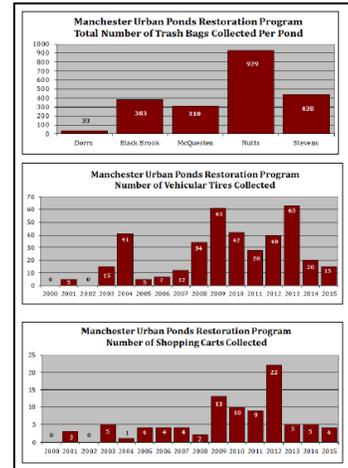
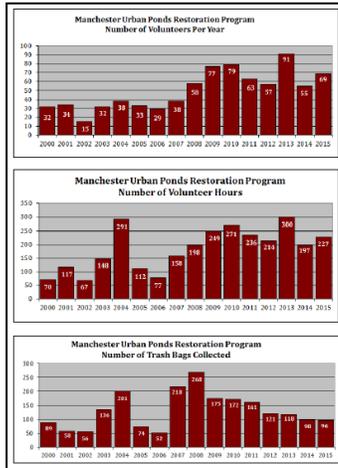
R. Consider Having a Picnic / Cookout / or Lunch: If you have the financial means, consider having a picnic / cookout / lunch afterwards to celebrate your accomplishment. Or, consider soliciting local vendors for food donations in exchange for sponsor / partnership recognition at your clean-up event. If you're not able to make or supply lunch, consider encouraging volunteers to bring a brown-bag lunch for afterwards.

Step 7: Follow Up After the Clean-Up Event

A. Update Your Electronic Records: Now is the time to transpose the information collected on the “Clean-Up Attendance Sheet” into an electronic record-retention system if you have access to one. Perhaps you have access to a database. If not, consider using a Microsoft Excel workbook / spreadsheet system to track measurements from your clean-up events. Now is also the time to update your existing e-mail distribution list with the names and e-mail addresses of those volunteers who participated in your clean-up event.

The UPRP has consistently used Microsoft Excel to track clean-up measurements. In the first worksheet of the workbook, we account for the number of our clean-up event, the location, date, hours spent at the event, numbers of bags of trash collected at the event, number of volunteers at the event, number of volunteer hours at the event, total value of volunteer time for the event, and other items retrieved at the event. For each year tracked, we created a “total” line with auto-calculations to account for the total of each year. To account for the value of volunteer time, we use figures taken from www.independentsector.org. In the second worksheet of the workbook, we account for pond cleanup attendees, where, for each clean-up event, we list the location, date, names (in alphabetical order), address, and hours at event. Similarly, for each year tracked, we created a “total” line. In the third worksheet of the workbook, we have created graphs based upon each year’s total metrics. We then transpose these graphs to a Microsoft Word document, then an Adobe PDF document, and post on our website, and at the kiosks.

Manchester Urban Ponds Restoration Pond Cleanup Measurements									
#	Location	Date	Hours	# Bags Trash Collected	# Volunteers in Attendance	# Volunteer Hours	Value of Volunteer Time (\$22.50/hr)	Other Items Retrieved	
2013									
101	Black Pond	4/30/13	2	16	70	140	\$3,150.00	5 tires, 1 wooden pallet, 2 large plastic coats	
102	Seawall Pond	4/30/13	2	16	6	12	\$270.00		
103	Wells Pond	5/6/13	3	16	5	15	\$337.50	wind socks, 3 shopping carts	
104	Manchester Pond (NHEC)	5/6/13	4	18	10	40	\$900.00	27 tires, 7 compressed buckets, 4 car tires	
105	Manchester Pond (NHEC)	5/6/13	4	18	10	40	\$900.00	26 tires (equal) dumped	
2014									
106	Black Pond	4/30/14	2	16	6	12	\$270.00	wind detritus, 2 plastic chairs	
107	Seawall Pond	5/3/14	2	16	14	28	\$630.00	1 tire, wood detritus, 2 shopping carts, 26 debris	
108	Wells Pond (EPA)	5/3/14	2	16	40	80	\$1,800.00	26 tires, 2 shopping carts, 26 debris	
109	Wells Pond	5/3/14	2	16	40	80	\$1,800.00	26 tires, 2 shopping carts, wood detritus	
110	Manchester Pond (NHEC)	5/3/14	4	18	10	40	\$900.00	12 tires, 3 shopping carts, wood detritus	
2015									
111	Black Pond	4/30/15	2	16	11	22	\$495.00	30 gallon drums, 30 gallon plastic garbage	
112	Seawall Pond	5/3/15	2	16	11	22	\$495.00	4 tires, 1 TV, 1 TV stand, wood detritus	
113	Wells Pond	5/3/15	2	16	10	20	\$450.00	12 tires, 2 shopping carts, 1 tire frame, 1 set of	
114	Manchester Pond (NHEC)	5/3/15	4	18	10	40	\$900.00	26 tires, 2 shopping carts, 26 tires of 26	
115	Manchester Pond (NHEC)	5/3/15	4	18	10	40	\$900.00	26 tires, 2 shopping carts, 26 tires of 26	
2015 Total									
101			2095	800	800	2928.50	\$64,254.80		



B. Follow Up With an E-mail or Thank-You Note: It is always nice to follow up with your new (and / or returning) volunteers by sending them a formal personalized thank-you via e-mail or US Postal Service. Besides, who doesn't like receiving a letter in the letter box, especially in this electronic day-in-age?

The UPRP, has, on occasion, sent personalized thank-you cards in the mail. Typically, however, we send a group thank-you via e-mail and attach photographs taken at the event(s), as well as re-cap tallies from the clean-up event(s).



C. Consider Writing an Article for Your Newsletter or the Newspaper: Consider writing an article for your newsletter, if you have one, or a local newsletter or newspaper, summarizing the event with photographs and tallies from the event. Volunteers who helped out at your clean-up event will feel proud of their accomplishment and the results. This is a good way to garner publicity about your group and its event as well as garner additional volunteers in the future.

The UPRP has often written newspaper articles and / or shared summary information about the clean-up events (at the end of the season) listing sponsors / project partners and volunteers, and including photographs of volunteers at the event, via an electronic newsletter.



From 2000 - 2005 **The Manchester Urban Ponds Restoration Program** (UPRP) was part of the Supplemental Environmental Projects Plan (SEPP) which was part of an agreement between the City of Manchester, NH Department of Environmental Services, and the US Environmental Protection Agency to address combined sewers in the City. Seven (7) waterbodies in Manchester have been evaluated and monitored for restoration potential. Specific restoration projects to meet the program's goals have also been identified, funded, and completed through this project. Since 2000, the Manchester Urban Ponds Restoration Program has organized 101 clean-up events. Over the past 15 years, 800 volunteers have spent 2,298.50 hours collecting 2,093 bags of trash! This does not include the items illegally “dumped” such as shopping carts (91), tires (388), car batteries, other car parts, construction debris, and other items. In addition, the value of volunteer time spent at these clean-ups has amounted to over \$54,000 over the past 15 years! The Manchester Urban Ponds Restoration Program was awarded an EPA “Environmental Merit Award” in 2011. More information on the Manchester Urban Ponds Restoration Program can be found by visiting www.manchesternh.gov/urbanponds.



Jen Drociak lives in Manchester, NH and holds a Bachelor of Science degree in Environmental Conservation from the University of New Hampshire. She is employed with the New Hampshire Department of Environmental Services where she has worked as a program specialist for the Pollution Prevention Program, a restoration specialist for the NH Coastal Program where she established a monitoring program for pre- and post-restoration projects in NH's salt marshes, and as the Volunteer River Assessment Program Coordinator

where she provided technical assistance to approximately 200 volunteers who collected water quality samples for surface water quality assessments on NH's rivers and streams. Jen has also worked for the Wastewater Engineering Bureau as a grants management specialist and is currently working for the Land Resources Management Bureau as a compliance specialist. Since 2000, Jen has also been involved with the Manchester Urban Ponds Restoration Program, and has served as acting coordinator since 2006 where she largely coordinates annual clean-up events and water quality monitoring.

Appendix H

Annual Reports and Reporting Requirements

Annual Reports Reporting Requirements

The Town will submit annual reports each year of the Small MS4 permit term, 90 days from the close of the reporting period (i.e., September 28). The reporting period will be a one-year period commencing on the permit effective date, and subsequent anniversaries thereof, except that the first annual report under the 2016 General Permit shall also cover the period from May 1, 2018 to the permit effective date, July 1, 2018. Under the 2016 General Permit, annual reports will consist of a simple update provided to EPA and more robust documentation included in this SWMP.

Per Section 4.4.b of the 2016 General Permit, the annual reports shall contain the following information:

- i. A self-assessment review of compliance with the permit terms and conditions.*
- ii. An assessment of the appropriateness of the selected BMPs.*
- iii. The status of any plans or activities required by part 2.1 and/ or part 2.2, including:*
 - Identification of all discharges determined to be causing or contributing to an exceedance of water quality standards and description of response including all items required by part 2.1.1;*
 - For discharges subject to TMDL related requirements, identification of specific BMPs used to address the pollutant identified as the cause of impairment and assessment of the BMPs effectiveness at controlling the pollutant (part 2.2.1. and Appendix F) and any deliverables required by Appendix F;*
 - For discharges to water quality limited waters a description of each BMP required by Appendix H and any deliverables required by Appendix H.*
- iv. An assessment of the progress towards achieving the measurable goals and objectives of each control measure in part 2.3 including:*
 - Evaluation of the public education program including a description of the targeted messages for each audience; method of distribution and dates of distribution; methods used to evaluate the program; and any changes to the program.*
 - Description of the activities used to promote public participation including documentation of compliance with state public notice regulations.*
 - Description of the activities related to implementation of the IDDE program including: status of the map; status and results of the illicit discharge potential ranking and assessment; identification of problem catchments; status of all protocols described in part 2.3.4.(program responsibilities and systematic procedure); number and identifier of catchments evaluated; number and identifier of outfalls screened; number of illicit discharges located; number of illicit discharges removed; gallons of flow removed; identification of tracking indicators and measures of progress based on those indicators; and employee training.*
 - Evaluation of the construction runoff management including number of project plans reviewed; number of inspections; and number of enforcement actions.*
 - Evaluation of stormwater management for new development and redevelopment including status of ordinance development (2.3.6.a.ii.), review and status of the street design assessment (2.3.6.b.), assessments to barriers to green infrastructure (2.3.6.c), and retrofit inventory status (2.3.6.d.)*

- *Status of the O&M Programs required by part 2.3.7.a.*
 - *Status of SWPPP required by part 2.3.7.b. including inspection results.*
 - *Any additional reporting requirements in part 3.0.*
- v. *All outfall screening and monitoring data collected by or on behalf of the permittee during the reporting period and cumulative for the permit term, including but not limited to all data collected pursuant to part 2.3.4. The permittee shall also provide a description of any additional monitoring data received by the permittee during the reporting period.*
- vi. *Description of activities for the next reporting cycle.*
- vii. *Description of any changes in identified BMPs or measurable goals.*
- viii. *Description of activities undertaken by any entity contracted for achieving any measurable goal or implementing any control measure.*

Appendix H

Record Keeping – Checklist of Key Documentation

MCM 1: Public Education and Outreach

- All educational materials provided to target audiences;
- Distribution lists for target audiences;
- Dates of distribution of educational materials;
- Annually track changes in social media subscription and use; and
- Note educational goals and opinion on effectiveness based on results tracked; modify education and outreach program if necessary.

MCM 2: Public Involvement and Participation

- Public meeting dates and topics when stormwater management-related topic is discussed; and
- Dates of public participation activities and quantification of participation (such as number of volunteers/participants, number of bags collected, etc.).

MCM 3: Illicit Discharge Detection and Elimination (IDDE) Program

- Log of phone calls and complaints received regarding suspected illicit connections and other storm drain issues, including dates and actions taken;
- SSO inventory (updated annually), including the number of illicit discharges/connections identified and/or removed and the volume of sewage removed;
- Drainage system map;
- Data collected during dry and wet weather outfall/interconnection investigations, including the date, outfall/interconnection identifier, location, weather conditions at time of sampling, precipitation in previous 48 hours, field screening results, and results of all analyses (summarize on an annual basis and for the entire permit term);
- Number and percent of total outfall catchments served by the MS4 evaluated using the catchment investigation procedure;
- Presence or absence of System Vulnerability Factors for each catchment;
- Data collected during key junction manhole investigations;
- Inspection and maintenance records; and
- Frequency and type of employee training, including employees trained, training topic, date/time, and materials presented.

MCM 4: Construction Site Stormwater Runoff Control

- Number of site reviews, inspections, and enforcement actions; and
- Modifications to Boylston's bylaws, regulations, policies, and/or procedures as necessary.

Appendix H

Record Keeping – Checklist of Key Documentation

MCM 5: Post-Construction Stormwater Management

- Measures the Town has taken to ensure adequate long-term operation and maintenance of stormwater BMPs and to require submission of as-built plans;
- Modifications to Boylston’s bylaws, regulations, policies, and/or procedures as necessary;
- Status of BMP 5B and 5C assessments, including any planned or completed changes to local regulations and guidelines (BMP 5B) and findings and progress towards making the practices allowable (BMP 5C); and
- Retrofit inventory, including all sites that have been modified or retrofitted. Sites should include town-owned sites identified in the inventory as well as non-municipal property modified or retrofitted to mitigate impervious area.

MCM 6: Good Housekeeping and Pollution Prevention

- Inventory of municipal facilities and equipment;
- Plan for optimizing catch basin cleaning and metrics about the number of catch basins, quantity cleaned and inspected, and total volume of material removed from all catch basins;
- Miles of streets cleaned and the volume of material removed; and
- All records associated with SWPPP quarterly site inspections, maintenance activities, and training.

Impaired Waters and TMDLs

Phosphorus TMDL – Assabet River Watershed

- All educational materials provided to target audiences;
- Distribution lists for target audiences;
- Dates of distribution of educational materials;
- Modifications to Boylston’s bylaws, regulations, policies, and/or procedures as necessary;
- Plan for proper management of grass cuttings and leaf litter; and
- Miles of streets cleaned and the volume of material removed – increase sweeping to twice per year in Assabet River watershed.

Lake and Pond Phosphorus TMDL – Newton Pond

- Progress report in each annual report on planning and implementation of LPCP
- Beginning five (5) years after the permit effective date, there are additional reporting requirements in Appendix F, Section II Part 2 of the MS4 permit. Reference this section for further requirements.

Appendix H

Record Keeping – Checklist of Key Documentation

Additional Record Keeping

- Monitoring results;
- Copies of reports;
- Records of outfall/interconnection screening;
- Follow-up and elimination of illicit discharges;
- Maintenance records; and
- Inspection records.

**MS4 Record Keeping Update
Boylston, MA
October 2023**

Tighe&Bond

The Town's Stormwater Management Program has been appended through the Permit term, including development of the following standalone reports. These reports are available from the Boylston Conservation Commission.

The **IDDE Program** has been updated to include:

- Illicit Discharge Detection and Elimination Program Update, June 2019 (draft), March 2020 (final), Revised October 2023
 - Includes Boylston MS4 Catchment Investigation Procedures, December 2019
- Phase I MS4 System Map, September 2020
- Outfall and Interconnection Inventory and Initial Ranking: Information submitted to EPA and MassDEP in the 2019 Annual Report indicated that there was one Problem outfall in Boylston (Outfall 07). However, upon further review of previous IDDE investigations completed by Woodard & Curran, Tighe & Bond determined that there was an instance of illegal dumping from a pipe adjacent to Outfall 07, and not from the actual outfall. The source of the adjacent pipe was investigated and found to be from a private residence. The adjacent pipe was plugged at the time of investigation and there have been no instances of illegal dumping to date from that source. Therefore, Outfall 07 should be ranked as a High Priority, not Problem. There are no known Problem outfalls at this time. The Outfall and Interconnection Inventory and Initial Ranking included in the Town's IDDE Plan incorporates this change.
- Annual IDDE Program employee training records.
- Annual Illicit Discharge Removal Reports, as applicable.
- Summary of Boylston's TMDLs and Impaired Waters, 2014 to 2016 303(d) List
- Summary of Boylston's TMDLs and Impaired Waters, 2016 to 2018/2020 303(d) List
- Summary of Boylston's TMDLs and Impaired Waters, 2018/2020 to 2022 303(d) List
- IDDE Program Update for Permit Year 5

The **Construction and Post-Construction Programs** have been updated to include:

- Section 6.0 (I) of the Boylston Conservation Commission Rules and Regulations for Stormwater requires the submission of as-built drawings and Section 13.0 requires ongoing maintenance and inspections for all structural and non-structural stormwater BMPs. The Rules and Regulations are available online here: <https://www.boylston-ma.gov/stormwater-committee/pages/stormwater-control-bylaws-forms>
- Town of Boylston – Local Code Assessment, June 2022. A report assessing current street design and parking lot guidelines and other local requirements that affect the creation of impervious cover; as well as assessing existing local regulations to determine the feasibility of making green infrastructure and LID practices allowable. *Mass Audubon's By-Law Review for LID & Climate-Smart, Nature Based Solutions is available electronically.*
- Boylston Retrofit Inventory Assessment, June 2022

**MS4 Record Keeping Update
Boylston, MA
October 2023**

Tighe&Bond

The **Municipal Good Housekeeping Program** has been updated to include:

- Good Housekeeping and Pollution Prevention Program for Municipal Operations and Maintenance, June 2020 (draft), October 2020 (final)
- The Town has determined that no facilities located within the MS4 require a site-specific SWPPP. Previously, it was assumed that a site-specific SWPPP was required for the Town's Highway Garage. Per *Part 1.2.1* of the General Permit "if the small MS4 is not located entirely within an urbanized area, only the portion of the MS4 that is located within the urbanized area is regulated under 40 CFR §122.32(a) (1)." It was determined that the Highway Garage, located adjacent to the urbanized area, maintains its drainage on site and does not connect to the MS4, and therefore does not require a SWPPP under the MS4 Program. This determination was submitted to EPA and MassDEP in the Year 2 Annual Report on September 28, 2020.

The **Lake Phosphorus Control Plan** has been updated to include the following components, as documented in the *Lake Phosphorus Control Plan (LPCP) for Newton Pond* memorandum dated June 2023:

- Legal analysis (with minor updates from September 2020 *Legal Analysis* memo)
- Funding source assessment (completed in Permit Year 2)
- LPCP scope/area (completed in Permit Year 4)
- Baseline phosphorus load, allowable phosphorus load, and phosphorus reduction requirement (completed in Permit Year 4)
- Description of planned non-structural and structural controls, O&M program, implementation schedule, costs, and funding source assessment update (completed in Permit Year 5)

The **SWMP** is updated to include the following information to address Section 3.0 of the General Permit, Additional Requirements for Discharges to Surface Drinking Water Supplies and Their Tributaries:

- EPA's SWMP template does not include provisions to address this requirement, but the requirement is applicable to the Town of Boylston. The Wachusett Reservoir, a surface drinking water supply that is part of the Massachusetts Water Resources Authority water system, is partially located in Boylston. While the Reservoir is not located within Boylston's MS4 and the Town has no direct discharges to the Wachusett Reservoir or other Class A waters, the Town's MS4 does discharge to tributaries of the Reservoir, including Malagasco Brook and Boylston Brook. Boylston meets the requirements of Section 3.0 by considering these tributaries a priority in the implementation of the SWMP. The Town partners with the Massachusetts Department of Conservation and Recreation to provide public education about water quality and stormwater management, as well as reduce direct discharges to the Reservoir where possible. There are additional provisions in Zoning Bylaws, such as the Rural Residential District and Wellhead Protection District, which also protection water resource areas in Town. Boylston should also provide pretreatment and spill control measures to stormwater discharges to the Reservoir's tributaries to the extent feasible. Boylston will consider additional measures for development and redevelopment projects located within the

**MS4 Record Keeping Update
Boylston, MA
October 2023**

Tighe&Bond

watershed during the update to the Rules and Regulations for Stormwater planned for Permit Year 3.

Reporting includes:

- Year 1 Annual Report and attachments:
 - Permit Year 1 Outfall and Interconnection Inventory and Initial Ranking
- Year 2 Annual Report and attachments:
 - Summary of Boylston's TMDLs and Impaired Waters
- Year 3 Annual Report and attachments:
 - Illicit Discharge Removal Report
 - DCR Monthly Monitoring Water Quality Data (*available electronically*)
- Year 4 Annual Report and attachments:
 - Summary of Boylston's TMDLs and Impaired Waters
 - Outfall inventory, screening, and sampling data (*available electronically*)
- Year 5 Annual Report and attachments:
 - Summary of Boylston's TMDLs and Impaired Waters
 - Boylston's Year 5 IDDE Program Update

Permit Year 1

(May 1, 2018 – June 30, 2019)

Year 1 Annual Report
Massachusetts Small MS4 General Permit
Reporting Period: May 1, 2018-June 30, 2019

Please DO NOT attach any documents to this form. Instead, attach all requested documents to an email when submitting the form

Unless otherwise noted, all fields are required to be filled out. If a field is left blank, it will be assumed the requirement or task has not been completed.

Part I: Contact Information

Name of Municipality or Organization:

EPA NPDES Permit Number:

Primary MS4 Program Manager Contact Information

Name:

Title:

Street Address Line 1:

Street Address Line 2:

City:

State:

Zip Code:

Email:

Phone Number:

Fax Number:

Stormwater Management Program (SWMP) Information

SWMP Location (web address):

Date SWMP was Last Updated:

If the SWMP is not available on the web please provide the physical address and an explanation of why it is not posted on the web:

Part II: Self Assessment

First, in the box below, select the impairment(s) and/or TMDL(s) that are applicable to your MS4.

Impairment(s)

Bacteria/Pathogens Chloride Nitrogen Phosphorus
 Solids/ Oil/ Grease (Hydrocarbons)/ Metals

TMDL(s)

In State: Assabet River Phosphorus Bacteria and Pathogen Cape Cod Nitrogen
 Charles River Watershed Phosphorus Lake and Pond Phosphorus

Out of State: Bacteria/Pathogens Metals Nitrogen Phosphorus

Clear Impairments and TMDLs

*Next, check off all requirements below that have been completed. **By checking each box you are certifying that you have completed that permit requirement fully.** If you have not completed a requirement leave the box unchecked. Additional information will be requested in later sections.*

Year 1 Requirements

- Develop and begin public education and outreach program
- Identify and develop inventory of all known locations where SSOs have discharged to the MS4 in the last 5 years
 - The SSO inventory is attached to the email submission
 - The SSO inventory can be found at the following website:

N/A - The Town of Boylston does not have a sanitary sewer system, therefore completing an SSO inventory is not applicable.
- Develop written IDDE plan including a procedure for screening and sampling outfalls
- IDDE ordinance complete
- Identify each outfall and interconnection discharging from MS4, classify into the relevant category, and priority rank each catchment for investigation
 - The priority ranking of outfalls/interconnections is attached to the email submission
 - The priority ranking of outfalls/interconnections can be found at the following website:
- Construction/ Erosion and Sediment Control (ESC) ordinance complete
- Develop written procedures for site inspections and enforcement of sediment and erosion control measures
- Develop written procedures for site plan review
- Keep a log of catch basins cleaned or inspected
- Complete inspection of all stormwater treatment structures

Annual Requirements

- Annual opportunity for public participation in review and implementation of SWMP
- Comply with State Public Notice requirements
- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- Annual training to employees involved in IDDE program
- All curbed roadways have been swept a minimum of one time per year

Phosphorus (Combination of Impaired Waters Requirements and TMDL Requirements as Applicable)

Annual Requirements

*Public Education and Outreach**

- Distribute an annual message in the spring (April/May) that encourages the proper use and disposal of grass clippings and encourages the proper use of slow-release and phosphorus-free fertilizers
- Distribute an annual message in the summer (June/July) encouraging the proper management of pet waste, including noting any existing ordinances where appropriate
- Distribute an annual message in the fall (August/September/October) encouraging the proper disposal of leaf litter

** Public education messages can be combined with other public education requirements as applicable (see Appendix H and F for more information)*

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

- Increase street sweeping frequency of all municipal owned streets and parking lots subject to Permit part 2.3.7.a.iii.(c) to a minimum of two times per year (spring and fall)

Lake and Pond Phosphorus TMDL

- Begin Phase 1 Lake Phosphorus Control Plan (LPCP)

Use the box below to input additional details on any unchecked boxes above or any additional information you would like to share as part of your self assessment:

SSO Inventory: The Town of Boylston is served by septic systems and has no public sanitary sewer system. Completing an SSO inventory is not applicable to Boylston, and was not included in the Town's NOI as a BMP.

Phosphorus Good Housekeeping: All streets are swept annually in the spring. The Town will estimate the budget needed to increase the street sweeping frequency in the Assabet River watershed in future Permit Years to meet TMDL requirements.

LPCP: The first requirement of Phase I, legal analysis, has not been started because it is due in Permit Year 2.

SWMP Certification: The Town's SWMP was drafted in Permit Year 1, but was finalized after the Permit Year ended. Therefore, the SWMP was certified during Permit Year 2.

IDDE Plan Update: Significant work was completed on the IDDE Plan under the 2003 General Permit, including developing illicit discharge procedures and conducting field inspections. A draft update to the IDDE Plan was completed in Permit Year 1 and will be finalized in Permit Year 2.

Part III: Receiving Waters/Impaired Waters/TMDL

Have you made any changes to your lists of receiving waters, outfalls, or impairments since the NOI was submitted?

Yes No

If yes, describe below, including any relevant impairments or TMDLs:

Part IV: Minimum Control Measures

Please fill out all of the metrics below. If applicable, include in the description who completed the task if completed by a third party.

MCM1: Public Education

Number of educational messages completed during the reporting period:

Below, report on the educational messages completed during the first year. For the measurable goal(s) please describe the method/measures used to assess the overall effectiveness of the educational program.

BMP: 1A: Education and Outreach to Residents (Multi-media Methods)

Message Description and Distribution Method:

The Town displayed brochures at Town Hall on the following stormwater-related topics: dog waste and surface water quality, Massachusetts Watershed Protection Act, phosphorus-free fertilizer use, stormwater basins and importance of routine maintenance, proper car washing procedures, swimming pools and surface water quality, and household stormwater pollution prevention.

Targeted Audience:

Responsible Department/Parties:

Measurable Goal(s):

Message Date(s):

Message Completed for: Appendix F Requirements Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes No

If yes, describe why the change was made:

BMP: 1A: Education and Outreach to Residents (Multi-media Methods)

Message Description and Distribution Method:

Multiple Town Departments and volunteer groups have active Facebook pages, including the Highway Department and Keep Boylston Beautiful volunteer group, where leaf litter collection, yard waste collection, and cleanup events are advertised.

Targeted Audience:

Responsible Department/Parties:

Measurable Goal(s):

are reached by this messaging.

Message Date(s): Various

Message Completed for: Appendix F Requirements Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes No

If yes, describe why the change was made:

BMP: 1B: Education and Outreach to Businesses (Multi-media Methods)

Message Description and Distribution Method:

DCR distributed an educational letter to the local golf course within Boylston's MS4 on stormwater pollution prevention. The letter included topics such as proper fertilizer use, pet and animal waste management, and vehicle washing and hazardous waste storage.

Targeted Audience: Businesses, institutions and commercial facilities

Responsible Department/Parties: Town Administrator with support from DCR

Measurable Goal(s):

One educational letter was distributed to a local golf course in the MS4 permitted area.

Message Date(s): June 11, 2019

Message Completed for: Appendix F Requirements Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes No

If yes, describe why the change was made:

BMP: 1C: Education and Outreach to Developers (Multi-media Methods)

Message Description and Distribution Method:

Information letters about wetlands permitting, water quality, and stormwater pollution prevention were developed in Permit Year 1, and the Town began distributing them with stormwater permits. The Town will continue to distribute the letters with permits in Permit Year 2.

Targeted Audience: Developers (construction)

Responsible Department/Parties: Town Administrator with support from DCR

Measurable Goal(s):

5 copies of these letters were distributed.

Message Date(s): Ongoing

Message Completed for: Appendix F Requirements Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes No

If yes, describe why the change was made:

Add an Educational Message

MCM2: Public Participation

Describe the opportunity provided for public involvement in the development of the Stormwater Management Program (SWMP) during the reporting period:

The Stormwater Management Plan (SWMP) was discussed at a public Board of Selectmen meeting on September 10, 2018 where public comments and feedback were solicited. The Town complied with Massachusetts Public Notice requirements and posted the Board of Selectmen meeting on September 6, 2018.

Was this opportunity different than what was proposed in your NOI? Yes No

Describe any other public involvement or participation opportunities conducted during the reporting period:

The Town of Boylston has created a Keep Boylston Beautiful volunteer organization to raise awareness on the issue of town littering and pollution. Keep Boylston Beautiful conducted two annual Town-wide clean ups in Permit Year 1 with the aid of local volunteers. A Fall clean up was completed on October 13 and 14, 2018 during which 125 bags of litter were collected, and a Spring clean up was conducted on April 27 and 28, 2019 during which 211 bags of litter and recyclables were collected.

Boylston is a member community of the Wachusett Watershed Regional Recycling Center. The Recycling Center holds special collection days, where residents can properly dispose of their household hazardous waste for a small fee.

MCM3: Illicit Discharge Detection and Elimination (IDDE)

Sanitary Sewer Overflows (SSOs)

Below, report on the number of SSOs identified in the MS4 system and removed during this reporting period.

Number of SSOs identified: N/A

Number of SSOs removed:

Below, report on the total number of SSOs identified in the MS4 system and removed to date. At a minimum, report SSOs identified since 2013.

Total number of SSOs identified:

Total number of SSOs removed:

MS4 System Mapping

Describe the status of your MS4 map, including any progress made during the reporting period (phase I map due in year 2):

The Town of Boylston has completed mapping of all known outfalls and has mapped additional stormwater structures required under the Phase II mapping requirements. The Town will continue to improve the map as modifications are made and the IDDE Program is implemented.

Screening of Outfalls/Interconnections

If conducted, please submit any outfall monitoring results from this reporting period. Outfall monitoring results should include the date, outfall/interconnection identifier, location, weather conditions at time of sampling, precipitation in previous 48 hours, field screening parameter results, and results from all analyses.

- The outfall screening data is attached to the email submission
- The outfall screening data can be found at the following website:

Below, report on the number of outfalls/interconnections screened during this reporting period.

Number of outfalls screened:

Below, report on the percent of total outfalls/ interconnections screened to date.

Percent of total outfalls screened:

Catchment Investigations

If conducted, please submit all data collected during this reporting period as part of the dry and wet weather investigations. Also include the presence or absence of System Vulnerability Factors for each catchment.

- The catchment investigation data is attached to the email submission
- The catchment investigation data can be found at the following website:

Below, report on the number of catchment investigations completed during this reporting period.

Number of catchment investigations completed this reporting period:

Below, report on the percent of catchments investigated to date.

Percent of total catchments investigated: 0

Optional: Provide any additional information for clarity regarding the catchment investigations below:

No catchment investigations were completed in Permit Year 1 as investigations of problem catchments are not required to begin until Permit Year 2. Additionally, the Town has not identified any problem catchments.

IDDE Progress

If illicit discharges were found, please submit a document describing work conducted over this reporting period, and cumulative to date, including location source; description of the discharge; method of discovery; date of discovery; and date of elimination, mitigation, or enforcement OR planned corrective measures and schedule of removal.

- The illicit discharge removal report is attached to the email submission
- The illicit discharge removal report can be found at the following website:

N/A

Below, report on the number of illicit discharges identified and removed, along with the volume of sewage removed during this reporting period.

Number of illicit discharges identified: 0

Number of illicit discharges removed: N/A

Estimated volume of sewage removed: N/A [UNITS]

Below, report on the total number of illicit discharges identified and removed to date. At a minimum, report on the number of illicit discharges identified and removed since the effective date of the permit.

Total number of illicit discharges identified: 0

Total number of illicit discharges removed: N/A

Optional: Provide any additional information for clarity regarding illicit discharges identified, removed, or planned to be removed below:

Employee Training

Describe the frequency and type of employee training conducted during the reporting period:

The Town's Highway Department staff annually attend training with the DCR.

Below, report on the construction site plan reviews, inspections, and enforcement actions completed during this reporting period.

Number of site plan reviews completed: 8

Number of inspections completed: 9

Number of enforcement actions taken: 0

MCM5: Post-Construction Stormwater Management in New Development and Redevelopment

Ordinance Development

Describe the status of the post-construction ordinance required to be complete in year 2 of the permit term:

The Town's Stormwater Control By-law, Article VI, Section 9 of the General By-laws, was adopted in 2006 and the Boylston Conservation Commission Rules and Regulations for Stormwater was adopted in 2007. The Town will review existing regulations and determine where updates or additions are needed to meet the requirements of the General Permit in Permit Year 2.

As-built Drawings

Describe the status of the measures the MS4 has utilized to require the submission of as-built drawings and ensure long term operation and maintenance of completed construction sites required to be complete in year 2 of the permit term:

This requirement has been met through adoption of the Boylston Conservation Commission Rules and Regulations for Stormwater. Section 6.0 (I) requires the submission of as-built drawings and Section 13.0 requires ongoing maintenance and inspections for all structural and non-structural stormwater BMPs.

Street Design and Parking Lots Report

Describe the status of the street design and parking lots assessment due in year 4 of the permit term, including any planned or completed changes to local regulations and guidelines:

Preparation for the Street Design and Parking Lots Report has not yet begun as this requirement is due in Permit Year 4.

Green Infrastructure Report

Describe the status of the green infrastructure report due in year 4 of the permit term, including the findings and progress towards making the practice allowable:

Preparation for the Green Infrastructure Report has not yet begun as this requirement is due in Permit Year 4.

Retrofit Properties Inventory

Describe the status of the inventory, due in year 4 of the permit term, of permittee-owned properties that could be modified or retrofitted with BMPs to mitigate impervious areas and report on any properties that have been modified or retrofitted:

Preparation for the Retrofit Properties Inventory has not yet begun as this requirement is due in Permit Year 4.

MCM6: Good Housekeeping**Catch Basin Cleaning**

Describe the status of the catch basin cleaning optimization plan:

The plan will be formalized during development of a written operation and maintenance plan in Permit Year 2.

If complete, attach the catch basin cleaning optimization plan or the schedule to gather information to develop the optimization plan:

- The catch basin cleaning optimization plan or schedule is attached to the email submission
- The catch basin cleaning optimization plan or schedule can be found at the following website:

N/A

Below, report on the number of catch basins inspected and cleaned, along with the total volume of material removed from the catch basins during this reporting period.

Number of catch basins inspected:

Number of catch basins cleaned:

Total volume or mass of material removed from all catch basins:

Below, report on the total number of catch basins in the MS4 system, if known.

Total number of catch basins:

If applicable:

Report on the actions taken if a catch basin sump is more than 50% full during two consecutive routine inspections/cleaning events:

N/A, all catch basins are cleaned annually.

Street Sweeping

Describe the status of the written procedures for sweeping streets and municipal-owned lots:

Written procedures for street sweeping will be formalized during development of a written operation and maintenance plan in Permit Year 2. The Town sweeps all paved roads in spring annually.

Report on street sweeping completed during the reporting period using one of the three metrics below.

Number of miles cleaned:

Volume of material removed: [UNITS]

Weight of material removed: [UNITS]

If applicable:

For rural uncurbed roadways with no catch basins, describe the progress of the inspection, documentation, and targeted sweeping plan:

Winter Road Maintenance

Describe the status of the written procedures for winter road maintenance including the storage of salt and sand:

Written procedures for winter road maintenance will be formalized during development of a written operation and maintenance plan in Permit Year 2.

Inventory of Permittee-Owned Properties

Describe the status of the inventory, due in year 2 of the permit term, of permittee-owned properties, including parks and open spaces, buildings and facilities, and vehicles and equipment, and include any updates:

The Town possesses institutional knowledge of Town-owned properties to be included in the inventory. The Town will develop a written inventory during Permit Year 2.

O&M Procedures for Parks and Open Spaces, Buildings and Facilities, and Vehicles and Equipment

Describe the status of the operation and maintenance procedures, due in year 2 of the permit term, of permittee-owned properties (parks and open spaces, buildings and facilities, vehicles and equipment) and include maintenance activities associated with each:

The Town has an existing operations and maintenance plan for the Highway Department Facility, and regular inspections and maintenance is conducted at the Highway Department Facility. Operation and maintenance procedures associated with all properties included in the inventory will be formalized and/or updated as

needed in Permit Year 2.

Stormwater Pollution Prevention Plan (SWPPP)

Describe the status of any SWPPP, due in year 2 of the permit term, for permittee-owned or operated facilities including maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater:

The Town will identify if any properties and facilities are in need of a SWPPP and prepare these in accordance with the General Permit by the end of Permit Year 2.

Below, report on the number of site inspections for facilities that require a SWPPP completed during this reporting period.

Number of site inspections completed:

Describe any corrective actions taken at a facility with a SWPPP:

O&M Procedures for Stormwater Treatment Structures

Describe the status of the written procedure for stormwater treatment structure maintenance:

Written procedures for operation and maintenance of stormwater treatment structures will be formalized during development of a written operation and maintenance plan in Permit Year 2.

Additional Information

Monitoring or Study Results

Results from any other stormwater or receiving water quality monitoring or studies conducted during the reporting period not otherwise mentioned above, where the data is being used to inform permit compliance or permit effectiveness must be attached.

- Not applicable
- The results from additional reports or studies are attached to the email submission
- The results from additional reports or studies can be found at the following website(s):

If such monitoring or studies were conducted on your behalf or if monitoring or studies conducted by other entities were reported to you, a brief description of the type of information gathered or received shall be described below:

Additional Information

Optional: Enter any additional information relevant to your stormwater management program implementation during the reporting period. Include any BMP modifications made by the MS4 if not already discussed above:

Catch Basin Cleaning: There are 530 Town-owned catch basins, approximately 200 of which are located inside the MS4 permitted area. The Town cleans all 530 catch basins annually.

Site Inspections and Site Reviews: The number of site plan reviews and site inspections listed in MCM 4 incorporates all construction sites in Town, including those outside of the MS4, because the Town's Stormwater Control By-Law and Boylston Conservation Commission Rules & Regulations for Stormwater are enforced throughout Boylston.

Activities Planned for Next Reporting Period

Please confirm that your SWMP has been, or will be, updated to comply with all applicable permit requirements including but not limited to the year 2 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree

- Complete system mapping Phase I
- Begin investigations of catchments associated with Problem Outfalls
- Develop or modify an ordinance or other regulatory mechanism for post-construction stormwater runoff from new development and redevelopment
- Establish and implement written procedures to require the submission of as-built drawings no later than two years after the completion of construction projects
- Develop, if not already developed, written operations and maintenance procedures
- Develop an inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; review annually and update as necessary
- Establish a written program detailing the activities and procedures the permittee will implement so that the MS4 infrastructure is maintained in a timely manner
- Develop and implement a written SWPPP for maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater
- Enclose or cover storage piles of salt or piles containing salt used for deicing or other purposes
- Develop, if not already developed, written procedures for sweeping streets and municipal-owned lots
- Develop, if not already developed, written procedures for winter road maintenance including storage of salt and sand
- Develop, if not already developed, a schedule for catch basin cleaning
- Develop, if not already developed, a written procedure for stormwater treatment structure maintenance
- Develop a written catchment investigation procedure (*18 months*)

Annual Requirements

- Annual report submitted and available to the public
- Annual opportunity for public participation in review and implementation of SWMP
- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to

receiving waters

- Annual training to employees involved in IDDE program
- Update inventory of all known locations where SSOs have discharged to the MS4 in the last 5 years
- Continue public education and outreach program
- Update outfall and interconnection inventory and priority ranking and include data collected in connection with the dry weather screening and other relevant inspections conducted
- Implement IDDE program
- Review site plans of construction sites as part of the construction stormwater runoff control program
- Conduct site inspection of construction sites as necessary
- Inspect and maintain stormwater treatment structures
- Log catch basins cleaned or inspected
- Sweep all uncurbed streets at least annually

Provide any additional details on activities planned for permit year 2 below:

The Town acknowledges the General Permit Year 2 requirements and intends to complete as many activities as possible based on funding and staff availability.

Part V: Certification of Small MS4 Annual Report 2019

40 CFR 144.32(d) Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: Title:

Signature: Date:

[Signatory may be a duly authorized representative]

**Permit Year 1 Outfall and Interconnection Inventory and Initial Ranking
Boylston, MA**

Town Structure ID	Outfall ID	Initial Rank	Receiving Waterbody	Latitude	Longitude	Location	Shape	Shape Description	Material
01	01	High	Tributary to Newton Pond MA51110	42.31953912	-71.744217	End of Knob Cone Drive			
02	02	High	Sewall Brook	42.32488745	-71.7408763	Sewall Street by YMCA Camp			
03	03	High	Outside Receiving	42.31645777	-71.7586909	Glazier Street			
04	04	High	Wetland to Malagasco Brook MA81-29	42.34058611	-71.7371569	Underwood Avenue			
05	05	High	Outside Receiving	42.32045149	-71.7551928	Bend in Belair St			
06	06	High	Outside Receiving	42.32026165	-71.7542515	Melrose Street			
07	07	Problem	Outside Receiving	42.3228245	-71.7483637	Nicholas Avenue			
08	08	High	Outside Receiving	42.32196001	-71.7486209	Codderre Street			
09	09	Low	Outside Receiving	42.31688766	-71.7632516	Cutler Road across from CB22			
10	10	Low	Outside Receiving	42.31823122	-71.7588318	Midland across from lower end of Upland Rd			
12	12	High	Outside Receiving	42.3166798	-71.7512728	Mill Road across from House 41			
13	13	High	Outside Receiving	42.31757848	-71.7498125	Mill Road across from House 61			
14	14	High	Tributary to Newton Pond MA51110	42.31803762	-71.7438931	Mill Road next to culvert			
15	15	Low	Outside Receiving	42.316998	-71.7623903	Cutler Rd at house #34			
16	16	High	Outside Receiving	42.31841214	-71.7470293	Brooke Rd			
17	17	High	Outside Receiving	42.32320578	-71.7396746	Sewall St S at int with Smallwood			
18	18	High	Wetland to Malagasco Brook MA81-29	42.33910523	-71.7373615	#1 Underwood at int with Fairacre			
19	19	High	Unnamed Tributary	42.33495528	-71.7348039	#4 Mary Ann Dr			
21	21	High	Outside Receiving	42.3345508	-71.7368537	E Temple St at Int with Sewall St N			
			Wetland to Tributary to French Brook MA81-48	42.35314286	-71.7049091				
	DCR-1	High	Outside Receiving	42.35448934	-71.70031				
	DCR-2	High	Outside Receiving	42.3539476	-71.7009847				
	DCR-3	High	Outside Receiving	42.35494174	-71.7018005				
	DCR-4	High	Outside Receiving	42.3544925	-71.7029421				
	DCR-5	High	Outside Receiving	42.35530729	-71.7018017				
	DCR-6	High	Outside Receiving						
	DCR-7	Low	Wetland to Tributary to Cold Harbor Brook MA82B-18	42.34715799	-71.7031146		12"		
	DCR-8	High	Wetland to Tributary to Cold Harbor Brook MA82B-18	42.34727044	-71.703601		18"		
	DCR-9	High	Tributary to French Brook MA81-48	42.34800681	-71.7065237		12"		
	DCR10	High	Tributary to French Brook MA81-48	42.34829542	-71.7075738		24"		
	DCR11	High	Tributary to French Brook MA81-48	42.34849236	-71.7062522				
	DCR12	High	Tributary to French Brook MA81-48	42.34937191	-71.7062335				
	DCR13	High	Tributary to French Brook MA81-48	42.35002218	-71.7062536				
	DCR14	High	Tributary to French Brook MA81-48	42.35104963	-71.7055024				
	DCR15	High	Tributary to French Brook MA81-48	42.35270683	-71.7043148		2'		
	DCR16	High	Wetland to French Brook MA81-48	42.35319285	-71.704935		18"	Circular	Metal
	DCR17	High	Tributary to French Brook MA81-48	42.35346137	-71.704152		3'		
	DCR18	High	Outside Receiving	42.35404093	-71.7009856				
	DCR19	High	Outside Receiving	42.35424422	-71.7015969			Circular	Plastic
	DCR20	High	Outside Receiving	42.3543417	-71.7004066		24"	Circular	Concrete
	DCR21	High	Outside Receiving	42.35440315	-71.7028894		12"		
	DCR22	High	Outside Receiving	42.35456615	-71.7030787		12"	Circular	Plastic
	DCR23	High	Outside Receiving	42.35497201	-71.7016982		12"	Circular	Concrete
	DCR24	High	Outside Receiving	42.35535211	-71.7018076		18"	Circular	Concrete
	DCR25	High	Outside Receiving	42.35548015	-71.700806				

Permit Year 2

(July 1, 2019 – June 30, 2020)

Year 2 Annual Report
Massachusetts Small MS4 General Permit
Reporting Period: July 1, 2019-June 30, 2020

Please DO NOT attach any documents to this form. Instead, attach all requested documents to an email when submitting the form

Unless otherwise noted, all fields are required to be filled out. If a field is left blank, it will be assumed the requirement or task has not been completed. Please ONLY report on activities between July 1, 2019 and June 30, 2020 unless otherwise requested.

Part I: Contact Information

Name of Municipality or Organization:

EPA NPDES Permit Number:

Primary MS4 Program Manager Contact Information

Name:

Title:

Street Address Line 1:

Street Address Line 2:

City:

State:

Zip Code:

Email:

Phone Number:

Stormwater Management Program (SWMP) Information

SWMP Location (web address):

Date SWMP was Last Updated:

If the SWMP is not available on the web please provide the physical address:

Part II: Self-Assessment

First, in the box below, select the impairment(s) and/or TMDL(s) that are applicable to your MS4. Make sure you are referring to the most recent EPA approved Section 303(d) Impaired Waters List which can be found here: <https://www.epa.gov/tmdl/region-1-impaired-waters-and-303d-lists-state>

Impairment(s)			
<input type="checkbox"/> Bacteria/Pathogens	<input type="checkbox"/> Chloride	<input type="checkbox"/> Nitrogen	<input type="checkbox"/> Phosphorus
<input type="checkbox"/> Solids/ Oil/ Grease (Hydrocarbons)/ Metals			
TMDL(s)			
<i>In State:</i>	<input checked="" type="checkbox"/> Assabet River Phosphorus	<input type="checkbox"/> Bacteria and Pathogen	<input type="checkbox"/> Cape Cod Nitrogen
	<input type="checkbox"/> Charles River Watershed Phosphorus	<input checked="" type="checkbox"/> Lake and Pond Phosphorus	
<i>Out of State:</i>	<input type="checkbox"/> Bacteria/Pathogens	<input type="checkbox"/> Metals	<input type="checkbox"/> Nitrogen
			<input type="checkbox"/> Phosphorus
			<input type="button" value="Clear Impairments and TMDLs"/>

Next, check off all requirements below that have been completed. **By checking each box you are certifying that you have completed that permit requirement fully.** If you have not completed a requirement leave the box unchecked. Additional information will be requested in later sections.

Year 2 Requirements

- Completed Phase I of system mapping
- Developed a written catchment investigation procedure and added the procedure to the SWMP
- Developed written procedures to require the submission of as-built drawings and ensure the long term operation and maintenance of completed construction sites and added these procedures to the SWMP
- Enclosed or covered storage piles of salt or piles containing salt used for deicing or other purposes
- Developed written operations and maintenance procedures for parks and open space, buildings and facilities, and vehicles and equipment and added these procedures to the SWMP
- Developed an inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment and added this inventory to the SWMP
- Completed a written program for MS4 infrastructure maintenance to reduce the discharge of pollutants
 - Developed written SWPPPs, included in the SWMP, for all of the following permittee owned or operated facilities: maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater

Optional: If you would like to describe progress made on any incomplete requirements listed above, provide any additional information, and/or if any of the above year 2 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

The Town has determined that no facilities located within the MS4 require a site-specific SWPPP. The Highway Garage, located adjacent to the urbanized area, maintains its drainage on site and does not connect to the MS4, and therefore does not require a SWPPP under the MS4 Program.

Annual Requirements

- Provided an opportunity for public participation in review and implementation of SWMP and complied with State Public Notice requirements
- Kept records relating to the permit available for 5 years and made available to the public
- The SSO inventory has been updated, including the status of mitigation and corrective measures implemented
 - This is not applicable because we do not have sanitary sewer
 - This is not applicable because we did not find any new SSOs
 - The updated SSO inventory is attached to the email submission
 - The updated SSO inventory can be found at the following website:
- Properly stored and disposed of catch basin cleanings and street sweepings so they did not discharge to receiving waters
- Provided training to employees involved in IDDE program within the reporting period
- All curbed roadways were swept at least once within the reporting period
- Updated outfall and interconnection inventory and priority ranking as needed

Optional: If you would like to describe progress made on any incomplete requirements listed above, provide any additional information, and/or if any of the above annual requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

Town staff completed a virtual IDDE training on September 10, 2020. This training was intended to be held in-person during Permit Year 2, but was delayed as the training had to be reformatted and recorded so staff could complete the training in accordance with COVID-19 social distancing guidelines.

Phosphorus (Combination of Impaired Waters Requirements and TMDL Requirements as Applicable)Annual Requirements*Public Education and Outreach**

- Distributed an annual message in the spring (April/May) encouraging the proper use and disposal of grass clippings and encouraging the proper use of slow-release and phosphorus-free fertilizers
- Distributed an annual message in the summer (June/July) encouraging the proper management of pet waste, including noting any existing ordinances where appropriate
- Distributed an annual message in the fall (August/September/October) encouraging the proper disposal of leaf litter

** Public education messages can be combined with other public education requirements as applicable (see Appendix H and F for more information)*

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

- Increased street sweeping frequency of all municipal owned streets and parking lots subject to Permit part 2.3.7.a.iii.(c) to a minimum of two times per year (spring and fall)

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

Phosphorus Good Housekeeping: All streets are swept annually in the spring. The Highway Department also sweeps priority areas up to 4 times per year. There are fewer than ten municipal streets within the area of Boylston's MS4 and the Assabet River watershed, many of which are low travel residential streets. The Town did not sweep all streets within this area two times in Permit Year 2, but does plan to increase the sweeping budget in Permit Year 3 to meet this requirement.

Lake and Pond Phosphorus TMDL

Completed Legal Analysis

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

The Legal Analysis for the LPCP has been drafted as of the date of this annual report submittal. The Town is currently reviewing and compiling additional information to finalize. Because Newton Pond was removed from the 2016 303(d) list and is considered Category 4c for non-native aquatic plants, we will be working with EPA and MassDEP to determine applicability of the Lake and Pond Phosphorus TMDL requirements in Permit Year 3.

Optional: Use the box below to provide any additional information you would like to share as part of your self-assessment:

Part III: Receiving Waters/Impaired Waters/TMDL

Have you made any changes to your lists of receiving waters, outfalls, or impairments since the NOI was submitted?

- Yes
 No

If yes, describe below, including any relevant impairments or TMDLs:

The Town's NOI listed receiving waters and impairments based on the water quality limited waters in the 2014 303(d) Integrated List. The Town has evaluated changes to the impairments and/or receiving waters based on the final 2016 303(d) Integrated List and enclosed the analysis herein. The enclosed document will be included in the Town's SWMP.

In September 2020, the Town's stormwater consultant completed field investigations to refine the MS4 outfall mapping. Based on these investigations, the Town will be able to remove many outfall points from the inventory because the mapped infrastructure was a culvert, BMP inlet, or private. A summary of the mapping efforts completed and the impact, if any, on the Town's receiving waters and impairments, will be included in the Year 3 Annual Report.

Part IV: Minimum Control Measures

Please fill out all of the metrics below. If applicable, include in the description who completed the task if completed by a third party.

MCM1: Public Education

Number of educational messages completed **during this reporting period:**

Below, report on the educational messages completed **during this reporting period**. For the measurable goal(s) please describe the method/measures used to assess the overall effectiveness of the educational program.

BMP: Education and Outreach to Residents (Multi-media Methods)

Message Description and Distribution Method:

For most of Permit Year 2, the Town displayed brochures and flyers at Town Hall on the following stormwater-related topics: dog waste and surface water quality, Massachusetts Watershed Protection Act, phosphorus-free fertilizer use, stormwater basins and importance of routine maintenance, proper car washing procedures, swimming pools and surface water quality, and household stormwater pollution prevention. Additionally, the Town posted flyers on leaf litter and ways to compost or properly dispose of leaves on the Town Hall bulletin board. During spring and summer of 2020, Town Hall was closed to the public and brochures were not on display due to COVID-19 safety concerns. The Town moved many of these educational materials to the Stormwater Committee webpage so they could be accessed safely, and also included additional materials that were not previously available at Town Hall..

Targeted Audience:

Responsible Department/Parties:

Measurable Goal(s):

All visitors to Town Hall are reached by this messaging. The educational materials on the Stormwater Committee webpage were available for all visitors of the Town's website.

Message Date(s):

Message Completed for: Appendix F Requirements Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes No

If yes, describe why the change was made:

BMP: Education and Outreach to Residents (Multi-media Methods)

Message Description and Distribution Method:

Multiple Town Departments and volunteer groups have active Facebook pages, including the Highway Department and Keep Boylston Beautiful volunteer group, where leaf litter collection, yard waste collection, and cleanup events are advertised. The Boylston Highway Department announced on May 5, 2020 that the Town will be accepting Spring yard waste at the Highway Garage. The Keep Boylston Beautiful Facebook

page announced results of the Spring Clean Up on June 7, 2020.

Targeted Audience: Residents

Responsible Department/Parties: Town Administrator with support from DCR

Measurable Goal(s):

475 people follow the Boylston Highway Department Facebook page and 368 people follow the Keep Boylston Beautiful Facebook page. Followers of these Facebook pages are reached by this messaging.

Yard waste post received 3 likes and 2 shares.

Clean up event post received 21 likes, 3 comments, and 7 shares.

Message Date(s): Various

Message Completed for: Appendix F Requirements Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes No

If yes, describe why the change was made:

BMP: Education and Outreach to Developers (Multi-media Methods)

Message Description and Distribution Method:

Informational letters about wetlands permitting, water quality, and stormwater pollution prevention were developed in Permit Year 1, and streamlined into one letter in Permit Year 2. This year, the Town continued to distribute the letter with stormwater permits and also provided the letter as an educational document to visitors of the Conservation Commission office.

Targeted Audience: Developers (construction)

Responsible Department/Parties: Town Administrator with support from DCR

Measurable Goal(s):

2 copies of the letter were issued with Stormwater permits in Year 2, and approximately 12 were distributed to visitors with questions about the permitting process.

Message Date(s): Ongoing

Message Completed for: Appendix F Requirements Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes No

If yes, describe why the change was made:

BMP: Education and Outreach to Residents (Multi-media Methods)

Message Description and Distribution Method:

The Town maintains a Stormwater Committee page on the Town's website that contains public education materials on stormwater pollution prevention, including seasonal messaging for phosphorus, the "Fowl Water" video, and a link to an EPA article about nutrient pollution. The page also includes information about the Town's MS4 program, including the SWMP, stormwater bylaws, and Year 1 annual report.

Targeted Audience: Residents

Responsible Department/Parties: Town Administrator with support from DCR

Measurable Goal(s):

The Stormwater Committee page and its resources are available to all visitors of the Town's website.

Message Date(s): Ongoing

Message Completed for: Appendix F Requirements Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes No

If yes, describe why the change was made:

BMP: Education and Outreach to Residents (Multi-media Methods)**Message Description and Distribution Method:**

The DCR incorporated new methods of public outreach due to COVID-19 and promoted online resource sharing. The DCR created activity guides and kiosk posters that are available on watershed education web pages. Additionally, a Virtual Reservoir Tour and Watershed Wildlife videos were created and distributed upon request to replace in-person visits. These educational materials were available to all Boylston residents.

Targeted Audience: Residents

Responsible Department/Parties: DCR

Measurable Goal(s):

The online activity guides created by DCR are available to all visitors of the DCR's webpage.

Message Date(s): Ongoing

Message Completed for: Appendix F Requirements Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes No

If yes, describe why the change was made:

Add an Educational Message

MCM2: Public Participation

Describe the opportunity provided for public involvement in the development of the Stormwater Management Program (SWMP) **during this reporting period:**

The Stormwater Management Plan (SWMP) was made publicly available for review and input on the Town's Stormwater Committee website.

The Conservation Commission held a meeting on February 24, 2020 to discuss updates needed to the Rules and Regulations to meet the revised post-construction stormwater management requirements in the General Permit. State Public Notice requirements were followed for this meeting.

Was this opportunity different than what was proposed in your NOI? Yes No

Describe any other public involvement or participation opportunities conducted **during this reporting period:**

- The Town of Boylston has created a Keep Boylston Beautiful volunteer organization to raise awareness on the issue of town littering and pollution. Keep Boylston Beautiful conducted two annual Town-wide clean ups in Permit Year 2 with the aid of local volunteers. A Fall clean up was completed on October 19 and 20, 2019 during which 1,000 lbs of litter was collected, and a Spring clean up was conducted on June 6 and 7, 2020 during which 1,349 lbs of litter and recyclables was collected.
- The Town offered Spring yard waste drop off for six days in May 2020.
- Boylston is a member community of the Wachusett Watershed Regional Recycling Center. The Recycling Center holds special collection days, where residents can properly dispose of their household hazardous waste for a small fee.
- The DCR conducted a guided hiking series in which the hike on January 18, 2020 was held in Boylston along Gate 8 of the Wachusett Reservoir and promoted water supply protection and responsible recreation.

MCM3: Illicit Discharge Detection and Elimination (IDDE)

Sanitary Sewer Overflows (SSOs)

Check off the box below if the statement is true.

- This SSO section is NOT applicable because we DO NOT have sanitary sewer

*Below, report on the number of SSOs identified in the MS4 system and removed **during this reporting period.***

Number of SSOs identified:

Number of SSOs removed:

MS4 System Mapping

Below, check all that apply.

The following elements of the Phase I map have been completed:

- Outfalls and receiving waters

- Open channel conveyances
- Interconnections
- Municipally-owned stormwater treatment structures
- Waterbodies identified by name and indication of all use impairments
- Initial catchment delineations

Optional: Describe any additional progress you made on your map during this reporting period or provide additional status information regarding your map:

The Town of Boylston has completed mapping of all known outfalls and has mapped additional stormwater structures required under the Phase II mapping requirements. The Town has no known interconnections and will update system mapping if any interconnections are located in future fieldwork efforts. In September 2020, the Town refined the outfall mapping by identifying mapped outfall points that are culverts, BMP inlets, or private, which reduced the total number of MS4 outfalls. This information will be provided in the Permit Year 3 Annual Report and further refined during dry weather outfall investigations. The Town will continue to improve the mapping as modifications are made and the IDDE Program is implemented.

Screening of Outfalls/Interconnections

If conducted, please submit any outfall monitoring results from this reporting period. Outfall monitoring results should include the date, outfall/interconnection identifier, location, weather conditions at time of sampling, precipitation in previous 48 hours, field screening parameter results, and results from all analyses.

- The outfall screening data is attached to the email submission
- The outfall screening data can be found at the following website:

N/A

*Below, report on the number of outfalls/interconnections screened **during this reporting period.***

Number of outfalls screened:

Catchment Investigations

If conducted, please submit all data collected during this reporting period as part of the dry and wet weather investigations. Also include the presence or absence of System Vulnerability Factors for each catchment.

- The catchment investigation data is attached to the email submission
- The catchment investigation data can be found at the following website:

N/A

*Below, report on the number of catchment investigations completed **during this reporting period.***

Number of catchment investigations completed this reporting period:

*Below, report on the percent of catchments investigated **to date.***

Percent of total catchments investigated:

Optional: Provide any additional information for clarity regarding the catchment investigations below:

The Town has not identified any problem catchments.

IDDE Progress

If illicit discharges were found, please submit a document describing work conducted over this reporting period, and cumulative to date, including location source; description of the discharge; method of discovery; date of discovery; and date of elimination, mitigation, or enforcement OR planned corrective measures and schedule of removal.

- The illicit discharge removal report is attached to the email submission
- The illicit discharge removal report can be found at the following website:

N/A

*Below, report on the number of illicit discharges identified and removed, along with the volume of sewage removed **during this reporting period.***

Number of illicit discharges identified:

Number of illicit discharges removed:

Estimated volume of sewage removed: gallons/day

*Below, report on the total number of illicit discharges identified and removed to date. At a minimum, report on the number of illicit discharges identified and removed **since the effective date of the permit (July 1, 2018).***

Total number of illicit discharges identified:

Total number of illicit discharges removed:

Optional: Provide any additional information for clarity regarding illicit discharges identified, removed, or planned to be removed below:

Employee Training

Describe the frequency and type of employee training conducted **during the reporting period:**

5 Highway Department staff completed a virtual IDDE Refresher training on September 10, 2020. This training was intended to be held in-person during Permit Year 2, but was delayed as the training had to be reformatted and recorded so staff could complete the training in accordance with COVID-19 social distancing guidelines.

MCM4: Construction Site Stormwater Runoff Control

*Below, report on the construction site plan reviews, inspections, and enforcement actions completed **during this reporting period.***

Number of site plan reviews completed:

Number of inspections completed:

Number of enforcement actions taken:

Optional: Enter any additional information relevant to construction site plan reviews, inspections, and enforcement actions:

The number of site plan reviews and site inspections listed in MCM 4 incorporates all construction sites in Town, including those outside of the MS4, because the Town's Stormwater Control By-Law and Boylston Conservation Commission Rules & Regulations for Stormwater are enforced throughout Boylston and those completed by the DCR for projects within the Wachusett Watershed..

MCM5: Post-Construction Stormwater Management in New Development and Redevelopment

Ordinance or Regulatory Mechanism

Below, select the option that describes your ordinance or regulatory mechanism progress.

- Bylaw, ordinance, or regulations are updated and adopted consistent with permit requirements
- Bylaw, ordinance, or regulations are updated consistent with permit requirements but are not yet adopted
- Bylaw, ordinance, or regulations have not been updated or adopted

As-built Drawings

Describe the measures the MS4 has utilized to require the submission of as-built drawings and ensure long term operation and maintenance of completed construction sites:

This requirement has been met through adoption of the Boylston Conservation Commission Rules and Regulations for Stormwater. Section 6.0 (I) requires the submission of as-built drawings and Section 13.0 requires ongoing maintenance and inspections for all structural and non-structural stormwater BMPs.

Street Design and Parking Lots Report

Describe the status of the street design and parking lots assessment due in year 4 of the permit term, including any planned or completed changes to local regulations and guidelines:

Preparation for the Street Design and Parking Lots Report has not yet begun as this requirement is due in Permit Year 4.

Green Infrastructure Report

Describe the status of the green infrastructure report due in year 4 of the permit term, including the findings and progress towards making the practice allowable:

Preparation for the Green Infrastructure Report has not yet begun as this requirement is due in Permit Year 4.

--

Retrofit Properties Inventory

Describe the status of the inventory, due in year 4 of the permit term, of permittee-owned properties that could be modified or retrofitted with BMPs to mitigate impervious areas and report on any properties that have been modified or retrofitted:

Preparation for the Retrofit Properties Inventory has not yet begun as this requirement is due in Permit Year 4.

MCM6: Good Housekeeping

Catch Basin Cleaning

*Below, report on the number of catch basins inspected and cleaned, along with the total volume of material removed from the catch basins **during this reporting period**.*

Number of catch basins inspected:

Number of catch basins cleaned:

Total volume or mass of material removed from all catch basins:

Below, report on the total number of catch basins in the MS4 system.

Total number of catch basins:

If applicable:

Report on the actions taken if a catch basin sump is more than 50% full during two consecutive routine inspections/cleaning events:

N/A, all catch basins are cleaned annually.

Street Sweeping

*Report on street sweeping completed **during this reporting period** using one of the three metrics below.*

Number of miles cleaned:

Volume of material removed:

Weight of material removed:

O&M Procedures and Inventory of Permittee-Owned Properties

Below, check all that apply.

The following permittee-owned properties have been inventoried:

- Parks and open spaces
- Buildings and facilities
- Vehicles and equipment

The following O&M procedures for permittee-owned properties have been completed:

- Parks and open spaces
- Buildings and facilities
- Vehicles and equipment

Stormwater Pollution Prevention Plan (SWPPP)

*Below, report on the number of site inspections for facilities that require a SWPPP completed **during this reporting period.***

Number of site inspections completed:

Describe any corrective actions taken at a facility with a SWPPP:

SWPPP inspections are N/A - see SWPPP description on Page 2

Additional Information

Monitoring or Study Results

Results from any other stormwater or receiving water quality monitoring or studies conducted during the reporting period not otherwise mentioned above, where the data is being used to inform permit compliance or permit effectiveness must be attached.

- Not applicable
- The results from additional reports or studies are attached to the email submission
- The results from additional reports or studies can be found at the following website(s):

If such monitoring or studies were conducted on your behalf or if monitoring or studies conducted by other entities were reported to you, a brief description of the type of information gathered or received shall be described below:

Additional Information

Optional: Enter any additional information relevant to your stormwater management program implementation during the reporting period. Include any BMP modifications made by the MS4 if not already discussed above:

The Town's Stormwater Control By-law, Article VI, Section 9 of the General By-laws, and the Boylston Conservation Commission Rules and Regulations for Stormwater fulfill part of the MCM 4 and MCM 5 Construction and Post-Construction Stormwater Management requirements. Due to the delay of the MassDEP Stormwater Handbook update and in accordance with the revised schedule in the proposed General Permit modifications, the Town's regulatory mechanism is currently undergoing review and will be updated as needed for consistency with the revised General Permit requirements in Permit Year 3.

Catch Basin Cleaning: There are 530 Town-owned catch basins, 196 of which are located inside the MS4 permitted area. The Town cleans all catch basins annually. Note that the volume of material removed reported is an estimate.

COVID-19 Impacts

Optional: If any of the above year 2 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

Activities Planned for Next Reporting Period

Please confirm that your SWMP has been, or will be, updated to comply with all applicable permit requirements including but not limited to the year 3 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree

- Inspect all outfalls/ interconnections (excluding Problem and Excluded outfalls) for the presence of dry weather flow
- Complete follow-up ranking as dry weather screening becomes available

Annual Requirements

- Annual report submitted and available to the public
- Annual opportunity for public participation in review and implementation of SWMP
- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- Annual training to employees involved in IDDE program
- Update inventory of all known locations where SSOs have discharged to the MS4
- Continue public education and outreach program
- Update outfall and interconnection inventory and priority ranking and include data collected in connection with the dry weather screening and other relevant inspections conducted
- Implement IDDE program

- Review site plans of construction sites as part of the construction stormwater runoff control program
- Conduct site inspection of construction sites as necessary
- Inspect and maintain stormwater treatment structures
- Log catch basins cleaned or inspected
- Sweep all uncurbed streets at least annually
- Continue investigations of catchments associated with Problem Outfalls
- Review inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; update if necessary

Provide any additional details on activities planned for permit year 3 below:

The Town acknowledges the General Permit Year 3 requirements and intends to complete as many activities as possible based on funding and staff availability.

Part V: Certification of Small MS4 Annual Report 2020

40 CFR 144.32(d) Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name:

Title:

Signature:

Date:

[Signatory may be a duly authorized representative]

Summary of Boylston's TMDLs and Impaired Waters ^{1, 2, 3}



Tighe&Bond

Receiving Waterbody	2014 Category	2014 Water Quality Impairments ⁴	2016 Category	2016 Water Quality Impairments ⁴	Applicable General Permit Section	Change to Permit Requirements
Malagasco Brook ⁵ (MA81-29)	5	Aquatic Macroinvertebrate Bioassessments Nutrient/Eutrophication Biological Indicators	5	Benthic Macroinvertebrates Nutrient/Eutrophication Biological Indicators		None
Newton Pond ⁵ (MA51110)	4a	Non-Native Aquatic Plants	4c	Non-Native Aquatic Plants		None
French Brook ⁵ (MA81-48)	2		2			None
Unnamed Tributary (Boylston Brook) (MA81-34)	2		3			None
Cold Harbor Brook ⁵ (MA82B-18)	2		2			None
Sewall Brook (MA51-44)			2			None
TMDL of Phosphorus for Selected Northern Blackstone Lakes					Appendix F, Section A.II - Lake and Pond Phosphorus TMDL	None
Assabet River TMDL for Total Phosphorus					Appendix F, Section A.V - Assabet River Phosphorus TMDL	None

¹ TMDLs associated with major rivers may apply to additional waterbodies within the watershed.

² Any TMDL or impairments related to nutrients (nitrogen and phosphorus) apply to all receiving waterbodies within the watershed.

³ Impairments and waterbodies in [blue](#) were added in the 2016 Integrated List of Waters.

⁴ Impairments applicable to Boylston that have been renamed between the 2014 and 2016 Integrated List of Waters include the following: Aquatic Macroinvertebrates Bioassessments -> Benthic Macroinvertebrates

⁵ Waterbody does not receive direct discharge from the MS4. MS4 discharges to a tributary/wetland of the waterbody. Included for reference only.

Phase I MS4 System Map

Summary of Boylston's TMDLs and Impaired Waters ^{1,2}

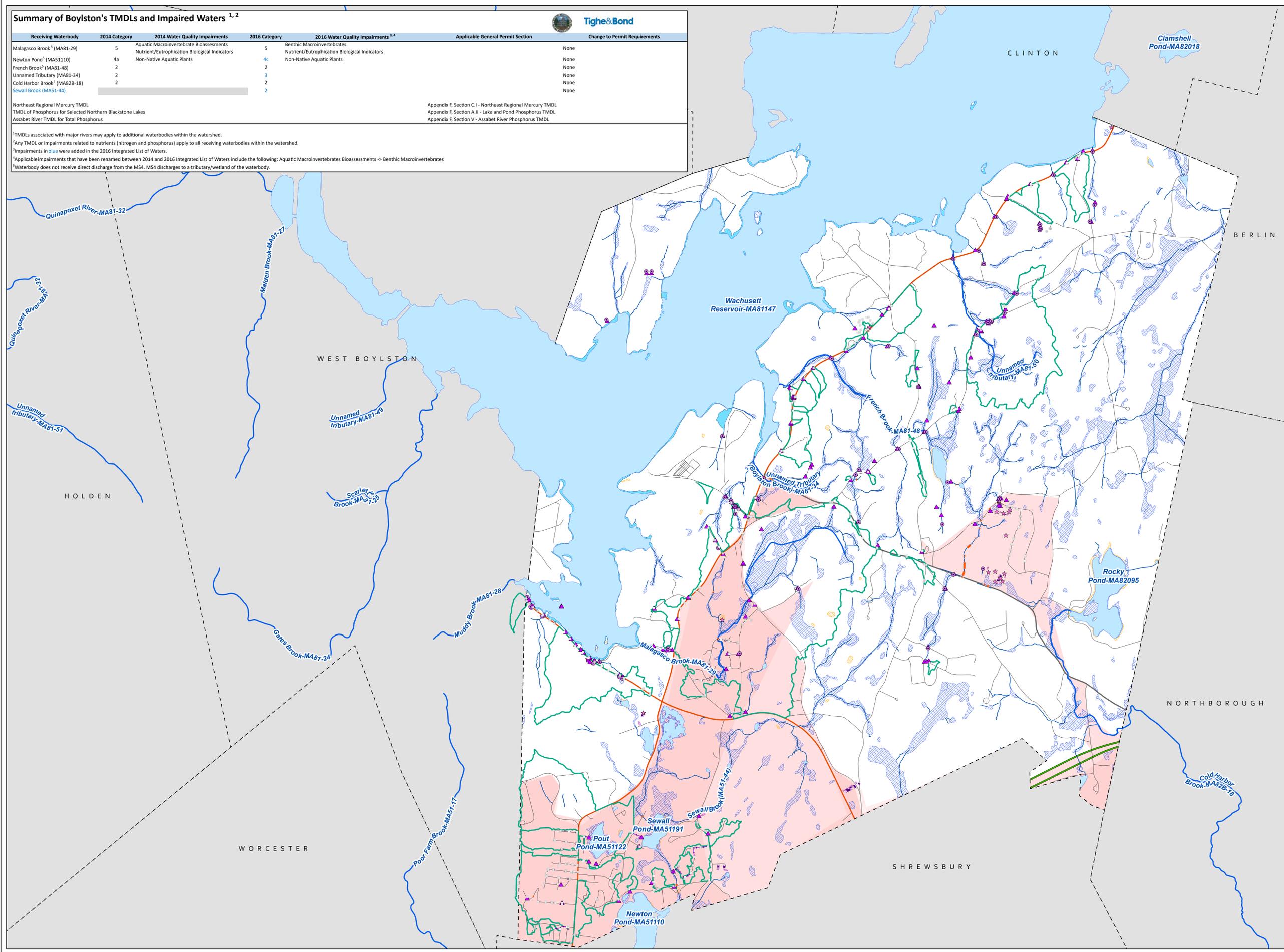


Receiving Waterbody	2014 Category	2014 Water Quality Impairments	2016 Category	2016 Water Quality Impairments ^{3,4}	Applicable General Permit Section	Change to Permit Requirements
Malagasco Brook ⁵ (MA81-29)	5	Aquatic Macroinvertebrate Bioassessments Nutrient/Eutrophication Biological Indicators	5	Benthic Macroinvertebrates Nutrient/Eutrophication Biological Indicators		None
Newton Pond ⁶ (MA51110)	4a	Non-Native Aquatic Plants	4c	Non-Native Aquatic Plants		None
French Brook ⁷ (MA81-48)	2		2			None
Unnamed Tributary (MA81-34)	2		3			None
Cold Harbor Brook ⁸ (MA82B-18)	2		2			None
Sewall Brook (MA51-44)			2			None

Northeast Regional Mercury TMDL
 TMDL of Phosphorus for Selected Northern Blackstone Lakes
 Assabet River TMDL for Total Phosphorus

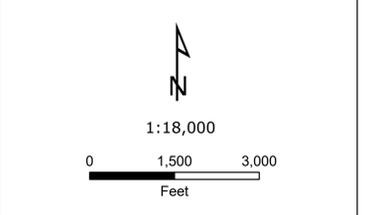
Appendix F, Section C.I - Northeast Regional Mercury TMDL
 Appendix F, Section A.II - Lake and Pond Phosphorus TMDL
 Appendix F, Section V - Assabet River Phosphorus TMDL

¹TMDLs associated with major rivers may apply to additional waterbodies within the watershed.
²Any TMDL or impairments related to nutrients (nitrogen and phosphorus) apply to all receiving waterbodies within the watershed.
³Impairments in blue were added in the 2016 Integrated List of Waters.
⁴Applicable impairments that have been renamed between 2014 and 2016 Integrated List of Waters include the following: Aquatic Macroinvertebrates Bioassessments -> Benthic Macroinvertebrates
⁵Waterbody does not receive direct discharge from the MS4. MS4 discharges to a tributary/wetland of the waterbody.



LEGEND

- Catch Basins
- Inlets
- Manholes
- Outfalls
- Drain Line
- Culverts
- BMP Point
- BMP Line
- BMP Polygon
- Outfall Catchments
- Stream/Intermittent Stream
- Public Surface Water Supply (PSWS)
- Water Bodies
- Town Boundary
- Limited Access Highway
- Multi-Lane Highway, NOT Limited Access
- Other Numbered Highway
- Major Road - Collector
- Minor Street or Road
- MassDEP Open Water
- MassDEP Inland Wetlands
- Urbanized Area 2010
- Urbanized Area 2000



NOTES

1. Data source: Bureau of Geographic Information (MassGIS) Commonwealth of Massachusetts, Executive Office of Technology
 2. Stormwater: The Town of Boylston

Permit Year 2 Annual Report
 Boylston, Massachusetts

September 2020



Permit Year 3

(July 1, 2020 – June 30, 2021)

Year 3 Annual Report
Massachusetts Small MS4 General Permit
Reporting Period: July 1, 2020-June 30, 2021

Please DO NOT attach any documents to this form. Instead, attach all requested documents to an email when submitting the form

Unless otherwise noted, all fields are required to be filled out. If a field is left blank, it will be assumed the requirement or task has not been completed. Please ONLY report on activities between July 1, 2020 and June 30, 2021 unless otherwise requested.

Part I: Contact Information

Name of Municipality or Organization:

EPA NPDES Permit Number:

Primary MS4 Program Manager Contact Information

Name: Title:

Street Address Line 1:

Street Address Line 2:

City: State: Zip Code:

Email: Phone Number:

Stormwater Management Program (SWMP) Information

SWMP Location (web address):

Date SWMP was Last Updated:

If the SWMP is not available on the web please provide the physical address:

Part II: Self-Assessment

First, in the box below, select the impairment(s) and/or TMDL(s) that are applicable to your MS4. Make sure you are referring to the most recent EPA approved Section 303(d) Impaired Waters List which can be found here: <https://www.epa.gov/tmdl/region-1-impaired-waters-and-303d-lists-state>

Impairment(s)			
<input type="checkbox"/> Bacteria/Pathogens	<input type="checkbox"/> Chloride	<input type="checkbox"/> Nitrogen	<input type="checkbox"/> Phosphorus
<input type="checkbox"/> Solids/ Oil/ Grease (Hydrocarbons)/ Metals			
TMDL(s)			
<i>In State:</i>	<input checked="" type="checkbox"/> Assabet River Phosphorus	<input type="checkbox"/> Bacteria and Pathogen	<input type="checkbox"/> Cape Cod Nitrogen
	<input type="checkbox"/> Charles River Watershed Phosphorus	<input checked="" type="checkbox"/> Lake and Pond Phosphorus	
<i>Out of State:</i>	<input type="checkbox"/> Bacteria/Pathogens	<input type="checkbox"/> Metals	<input type="checkbox"/> Nitrogen
			<input type="checkbox"/> Phosphorus
			Clear Impairments and TMDLs

Next, check off all requirements below that have been completed. **By checking each box you are certifying that you have completed that permit requirement fully.** If you have not completed a requirement leave the box unchecked. Additional information will be requested in later sections.

Year 3 Requirements

- Inspected and screened all outfalls/interconnections (excluding Problem and Excluded outfalls)
- Updated outfall/interconnection priority ranking based on the information collected during the dry weather inspections as necessary
- Post-construction bylaw, ordinance, or other regulatory mechanism was updated and adopted consistent with permit requirements

Optional: If you would like to describe progress made on any incomplete requirements listed above, provide any additional information, and/or if any of the above year 3 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

In Permit Year 3, the Town refined the outfall mapping by identifying mapped outfall points that are culverts, BMP inlets, or private, which reduced the total number of MS4 outfalls. This is summarized in Part III. Due to COVID-19 and a significant backlog of work for the Highway Department staff that would typically assist with the outfall investigations, as well as unusually wet spring/summer conditions, dry weather screening will be completed in Permit Year 4 for the MS4 outfalls (fewer than 40 outfalls), and the priority ranking will be updated using information collected during field work conducted during field work. Note also that outfall mapping was completed under the 2003 General Permit to develop Boylston's initial outfall inventory, and field inspections and screening was conducted.

Boylston's current Conservation Commission Rules & Regulations for Stormwater are largely compliant with the 2016 Small MS4 General Permit but additional clarifications and specifics are needed to meet the more stringent post-construction requirements since the MA Stormwater Handbook update has been delayed. Boylston updated the Rules & Regulations for Stormwater for consistency with the General Permit

requirements in Permit Year 3. The updated Regulations were presented at the August 16, 2021 Conservation Commission meeting for public and Commission comment. The updated Regulations are anticipated to be adopted at a Fall 2021 Conservation Commission public meeting.

Annual Requirements

- Provided an opportunity for public participation in review and implementation of SWMP and complied with State Public Notice requirements
- Kept records relating to the permit available for 5 years and made available to the public
- The SSO inventory has been updated, including the status of mitigation and corrective measures implemented
 - This is not applicable because we do not have sanitary sewer
 - This is not applicable because we did not find any new SSOs
 - The updated SSO inventory is attached to the email submission
 - The updated SSO inventory can be found at the following website:
- Properly stored and disposed of catch basin cleanings and street sweepings so they did not discharge to receiving waters
- Provided training to employees involved in IDDE program within the reporting period
- All curbed roadways were swept at least once within the reporting period
- Updated system map due in year 2 as necessary
- Enclosed all road salt storage piles or facilities and implemented winter road maintenance procedures to minimize the use of road salt
- Implemented SWPPPs for all permittee owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities
- Updated inventory of all permittee owned facilities as necessary
- O&M programs for all permittee owned facilities have been completed and updated as necessary
- Implemented all maintenance procedures for permittee owned facilities in accordance with O&M programs
- Implemented program for MS4 infrastructure maintenance to reduce the discharge of pollutants
- Inspected all permittee owned treatment structures (excluding catch basins)

Optional: If you would like to describe progress made on any incomplete requirements listed above, provide any additional information, and/or if any of the above annual requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

-The Town has determined that no facilities located within the MS4 require a site-specific SWPPP.
 -The Town's "Good Housekeeping and Pollution Prevention Program for Municipal Operations and Maintenance" includes maintenance procedures for Town facilities and MS4 infrastructure, which are implemented to the maximum extent practicable.
 -In addition to the Highway Department's typical BMP inspections, DCR staff also completed 4 inspections at BMPs within the Wachusett Reservoir watershed during Permit Year 3.

Phosphorus (Combination of Impaired Waters Requirements and TMDL Requirements as Applicable)Annual Requirements*Public Education and Outreach**

- Distributed an annual message in the spring (April/May) encouraging the proper use and disposal of grass clippings and encouraging the proper use of slow-release and phosphorus-free fertilizers
- Distributed an annual message in the summer (June/July) encouraging the proper management of pet waste, including noting any existing ordinances where appropriate
- Distributed an annual message in the fall (August/September/October) encouraging the proper disposal of leaf litter

** Public education messages can be combined with other public education requirements as applicable (see Appendix H and F for more information)*

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

- Increased street sweeping frequency of all municipal owned streets and parking lots subject to Permit part 2.3.7.a.iii.(c) to a minimum of two times per year (spring and fall)

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

Phosphorus Good Housekeeping: All streets are swept annually in the spring. The Highway Department also sweeps priority areas more frequently. There are fewer than ten municipal streets within the area of Boylston's MS4 and the Assabet River watershed, many of which are low travel residential streets. The Town did not sweep all streets within this area two times in Permit Year, but plans to sweep these streets in Fall 2021.

Lake and Pond Phosphorus TMDL

- Completed the funding source assessment

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

The preliminary funding source assessment, based on discussions with Town staff during development of the "Legal Analysis" component of the LPCP, calls for the continuation of use of General Fund and Conservation Commission fees for stormwater program compliance, including sweeping, catch basin cleaning, and planning. This will be re-evaluated in Permit Year 5 once the costs and schedule of the LPCP are known.

Optional: Use the box below to provide any additional information you would like to share as part of your self-assessment:

Part III: Receiving Waters/Impaired Waters/TMDL

Have you made any changes to your lists of receiving waters, outfalls, or impairments since the NOI was submitted?

- Yes
 No

If yes, describe below, including any relevant impairments or TMDLs:

Boylston's NOI listed water quality impairments and TMDLs for the Town's receiving waters based on the 2014 303(d) List. The Town evaluated changes to the impairments and/or receiving waters based on the final 2016 303(d) List and the analysis is included in the Town's Permit Year 2 Annual Report and available in the Town's SWMP.

In September 2020, the Town's stormwater consultant completed field investigations to refine the MS4 outfall mapping. Based on these investigations, the Town removed outfall points from the inventory because the mapped infrastructure was a culvert, BMP inlet, or private, and added a few previously unmapped outfalls. Changes to receiving waters will be evaluated prior to dry weather screening outfall investigations in Permit Year 4.

Part IV: Minimum Control Measures

Please fill out all of the metrics below. If applicable, include in the description who completed the task if completed by a third party.

MCM1: Public Education

Number of educational messages completed **during this reporting period:**

Below, report on the educational messages completed **during this reporting period**. For the measurable goal(s) please describe the method/measures used to assess the overall effectiveness of the educational program.

BMP: Education and Outreach to Residents - Stormwater Committee Webpage

Message Description and Distribution Method:

The Town's Stormwater Committee webpage contains information on dog waste and surface water quality, Massachusetts Watershed Protection Act, phosphorus-free fertilizer use, stormwater basins and importance of routine maintenance, proper car washing procedures, swimming pools and surface water quality, household stormwater pollution prevention, the "Fowl Water" video, and a link to an EPA website about nutrient pollution. The page also includes information about the Town's MS4 program, including the SWMP, stormwater bylaws, and Years 1 and 2 annual reports.

Targeted Audience:

Responsible Department/Parties:

Measurable Goal(s):

The Stormwater Committee page and its resources are available to all visitors of the Town's website.

Message Date(s):

Message Completed for: Appendix F Requirements Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes No

If yes, describe why the change was made:

BMP: Education and Outreach to Residents - Social Media

Message Description and Distribution Method:

Multiple Town Departments and volunteer groups have active Facebook pages, including the Highway Department and Keep Boylston Beautiful volunteer group, where leaf litter collection, yard waste collection, and cleanup events are advertised. The Boylston Highway Department announced on October 5, 2020 and April 5, 2021 that the Town will be accepting Fall and Spring yard waste at the Highway Garage. The Keep Boylston Beautiful Facebook page announced results of the Spring Clean Up on April 25, 2021.

Targeted Audience:

Responsible Department/Parties:

Measurable Goal(s):

606 people follow the Boylston Highway Department Facebook page and 464 people follow the Keep Boylston Beautiful Facebook page. Followers of these Facebook pages are reached by this messaging. Fall yard waste post received 8 likes and 2 comments. Spring yard waste post received 3 likes and 3 shares. Clean up event post received 14 likes, 1 comment, and 4 shares.

Message Date(s):

Message Completed for: Appendix F Requirements Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes No

If yes, describe why the change was made:

BMP: Education and Outreach to Residents - Coordination with DCR

Message Description and Distribution Method:

The DCR has created activity guides and kiosk posters that are available on watershed education web pages. Additionally, there are Stormwater Pollution Prevention, Virtual Reservoir Tour, and Watershed Wildlife videos available to watch. The Stormwater Pollution Prevention video discusses stormwater, pollutants in stormwater, watershed protection, and stormwater BMPs. These educational materials are available to all Boylston residents.

Targeted Audience:

Responsible Department/Parties:

Measurable Goal(s):

The online activity guides created by DCR are available to all visitors of the DCR's webpage. The Stormwater Pollution Prevention video was 194 views and 1 like.

Message Date(s):

Message Completed for: Appendix F Requirements Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes No

If yes, describe why the change was made:

BMP: Education and Outreach to Residents - Fall Message

Message Description and Distribution Method:

A post about proper management of leaf litter was posted to the Town's website, including a description of best practices and links to the following educational materials: "Keep Boylston's Roads Pristine and Waters

Clean", "Be a Leaf Hero", and "Rake up leaves to prevent flooding!".

Targeted Audience: Residents

Responsible Department/Parties: Town Administrator

Measurable Goal(s):

This message was sent to all subscribers of the Town News bulletin, as well as available to visitors of the Stormwater webpage.

Message Date(s): October 28, 2020

Message Completed for: Appendix F Requirements Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes No

If yes, describe why the change was made:

BMP:Education and Outreach to Residents - Spring Message

Message Description and Distribution Method:

The Town posted a message to the Town website encouraging the proper use and disposal of grass clippings and encouraging the proper use of slow-release and phosphorus-free fertilizers. This message also appears on the Town website homepage.

Targeted Audience: Residents

Responsible Department/Parties: Town Administrator

Measurable Goal(s):

This message was sent to all subscribers of the Town News bulletin, as well as available to visitors of the Stormwater webpage.

Message Date(s): May 17, 2021

Message Completed for: Appendix F Requirements Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes No

If yes, describe why the change was made:

Add an Educational Message

MCM2: Public Participation

Describe the opportunity provided for public involvement in the development of the Stormwater Management Program (SWMP) **during this reporting period:**

The Stormwater Management Plan (SWMP) is publicly available for review and input on the Town's Stormwater Committee website.

A Conservation Commission public meeting was held to discuss the updates to the Rules & Regulations for Stormwater on August 16, 2021. State Public Notice requirements were followed for these meetings.

Was this opportunity different than what was proposed in your NOI? Yes No

Describe any other public involvement or participation opportunities conducted **during this reporting period:**

- The Town of Boylston has created a Keep Boylston Beautiful volunteer organization to raise awareness on the issue of town littering and pollution. Keep Boylston Beautiful conducted an annual Town-wide clean up in Permit Year 3 with the aid of local volunteers. A Spring clean up was conducted on April 24 and 25, 2021.
- The Town offered Fall and Spring yard waste drop off for four days in October 2020 and three days in April and May 2021.
- Boylston is a member community of the Wachusett Watershed Regional Recycling Center. The Recycling Center held special collection days on October 17, 2020 and April 24, 2021, where residents can properly dispose of their household hazardous waste for a small fee.

MCM3: Illicit Discharge Detection and Elimination (IDDE)

Sanitary Sewer Overflows (SSOs)

Check off the box below if the statement is true.

This SSO section is NOT applicable because we DO NOT have sanitary sewer

Below, report on the number of SSOs identified in the MS4 system and removed **during this reporting period.**

Number of SSOs identified:

Number of SSOs removed:

MS4 System Mapping

Optional: Provide additional status information regarding your map:

In September 2020, the Town's stormwater consultant completed field investigations to refine the MS4 outfall mapping. Based on these investigations, the Town removed outfall points from the inventory because the mapped infrastructure was a culvert, BMP inlet, or private, and added a few previously unmapped outfalls. Changes to receiving waters will be evaluated prior to dry weather screening outfall investigations in Permit Year 4. The Town will continue to improve the mapping as modifications are made and the IDDE Program is

implemented.

Screening of Outfalls/Interconnections

If conducted, please submit any outfall monitoring results from this reporting period. Outfall monitoring results should include the date, outfall/interconnection identifier, location, weather conditions at time of sampling, precipitation in previous 48 hours, field screening parameter results, and results from all analyses. Please also include the updated inventory and ranking of outfalls/interconnections based on monitoring results.

- No outfalls were inspected
- The outfall screening data is attached to the email submission
- The outfall screening data can be found at the following website:

*Below, report on the number of outfalls/interconnections screened **during this reporting period**.*

Number of outfalls screened:

*Below, report on the percent of outfalls/interconnections screened **to date**.*

Percent of outfalls screened:

Optional: Provide additional information regarding your outfall/interconnection screening:

In Permit Year 3, the Town refined the outfall mapping. The Town has contracted with a consultant to complete outfall investigations and dry weather screening in Permit Year 4 for the MS4 outfalls (fewer than 40 outfalls), and the priority ranking will be updated using information collected during field work. Outfalls in the 2000 urbanized area were previously screened under the 2003 General Permit. The result was 1 illicit connection removed from a basement drain.

Catchment Investigations

If conducted, please submit all data collected during this reporting period as part of the dry and wet weather investigations. Also include the presence or absence of System Vulnerability Factors for each catchment.

- No catchment investigations were conducted
- The catchment investigation data is attached to the email submission
- The catchment investigation data can be found at the following website:

*Below, report on the number of catchment investigations completed **during this reporting period**.*

Number of catchment investigations completed this reporting period:

*Below, report on the percent of catchments investigated **to date**.*

Percent of total catchments investigated:

Optional: Provide any additional information for clarity regarding the catchment investigations below:

IDDE Progress

If illicit discharges were found, please submit a document describing work conducted over this reporting period, and cumulative to date, including location source; description of the discharge; method of discovery; date of discovery; and date of elimination, mitigation, or enforcement OR planned corrective measures and schedule of removal.

- No illicit discharges were found
- The illicit discharge removal report is attached to the email submission
- The illicit discharge removal report can be found at the following website:

*Below, report on the number of illicit discharges identified and removed, along with the volume of sewage removed **during this reporting period.***

Number of illicit discharges identified:

Number of illicit discharges removed:

Estimated volume of sewage removed: gallons/day

*Below, report on the total number of illicit discharges identified and removed to date. At a minimum, report on the number of illicit discharges identified and removed **since the effective date of the permit (July 1, 2018).***

Total number of illicit discharges identified:

Total number of illicit discharges removed:

Optional: Provide any additional information for clarity regarding illicit discharges identified, removed, or planned to be removed below:

The Town is working to complete the removal and disposal of a large tire stockpile that was discovered in March 2021. See the attached removal report.

Employee Training

Describe the frequency and type of employee training conducted **during this reporting period:**

5 Highway Department staff completed a virtual IDDE Refresher training on September 10, 2020. 4 key Highway Department staff completed a training on June 10, 2021 to review MS4 Good Housekeeping and Pollution Prevention requirements and reducing and preventing pollutant runoff from municipal activities.

MCM4: Construction Site Stormwater Runoff Control

*Below, report on the construction site plan reviews, inspections, and enforcement actions completed **during this reporting period.***

Number of site plan reviews completed:

Number of inspections completed:

Number of enforcement actions taken:

Optional: Enter any additional information relevant to construction site plan reviews, inspections, and enforcement actions:

The quantities listed above are based on Conservation Commission permitting.
The DCR conducts additional inspections at construction sites within the Wachusett Reservoir watershed. No violations were noted at sites in Boylston this year.

MCM5: Post-Construction Stormwater Management in New Development and Redevelopment

As-built Drawings

Below, report on the number of as-built drawings received during this reporting period.

Number of as-built drawings received:

Optional: Enter any additional information relevant to the submission of as-built drawings:

Street Design and Parking Lots Report

Describe the status of the street design and parking lots assessment due in year 4 of the permit term, including any planned or completed changes to local regulations and guidelines:

Preparation for the Street Design and Parking Lots Report has not yet begun as this requirement is due in Permit Year 4.

Green Infrastructure Report

Describe the status of the green infrastructure report due in year 4 of the permit term, including the findings and progress towards making the practice allowable:

Preparation for the Green Infrastructure Report has not yet begun as this requirement is due in Permit Year 4.

Retrofit Properties Inventory

Describe the status of the inventory, due in year 4 of the permit term, of permittee-owned properties that could be modified or retrofitted with BMPs to mitigate impervious areas and report on any properties that have been modified or retrofitted:

Preparation for the Retrofit Properties Inventory has not yet begun as this requirement is due in Permit Year 4.

MCM6: Good Housekeeping

Catch Basin Cleaning

Below, report on the number of catch basins inspected and cleaned, along with the total volume of material removed from the catch basins **during this reporting period**.

Number of catch basins inspected:

Number of catch basins cleaned:

Total volume or mass of material removed from all catch basins:

Below, report on the total number of catch basins in the MS4 system.

Total number of catch basins:

If applicable:

Report on the actions taken if a catch basin sump is more than 50% full during two consecutive routine inspections/cleaning events:

No catch basins were more than 50% full during cleaning events.

Street Sweeping

Report on street sweeping completed **during this reporting period** using one of the three metrics below.

Number of miles cleaned:

Volume of material removed: [Select Units]

Weight of material removed: [Select Units]

Stormwater Pollution Prevention Plan (SWPPP)

Below, report on the number of site inspections for facilities that require a SWPPP completed **during this reporting period**.

Number of site inspections completed:

Describe any corrective actions taken at a facility with a SWPPP:

There are no facilities located within the MS4 that require a SWPPP.

Additional Information

Monitoring or Study Results

Results from any other stormwater or receiving water quality monitoring or studies conducted during the reporting period not otherwise mentioned above, where the data is being used to inform permit compliance or permit effectiveness must be attached.

- Not applicable
- The results from additional reports or studies are attached to the email submission
- The results from additional reports or studies can be found at the following website(s):

If such monitoring or studies were conducted on your behalf or if monitoring or studies conducted by other entities were reported to you, a brief description of the type of information gathered or received shall be described below:

DCR staff conduct monthly monitoring that captures both wet and dry weather conditions at 3 stream locations in Boylston, including Boylston Brook, French Brook, and Malagasco Brook. The parameters tested are: alkalinity, pH, temperature, dissolved oxygen, total nitrogen, total phosphorus, total organic carbon, E. coli, turbidity, specific conductance, chloride, mean daily discharge, and total monthly discharge.

Additional Information

Optional: Enter any additional information relevant to your stormwater management program implementation during the reporting period. Include any BMP modifications made by the MS4 if not already discussed above:

Catch Basin Cleaning: There are 530 Town-owned catch basins, approximately 200 of which are located inside the MS4 permitted area. All catch basins in the MS4 are cleaned annually. Note that the number of catch basins cleaned is an estimate. The volume of material removed is estimated to be 15-20 cubic yards.

Street Sweeping: The reported miles of streets swept includes streets outside of the urbanized area.

COVID-19 Impacts

Optional: If any of the above year 3 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

Activities Planned for Next Reporting Period

Please confirm that your SWMP has been, or will be, updated to comply with all applicable permit requirements including but not limited to the year 4 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree

- Develop a report assessing current street design and parking lot guidelines and other local requirements within the municipality that affect the creation of impervious cover
- Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist
- Identify a minimum of 5 permittee-owned properties that could potentially be modified or retrofitted with BMPs to reduce impervious areas

Annual Requirements

- Annual report submitted and available to the public
- Annual opportunity for public participation in review and implementation of SWMP
- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- Annual training to employees involved in IDDE program
- Update inventory of all known locations where SSOs have discharged to the MS4
- Continue public education and outreach program
- Update outfall and interconnection inventory and priority ranking and include data collected in connection with the dry weather screening and other relevant inspections conducted
- Implement IDDE program
- Review site plans of construction sites as part of the construction stormwater runoff control program
- Conduct site inspection of construction sites as necessary
- Inspect and maintain stormwater treatment structures
- Log catch basins cleaned or inspected
- Sweep all curbed streets at least annually
- Continue investigations of catchments associated with Problem Outfalls
- Implemented SWPPPs for all permittee owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities
- Review inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; update if necessary
- Review O&M programs for all permittee owned facilities; update if necessary
- Implement all maintenance procedures for permittee owned facilities in accordance with O&M programs
- Implement program for MS4 infrastructure maintenance to reduce the discharge of pollutants
- Enclose all road salt storage piles or facilities and implemented winter road maintenance procedures to minimize the use of road salt
- Review as-built drawings for new and redevelopment to ensure compliance with post construction bylaws, regulations, or regulatory mechanism consistent with permit requirements
- Inspect all permittee owned treatment structures (excluding catch basins)

Provide any additional details on activities planned for permit year 4 below:

The Town acknowledges the General Permit Year 4 requirements and intends to complete as many activities as possible based on funding and staff availability.

Part V: Certification of Small MS4 Annual Report 2021

40 CFR 144.32(d) Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

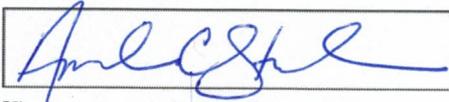
Name:

April Steward

Title:

Town Administrator

Signature:



Date:

9/28/2021

[Signatory may be a duly authorized representative]



Illicit Discharge Removal Report

Town of Boylston

The Town was notified of a stockpile of hundreds of tires discovered next to a closed landfill in March of 2021. The source of the illegal dumping is unknown. Since being notified, the Town has worked to remove and properly dispose of the tires, including coordinating with the Central Mass Mosquito Control Project. CMMCP assists member communities with tire pile removals for passenger and light truck tires and brings all tires to a recycling facility in Littleton called FBS Tire Recycling. Most of the tires have been removed at this point, and the Town is working to determine the best disposal method for the remaining large truck tires.

Permit Year 3 DCR Monthly Monitoring Water Quality Data

Water quality data collected from monthly DCR monitoring at three stream locations in Boylston is available electronically in the Town's record keeping files.

Permit Year 4

(July 1, 2021 – June 30, 2022)

Year 4 Annual Report
Massachusetts Small MS4 General Permit
Reporting Period: July 1, 2021-June 30, 2022

Please DO NOT attach any documents to this form. Instead, attach all requested documents to an email when submitting the form

Unless otherwise noted, all fields are required to be filled out. If a field is left blank, it will be assumed the requirement or task has not been completed. Please ONLY report on activities between July 1, 2021 and June 30, 2022 unless otherwise requested.

Part I: Contact Information

Name of Municipality or Organization:

EPA NPDES Permit Number:

Primary MS4 Program Manager Contact Information

Name: Title:

Street Address Line 1:

Street Address Line 2:

City: State: Zip Code:

Email: Phone Number:

Stormwater Management Program (SWMP) Information

SWMP Location (web address):

Date SWMP was Last Updated:

If the SWMP is not available on the web please provide the physical address:

Part II: Self-Assessment

First, in the box below, select the impairment(s) and/or TMDL(s) that are applicable to your MS4. Make sure you are referring to the most recent EPA approved Section 303(d) Impaired Waters List which can be found here: <https://www.epa.gov/tmdl/region-1-impaired-waters-and-303d-lists-state>

Impairment(s)

Bacteria/Pathogens Chloride Nitrogen Phosphorus
 Solids/ Oil/ Grease (Hydrocarbons)/ Metals

TMDL(s)

In State: Assabet River Phosphorus Bacteria and Pathogen Cape Cod Nitrogen
 Charles River Watershed Phosphorus Lake and Pond Phosphorus

Out of State: Bacteria/Pathogens Metals Nitrogen Phosphorus

Clear Impairments and TMDLs

Next, check off all requirements below that have been completed. **By checking each box you are certifying that you have completed that permit requirement fully.** If you have not completed a requirement leave the box unchecked. Additional information will be requested in later sections.

Year 4 Requirements

Developed a report assessing current street design and parking lot guidelines and other local requirements within the municipality that affect the creation of impervious cover, made it available as part of the SWMP, and:

- No updates were recommended
- Updates were recommended. The anticipated date or date of completion for updates is/was:

July 2025

Developed a report assessing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist, made it available as part of the SWMP, and:

- No updates were recommended
- Updates were recommended. The anticipated date or date of completion for updates is/was:

July 2025

Identified a minimum of 5 permittee-owned properties that could potentially be modified or retrofitted with BMPs to reduce impervious cover

Optional: If you would like to describe progress made on any incomplete requirements listed above, provide an update on previous incomplete milestones, or provide any additional details, please use the box below:

Annual Requirements

- Provided an opportunity for public participation in review and implementation of SWMP and complied with State Public Notice requirements
- Kept records relating to the permit available for 5 years and made available to the public
- The SSO inventory has been updated, including the status of mitigation and corrective measures implemented
 - This is not applicable because we do not have sanitary sewer
 - This is not applicable because we did not find any new SSOs
 - The updated SSO inventory is attached to the email submission
 - The updated SSO inventory can be found at the following website:

- Updated system map due in year 2 as necessary
- Provided training to employees involved in IDDE program within the reporting period
- Properly stored and disposed of catch basin cleanings and street sweepings so they did not discharge to receiving waters
- All curbed roadways were swept at least once within the reporting period
- Enclosed all road salt storage piles or facilities and implemented winter road maintenance procedures to minimize the use of road salt
- Implemented SWPPPs for all permittee owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities
- Updated inventory of all permittee owned facilities as necessary
- O&M programs for all permittee owned facilities have been completed and updated as necessary
- Implemented all maintenance procedures for permittee owned facilities in accordance with O&M programs
- Implemented program for MS4 infrastructure maintenance to reduce the discharge of pollutants
- Inspected all permittee owned treatment structures (excluding catch basins)

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

The Town has determined that no facilities located within the MS4 require a site-specific SWPPP.

The Town's "Good Housekeeping and Pollution Prevention Program for Municipal Operations and Maintenance" includes maintenance procedures for Town facilities and MS4 infrastructure, which are implemented to the maximum extent practicable.

In addition to the Highway Department's typical BMP inspections, DCR staff completed 19 inspections at BMPs within the Wachusett Reservoir watershed when completing a mapping effort, and 3 additional BMPs were inspected and found to have no outstanding issues. Some of these are outside of the Regulated Area.

Phosphorus (Combination of Impaired Waters Requirements and TMDL Requirements as Applicable)Annual Requirements

*Public Education and Outreach**

- Distributed an annual message in the spring (April/May) encouraging the proper use and disposal of grass clippings and encouraging the proper use of slow-release and phosphorus-free fertilizers
- Distributed an annual message in the summer (June/July) encouraging the proper management of pet waste, including noting any existing ordinances where appropriate
- Distributed an annual message in the fall (August/September/October) encouraging the proper disposal of leaf litter

** Public education messages can be combined with other public education requirements as applicable (see Appendix H and F for more information)*

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

- Increased street sweeping frequency of all municipal owned streets and parking lots subject to Permit part 2.3.7.a.iii.(c) to a minimum of two times per year (spring and fall)

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

Lake and Pond Phosphorus TMDL

- Defined the scope of the Lake Phosphorus Control Plan (LPCP). *Please select one of the following:*
 - The PCP scope is the entire area within our jurisdiction discharging to the impaired waterbody
 - The PCP scope is the urbanized area portion of our jurisdiction discharging to the impaired waterbody
- Calculated baseline phosphorus, allowable phosphorus load, and phosphorus reduction requirement

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

Optional: Use the box below to provide any additional information you would like to share as part of your self-assessment:

--

Part III: Receiving Waters/Impaired Waters/TMDL

Have you made any changes to your lists of receiving waters, outfalls, or impairments since the NOI was submitted?

- Yes
 No

If yes, describe below, including any relevant impairments or TMDLs:

The Town's NOI listed receiving waters and impairments based on the water quality limited waters in the 2014 303(d) Integrated List. The Town has evaluated changes to the impairments and/or receiving waters based on the final 2016 and the 2018/2020 303(d) Integrated List and enclosed the analysis herein. The enclosed document will be included in the Town's SWMP.

Stormwater system mapping was updated as part of outfall investigations in Permit Year 4. 16 outfall locations were determined to be other stormwater assets (culvert ends, BMP inlets) and will be removed from the outfall inventory. Sewall Pond (MA51191) and Pout Pond (MA51122) were added as receiving waters after field investigations. These modifications did not change any additional receiving waters as listed in the NOI or Permit Year 2 impaired waters update.

Part IV: Minimum Control Measures

Please fill out all of the metrics below. If applicable, include in the description who completed the task if completed by a third party.

MCM1: Public Education

Number of educational messages completed **during this reporting period:**

Below, report on the educational messages completed **during this reporting period**. For the measurable goal(s) please describe the method/measures used to assess the overall effectiveness of the educational program.

BMP:Education for Residents - Stormwater Committee Webpage

Message Description and Distribution Method:

The Town's Stormwater Committee webpage includes links to information on spring proper lawn care, fall leaf litter, the "Fowl Water" video from Think Blue Massachusetts, as well as a link to an EPA website about nutrient pollution, household stormwater management, and the effects on surface water quality. The page also includes information about the Town's MS4 program (SWMP, stormwater control bylaws and forms, previous annual reports).

Targeted Audience:

Responsible Department/Parties:

Measurable Goal(s):

The Stormwater Committee page and its resources are available to all visitors of the Town's website.

Message Date(s):

Message Completed for: Appendix F Requirements Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes No

If yes, describe why the change was made:

BMP:Education and Outreach to Residents - Social Media

Message Description and Distribution Method:

The Highway Department and the volunteer group Keep Boylston Beautiful have active Facebook groups, where leaf litter collection, yard waste collection, and cleanup events are advertised. The Highway Department announced when the Town will be accepting Fall and Spring Yard Waste at the Highway Garage. The Keep Boylston Beautiful Facebook page provided information about the Spring Clean Up.

Targeted Audience:

Responsible Department/Parties:

Measurable Goal(s):

656 people follow the Boylston Highway Department Facebook page and 502 people follow the Keep Boylston Beautiful Facebook page. Followers of these pages are reached by this messaging.

Message Date(s): Yard Waste posts: October 20, 2021, November 9, 2021, March 15, 2022, April 1, 2022
Spring Clean Up post: May 1, 2022

Message Completed for: Appendix F Requirements Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes No

If yes, describe why the change was made:

BMP: Education and Outreach to Residents - Coordination with DCR

Message Description and Distribution Method:

DCR provided brochures for communities within the Wachusett Watershed. They are available at Town Hall and cover a range of topics specific to homeowners, businesses, and developers such as car wash stormwater impacts, construction stormwater tips, dog waste and surface water quality, household stormwater pollution prevention, disposal of unused and expired pharmaceuticals, prevention of illicit stormwater discharges, stormwater basin maintenance, and winter salt use. The DCR Household Stormwater Pollution Prevention brochure was included in mailings to all new homeowners listed in land transfers.

A video "The Importance of Road Salt Reduction" was posted to the MassDCR website March 30, 2022 that discusses how reducing road salt use can help remain safe on the roads, save money, and improve water quality.

Targeted Audience: Residents, Businesses, Developers

Responsible Department/Parties: DCR

Measurable Goal(s):

The brochures are available at Town Hall to all visitors and online to all visitors of the DCR's webpage. The MassDCR YouTube page where the Importance of Road Salt Reduction video was posted has 210 subscribers, received 444 views, and 8 likes.

Message Date(s): Town Hall: Ongoing
Importance of Road Salt Reduction video was posted March 30, 2022

Message Completed for: Appendix F Requirements Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes No

If yes, describe why the change was made:

Add an Educational Message

MCM2: Public Participation

Describe the opportunity provided for public involvement in the development of the Stormwater Management Program (SWMP) **during this reporting period:**

The Stormwater Management Plan (SWMP) is publicly available for review and input on the Town's Stormwater Committee website.

The Boylston Conservation Commission Rules and Regulations for Stormwater were updated within the permit year. The Conservation Commission held a meeting on April 25, 2022 to solicit public and Conservation Commission comments. The revised regulations were adopted on July 18, 2022.

Was this opportunity different than what was proposed in your NOI? Yes No

Describe any other public involvement or participation opportunities conducted **during this reporting period:**

- The Town of Boylston's Keep Boylston Beautiful volunteer organization raises awareness on the issue of town littering and pollution. Keep Boylston Beautiful conducted an annual Town-wide clean up on April 30 and May 1, 2022 with the aid of local volunteers.
- The Town offered Fall and Spring yard waste drop off for a few days in October 2021, and on April 22, May 7, May 20, June 10 and June 25, 2022.
- Boylston is a member community of the Wachusett Watershed Regional Recycling Center. The Recycling Center held special collection days on November 13, 2021 and April 23, 2022, where residents can properly dispose of their household hazardous waste for a small fee.
- As part of the Municipal Vulnerability Preparedness Program, the Town held a public listening session on May 23, 2022.
- The Board of Selectmen are seeking feedback from the community on the drafted Vision Statement and Goals for the town's update to their Master Plan. A survey form is available for feedback on the town website: <https://www.boylston-ma.gov/master-plan-steering-committee>. The Master Plan addresses stormwater in various sections, including but not limited to: a Land Use chapter that includes impervious surface and low-impact design; a Town Services and Facilities chapter with an MS4 Stormwater Self-Assessment and Stormwater management practices section.

MCM3: Illicit Discharge Detection and Elimination (IDDE)

Sanitary Sewer Overflows (SSOs)

Check off the box below if the statement is true.

- This SSO section is NOT applicable because we DO NOT have sanitary sewer

Below, report on the number of SSOs identified in the MS4 system and removed **during this reporting period.**

Number of SSOs identified:

Number of SSOs removed:

MS4 System Mapping

Optional: Provide additional status information regarding your map:

Mapping was updated as part of outfall investigations in Permit Year 4. Mapping will continue to be updated as the IDDE program is implemented.

Screening of Outfalls/Interconnections

If conducted, please submit any outfall monitoring results from this reporting period. Outfall monitoring results should include the date, outfall/interconnection identifier, location, weather conditions at time of sampling, precipitation in previous 48 hours, field screening parameter results, and results from all analyses. Please also include the updated inventory and ranking of outfalls/interconnections based on monitoring results.

- No outfalls were inspected
- The outfall screening data is attached to the email submission
- The outfall screening data can be found at the following website:

*Below, report on the number of outfalls/interconnections screened **during this reporting period.***

Number of outfalls screened:

*Below, report on the percent of outfalls/interconnections screened **to date.***

Percent of outfalls screened:

Optional: Provide additional information regarding your outfall/interconnection screening:

In previous permit years, the Town has made significant updates to their outfall mapping particularly in the expanded Regulated Area. In Permit Year 4, the Town investigated the 48 mapped outfall locations to field verify and screen them for dry weather flow. 16 were determined to be other stormwater assets (culvert ends, BMP inlets). 31 of the remaining 32 confirmed outfalls were screened for dry weather flow. 1 mapped outfall requires additional field work to verify system connectivity. OF-17 was screened at an upstream structure, which was dry.

Within the Wachusett Reservoir watershed, the DCR has done extensive mapping of catch basins and stormwater drainage structures. DCR staff continues to improve and update maps with both online corrections and field inspections and will coordinate efforts with the watershed communities. An effort is underway to develop connectivity and flow direction information. The DCR continues to monitor and map structural best management practices (BMPs) in the watershed. To date, 19 BMPs (including infiltration basins, infiltration trenches, detention basins and sediment forebays) have been mapped within Boylston (some outside of Urban Area) and are part of a larger GIS hydrology layer project.

Catchment Investigations

If conducted, please submit all data collected during this reporting period as part of the dry and wet weather investigations. Also include the presence or absence of System Vulnerability Factors for each catchment.

- No catchment investigations were conducted

- The catchment investigation data is attached to the email submission
- The catchment investigation data can be found at the following website:

Below, report on the number of catchment investigations completed during this reporting period.

Number of catchment investigations completed this reporting period:

Below, report on the percent of catchments investigated to date.

Percent of total catchments investigated:

Optional: Provide any additional information for clarity regarding the catchment investigations below:

IDDE Progress

If illicit discharges were found, please submit a document describing work conducted over this reporting period, and cumulative to date, including location source; description of the discharge; method of discovery; date of discovery; and date of elimination, mitigation, or enforcement OR planned corrective measures and schedule of removal.

- No illicit discharges were found
- The illicit discharge removal report is attached to the email submission
- The illicit discharge removal report can be found at the following website:

Below, report on the number of illicit discharges identified and removed, along with the volume of sewage removed during this reporting period.

Number of illicit discharges identified:

Number of illicit discharges removed:

Estimated volume of sewage removed: gallons/day

Below, report on the total number of illicit discharges identified and removed to date. At a minimum, report on the number of illicit discharges identified and removed since the effective date of the permit (July 1, 2018).

Total number of illicit discharges identified:

Total number of illicit discharges removed:

Optional: Provide any additional information for clarity regarding illicit discharges identified, removed, or planned to be removed below:

In Permit Year 3, a stockpile of tires was discovered and the majority of the tires were removed. A removal report was submitted with the Permit Year 3 annual report. The remaining tires have been moved away from any resource areas as the Town determines the best disposal method.

Employee Training

Describe the frequency and type of employee training conducted **during this reporting period**:

A representative from Highway was provided a refresher on outfall investigation protocols during field work in Permit Year 4. Reporting illicit discharges is a normal part of Highway Department operations. A formal training on the IDDE Program and Good Housekeeping Program was completed in August 2022.

MCM4: Construction Site Stormwater Runoff Control

*Below, report on the construction site plan reviews, inspections, and enforcement actions completed **during this reporting period**.*

Number of site plan reviews completed:

Number of inspections completed:

Number of enforcement actions taken:

Optional: Enter any additional information relevant to construction site plan reviews, inspections, and enforcement actions:

Inspections noted above were conducted by the Town. In addition, routine inspections of construction sites that disturb more than one acre are completed by the DCR during dry and wet weather. 75 site inspections were completed by DCR at two sites during Permit Year 4. Staff concentrated on visiting sites prior to storm events to identify any potential problems and request corrections before negative impacts could occur. No formal enforcement actions were necessary.

MCM5: Post-Construction Stormwater Management in New Development and Redevelopment**Ordinance or Regulatory Mechanism**

Date update was completed (due in year 3):

As-built Drawings

*Below, report on the number of as-built drawings received **during this reporting period**.*

Number of as-built drawings received:

Optional: Enter any additional information relevant to the submission of as-built drawings:

Retrofit Properties Inventory

Below, list the permittee-owned properties that could be modified or retrofitted with BMPs to mitigate impervious areas (at least 5):

Boylston Elementary School
 Manor Playground/Ball Fields
 Town Common
 Boylston Electric Light Department
 Town Hall/Police Department Complex

MCM6: Good Housekeeping

Catch Basin Cleaning

*Below, report on the number of catch basins inspected and cleaned, along with the total volume of material removed from the catch basins **during this reporting period**.*

Number of catch basins inspected:

Number of catch basins cleaned:

Total volume or mass of material removed from all catch basins:

Below, report on the total number of catch basins in the MS4 system.

Total number of catch basins:

If applicable:

Report on the actions taken if a catch basin sump is more than 50% full during two consecutive routine inspections/cleaning events:

There are 530 Town-owned catch basins, approximately 200 of which are located inside the MS4 permitted area. All catch basins in the MS4 are cleaned annually.

Street Sweeping

*Report on street sweeping completed **during this reporting period** using one of the three metrics below.*

Number of miles cleaned:

Volume of material removed:

Weight of material removed:

Stormwater Pollution Prevention Plan (SWPPP)

*Below, report on the number of site inspections for facilities that require a SWPPP completed **during this reporting period.***

Number of site inspections completed:

Describe any corrective actions taken at a facility with a SWPPP:

N/A: The Town has determined that no facilities located within the MS4 require a site-specific SWPPP.

Additional Information

Monitoring or Study Results

Results from any other stormwater or receiving water quality monitoring or studies conducted during the reporting period not otherwise mentioned above, where the data is being used to inform permit compliance or permit effectiveness must be attached.

- Not applicable
- The results from additional reports or studies are attached to the email submission
- The results from additional reports or studies can be found at the following website(s):

If such monitoring or studies were conducted on your behalf or if monitoring or studies conducted by other entities were reported to you, a brief description of the type of information gathered or received shall be described below:

DCR staff conduct monthly monitoring that captures both wet and dry weather conditions at 3 stream locations in Boylston, including Boylston Brook, French Brook, and Malagasco Brook. The parameters tested are: alkalinity, pH, temperature, dissolved oxygen, total nitrogen, total phosphorus, total organic carbon, E. coli, turbidity, specific conductance, chloride, mean daily discharge, and total monthly discharge. The DCR also conducts bacteria sampling every two weeks from these locations and monthly nutrient sampling from French Brook and Malagasco Brook. Annual water quality summary statistics and raw data are available from DCR upon request.

Additional Information

Optional: Enter any additional information relevant to your stormwater management program implementation during the reporting period. Include any BMP modifications made by the MS4 if not already discussed above:

COVID-19 Impacts

Optional: If any of the above year 4 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

Activities Planned for Next Reporting Period

Please confirm that your SWMP has been, or will be, updated to comply with all applicable permit requirements including but not limited to the year 5 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree

Annual Requirements

- Annual report submitted and available to the public
- Annual opportunity for public participation in review and implementation of SWMP
- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- Annual training to employees involved in IDDE program
- Update inventory of all known locations where SSOs have discharged to the MS4
- Continue public education and outreach program
- Update outfall and interconnection inventory and priority ranking and include data collected in connection with the dry weather screening and other relevant inspections conducted
- Implement IDDE program
- Review site plans of construction sites as part of the construction stormwater runoff control program
- Conduct site inspection of construction sites as necessary
- Inspect and maintain stormwater treatment structures
- Log catch basins cleaned or inspected
- Sweep all curbed streets at least annually
- Continue investigations of catchments associated with Problem Outfalls
- Implemented SWPPPs for all permittee owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities
- Review inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; update if necessary
- Review O&M programs for all permittee owned facilities; update if necessary
- Implement all maintenance procedures for permittee owned facilities in accordance with O&M programs
- Implement program for MS4 infrastructure maintenance to reduce the discharge of pollutants
- Enclose all road salt storage piles or facilities and implemented winter road maintenance procedures to minimize the use of road salt
- Review as-built drawings for new and redevelopment to ensure compliance with post construction bylaws, regulations, or regulatory mechanism consistent with permit requirements
- Inspect all permittee owned treatment structures (excluding catch basins)
- Identify additional permittee-owned properties that could potentially be modified or retrofitted

with BMPs to reduce impervious areas so that the permittee maintains a minimum of 5 sites in their inventory, until such a time when the permittee has less than 5 sites remaining

Provide any additional details on activities planned for permit year 5 below:

The Town acknowledges the General Permit Year 5 requirements and intends to complete as many activities as possible based on funding and staff availability.

Part V: Certification of Small MS4 Annual Report 2021

40 CFR 144.32(d) Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

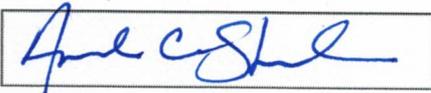
Name:

April Steward

Title:

Town Administrator

Signature:



Date:

9/28/2021

[Signatory may be a duly authorized representative]

Summary of Boylston's TMDLs and Impaired Waters ^{1, 2}



Receiving Waterbody	2016 Category	2016 Water Quality Impairments ³	2018/2020 Category	2018/2020 Water Quality Impairments ^{3, 4}	Applicable General Permit Section	Change to Permit Requirements
Malagasco Brook (MA81-29)	5	Benthic Macroinvertebrates Nutrient/Eutrophication Biological Indicators	5	Benthic Macroinvertebrates		None
Unnamed Tributary (Boylston Brook) (MA81-34)	3		2			None
Sewall Brook (MA51-44)	2		5	Temperature		None
Pout Pond (MA51122)	3		3			None
Sewall Pond (MA51191)	3		3			None
Newton Pond ⁵ (MA51110)	4c	Non-Native Aquatic Plants	4c	Fanwort Non-Native Aquatic Plants	Appendix F, Section A.II - Lake and Pond Phosphorus TMDL	None
French Brook ⁵ (MA81-48)	2		2			None
Cold Harbor Brook ⁵ (MA82B-18)	2		2			None
Rocky Pond ⁶ (MA82095)	4c	Non-Native Aquatic Plants	4c	Non-Native Aquatic Plants		None
Unnamed Tributary ⁶ (MA81-50)	3		3			None
Wachusett Reservoir ⁶ (MA81147)	4a	Eurasian Water Milfoil, Myriophyllum spicatum Non-Native Aquatic Plants Mercury in Fish Tissue (TMDL 33880)	4a	Brittle Naiad, Najas Minor Eurasian Water Milfoil, Myriophyllum Spicatum Fanwort Non-Native Aquatic Plants Mercury in Fish Tissue (TMDL 33880)	Appendix F, Section C - Northeast Regional Mercury TMDL	None
Assabet River TMDL for Total Phosphorus					Appendix F, Section A.V - Assabet River Phosphorus TMDL	None

¹ TMDLs associated with major rivers may apply to additional waterbodies within the watershed.

² Any TMDL or impairments related to nutrients (nitrogen and phosphorus) apply to all receiving waterbodies within the watershed.

³ Impairments in red were removed, impairments in blue were added, and categories in green were modified in the 2018/2020 Integrated List of Waters.

⁴ Impairments applicable to Boylston that have been renamed between 2016 and 2018/2020 Integrated List of Waters include the following but do not represent actual changes in the status of the waters exhibiting these impairments: Non-Native Aquatic Plants -> Specific species of non-native plants (i.e. Fanwort, Brittle Naiad, Najas Minor)

⁵ Waterbody does not receive direct discharge from the MS4. MS4 discharges to a tributary/wetland of the waterbody. Included for reference only.

⁶ Waterbody located outside of the urbanized area and does not receive direct discharge from the MS4. Included for reference only.

Permit Year 4 Outfall Screening & Sampling Data
Outfall inventory, screening and sampling data is available
electronically in the Town's record keeping files.

Local Code Assessment

The following memorandum meets the MCM 5 requirements to complete an assessment of current street design, parking lot guidelines and other local requirements that affect the creation of impervious cover; and to evaluate existing regulations to determine feasibility of making green infrastructure practices allowable when appropriate site conditions exist.

Town of Boylston – Local Code Assessment

To: Boylston Stormwater Committee
FROM: Cassandra LaRochelle, PE, Project Manager
Emma Burleson, EIT, Staff Engineer
COPY: Emily Scerbo, PE, Project Director
DATE: June 30, 2022

Section 2.3.6.b and 2.3.6.c of the United States Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NDPES) General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts (referred to herein as “2016 Small MS4 General Permit”) requires permittees within four (4) years of the Permit effective date to:

- Develop a report assessing current street design and parking lot guidelines and other local requirements that affect the creation of impervious cover; and
- Develop a report evaluating existing local regulations to determine the feasibility of making the following green infrastructure practices allowable when appropriate site conditions exist:
 - Green roofs;
 - Infiltration practices, such as rain gardens, curb extensions, planter gardens, porous and pervious pavements, and other designs to manage stormwater using landscaping and structured or augmented soils; and
 - Water harvesting devices, such as rain barrels and cisterns, and the use of stormwater for non-potable uses.

This memorandum summarizes Tighe & Bond’s assessment of the Town of Boylston’s local code related to these practices with potential to impact stormwater runoff. The assessment included review of current street design and parking lot guidelines that affect the creation of impervious cover and requirements related to stormwater management to allow the Town to determine if changes to design standards for streets and parking lots can be made to support low impact development (LID) options as required by the 2016 Small MS4 General Permit. The assessment also included review of allowable green infrastructure practices and under what circumstances they are allowed.

What are GI and LID?

Green Infrastructure (GI) includes both natural features such as forests and wetlands, as well as engineered landscapes that mimic these natural processes such as a rain garden.

Low Impact Development (LID) works to preserve the natural landscape and minimize impervious surfaces to keep stormwater close to the source and use it as a resource rather than a waste product.

Together, LID and GI not only manage stormwater and improve groundwater supplies, but also offer many free ecosystem services including cleaner air and water, flood control, shade and energy savings, recreational opportunities, and enhanced property values and quality of life.

Source: [MassAudubon LID Fact Sheets. https://www.massaudubon.org](https://www.massaudubon.org)

According to the 2016 Small MS4 General Permit:

Section 2.3.6.b. related to generation of impervious cover: *If the assessment indicates that changes can be made, the **assessment shall include recommendations and proposed schedules** to incorporate policies and standards into relevant documents and procedures to minimize impervious cover attributable to parking areas and street designs. The permittee shall implement all recommendations, in accordance with the schedules, contained in the assessment.*

Section 2.3.6.c. related to allowing specific practices: *If the practices are not allowed, the **permittee shall determine what hinders the use of these practices, what changes in local regulations may be made to make them allowable, and provide a schedule for implementation of recommendations**. The permittee shall implement all recommendations, in accordance with the schedules, contained in the assessment.*

Recommended changes to the Town's by-laws and regulations are outlined in this memorandum and should be refined through collaboration with the Town's Planning Board, Conservation Commission and Stormwater Committee.

Review of Existing By-Laws and Regulations

The following existing by-laws and regulations of the Town of Boylston were assessed relative to requirements that affect the creation of impervious cover or implementation of green infrastructure practices.

- Zoning By-Laws for the Town of Boylston (as amended June 7, 2021), including:
 - Section 5 – Senior Residential Development
 - Section 6 – Flood Plain District Regulations
 - Section 7 – Wellhead Protection District Regulations
 - Section 9 – Dimensional Requirements
 - Section 10 – Special Regulations (Off-Street Parking and Loading, Site Plan Review)
 - Section 17 – Common Driveways
- Rules & Regulations Governing the Subdivision of Land in Boylston (as amended June 4, 2012)
- Boylston Conservation Commission Rules & Regulations for Stormwater (as revised February 2022 – draft for adoption in 2022)
- General By-Laws of the Town of Boylston
 - Article VI, Section 6 – Earth Removal By-Law (as amended May 2009)
 - Article VI, Section 7 – Driveways (as amended May 2009)
 - Article VI, Section 9 – Stormwater Control By-Law (as amended May 2009)
 - Article VI, Section 22 – Storm Drain By-Laws (as amended May 2009)

To document our review of local code and understand opportunities for improvement, Tighe & Bond used Mass Audubon's *By-law Review for LID & Climate-Smart, Nature Based Solutions*.¹ As described in the Mass Audubon checklist, it provides a framework to:

...evaluate local land use regulations in relation to models and examples from the Commonwealth of Massachusetts' Smart Growth/Smart Energy Toolkit and other sources in relation to the use of LID and Green Infrastructure (GI) techniques. The focus is primarily on residential development, but the concepts are also applicable to other forms of development and redevelopment.

Best practices minimize the alteration of natural green infrastructure such as forests; reduce creation of impervious surfaces; support retention of naturally vegetated buffers along wetlands and waterways; minimize grading and alterations to natural flow patterns; and support the use of LID techniques as the preferred, most easily permitted methods for managing stormwater.

The key areas of analysis in the checklist include overall site design (such as open space residential design or "OSRD" versus conventional subdivisions), project design and layout standards in relation to LID (such as preservation and protection of natural resources, minimizing the area of disturbance, road layout and width, curbing, drainage, sidewalks, parking, landscaping), maintenance and operations, and mechanisms for enforcement. See Tabs 1 through 4 in the checklist for additional information about the tool.

The analysis portion of the checklist is separated into two tabs; Tab 5 summarizes factors related to OSRD and Tab 6 summarizes factors related to Mass Audubon's five major goals of a robust LID program:

- Goal 1: Protect natural resources and open space
- Goal 2: Promote efficient, compact development patterns and infill
- Goal 3: Smart designs that reduce overall imperviousness
- Goal 4: Adopt green infrastructure stormwater management provisions
- Goal 5: Encourage efficient parking

A color-coded ranking system is used to categorize the state of current code compared to Mass Audubon's "Conventional", "Better", and "Best" categories for each factor. This allows the Town to visually perceive whether the Town's current code related to a particular LID goal or factor follows a more conventional approach and therefore may present an opportunity to update the code with more LID-focused parameters. Note that there is no EPA requirement to meet the "Best" category for each factor in the checklist, and the recommendations presented here are primarily focused on meeting the Small MS4 General Permit requirements.

Tighe & Bond met with the Town on June 21, 2022 to obtain initial input on this assessment. The final Code Assessment Summary checklist is enclosed in this memorandum (delivered electronically in Excel). During the meeting, it was noted that the Town of Boylston is in the process of updating the Master Plan with the Master Plan Steering Committee² and simultaneously completing a Municipal Vulnerability Preparedness (MVP) project, with the goal

¹ Mass Audubon. *By-Law Review: Encouraging Nature-Based Solutions*. URL: <https://www.massaudubon.org/our-conservation-work/policy-advocacy/shaping-climate-resilient-communities/publications-community-resources/bylaw-review>

² Additional information about the Boylston Master Plan update is available at the following websites: <https://www.boylston-ma.gov/master-plan-steering-committee>, <https://www.boylstonmasterplan.com>

of completing both in 2022. The draft reports include the following recommendations³ related to open space design, LID, and protecting natural resources, which Tighe & Bond has incorporated as applicable into the Recommendations section of this memorandum:

Recommendations from the draft MVP report:

- *Improve and expand stormwater management practices and infrastructure*
- *Prioritize environmental and open space planning*
- *Expand resource protection efforts*
- *Fortify utilities*

Recommendations from the draft Master Plan:

- *Land Use: Concentrate new development around existing infrastructure to preserve natural resources and limit service provision costs.*
- *Open Space & Natural Resources:*
 - *Explore zoning changes such as Open Space Residential Design, Cluster Development, and other bylaws to require conservation of open space with new subdivisions.*
 - *Pursue adoption of conservation-related bylaws and policies, particularly zoning incentives for preserving open space and natural resources.*
 - *Explore establishing a No Disturb Zone around wetland resource areas to a defined distance.*

Summary of Findings

Tighe & Bond's assessment of the Town of Boylston's local code has determined that several By-laws and Regulations include provisions that affect the creation of impervious cover. As noted in the Recommendations section of this memorandum, there are some opportunities to update the code to incorporate policies and standards to minimize impervious cover attributable to parking areas and street designs.

Several By-laws and Regulations allow for the implementation of green roofs, infiltration practices, and water harvesting devices when appropriate site conditions exist. Tighe & Bond found no hinderances to these practices within the existing local codes, however there are opportunities to encourage their use more proactively, as described in the Recommendations section of this memorandum.

This section provides a brief summary of findings from each code reviewed. For a more detailed summary of existing provisions included in the By-laws or Regulations listed below, refer to the enclosed Code Assessment Summary.

Zoning By-Laws for the Town of Boylston

The Town's Zoning By-Laws were enacted in accordance with M.G.L., Chapter 40A, and the Home Rule Amendment, Article 89 of the Massachusetts Constitution. The purpose of the by-laws are to lessen congestion in the streets; to conserve health; to secure safety from fire, flood, panic, and other dangers; to provide adequate light and air; to prevent overcrowding of land; to avoid undue concentrations of population, to encourage housing for persons of all income levels; to facilitate the adequate provision of transportation, water, water supply, on-lot sewerage disposal, drainage, schools, parks, open space and other requirements of the residents of Boylston; to conserve the value of land and buildings, including the conservation

³ These recommendations, provided by the Boylston Stormwater Committee, should be considered draft and may change upon completion of the Master Planning Process and MVP project.

of natural resources and the prevention of blight and pollution of the environment; to encourage the most appropriate use of land throughout the Town of Boylston, including consideration of the recommendations of a Master Plan adopted by the Boylston Planning Board and the land use recommendations, as they may relate to the Town of Boylston, of the Central Massachusetts Regional Planning Commission, and to preserve and increase the amenities of the Town by promulgation of regulations to fulfill the above objectives.

Boylston's Zoning By-Laws include specific provisions related to this assessment for different uses in various zoning districts and overlay districts which include the following:

- Residential Districts (Rural Residential, Residential, General Residential);
- Residential Office Overlay District;
- Business Districts (Village Business, Highway Business, Flexible Business Development District; Neighborhood Business District, Route 140 Business District);
- Commercial District;
- Heritage District;
- Industrial Districts (Industrial Park, Mixed Use Industrial District);
- Flood Plain District; and
- Wellhead Protection.

The Dimensional Requirements included in Section 9 of the Zoning By-Laws includes specifications on minimum lot frontage and width, minimum yard dimensional limits, maximum building height, maximum lot coverage percentages, and minimum lot landscaping percentages. Requirements related to the creation of impervious cover and use of green infrastructure techniques may be more or less stringent depending on the zoning or overlay district the proposed development is located within. The Zoning By-law typically provides provisions to protect natural resources and open space and promote designs that reduce overall imperviousness, but there are opportunities to encourage efficient parking and promote efficient, compact development patterns with flexible or minimized lot sizes, setbacks, and frontage areas, as discussed in the Recommendations section of this memorandum. Applicable standards as they relate to street design, parking, impervious cover, and green infrastructure are summarized in more detail in the Code Assessment Summary (see Enclosure, Tab 6).

While Boylston does not have a standalone Open Space Residential Design (OSRD) or Flexible Development By-law, open space standards are included in the Zoning By-Laws under Section 5, Senior Residential Development (SRD), which is intended to provide more affordable housing options for a maturing population, to reduce demands on municipal and educational services, to promote development that is in harmony with the town's natural features and resources, its historic and traditional landscapes, the existing and probable future use of adjacent land, and to establish flexible residential development standards and procedures that will support these objectives. In general, the SRD has some factors that are considered "Better" or "Best Practice" by the Mass Audubon standards for ORSD or Flexible Development, but also has areas that could be improved in terms of design requirements, application submittals, and promoting LID, as discussed in the Recommendations section of this memorandum. Applicable standards as they relate to open space residential design are summarized in more detail in the Code Assessment Summary (see Enclosure, Tab 5).

Note that the Zoning By-law includes requirements for Site Plan Review in Section 10, Special Regulations. This section outlines the procedural process and submittal requirements for applications requiring a special permit site plan approval, and does not include specific design

requirements related to this assessment. Therefore, evaluation of this section of the By-law was not included in the enclosed Code Assessment Summary.

Rules & Regulations Governing the Subdivision of Land in Boylston

The Rules and Regulations Governing the Subdivision of Land in Boylston (herein referred to as the "Subdivision Regulations") contain paved street width, cul-de-sac requirements, and sidewalk requirements that affect the creation of impervious cover associated with subdivisions. The Subdivision Regulations set forth street layout and design standards that regulate the location, alignment, intersections, widths, and access of the streets of Boylston. In general, streets shall be designed to provide safe vehicular travel through the proper provision of adequate sight distances, width of pavement, grades, intersection design, and other engineering standards.

Overall, the Subdivision Regulations provide good protection for natural resources and open space within subdivisions and have many provisions requiring LID practices (e.g., bioretention areas in cul-de-sacs and permeable pavement for sidewalks). Because Definitive Subdivision Plans explicitly require a permit under the Town's Stormwater Control By-law and Regulations, these projects will meet the most up-to-date State and Federal design requirements, and will also require a Stormwater Management Plan, Operation and Maintenance Plan, and Erosion and Sediment Control Plan.

There are opportunities to support the reduction of impervious cover during development and to further encourage the use of green infrastructure stormwater provisions, as discussed in the Recommendations section of this memorandum. Refer to the Code Assessment Summary (see Enclosure, Tab 6) for an outline of the applicable standards within the Subdivision Regulations relative to the creation of impervious cover and use of green infrastructure within Boylston.

Boylston Stormwater Control By-Law and Conservation Commission Rules & Regulations for Stormwater

The Town's Stormwater Control By-Law outlines activities requiring Stormwater Control Permits (subdivisions requiring a Definitive Plan, activities that result in a land disturbance greater than one acre, and activities that result in a land disturbance less than one acre if the project is part of a larger common plan of development which eventually will disturb greater than one acre); permit procedures; performance standards for erosion and sediment control and post-construction stormwater management (including stormwater and low impact development performance standards); waivers; and enforcement.

The Conservation Commission adopted associated Rules & Regulations for Stormwater in 2007 to provide submittal requirements and detailed performance standards and design criteria for applicants. The Regulations were recently updated for consistency with the 2016 Small MS4 General Permit and will be adopted in 2022; these updated Regulations were used for this assessment.

For compliance with the standards in the Regulations, the applicant must include a Stormwater Management Plan, Operation and Maintenance Plan, Erosion and Sediment Control Plan, and Inspection and Maintenance agreement with the application for a Stormwater Control Permit. Section 7.0 of the Regulations define performance standards for stormwater management and LID and state that stormwater management shall be designed in accordance with the requirements of the Small MS4 General Permit and the Stormwater Management Standards described in the Massachusetts Stormwater Handbook using current Best Management Practices (BMPs).

Additionally, the Regulations require that LID site planning and design strategies must be utilized where adequate soil, groundwater, and topographic conditions allow. Within the Regulations, LID is defined as “site planning and design strategies that use or mimic natural processes that result in the infiltration, evapotranspiration, or use of stormwater in order to protect water quality and associated habitat. Low impact development techniques employ principles such as preserving and recreating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treats stormwater as a resource rather than a waste product. Low impact development techniques include, but are not limited to, bioretention facilities, rain gardens, vegetated rooftops, rain barrels, and permeable pavement.”

Refer to the Code Assessment Summary (see Enclosure, Tab 6) for more detail of the applicable standards within the Stormwater Control By-Law and Regulations relative to the creation of impervious cover and green infrastructure within Boylston.

General By-Laws of the Town of Boylston

As noted on page 2 of this memorandum, some of the Town’s General By-laws were reviewed as part of the assessment, including the Earth Removal, Driveways, Stormwater Control (discussed previously), and Storm Drain By-laws. These by-laws include some additional provisions related to street design, parking, and green infrastructure. Commentary was included in the checklist for earth removal, driveway design, illicit discharge control, and permeable paving.

Recommendations

The majority of Tighe & Bond’s recommendations are limited to updates to the Zoning By-Laws and Subdivision Regulations, which have the most opportunity to generate impervious cover through construction of buildings, parking, streets, and sidewalks. While Tighe & Bond has provided recommended areas for potential improvement, the ultimate updates to Town code will be determined after careful consideration by the Town’s professional staff, discussion with the Planning Board and other enforcing entities, and a process for public input.

As previously noted, the Town’s Master Plan Steering Committee is in the process of updating the Master Plan, and the Town is simultaneously completing an MVP project. Recommendations from these draft Plans are included on page 4 of this memorandum, and have also been incorporated in this Section as applicable because implementation of the recommendations will result in improvements to local code in terms of open space, protection of natural resources, and LID.

Recommended Revisions to Zoning By-Laws

Responsible Parties: Planning Board

Target Completion Date: July 2025 *(As noted at the June 21, 2022 working meeting, the schedule for modifications may be adjusted as needed to coordinate with the schedule for implementation of Master Plan and/or MVP project recommendations.)*

The Town’s Zoning By-Laws have established a Senior Residential Development District, which allows for more flexible dimensional requirements to create open space for a targeted residential use. Other sections including the Schedule of Dimensional Requirements Table in Section 9.02 also have requirements for the creation of less impervious surface and better stormwater management.

The list below provides more specific recommendations on how to further promote LID and reduce impervious area in the Town of Boylston for discussion and collaboration with the Town's Planning Board and Highway Department based on recommendations from the Massachusetts Low Impact Development Toolkit⁴ and the American Planning Association (APA) guidebook, *Sustainable Neighborhood Road Design: A Guidebook for Massachusetts Cities and Towns*.⁵

Promoting Efficient Development

- The Zoning By-Laws establish minimum lot setbacks in the Schedule of Dimensional Requirements Table and additional setback requirements are presented for varying uses and overlay districts throughout the By-Laws. Look for opportunities to examine minimum setback requirements in certain districts such as Commercial and Industrial. Consider adding language to set impervious cover limits tailored to the community and district type.
- In low-density areas, consider establishing limits on impervious lot coverage (e.g., <15%). This is addressed within the Wellhead Protection District currently. Note this is not appropriate for town centers or moderate density neighborhoods where compact development should be encouraged. Consider adding language to set impervious cover limits tailored to the community and district type.
- Incorporate recommendations from the recently approved Housing Production Plan (2021) developed by the Master Plan Steering Committee, such as exploring a Cottage Housing Bylaw. "A Cottage Housing Bylaw is like an open space bylaw in that it provides density bonuses in exchange for a common open space set-aside but focuses on houses on smaller lots with pedestrian oriented layout. In a cottage development, housing units (typically single-family) are clustered with smaller than typical frontages along shared spaces, walkways or other amenities."⁶

Street Design, Parking, and Common Driveways

- Street design and roadway widths are not addressed within the Zoning By-Law, other than within the Senior Residential Development District. Consider adding specificity to the By-laws, or referencing the Subdivision Regulations, and allowing flexible pavement and right-of-way widths depending on anticipated traffic volumes and availability of on-site parking.
- Section 10.02 of the Zoning By-laws include parking requirements, which specify a minimum number of parking spaces based on the land use and building types. The Route 140 Development District has additional off-street parking provisions and provides consideration of shared parking (i.e., common off-street parking areas) by special permit. Consider opportunities to reduce impervious area creation while still providing reasonable parking accommodations by updating the parking requirements to set a maximum number of parking spaces and/or providing additional opportunities in other overlay districts for Shared Parking.
- Common driveways are permitted by special permit, with the maximum number of lots served by a common driveway being 3 in residential districts and 5 in commercial, business, and industrial districts. Consider increasing the density of lots allowed for

⁴ <https://www.mapc.org/resource-library/low-impact-development-toolkit/>

⁵ https://www.apa-ma.org/wp-content/uploads/2018/12/NRB_Guidebook_2011.pdf

⁶ Boylston Housing Production Plan Sub-Committee of the Master Plan Steering Committee and the Central Massachusetts Regional Planning Commission. *Town of Boylston Housing Production Plan*. 2021. URL: <https://www.mass.gov/doc/boylston-plan/download>

common driveways. Also consider requiring or encouraging common driveways to be constructed with permeable pavers or pavement.

Stormwater Management and Landscaping Requirements

- Consider adding provisions to the Zoning By-Laws to allow for easy siting of LID features on lots, common open space, setback areas, or road rights-of-way and easements. Green infrastructure could count toward fulfillment of landscaping and open space requirements. Examples include allowing an increase in floor area ratio or other developmental incentives for green roofs for commercial development, specifying commercial landscaping requirements for parking areas, and allowing for vegetated areas with bioretention functions in commercial landscaping areas.
- The Zoning By-Laws require non-invasive plantings and street trees within certain districts (Route 140 Development). Many districts also require greenbelts/buffers or open space with trees (Commercial/Industrial contiguous to a residential zone, Residential-Office overlay district). Consider expanding this requirement to apply to additional districts.

OSRD/Flexible Development

- Consider creating a standalone Open Space Residential Design or Flexible Development by-law. Currently, Section 5 of the Zoning By-law outlines requirements for open space and flexible development within the Senior Residential Development District. The draft Master Plan also recommends exploring "Open Space Residential Design, Cluster Development, and other bylaws to require conservation of open space with new subdivisions and development".

Recommended Revisions to Subdivision Regulations

Responsible Parties: Planning Board

Target Completion Date: July 2025 *(As noted at the June 21, 2022 working meeting, the schedule for modifications may be adjusted as needed to coordinate with the schedule for implementation of Master Plan and/or MVP project recommendations.)*

The Town's Subdivision Regulations were last amended in 2012 and would benefit from additional modifications designed to promote the use of LID and stormwater management techniques that improve water quality. In general, such modifications would reduce impervious area, incorporate more LID and GI, and better preserve open space.

The list below provides more specific recommendations on how to further promote LID in the Town of Boylston for discussion and collaboration with the Town's Planning Board, Highway Department, and Fire Department based on recommendations from the Massachusetts Low Impact Development Toolkit and the American Planning Association (APA) guidebook, *Sustainable Neighborhood Road Design: A Guidebook for Massachusetts Cities and Towns*.

Street Design

- Consider adding provisions to the Subdivision Regulations to require that the location of streets minimize grading and road length and avoid important natural features.
- The Subdivision Regulations specify in Section 6.2.4 that the minimum width of pavement shall be 24 feet for local streets, and 28 feet for collector streets. Consider minimizing road widths by specifying the following tiered road width standards in the Subdivision Regulations to reduce pavement to the extent possible (e.g., wide, medium, narrow, and alley categories—20 to 24-foot widest for 2 travel lanes, 16 to

20-foot for low traffic residential neighborhood, plus 2-foot shoulders.) Consider allowing narrow widths in lower density residential areas or where on-street parking is not anticipated. This will require meeting with the Fire Department to resolve conflicts between standards in Subdivision Regulations and requirements and/or preferences of the Fire Department for emergency vehicle access. Note that the draft Master Plan also includes a recommendation action to "Identify changes to roadway width, parking, and other requirements in ... subdivision bylaws that reduce impervious cover."

- Consider giving preference to roadside swales over closed drainage. Currently, vegetated open channels are only allowed in lieu of traditional curbs and gutters when deemed appropriate by the Planning Board.

Stormwater Management

- Although Definitive Subdivision Plans explicitly require a permit under the Town's Stormwater Control By-law and Regulations, consider updating Section 6 (Design and Construction Standards) for consistency with the Stormwater Management Regulations by reference, the MA Stormwater Handbook, and the Town's current design preferences. The Town could consider encouraging additional green infrastructure and LID practices where deemed appropriate for Subdivisions
- Consider requirements to address runoff from roofs. Roof runoff is not specifically required to be infiltrated or directed to landscaped or naturally vegetated areas capable of absorbing clean water. Green roofs, downspout disconnection, and rainwater harvesting could be encouraged in some cases through the permitting process. Downspout disconnection and rainwater harvesting are both considered green infrastructure elements.⁷

Additional Recommendations

Responsible Parties: Planning Board/Highway Department/Conservation Commission

Target Completion Date: Consider selecting one to three of these potential recommendations by July 2025

- Consider updating the Scope and Applicability of the Stormwater Control By-law to reduce area of land disturbance required to trigger a Stormwater Control Permit. This might create a clearer review process and design criteria for smaller projects that are not currently captured by the By-law.
- Provide opportunities for professional staff and members of the Zoning Board of Appeals, Planning Board, and Conservation Commission to participate in workshops or conferences about the benefits of LID, GI, and sustainable stormwater management.
- Consider implementing a new green infrastructure or LID demonstration project on Town-owned property.

⁷ U.S. EPA. *What is Green Infrastructure?* URL: <https://www.epa.gov/green-infrastructure/what-green-infrastructure>

- Modify and distribute public education materials available from MassDEP and EPA to developers regarding design, uses, and appropriate site conditions for green infrastructure such as rain gardens and porous pavement.^{8 9 10 11 12}
- Participate in a rain barrel sale and distribution program such as those offered by the Great American Rain Barrel company.¹³ Provide education to residents and developers about rainwater harvesting.

Next Steps

The proposed recommendations for revision presented herein should be discussed and refined through a joint working meeting of relevant boards and commissions including the Town's Planning Board, Stormwater Committee, and other Town staff, boards, or committees involved in implementing recommendations of the updated Master Plan. Per the 2016 Small MS4 General Permit, recommended changes must have a corresponding proposed schedule to incorporate policies and standards into relevant documents and procedures to minimize impervious cover attributable to parking areas and street designs. The joint meeting should also include development of a schedule of implementation of proposed revisions and recommended actions.

Enclosures

Boylston Code Assessment Summary via Mass Audubon's *By-Law Review for LID & Climate-Smart, Nature Based Solutions* (delivered electronically)

J:\B\B0768 Boylston Stormwater Assistance\011 - FY22 Stormwater Assistance\Local Code Review\Boylston Local Code Assessment Memo.docx

⁸ <https://www.epa.gov/green-infrastructure/overcoming-barriers-green-infrastructure>

⁹ <https://www.epa.gov/soakuptherain>

¹⁰ <https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/BMPRetrofit.pdf>

¹¹ <https://www.thinkbluemassachusetts.org/>

¹² <https://www.mass.gov/guides/stormwater-outreach-materials-to-help-towns-comply-with-the-ms4-permit>

¹³ <https://www.greatamericanrainbarrel.com/>

**Mass Audubon's *By-Law Review for LID & Climate-Smart,
Nature Based Solutions***

The Boylston Code Assessment Summary via *Mass Audubon's By-Law Review for LID & Climate-Smart, Nature Based Solutions* is available electronically in the Town's record keeping files.

Boylston Retrofit Inventory Assessment

The following memorandum meets the MCM 5 requirement to identify a minimum of 5 permittee-owned properties that could potentially be modified or retrofitted with BMPs designed to reduce the frequency, volume, and pollutant loads of stormwater discharges to and from the MS4 through the reduction of impervious area.

Boylston Retrofit Inventory Assessment

TO: Town of Boylston Stormwater Committee
FROM: Cassandra LaRochelle, PE
Megan Olson, EIT
COPY: Emily Scerbo, PE
DATE: June 30, 2022

Section 2.3.6.d of the United States Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts (referred to herein as "2016 Small MS4 General Permit") requires that the Town:

...identify a minimum of 5 permittee-owned properties that could potentially be modified or retrofitted with BMPs designed to reduce the frequency, volume, and pollutant loads of stormwater discharges to and from its MS4 through the reduction of impervious area. Properties and infrastructure for consideration shall include those with the potential for reduction of on-site impervious area (IA) as well as those that could provide reduction of off-site IA.

At a minimum, the permittee shall consider municipal properties with significant impervious cover (including parking lots, buildings, and maintenance yards) that could be modified or retrofitted. MS4 infrastructure to be considered includes existing street right-of-ways, outfalls and conventional stormwater conveyances and controls (including swales and detention practices) that could be readily modified or retrofitted to provide reduction in frequency, volume or pollutant loads of such discharges through reduction of impervious cover.

In determining the potential for modifying or retrofitting particular properties, the permittee shall consider factors such as access for maintenance purposes; subsurface geology; depth to water table; proximity to aquifers and subsurface infrastructure including sanitary sewers and septic systems; and opportunities for public use and education.

In determining its priority ranking, the permittee shall consider factors such as schedules for planned capital improvements to storm and sanitary sewer infrastructure and paving projects; current storm sewer level of service; and control of discharges to water quality limited waters, first or second order streams, public swimming beaches, drinking water supply sources and shellfish growing areas.

This memorandum describes the assessment completed for Town-owned properties and infrastructure to determine potential stormwater best management practice (BMP) retrofit opportunities, as well as how the screening and ranking criteria were applied.

Phosphorus Optimization Requirements

The Retrofit Inventory is one part of an overall program that must be established to address post-construction stormwater runoff from all new development and redevelopment sites that disturb one or more acres and discharge into the Town's MS4.

The Town may also need to comply with additional state and local permitting requirements during design of BMP retrofits, depending on the selected location and proposed area of disturbance during construction. This may include the Wetlands Protection Act if the site is located within the buffer zone of a resource area, or other stormwater requirements in Section 2.3.6.a.ii.4 of the 2016 Small MS4 General Permit, which outlines a specific percent reduction required for phosphorus and total suspended solids for redevelopment sites that are an acre or larger.

The Newton Pond watershed is subject to the Lake and Pond Phosphorus Total Maximum Daily Load (TMDL) Requirements listed in Appendix F Part A.II, which includes a 19% reduction of phosphorus within the watershed. The Town has developed the first phases of a Lake Phosphorus Control Plan, which will eventually incorporate structural and nonstructural controls for phosphorus reduction. Structural controls may include implementation of a stormwater BMP for phosphorus removal.

Additionally, the Town must comply with the Assabet River watershed TMDL requirements outlined in Appendix F Part A.V.1.a of the 2016 Small MS4 General Permit, which includes enhanced BMPs to ensure that current phosphorus loads from stormwater discharged directly or indirectly via tributaries into the Assabet River do not increase. The Town has already implemented a post-construction stormwater management requirement that BMPs be optimized for phosphorus removal.¹ As another enhanced BMP per Appendix F, this Retrofit Inventory includes infiltrating BMPs when possible.

Initial Retrofit Assessment and Preliminary Ranking

In Permit Year 2, Tighe & Bond used existing Assessor's GIS data to develop an inventory of municipal buildings, facilities, parks, and open space as part of the *Good Housekeeping and Pollution Prevention Program for Municipal Operations and Maintenance*. We used this information and the Property Tax Parcel database from MassGIS as a baseline for identifying the Town-owned properties for the Retrofit Inventory.

Tighe & Bond performed a desktop assessment of Town-owned parcels that were included in the Town's stormwater Municipal Good Housekeeping Program's municipal facility inventory within and abutting the MS4 urbanized area to develop a preliminary list of sites and determine the feasibility of retrofitting properties. This assessment included an initial screening in ArcGIS of sites included to determine site characteristics, and developing a numerical ranking in Microsoft Excel of properties based on site characteristics and EPA's prescribed evaluation criteria. Attachment A includes documentation of the datasets, data sources, and Tighe & Bond's screening and ranking methodology used for the retrofit analysis.

There were 23 Town-owned parcels identified in the initial GIS desktop analysis. This includes 11 Town properties with an active use (e.g., building or park) and 12 vacant lots with no active use. Some parcels were immediately removed from the list of properties for the potential Retrofit Inventory because they already had a BMP on-site treating stormwater runoff (e.g., Highway Department) or there was no available space on a parcel with an active use (e.g., Old Burial Ground historic cemetery and Historic Town Hall). 18 Town parcels remained in the initial inventory after removing these, including 9 parcels with active uses and 9 vacant lots.

¹ This requirement is included in the Town's draft Conservation Commission Rules & Regulations for Stormwater, which are scheduled to be adopted in Summer 2022.

Using the EPA screening criteria outlined in Attachment A, the list of Town properties was further refined to identify locations that could present a feasible retrofit opportunity. A preliminary ranking was then determined for each parcel. Attachment A also includes the criteria used for ranking each property and cut-off values associated for each parameter assessed. Attachment B includes a summary of the final evaluation and ranking for each of the 18 Town parcels that were included in the assessment.

Final Retrofit Inventory

Tighe & Bond staff met with Boylston Town Staff on June 21, 2022 to review and further refine the Preliminary Retrofit Inventory and site maps. We discussed general feasibility of the sites and gathered information on planned physical capital projects (e.g., planned construction of municipal buildings, recently completed and planned capital projects and infrastructure improvement projects). Additional items discussed at the meeting include the following:

- The parking lot at the Boylston Public Library was recently repaved, and the work included construction of new drainage swales.
- Reduction of impervious cover by installing permeable pavement or reducing the number of parking spots during parking lot redevelopment is preferred over installing a BMP in a roadway right-of-way.
- The neighborhood surrounding the Manor Playground experiences flooding issues, and swales on the property may discharge to the MS4.
- While the Town Hall parcel ranked high on the initial Retrofit Inventory list because it is a large parcel with significant impervious cover, the parcel is abutting but not located within the urbanized area and the buildings and facilities on the parcel are located uphill from the roadway; therefore a stormwater BMP installed on the property would not provide treatment for stormwater discharging from the MS4.
- Opportunities for using vacant parcels to provide offsite mitigation for areas with high pollutant loading or to treat stormwater conveyed by the MS4 prior to discharging to the environment could be considered in the future, but are not preferred. The Town would prefer to focus on incorporating stormwater management practices during capital projects at actively used properties.
- The Town is currently in the planning stages of a new Public Services Building for the Police Department, Fire Department, and Senior Center. A feasibility study is being conducted to determine whether a new building will be constructed or if an existing building can be repurposed. Stormwater management practices will be included in any new development or redevelopment plans for the facility. Town staff indicated that there are no additional capital projects planned for infrastructure or drainage-related improvements.

Tighe & Bond incorporated feedback received during the meeting to finalize the Retrofit Inventory. The top 6 high priority sites that could be retrofitted or modified with BMPs are presented in Table 1. Site assessment and ranking criteria for these sites are included in the summary table in Attachment B.

Note that the future Public Services Building is included as the sixth property in the Retrofit Inventory, as it is a planned capital project but the schedule and location are yet to be determined and therefore the evaluation and ranking process could not be completed. As discussed above, the building may be a new building or it may include repurposing an existing building. If an existing building is repurposed and a BMP is included as part of redevelopment, or if a new building is constructed and adjacent street drainage is connected to and treated

by on-site BMPs, this site can be kept on the Retrofit Inventory list. However, if a new building is constructed on a newly developed property and is not connected to the MS4, it would not be considered a retrofit opportunity and should be removed from the Retrofit Inventory list. Once the feasibility study is completed, update the Retrofit Inventory accordingly.

The summary in Table 1 also includes potential BMPs that could be used in retrofitting each site. If the Town elects to install a BMP, additional investigations into existing site conditions and design efforts will be required to verify the best BMP for the site. Tighe & Bond did not complete subsurface soil, bedrock, or groundwater investigations to assist in the assessment of these properties. The Town should complete these investigations as part of the design phase of any selected Retrofit site to better determine actual site conditions at each property, including the area available for BMPs, soil conditions, depth to restrictive underground features, and actual land area that can be directed towards the BMP(s) based on existing topography.

Table 1: Retrofit Inventory

Property	Potential BMP(s)	Notes	Priority Rank
Boylston Elementary School (200 Sewall Street)	<ul style="list-style-type: none"> Water quality swale(s) to capture runoff from parking lots and driveways Bioretention area in grass area Replace portions of existing parking areas or sidewalks with permeable pavement 	<ul style="list-style-type: none"> Excellent public education opportunity Easily accessible for maintenance Would treat site runoff 	1
Manor Playground (0 Midland Road)	<ul style="list-style-type: none"> Maintain or replace existing swales to assist with flooding concerns Install water quality units within neighboring streets and divert street drainage to the bioretention area to be treated prior to discharging to the environment 	<ul style="list-style-type: none"> Excellent public education opportunity Easily accessible for maintenance 	2
Town Common (Main Street at Central Street)	<ul style="list-style-type: none"> Bioretention area within the grass area Install water quality units within Main Street, Central Street, and/or Church Street and divert street drainage to the bioretention area to be treated prior to discharging to the environment 	<ul style="list-style-type: none"> Excellent public education opportunity Easily accessible for maintenance If street drainage is connected, phosphorus loading would be reduced within these more densely populated catchment area(s) 	3
Boylston Electric Light Department (16 Paul X Tivnan Drive)	<ul style="list-style-type: none"> Bioretention area with sediment forebay Install water quality unit within street and divert street drainage for treatment 	<ul style="list-style-type: none"> Easily accessible for maintenance 	4

Property	Potential BMP(s)	Notes	Priority Rank
Town Hall/Police Department Complex (215-221 Main Street)	<ul style="list-style-type: none"> • Infiltration basin with sediment forebay 	<ul style="list-style-type: none"> • Excellent public education opportunity • Easily accessible for maintenance 	5
Future Public Services Building (Location TBD)	<ul style="list-style-type: none"> • Stormwater management techniques may include infiltration basins, bioretention areas, water quality swales, water quality units, and/or permeable pavement as applicable and appropriate for the site. 	<ul style="list-style-type: none"> • If new building on new site – consider connecting street drainage, or remove from Inventory • If repurposing old building, consider the potential BMPs listed herein 	6

As discussed in the “Phosphorus Optimization Requirements” Section of this memorandum, Boylston must optimize retrofit BMPs for phosphorus removal and may need to comply with phosphorus reduction requirements in Part 2.3.6.a.ii.4 of the General Permit if the proposed project’s land disturbance is an acre or larger. Therefore, the potential BMPs presented for each site were selected to optimize for total phosphorus removal. Below is a summary of each BMP type and its estimated total phosphorus removal rate. Additional BMP types are included for reference. Actual phosphorus removal recognized for any BMP retrofit site implemented by the Town will need to be determined during design of the selected BMP(s) based on existing and proposed site conditions.

- **Water Quality Units** (for pretreatment): a flow-through structure with a settling or separation unit to remove sediments and other pollutants by swirling or flowing water to separate floatables, such as oils and greases, and coarser sediments. 32% TP removal rate.²
- **Water Quality Swale** (for pretreatment): vegetated open channels designed to treat the required water quality volume and to convey runoff without erosion. The vegetation in the swales promotes phosphorus removal. 9% TP removal rate, however it can be used as pretreatment to support longevity of certain stormwater treatment features and/or to transport stormwater runoff to another treatment feature.³
- **Sediment Forebay** (for pretreatment): consists of an excavated pit or bermed area with a weir, designed to slow incoming stormwater runoff and facilitating the gravity separation of suspended solids. Insufficient data exists on the removal rate for TP; however, it is recommended as pretreatment to support longevity of certain stormwater treatment features, including many of the BMPs recommended in the Final Retrofit Inventory.
- **Porous Pavement**: a paved surface with a higher-than-normal percentage of air voids to allow water to pass through it and infiltrate into the subsoil. It replaces traditional pavement, allowing runoff to receive water quality treatment. All permeable paving systems consist of a durable, load bearing, pervious surface overlying a stone bed that stores rainwater before it infiltrates into the underlying soil. Permeable paving

² Source: Imbrium Stormceptor STC Performance Test Results from Field Monitoring in Como Park, MN

³ Source: EPA Storm Water Technology Fact Sheet for Vegetated Swales, dated September 1999

techniques include porous asphalt, pervious concrete, paving stones, and manufactured "grass pavers" made of concrete or plastic. 65% TP removal rate.⁴

- **Bioretention Areas** (otherwise known as a rain garden): a technique that uses soils, plants, and microbes to treat stormwater before it is infiltrated and/or discharged. A bioretention area typically consists of a vegetated depression and subsurface soil media which acts as a filter. 70-83% TP removal rate.⁵
- **Infiltration Basin**: stormwater runoff impoundments that are constructed over permeable soils. Runoff is stored within the basin until it exfiltrates through the soil of the basin floor. 82% TP removal rate.⁶
- **Constructed Stormwater Wetland**: a stormwater wetland system that maximizes the removal of pollutants from stormwater runoff through wetland vegetation uptake, retention, and settling. These systems temporarily store runoff in shallow pools that support conditions suitable for the growth of wetland plants. 49% TP removal rate according to the US EPA Storm Water Technology Fact Sheet for Storm Water Wetlands, dated September 1999. The Massachusetts Stormwater Handbook indicates a potential removal rate of 40-60%. The constructed stormwater wetland would be equipped with adequate pretreatment to ensure the required TP removal rate of 50% is achieved.

Next Steps

The list of properties included in this Retrofit Inventory must be submitted to EPA and MassDEP as part of the Permit Year 4 annual report, due on September 28, 2022. When preparing subsequent annual reports after submission, the Town should review and update the Retrofit Inventory by identifying additional sites or infrastructure that could be retrofitted. A minimum of five sites must be maintained in the Inventory until such a time as when the Town has less than five possible retrofit sites remaining.

In addition, the Town must report on all properties included in the Retrofit Inventory that have been modified or retrofitted with BMPs to mitigate IA. The Town may also include in its annual report non-MS4 owned property that has been modified or retrofitted with BMPs to mitigate IA.

Attachments

Attachment A: Methodology for Retrofit Assessment

Attachment B: Summary of Parcel Evaluation and Ranking

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⁴ Source: EPA Storm Water Technology Fact Sheet for Porous Pavement, dated September 1999

⁵ Source: EPA Storm Water Technology Fact Sheet for Bioretention, dated September 1999

⁶ Source: US EPA Region 1 BMP Optimization Tool for Stormwater Management, last updated December 31, 2016

Attachment A – Methodology for Retrofit Assessment

This attachment provides the GIS methodology used to identify the top five retrofit opportunities within the Town. All actions described were performed in ArcGIS Pro 2.6.0 and Microsoft Excel.

Town-owned parcels were assessed for retrofit opportunities and restrictions. Both the municipal facility inventories from the Town’s Operation and Maintenance Plan was used to develop an initial list of Town-owned properties.

Properties were assessed according to the following GIS layers listed in Table 1, where applicable. Table 1 also provides the data sources from which the layers were brought into GIS.

Table 1: Shapefiles Used in Retrofit Analysis

Layer	Use	Origin
Property Tax Parcels	Town-owned property determination and total parcel areas	MassGIS
2016 Land Use/Land Cover	Impervious area calculations by parcel	MassGIS
Subsurface Geology	Soil hydrologic group, depth to water table, and depth to bedrock identification	NRCS Soils Layer and Mapunit Aggregated Attribute Table
National Wetland Inventory	Wetland buffers, areas, and proximities	MassGIS
MassDEP Hydrography	Waterbody proximities and buffers	MassGIS
FEMA National Flood Hazard Layer	Flood zone proximities	MassGIS
Aquifers	Aquifer proximities	MassGIS
Wellhead protection area	Wellhead protection area proximities	MassGIS
Water supply protection area	Water supply protection area proximities	MassGIS
Subsurface Infrastructure	Septic infrastructure on site	Town database as available
Stormwater Infrastructure	Stormwater infrastructure on site or in proximity	Town database as available
Environmental Justice Area	Environmental Justice areas in proximity	MassGIS
2016 Integrated List of Waters*	Impaired water proximity	MassGIS
Public Beaches	Public beach proximity	MassGIS
Watershed Areas	Assabet River watershed and Newton Pond watershed proximities	MassGIS and StreamStats
2000 and 2010 Urbanized Areas	MS4 urbanized area proximity	MassGIS

*The 2018/2020 Integrated List of Waters was finalized in 2022 after this assessment was completed.

Note that Shellfish Growing Areas were not evaluated, as this criterion is not applicable to Boylston.

One layer, including all Town-owned parcels of interest, was populated with the information identified in the “use” column of Table 1. The following geoprocessing tools were used to populate this information: **Summarize Within** to calculate areas in acres within a given parcel; **Near** to calculate the proximity of each parcel to the layers of interest; **Buffer** to identify the buffers to resource areas; **Calculate Geometry** to calculate the total parcel area; **Spatial Join** was used to join all soil hydrologic groups, depths to bedrock, and depths to water tables present on a given parcel. Fields were also added to record information on proximity to environmental justice areas and whether parcels were located within specific watersheds.

Assessment of sanitary sewer infrastructure proximity was not evaluated, as there is no sanitary sewer present in Boylston. However, the presence of septic systems on site was evaluated with the assumption that parcels with a building have an associated septic system and vacant parcels do not have a septic system.

Once GIS analysis was complete, the data was exported to excel where each parcel was numerically ranked. In excel, information on subsurface geology was classified as either “Null”, “Shallow”, or “Deep”. Table 2 provides the criteria used for ranking and cutoff values used to assign a value of 0 through 5.

Table 2: Property Ranking Criteria

Ranking Criteria	Priority Value (0 through 5) Cut-off Values (criteria specific)						Notes 5 = highest priority rank 0 = lowest priority rank
	0	1	2	3	4	5	
Area (acres)	-	0	0.5	1	2	5	Larger parcel size ranks higher
Impervious Area*	0	>0	0.5	1	2	5	Larger cover ranks higher
Dominant Hydrologic Soil Conditions	C, D, or C/D	-	-	-	-	A or B	Soil types range from A - D and can be mixed. Soil type A provides best infiltration rates and therefore ranks highest. Soil type D ranks lowest.
Wetland Area (% Coverage)	-	5	3	2	1	0	Smaller wetlands area ranks higher
FEMA Floodzone	Floodway	-	-	500 Year Flood	-	None	Not in Floodzone ranks higher
Wellhead Protection Area	Zone I	-	-	-	-	Zone II, IWPA, or No	Not in protection area or treating stormwater within secondary protection area ranks higher
Surface Water Supply Protection Area	Zone A	-	-	-	-	Zone B, Zone C, or No	Not in protection area or treating stormwater within secondary protection area ranks higher
Depth To Bedrock (cm)	-	Shallow: 0-41	-	Null	Deep: > 41	-	Deeper bedrock ranks higher
Depth To Watertable (cm)	-	Shallow: 0-36	-	Null	Deep: > 36	-	Deeper water table ranks higher
On-site Septic	-	Yes	-	-	-	No	No septic ranks higher
On-site Drainage	-	No	-	Abutting	-	Yes	Closer ranks higher
Proximity to Waterbody or Wetland Resource Area (ft)	-	0	-	100	-	200	Further ranks higher
Proximity to Impaired Waterbody (ft)	-	0	-	100	-	200	Further ranks higher
Proximity to Public Water Supply (mi)	-	1	0.75	0.5	0.25	0	Closer ranks higher
Proximity to Beach (mi)	-	1	0.75	0.5	0.25	0	Closer ranks higher
Located within MS4 Area**	-	Abutting	-	-	-	Yes	Within MS4 ranks higher
Located within the Assabet River or Newton Pond watershed	No	-	-	-	-	Yes	Within Concord River watershed ranks higher
Vacant Parcel***	Yes	-	-	-	-	No	Parcels with active uses rank higher

Max Score: 128

* Note: The priority values for impervious area are weighted as follows:

Acres	Priority Value
0	1
0.5	5
1	10
2	15
5	20

** Note: The priority values for parcels located within the MS4 are weighted as follows:

MS4 Area	Priority Parcel
Yes	25
Abutting	1

*** Note: The priority values for vacant parcels are weighted as follows:

Vacant	Priority Parcel
Yes	0
No	10

Following the preliminary ranking, additional items were considered as listed below and discussions with Town personnel informed the selection of the top 5 properties in the Retrofit Inventory. Discussions with the Town is discussed in broader detail in the memorandum.

Other items considered:

- Ease of access for maintenance: easy, moderate, difficult
- Opportunities for public use and education
- Upcoming capital improvements to storm, sewer, or paving projects
- Current storm sewer level of service
- Road width (i.e., wider roads have more opportunity to add BMPs along road edge/reduce pavement without impacting traffic flow)

Attachment B
Summary of Parcel Evaluation and Ranking

Parcel ID	Site Address	Area (acres)	Impervious Area (Acres)	Hydrologic Soil Conditions	Wetland Area (%)	FEMA Floodzone	Wellhead Protection Area	Public Water Supply Protection Area	Depth To Bedrock (cm)	Depth To Watertable (cm)	On-site Septic	On-site Drainage	Proximity to Waterbody (ft)	Proximity to Impaired Waterbody (ft)	Proximity To PWS (mi)	Proximity to Beach (mi)	Assabet River or Newton Pond Watershed Area	MS4 Area	Vacant Lot	Sum	Property Description
12_4	200 SEWALL ST	5	15	5	3	5	5	5	3	3	1	1	1	5	5	4	5	25	10	106	Boylston Elementary School
3_199	MIDLAND RD	5	1	0	5	5	5	5	1	4	1	5	5	5	2	3	5	25	10	92	Manor Playground/Ball fields
35_51	MAIN ST	3	1	5	5	5	5	5	1	3	1	5	5	5	4	1	0	25	10	89	Town Common
6_1	16 PAUL X TIVAN DR	4	5	0	5	5	5	5	3	4	1	1	1	5	3	4	0	25	10	86	Boylston Electric Light Department
6_5	215-221 MAIN ST	5	20	5	2	3	5	5	1	4	1	5	1	3	5	5	5	1	10	86	Town Hall, Police Department, Regional School District, Park & Recreation Commission, Hillside Park
1_44	HOBSON AVE	2	1	5	5	5	5	5	3	3	5	1	5	5	3	2	5	25	0	85	Vacant Lot
3_138	BELAIR & E OAKDALE STS	1	1	5	5	5	5	5	3	3	5	3	3	5	2	4	5	25	0	85	Vacant Lot
3_176	STOCKTON ST	1	1	5	5	5	5	5	3	3	5	3	5	3	2	4	5	25	0	85	Vacant Lot
38_59	MAPLE WAY	4	0	5	5	5	5	5	3	3	5	1	5	5	2	1	5	25	0	84	Vacant Lot
29_27	9 SCHOOL ST	3	1	0	5	5	5	5	1	4	5	3	5	3	3	1	0	25	10	84	Athletic Courts
3_155	MELROSE ST	1	1	5	5	5	5	5	3	3	5	1	3	5	2	4	5	25	0	83	Vacant Lot
2_6	MILL RD	1	0	5	5	5	5	5	3	3	5	1	1	1	2	4	5	25	0	76	Vacant Lot
3_43	KENDALL RD	2	0	0	5	5	5	5	1	3	5	1	5	5	1	3	5	25	0	76	Vacant Lot
3_200	KENDALL RD	1	0	0	5	5	5	5	1	3	5	1	5	5	1	3	5	25	0	75	Vacant Lot
29_4	605 MAIN ST	4	10	5	5	5	5	5	1	3	1	1	5	5	4	1	0	1	10	71	Fire Department/Boylston Town House
35_1	695 MAIN ST	2	1	5	5	5	5	0	1	4	1	3	1	5	4	1	0	1	10	54	Boylston Public Library
35_52	669 MAIN ST	1	1	5	5	5	5	0	1	4	1	3	1	5	4	1	0	1	10	53	Light Department Building
33_43	ROCKY POND RD	5	0	5	5	3	5	5	3	3	5	1	1	1	3	1	5	1	0	52	Vacant Lot

Permit Year 5

(July 1, 2022 – June 30, 2023)

Year 5 Annual Report
Massachusetts Small MS4 General Permit
Reporting Period: July 1, 2022-June 30, 2023

Please DO NOT attach any documents to this form. Instead, attach all requested documents to an email when submitting the form. Also ensure any websites included on this form are to publicly accessible sites

Unless otherwise noted, all fields are required to be filled out. If a field is left blank, it will be assumed the requirement or task has not been completed. Please ONLY report on activities between July 1, 2022 and June 30, 2023 unless otherwise requested.

Part I: Contact Information

Name of Municipality or Organization:

EPA NPDES Permit Number:

Primary MS4 Program Manager Contact Information

Name: Title:

Street Address Line 1:

Street Address Line 2:

City: State: Zip Code:

Email: Phone Number:

Stormwater Management Program (SWMP) Information

SWMP Location (publicly available web address):

Date SWMP was Last Updated:

If the SWMP is not available on the web please provide the physical address:

Part II: Self-Assessment

First, in the box below, select the impairment(s) and/or TMDL(s) that are applicable to your MS4. Make sure you are referring to the most recent EPA approved Section 303(d) Impaired Waters List which can be found here: <https://www.epa.gov/tmdl/region-1-impaired-waters-and-303d-lists-state>

Impairment(s)			
<input type="checkbox"/> Bacteria/Pathogens	<input type="checkbox"/> Chloride	<input type="checkbox"/> Nitrogen	<input type="checkbox"/> Phosphorus
<input type="checkbox"/> Solids/ Oil/ Grease (Hydrocarbons)/ Metals			
TMDL(s)			
<i>In State:</i>	<input checked="" type="checkbox"/> Assabet River Phosphorus	<input type="checkbox"/> Bacteria and Pathogen	<input type="checkbox"/> Cape Cod Nitrogen
	<input type="checkbox"/> Charles River Watershed Phosphorus	<input checked="" type="checkbox"/> Lake and Pond Phosphorus	
<i>Out of State:</i>	<input type="checkbox"/> Bacteria/Pathogens	<input type="checkbox"/> Metals	<input type="checkbox"/> Nitrogen
		<input type="checkbox"/> Nitrogen	<input type="checkbox"/> Phosphorus
			Clear Impairments and TMDLs

Next, check off all requirements below that have been completed. **By checking each box you are certifying that you have completed that permit requirement fully.** If you have not completed a requirement leave the box unchecked. Additional information will be requested in later sections.

Annual Requirements

- Provided an opportunity for public participation in review and implementation of SWMP and complied with State Public Notice requirements
- Kept records relating to the permit available for 5 years and made available to the public
- The SSO inventory has been updated, including the status of mitigation and corrective measures implemented
 - This is not applicable because we do not have sanitary sewer
 - This is not applicable because we did not find any new SSOs
 - The updated SSO inventory is attached to the email submission
 - The updated SSO inventory can be found at the following publicly available website:

- Updated system map due in year 2 as necessary
- Provided training to employees involved in IDDE program within the reporting period
- Properly stored and disposed of catch basin cleanings and street sweepings so they did not discharge to receiving waters
- All curbed roadways were swept at least once within the reporting period
- Enclosed all road salt storage piles or facilities and implemented winter road maintenance procedures to minimize the use of road salt
- Implemented SWPPPs for all permittee owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities

- Updated inventory of all permittee owned facilities as necessary
- O&M programs for all permittee owned facilities have been completed and updated as necessary
- Implemented all maintenance procedures for permittee owned facilities in accordance with O&M programs
- Implemented program for MS4 infrastructure maintenance to reduce the discharge of pollutants
- Inspected all permittee owned treatment structures (excluding catch basins)

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

The Town has determined no facilities located within the MS4 require a site-specific SWPPP.

The Town's "Good Housekeeping and Pollution Prevention Program for Municipal Operations and Maintenance" includes maintenance procedures for Town facilities and MS4 infrastructure, which are implemented to the maximum extent practicable.

In Year 5, some of the catch basin cleanings and street sweepings were temporarily stockpiled together at the Highway yard, which is located outside of the MS4 urbanized area. The stockpiles are located more than 200 feet away from the nearest water resource area, with woodland areas acting as a buffer between the stockpile and the resource area. The stockpile will be disposed at a solid waste facility in Permit Year 6. Moving forward, the Town will maintain separate stockpiles in accordance with MassDEP policies.

In addition to the Highway Department's typical BMP inspections, DCR monitors basins located on DCR property within the Town to determine if there are any maintenance needs. Three DCR basins were inspected during the reporting period, some of which are located outside of the Regulated Area. Sediment was removed from the forebay of the BMP at South Dike in February of 2023. The BMP at Gate B1 previously had been observed not infiltrating properly; with a permanent pool of water in it. The inlet swale also had issues of ponding water and causing icing issues in the roadway. During the summer and fall of 2022, DCR crews removed accumulated sediment and poor draining soils in the bottom of the basin and replaced with better infiltrating sand and topsoil. DCR crews also regraded the inlet swale to provide better drainage away from the roadway. The area was re-stabilized and improved with a better stand of grass. Additional grass seed was spread in the bottom of the basin in the spring of 2023. The BMP has since been observed properly infiltrating after storm events and water appears to better drain from the roadway. The basin and inlet swale are fully stabilized with a healthy cover of grass.

Phosphorus (Combination of Impaired Waters Requirements and TMDL Requirements as Applicable)

Annual Requirements

*Public Education and Outreach**

- Distributed an annual message in the spring (April/May) encouraging the proper use and disposal of grass clippings and encouraging the proper use of slow-release and phosphorus-free fertilizers
- Distributed an annual message in the summer (June/July) encouraging the proper management of pet waste, including noting any existing ordinances where appropriate
- Distributed an annual message in the fall (August/September/October) encouraging the proper disposal of leaf litter

* *Public education messages can be combined with other public education requirements as applicable (see Appendix H and F for more information)*

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

- Increased street sweeping frequency of all municipal owned streets and parking lots subject to Permit part 2.3.7.a.iii.(c) to a minimum of two times per year (spring and fall)

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

Lake and Pond Phosphorus TMDL

- Completed the written Phase 1 Lake Phosphorus Control Plan (LPCP), including: *(select the items in the Phase 1 LPCP that have been completed)*
 - Planned nonstructural controls
 - Planned structural controls
 - O&M program for structural controls
 - Implementation schedule
 - Cost of implementation

The Phase 1 LPCP: *(select one of the following options)*

- is attached to the email submission
- can be found at the following publicly available website:

Below, calculate your current phosphorus export rate by first filling out the individual phosphorus loading components (labeled [A], [B], [C], and [D]) and then computing your current phosphorus export rate using the equation provided.

Baseline phosphorus export reduction required from LPCP Area (lbs/year) [A]:

80

- Documented the nonstructural control measures implemented during **this reporting period** and their phosphorus reduction

total phosphorus reduction from all nonstructural controls this reporting period (lbs/year) [B]:

2.2

- No nonstructural control measures were implemented
- The nonstructural control measures information is attached to the email submission
- The nonstructural control measures information can be found at the following publicly available website:

Documented the structural control measures implemented during **this reporting period and all**

previous years, including location, phosphorus reduction in weight/year, and date of last completed maintenance and inspection for each control

total phosphorus reduction from all structural controls installed this reporting period and all previous years (**lbs/year**) [C]:

17

- No structural control measures were implemented
- The structural control measures information is attached to the email submission
- The structural control measures information can be found at the following publicly available website:

Phosphorus load increase due to development incurred since baseline loading was calculated in **lbs/year** [D]:

Current phosphorus export rate from the LPCP Area in **lbs/year** [=A-(B+C)+D from above]:

60.8

I certify under penalty of law that all source control and treatment Best Management Practices being claimed for phosphorus reduction credit have been inspected, maintained and repaired in accordance

with manufacturer or design specification. I certify that, to the best of my knowledge, all Best Management Practices being claimed for a phosphorus reduction credit are performing as originally designed.

All municipally owned and maintained turf grass areas are being managed in accordance with Massachusetts Regulation 331 CMR 31.00 pertaining to proper use of fertilizers on turf grasses

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

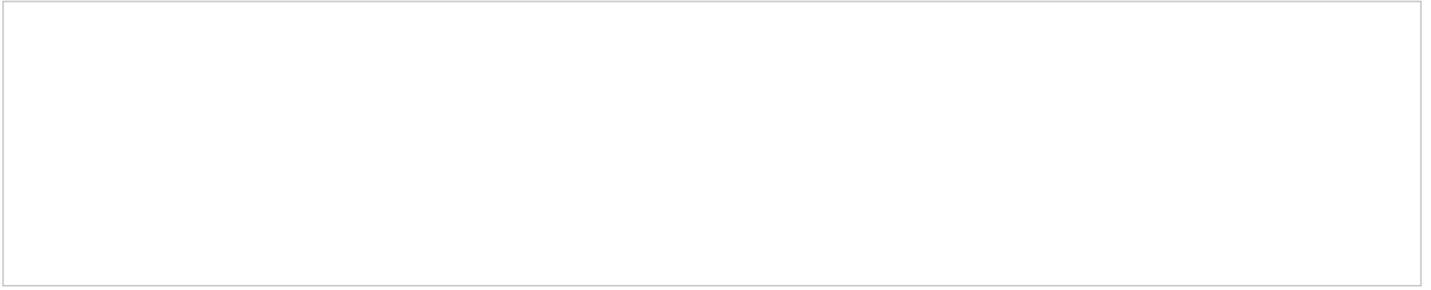
The estimated total phosphorus reduction from nonstructural and structural controls are included in the enclosed LPCP. Note that the calculations were estimated and will be refined in Permit Year 6, as discussed in the LPCP. Refer to the implementation schedule included in the enclosed LPCP for the full analysis completed.

The current Pexp from the regulated portion of the watershed will be estimated in Permit Year 6 with 2016 land use and impervious area; Pdevinc will be calculated with this information instead of using individual projects since 2005.

Based on initial calculations provided in the LPCP, it appears that the absolute phosphorus reduction in Table F-7 for Permit Year 10 will significantly expedite loading reductions. Upon further analysis planned for Permit Year 6, the Town may need to utilize the Alternative Schedule Request process so relative reductions can be steadily achieved through Permit Year 15.

School athletic departments hire outside contractors during sports seasons for playing field maintenance. However, all town-managed fields are maintained in accordance with MGL 331 CMR 31.00.

Optional: Use the box below to provide any additional information you would like to share as part of your self-assessment:



Part III: Receiving Waters/Impaired Waters/TMDL

Have you made any changes to your lists of receiving waters, outfalls, or impairments since the NOI was submitted?

- Yes
 No

If yes, describe below, including any relevant impairments or TMDLs:

The Town's NOI listed receiving waters and impairments based on the water quality limited waters in the 2014 303(d) Integrated List. In Permit Year 2, the Town evaluated changes to the impairments and/or receiving waters based on the final 2016 303(d) List and the analysis was submitted with the Town's Permit Year 2 Annual Report and is available in the Town's SWMP. In Permit Year 4, the Town evaluated changes to the impairments and/or receiving waters based on the final 2018/2020 303(d) List and the analysis was submitted with the Town's Permit Year 4 Annual Report and is available in the Town's SWMP.

In Permit Year 5, the Town evaluated any changes to the impairments and/or receiving waters based on the final 2022 303(d) List and the analysis is included as an attachment with this report. The changes described herein do not add, remove, or change any receiving waters or impairments.

Stormwater system mapping was updated as part of catchment investigations in Permit Year 5.

- Six (6) outfall locations were determined to be other stormwater assets (culvert ends, BMP inlets) and will be removed from the outfall inventory.

- 27 outfalls and 12 interconnections were added to the inventory.

These modifications did not change any additional receiving waters as listed in the NOI or Permit Year 4 impaired waters update.

Part IV: Minimum Control Measures

Please fill out all of the metrics below. If applicable, include in the description who completed the task if completed by a third party.

MCM1: Public Education

Number of educational messages completed **during this reporting period:**

Below, report on the educational messages completed **during this reporting period**. For the measurable goal(s) please describe the method/measures used to assess the overall effectiveness of the educational program.

BMP: Education for Residents - Stormwater Committee Webpage

Message Description and Distribution Method:

The Town's Stormwater Committee webpage provides links to the previous four annual reports as well as the Town's Stormwater Control Bylaws & Forms and SWMP. The webpage also includes several educational resources such as a Stormwater Pollution Prevention Guide for Homeowners, proper fertilizing education, a guide for leaf litter and yard waste disposal, and tips on reducing water pollution from snowmelt in the winter. The webpage has a link to the EPA's Nutrient Pollution webpage which outlines ways residents can reduce waterway pollution through proper pet waste and household waste disposal. The webpage also shares a link to the "Fowl Water" video from Think Blue Massachusetts.

Targeted Audience:

Responsible Department/Parties:

Measurable Goal(s):

Message Date(s):

Message Completed for: Appendix F Requirements Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes No

If yes, describe why the change was made:

BMP: Education and Outreach to Residents - Social Media

Message Description and Distribution Method:

The Boylston Highway Department Facebook page posts periodic messages to alert residents when they can drop off yard waste at the Town's shed located at the Highway Garage. The Keep Boylston Beautiful Facebook page shares posts from Pleasant View Waste Removal with their contact information to help with correct disposal of roadside litter. The Keep Boylston Beautiful Facebook page also shared information about the 2023 Spring Cleanup where volunteers collected litter off of roadsides.

Targeted Audience: Residents

Responsible Department/Parties: Highway Department

Measurable Goal(s):

The Boylston Highway Department Facebook page has 691 followers and the Keep Boylston Beautiful Facebook page has 540 followers. The 2023 Spring Cleanup collected 2,200 pounds of roadside litter and the cleanup post received 27 likes.

Message Date(s): Yard Waste posts: November 7, 2022, April 4, 2023. 2023 Spring Cleanup: April 29, 2023

Message Completed for: Appendix F Requirements Appendix H Requirements Was this message different than what was proposed in your NOI? Yes No

If yes, describe why the change was made:

BMP: Education and Outreach to Residents - Coordination with DCR

Message Description and Distribution Method:

The DCR's webpage provides brochures about household, business, and developers stormwater pollution prevention which includes topics such as impacts of car wash on water quality, construction stormwater pollution mitigation, proper disposal of unused and expires pharmaceuticals, firefighting effects on surface waters, preventing illicit stormwater discharges, and reducing winter salt use. The DCR webpage also has a "Dog Waste Public Service Announcement" video for Wachusett watershed communities which explains the effect dog waste has on waterways. DCR partners with the Wachusett watershed communities to host a regional recycling center where residents can drop off clean items for recycling for a small fee. The DCR Household Stormwater Pollution Prevention brochure has been included in mailings to all new homeowners listed in land transfers.

Targeted Audience: Residents, Businesses, Developers

Responsible Department/Parties: DCR

Measurable Goal(s):

The brochures are available at Town Hall to all visitors and online to all visitors of the DCR's webpage.

Message Date(s): Ongoing

Message Completed for: Appendix F Requirements Appendix H Requirements Was this message different than what was proposed in your NOI? Yes No

If yes, describe why the change was made:

Add an Educational Message

MCM2: Public Participation

Describe the opportunity provided for public involvement in the development of the Stormwater Management Program (SWMP) **during this reporting period:**

The Town's Stormwater Committee website provides access to the Stormwater Management Plan (SWMP) for public review and input.

Was this opportunity different than what was proposed in your NOI? Yes No

Describe any other public involvement or participation opportunities conducted **during this reporting period:**

The Town offered Fall and Spring yard waste drop off to residents on November 7, 2022 and April 4, 2023.

The Town hosted a 2023 Spring cleanup on April 29 and 30, 2023 for residents to collect and dispose of debris and trash on roadsides with the help of the volunteer organization Keep Boylston Beautiful. 2,200 lbs of debris were collected in this effort.

Boylston is a member community of the Wachusett Watershed Regional Recycling Center. The Recycling Center held a household hazardous products collection day on November 12, 2022 where residents can dispose of household hazardous waste for a small fee. The Wachusett Watershed Regional Recycling Center was open year-round on Tuesdays, Thursdays, and the 1st and 3rd Saturdays.

At a Boylston Conservation Commission meeting on July 18, 2022 the Commission's Rules and Regulations stormwater update was adopted.

The Boylston Master Plan was adopted on February 8, 2023 using feedback from the community. The Master Plan contains results and input from Community Vision Surveys utilized by the Town. The Master Plan addresses stormwater runoff in several areas. It includes information on the Town's Stormwater Control Bylaw and how this bylaw effects new development, construction, and design guidelines created to minimize stormwater runoff and pollution through structural BMPs and erosion control. Multiple sections describe low-impact design methods such as permeable paving, rain gardens, green rooftop systems, vegetated buffers, and rain barrels and cisterns and encourages the use of these techniques in new development. The plan itemizes methods for reducing impervious surface area in parking lots to minimize stormwater runoff, including utilizing shared or off-site parking. The Master Plan includes a review of the Town's 2014 MS4 Stormwater Self-Assessment.

The Master Plan also developed several goals and action items concerning the quality of Boylston water resources, such as developing a stormwater utility or enterprise fund, developing a rain barrel program, implementing an organic waste and leaf litter collection program, and developing a written Lake Phosphorous Control Plan. The public can reference the Master Plan to find a list of action taken by the Town's Stormwater Committee in the recent years, including their public education efforts, outfall inspection and mapping, and the development of their illicit discharge and stormwater control bylaws.

MCM3: Illicit Discharge Detection and Elimination (IDDE)

Sanitary Sewer Overflows (SSOs)

Check off the box below if the statement is true.

- This SSO section is NOT applicable because we DO NOT have sanitary sewer

Below, report on the number of SSOs identified in the MS4 system and removed **during this reporting period**.

Number of SSOs identified:

Number of SSOs removed:

MS4 System Mapping

Optional: Provide additional status information regarding your map:

Four days of field work were completed to refine drainage connectivity in the GIS mapping and complete dry weather catchment investigations. This included the verification of additional outfall/interconnection locations and assigning receiving waters, collection of outfall/interconnection inventory data, the addition of the interconnections GIS layer, updates to the Town-owned BMP layer, and the addition of a Pipe Ends layer to include culvert inlets/outlets and BMP inlets/outlets. Refer to the enclosed Mapping & Catchment Investigations Summary memorandum. Mapping will continue to be updated as the IDDE Program is implemented.

Screening of Outfalls/Interconnections

If conducted, please submit any outfall monitoring results from this reporting period. Outfall monitoring results should include the date, outfall/interconnection identifier, location, weather conditions at time of sampling, precipitation in previous 48 hours, field screening parameter results, and results from all analyses. Please also include the updated inventory and ranking of outfalls/interconnections based on monitoring results.

- No outfalls were inspected
- The above referenced outfall screening data is attached to the email submission
- The above referenced outfall screening data can be found at the following publicly available website:

Below, report on the number of outfalls/interconnections screened **during this reporting period**.

Number of outfalls screened:

Below, report on the percent of outfalls/interconnections screened **to date**.

Percent of outfalls screened:

Optional: Provide additional information regarding your outfall/interconnection screening:

During the mapping field work, 27 outfalls were identified and screened for dry weather flow and 1 should be revisited to sample dry weather flow observed with MassDOT. Also as part of the catchment investigation

field work, mapping was updated to include additional interconnections. 12 interconnections were screened during this effort, 2 should be revisited to sample dry weather flow observed. Outfall/interconnection screening data is included in Attachment B of the enclosed Mapping & Catchment Investigations Summary memorandum.

Catchment Investigations

If conducted, please submit all data collected during this reporting period as part of the dry and wet weather investigations. Also include the presence or absence of System Vulnerability Factors for each catchment.

- No catchment investigations were conducted
- The catchment investigation data is attached to the email submission
- The catchment investigation data can be found at the following publicly available website:

*Below, report on the number of catchment investigations completed **during this reporting period.***

Number of catchment investigations completed this reporting period:

*Below, report on the percent of catchments investigated **to date.***

Percent of total catchments investigated:

Optional: Provide any additional information for clarity regarding the catchment investigations below:

During Permit Year 5, 56 outfalls/interconnections were determined to have no key junction structures and therefore not need catchment investigations. 9 outfalls may have key junction structures; of these, catchment investigations were conducted and completed for 4 outfall catchments. Refer to the enclosed Mapping & Catchment Investigations Summary memorandum. Based on the SVF evaluation completed in 2020, there are no required SVFs in Boylston, as the Town does not have sanitary sewer. The percent complete is based on total MS4 outfalls/interconnections mapped and may change as the mapping continues to be refined.

IDDE Progress

If illicit discharges were found, please submit a document describing work conducted over this reporting period, and cumulative to date, including location source; description of the discharge; method of discovery; date of discovery; and date of elimination, mitigation, or enforcement OR planned corrective measures and schedule of removal.

- No illicit discharges were found
- The illicit discharge removal report is attached to the email submission
- The illicit discharge removal report can be found at the following publicly available website:

*Below, report on the number of illicit discharges identified and removed, along with the volume of sewage removed **during this reporting period.***

Number of illicit discharges identified:

Number of illicit discharges removed:

Estimated volume of sewage removed: gallons/day

*Below, report on the total number of illicit discharges identified and removed to date. At a minimum, report on the number of illicit discharges identified and removed **since the effective date of the permit (July 1, 2018)**.*

Total number of illicit discharges identified:

Total number of illicit discharges removed:

Optional: Provide any additional information for clarity regarding illicit discharges identified, removed, or planned to be removed below:

Employee Training

Describe the frequency and type of employee training conducted **during this reporting period:**

Highway staff were provided a refresher on outfall investigation protocols and catchment investigation procedures during field work in Permit Year 5. A formal training on the IDDE Program and Good Housekeeping Program was completed on August 17, 2023.

MCM4: Construction Site Stormwater Runoff Control

*Below, report on the construction site plan reviews, inspections, and enforcement actions completed **during this reporting period**.*

Number of site plan reviews completed:

Number of inspections completed:

Number of enforcement actions taken:

Optional: Enter any additional information relevant to construction site plan reviews, inspections, and enforcement actions:

Inspections noted above were conducted by the Town.
In addition, routine inspections of construction sites that disturb more than one acre are completed by the DCR during dry and wet weather. 2 site inspections were completed by DCR at 2 sites during Permit Year 5. Staff concentrated on visiting sites prior to storm events to identify any potential problems and request corrections before negative impacts could occur. No formal enforcement actions were necessary.

MCM5: Post-Construction Stormwater Management in New Development and Redevelopment

Ordinance or Regulatory Mechanism

Date update was completed (due in year 3):

Website of ordinance or regulatory mechanism:

As-built Drawings

*Below, report on the number of as-built drawings received **during this reporting period.***

Number of as-built drawings received:

Optional: Enter any additional information relevant to the submission of as-built drawings:

Two complete and two partial Stormwater Certificates of Compliance were submitted in Permit Year 5.

Street Design and Parking Lots Report

Below, describe any changes made or planned to be made to local regulations and guidelines based on the report completed in Year 4:

This report was developed in Permit Year 4, dated June 30, 2022, and recommended updates to the Zoning By-Laws, Subdivision Regulations, and Stormwater Control By-Law. These proposed recommendations are not due until future permit years.

Green Infrastructure Report

Below, describe progress towards making green infrastructure practices allowable based on the report completed in Year 4:

This report was developed in Permit Year 4, dated June 30, 2022, and recommended updates to the Zoning By-Laws, Subdivision Regulations, and Stormwater Control By-Law. These proposed recommendations are not due until future permit years.

Retrofit Properties Inventory

Below, list remaining permittee-owned properties that could be modified or retrofitted with BMPs to mitigate impervious areas (must maintain a minimum of 5 sites in inventory until less than 5 sites remain):

Boylston Elementary School
Manor Playground/Ball Fields
Town Common
Boylston Electric Light Department

Town Hall/Police Department Complex

Below, list all properties that have been modified or retrofitted with BMPs to mitigate impervious area that were inventoried as part of 2.3.6.d of the permit. Non-MS4 owned properties that have been modified or retrofitted with BMPs to mitigate impervious area may also be listed, but must be indicated as non-MS4.

None. The Town plans to incorporate some structural BMP(s) in the future (as needed) as noted in the enclosed LPCP.

MCM6: Good Housekeeping

Catch Basin Cleaning

*Below, report on the number of catch basins inspected and cleaned, along with the total volume of material removed from the catch basins **during this reporting period**.*

Number of catch basins inspected:

Number of catch basins cleaned:

Total volume or mass of material removed from all catch basins:

Below, report on the total number of catch basins in the MS4 system.

Total number of catch basins:

If applicable:

Report on the actions taken if a catch basin sump is more than 50% full during two consecutive routine inspections/cleaning events:

There are 412 Town-owned catch basins within Town, 275 of which are located inside the MS4 permitted area and therefore cleaned/inspected within the permit year.

The volume of material removed from catch basins includes street sweeping material removed as well.

Street Sweeping

*Report on street sweeping completed **during this reporting period** using one of the three metrics below.*

- Number of miles cleaned:
- Volume of material removed: [Select Units]
- Weight of material removed: [Select Units]

Stormwater Pollution Prevention Plan (SWPPP)

*Below, report on the number of site inspections for facilities that require a SWPPP completed **during this reporting period**.*

Number of site inspections completed:

Describe any corrective actions taken at a facility with a SWPPP:

N/A: The Town has determined that no facilities located within the MS4 require a site-specific SWPPP.

Additional Information

Monitoring or Study Results

Results from any other stormwater or receiving water quality monitoring or studies conducted during the reporting period not otherwise mentioned above, where the data is being used to inform permit compliance or permit effectiveness must be attached.

- Not applicable
- The results from additional reports or studies are attached to the email submission
- The results from additional reports or studies can be found at the following publicly available website(s):

<https://www.mass.gov/info-details/dcr-watershed-water-quality-reports#wachusett-reservoir-annual-water-quality-reports->

If such monitoring or studies were conducted on your behalf or if monitoring or studies conducted by other entities were reported to you, a brief description of the type of information gathered or received shall be described below:

DCR staff conduct monthly monitoring that captures both wet and dry weather conditions at 3 stream locations in Boylston, including Boylston Brook, French Brook, and Malagasco Brook. The parameters tested are: Alkalinity, pH, Temperature, Dissolved Oxygen, Total Nitrogen, Total Phosphorus, Total Organic Carbon, E. coli, Turbidity, Specific Conductance, Chloride, Mean Daily Discharge, Total Monthly Discharge. The DCR also conducts bacteria sampling every two weeks from these locations and monthly nutrient sampling from French Brook and Malagasco Brook. Annual water quality summary statistics and raw data are available from DCR upon request.

Additional Information

Optional: Enter any additional information relevant to your stormwater management program implementation during the reporting period. Include any BMP modifications made by the MS4 if not already discussed above. If any of the above year 5 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

Activities Planned for Next Reporting Period

Please confirm that your SWMP has been, or will be, updated to comply with all applicable permit requirements including but not limited to the year 6 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree

Annual Requirements

- Annual report submitted and available to the public
- Annual opportunity for public participation in review and implementation of SWMP
- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- Annual training to employees involved in IDDE program
- Update inventory of all known locations where SSOs have discharged to the MS4
- Continue public education and outreach program
- Update outfall and interconnection inventory and priority ranking and include data collected in connection with the dry weather screening and other relevant inspections conducted
- Implement IDDE program
- Review site plans of construction sites as part of the construction stormwater runoff control program
- Conduct site inspection of construction sites as necessary
- Inspect and maintain stormwater treatment structures
- Log catch basins cleaned or inspected
- Sweep all curbed streets at least annually
- Continue investigations of catchments associated with Problem Outfalls
- Implemented SWPPPs for all permittee owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities
- Review inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; update if necessary
- Review O&M programs for all permittee owned facilities; update if necessary
- Implement all maintenance procedures for permittee owned facilities in accordance with O&M programs
- Implement program for MS4 infrastructure maintenance to reduce the discharge of pollutants
- Enclose all road salt storage piles or facilities and implemented winter road maintenance procedures to minimize the use of road salt
- Review as-built drawings for new and redevelopment to ensure compliance with post construction bylaws, regulations, or regulatory mechanism consistent with permit requirements
- Inspect all permittee owned treatment structures (excluding catch basins)

- Identify additional permittee-owned properties that could potentially be modified or retrofitted with BMPs to reduce impervious areas so that the permittee maintains a minimum of 5 sites in their inventory, until such a time when the permittee has less than 5 sites remaining

Provide any additional details on activities planned for permit year 6 below:

The Town acknowledges the General Permit Year 6 requirements and intends to complete as many activities as possible based on funding and staff availability.

Part V: Certification of Small MS4 Annual Report 2023

40 CFR 144.32(d) Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: Title:

Signature: Date:

Digitally signed by April C. Steward
DN: c=US, E=asteward@boylston-ma.gov,
O=Town of Boylston, OU=Town Administrator,
CN=April C. Steward
Reason: I am approving this document
Date: 2023.09.28 14:52:33-04'00'

[Signatory may be a duly authorized representative]

Summary of Boylston's TMDLs and Impaired Waters ¹



Receiving Waterbody	2018/2020 Category	2018/2020 Water Quality Impairments	2022 Category	2022 Water Quality Impairments	Applicable General Permit Section	Change to Permit Requirements
Malagasco Brook (MA81-29)	5	Benthic Macroinvertebrates	5	Benthic Macroinvertebrates		None
Unnamed Tributary - Boylston Brook (MA81-34)	2		2			None
Sewall Brook (MA51-44)	5	Temperature	5	Temperature	Appendix F, Section A.II - Lake and Pond Phosphorus TMDL	None
Pout Pond (MA51122)	3		3			None
Sewall Pond (MA51191)	3		3		Appendix F, Section A.II - Lake and Pond Phosphorus TMDL	None
Newton Pond ² (MA51110)	4c	Fanwort* Non-Native Aquatic Plants*	4c	Fanwort* Non-Native Aquatic Plants*	Appendix F, Section A.II - Lake and Pond Phosphorus TMDL	None
French Brook ² (MA81-48)	2		2			None
Cold Harbor Brook ² (MA82B-18)	2		2		Appendix F, Section A.V - Assabet River Phosphorus TMDL	None
Rocky Pond (MA82095) ^{2, 3}	4c	Non-Native Aquatic Plants*	4c	Non-Native Aquatic Plants*	Appendix F, Section A.V - Assabet River Phosphorus TMDL	None
Unnamed Tributary (MA81-50) ³	2		2			None
Wachusett Reservoir (MA81147) ^{2, 3}	4a	Brittle Naiad, Najas Minor* Eurasian Water Milfoil, Myriophyllum Spicatum* Fanwort* Non-Native Aquatic Plants* Mercury in Fish Tissue (33880)	4a	Brittle Naiad, Najas Minor* Eurasian Water Milfoil, Myriophyllum Spicatum* Fanwort* Non-Native Aquatic Plants* Mercury in Fish Tissue (33880)	Appendix F, Section C - Northeast Regional Mercury TMDL	None
Total Phosphorus TMDL for the Assabet River					Appendix F, Section A.V - Assabet River Phosphorus TMDL	None
Total Phosphorus TMDL for the Northern Blackstone Lakes (Newton Pond)					Appendix F, Section A.II - Lake and Pond Phosphorus TMDL	None

¹ Any TMDL or impairments related to nutrients (nitrogen and phosphorus) apply to all receiving waterbodies within the watershed. For example, Sewall Brook and Sewall Pond are tributary to Newton Pond; therefore the Total Phosphorus TMDL for the Northern Blackstone Lakes applies to these waters.☐

² Waterbody does not receive direct discharge from the MS4. MS4 discharges to a tributary/wetland of the waterbody. Included for reference only.

³ Waterbody located outside of the urbanized area and does not receive direct discharge from the MS4. Included for reference only.

**IDDE Program Update
for Permit Year 5**

Boylston IDDE Program Update for Permit Year 5

TO: Steve Mero, Highway Superintendent

FROM: Cassandra LaRochelle, PE, Project Manager
Kate Burke, EIT, Staff Engineer

COPY: Boylston Stormwater Committee
Emily Scerbo, PE, Project Director

DATE: September 2023

Per Part 2.3.4.8 of the 2016 Small MS4 General Permit and the Town of Boylston's Illicit Discharge Detection and Elimination (IDDE) Program, the Town must investigate each catchment (i.e., the land area draining to a single outfall or interconnection based on localized topography, impervious cover, and the location of drainage structures and the connectivity of MS4 pipes) associated with an outfall or interconnection within the Town's MS4 for possible illicit discharges or connections. The source of any illicit discharge identified during dry or wet weather must be isolated, confirmed, and removed.

As described in the Town of Boylston's IDDE plan, the Town of Boylston is 100% served by septic systems. Sanitary sewage can be linked to indirect illicit discharges in the form of sewage infiltration to the storm drain via groundwater or through septic system breakouts over land. This may result in a discharge of sanitary sewage from the MS4 to receiving waters. Typical pollutants found in septic systems are nutrients, pathogens, dissolved metals, detergents, and solvents.

1 Field Work Overview

Tighe & Bond with a Highway Department staff performed four (4) days of field work on April 26, April 27, May 31, and June 21, 2023, to refine drainage connectivity in the GIS mapping and complete dry weather catchment investigations. Catchment investigations include inspection of key junction structures (typically manholes and catch basins, abbreviated KJMh) for visual and olfactory evidence of illicit connections. The investigations were completed in accordance with the written *Catchment Investigation Procedures* developed in December 2019. During the effort, if new outfalls/interconnections were located or those previously not screened were visited, dry weather outfall screening was also conducted at the outfall/interconnection.

Dry Weather: Screening and sampling shall proceed only when no more than 0.1 inches of rainfall has occurred in the previous 24-hr period and no significant snow melt is occurring.

Per Section 2.3.4.8 of the General Permit, the Town must inspect KJMh and gather catchment information on the locations of MS4 pipes, manholes, and the extent of the contributing catchment for each MS4 catchment area. *All* catchments must be investigated during dry weather conditions. Only catchments that have a higher potential for illicit discharges based on maps, historic plans and records, and other sources of data (termed "System Vulnerability Factors (SVF) in the General Permit) must undergo a wet weather investigation process. The source of any illicit discharge identified during dry or wet weather must be isolated, confirmed, and removed.

During dry weather, KJMh shall be opened and inspected systematically for visual and olfactory evidence of illicit connections. If flow is observed, it shall be sampled for ammonia,

chlorine, and surfactants. Where sampling results or visual or olfactory evidence indicate potential illicit discharges¹, the area draining to the junction manhole shall be flagged for further upstream investigation. Key junction and subsequent manhole investigations will proceed until the location of suspected illicit discharges can be isolated to a pipe segment between two manholes. If no evidence of an illicit discharge is found, catchment investigations will be considered complete upon completion of key junction manhole sampling.

In accordance with the Town's *Catchment Investigation Procedures* and the MS4 Permit Section 2.3.4.8.c.ii.1.c, outfall catchments that do not include a junction manhole (e.g., the catchment may be small and only contain a number of individual catch basins) do not require dry weather key junction manhole inspections; the dry weather screening completed at the catchment's outfall fulfills the intent of the manhole inspection requirement when screening does not indicate the presence of a potential illicit discharge. For catchments that meet these criteria and do not require wet weather screening, the catchment investigation is considered complete.

2 Mapping Improvements

In Permit Year 3, Tighe & Bond worked with Town staff to field locate outfalls. A summary memorandum dated February 2023 described the work completed. Mapping edits in Table 2-3 of that memorandum (e.g., OF-29 was a miscategorized outfall that is a culvert pipe end) were incorporated into the GIS mapping in Permit Year 5.

In 2023, we completed the following mapping improvements to satisfy requirements under Phase I, Phase II, and other recommended mapping components of the IDDE Program. These updates include the following. An updated Phase I system map is included in **Attachment A**.

Phase I

- Verified additional outfall locations and assigned receiving waters.
- Collected outfall inventory information, including:
 - location, outfall size, material, shape, condition;
 - field observations with photograph(s); and
 - documentation of the presence and characteristics of dry weather flow, if present.
- Added an Interconnections GIS layer.
- Updated Town-owned BMP layer.
- Added a Pipe Ends layer that includes culvert inlets/outlets and BMP inlets/outlets.

Phase II

- The outfalls located during field investigations have a spatial location that is within an accuracy of +/- 30 feet.
- Located unmapped drainage infrastructure: A large number of pipes, catch basins, and manholes are included and mapped throughout the Town's MS4.
- Refined catchment delineations.
- Municipal sanitary sewer system – N/A
- Municipal combined sewer system – N/A

¹ Likely septic input indicators include olfactory or visual evidence of sewage; Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water; or Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and detectable levels of chlorine.

During development of the Town's IDDE Plan, the Town ranked each outfall in accordance with General Permit Section 2.3.4.7.a. The priority rankings were updated after Permit Year 3 field work was completed. **Attachment B** provides a summary of the updated priority ranking for confirmed MS4 outfalls completed by Tighe & Bond in Permit Year 5, based on the dry weather screening results. A summary of the Town's final outfall/interconnection inventory at the conclusion of this field effort is provided in **Table 1**.

TABLE 1

Outfall/Interconnection Inventory Summary

	Change	Subtotal
Total Mapped Outfalls in NOI		44
Revised Total Number from Inventory after PY3 Field Work		32
Outfalls Added to Inventory Post-PY3 and During PY5 Field Work	+27	
Interconnections Discovered During PY5 Field Work	+12*	
Outfalls Removed from Inventory During PY5 Field Work	-6	
Revised Total Number of Outfalls in Inventory		65

* While completing mapping connectivity along the streets west of Main Street (a state-owned road), there were many instances of the Town's drainage system connecting to the state's drainage system on Main Street.

3 Dry Weather Outfall Screening

As mapping is improved during catchment investigations and other IDDE Program field work, dry weather outfall screening must be conducted at newly mapped Town-owned MS4 outfalls/interconnections. During the Permit Year 5 field work, any newly mapped MS4 outfalls/interconnections were screened as well as the two outfall locations that could not be located in past field efforts. In total, Tighe & Bond and Boylston Highway staff visited 47 MS4 outfalls/interconnections. Of these:

- 6 outfalls were removed from the outfall inventory. See Section 3.1 for more information.
- 3 of these outfalls/interconnections had dry weather flow and should be revisited to sample the flow. See Section 3.2 for more information.
- 37 outfalls/interconnections were successfully screened for dry weather flow. Of these, 7 were successfully screened at the outfall or the next upstream structure but require further action by the Town, as noted in Section 3.3.
- The possible interconnection with Shrewsbury (OF-21) was visited multiple times by Tighe & Bond and Highway staff during the Permit Year 5 field work, but connectivity could not be confirmed. See the *Boylston Outfall Inventory and Dry Weather Screening Field Effort Summary* memorandum (February 2023) and Section 3.3 for additional information.

At the conclusion of this field effort, **94% of the Town's MS4 outfalls/interconnections are considered complete for dry weather screening investigations.**

3.1 Reclassified Outfalls

As noted in **Table 1**, 6 outfalls were removed from the outfall inventory. These structures were determined to be miscategorized drainage assets or do not exist. **Table 2** contains a list of these “outfalls” Tighe & Bond reclassified in the updated drainage mapping and removed from the Town’s outfall inventory. Additional notes on these “outfalls” are provided in **Attachment B**.

TABLE 2

Reclassified Structures

Original Outfall ID	New ID	Reason
OF-4	PE-2	Pipe end – BMP inlet
OF-10A	PE-5	Pipe end – culvert
OF-19	IN-68	Inlet
OF-23	N/A	Does not exist
OF-25	PE-14	Pipe end
OF-28	IN-71	Inlet

3.2 Dry Weather Flow

Table 3 includes outfalls and interconnections that were found to have dry weather flow in the 2023 mapping effort and should be revisited as soon as possible to complete the dry weather screening effort and sample the flow.

TABLE 3

Outfalls/Interconnections to be Revisited and Sample Flow

Outfall ID	Notes
OF-48	Screened, dry weather flow present at outfall
IC-5	Screened, dry weather flow present at interconnection (catch basin CB-67)
IC-6	Screened, dry weather flow present at interconnection (manhole DMH-14)

3.3 Outfalls Requiring Further Investigation

The outfalls included in **Table 4** were successfully screened at the outfall or the next upstream structure. However, further action by the Town is recommended as noted to verify their locations, collect outfall inventory data, and update system connectivity.

TABLE 4

Outfalls Requiring Further Investigation

Outfall ID	Notes
OF-21	Revisit the area to confirm where drainage system on Cook Street towards Dewey Avenue goes and determine possible interconnection location with Shrewsbury.
OF-46	Located just south of Maple Way, collects drainage from Maple Way and Pleasant Lane. Review record plans to confirm mapping as current mapping appears to be missing structures and has unclear pipe directions. Once mapping is updated/confirmed, catchment investigation may be required if key junctions are identified.

Outfall ID	Notes
OF-47	Located just south of Maple Way, collects drainage from Maple Way and Pleasant Lane. Review record plans to confirm mapping as current mapping appears to be missing structures and has unclear pipe directions. Once mapping is updated/confirmed, catchment investigation may be required if key junctions are identified.
OF-48	Located just south of Maple Way, collects drainage from Maple Way and Pleasant Lane. Review record plans to confirm mapping as current mapping appears to be missing structures and has unclear pipe directions. Once mapping is updated/confirmed, catchment investigation may be required if key junctions are identified.
OF-71	Upstream CB screened, OF could not be accessed behind resident's fence. Recommend revisiting to locate the outfall.
OF-72	Upstream CB screened, OF could not be located. Recommend revisiting to locate the outfall.
OF-379	Located south of Central Street & Linden Street, the OF should be revisited to complete system mapping and determine if catchment investigations are required if key junctions are identified.

4 Catchment Investigation Summary

Based on the updated mapping, key junction structures (KJMHs) could be identified (if present) for 60 of the 65 outfall/interconnection systems. Five (5) outfalls (OF-21, OF-46, OF-47, OF-48, OF-379) still have system connectivity that needs verification and are considered incomplete for catchment investigations. Of the 60 outfall/interconnection systems with completed system mapping:

- 56 outfalls were identified to have no junction structures. Since Boylston does not have municipal sewer, there are no System Vulnerability Factors (SVFs) present requiring wet weather outfall screening. Therefore, these outfalls are considered complete for catchment investigations.²
- Four (4) outfalls have KJMHs and catchment investigations were completed. **Attachment C** includes a mapbook of catchment investigations completed during this field effort.³ The mapbook has notes that include:
 - Structures investigated (circled in blue) including terminal structures⁴ confirmed.
 - Callouts of field observations and other notes about access or maintenance issues.

At the conclusion of this field effort, **92% of the Town's MS4 outfalls/interconnections are considered complete for catchment investigations.**

² Per Section 2.3.4.8.c.ii, Footnote 8: *Where catchments do not contain junction manholes, the dry weather screening and sampling shall be considered as meeting the manhole inspection requirement. In these catchments, dry weather screenings that indicate potential presence of illicit discharges shall be further investigated pursuant to part 2.3.4.8.d. Investigations in these catchments may be considered complete where dry weather screening reveals no flow; no evidence of illicit discharges or SSOs is indicated through sampling results or visual or olfactory means; and no wet weather System Vulnerability Factors are identified.*

³ Note that the catchment delineations are not shown on the mapbook because they were refined after field work was completed. This information is available in the GIS.

⁴ Terminal structures: most upstream structures in the catchment area.

5 Summary Spreadsheet

Inspection and screening data are included in the enclosed Excel spreadsheet (**Attachment B**). The spreadsheet has three (3) tabs, as described below. Note that this data is also available in the Town's ArcGIS Online mapping.

- **Outfall Inventory** – A master log of all the Town's MS4 outfalls, including the updated dry weather outfall screening and key junction investigation status. The tab only includes MS4 outfalls.
- **Outfall Screening** – A log of the screening completed at each outfall, including notes on the presence of dry weather flow and possible source (if applicable) and any maintenance issues.
- **KJMH inspections** – A log of the screening completed at each KJMH, including notes on the presence of dry weather flow and possible source (if applicable), structural observations, and any maintenance issues.

6 Recommendations

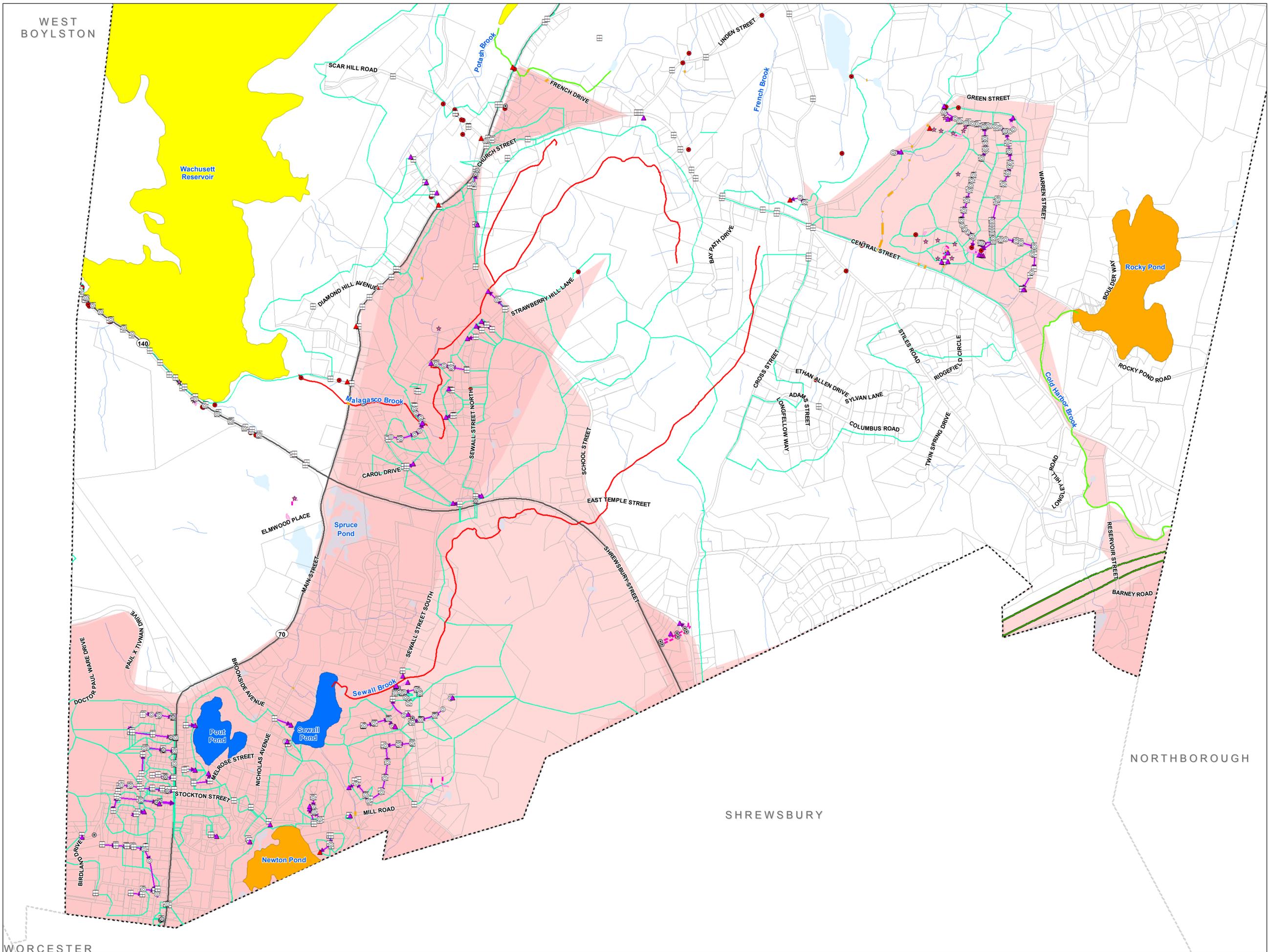
The following are recommendations for the Town, which can be completed by Town staff or a Contractor in subsequent Permit Years:

- **Complete follow-up investigations and update outfall/interconnection inventory and priority ranking.** The Town should revisit outfalls listed in **Tables 3 and 4** of this memorandum as soon as possible.
- **Continue to improve GIS mapping.** The Town should continue to improve drainage system mapping during subsequent field investigations. Connectivity between structures and outfalls should be refined and the GIS mapping updated accordingly.
- **Continue dry weather screening and catchment investigations.** The Town should complete dry weather screening for the three (3) remaining outfalls/interconnections and key junction inspections for the five (5) remaining catchment areas. These outfalls/interconnections are marked as Revisit or Incomplete in the *Outfall Inventory* tab of **Attachment B**.
- **Conduct wet weather screening.** Per Section 2.3.4.8.c.ii.1, "Where a minimum of one (1) SVF is identified based on previous information or the investigation, a wet weather investigation must be conducted at the associated outfall." Wet weather sampling is required at all outfalls and interconnections where SVFs are present. Previously identified in an SVF evaluation, the Morningdale neighborhood has historically had a higher incidence of septic system failures. However, based on recent discussions with Town staff, this optional septic related SVF should be reevaluated with the Board of Health Director.

Attachments

Attachment A	Phase I System Map
Attachment B	Outfall Inventory & Catchment Investigation Data
Attachment C	Catchment Investigation Mapbook with markups

Attachment A
Phase I System Map



PHASE 1 SYSTEM MAP

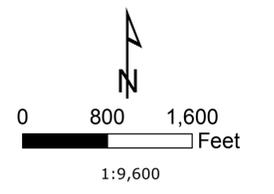
LEGEND

- MS4 Outfall
- Non MS4 Outfall
- Interconnection
- Pipe End
- Manhole
- Catch Basin
- Inlet
- Drain Line
- Culvert
- Catchment Delineation
- BMP Point
- BMP Line
- BMP Polygon
- Limited Access Highway
- Other Numbered Route
- Stream/Intermittent Stream
- Water Bodies
- MS4 Urbanized Area
- Parcel Boundary
- Town Boundary

2018/2020 Integrated List Data - 305(b)/314/303(d)

- Water Body AUs - Rivers (arcs)**
- 2 - Attaining some uses; other uses not assessed
 - 3 - No uses assessed
 - 4A - Impaired - TMDL is completed
 - 4C - Impairment not caused by a pollutant
 - 5 - Impaired - TMDL required
- Water Body AUs - Lakes, Estuaries (polygons)**
- 2 - Attaining some uses; other uses not assessed
 - 3 - No uses assessed
 - 4A - Impaired - TMDL is completed
 - 4C - Impairment not caused by a pollutant
 - 5 - Impaired - TMDL required

LOCUS MAP



NOTES

1. Stormwater Data provided by the Town of Boylston (2023).
2. Data is Provided by the Commonwealth of Massachusetts, MassGIS, MassDEP, and MassDOT.
3. Urban Area Data is from 2000 and 2010.

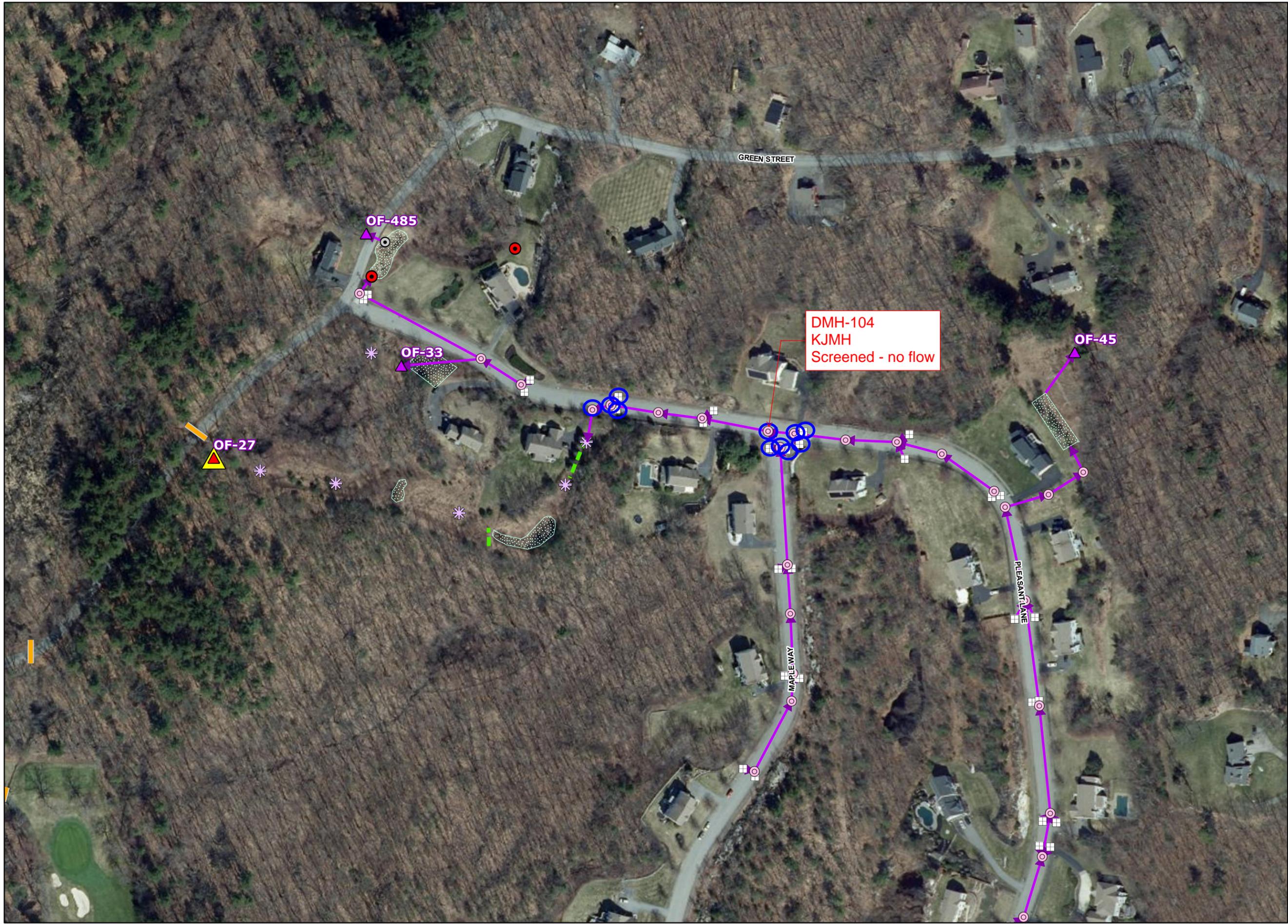
Boylston Stormwater System Overview

Boylston, Massachusetts
August 2023



Attachment B
Outfall Inventory & Catchment Investigation
Data
Delivered electronically

Attachment C
Catchment Investigation Mapbook

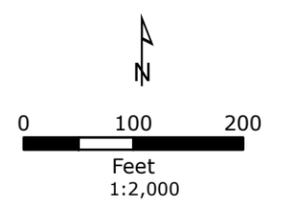
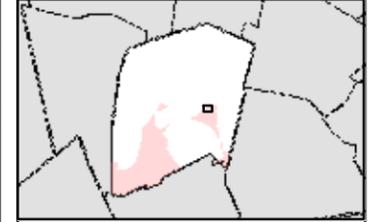


**BOYLSTON
MAPPING
IMPROVEMENTS**

LEGEND

-  MS4 Outfall
-  Non-MS4 Outfall
-  Interconnection
-  Pipe End
-  Bridges
-  Manhole
-  Catch Basin
-  Inlet
-  Drain Line
-  Culvert
-  BMP Point
-  BMP Line
-  BMP Polygon
-  Town Boundary

LOCUS MAP



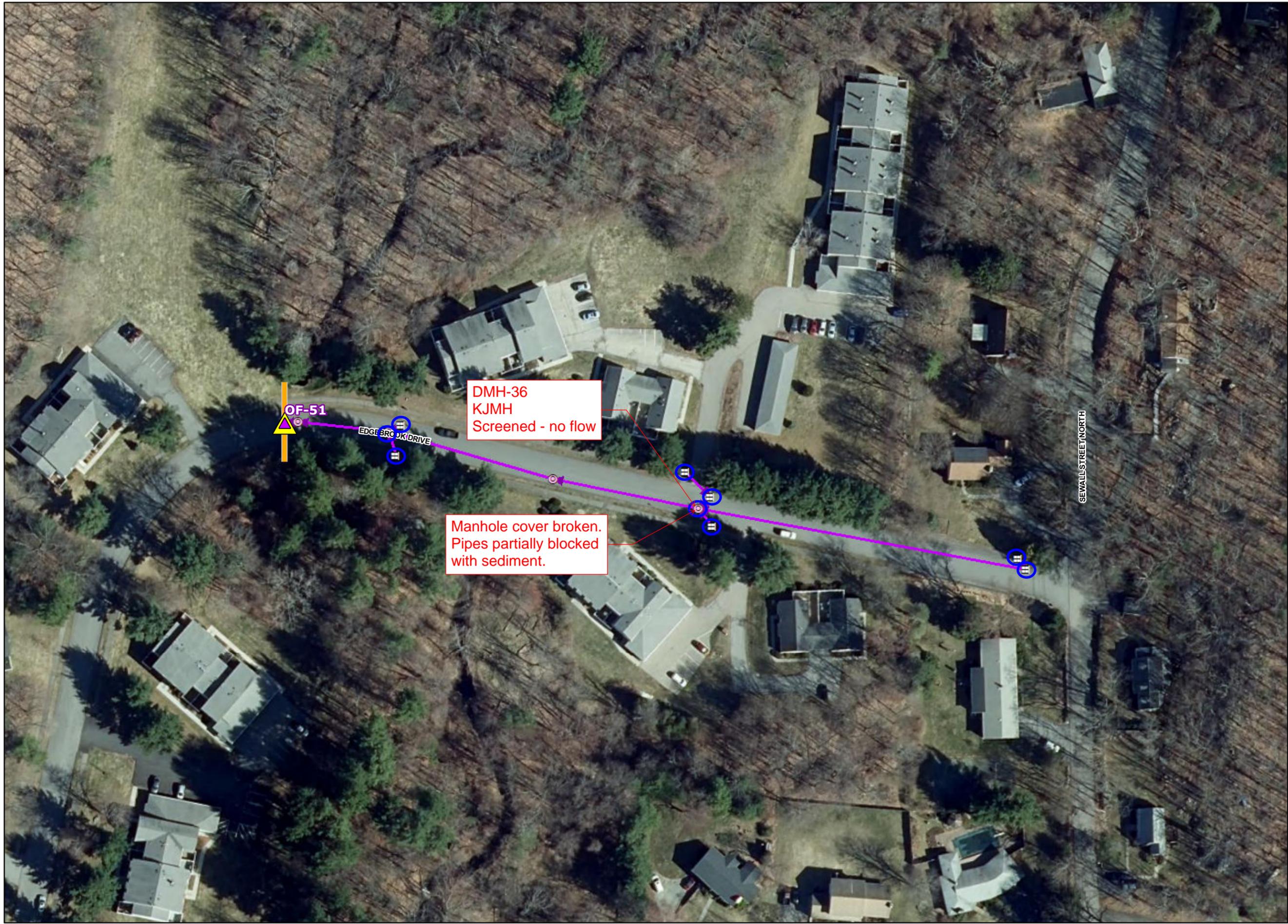
NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Boylston (2023).

Outfall ID: OF-27
Boylston Stormwater
Boylston, Massachusetts

Page 1 out of 4
 August 2023



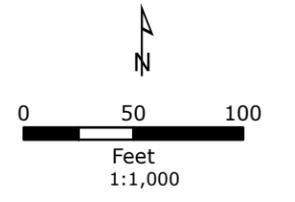
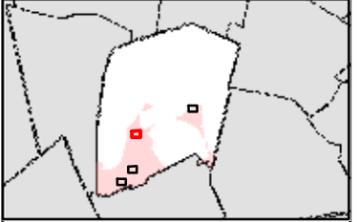


BOYLSTON CATCHMENT INVESTIGATIONS

LEGEND

- MS4 Outfall
- Non-MS4 Outfall
- Interconnection
- Pipe End
- Bridges
- Manhole
- Catch Basin
- Inlet
- Drain Line
- Culvert
- BMP Point
- BMP Line
- BMP Polygon
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Boylston (2023).

Outfall ID: OF-51
Boylston Stormwater
Boylston, Massachusetts

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 August 2023



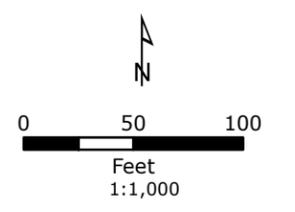
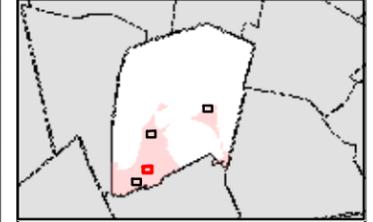


**BOYLSTON
CATCHMENT
INVESTIGATIONS**

LEGEND

- MS4 Outfall
- Non-MS4 Outfall
- Interconnection
- Pipe End
- Bridges
- Manhole
- Catch Basin
- Inlet
- Drain Line
- Culvert
- BMP Point
- BMP Line
- BMP Polygon
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Boylston (2023).

**Outfall ID: OF-64
Boylston Stormwater
Boylston, Massachusetts**

Page 3 out of 4
August 2023



DMH-141
KJM
Screened - no flow

Detergent odor,
no flow or other
indications of illicit
discharge.

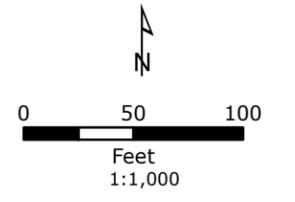
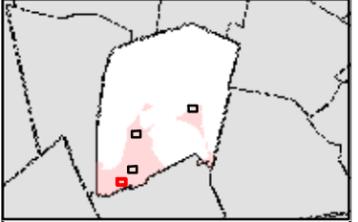


**BOYLSTON
CATCHMENT
INVESTIGATIONS**

LEGEND

- MS4 Outfall
- Non-MS4 Outfall
- Interconnection
- Pipe End
- Bridges
- Manhole
- Catch Basin
- Inlet
- Drain Line
- Culvert
- BMP Point
- BMP Line
- BMP Polygon
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Boylston (2023).

**Outfall ID: OF-3A
Boylston Stormwater
Boylston, Massachusetts**

**Page 4 out of 4
August 2023**



Appendix I

Lake Phosphorus Control Plan Record Keeping

Lake Phosphorus Control Plan (LPCP) for Newton Pond

To: Town of Boylston Stormwater Committee

FROM: Cassandra LaRoche, PE, Project Manager
Kate Burke, EIT, Staff Engineer II

COPY: Emily Scerbo, Project Director

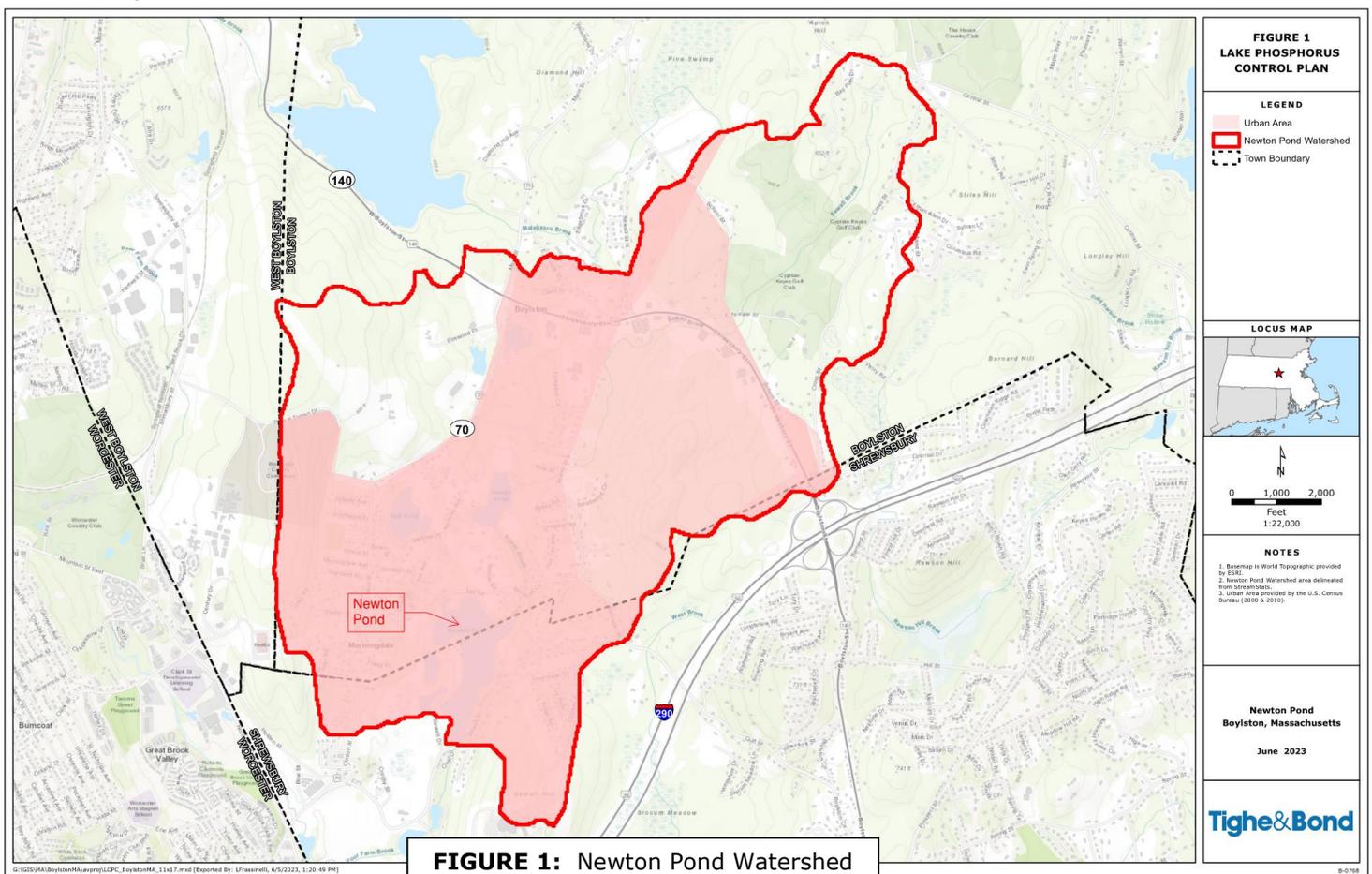
DATE: June 2023

Tighe & Bond is providing this memorandum to the Town of Boylston to document requirements of the U.S. Environmental Protection Agency's (EPA's) *General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems* (MS4GP) related to discharges to Newton Pond and its tributaries (see Part 2.2 and Appendix F of the MS4GP). This memorandum presents information regarding Newton Pond within the Blackstone River watershed affected by the MS4GP as well as the phased requirements for a Lake Phosphorus Control Plan (LPCP).

1. Overview of Newton Pond's Water Quality Concerns

As you are aware, a portion of the Town of Boylston's MS4 discharges to Newton Pond. Newton Pond occupies approximately 54 acres in both Boylston and Shrewsbury. In Boylston, the pond is located south of Mill Street, east of Main Street, and west of Sewall Street. The pond is fed by Sewall Brook. The total watershed of Newton Pond is approximately 4.29 square miles.

Figure 1, below, shows the location of Newton Pond, the approximate watershed, and Boylston's MS4 urbanized areas.



The Watershed-Based Plan for Newton Pond is enclosed, which was prepared using the Massachusetts Watershed-Based Plan toolkit and provides additional background information about the watershed and water quality concerns.

A Total Maximum Daily Load (TMDL) (a.k.a. "pollution budget") for phosphorus was developed and approved in April 2002 for select waterbodies (lakes and ponds) in the Northern Blackstone River watershed, including Newton Pond¹. Phosphorus is a nutrient that, when present at high levels in natural waterbodies, can cause overgrowth of aquatic plants, increased harmful algal blooms, decreased light in a waterbody, and decreased levels of dissolved oxygen, thereby impairing designated uses (aquatic life, fish consumption, primary and secondary contact, and aesthetics) per the Commonwealth's Surface Water Quality Standards (314 CMR 4.00). Phosphorus is a common pollutant in stormwater, with sources including leaf litter, pet waste, road salt, fertilizer, and atmospheric deposition. A variety of structural (infiltration and treatment structures) and non-structural (such as street sweeping and catch basin cleaning) Best Management Practices (BMPs) can be effective at reducing phosphorus loads from stormwater.

Per the TMDL, the lakes and ponds included "...were listed on the state "303d" list for a variety of pollutant and stressors including low dissolved oxygen, turbidity, nutrients, and overabundance of nuisance aquatic plants. All of the pollutants and stressors are indicators of nutrient enriched systems, better known as the process of eutrophication. In freshwater systems the primary nutrient known to accelerate eutrophication is phosphorus. Therefore, in order to prevent further degradation in water quality and to ensure that each lake meets state water quality standards the TMDL establishes a phosphorus limit for each lake and outlines corrective actions to achieve that goal." There was limited data collected by the Massachusetts Department of Environmental Protection (MassDEP) in July 1994 that informed the TMDL and there was no detailed study of the nutrient sources within the watersheds conducted to develop the TMDL. Thus, nutrient sources were estimated based on land use modeling within MassDEP's NPSLAKE model.

Since approval of the TMDL in early 2002, iterations of the Integrated List of Waters have consistently listed Newton Pond as being impaired by aquatic plants (non-native) and by noxious aquatic plants (macrophytes). However, in the Massachusetts Final 2016 Integrated List of Waters, approved in January 2020, the aquatic plant (macrophytes) impairment was *removed* for Newton Pond because, as stated in the List, "applicable water quality standards [are] attained; according to new assessment method." The Massachusetts Final 2018/2020 Integrated List of Waters was approved in February 2022 and added a new impairment for Fanwort, a specific species of non-native aquatic plant. The Final 2022 Integrated List of Waters was approved in May 2023 and included no changes to the Newton Pond impairments. Excerpts from the 2014, 2016, 2018/2020, and 2022 Integrated List of Waters are enclosed.

Correspondence with permit writers at EPA indicates that an update to the Integrated List of Waters list does not supersede a TMDL and a state can only change a TMDL by updating or withdrawing it. Each community remains subject to that TMDL and the conditions of the MS4GP until the applicable TMDL is updated by the State. EPA recommended coordination with MassDEP. Following consultation with MassDEP in Permit Year 4, it was confirmed that the TMDL is not scheduled to be updated at this time because MassDEP considers the TMDL to be protective versus restorative for Newton Pond, and the Town should continue efforts toward completing the required Phosphorus Control Plan.

¹ Total Maximum Daily Loads of Phosphorus for Selected Northern Blackstone Lakes (TMDL Report Number: MA51004-2002-3), <https://www.mass.gov/doc/final-tmdl-for-northern-blackstone-lakes/download>

2. EPA's Lake (& Pond) Phosphorus Reduction Requirements

To address a required phosphorus reduction of 19% in Newton Pond, the MS4GP requires Boylston to develop a written LPCP and fully implement all control measures as soon as possible but no later than June 30, 2033 (15 years from effective date of MS4GP). The LPCP includes the following elements:

- Legal analysis (completed September 28, 2020 and included in this memorandum with applicable updates)
- Funding source assessment (completed in Permit Year 2 and included in this memorandum)
- Define LPCP scope/area and calculate baseline phosphorus, allowable phosphorus load, and phosphorus reduction requirement (completed in Permit Year 4 and included in this memorandum)
- Describe planned non-structural and structural controls, operation & maintenance (O&M) program, implementation schedule, costs, funding sources assessment (update), and prepare a fully written LPCP (due Permit Year 5, included in this memorandum)

The MS4GP assumes phosphorus will first be addressed with non-structural controls (street sweeping, catch basin cleaning, and enhanced leaf litter pickup), assessing performance of those controls, and then adding structural controls and assessing performance over the remaining years through 2033.

Tighe & Bond is providing this memorandum to document compliance with Part 2.2 and Appendix F, Part A.II of the MS4GP.

3. LPCP "Legal Analysis" Requirements

According to Appendix F, as part of developing and implementing a LPCP designed to reduce the amount of phosphorus in stormwater discharges from the MS4 to Newton Pond and its tributaries, Boylston must conduct an analysis of local legal authority that may be necessary to effectively implement the entire LPCP (termed by EPA as a "legal analysis"). A description of the Phase 1 PCP Legal Analysis, as stated in the MS4GP, reads as follows:

The permittee shall develop and implement an analysis that identifies existing regulatory mechanisms available to the MS4 such as by-laws and ordinances and describes any changes to these regulatory mechanisms that may be necessary to effectively implement the LPCP. This may include the creation or amendment of financial and regulatory authorities. The permittee shall adopt necessary regulatory changes by the end of the permit term.

Tighe & Bond has prepared the LPCP Legal Analysis to identify existing regulatory mechanisms available to the Town such as bylaws and regulations and any changes to regulatory mechanisms that may be necessary to effectively implement the entire LPCP. The following includes an analysis of available non-structural, structural, and semi-structural phosphorus reduction actions; current legal authority of the Town to implement those actions on both public and private property; and future changes that would be required to fully implement the LPCP. This analysis also considers the potential use of a Stormwater Utility or Enterprise Fund that could include a credit system for private properties, as well as the potential for EPA taking Residual Designation Authority (RDA) over private properties.

3.1 Legal Authority to Implement the LPCP on Public Property

Current Authority

The Town of Boylston has authority to undertake all structural and non-structural controls on public property. Public property consists of Town owned or operated parcels including parking lots, as well as municipal roadways and the right of way. Boylston can complete street sweeping, catch basin cleaning, and although perhaps not desired, an enhanced Organic Waste and Leaf Litter Collection program, both now and in the future. Boylston has authority to install structural or semi-structural BMPs on Town-owned lands.

Changes Needed

There are no legal changes necessary to implement the LPCP on public property. However, requiring all public new and redevelopment projects to implement structural BMPs that improve water quality, beyond those required by current local code, requires buy-in from municipal officials and planning for these efforts in capital and operational budgets.

3.2 Legal Authority to Implement the LPCP on Private Property

Current Authority

Local Code:

- Stormwater Control By-Law and Conservation Commission Rules & Regulations for Stormwater: The Town's Stormwater Control By-Law² outlines the following thresholds for projects requiring a Stormwater Control Permit through the Conservation Commission:
 1. Any Subdivision requiring a Definitive Plan;
 2. Any activities that result in a land disturbance greater than one acre; and
 3. The activities that result in a land disturbance less than one acre if the project is part of a larger common plan of development which will eventually disturb greater than one acre.

As outlined in the associated Regulations³, stormwater management systems installed on new development and redevelopment sites must meet total phosphorus removal standards as outlined in the MS4GP. Additionally, the Regulations require applicants to implement structural and non-structural stormwater BMPs that are optimized to remove the pollutant(s) responsible for nearby waterbody impairments or TMDLs, which includes this Newton Pond phosphorus TMDL.

- Title V: Title V applies to subsurface sewage disposal systems (septic systems) of 10,000 gallons per day or less that must conform to 310 CMR 15.00. This includes private residential properties in Boylston. Implementation of the Town's Title V code and providing educational materials about proper maintenance to septic system owners can help reduce phosphorus loadings to local waters via leaching or failing systems.

² The Town's Stormwater Control By-Law is Article VI, Section 9 of the General By-Laws, amended 2006.

³ The Boylston Conservation Commission Rules & Regulations for Stormwater include additional requirements and were last amended 2022.

Non-Structural BMPs:

- Catch Basin Cleaning: Catch basin cleaning on private properties by a private entity can only be enforced under a local permit or Order of Conditions that requires catch basin cleaning through an O&M plan currently required for under jurisdiction of Wetlands, Stormwater, and/or Site Plan Review.
- Enhanced Sweeping: Boylston has no authority to physically sweep on private individual properties. Similar to catch basin cleaning, this could be required as an ongoing condition through an O&M Plan required by the Conservation Commission.
- Enhanced Organic Waste and Leaf Litter Collection Program: Boylston has no authority to require this work on private property; further, the Town has no control over the method of disposal on private individual properties. While Boylston does hold yard waste collection days each Fall, in order to meet the Organic Waste and Leaf Litter Collection program requirements in Appendix F, the Town must gather and remove all landscaping wastes, organic debris, and leaf litter from impervious roadways and parking lots at least once per week during the period of September 1 to December 1 of each year.

Semi-Structural BMPs⁴: There is limited opportunity to require semi-structural BMPs through current code.

Structural BMPs⁵: Structural BMPs on private properties can only be required through issuance of a local permit or Order of Conditions that requires structural BMPs as part of permit conditions and/or O&M plan currently required for projects under jurisdiction of Wetlands, Stormwater, and/or Site Plan Review. **Currently, it is impossible under local code for the Town to require a completed project to retrofit the drainage system to add structural BMPs.**

Changes Needed

To fully implement the LPCP on private property, there would need to be significant changes to local and/or state and federal permitting. Note that the Newton Pond watershed area covers only a portion of Boylston, as shown in **Figure 1**. Additionally, the Town's MS4 covers only a portion of the Newton Pond watershed. The requirements of the LPCP are only applicable in the area covered by both the watershed and the MS4.

Some changes to consider include:

1. Potentially reducing the threshold by which a project would be reviewed locally and obtain a stormwater control permit. Currently the Town threshold is one acre. Reducing this threshold would require new and redevelopment projects to comply with phosphorus reduction requirements.
2. Changes to roadway width, parking, and other requirements in zoning and subdivision that result in creation of impervious cover. Additional recommendations related to impervious cover provisions in local code are outlined in the *Town of Boylston – Local Code Assessment* memorandum completed in June 2022.

⁴ Semi-structural BMPs include impervious area disconnection through storage (e.g., rain barrels, cisterns, etc.), impervious area disconnection, conversion of impervious area to permeable pervious area, and soil amendments to enhance permeability of pervious areas

⁵ Structural BMPs include infiltration trench, infiltration basin or other surface infiltration practice, bio-filtration practice, gravel wetland system, porous pavement, wet pond or wet detention basin, dry pond or detention basin, dry water quality swale/grass swale

3. Development of a rain barrel program.
4. Developing a Stormwater Utility or Enterprise Fund and incentivizing private sites to take their own actions through a credit system.
5. Politically, it will be very challenging if not impossible to require private properties to retrofit a site without an activity that triggers local permitting. EPA Region 1 has been petitioned to take Residual Designation Authority (RDA)⁶ of various watersheds. Boylston can consider supporting a RDA petition, if desired, however, elected officials and decision makers should carefully consider balancing Town needs with the economics of private landowners.

4. LPCP Funding Source Assessment

According to Appendix F, as part of developing and implementing a LPCP designed to reduce the amount of phosphorus in stormwater discharges from the MS4 to Newton Pond and its tributaries, Boylston must conduct an assessment of possible funding sources that may be used to implement the LPCP. A description of the Phase 2 LPCP funding source assessment, as stated in the MS4GP, is as follows:

The permittee shall describe known and anticipated funding mechanisms (e.g. general funding, enterprise funding, stormwater utilities) that will be used to fund PCP implementation. The permittee shall describe the steps it will take to implement its funding plan. This may include but is not limited to conceptual development, outreach to affected parties, and development of legal authorities.

Potential funding sources discussed with the Town during development of the Legal Analysis phase of the LPCP included the following:

- Property Taxes/General Fund, including the Highway Department operational budget and capital projects as needed
- Grants/Loans (e.g., MassDEP State Revolving Fund)
- Stormwater Permit/Connection Fee(s)
- Stormwater Enterprise Fund with an impervious area-based fee structure.

The Town currently funds MS4 program compliance through a mix of Conservation Commission fees, grants and loans, and the General Fund for stormwater program compliance, including sweeping, catch basin cleaning, and planning. While the true cost of implementing the LPCP was unknown when the initial funding source assessment was completed, a mix of the above funding sources was anticipated to be used to meet the requirements on public and municipal property. Through implementation of the *Boylston Conservation Commission Rules & Regulations for Stormwater*, some of the onus of phosphorus reduction and water quality improvements shifts to private developers or property owners. The Town does not intend to establish a stormwater utility at this time. Funding sources were re-evaluated in Permit Year 5

⁶ EPA and the authorized states regulate stormwater discharges from regulated MS4s, industrial activities, and construction sites under section 402(p) of the Clean Water Act. These stormwater discharges require NPDES permits. In addition, EPA can use its "residual designation" authority under 40 CFR 122.26(a)(9)(i)(C) and (D) to require NPDES permits for other stormwater discharges or category of discharges on a case-by-case basis when it determines that:

- the discharges contribute to a violation of water quality standards,
- the discharges are a significant contributor of pollutant to federally protected surface waters, or
- controls are needed for the discharge based on wasteload allocations that are part of TMDLs that address the pollutant(s) of concern.

once the costs and schedule of the LPCP were better defined (see Section 11 of this memorandum).

5. LPCP Scope (LPCP Area)

Phase 3 of the LPCP requires the Town to determine the scope of implementation for the LPCP. An excerpt from the MS4GP for this phase is as follows:

The permittee shall indicate the area in which the permittee plans to implement the LPCP, this area is known as the "LPCP Area". The permittee must choose one of the following: 1) to implement its LPCP in the entire area within its jurisdiction discharging to the impaired waterbody (for a municipality this would be the municipal boundary) or 2) to implement its LPCP in only the urbanized area portion of its jurisdiction discharging to the impaired waterbody. If the permittee chooses to implement the LPCP in its entire jurisdiction discharging to the impaired waterbody, the permittee may demonstrate compliance with the Phosphorus Reduction Requirement and Allowable Phosphorus Load requirements applicable to it through structural and nonstructural controls on discharges that occur both inside and outside the urbanized area. If the permittee chooses to implement the LPCP in its urbanized area only discharging to the impaired waterbody, the permittee must demonstrate compliance with the Phosphorus Reduction Requirement and Allowable Phosphorus Load requirements applicable to it through structural and non-structural controls on discharges that occur within the urbanized area only.

Approximately 2,555 acres of Boylston's total 12,600 acres are located within the Newton Pond watershed. Of those 2,555 acres, 1,588 acres are also located within Boylston's Urbanized Area (i.e., the area regulated by the MS4GP). Per discussions with Town staff, the Town will implement its LPCP only in the Urbanized Area portion of its jurisdiction within the Newton Pond watershed.

6. Phosphorus Loadings

Phase 4 of the LPCP includes determining a baseline phosphorus loading and phosphorus reduction requirement within each watershed. The methodology for this analysis is included in Attachment 1 to Appendix F of the MS4GP.⁷ An excerpt from the MS4GP for this phase is as follows:

Permittees shall calculate their numerical Allowable Phosphorus Load and Phosphorus Reduction Requirement in mass/yr by first estimating their Baseline Phosphorus Load in mass/yr from its LPCP Area consistent with the methodology in Attachment 1 to Appendix F, the baseline shall only be estimated using land use phosphorus export coefficients in Attachment 1 to Appendix F and not account for phosphorus reductions resulting from implemented structural BMPs completed to date. Table F-6 contains the percent phosphorus reduction required from urban stormwater consistent with the TMDL of each impaired waterbody. The permittee shall apply the applicable required percent reduction in Table F-6 to the calculated Baseline Phosphorus Load to obtain the permittee specific Allowable Phosphorus Load. The Allowable Phosphorus Load shall then be subtracted from the Baseline Phosphorus Load to obtain the permittee specific Phosphorus Reduction Requirement in mass/yr.

⁷ Attachment 1 to Appendix F of the MS4 General Permit, *Method to Calculate Baseline Phosphorus Load (Baseline), Phosphorus Reduction Requirements and Phosphorus load increases due to development (PDEVinc)*, URL: <https://www3.epa.gov/region1/npdes/stormwater/ma/2016fpd/appendix-f-attach-1-2016-ma-sms4-gp-mod.pdf>

The **Baseline Phosphorus Load** is a measure of the annual phosphorus load discharging in stormwater from the impervious and pervious areas within the MS4 area in each watershed subject to the LPCP. Watersheds that are more densely developed and have more impervious cover will yield a higher total pollution potential (e.g., a commercial property will have a higher phosphorus loading than forested land). The calculation uses phosphorus loading rates prescribed by EPA for each land use type (based on the MassGIS database from 2005) within the watershed. The sum of loading rates for all land use categories in the watershed is the total Baseline Phosphorus Load for the watershed.

The Phosphorus Pounds Reduction, also referred to as the **Phosphorus Reduction Requirement**, represents the required reduction in annual phosphorus load in stormwater to meet the water quality goals for the impaired watershed. This is calculated by multiplying the Baseline Phosphorus Load by the Required Percent Reduction for the watershed (19% reduction for the Newton Pond watershed). This yields the Phosphorus Pounds Reduction.

The **Allowable Phosphorus Load** is the amount of phosphorus allowed in stormwater within the impaired watershed annually. It is calculated by subtracting the Phosphorus Reduction Requirement from the Baseline Phosphorus Load.

Table 1 includes a summary of the Baseline Phosphorus, Phosphorus Reduction Requirement, and Allowable Phosphorus Load for the Newton Pond watershed.

Table 1: Required Reduction of Phosphorus from Stormwater

Waterbody	Watershed Area in Boylston (acres)	Watershed Area in Town's MS4 (acres)	Baseline Phosphorus Load (lbs/yr)	Phosphorus Reduction Requirement P_{RR} (lbs/yr)	Allowable Phosphorus Load P_{allow} (lbs/yr)
Newton Pond	2,555	1,588	423	80	342

Notes:

- These loadings were calculated for the LPCP Area of Boylston's MS4 area within the watershed (including private and state roads and impervious cover) and may not be applicable to the entire watershed.
- The watershed area for Newton Pond was determined using StreamStats from USGS and differs slightly from the area provided in the enclosed Watershed Based Plan.
- The Baseline Phosphorus Load and thus Phosphorus Load Reduction Requirement were calculated including state roads. Those loadings should be adjusted to include only town and private roads.

7. Non-Structural Controls

Phase 5 of the LPCP requires the Town to determine what types of non-structural stormwater control measures can be implemented to achieve the phosphorus reduction requirement of 80 lbs/year within the LPCP Area. An excerpt from the MS4GP for this phase is as follows:

The permittee shall describe the non-structural stormwater control measures to be implemented to support the achievement of the milestones in Table F-7. The description of non-structural controls shall include the planned measures, the areas where the measures will be implemented, and the annual phosphorus reductions that are expected to result from their implementation.

As described previously in the LPCP, non-structural controls include street sweeping, catch basin cleaning, and enhanced leaf litter pickup. The Town is currently implementing two of these non-structural BMPs (street sweeping and catch basin cleaning), which can qualify for phosphorus reduction credits.

The **street sweeping credit** is calculated using Equation 2-1 from Attachment 2 to Appendix F of the MS4GP, as follows:

$$\text{Phosphorus Credit} = IA_{\text{swept}} \times \text{PLER}_{\text{IC-land use}} \times \text{PRF}_{\text{sweeping}} \times \text{AF}$$

Where:

IA_{swept} = Area of impervious surface that is swept (acres)

$\text{PLER}_{\text{IC-land use}}$ = Phosphorus load export rate for impervious cover and specified land use (lb/acre/yr)

$\text{PRF}_{\text{sweeping}}$ = Phosphorus reduction factor for sweeping based on sweeper type and frequency

AF = Annual frequency for sweeping. Note, as stated in Attachment 2 to Appendix F, "for full credit for monthly and weekly frequency, sweeping must be conducted year round. Otherwise, the credit should be adjusted proportionally based on the duration of the sweeping season (using AF factor)." Boylston sweeps 1x per year, thus the AF factor used was (1/12).

The **catch basin cleaning credit** is calculated using Equation 2-3 from Attachment 2 to Appendix F of the MS4GP, as follows:

$$\text{Phosphorus Credit} = IA_{\text{CB}} \times \text{PLER}_{\text{IC-land use}} \times \text{PRF}_{\text{CB}}$$

Where:

IA_{CB} = Impervious drainage area to catch basins (acres)

$\text{PLER}_{\text{IC-land use}}$ = Phosphorus load export rate for impervious cover and specified land use (lb/acre/yr)

PRF_{CB} = Phosphorus reduction factor for sweeping based on sweeper type and frequency. Note, Attachment 2 to Appendix F gives the PRF_{CB} for catch basin cleaning as 0.02.

The **leaf litter program credit** is calculated using Equation 2-5 from Attachment 2 to Appendix F of the MS4GP, as follows:

$$\text{Leaf Litter Credit} = IA_{\text{leaf litter}} \times \text{PLER}_{\text{IC-land use}} \times 0.05$$

Where:

$IA_{\text{leaf litter}}$ = Impervious area (acres) subject to enhanced organic waste and leaf litter collection program

$\text{PLER}_{\text{IC-land use}}$ = Phosphorus load export rate for impervious cover and specified land use (lb/acre/yr)

$\text{PRF}_{\text{sweeping}}$ = Phosphorus reduction factor for sweeping based on sweeper type and frequency

AF = 5% nutrient reduction factor for organic waste and leaf litter collection program

The Town does not currently have a leaf litter collection program, so no credits were evaluated. If the Town were to implement the program, they would receive credit for approximately 5.5 lb/year total phosphorus removal. This assumes that all town-maintained streets within the LPCP area would be a part of the program. Note that the Town offers free yard waste drop off for reuse by the community. **Table 2** presents these phosphorus reduction credits:

Table 2: Current Non-Structural Control Summary ¹

Non-Structural BMP	Average Annual Acres Managed ²	Average Annual Phosphorus-Reduction (lb/yr)	Implementation Level (frequency, sweeper type)
Street Sweeping	56.3	0.1	1x per year (spring), vacuum truck with broom
Catch Basin Cleaning	30.3	2.1	1x per year
Leaf Litter Program	N/A	N/A	N/A
TOTAL P_{NSred}	-	2.2	-

¹ Data Assumptions:

- 2016 MassGIS Land Use data layer was used.
- Street Sweeping - The nutrient reduction efficiency factor for sweeping impervious areas was assumed as the 2/year frequency with a mechanical broom, as streets are swept 1/year with vacuum assisted technology.
- Catch Basin Cleaning - Metropolitan Area Planning Council (MAPC) method for catchment delineations were used to develop catchment areas on an individual catch basin basis.

² The Average Annual Acres Managed noted in **Table 2** includes town-owned streets within the Newton Pond watershed and within the MS4 urbanized area (LPCP area), excluding state roads. This also excludes private roads because they are not maintained by the Town.

The financial and staffing resources to enhance non-structural controls are not available at this time. The Town will further evaluate the feasibility of increasing these efforts once additional assessment is completed in Permit Year 6 (see Table 5: changes in phosphorus loading since baseline and to exclude state and private roads, calculate private BMP phosphorus load reductions, calculate municipal BMP phosphorus load reductions, etc.).

8. Structural Controls

Phase 5 of the LPCP also requires the Town to determine what types of structural stormwater control measures can be implemented to achieve the phosphorus reduction requirement of 80 lbs/year within the LPCP Area and develop a priority ranking for locations within the LPCP Area where the controls can be implemented. An excerpt from the MS4GP for this phase is as follows:

The permittee shall develop a priority ranking of areas and infrastructure within the municipality for potential implementation of phosphorus control practices. The ranking shall be developed through the use of available screening and monitoring results collected during the permit term either by the permittee or another entity and the mapping required pursuant to part 2.3.4.6 of the Permit. The permittee shall also include in this prioritization a detailed assessment of site suitability for potential phosphorus control measures based on soil types and other factors. The permittee shall coordinate this activity with the requirements of part 2.3.6.8.b of the Permit. A description and the result of this priority ranking shall be included in the LPCP. The permittee shall describe the structural stormwater control measures necessary to support achievement of the milestones in Table F-7. The description of structural controls shall include the planned measures, the areas where the measures will be implemented, and the annual phosphorus reductions in units of mass/yr that are expected to result from their implementation. Structural measures to be implemented by a third party may be included in the LPCP. Annual phosphorus reduction from structural BMPs shall be calculated consistent with Attachment 3 to Appendix F.

The following sections outline potential structural stormwater controls that can be implemented within the LPCP Area for municipal and private BMPs.

8.1 Municipal BMPs

In Permit Year 4, Boylston developed a priority ranking of areas and infrastructure within the MS4 for potential implementation of structural phosphorus controls as part of the “BMP Retrofit Inventory Assessment” dated June 30, 2022, which meets the requirements of MS4GP Section 2.3.6.d. As described in Section 2.3.6.d, this priority ranking considered “municipal properties with significant impervious cover (including parking lots, buildings, and maintenance yards)” and evaluated “factors such as access for maintenance purposes; subsurface geology; depth to water table; proximity to aquifers and subsurface infrastructure including sanitary sewers and septic systems; and opportunities for public use and education.” These sites were prioritized considering site characteristics such as land use/land cover, hydrologic soil conditions, and subsurface geology. Land Use/Land Cover data was based on the MassGIS 2016 Land Use/Land Cover data layer.

The Town-owned sites identified in the Retrofit Inventory that are within Newton Pond watershed are included in **Table 3**. The assessment included descriptions of potential BMPs, as noted in the table. As part of the LPCP, an assessment was completed to determine a range of potential total phosphorus removal based on the proposed BMP type, which was estimated using EPA’s BMP Accounting and Tracking Tool (BATT).

BATT uses BMP type, storage volume, catchment area, hydrologic soil group (HSG) and infiltration rate to estimate total phosphorus reduction by the BMP. The estimated ranges for each BMP included in **Table 3** were calculated with preliminary assumptions of BMP placement, size, and catchment area. The bioretention areas were assumed to have an average size of 1,000 cubic feet and any swales were assumed to have an average size of 270 cubic feet. HSGs were determined for each parcel based on Natural Resources Conservation Service (NRCS) Soils Layer, and Rawls Rate was used for the infiltration rates. Catchment areas were estimated assuming the BMP treated the parcel area. These estimated total phosphorus removals are intended to provide a high-level idea of potential removal that could be achieved at the site; they will need to be refined based on the actual design characteristics of any BMP implemented.

Table 3: Retrofit Inventory and Potential Phosphorus Load Reductions

Property	Potential BMP(s)	Range of Potential TP Removal (lb/yr)	Priority Rank
Boylston Elementary School (200 Sewall Street)	<ul style="list-style-type: none"> Water quality swale(s) to capture runoff from parking lots and driveways Bioretention area in grass area Replace portions of existing parking areas or sidewalks with permeable pavement 	1.2 – 2.7	1
Manor Playground (0 Midland Road)	<ul style="list-style-type: none"> Maintain or replace existing swales to assist with flooding concerns Install water quality units within neighboring streets and divert street drainage to the bioretention area to be treated prior to discharging to the environment 	0.04 – 0.1	2

Property	Potential BMP(s)	Range of Potential TP Removal (lb/yr)	Priority Rank
Boylston Electric Light Department (16 Paul X Tivnan Drive)	<ul style="list-style-type: none"> • Bioretention area with sediment forebay • Install water quality unit within street and divert street drainage for treatment 	0.6 – 1.4	4
Town Hall/Police Department Complex (215-221 Main Street)	<ul style="list-style-type: none"> • Infiltration basin with sediment forebay 	1.2 – 2.7	5

Using EPA's BATT, estimated total phosphorus removal was also calculated for the existing municipal BMPs that have been installed within the LPCP Area since the MS4GP effective date, shown in **Table 4**. Available drainage plans were used to estimate BMP size. HSGs were determined from NRCS Soils Layer, and Rawls Rate was used for the infiltration rates. However, the estimated total phosphorus removal for each BMP should be further refined based on available stormwater report records that include the designed catchment areas and actual BMP storage volumes; these reports are being compiled and calculations will be refined for BMPs with readily available documentation in Permit Year 6.

Table 4: Existing BMP Estimated Phosphorus Load Reductions

Street	BMP	Range of Potential TP Removal (lb/yr)
	Infiltration Basin 1	0.7 – 1.6
Cross Street & School Street	Infiltration Basin 2	0.7 – 1.6
	Infiltration Basin 3	0.7 – 1.6
Nature's View Way	Infiltration Basin 1	0.7 – 1.6
	Infiltration Basin 2	0.7 – 1.6
Morgan Circle	Infiltration Basin	3.6 – 8.4
Smallwood Circle & Sewall Street	Infiltration Basin	2.7 – 6.4

In order to take credit for the estimated 9.8 – 22.8 lb/yr from existing municipal BMPs, the Town must certify in Annual Reports that the BMP is performing up to design specifications and is properly maintained and inspected according to manufacturer design or specifications. The MS4GP provides certification statement language as follows:

I certify under penalty of law that all source control and treatment Best Management Practices being claimed for phosphorus reduction credit have been inspected, maintained and repaired in accordance with manufacturer or design specification. I certify that, to the best of my knowledge, all Best Management Practices being claimed for a phosphorus reduction credit are performing as originally designed.

8.2 Private BMPs

Phosphorus load reductions from private structural BMPs can be used to offset the phosphorus loading in the LPCP Area if O&M of the private BMPs is certified by the private owners. Private BMPs located within the LPCP Area include:

- Rand-Whitney, Unified (160 Shrewsbury Street)
- Brookside Apartments (85 Sewall Street)
- Compass Pointe Subdivision (Compass Circle)
- FedEx (100 Pine Hill Drive)
- Frito-Lay (311 Main Street)
- Phillips Precision (141 Shrewsbury Street)
- Trailside Apartments (100 Shrewsbury Street)

These existing private BMPs should be evaluated using EPA's BATT, drainage plans, and stormwater reports to estimate phosphorus load removal.

An annual O&M report is already submitted by these private entities to the Town's Conservation Commission that reports on stormwater pollution prevention efforts (facility changes, significant spills, discharges, etc.) at the sites. The report includes dates of quarterly inspections, annual trainings, non-compliance findings, corrective actions taken for non-compliance findings, and more. It is recommended an additional category be added to require confirmation that proper O&M was followed for the on-site BMP(s), including all certification components as mentioned in Section 8.1, so the Town can take credit for the phosphorus reduction in Annual Reports to EPA.

8.3 Conclusion

If all BMP retrofit opportunities presented in **Table 3** are installed, the Town could gain up to approximately 7 lb/yr of phosphorus removal. Considering the approximate phosphorus reduction removal for existing municipal BMPs (estimated in **Table 4**), and assuming proper O&M certification, the Town currently achieves approximately 10 to 23 lb/yr of phosphorus removal. These roughly calculated phosphorus reduction removals were based on assumptions and estimations, and therefore should be refined in Permit Year 6.

Assuming the private sites with BMPs complete required O&M and include a certification in the annual O&M report next year, the Town expects a substantial increase in phosphorus removal within the LPCP Area. However, this will need to be further refined in Permit Year 6 once the certification statement is required in annual reports and phosphorus reductions are estimated.

Per the MS4GP's Equation 2 in Appendix F Part A.II, Section 2, the yearly phosphorus reduction from implemented structural controls (P_{Sred}) is estimated to be 17 to 30 lb/yr.

9. Operation & Maintenance Program

Phase 6 of the LPCP requires the Town to describe the O&M Program for structural control measures being claimed for the phosphorus reduction. An excerpt from the MS4GP for this phase is as follows:

The permittee shall establish an Operation and Maintenance Program for all structural BMPs being claimed for phosphorus reduction credit. This includes BMPs implemented to date as well as BMPs to be implemented. The Operation and Maintenance Program shall become part of the LPCP and include: (1) inspection and maintenance schedule for each BMP according to BMP design or manufacturer specification and (2) program or department responsible for BMP maintenance.

Municipal BMPs are inspected following the BMP Standard Operating Procedure (SOP) included in Boylston's Good Housekeeping Program, which is enclosed with this memorandum for reference. The SOP includes inspection and maintenance requirements for various BMP types.

Private BMPs must be maintained in accordance with the Town's Stormwater Regulations and the site's O&M Program. As required by the Regulations⁸, each O&M Program should include a maintenance agreement with "an Inspection and Maintenance Schedule for all stormwater management facilities including routine and non-routine maintenance tasks to be performed. ... All stormwater BMPs are to follow the minimum requirements for inspection and maintenance in accordance with the latest edition of the Massachusetts Stormwater Handbook." The Regulations also require submission of an annual O&M report to the Town's Conservation Commission to ensure adequate long-term operation and maintenance of stormwater management practices.

10. Implementation Schedule

Phase 7 of the LPCP requires that an initial schedule be developed for the implementation of the planned BMPs identified in this LPCP. An excerpt from the MS4GP for this phase is as follows:

An initial schedule for implementing the BMPs, including, as appropriate: funding, training, purchasing, construction, inspections, monitoring, O&M and other assessment and evaluation components of implementation. Implementation of planned BMPs must begin upon completion of the LPCP, and all non-structural BMPs shall be fully implemented within six years of the permit effective date. Where planned structural BMP retrofits or major drainage infrastructure projects are expected to take additional time to construct, the permittee shall within four years of the effective date of the permit have a schedule for completion of construction consistent with the reduction requirements in Table F-7. The permittee shall complete the implementation of its LPCP as soon as possible or at a minimum in accordance with the milestones set forth in Table F-7. The implementation schedule shall be updated as needed to support the achievement of the milestones in Table F-7, including an update in the updated written LPCP 10 years after the permit effective date.

The MS4GP assumes phosphorus will first be addressed with non-structural controls, assessing performance of those controls, and then adding structural controls and assessing performance over the remaining years through 2033. The initial implementation schedule for Boylston's LPCP is summarized in **Table 5**.

⁸ See Section 6.L) of the Stormwater Regulations for O&M Plan requirements. URL: https://www.boylston-ma.gov/sites/g/files/vyhlf4171f/uploads/boylston_rules_regulations_for_stormwater_final_1.pdf

Note that performance evaluations are noted each year. An excerpt describing these evaluations from the MS4GP is as follows:

The permittee shall evaluate the effectiveness of the LPCP by tracking the phosphorus reductions achieved through implementation of structural and non-structural BMPs and tracking increases in phosphorus loading from the LPCP Area beginning six years after the effective date of the permit. Phosphorus reductions shall be calculated consistent with Attachment 2 (nonstructural BMP performance), Attachment 3 (structural BMP performance) and Attachment 1 (reductions through land use change), to Appendix F for all BMPs implemented to date. Phosphorus load increases resulting from development shall be calculated consistent with Attachment 1 to Appendix F. Phosphorus loading increases and reductions in units of mass/yr shall be added or subtracted from the calculated Baseline Phosphorus Load to estimate the yearly phosphorous export rate from the LPCP Area in mass/yr. The permittee shall also include all information required in part II.2 of this Appendix in each performance evaluation.

Table 5: Initial Implementation Schedule

Planned Date ¹	Task
Permit Year 6 (FY2024)	<ul style="list-style-type: none"> Determine changes in phosphorus loading since baseline (2005 data) using new land use and impervious area mapping; and adjust phosphorus loadings to exclude MassDOT and DCR roads and properties. Calculate private BMP phosphorus load reductions. Update private annual O&M report template to include BMP O&M certification. Refine existing municipal BMP phosphorus load reductions and certify O&M. Performance Evaluation: Evaluate level of phosphorus loading based on municipal and private BMP phosphorus reductions estimated in Permit Year 6, plan for what remains to meet the phosphorus load reduction requirement (i.e., installation of additional structural BMPs). Based on Performance Evaluation, prepare, post for public notice, and submit to EPA and MassDEP an Alternative Schedule Request per Appendix F Part A.II, Section 4.a.
Permit Year 7 (FY2025)	<ul style="list-style-type: none"> Performance Evaluation Evaluate private BMP reporting. Design and permitting for one priority BMP retrofit from Table 3 (if required).
Permit Year 8 (FY2026)	<ul style="list-style-type: none"> Performance Evaluation Demonstrate: $P_{exp} \leq P_{allow} + (P_{RR} \times 0.80)$; where P_{exp} is the current total phosphorus export rate, P_{allow} is the Allowable Phosphorus Load (342 lb/yr), P_{RR} is the Phosphorus Reduction Requirement (80 lb/yr). $P_{exp} \leq 342 + (80 \times 0.80)$; $P_{exp} \leq 406$ lb/yr Implementation of planned structural controls (construction of one priority BMP retrofit project).
Permit Year 9 (FY2027)	<ul style="list-style-type: none"> Performance Evaluation Design and permitting for BMP retrofit (if required).
Permit Year 10 (FY2028)	<ul style="list-style-type: none"> Performance Evaluation and update LPCP Demonstrate: $P_{exp} \leq P_{allow} + (P_{RR} \times 0.60)$; where P_{exp} is the current total phosphorus export rate, P_{allow} is the Allowable Phosphorus Load (342 lb/yr), P_{RR} is the Phosphorus Reduction Requirement (80 lb/yr). OR demonstrate a reduction of P_{exp} by 30 kg/yr (whichever is greater, unless full P_{RR} has been met). $P_{exp} \leq 342 + (80 \times 0.60)$; $P_{exp} \leq 390$ lb/yr Implementation of structural controls (construction of BMP retrofit project) (if required).

Planned Date ¹	Task
Permit Year 11/12 (FY2029/2030)	<ul style="list-style-type: none"> Performance Evaluation
Permit Year 13 (FY2031)	<ul style="list-style-type: none"> Performance Evaluation Demonstrate: $P_{exp} \leq P_{allow} + (P_{RR} \times 0.30)$; where P_{exp} is the current total phosphorus export rate, P_{allow} is the Allowable Phosphorus Load (342 lb/yr), P_{RR} is the Phosphorus Reduction Requirement (80 lb/yr). $P_{exp} \leq 342 + (80 \times 0.30)$; $P_{exp} \leq 366$ lb/yr Design and permitting for BMP retrofit (<i>if required</i>).
Permit Year 14 (FY2032)	<ul style="list-style-type: none"> Performance Evaluation
Permit Year 15 (FY2033)	<ul style="list-style-type: none"> Performance Evaluation Demonstrate: $P_{exp} \leq P_{allow}$; where P_{exp} is the current total phosphorus export rate, P_{allow} is the Allowable Phosphorus Load (342 lb/yr). Implementation of structural controls (construction of BMP retrofit project) (<i>if required</i>).

¹ Note that schedules presented herein are subject to change based on further development of the LPCP and available funding for design and construction of structural controls.

11. Cost and Funding Source Assessment Update

Phase 8 of the LPCP requires that the cost and anticipated funding for implementing the LPCP be estimated (previously described in Section 4). An excerpt from the MS4GP for this phase is as follows:

The permittee shall estimate the cost for implementing its LPCP and describe known and anticipated funding mechanisms. The permittee shall describe the steps it will take to implement its funding plan. This may include but is not limited to conceptual development, outreach to affected parties, and development of legal authorities.

Based on the planned non-structural and structural controls presented herein, the following is the estimated cost for implementing the LPCP:

Table 6: Estimated LPCP Implementation Cost ¹

Number	Task	Estimated Cost ²
1	Implement Permit Year 6 tasks from Table 5	\$7,000
2	Annual performance evaluation	\$3,000
3	Design, permit, and bid a BMP retrofit project ³	\$30,000
4	Construct a BMP retrofit project ³	\$15,000 - \$30,000

¹ Costs presented herein exclude current operating budgets for Highway staff, equipment, etc. This should be evaluated as part of the overall LPCP implementation cost.

² Estimated costs are subject to change based on further development of the LPCP and during design and construction of structural controls.

³ More than one BMP retrofit project may be required to meet the phosphorus reduction goal. The plan will be established after Task 1 has been completed and refined LPCP costs are known.

The Town anticipates funding the LPCP through a mix of Conservation Commission fees, grants and loans, and the General Fund (including Highway Department operational budget and capital projects) for work on public and municipal property. Through implementation of the *Boylston Conservation Commission Rules & Regulations for Stormwater*, some of the onus of phosphorus reduction and water quality improvements shifts to private developers or property owners. If installation of a municipal structural BMP(s) is required, the Town intends to increase the annual

Conservation Commission or Highway Department operating budget to account for the cost increase and pursue potential grant opportunities or donations. If required, a capital project could be added to the annual town budget, to be funded from the General Fund.

12. Annual Reporting

Starting in Permit Year 5, the following will be included in each annual report submitted by the Town to EPA and MassDEP, as stated in Appendix F, Part A.II.2 of the MS4GP:

- a. *All non-structural control measures implemented during the reporting year along with the phosphorus reduction in mass/yr (P_{NSred}) calculated consistent with Attachment 2 to Appendix F*
- b. *Structural controls implemented during the reporting year and all previous years including:*
 - a. *Location information of structural BMPs (GPS coordinates or street address)*
 - b. *Phosphorus reduction from all structural BMPs implemented to date in mass/yr (P_{Sred}) calculated consistent with Attachment 3 to Appendix F*
 - c. *Date of last completed maintenance for each structural control*
- c. *Phosphorus load increases due to development over the previous reporting period and incurred to date (P_{DEVinc}) calculated consistent with Attachment 1 to Appendix F*
- d. *Estimated yearly phosphorus export rate (P_{exp}) from the LPCP Area calculated using Equation 2 [see Permit for equation]. Equation 2 calculates the yearly phosphorus export rate by subtracting yearly phosphorus reductions through implemented nonstructural controls and structural controls to date from the Baseline Phosphorus Load and adding loading increases incurred through development to date. This equation shall be used to demonstrate compliance with applicable phosphorus reduction milestones.*
- e. *Certification that all structural BMPs are being inspected and maintained according to the O&M program specified as part of the PCP. The certification statement shall be:*

I certify under penalty of law that all source control and treatment Best Management Practices being claimed for phosphorus reduction credit have been inspected, maintained and repaired in accordance with manufacturer or design specification. I certify that, to the best of my knowledge, all Best Management Practices being claimed for a phosphorus reduction credit are performing as originally designed.
- f. *Certification that all municipally owned and maintained turf grass areas are being managed in accordance with Massachusetts Regulation 331 CMR 31 pertaining to proper use of fertilizers on turf grasses (see <http://www.mass.gov/courts/docs/lawlib/300-399cmr/330cmr31.pdf>).*

13. Enclosures

Watershed-Based Plan - Newton Pond

Excerpts from Massachusetts Year 2014 Integrated List of Waters

Excerpts from Massachusetts Year 2016 Integrated List of Waters

Excerpts from Massachusetts Year 2018/2020 Integrated List of Waters

Excerpts from Massachusetts Year 2022 Integrated List of Waters

Excerpt from Good Housekeeping and Pollution Prevention Program for Municipal O&M: Structural BMP Inspections & Maintenance Standard Operating Procedure



WATERSHED-BASED PLAN

Newton Pond

September 28, 2020



Prepared By:

Tighe&Bond
120 Front Street, Suite 7
Worcester, MA

Prepared For:





Contents

[Element A: Nonpoint Source Pollution Causes and Sources](#)

[Element B: Pollutant Load Reductions Needed / Water Quality Goals](#)

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[Element D: Technical and Financial Assistance Needed](#)

[Element E: Public Information and Education](#)

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[References/Appendix](#)

Element A: Identify Causes of Impairment & Pollution Sources

Element A: Identify the causes and sources or groups of similar sources that need to be controlled to achieve the necessary pollutant load reductions estimated in the watershed based plan (WBP).



1. General Watershed Information

Table A-1: General Watershed Information

Watershed Name (Assessment Unit ID):	Newton Pond (MA51110)
Major Basin:	BLACKSTONE
Watershed Area (within MA):	2749.6 (ac)
Water Body Size:	54 (ac)

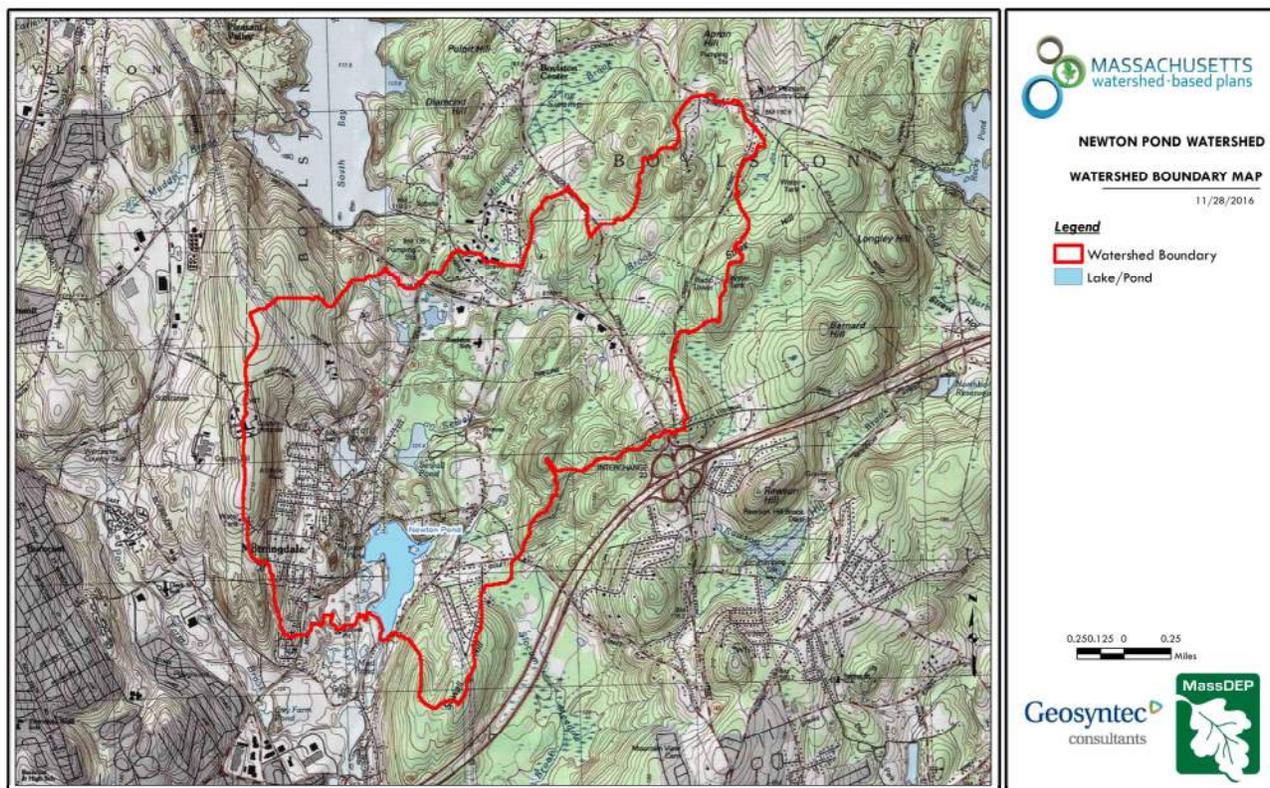


Figure A-1: Watershed Boundary Map (MassGIS, 1999; MassGIS, 2001; USGS, 2016)

Ctrl + Click on the map to view a full sized image in your web browser.

General watershed information:



2. MassDEP Water Quality Assessment Report and TMDL Review

The following reports are available:

- [Blackstone River Watershed 2003-2007 Water Quality Assessment Report](#)
- [Total Maximum Daily Loads of Phosphorus for Selected Northern Blackstone Lakes](#)

Blackstone River Watershed 2003-2007 Water Quality Assessment Report (MA51110 - Newton Pond)

Aquatic Life Use
Biology

Two non-native aquatic macrophyte species (*Myriophyllum heterophyllum* and *Cabomba caroliniana*) were observed in Newton

Pond during the 1998 synoptic surveys (MassDEP 1998).

The Aquatic Life Use is assessed as impaired for Newton Pond because of the infestation with *M. heterophyllum* and *C. caroliniana*, non-native aquatic macrophytes.

Report Recommendations:

Continue to monitor for the presence of invasive non-native aquatic vegetation and determine the extent of the infestation. Prevent spreading of invasive aquatic plants. Once the extent of the problem is determined and control practices are exercised, vigilant monitoring needs to be practiced to guard against infestations in unaffected areas, including downstream from the site, and to ensure that managed areas stay in check. A key portion of the prevention program should be posting of boat access points with signs to educate and alert lake-users to the problem and their responsibility to prevent spreading these species. The watershed/canoe/kayak groups should consider seeking volunteers to provide outreach on preventing the spread of exotic invasive plants at popular access points during the busiest weekends of the summer. The Final GEIR for Eutrophication and Aquatic Plant Management in Massachusetts (Mattson et al. 2004) should also be consulted prior to the development of any lake management plan to control non-native aquatic plant species. Plant control options can be selected from several techniques (e.g., bottom barriers, drawdown, herbicides, etc.) each of which has advantages and disadvantages that need to be addressed for the specific site. However, methods that result in fragmentation (such as cutting or raking) should not be used for many species because of the propensity for these invasive species to reproduce and spread vegetatively (from cuttings).

Total Maximum Daily Loads of Phosphorus for Selected Northern Blackstone Lakes (MA51110 - Newton Pond)

Waterbody Descriptions and Problem Assessment

Landuse information for each watershed is based on MassGIS digital maps derived from aerial photography taken in 1985. To account for changes in landuse, population growth rates are reported for towns closest to the lake. Population (census) data and estimated growth rates are from projections provided on the internet (www.umass.edu/miser/) by the Massachusetts Institute for Social and Economic Research (MISER) at the University of Massachusetts, Amherst.

Lake Description

Newton Pond Shrewsbury is approximately 48 acres in size. The watershed is 61 percent forested and about 22 percent is in rural landuse category. About 12 percent is in urban landuse and both water and wetlands accounting for the remaining 5 percent. A large gravel pit is located just to the southwest shore of the lake that may contribute sediments and nutrients to the lake. Population in the town has been described above. The pond was assessed by DEP in the summer of 1994 and the assessment comments reported: "A 22 July 1994 synoptic survey indicates that floating leaf plants of 75% to 100% density were found in patches around shores and in coves (approximately 25% of the north part of the lake). There were no floating leaf plants at the end of the lake off Sewall street at the outlet and there were moderate submerged. The possible non-native *Myriophyllum* (possibly *heterophyllum*) was present and threatens the secondary contact over 43 acres of the pond. No other data was available to make assessments."

Pollutant Sources and Background:

Unfortunately, no detailed study of the nutrient sources within the watersheds has been conducted to date. Thus, nutrient sources were estimated based on land use modeling within the DEP's NPSLAKE model as discussed below. The NPSLAKE model was designed to estimate watershed loading rates of phosphorus to lakes. A brief description of the NPSLAKE model and data inputs is given here. MassGIS digital maps of land use within the watershed were used to calculate areas of landuse within three major types: Forest, rural and urban landuse. This model takes the area in hectares of land use within each of three categories and applies an export coefficient to each to predict the annual external loading of phosphorus to the lake from the watershed. Because much of the landuse data is based on old (1985) aerial photographs, the current landuses within the watershed may be different today. This can be important in the development of the TMDL because different landuses can result in different phosphorus loadings to the waterbody in question. For many rural areas, landuse changes often result in conversion of open or agricultural lands to low density housing, in which case, the export coefficients of the NPSLAKE model are the same and no change in loading is predicted to occur. However, in cases where development changes forests to residential areas or rural landuses to urban landuses, phosphorus loadings are predicted to increase. In some cases, loadings are predicted to decrease if additional agricultural land is abandoned and forest regrowth occurs. To account for this uncertainty in landuse changes, a conservative target is chosen (see below). In addition, the MassGIS landuse maps are scheduled to be updated with current aerial photos and the TMDL can be modified as additional information is obtained.

Other phosphorus sources, such as septic system inputs of phosphorus, are estimated from an export coefficient multiplied by the number of homes within 100 meters of the lake. Point sources are estimated manually based on discharge information and site specific information for uptake and storage. Other sources such as atmospheric deposition to lakes was determined to be small and not significant in the NPSLAKE model, perhaps because lakes tend to be sinks rather than sources of phosphorus (Mattson and Isaac, 1999). For similar reasons wetlands were also not considered to be significant sources of phosphorus following (see discussion and references in Mattson and Isaac, 1999). Other, non-landuse sources of phosphorus such as inputs from waterfowl were not included, but can be added as additional information becomes available. If large numbers of waterfowl are using the lake the total phosphorus budget may be an underestimate, and control measures should be considered. Internal sources (recycling) of phosphorus is not included because it is not considered as a net external load to the lake, but rather a seasonal recycling of phosphorus already present in the lake. In cases where this internal source is large it may result in surface concentrations higher than predicted from landuse loading models and may contribute to water quality violations during the critical summer period. As additional monitoring data become available, these lakes will be assessed for internal contributions and possibly control of these sources by alum or other means. The major sources according to the land use analysis are shown for the lake of interest in the following table (originally part of Table 2 of "Total Maximum Daily Loads of Phosphorus for Selected Northern Blackstone Lakes" report, 2002).

Table Newton Pond MA51110

Total Estimated Nonpoint Source Pollution loads based on GIS Landuse

Watershed Area=	1099.8 Ha (4.2 mi ²)
Average Annual Water Load =	6704524.0 m ³ /yr (7.6 cfs)
Average Runoff=	61.0 cm/yr (24.0 in/yr)
Lake area=	19.4 Ha. (48.0ac)
Areal water loading to lake: q=	34.5 m/yr.
Homes with septic systems within 100m of lake.=	15.0
Other P inputs =	0.0 kg/yr

Estimate of annual Nonpoint Source Pollution Loads by land use

Land use	Area Ha (%)	P Load kg/yr (%)	N Load kg/yr	TSS Load kg/yr
Forest category				
Forest:	675.3 (61.4)	87.8 (26.7)	1688.3	16208.0
Rural category				
Agriculture:	34.6 (3.1)	10.4 (3.2)	304.5	10450.1
Open land:	98.9 (9.0)	29.7 (9.0)	514.3	12227.8
Residential Low:	110.0 (10.0)	33.0 (10.0)	605.1	42688.1
Urban category				
Residential High:	104.7 (9.5)	127.8 (38.9)	811.6	57702.1
Comm - Ind:	26.9 (2.4)	32.8 (10.0)	268.0	10461.7
Other Landuses				
Water:	35.8 (3.3)	0.0 (0.0)	0.0	0.0
Wetlands:	13.5 (1.2)	0.0 (0.0)	0.0	717.9
Subtotal	1099.8	321.5	4228.0	150937.9
Other P inputs:	NA	0.0 (0.0)		
15.0 Septics:	NA	7.5 (2.3)		
Total	1099.8 (100.0)	329.0(100)	4228.0	150937.9

Summary of Lake Total Phosphorus Modeling Results

Areal P loading L= 1.7 g/m²/yr.
 Reckhow (1979) model predicts lake TP = L/(11.6+1.2q)*1000 = 31.9 ppb.
 Predicted transparency = 1.5 meters.

If all land were forested, P export would be 136.6 kg/yr
 and the forested condition lake TP would be 13.3 ppb.

The NPSLAKE model assumes land uses are accurately represented by the MassGIS digital maps and that land use has not changed appreciably since the maps were compiled in 1985. The predicted loading is based on the equation:

$$P \text{ Loading (kg/yr)} = 0.5 * \text{septics} + 0.13 * \text{forest ha} + 0.3 * \text{rural ha} + 14 * (\text{urban ha})^{0.5}$$

The coefficients of the model are based on a combination of values estimated with the aid of multiple regression on a Massachusetts data set and of typical values reported in previous diagnostic/feasibility studies in Massachusetts.

All coefficients fall within the range of values reported in other studies. The overall standard error of the model is approximately 172 kg/yr. If not data is available for internal loading a rough estimate of the magnitude of this sources can be estimated by substitution of the in-lake concentration for TP. The difference in predicted loadings from this approach and the landuse approach is the best estimate of internal loading.

The NPSLAKE model also generates predictions of estimated yearly average water runoff to the lake based on total watershed area and runoff maps of Massachusetts.

Because of the general nature of the landuse loading approach, natural background is included in land use based export coefficients. Natural background can be estimated based on the forest export coefficient of 0.13 kg/ha/yr multiplied by the hectares of the watershed assuming the watershed to be entirely forested. Without site specific information regarding soil phosphorus and natural erosion rates the accuracy of this estimate would be uncertain and would add little value to the analysis. There were three NPDES point sources listed in the watersheds of some of the lakes, but further investigation revealed they are no longer official point sources, or in one case will no longer be a point source within two months. The one major industrial discharger (Worcester Spinning and Finishing) has since closed after the factory burned down and it is not expected to reopen. A small wastewater point source for Nazareth Home for Boys is currently being tied into the sewer system of the Leicester Water District with work expected to be completed within two months. The remaining NPDES site was a general permit for Browning Ferris Industries Inc (BFI) which is now covered under an EPA Multi-Sector Permit and is not considered as a point source in this analysis but is included as industrial (urban) landuse in the model.

Reckhow, K.H. 1979. Uncertainty Analysis Applied to Vollenweider's Phosphorus Loading Criteria. J. Water Poll. Control Fed. 51(8):2123-2128

Mattson, M.D. and R.A. Isaac. 1999. Calibration of Phosphorus Export coefficients for Total Maximum Daily Loads of Massachusetts Lakes. Lake and Reservoir Man. 15(3):209-219.

Reckhow, K.H., M.N. Beaulac, J.T. Simpson. 1980. Modeling Phosphorus Loading and Lake Response Under Uncertainty: A Manual and Compilation of Export Coefficients. U.S.E.P.A. Washington DC. EPA 440/5-80-011.

Literature review information:



3. Water Quality Impairments

Known water quality impairments, as documented in the Massachusetts Department of Environmental Protection (MassDEP) 2012 Massachusetts Integrated List of Waters, are listed below. Impairment categories from the Integrated List are as follows:

Table A-2: 2012 MA Integrated List of Waters Categories

Integrated List Category	Description
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 calculation of a Total Maximum Daily Load (TMDL), including: 4a: TMDL is completed 4b: Impairment controlled by alternative pollution control requirements 4c: Impairment not caused by a pollutant - TMDL not required

Table A-3: Water Quality Impairments

Assessment Unit ID	Waterbody	Integrated List Category	Designated Use	Impairment Cause	Impairment Source
MA51110	Newton Pond	4A	Aesthetic	Aquatic Plants (Macrophytes)	Source Unknown
MA51110	Newton Pond	4A	Fish, other Aquatic Life and Wildlife	Non-Native Aquatic Plants	Introduction of Non-native Organisms (Accidental or Intentional)
MA51110	Newton Pond	4A	Primary Contact Recreation	Aquatic Plants (Macrophytes)	Source Unknown
MA51110	Newton Pond	4A	Secondary Contact Recreation	Aquatic Plants (Macrophytes)	Source Unknown

4. Water Quality Goals

Water quality goals may be established for a variety of purposes, including the following:

- a.) For **water bodies with known impairments**, a [Total Maximum Daily Load](#) (TMDL) is established by MassDEP and the United States Environmental Protection Agency (USEPA) as the maximum amount of the target pollutant that the waterbody can receive and still safely meet water quality standards. If the waterbody has a TMDL for total phosphorus (TP) or total nitrogen (TN), or total suspended solids (TSS), that information is provided below and included as a water quality goal.
- b.) For **water bodies without a TMDL for total phosphorus** (TP), a default water quality goal for TP is based on target concentrations established in the [Quality Criteria for Water](#) (USEPA, 1986) (also known as the “Gold Book”). The Gold Book states that TP should not exceed 50 ug/L in any stream at the point where it enters any lake or reservoir, nor 25 ug/L within a lake or reservoir. For the purposes of developing WBPs, MassDEP has adopted 50 ug/L as the TP target for all streams at their downstream discharge point, regardless of which type of water body the stream discharges to.
- c.) [Massachusetts Surface Water Quality Standards](#) (314 CMR 4.00, 2013) prescribe the minimum water quality criteria required to sustain a waterbody’s designated uses. Newton Pond is a Class 'B' waterbody. The water quality goal for fecal coliform bacteria is based on the Massachusetts Surface Water Quality Standards.

Table A-4: Surface Water Quality Classification by Assessment Unit ID

Assessment Unit ID	Waterbody	Class
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MA51110	Newton Pond	B
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d.) **Other water quality goals set by the community** (e.g., protection of high quality waters, in-lake phosphorus concentration goal to reduce recurrence of cyanobacteria blooms, etc.).

Table A-5: Water Quality Goals

Pollutant	Goal	Source																																																																																					
Total Phosphorus (TP)	<p>The following table (originally on page 4 of “Total Maximum Daily Loads of Phosphorus for Selected Northern Blackstone Lakes” report, 2002) lists the lakes that were evaluated, their predicted total phosphorus concentration and load using the landuse model and selected target concentration and loads necessary to achieve water quality standards. The results indicate that current phosphorus loads to these lakes need to be reduced on an average of 27% and range from a low of about 2% (Eddy Pond, Auburn, MA) to a high of 68% (Southwick Pond, Leicester, MA).</p> <table border="1"> <thead> <tr> <th>WBID</th> <th>Lake Name</th> <th>Predicted TP (ppb)</th> <th>Predicted load (kg/yr)</th> <th>Target (ppb)</th> </tr> </thead> <tbody> <tr> <td>MA51004</td> <td>Auburn Pond, Auburn</td> <td>34</td> <td>717</td> <td></td> </tr> <tr> <td>MA51010</td> <td>Brierly Pond, Millbury</td> <td>30</td> <td>278</td> <td></td> </tr> <tr> <td>MA51032</td> <td>Curtis Pond North, Worcester</td> <td>26</td> <td>1644</td> <td></td> </tr> <tr> <td>MA51033</td> <td>Curtis Pond South, Worcester</td> <td>27</td> <td>1609</td> <td></td> </tr> <tr> <td>MA51039</td> <td>Dorothy Pond, Millbury</td> <td>26</td> <td>366</td> <td></td> </tr> <tr> <td>MA51043</td> <td>Eddy Pond, Auburn</td> <td>15</td> <td>123</td> <td></td> </tr> <tr> <td>MA51056</td> <td>Green Hill Pond, Worcester</td> <td>44.2</td> <td>75</td> <td></td> </tr> <tr> <td>MA51071</td> <td>Howe Reservoir, Millbury</td> <td>50.9</td> <td>104</td> <td></td> </tr> <tr> <td>MA51078</td> <td>Jordan Pond, Shrewsbury</td> <td>67.6</td> <td>99</td> <td></td> </tr> <tr> <td>MA51105</td> <td>Mill Pond Shrewsbury</td> <td>46.5</td> <td>275</td> <td></td> </tr> <tr> <td>MA51110</td> <td>Newton Pond Shrewsbury</td> <td>31.9</td> <td>330</td> <td></td> </tr> <tr> <td>MA51120</td> <td>Pondville Pond, Auburn</td> <td>28.1</td> <td>453</td> <td></td> </tr> <tr> <td>MA51156</td> <td>Smiths Pond, Leicester</td> <td>30</td> <td>583</td> <td></td> </tr> <tr> <td>MA51157</td> <td>Southwick Pond, Leicester</td> <td>30.4</td> <td>108</td> <td></td> </tr> <tr> <td>MA51160</td> <td>Stoneville Pond, Auburn</td> <td>26.7</td> <td>970</td> <td></td> </tr> <tr> <td>MA51196</td> <td>Shirley Street Pond, Shrewsbury,</td> <td>37.7</td> <td>670</td> <td></td> </tr> </tbody> </table>	WBID	Lake Name	Predicted TP (ppb)	Predicted load (kg/yr)	Target (ppb)	MA51004	Auburn Pond, Auburn	34	717		MA51010	Brierly Pond, Millbury	30	278		MA51032	Curtis Pond North, Worcester	26	1644		MA51033	Curtis Pond South, Worcester	27	1609		MA51039	Dorothy Pond, Millbury	26	366		MA51043	Eddy Pond, Auburn	15	123		MA51056	Green Hill Pond, Worcester	44.2	75		MA51071	Howe Reservoir, Millbury	50.9	104		MA51078	Jordan Pond, Shrewsbury	67.6	99		MA51105	Mill Pond Shrewsbury	46.5	275		MA51110	Newton Pond Shrewsbury	31.9	330		MA51120	Pondville Pond, Auburn	28.1	453		MA51156	Smiths Pond, Leicester	30	583		MA51157	Southwick Pond, Leicester	30.4	108		MA51160	Stoneville Pond, Auburn	26.7	970		MA51196	Shirley Street Pond, Shrewsbury,	37.7	670		Total Maximum Daily Loads of Phosphorus for Selected Northern Blackstone Lakes
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Bacteria	<p>Class B Standards</p> <ul style="list-style-type: none"> Public Bathing Beaches: For E. coli, geometric mean of 5 most recent samples shall not exceed 126 colonies/ 100 ml and no single sample during the bathing season shall exceed 235 colonies/100 ml. For enterococci, geometric mean of 5 most recent samples shall not exceed 33 colonies/100 ml and no single sample during bathing season shall exceed 61 colonies/100 ml; Other Waters and Non-bathing Season at Bathing Beaches: For E. coli, geometric mean of samples from most recent 6 months shall not exceed 126 colonies/100 ml (typically based on min. 5 samples) and no single sample shall exceed 235 colonies/100 ml. For enterococci, geometric mean of samples from most recent 6 	Massachusetts Surface Water Quality Standards (314 CMR 4.00,																																																																																					

months shall not exceed 33 colonies/100 ml, and no single sample shall exceed 61 colonies/100 ml.

[2013\)](#)

Note: There may be more than one water quality goal for bacteria due to different Massachusetts Surface Water Quality Standards Classes for different Assessment Units within the watershed.

5. Land Use Information

A. Watershed Land Uses

Table A-6: Watershed Land Uses

Land Use	Area (acres)	% of Watershed
Agriculture	155.1	5.6
Commercial	75.3	2.7
Forest	1746.78	63.5
High Density Residential	73.2	2.7
Highway	5.16	0.2
Industrial	69.55	2.5
Low Density Residential	316.49	11.5
Medium Density Residential	93.02	3.4
Open Land	146.37	5.3
Water	68.66	2.5

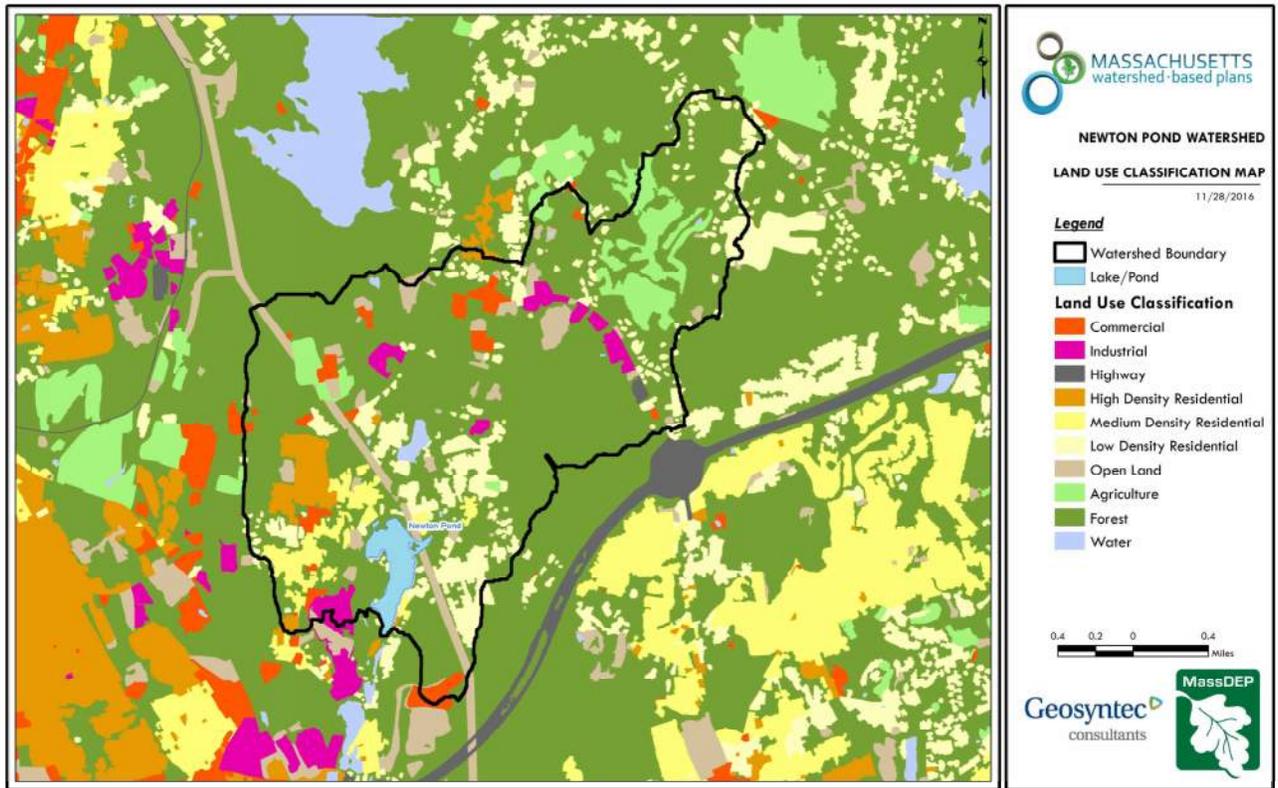


Figure A-2: Watershed Land Use Map (MassGIS, 2009b; MassGIS, 1999; MassGIS, 2001; USGS, 2016)

Ctrl + Click on the map to view a full sized image in your web browser.

B. Watershed Impervious Cover

There is a strong link between impervious land cover and stream water quality. Impervious cover includes land surfaces that prevent the infiltration of water into the ground, such as paved roads and parking lots, roofs, basketball courts, etc.

Impervious areas that are directly connected (DCIA) to receiving waters (via storm sewers, gutters, or other impervious drainage pathways) produce higher runoff volumes and transport stormwater pollutants with greater efficiency than disconnected impervious cover areas which are surrounded by vegetated, pervious land. Runoff volumes from disconnected impervious cover areas are reduced as stormwater infiltrates when it flows across adjacent pervious surfaces.

An estimate of DCIA for the watershed was calculated based on the Sutherland equations. USEPA provides guidance (USEPA, 2010) on the use of the Sutherland equations to predict relative levels of connection and disconnection based on the type of stormwater infrastructure within the **total impervious area (TIA)** of a watershed. Within each subwatershed, the total area of each land use were summed and used to calculate the percent TIA.

Estimated TIA in the watershed: 12.1 %

Estimated DCIA in the watershed: 8.9 %

The relationship between TIA and water quality can generally be categorized as follows (Schueler et al. 2009):

Table A-7: Relationship between Total Impervious Area (TIA) and water quality (Schueler et al. 2009)

% Watershed Impervious Cover	Stream Water Quality
0-10%	Typically high quality, and typified by stable channels, excellent habitat structure, good to excellent water quality, and diverse communities of both fish and aquatic insects.
11-25%	These streams show clear signs of degradation. Elevated storm flows begin to alter stream geometry, with evident erosion and channel widening. Stream banks become unstable, and physical stream habitat is degraded. Stream water quality shifts into the fair/good category during both storms and dry weather periods. Stream biodiversity declines to fair levels, with most sensitive fish and aquatic insects disappearing from the stream.
26-60%	These streams typically no longer support a diverse stream community. The stream channel becomes highly unstable, and many stream reaches experience severe widening, downcutting, and streambank erosion. Pool and riffle structure needed to sustain fish is diminished or eliminated and the substrate can no longer provide habitat for aquatic insects, or spawning areas for fish. Biological quality is typically poor, dominated by pollution tolerant insects and fish. Water quality is consistently rated as fair to poor, and water recreation is often no longer possible due to the presence of high bacteria levels.
>60%	These streams are typical of “urban drainage”, with most ecological functions greatly impaired or absent, and the stream channel primarily functioning as a conveyance for stormwater flows.

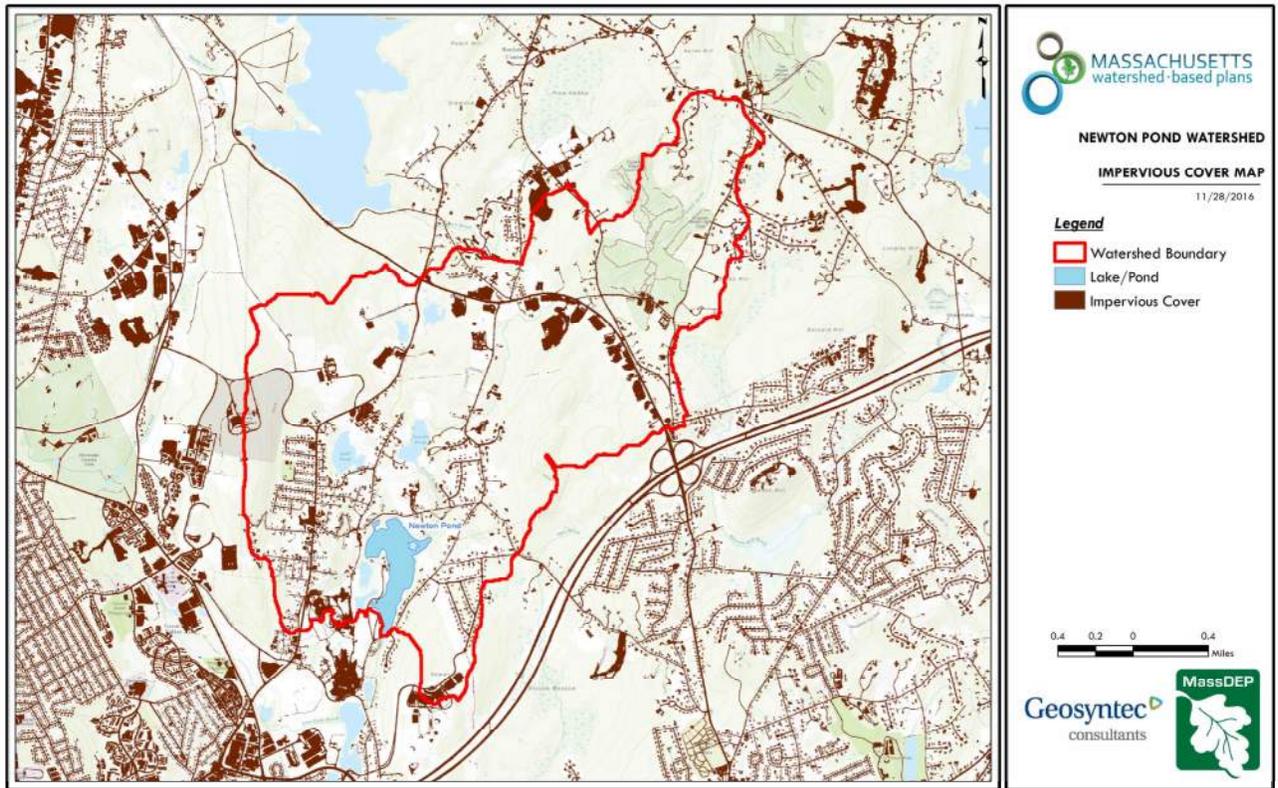


Figure A-3: Watershed Impervious Surface Map (MassGIS, 2009b; MassGIS, 1999; MassGIS, 2001; USGS, 2016)

Ctrl + Click on the map to view a full sized image in your web browser.

Land use information:



6. Pollutant Loading

The land use data (MassGIS, 2009b) was intersected with impervious cover data (MassGIS, 2009a) and United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soils data (USDA NRCS and MassGIS, 2012) to create a combined land use/land cover grid. The grid was used to sum the total area of each unique land use/land cover type.

The amount of DCIA was estimated using the Sutherland equations as described above and any reduction in impervious area due to disconnection (i.e., the area difference between TIA and DCIA) was assigned to the pervious D soil category for that land use to simulate that some infiltration will likely occur after runoff from disconnected impervious surfaces passes over pervious surfaces.

Pollutant loading for key nonpoint source pollutants in the watershed was estimated by multiplying each land use/cover type area by its pollutant load export rate (PLER). The PLERs are an estimate of the annual total pollutant load exported via stormwater from a given unit area of a particular land cover type. The PLER values for TN, TP and TSS were obtained from USEPA (Voorhees, 2016b) (see documentation provided in Appendix A) as follows:

$$L_n = A_n * P_n$$

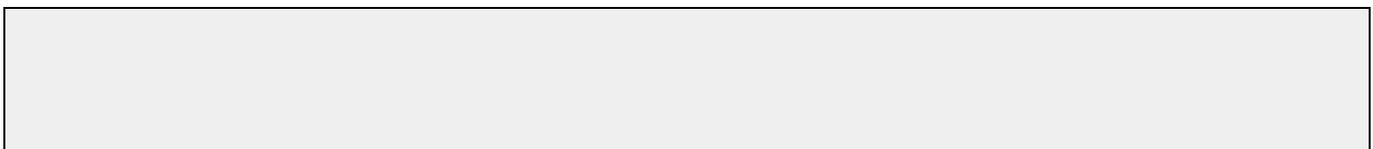
Where L_n = Loading of land use/cover type n (lb/yr); A_n = area of land use/cover type n (acres); P_n = pollutant load export rate of land use/cover type n (lb/acre/yr)

Table A-8: Estimated Pollutant Loading for Key Nonpoint Source Pollutants

Land Use Type	Pollutant Loading ¹		
	Total Phosphorus (TP) (lbs/yr)	Total Nitrogen (TN) (lbs/yr)	Total Suspended Solids (TSS) (tons/yr)
Agriculture	90	569	10.05
Commercial	82	709	8.87
Forest	273	1,477	53.37
High Density Residential	49	333	4.94
Highway	5	41	2.59
Industrial	68	587	7.35
Low Density Residential	97	947	13.39
Medium Density Residential	29	236	3.38
Open Land	58	498	11.56
TOTAL	751	5,396	115.49

¹These estimates do not consider loads from point sources or septic systems.

Pollutant loading information:



Element B: Determine Pollutant Load Reductions Needed to Achieve Water Quality Goals

Element B of your WBP should:

Determine the pollutant load reductions needed to achieve the water quality goals established in Element A. The water quality goals should incorporate Total Maximum Daily Load (TMDL) goals, when applicable. For impaired water bodies, a TMDL establishes pollutant loading limits as needed to attain water quality standards.



1. Estimated Pollutant Loads

Table 1 lists estimated pollutant loads for the following primary nonpoint source (NPS) pollutants: total phosphorus (TP), total nitrogen (TN), total suspended solids (TSS). These estimated loads are based on the pollutant loading analysis presented in Section 4 of Element A.

2. Water Quality Goals

Water quality goals for primary NPS pollutants are listed in Table 1 based on the following:

- TMDL water quality goals (if a TMDL exists for the water body);
- For all water bodies, including impaired waters that have a pathogen TMDL, the water quality goal for bacteria is based on the [Massachusetts Surface Water Quality Standards](#) (314 CMR 4.00, 2013) that apply to the Water Class of the selected water body.
- If the water body does not have a TMDL for TP, a default target TP concentrations is provided which is based on guidance provided by the USEPA in [Quality Criteria for Water \(1986\)](#), also known as the “Gold Book”. Because there are no similar default water quality goals for TN and TSS, goals for these pollutants are provided in Table 1 only if a TMDL exists or alternate goal(s) have been optionally established by the WBP author.
- According to the USEPA Gold Book, total phosphorus should not exceed 50 ug/L in any stream at the point where it enters any lake or reservoir. The water quality loading goal was estimated by multiplying this target maximum phosphorus concentration (50 ug/L) by the estimated annual watershed discharge for the selected water body. To estimate the annual watershed discharge, the mean flow was used, which was estimated based on United States Geological Survey (USGS) “Runoff Depth” estimates for Massachusetts (Cohen and Randall, 1998). Cohen and Randall (1998) provide statewide estimates of annual Precipitation (P), Evapotranspiration (ET), and Runoff (R) depths for the northeastern U.S. According to their method, Runoff Depth (R) is defined as all water reaching a discharge point (including surface and groundwater), and is calculated by:

$$P - ET = R$$

A mean Runoff Depth R was determined for the watershed by calculating the average value of R within the watershed boundary. This method includes the following assumptions/limitations:

- a. For lakes and ponds, the estimate of annual TP loading is averaged across the entire watershed. However, a given lake or reservoir may have multiple tributary streams, and each stream may drain land with vastly different characteristics. For example, one tributary may drain a highly developed residential area, while a second tributary may drain primarily forested and undeveloped land. In this case, one tributary may exhibit much higher phosphorus concentrations than the average of all streams in the selected watershed.
- b. The estimated existing loading value only accounts for phosphorus due to stormwater runoff. Other sources of phosphorus may be relevant, particularly phosphorus from on-site wastewater treatment (septic systems) within close proximity to receiving waters. Phosphorus does not typically travel far within an aquifer, but in watersheds that are primarily unsewered, septic systems and other similar groundwater-related sources may contribute a significant load of phosphorus that is not captured in this analysis. As such, it is important to consider the estimated TP loading as "the expected TP loading from stormwater sources."

Table B-1: Pollutant Load Reductions Needed

Pollutant	Existing Estimated Total Load	Water Quality Goal	Required Load Reduction
Total Phosphorus	See TMDL information below	See TMDL information below	See TMDL information below
Total Nitrogen	5396 lbs/yr		
Total Suspended Solids	115 ton/yr		
Bacteria	<i>MSWQS for bacteria are concentration standards (e.g., colonies of fecal coliform bacteria per 100 ml), which are difficult to predict based on estimated annual loading.</i>	<p>Class B. Class B Standards</p> <ul style="list-style-type: none"> • Public Bathing Beaches: For E. coli, geometric mean of 5 most recent samples shall not exceed 126 colonies/ 100 ml and no single sample during the bathing season shall exceed 235 colonies/100 ml. For enterococci, geometric mean of 5 most recent samples shall not exceed 33 colonies/100 ml and no single sample during bathing season shall exceed 61 colonies/100 ml; • Other Waters and Non-bathing Season at Bathing Beaches: For E. coli, geometric mean of samples from most recent 6 months shall not exceed 126 colonies/100 ml (typically based on min. 5 samples) and no single sample shall exceed 235 colonies/100 ml. For 	

		<p style="text-align: center;">enterococci, geometric mean of samples from most recent 6 months shall not exceed 33 colonies/100 ml, and no single sample shall exceed 61 colonies/100 ml.</p>	
--	--	--	--

TMDL Pollutant Load Criteria

Total Phosphorus (MA51110)																														
<p>Loading Capacity Modeling Assumptions, Key Input, Calibration and Validation: There are no numeric models available to predict the growth of rooted aquatic macrophytes as a function of nutrient loading estimates, therefore the control of nuisance aquatic plants is based on best professional judgment. However, the goal of the TMDL is to prevent future eutrophication from occurring, thus the nutrient loading still needs to be controlled. To control eutrophication, the Carlson Trophic State Index (TSI) predicts a lake should have total phosphorus concentrations of about 40 ppb to meet the 4-foot transparency requirement for swimming beaches in Massachusetts and targets are set lower than this. Due to the lack of data on mean depth and other parameters, a simple water quality model was used to link watershed phosphorus loading to in-lake total phosphorus concentration targets. Based on the NPSLAKE model phosphorus loading output and predicted water runoff volumes, an estimated in-lake total phosphorus (TP) concentration was derived based on the Reckhow (1979) model: $TP = L / (11.6 + 1.2 * q) * 1000$ where TP= the predicted average total phosphorus concentration (mg/l) in the lake. L= Phosphorus loading in g/m²/yr (the total loading in grams divided by lake area in meters). q= The areal water loading in m/yr from total water runoff in m³/yr divided by lake area in m². Similarly, by setting the TP to the target total phosphorus concentration, a target load was estimated by solving the equation above. As noted in Mattson and Isaac (1999) the Reckhow (1979) model was developed on similar, north temperate lakes and most Massachusetts lakes will fall within the range of phosphorus loading and hydrology of the calibration data set. Additional assumptions, and details of calibration and validation are given in Reckhow (1979).</p> <p>Wasteload Allocations, Load Allocations and Margin of Safety: For most lakes, point source wasteload allocation is zero. The margin of safety is set by establishing a target that is below that expected to meet the 4-foot swimming standard (about 40 ppb). Thus, the TMDL is the same as the target load allocation to nonpoint sources as indicated in the right side of the following table (originally part of Table 4 of "Total Maximum Daily Loads of Phosphorus for Selected Northern Blackstone Lakes" report, 2002). Loading allocations are based on the NPSLAKE landuse modeled phosphorus budget. Note that if lakes have surface TP concentrations that are much larger than that predicted by the NPSLAKE model, internal sources of phosphorus, such as the sediments, may also be a contributing source of phosphorus to the surface waters and should be considered for further evaluation and control.</p>																														
<p>Table . Newton Pond MA51110 TMDL Load Allocation.</p>																														
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; padding: 5px;"><i>Source</i></th> <th style="text-align: center; padding: 5px;"><i>Current TP Loading (kg/yr)</i></th> <th style="text-align: center; padding: 5px;"><i>Target TP Load Allocation (kg/yr)</i></th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">Forest</td> <td style="text-align: center; padding: 5px;">88</td> <td style="text-align: center; padding: 5px;">88</td> </tr> <tr> <td style="padding: 5px;">Agriculture</td> <td style="text-align: center; padding: 5px;">10</td> <td style="text-align: center; padding: 5px;">7</td> </tr> <tr> <td style="padding: 5px;">Open Land</td> <td style="text-align: center; padding: 5px;">30</td> <td style="text-align: center; padding: 5px;">21</td> </tr> <tr> <td style="padding: 5px;">Residential (Low den.)</td> <td style="text-align: center; padding: 5px;">33</td> <td style="text-align: center; padding: 5px;">23</td> </tr> <tr> <td style="padding: 5px;">Residential (High den.)</td> <td style="text-align: center; padding: 5px;">128</td> <td style="text-align: center; padding: 5px;">90</td> </tr> <tr> <td style="padding: 5px;">Comm. Indust.</td> <td style="text-align: center; padding: 5px;">33</td> <td style="text-align: center; padding: 5px;">23</td> </tr> <tr> <td style="padding: 5px;">Septic System</td> <td style="text-align: center; padding: 5px;">8</td> <td style="text-align: center; padding: 5px;">5</td> </tr> <tr> <td style="padding: 5px;">Other</td> <td style="text-align: center; padding: 5px;">0</td> <td style="text-align: center; padding: 5px;">0</td> </tr> <tr> <td style="padding: 5px;">Total Inputs</td> <td style="text-align: center; padding: 5px;">330</td> <td style="text-align: center; padding: 5px;">257</td> </tr> </tbody> </table>	<i>Source</i>	<i>Current TP Loading (kg/yr)</i>	<i>Target TP Load Allocation (kg/yr)</i>	Forest	88	88	Agriculture	10	7	Open Land	30	21	Residential (Low den.)	33	23	Residential (High den.)	128	90	Comm. Indust.	33	23	Septic System	8	5	Other	0	0	Total Inputs	330	257
<i>Source</i>	<i>Current TP Loading (kg/yr)</i>	<i>Target TP Load Allocation (kg/yr)</i>																												
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Residential (Low den.)	33	23																												
Residential (High den.)	128	90																												
Comm. Indust.	33	23																												
Septic System	8	5																												
Other	0	0																												
Total Inputs	330	257																												

Phosphorus loading allocations for each landuse category are shown (are rounded to the nearest kg/yr) in the above table. No reduction in forest loading is targeted, because other than logging operations, which are relatively rare and already have BMPs in place, this source is unlikely to be reduced by additional BMPs. The remaining load reductions are allocated as a proportional phosphorus loading reduction.

The TMDL is the sum of the wasteload allocations (WLA) from point sources (e.g., sewage treatment plants) plus load allocations (LA) from nonpoint sources (e.g., landuse sources) plus a margin of safety (MOS). Thus, the TMDL can be written as:

$$\text{TMDL} = \text{WLA} + \text{LA} + \text{MOS}$$

Seasonality:

As the term implies, TMDLs are often expressed as maximum daily loads. However, as specified in 40 CFR 130.2(l), TMDLs may be expressed in other terms when appropriate. For this case, the TMDL is expressed in terms of allowable annual loadings of phosphorus. Although critical conditions occur during the summer season when weed growth is more likely to interfere with uses, water quality in many lakes is generally not sensitive to daily or short term loading, but is more a function of loadings that occur over longer periods of time (e.g. annually).

Therefore, seasonal variation is taken into account with the estimation of annual loads. In addition, evaluating the effectiveness of nonpoint source controls can be more easily accomplished on an annual basis rather than a daily basis.

For most lakes, it is appropriate and justifiable to express a nutrient TMDL in terms of allowable annual loadings. The annual load should inherently account for seasonal variations by being protective of the most sensitive time of year. The most sensitive time of year in most lakes occurs during summer, when the frequency and occurrence of nuisance algal blooms and macrophyte growth are usually greatest. Therefore, because these phosphorus TMDLs were established to be protective of the most environmentally sensitive period (i.e., the summer season), it will also be protective of water quality during all other seasons. Additionally, the targeted reduction in annual phosphorus load to the ponds will result in the application of phosphorus controls that also address seasonal variation. For example, certain control practices such as stabilizing eroding drainage ways or maintaining septic systems will be in place throughout the year while others will be in effect during the times the sources are active (e.g., application of lawn fertilizer).

Reckhow, K.H. 1979. Uncertainty Analysis Applied to Vollenweider's Phosphorus Loading Criteria. *J. Water Poll. Control Fed.* 51(8):2123-2128

Mattson, M.D. and R.A. Isaac. 1999. Calibration of Phosphorus Export coefficients for Total Maximum Daily Loads of Massachusetts Lakes. *Lake and Reservoir Man.* 15(3):209-219.

Total Maximum Daily Loads of Phosphorus for Selected Northern Blackstone Lakes

Pollutant load reduction information:

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Element C: Describe management measures that will be implemented to achieve water quality goals

Element C: A description of the nonpoint source management measures needed to achieve the pollutant load reductions presented in Element B, and a description of the critical areas where those measures will be needed to implement this plan.



Table C1 presents the proposed management measures as well as the estimated pollutant load reductions and costs. The planning level cost estimates and pollutant load reduction estimates and estimates of BMP footprint were based off information obtained in the following sources and were also adjusted to 2016 values using the Consumer Price Index (CPI) (United States Bureau of Labor Statistics, 2016):

- Geosyntec Consultants, Inc. (2014);
- Geosyntec Consultants, Inc. (2015);
- King and Hagen (2011);
- Leisenring, et al. (2014);
- King and Hagen (2011);
- MassDEP (2016a);
- MassDEP (2016b);
- University of Massachusetts, Amherst (2004);
- Voorhees (2015);
- Voorhees (2016a);
- Voorhees (2016b);

Table C-1: Proposed Management Measures, Estimated Pollutant Load Reductions and Costs

Structural BMPs

No Structural BMP Data Found

Additional BMPs

No Additional BMP Data Found

Element D: Identify Technical and Financial Assistance Needed to Implement Plan

Element D: Estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon to implement this plan.



Table D-1 presents the funding needed to implement the management measures presented in this watershed plan. The table includes costs for structural and non-structural BMPs, operation and maintenance activities, information/education measures, and monitoring/evaluation activities.

Table D-1: Summary of Funding Needed to Implement the Watershed Plan.

Management Measures	Location	Capital Costs	Operation & Maintenance Costs	Relevant Authorities	Technical Assistance Needed	Funding Needed
Structural and Non-Structural BMPs (from Element C)						
Information/Education (see Element E)						
Monitoring and Evaluation (see Element H/I)						
Total Funding Needed:						
Funding Sources:						

Element E: Public Information and Education

Element E: Information and Education (I/E) component of the watershed plan used to:

1. Enhance public understanding of the project; and
2. Encourage early and continued public participation in selecting, designing, and implementing the NPS management measures that will be implemented.



Step 1: Goals and Objectives

The goals and objectives for the watershed information and education program.

Step 2: Target Audience

Target audiences that need to be reached to meet the goals and objectives identified above.

Step 3: Outreach Products and Distribution

The outreach product(s) and distribution form(s) that will be used for each.

Step 4: Evaluate Information/Education Program

Information and education efforts and how they will be evaluated.

Other Information

--

Elements F & G: Implementation Schedule and Measurable Milestones

Element F: Schedule for implementing the nonpoint source management measures identified in this plan that is reasonably expeditious.

Element G: A description of interim measurable milestones for determining whether nonpoint source management measures or other control actions are being implemented.



Table FG-1: Implementation Schedule and Interim Measurable Milestones

A. Structural & Non-Structural BMPs
No Data Found

B. Public Education & Outreach
No Data Found

C. Monitoring
No Data Found

Scheduling and milestone information:

Elements H & I: Progress Evaluation Criteria and Monitoring

Element H: A set of criteria used to determine (1) if loading reductions are being achieved over time and (2) if progress is being made toward attaining water quality goals. Element H asks "**how will you know if you are making progress towards water quality goals?**" The criteria established to track progress can be direct measurements (e.g., E. coli bacteria concentrations) or indirect indicators of load reduction (e.g., number of beach closings related to bacteria).

Element I: A monitoring component to evaluate the effectiveness of implementation efforts over time, as measured against the Element H criteria. Element I asks "**how, when, and where will you conduct monitoring?**"



The water quality target concentration(s) is presented under Element A of this plan. To achieve this target concentration, the annual loading must be reduced to the amount described in Element B. Element C of this plan describes the various management measures that will be implemented to achieve this targeted load reduction. The evaluation criteria and monitoring program described below will be used to measure the effectiveness of the proposed management measures (described in Element C) in improving the water quality of Gulf Pond.

Indirect Indicators of Load Reduction

Project-Specific Indicators

TMDL Criteria

Direct Measurements

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Adaptive Management

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References / Appendix

References

- 314 CMR 4.00 (2013). "[Division of Water Pollution Control, Massachusetts Surface Water Quality Standards](#)"
- Cohen, A. J.; Randall, A.D. (1998). "[Mean annual runoff, precipitation, and evapotranspiration in the glaciated northeastern United States, 1951-80.](#)" Prepared for United States Geological Survey, Reston VA.
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- Geosyntec Consultants, Inc. (2015). "[Appendix B: Pollutant Load Modeling Report, Water Integration for the Squamscott-Exeter \(WISE\) River Watershed.](#)"
- King, D. and Hagan, P. (2011). "*Costs of Stormwater Management Practices in Maryland Counties.*" University of Maryland Center for Environmental Science Chesapeake Biological Laboratory. October 11, 2011.
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United States Bureau of Labor Statistics (2016). "[Consumer Price Index](#)"

United States Geological Survey (2016). "[National Hydrography Dataset, High Resolution Shapefile](#)"

University of Massachusetts, Amherst (2004). "[Stormwater Technologies Clearinghouse](#)"

USDA NRCS and MassGIS (2012). "[NRCS SSURGO-Certified Soils](#)" Shapefile

USEPA (1986). "*Quality Criteria for Water (Gold Book)*" EPA 440/5-86-001. Office of Water, Regulations and Standards. Washington, D.C.

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Voorhees, Mark, USEPA. (2016a). "*FW: EPA Region 1 SW BMP performance equations*" Message to Chad Yaindl, Geosyntec Consultants. 25 January 2016. E-mail.

Voorhees, Mark, USEPA. (2016b). "*FW: Description of additional modelling work for Opti-Tool Project*" Message to Chad Yaindl, Geosyntec Consultants. 23 April 2015. E-mail.

Water Quality Assessment Reports

"[Blackstone River Watershed 2003-2007 Water Quality Assessment Report](#)"

TMDL

"[Total Maximum Daily Loads of Phosphorus for Selected Northern Blackstone Lakes](#)"

Appendix A – Pollutant Load Export Rates (PLERs)

Land Use & Cover ¹	PLERs (lb/acre/year)		
	(TP)	(TSS)	(TN)
AGRICULTURE, HSG A	0.45	7.14	2.59
AGRICULTURE, HSG B	0.45	29.4	2.59
AGRICULTURE, HSG C	0.45	59.8	2.59
AGRICULTURE, HSG D	0.45	91.0	2.59
AGRICULTURE, IMPERVIOUS	1.52	650	11.3
COMMERCIAL, HSG A	0.03	7.14	0.27
COMMERCIAL, HSG B	0.12	29.4	1.16
COMMERCIAL, HSG C	0.21	59.8	2.41
COMMERCIAL, HSG D	0.37	91.0	3.66
COMMERCIAL, IMPERVIOUS	1.78	377	15.1
FOREST, HSG A	0.12	7.14	0.54
FOREST, HSG B	0.12	29.4	0.54
FOREST, HSG C	0.12	59.8	0.54
FOREST, HSG D	0.12	91.0	0.54
FOREST, HSG IMPERVIOUS	1.52	650	11.3
HIGH DENSITY RESIDENTIAL, HSG A	0.03	7.14	0.27
HIGH DENSITY RESIDENTIAL, HSG B	0.12	29.4	1.16
HIGH DENSITY RESIDENTIAL, HSG C	0.21	59.8	2.41
HIGH DENSITY RESIDENTIAL, HSG D	0.37	91.0	3.66
HIGH DENSITY RESIDENTIAL, IMPERVIOUS	2.32	439	14.1
HIGHWAY, HSG A	0.03	7.14	0.27
HIGHWAY, HSG B	0.12	29.4	1.16
HIGHWAY, HSG C	0.21	59.8	2.41
HIGHWAY, HSG D	0.37	91.0	3.66
HIGHWAY, IMPERVIOUS	1.34	1,480	10.2
INDUSTRIAL, HSG A	0.03	7.14	0.27
INDUSTRIAL, HSG B	0.12	29.4	1.16

INDUSTRIAL, HSG C	0.21	59.8	2.41
INDUSTRIAL, HSG D	0.37	91.0	3.66
INDUSTRIAL, IMPERVIOUS	1.78	377	15.1
LOW DENSITY RESIDENTIAL, HSG A	0.03	7.14	0.27
LOW DENSITY RESIDENTIAL, HSG B	0.12	29.4	1.16
LOW DENSITY RESIDENTIAL, HSG C	0.21	59.8	2.41
LOW DENSITY RESIDENTIAL, HSG D	0.37	91.0	3.66
LOW DENSITY RESIDENTIAL, IMPERVIOUS	1.52	439	14.1
MEDIUM DENSITY RESIDENTIAL, HSG A	0.03	7.14	0.27
MEDIUM DENSITY RESIDENTIAL, HSG B	0.12	29.4	1.16
MEDIUM DENSITY RESIDENTIAL, HSG C	0.21	59.8	2.41
MEDIUM DENSITY RESIDENTIAL, HSG D	0.37	91.0	3.66
MEDIUM DENSITY RESIDENTIAL, IMPERVIOUS	1.96	439	14.1
OPEN LAND, HSG A	0.12	7.14	0.27
OPEN LAND, HSG B	0.12	29.4	1.16
OPEN LAND, HSG C	0.12	59.8	2.41
OPEN LAND, HSG D	0.12	91.0	3.66
OPEN LAND, IMPERVIOUS	1.52	650	11.3
¹ HSG = Hydrologic Soil Group			

Massachusetts Year 2014 Integrated List of Waters

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



CN 450.1

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
Matthew A. Beaton, Secretary
Massachusetts Department of Environmental Protection
Martin Suuberg, Commissioner
Bureau of Water Resources
Douglas E. Fine, Assistant Commissioner

Massachusetts Category 4a Waters "TMDL is completed"

NAME	SEGMENT ID	DESCRIPTION	SIZE	UNITS	POLLUTANTS ADDRESSED BY TMDL	EPA TMDL NUMBER
Blackstone						
Brierly Pond	MA51010	Millbury	18	ACRES	(Non-Native Aquatic Plants*) Aquatic Plants (Macrophytes)	175
Dorothy Pond	MA51039	Millbury	133	ACRES	(Eurasian Water Milfoil, Myriophyllum spicatum*) (Non-Native Aquatic Plants*) Turbidity	379
Eddy Pond	MA51043	Auburn	99	ACRES	(Non-Native Aquatic Plants*) Aquatic Plants (Macrophytes)	2382
Flint Pond	MA51050	[North Basin] Shrewsbury	92	ACRES	(Eurasian Water Milfoil, Myriophyllum spicatum*) (Non-Native Aquatic Plants*) Aquatic Plants (Macrophytes) Turbidity	444 444
Flint Pond	MA51188	[South Basin] Shrewsbury/Grafton/Worcester	173	ACRES	(Eurasian Water Milfoil, Myriophyllum spicatum*) (Non-Native Aquatic Plants*) Aquatic Plants (Macrophytes)	444
Green Hill Pond	MA51056	Worcester	29	ACRES	Turbidity	498
Howe Reservoirs	MA51071	[West Basin] Millbury	7	ACRES	Aquatic Plants (Macrophytes)	550
Indian Lake	MA51073	Worcester	186	ACRES	(Eurasian Water Milfoil, Myriophyllum spicatum*) Aquatic Plants (Macrophytes) Oxygen, Dissolved	2323 2323
Jordan Pond	MA51078	Shrewsbury	18	ACRES	Turbidity	2385
Lake Quinsigamond	MA51125	Shrewsbury/Worcester	471	ACRES	(Eurasian Water Milfoil, Myriophyllum spicatum*) (Non-Native Aquatic Plants*) Excess Algal Growth Oxygen, Dissolved	644 644
Leesville Pond	MA51087	Auburn/Worcester	34	ACRES	(Non-Native Aquatic Plants*) Oxygen, Dissolved Phosphorus (Total)	671 671
Mill Pond	MA51105	Shrewsbury	12	ACRES	Turbidity	804
Newton Pond	MA51110	Shrewsbury/Boylston	54	ACRES	(Non-Native Aquatic Plants*) Aquatic Plants (Macrophytes)	862



Massachusetts Year 2016 Integrated List of Waters

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



MASSACHUSETTS
DEPARTMENT
OF
ENVIRONMENTAL
PROTECTION

CN 470.1

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
Kathleen A. Theoharides, Secretary
Massachusetts Department of Environmental Protection
Martin Suuberg, Commissioner
Bureau of Water Resources
Kathleen Baskin, Assistant Commissioner

Category 4c waters listed alphabetically by major watershed "Impairment not caused by a pollutant – TMDL not required"

Water Body	Segment ID	Description	Size	Units	Impairment
Blackstone					
Brierly Pond	MA51010	Millbury.	18.00	Acres	(Aquatic Plants (Macrophytes)*) (Non-Native Aquatic Plants*)
Coes Reservoir	MA51024	Worcester.	87.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Dark Brook Reservoir	MA51035	[South Basin] Auburn.	58.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*) (Non-Native Aquatic Plants*)
Dark Brook Reservoir	MA51036	[North Basin] Auburn.	171.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Girard Pond	MA51053	Sutton.	2.00	Acres	(Non-Native Aquatic Plants*)
Howe Reservoirs	MA51070	[East Basin] Millbury.	2.00	Acres	(Dewatering*) (Non-Native Aquatic Plants*)
Ironstone Reservoir	MA51074	Uxbridge.	28.00	Acres	(Non-Native Aquatic Plants*)
Jenks Reservoir	MA51075	Bellingham.	26.00	Acres	(Non-Native Aquatic Plants*)
Mill Pond	MA51104	Upton.	10.00	Acres	(Non-Native Aquatic Plants*)
Miscoe Lake	MA51106	Wrentham (size indicates portion in Massachusetts) (entire portion in MA is from 1000 feet upstream of the state line, these interstate surface waters are public water supply in Rhode Island and designated in MA as Class A/PWS/ORW).	5.00	Acres	(Non-Native Aquatic Plants*)
Newton Pond	MA51110	Shrewsbury/Boylston.	54.00	Acres	(Non-Native Aquatic Plants*)
North Pond	MA51112	Hopkinton/Milford.	231.00	Acres	(Non-Native Aquatic Plants*)
Pratt Pond	MA51123	Upton.	40.00	Acres	(Non-Native Aquatic Plants*)
Quinsigamond River	MA51-09	Headwaters, outlet Flint Pond, Grafton to confluence with the Blackstone River in Fisherville Pond, Grafton (excluding approximately 0.5 mile through Lake Ripple segment MA51135) (segment includes all of Hovey Pond formerly segment MA51068 and a portion of Fisherville Pond formerly segment MA51048).	5.20	Miles	(Eurasian Water Milfoil, Myriophyllum spicatum*) (Non-Native Aquatic Plants*)
Riverlin Street Pond	MA51137	Millbury.	2.00	Acres	(Non-Native Aquatic Plants*)
Rivulet Pond	MA51138	Uxbridge.	4.00	Acres	(Non-Native Aquatic Plants*)
Sibley Reservoir	MA51148	Sutton.	25.00	Acres	(Dewatering*)
Silver Lake	MA51150	Bellingham.	42.00	Acres	(Non-Native Aquatic Plants*)
Silver Lake	MA51151	Grafton.	25.00	Acres	(Dewatering*)
Singletary Pond	MA51152	Sutton/Millbury.	341.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*) (Non-Native Aquatic Plants*)
Stevens Pond	MA51159	Sutton.	85.00	Acres	(Non-Native Aquatic Plants*)
Swans Pond	MA51164	Sutton/Northbridge.	32.00	Acres	(Non-Native Aquatic Plants*)
Taft Pond	MA51165	Upton.	11.00	Acres	(Non-Native Aquatic Plants*)



Appendix 3
Impairments removed from categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category		Impairment Cause	EPA TMDL No.	Explanation
		2014	2016			
Blackstone						
Beaver Brook	MA51-07	5	5	(Debris/Floatables/Trash*)		Applicable WQS attained; reason for recovery unspecified.
				Taste and Odor		Applicable WQS attained; reason for recovery unspecified.
Blackstone River	MA51-04	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Blackstone River	MA51-06	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Brierly Pond	MA51010	4A	4C	Aquatic Plants (Macrophytes)	175	Not caused by a pollutant, impairment still exists.
Dark Brook	MA51-16	5	5	Aquatic Plants (Macrophytes)	2377	Applicable WQS attained; reason for recovery unspecified.
Eddy Pond	MA51043	4A	4A	Aquatic Plants (Macrophytes)	2382	Not caused by a pollutant, impairment still exists.
				Nutrient/Eutrophication Biological Indicators	2382	New impairment, covered under existing TMDL [CN 070.1, 5/2/2002], added to this segment for 2016.
Flint Pond	MA51050	4A	4A	Aquatic Plants (Macrophytes)	444	Not caused by a pollutant, impairment still exists.
				Nutrient/Eutrophication Biological Indicators	444	New impairment, covered under existing TMDL [CN 115.0, 6/28/2002], added to this segment for 2016.
Flint Pond	MA51188	4A	4A	Aquatic Plants (Macrophytes)	444	Not caused by a pollutant, impairment still exists.
				Nutrient/Eutrophication Biological Indicators	444	New impairment, covered under existing TMDL [CN 115.0, 6/28/2002], added to this segment for 2016.
Howe Reservoirs	MA51071	4A	4A	Aquatic Plants (Macrophytes)	550	Not caused by a pollutant, impairment still exists.
				Nutrient/Eutrophication Biological Indicators	550	New impairment, covered under existing TMDL [CN 070.1, 5/2/2002], added to this segment for 2016.
Indian Lake	MA51073	4A	4A	Aquatic Plants (Macrophytes)	2323	Applicable WQS attained; according to new assessment method.
				Harmful Algal Blooms	2323	New impairment, covered under existing TMDL [CN 116.0, 6/28/2002], added to this segment for 2016.
				Nutrient/Eutrophication Biological Indicators	2323	New impairment, covered under existing TMDL [CN 116.0, 6/28/2002], added to this segment for 2016.
Jordan Pond	MA51078	4A	4A	Harmful Algal Blooms	2385	New impairment, covered under existing TMDL [CN 070.1, 5/2/2002], added to this segment for 2016.
Kettle Brook	MA51-01	5	5	(Debris/Floatables/Trash*)		Applicable WQS attained; reason for recovery unspecified.
				Aquatic Plants (Macrophytes)	2391	Applicable WQS attained; reason for recovery unspecified.
				Turbidity	2389	Applicable WQS attained; reason for recovery unspecified.
Mill River	MA51-36	5	5	Aquatic Plants (Macrophytes)		Applicable WQS attained; according to new assessment method.
Newton Pond	MA51110	4A	4C	Aquatic Plants (Macrophytes)	862	Applicable WQS attained; according to new assessment method.
Shirley Street Pond	MA51196	4A	4A	Aquatic Plants (Macrophytes)	2392	Not caused by a pollutant, impairment still exists.
				Nutrient/Eutrophication Biological Indicators	2392	New impairment, covered under existing TMDL [CN 070.1, 5/2/2002], added to this segment for 2016.
Singletary Brook	MA51-31	5	5	Aquatic Plants (Macrophytes)		Original basis for listing was incorrect.



Final Massachusetts Integrated List of Waters for the Clean Water Act 2018/2020 Reporting Cycle



MASSACHUSETTS
DEPARTMENT
of
ENVIRONMENTAL
PROTECTION

CN 505.1

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
Kathleen A. Theoharides, Secretary
Massachusetts Department of Environmental Protection
Martin Suuberg, Commissioner
Bureau of Water Resources
Kathleen Baskin, Assistant Commissioner

**Category 4c waters listed alphabetically by major watershed
"Impairment not caused by a pollutant – TMDL not required"**

Waterbody	AU_ID	Description	Size	Units	Impairment
Blackstone					
Brierly Pond	MA51010	Millbury.	18.00	Acres	(Aquatic Plants (Macrophytes)*) (Non-Native Aquatic Plants*)
Coes Reservoir	MA51024	Worcester.	87.00	Acres	(Eurasian Water Milfoil, Myriophyllum Spicatum*) (Water Chestnut*)
Dark Brook Reservoir	MA51035	[South Basin] Auburn.	58.00	Acres	(Brittle Naiad, Najas Minor*) (Eurasian Water Milfoil, Myriophyllum Spicatum*)
Dark Brook Reservoir	MA51036	[North Basin] Auburn.	171.00	Acres	(Eurasian Water Milfoil, Myriophyllum Spicatum*)
Girard Pond	MA51053	Sutton.	2.00	Acres	(Fanwort*)
Howe Reservoirs	MA51070	[East Basin] Millbury.	2.00	Acres	(Dewatering*)
Ironstone Reservoir	MA51074	Uxbridge.	28.00	Acres	(Fanwort*)
Jenks Reservoir	MA51075	Bellingham.	26.00	Acres	(Non-Native Aquatic Plants*)
Mill Pond	MA51104	Upton.	10.00	Acres	(Fanwort*) (Non-Native Aquatic Plants*)
Miscoe Lake	MA51106	Wrentham (size indicates portion in Massachusetts) (entire portion in MA is from 1000 feet upstream of the state line, these interstate surface waters are public water supply in Rhode Island and designated in MA as Class A/PWS/ORW).	5.00	Acres	(Fanwort*)
Newton Pond	MA51110	Shrewsbury/Boylston.	54.00	Acres	(Fanwort*) (Non-Native Aquatic Plants*)
North Pond	MA51112	Hopkinton/Milford.	231.00	Acres	(Brittle Naiad, Najas Minor*) (Fanwort*) (Non-Native Aquatic Plants*)
Pratt Pond	MA51123	Upton.	40.00	Acres	(Fanwort*) (Non-Native Aquatic Plants*)
Riverlin Street Pond	MA51137	Millbury.	2.00	Acres	(Curly-leaf Pondweed*) (Non-Native Aquatic Plants*)
Rivulet Pond	MA51138	Uxbridge.	4.00	Acres	(Non-Native Aquatic Plants*)
Sibley Reservoir	MA51148	Sutton.	25.00	Acres	(Dewatering*)
Silver Lake	MA51150	Bellingham.	42.00	Acres	(Non-Native Aquatic Plants*)
Silver Lake	MA51151	Grafton.	25.00	Acres	(Water Chestnut*)
Singletary Pond	MA51152	Sutton/Millbury.	341.00	Acres	(Eurasian Water Milfoil, Myriophyllum Spicatum*)
Stevens Pond	MA51159	Sutton.	85.00	Acres	(Fanwort*)
Swans Pond	MA51164	Sutton/Northbridge.	32.00	Acres	(Non-Native Aquatic Plants*)



Final Massachusetts Integrated List of Waters for the Clean Water Act 2022 Reporting Cycle



CN 568.1

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
Rebecca L. Tepper, Secretary
Massachusetts Department of Environmental Protection
Bonnie Heiple, Commissioner
Bureau of Water Resources
Kathleen M. Baskin, Assistant Commissioner



**Category 4c waters listed alphabetically by major watershed
"Impairment not caused by a pollutant – TMDL not required"**

Waterbody	AU_ID	Description	Size	Units	Impairment
Blackstone					
Briery Pond	MA51010	Millbury.	18.00	Acres	(Aquatic Plants (Macrophytes)*) (Non-Native Aquatic Plants*)
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Pratt Pond	MA51123	Upton.	40.00	Acres	(Fanwort*) (Non-Native Aquatic Plants*)
Riverlin Street Pond	MA51137	Millbury.	2.00	Acres	(Curly-leaf Pondweed*) (Non-Native Aquatic Plants*)
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Stevens Pond	MA51159	Sutton.	85.00	Acres	(Fanwort*)
Swans Pond	MA51164	Sutton/Northbridge.	32.00	Acres	(Non-Native Aquatic Plants*)
Taft Pond	MA51165	Upton.	11.00	Acres	(Non-Native Aquatic Plants*)
Tinker Hill Pond	MA51167	Auburn.	37.00	Acres	(Brittle Naiad, Najas Minor*)
Tuckers Pond	MA51169	Sutton.	26.00	Acres	(Non-Native Aquatic Plants*)



STANDARD OPERATING PROCEDURE

Structural Stormwater Best Management Practices Inspections & Maintenance



TARGETED POLLUTANTS

Nutrients (nitrogen, phosphorus)
Total Suspended Solids (TSS)
Metals (copper, lead, zinc)
Pathogens (*E. coli*, coliform)
Invasive species
Trash

MASSACHUSETTS STORMWATER HANDBOOK (VOLUME 2, CHAPTER 2):

<https://www.mass.gov/doc/massachusetts-stormwater-handbook-vol-2-ch-2-stormwater-best-management-practices/download>

Description

Procedures for inspecting and maintaining common types of constructed stormwater best management practices (BMPs). Constructed BMPs are permanent site features designed to retain, treat, and/or infiltrate stormwater before discharging it to a surface waterbody.

In accordance with Part 2.3.7.a.iii.6 of the MS4 General Permit, all municipally-owned stormwater treatment structures (excluding catch basins) shall be inspected annually, at a minimum. The description of each BMP type and the recommended activities for inspection and maintenance included in this SOP are based on the Massachusetts Stormwater Handbook (February 2008) and should be considered guidelines to follow, but the maintenance schedules presented herein are more prescriptive and stringent than the MS4 General Permit and will be followed on a case-by-case basis. **The Town will complete the required inspection annually and complete maintenance on an as-needed basis.**

This SOP is also not intended to replace a site-specific Operation and Maintenance (O&M) Plan required by the Massachusetts Wetlands Protection Act Order of Conditions or a local stormwater requirement. The 2015 *Boylston Highway Department Facility Operations and Maintenance Plan* should also be referenced for O&M procedures related to inspection and maintenance of stormwater treatment structures and swales, as well as associated record keeping.

While many of the BMP types listed in this SOP can be found in the Town, information for additional BMP types is also included in case they are constructed in the future. A general inspection form is attached.

In accordance with General Permit requirements, the Town must keep a written record (hard copy or electronic) of all maintenance activities and inspections completed and report on the status each year in the Annual Report. Maintain records for a period of at least five years.

Note: Information related to catch basins is provided in a separate SOP. Also, BMP accessories (e.g., level spreaders, check dams, outlet structures, and catch basin inserts) are not formally described in this SOP. Maintenance of BMP accessories generally includes regular inspections (especially after large rainfall events and per the manufacturer's recommendation), noting and repairing any erosion or damage as needed, removing sediment as needed, and lawfully disposing of any cleanings or used filtration media.

Structural Pretreatment BMPs

Oil and Grit Separators

Description

Oil/grit separators are underground storage tanks with three chambers designed to remove heavy particulates, floating debris and hydrocarbons from stormwater. Stormwater enters the first chamber where heavy sediments and solids drop out. The flow moves into the second chamber where oils and greases are removed and further settling of suspended solids takes place. Oil and grease are stored in this second chamber for future removal. After moving into the third outlet chamber, the clarified stormwater runoff is then discharged to a pipe and another BMP. There are other separators that may be used for spill control.

STANDARD OPERATING PROCEDURE | *Structural Stormwater Best Management Practices Inspections & Maintenance*

Inspection & Maintenance

Sediments and associated pollutants and trash are removed only when inlets or sumps are cleaned out, so regular maintenance is essential. Most studies have linked the failure of oil grit separators to the lack of regular maintenance. The more frequent the cleaning, the less likely sediments will be resuspended and subsequently discharged. In addition, frequent cleaning also makes more volume available for future storms and enhances overall performance. Cleaning includes removal of accumulated oil and grease and sediment using a vacuum truck or other ordinary catch basin cleaning device. In areas of high sediment loading, inspect and clean inlets after every major storm. At a minimum, inspect oil grit separators monthly, and clean them out at least twice per year. Polluted water or sediments removed from an oil grit separator should be disposed of in accordance with all applicable local, state and federal laws and regulations including M.G.L.c. 21C and 310 CMR 30.00.

Recommended Maintenance Schedule

Activity	Frequency
Inspect units	After every major storm but at least monthly
Clean units	Twice a year

Sediment Forebays

Description

A sediment forebay is a post-construction practice consisting of an excavated pit, bermed area, or cast structure combined with a weir, designed to slow incoming stormwater runoff and facilitating the gravity separation of suspended solids. This practice is different from a sediment trap used as a construction period BMP.

Inspection & Maintenance

Regular maintenance is critical for filter strips to be effective and to ensure that flow does not shortcircuit the system. Conduct semi-annual inspections during the first year (and annually thereafter). Inspect the level spreader for sediment buildup and the vegetation for signs of erosion, bare spots, and overall health. Regular, frequent mowing of the grass is required. Remove sediment from the toe of slope or level spreader, and reseed bare spots as necessary. Periodically, remove sediment that accumulates near the top of the strip to maintain the appropriate slope and prevent formation of a "berm" that could impede the distribution of runoff as sheet flow. When the filter strip is located in the buffer zone to a wetland resource area, the operation and maintenance plan must include strict measures to ensure that maintenance operations do not alter the wetland resource areas. Please note, filter strips are restricted to the outer 50 feet of the buffer zone.

Recommended Maintenance Schedule

Activity	Frequency
Inspect sediment forebays	Monthly
Clean sediment forebays	Four times per year and when sediment depth is between 3 to 6 feet.

Vegetated Filter Strips

Description

Vegetated filter strips, also known as filter strips, grass buffer strips and grass filters, are uniformly graded vegetated surfaces (i.e., grass or close-growing native vegetation) that receive runoff from adjacent impervious areas. Vegetated filter strips typically treat sheet flow or small concentrated flows that can be distributed along the width of the strip using a level spreader. Vegetated filter strips are designed to slow runoff velocities, trap sediment, and promote infiltration, thereby reducing runoff volumes.

Inspection & Maintenance

Sediments and associated pollutants are removed only when sediment forebays are actually cleaned out, so regular maintenance is essential. Frequently removing accumulated sediments will make it less likely that sediments will be resuspended. At a minimum, inspect sediment forebays monthly and clean them out at least four times per year. Stabilize the floor and sidewalls of the sediment forebay before making it operational, otherwise the practice will discharge excess amounts of suspended sediments. When mowing grasses, keep the grass height no greater than 6 inches. Set mower blades no lower than 3 to 4 inches. Check for signs of rilling and gullyng and repair as needed. After removing the sediment, replace any vegetation damaged during the clean-out by either reseeding or resodding.

STANDARD OPERATING PROCEDURE | *Structural Stormwater Best Management Practices Inspections & Maintenance*

When reseeding, incorporate practices such as hydroseeding with a tackifier, blanket, or similar practice to ensure that no scour occurs in the forebay, while the seeds germinate and develop roots.

Recommended Maintenance Schedule

Activity	Frequency
Inspect the level spreader for sediment buildup and the vegetation for signs of erosion, bare spots, and overall health.	Every six months during the first year. Annually thereafter.
Regularly mow the grass.	As needed
Remove sediment from the toe of slope or level spreader and reseed bare spots.	As needed

Treatment BMPs

Bioretention Areas and Rain Gardens

Description

Bioretention areas and rain gardens are shallow depressions filled with sandy soil, topped with a thick layer of mulch and planted with dense native vegetation. There are two types of bioretention cells:

1. Filtering bioretention area: Areas that are designed solely as an organic filter; and
2. Exfiltration bioretention area: Areas that are configured to recharge groundwater in addition to acting as a filter.

Inspection & Maintenance

Regular inspection and maintenance are important to prevent against premature failure of bioretention areas or rain gardens. Regular inspection and maintenance of pretreatment devices and bioretention cells for sediment buildup, structural damage and standing water can extend the life of the soil media.

When failure is discovered, excavate the bioretention area, scarify the bottom and sides, replace the filter fabric and soil, replant vegetation and mulch the surface.

Never store snow within a bioretention area or rain garden. This would prevent required water quality treatment and the recharge of groundwater.

Recommended Maintenance Schedule

Activity	Time of Year	Frequency
Inspect for soil erosion and repair	Year round	Monthly
Inspect for invasive species and remove if present	Year round	Monthly
Remove trash	Year round	Monthly
Mulch Void Areas	Spring	Annually
Remove dead vegetation	Fall and Spring	Bi-Annually
Replace dead vegetation	Spring	Annually
Prune	Spring or Fall	Annually
Replace all media and vegetation	Late Spring/Early Summer	As Needed

Bioretention/Constructed Stormwater Wetlands

Description

Constructed stormwater wetlands maximize the pollutant removal from stormwater through the use of wetland vegetation uptake, retention and settling. Constructed storm water wetlands must be used in conjunction with other BMPs, such as sediment forebays.

Inspection & Maintenance

Regular inspection and maintenance are important for the health of constructed stormwater wetlands. Regular inspection and maintenance of pretreatment devices, such as forebays, should check for sediment buildup, structural damage and standing water. Inspection of the constructed wetlands should address the health of the vegetation, presence of invasive species, and identify the need to replace vegetation or media. Never store snow within a constructed stormwater wetland, as this would prevent required water quality treatment and the recharge of groundwater.

When failure is discovered, excavate the bioretention area, scarify the bottom and sides, replace the filter fabric and soil, replant vegetation and mulch the surface.

Recommended Maintenance Schedule – Years 0—3

Activity	Time of Year	Frequency
Inspect for invasive species and remove if present	Year round	Monthly
Record and Map:	Year round	Annually
Types and distribution of dominant wetland plants	Year round	Bi-Annually
Presence and distribution of planted wetland species	Spring	Annually
Presence and distribution of invasive species	Fall and Spring	Bi-Annually
Indications other species are replacing planted wetland species	Spring	Annually
Percent of standing water that is not vegetated	Spring or Fall	Annually
Replace all media and vegetation	Late Spring/Early Summer	As Needed
Stability of original depth zones and micro-topographic features	Spring and Fall	Bi-Annually
Accumulation of sediment in the forebay and micropool and survival rate of plants	Spring and Fall	Bi-Annually

Recommended Maintenance Schedule – Years 4+

Activity	Time of Year	Frequency
Inspect for invasive species and remove if present	Year round	Monthly
Clean forebays	Year round	Annually
Clean sediment in basin/wetland system	Year round	Once every 10 years
Mulch Void Areas	Spring	Annually
Remove dead vegetation	Fall and Spring	Bi-Annually
Replace dead vegetation	Spring	Annually
Prune	Spring or Fall	Annually
Replace all media and vegetation	Late Spring/Early Summer	As Needed

Extended Dry Detention Basins

Description

Extended dry detention basins are designed to control both stormwater quantity and quality. These BMPs are designed to hold stormwater for at least 24 hours, allowing solids to settle and to reduce local and downstream flooding. Pretreatment is required to reduce the potential for overflow clogging. The outflow may be designed as either fixed or adjustable. Additional nutrient removal may be achieved by a micropool or shallow marsh.

Inspection & Maintenance

Annual inspection of extended dry detention basins is required to ensure that the basins are operating properly. Potential problems include: erosion within the basin and banks, tree growth on the embankment, damage to the

emergency spillway and sediment accumulation around the outlet. Should any of these problems be encountered, necessary repairs should be made immediately.

Recommended Maintenance Schedule

Activity	Time of Year	Frequency
Inspect basins	Spring and Fall	Bi-Annually, and during and after major storms
Examine outlet structure for clogging or high outflow release velocities	Spring and Fall	Bi-Annually
Mow upper stage, side slopes, embankment and emergency spillway	Spring through Fall	Bi-Annually
Remove trash and debris	Spring	Bi-Annually
Remove sediment from basin	Year round	At least once every 5 years

Sand and Organic Filters

Description

Sand and organic filters, also known as filtration basins, are intended for quality control rather than quantity control. These filters improve water quality by removing pollutants through a filtering media and settling pollutants on top of the sand bed and/or in a pretreatment basin. Pretreatment is required to prevent filter media from clogging. Runoff from the filters is typically discharged to another BMP for additional treatment.

Inspection & Maintenance

If properly maintained, sand and organic filters have a long design life. Maintenance requirements include raking the sand and removing sediment, trash and debris from the surface of the BMP. Over time, fine sediments will penetrate deep into the sand requiring replacement of several inches or the entire sand layer. Discolored sand is an indicator of the presence of fine sediments, suggesting that replacement of the sand should be completed.

Recommended Maintenance Schedule

Activity	Frequency
Inspect filters and remove debris	After every major storm for the first 3 months after construction completion. Every 6 months thereafter.

Wet Basins

Description

Wet basins are intended to treat stormwater quality through the removal of sediments and soluble pollutants. A permanent pool of water allows sediments to settle and removes the soluble pollutants, including some metals and nutrients. Additional dry storage is required to control peak discharges during large storm events, and if properly designed and maintained wet basins can add fire protection, wildlife habitat and aesthetic values to a property.

Inspection & Maintenance

To ensure proper operation, wet basin outfalls should be inspected for evidence of clogging or excessive outfall releases. Potential problems to investigate include erosion within the basin and banks, damage to the emergency spillway, tree growth on the embankment, sediment accumulation around the outlet and the emergence of invasive species. Should any of these problems be encountered, perform repairs immediately. An on-site sediment disposal area will reduce sediment removal costs.

Recommended Maintenance Schedule

Activity	Time of Year	Frequency
Inspect wet basins	Spring and/or Fall	Annually (Minimum)
Mow upper stage, side slopes, embankment and emergency spillway	Spring through Fall	Bi-Annually (Minimum)
Remove sediment, trash and debris	Spring through Fall	Bi-Annually (Minimum)
Remove sediment from basin	Year round	As required, minimum once every 10 years

Conveyance BMPs

Drainage Channels

Description

Drainage channels are traditional vegetated open channels that are designed to provide for non-erosive conveyance. They receive no infiltration or TSS removal credit (Standards 3 and 4).

Inspection & Maintenance

The maintenance and inspection schedule should take into consideration the effectiveness of the drainage channel. Regular maintenance tasks include mowing, fertilizing, liming, watering, pruning, weeding, and pest control. Keep grass height under 6 inches to maintain the design depth necessary to serve as a conveyance. Do not mow excessively, because it may increase the design flow velocity. Remove sediment and debris manually at least once per year. Re-seed periodically to maintain the dense growth of grass vegetation. Take care to protect drainage channels from snow removal procedures and off-street parking. When drainage channels are located on private residential property, the operation and maintenance plan must clearly specify the private property owner who is responsible for carrying out the required maintenance. If the operation and maintenance plan calls for maintenance of drainage channels on private properties to be performed by a public entity or an association (e.g. homeowners association), maintenance easements must be obtained.

Recommended Maintenance Schedule

Activity	Frequency
Inspect channels to make sure vegetation is adequate and for signs of rilling and gulying. Inspect for slope integrity, soil moisture, vegetative health, soil stability, soil compaction, soil erosion, ponding, and sediment accumulation. Repair any rills or gullies. Replace dead vegetation.	The first few months after construction and twice a year thereafter.
Mow	As necessary. Grass height shall not exceed 6 inches.
Remove sediment and debris manually	At least once a year
Reseed	As necessary. Use of road salt or other deicers during the winter will necessitate yearly reseeding in the spring.

Grassed Channels

Description

Grassed Channels (formerly known as Biofilter swales) are treatment systems with a longer hydraulic residence time than drainage channels. The removal mechanisms are sedimentation and gravity separation, rather than filtration. To receive TSS credit, a sediment forebay or equivalent must be provided for pretreatment. Note that the sediment forebay does not receive a separate TSS removal credit.

STANDARD OPERATING PROCEDURE | *Structural Stormwater Best Management Practices Inspections & Maintenance*

Inspection & Maintenance

Maintenance access must be designed as part of the grass channel. If located adjacent to a roadway, make the maintenance access at least 15 feet wide, which can also be combined with a breakdown lane along a highway or onstreet parking along a residential street. When combined with on-street parking, post signs prohibiting parking when the swale is to be inspected and cleaned. Do not use travel lanes along highways and streets as the required maintenance access. Set mower blades no lower than 3 to 4 inches above the ground. Do not mow beneath the depth of the design flow during the storm associated with the water quality event (e.g., if the design flow is no more than 4 inches, do not cut the grass shorter than 4 inches). Mow on an as-needed basis during the growing season so that the grass height does not exceed 6 inches. Inspect semi-annually the first year, and at least once a year thereafter. Inspect the grass for growth and the side slopes for signs of erosion and formation of rills and gullies. Plant an alternative grass species if the original grass cover is not successfully established. If grass growth is impaired by winter road salt or other deicer use, re-establish the grass in the spring. Remove accumulated trash and debris prior to mowing. Check on a yearly basis and clean sediment as needed. Use hand methods (i.e., a person with a shovel) when cleaning to minimize disturbance to vegetation and underlying soils. Sediment build-up in the grass channel reduces its capacity to treat and convey the water quality event, 2-year and 10-year 24-hour storm.

Recommended Maintenance Schedule

Activity	Frequency
Remove sediment from forebay	Annually
Remove sediment from grass channel	Annually
Mow	Once a month during growing season
Repair areas of erosion and revegetate	As needed, but no less than once a year

Water Quality Swale

Description

Water quality swales are vegetated open channels designed to treat the required water quality volume and to convey runoff from the 10-year storm without causing erosion. There are two different types of water quality swales that may be used to satisfy the Stormwater Management Standards:

- Dry Swales
- Wet Swales

Unlike drainage channels which are intended to be used only for conveyance, water quality swales and grass channels are designed to treat the required water quality volume and incorporate specific features to enhance their stormwater pollutant removal effectiveness. Water quality swales have higher pollutant removal efficiencies than grass channels.

Inspection & Maintenance

Incorporate a maintenance and inspection schedule into the design to ensure the effectiveness of water quality swales. Inspect swales during the first few months after installation to make sure that the vegetation in the swales becomes adequately established. Thereafter, inspect swales twice a year. During the inspections, check the swales for slope integrity, soil moisture, vegetative health, soil stability, soil compaction, soil erosion, ponding and sedimentation. Regular maintenance includes mowing, fertilizing, liming, watering, pruning, and weed and pest control. Mow swales at least once per year. Do not cut the grass shorter than three to four inches, otherwise the effectiveness of the vegetation in reducing flow velocity and removing pollutants may be reduced. Do not let grass height exceed 6 inches. Manually remove sediment and debris at least once per year, and periodically re-seed, if necessary, to maintain a dense growth of vegetation. Take care to protect water quality swales from snow removal and disposal practices and off-street parking. When grass water quality swales are located on private residential property, the operation and maintenance plan must clearly identify the property owner who is responsible for carrying out the required maintenance. If the operation and maintenance plan calls for maintenance of water quality swales on private properties to be accomplished by a public entity or an association (e.g. homeowners association), maintenance easements must be secured.

STANDARD OPERATING PROCEDURE

Structural Stormwater Best Management Practices Inspections & Maintenance

Recommended Maintenance Schedule

Activity	Frequency
Inspect swales to make sure vegetation is adequate and slopes are not eroding. Check for rilling and gullying. Repair eroded areas and revegetate	The first few months after construction and twice a year thereafter.
Mow dry swales. Wet swales may not need to be mowed depending on vegetation.	As needed.
Remove sediment and debris manually	At least once a year.
Reseed	As necessary.

Infiltration BMPs

Dry Wells

Description

Dry wells are used to infiltrate uncontaminated runoff. These BMPs should never be used to infiltrate stormwater or runoff that has the potential to be contaminated with sediment and other pollutants. Dry wells provide groundwater recharge and can reduce the size and cost required of downstream BMPs or storm drains. However, they are only applicable in drainage areas of less than one acre and may experience high failure rates due to clogging.

Inspection & Maintenance

Proper dry well function depends on regular inspection. Clogging has the potential to cause high failure rates. The water depth in the observation well should be measured at 24- and 48-hour intervals after a storm and the clearance rate calculated. The clearance rate is calculated by dividing the drop in water level (inches) by the time elapsed (hours).

Recommended Maintenance Schedule

Activity	Frequency
Inspect dry wells	After every major storm for the first 3 months after construction completion. Annually thereafter.

Infiltration Basins

Description

Infiltration basins are designed to contain stormwater quantity and provide groundwater recharge. Pollution prevention and pretreatment are required to ensure that contaminated stormwater is not infiltrated. Infiltration basins reduce local flooding and preserve the natural water balance of the site, however high failure rates often occur due to improper siting, inadequate pretreatment, poor design and lack of maintenance.

Inspection & Maintenance

Regular maintenance is required to prevent clogging, which results in infiltration basin failure. Clogging may be due to upland sediment erosion, excessive soil compaction or low spots.

Inspections should include:

- signs of differential settlement
- cracking
- erosion
- leakage in the embankments
- tree growth on the embankments
- rip-rap condition
- sediment accumulation
- turf health

STANDARD OPERATING PROCEDURE | *Structural Stormwater Best Management Practices Inspections & Maintenance*

Recommended Maintenance Schedule

Activity	Time of Year	Frequency
Preventative maintenance	Spring and Fall	Bi-Annually
Inspection	Spring and Fall	After every major storm for the first 3 months after construction completion. Bi-annually thereafter and discharges through the high outlet orifice.
Mow/rake buffer area, side slopes and basin bottom	Spring and Fall	Bi-Annually
Remove trash, debris and organic matter	Spring and Fall	Bi-Annually

Infiltration Trenches

Description

Infiltration trenches are shallow excavations filled with stone. They can be designed to capture sheet flow or piped inflow. The stone provides underground storage for stormwater runoff. The stored runoff gradually exfiltrates through the bottom and/or sides of the trench into the subsoil and eventually into the water table.

Inspection & Maintenance

Because infiltration trenches are prone to failure due to clogging, it is imperative that they be aggressively maintained on a regular schedule. Using pretreatment BMPs will significantly reduce the maintenance requirements for the trench itself. Removing accumulated sediment from a deep sump catch basin or a vegetated filter strip is considerably less difficult and less costly than rehabilitating a trench. Eventually, the infiltration trench will have to be rehabilitated, but regular maintenance will prolong its operational life and delay the day when rehabilitation is needed. With appropriate design and aggressive maintenance, rehabilitation can be delayed for a decade or more. Remove tree seedlings, before they become firmly established. Remove accumulated sediment, trash, debris, leaves and grass clippings from mowing. Check inlet and outlet pipes to determine if they are clogged. If the top of the trench is grassed, it must be mowed on a seasonal basis. Grass height must be maintained to be no more than four inches. Routinely remove grass clippings leaves and accumulated sediment from the surface of the trench. Inspect the trench 24 hours or several days after a rain event, to look for ponded water. If there is ponded water at the surface of the trench, it is likely that the trench surface is clogged. To address surface clogging, remove and replace the topsoil or first layer of stone aggregate and the filter fabric. If water is ponded inside the trench, it may indicate that the bottom of the trench has failed. To rehabilitate a failed trench, all accumulated sediment must be stripped from the bottom, the bottom of the trench must be scarified and tilled to induce infiltration, and all of the stone aggregate and filter fabric or media must be removed and replaced.

Recommended Maintenance Schedule

Activity	Frequency
Preventative maintenance	Twice a year
Inspect units and remove debris	Every 6 months and after every major storm
Remove sediment from pretreatment BMPs	Every 6 months and after every major storm
Inspect and clean pretreatment BMPs	Every 6 months and after every major storm (2 year return frequency)

Subsurface Structures

Description

Subsurface structures are underground systems that capture runoff, and gradually infiltrate it into the groundwater through rock and gravel. There are a number of underground infiltration systems that can be installed to enhance groundwater recharge. The most common types include pre-cast concrete or plastic pits, chambers (manufactured pipes), perforated pipes, and galleys.

STANDARD OPERATING PROCEDURE | *Structural Stormwater Best Management Practices Inspections & Maintenance*

Inspection & Maintenance

Because subsurface structures are installed underground, they are extremely difficult to maintain. Remove any debris that might clog the system. Include mosquito controls in the Operation and Maintenance Plan.

Recommended Maintenance Schedule

Activity	Frequency
Inspect inlets	Twice a year
Remove any debris that might clog the system	As needed

Proprietary BMPs

Proprietary Separators

Description

A proprietary separator is a flow-through structure with a settling or separation unit to remove sediments and other pollutants. They typically use the power of swirling or flowing water to separate floatables and coarser sediments, are typically designed and manufactured by private businesses, and come in different sizes to accommodate different design storms and flow conditions. Some rely solely on gravity separation and contain no swirl chamber. Since proprietary separators can be placed in almost any location on a site, they are particularly useful when either site constraints prevent the use of other stormwater techniques or as part of a larger treatment train. The effectiveness of proprietary separators varies greatly by size and design, so make sure that the units are sized correctly for the site's soil conditions and flow profiles, otherwise the unit will not work as designed.

Inspection & Maintenance

Inspect and clean these units in strict accordance with manufacturers' recommendations and requirements. Clean the units using the method specified by the manufacturer. Vactor trucks are typically used to clean these units. Clamshell buckets typically used for cleaning catch basins are almost never allowed by manufacturers. Sometimes it will be necessary to remove sediment manually.

Recommended Maintenance Schedule

Activity	Frequency
Inspect in accordance with manufacturer requirements, but no less than twice a year following installation, and no less than once a year thereafter.	See activity
Remove sediment and other trapped pollutants at frequency or level specified by manufacturer.	Per manufacturer's schedule

Proprietary Media Filters

Description

Media Filters are designed to reduce total suspended solids and other target pollutants, such as organics, heavy metals or nutrients, which are sorbed onto the filter media, which is contained in a concrete structure. The substrate used as filter media depends on the target pollutants, and may consist of leaf compost, pleated fabric, activated charcoal, perlite, amended sand in combination with perlite, and zeolite. Two types of Media Filters are manufactured: Dry Media Filters, which are designed to dewater within 72 hours; and Wet Media Filters, which maintain a permanent pool of water as part of the treatment system.

Inspection & Maintenance

Maintenance in accordance with the manufacturer's requirements is necessary to ensure stormwater treatment. Inspection or maintenance of the concrete structure may require OSHA confined space training. Dry Media Filters are required to dewater in 72 hours, thus preventing breeding of mosquitos and other insects. Proper maintenance is essential to prevent clogging. Wet Media Filters require tight fitting seals to keep mosquitoes and other insects from entering and breeding in the permanent pools. Required maintenance includes routine inspection and treatment.

Recommended Maintenance Schedule

Activity	Time of Year	Frequency
Inspect for standing water, trash, sediment and clogging	Per manufacturer’s schedule	Bi-Annually (minimum)
Remove trash and debris	N/A	Each Inspection
Examine to determine if system drains in 72 hours	Spring, after large storm	Annually
Inspect filtering media for clogging	Per manufacturer’s schedule	Per manufacturer’s schedule

Other BMPs

Dry Detention Basin

Description

A dry detention basin is an impoundment or excavated basin for the short-term detention of stormwater runoff from a completed development that allows a controlled release from the structure at downstream, pre-development flow rates. Conventional dry detention basins typically control peak runoff for 2-year and 10-year 24-hour storms. They are not specifically designed to provide extended dewatering times, wet pools, or groundwater recharge. Sometimes flows can be controlled using an outlet pipe of the appropriate size but this approach typically cannot control multiple design storms.

Inspection & Maintenance

It is critical to provide access for maintenance, especially to the interior of the basin. Inspect dry detention basins at least once per year to ensure that they are operating as intended. Inspect basins during and after storms to determine if the basin is meeting the expected detention times. Inspect the outlet structure for evidence of clogging or outflow release velocities that are greater than design flow. Potential problems that should be checked include: subsidence, erosion, cracking or tree growth on the embankment; damage to the emergency spillway; sediment accumulation around the outlet; inadequacy of the inlet/outlet channel erosion control measures; changes in the condition of the pilot channel; and erosion within the basin and banks. Make any necessary repairs immediately. During inspections, note changes to the detention basin or the contributing watershed because these changes could affect basin performance. Mow the side slopes, embankment, and emergency spillway at least twice per year. Remove trash and debris at this time. Remove sediment from the basin as necessary, and at least once every 10 years or when the basin is 50% full. Provide for an on-site sediment disposal area to reduce the overall sediment removal costs.

Recommended Maintenance Schedule

Activity	Frequency
Inspect wet basins to ensure they are operating as designed	At least once a year.
Mow the upper-stage, side slopes, embankment and emergency spillway.	At least twice a year
Check the sediment forebay for accumulated sediment, trash, and debris and remove it.	At least twice a year.
Remove sediment from the basin.	As necessary, and at least once every 10 years

Porous Pavement

Description

Porous pavement is a paved surface with a higher than normal percentage of air voids to allow water to pass through it and infiltrate into the subsoil. This porous surface replaces traditional pavement, allowing parking lot, driveway, and roadway runoff to infiltrate directly into the soil and receive water quality treatment. All permeable paving systems consist of a durable, load-bearing, pervious surface overlying a stone bed that stores rainwater before it infiltrates into the underlying soil. Permeable paving techniques include porous asphalt, pervious concrete, paving stones, and manufactured “grass pavers” made of concrete or plastic. Permeable paving may be used for walkways, patios, plazas, driveways, parking stalls, and overflow parking areas.

STANDARD OPERATING PROCEDURE | *Structural Stormwater Best Management Practices Inspections & Maintenance*

Inspection & Maintenance

In most porous pavement designs, the pavement itself acts as pretreatment to the stone reservoir below. Consequently, frequent cleaning and maintenance of the pavement surface is critical to prevent clogging. To keep the surface clean, frequent vacuum sweeping along with jet washing of asphalt and concrete pavement is required. No winter sanding shall be conducted on the porous surface. As discussed, designs that include an “overflow edge” provide a backup in case the surface clogs. If the surface clogs, stormwater will flow over the surface and into the trench, where some infiltration and treatment will occur. For proper maintenance:

- Post signs identifying porous pavement areas.
- Minimize salt use during winter months. If drinking water sources are located nearby (see setbacks), porous pavements may not be allowed.
- No winter sanding is allowed.
- Keep landscaped areas well maintained to prevent soil from being transported onto the pavement.
- Clean the surface using vacuum sweeping machines monthly. For paving stones, periodically add joint material (sand) to replace material that has been transported.
- Regularly monitor the paving surface to make sure it drains properly after storms.
- Never reseal or repave with impermeable materials.
- Inspect the surface annually for deterioration or spalling.
- Periodically reseed grass pavers to fill in bare spots.
- Attach rollers to the bottoms of snowplows to prevent them from catching on the edges of grass pavers and some paving stones.

Recommended Maintenance Schedule

Activity	Frequency
Monitor to ensure that the paving surface drains properly after storms	As needed
For porous asphalts and concretes, clean the surface using power washer to dislodge trapped particles and then vacuum sweep the area. For paving stones, add joint material (sand) to replace material that has been transported.	As needed
Inspect the surface annually for deterioration	Annually
Assess exfiltration capability at least once a year. When exfiltration capacity is found to decline, implement measures from the Operation and Maintenance Plan to restore original exfiltration capacity.	As needed, but at least once a year
Reseed grass pavers to fill in bare spots	As needed

Attachments

- Constructed Stormwater BMP Inspection Form



CONSTRUCTED STORMWATER BMP INSPECTION FORM

Date of Inspection				
Start Time				
<p>BMP Type/Description:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 33%; vertical-align: top; border: none;"> <p>Structural Pretreatment</p> <input type="checkbox"/> Oil/Grit Separators <input type="checkbox"/> Sediment Forebays <input type="checkbox"/> Vegetated Filter Strips <p>Treatment</p> <input type="checkbox"/> Bioretention Areas/Rain Gardens <input type="checkbox"/> Constructed Stormwater Wetlands <input type="checkbox"/> Extended Dry Detention Basins <input type="checkbox"/> Sand and Organic Filters <input type="checkbox"/> Wet Basins </td> <td style="width: 33%; vertical-align: top; border: none;"> <p>Conveyance</p> <input type="checkbox"/> Drainage Channels <input type="checkbox"/> Grassed Channels <input type="checkbox"/> Water Quality Swale <p>Infiltration</p> <input type="checkbox"/> Dry Wells <input type="checkbox"/> Infiltration Basins <input type="checkbox"/> Infiltration Trenches <input type="checkbox"/> Subsurface Structures </td> <td style="width: 33%; vertical-align: top; border: none;"> <p>Proprietary</p> <input type="checkbox"/> Proprietary Separators <input type="checkbox"/> Proprietary Media Filters <p>Other</p> <input type="checkbox"/> Dry Detention Basin <input type="checkbox"/> Porous Pavement <input type="checkbox"/> Other: </td> </tr> </table>		<p>Structural Pretreatment</p> <input type="checkbox"/> Oil/Grit Separators <input type="checkbox"/> Sediment Forebays <input type="checkbox"/> Vegetated Filter Strips <p>Treatment</p> <input type="checkbox"/> Bioretention Areas/Rain Gardens <input type="checkbox"/> Constructed Stormwater Wetlands <input type="checkbox"/> Extended Dry Detention Basins <input type="checkbox"/> Sand and Organic Filters <input type="checkbox"/> Wet Basins	<p>Conveyance</p> <input type="checkbox"/> Drainage Channels <input type="checkbox"/> Grassed Channels <input type="checkbox"/> Water Quality Swale <p>Infiltration</p> <input type="checkbox"/> Dry Wells <input type="checkbox"/> Infiltration Basins <input type="checkbox"/> Infiltration Trenches <input type="checkbox"/> Subsurface Structures	<p>Proprietary</p> <input type="checkbox"/> Proprietary Separators <input type="checkbox"/> Proprietary Media Filters <p>Other</p> <input type="checkbox"/> Dry Detention Basin <input type="checkbox"/> Porous Pavement <input type="checkbox"/> Other:
<p>Structural Pretreatment</p> <input type="checkbox"/> Oil/Grit Separators <input type="checkbox"/> Sediment Forebays <input type="checkbox"/> Vegetated Filter Strips <p>Treatment</p> <input type="checkbox"/> Bioretention Areas/Rain Gardens <input type="checkbox"/> Constructed Stormwater Wetlands <input type="checkbox"/> Extended Dry Detention Basins <input type="checkbox"/> Sand and Organic Filters <input type="checkbox"/> Wet Basins	<p>Conveyance</p> <input type="checkbox"/> Drainage Channels <input type="checkbox"/> Grassed Channels <input type="checkbox"/> Water Quality Swale <p>Infiltration</p> <input type="checkbox"/> Dry Wells <input type="checkbox"/> Infiltration Basins <input type="checkbox"/> Infiltration Trenches <input type="checkbox"/> Subsurface Structures	<p>Proprietary</p> <input type="checkbox"/> Proprietary Separators <input type="checkbox"/> Proprietary Media Filters <p>Other</p> <input type="checkbox"/> Dry Detention Basin <input type="checkbox"/> Porous Pavement <input type="checkbox"/> Other:		
BMP Address and Location on Site				
Inspector Name, Title, and Contact Information				
<p>Type of Inspection:</p> <input type="checkbox"/> Routine <input type="checkbox"/> Pre-Storm Event <input type="checkbox"/> During Storm Event <input type="checkbox"/> Post-Storm Event				
<p>Weather at time of this inspection:</p> <input type="checkbox"/> Clear <input type="checkbox"/> Cloudy <input type="checkbox"/> Rain <input type="checkbox"/> Sleet <input type="checkbox"/> Fog <input type="checkbox"/> Snow <input type="checkbox"/> High Winds <input type="checkbox"/> Other: _____ Temperature (F): _____				
<p>Photo(s) Taken: Yes <input type="checkbox"/> No <input type="checkbox"/> If Yes, describe: _____</p>				
<p>Are there any discharges occurring at the time of inspection? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, are any physical indicators present in the flow? If yes, describe below: _____</p>				
Indicator & Description	Relative Severity Index (1-3)			
<input type="checkbox"/> Color present: <input type="checkbox"/> Clear <input type="checkbox"/> Brown <input type="checkbox"/> Gray <input type="checkbox"/> Yellow <input type="checkbox"/> Green <input type="checkbox"/> Orange <input type="checkbox"/> Red <input type="checkbox"/> Other: _____	<input type="checkbox"/> 1 - Faint <input type="checkbox"/> 2 - Clearly visible <input type="checkbox"/> 3 - Brightly colored			



CONSTRUCTED STORMWATER BMP INSPECTION FORM

Indicator & Description	Relative Severity Index (1-3)
<input type="checkbox"/> Turbidity present: <input type="checkbox"/> Slight cloudiness <input type="checkbox"/> Cloudy <input type="checkbox"/> Opaque	<input type="checkbox"/> 1 - Faint <input type="checkbox"/> 2 - Clearly visible <input type="checkbox"/> 3 - Bright
<input type="checkbox"/> Floatables present (does not include trash): <input type="checkbox"/> Sewage (toilet paper, etc.) <input type="checkbox"/> Suds <input type="checkbox"/> Petroleum (oil sheen) <input type="checkbox"/> Other:	<input type="checkbox"/> 1 - Few/slight <input type="checkbox"/> 2 - Some <input type="checkbox"/> 3 - Many/obvious
<input type="checkbox"/> Odor present: <input type="checkbox"/> Sewage <input type="checkbox"/> Sulfide <input type="checkbox"/> Rancid/sour <input type="checkbox"/> Petroleum/gas <input type="checkbox"/> Other:	<input type="checkbox"/> 1 - Faint <input type="checkbox"/> 2 - Easily detected <input type="checkbox"/> 3 - Noticeable from a distance
Items Inspected	<input type="checkbox"/> Erosion <input type="checkbox"/> Filters/filter media <input type="checkbox"/> Standing water <input type="checkbox"/> Invasive species <input type="checkbox"/> Basins <input type="checkbox"/> Deterioration <input type="checkbox"/> Dead vegetation <input type="checkbox"/> Slope integrity <input type="checkbox"/> Other: <input type="checkbox"/> Trash/sediment/debris <input type="checkbox"/> Cracking <input type="checkbox"/> Grates <input type="checkbox"/> Clogging
Maintenance Performed	<input type="checkbox"/> Repaired erosion <input type="checkbox"/> Reseeded <input type="checkbox"/> Cleaned <input type="checkbox"/> Removed invasive species <input type="checkbox"/> Mowed <input type="checkbox"/> Raked <input type="checkbox"/> Removed sediment/trash/debris <input type="checkbox"/> Replaced vegetation <input type="checkbox"/> Other: <input type="checkbox"/> Pruned <input type="checkbox"/> Replaced media <input type="checkbox"/> Mulched
Additional Maintenance Required	If yes, describe: Yes <input type="checkbox"/> No <input type="checkbox"/>
Other Notes	

Massachusetts Year 2014 Integrated List of Waters

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



CN 450.1

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
Matthew A. Beaton, Secretary
Massachusetts Department of Environmental Protection
Martin Suuberg, Commissioner
Bureau of Water Resources
Douglas E. Fine, Assistant Commissioner

Massachusetts Category 4a Waters "TMDL is completed"

NAME	SEGMENT ID	DESCRIPTION	SIZE	UNITS	POLLUTANTS ADDRESSED BY TMDL	EPA TMDL NUMBER
Blackstone						
Brierly Pond	MA51010	Millbury	18	ACRES	(Non-Native Aquatic Plants*) Aquatic Plants (Macrophytes)	175
Dorothy Pond	MA51039	Millbury	133	ACRES	(Eurasian Water Milfoil, Myriophyllum spicatum*) (Non-Native Aquatic Plants*) Turbidity	379
Eddy Pond	MA51043	Auburn	99	ACRES	(Non-Native Aquatic Plants*) Aquatic Plants (Macrophytes)	2382
Flint Pond	MA51050	[North Basin] Shrewsbury	92	ACRES	(Eurasian Water Milfoil, Myriophyllum spicatum*) (Non-Native Aquatic Plants*) Aquatic Plants (Macrophytes) Turbidity	444 444
Flint Pond	MA51188	[South Basin] Shrewsbury/Grafton/Worcester	173	ACRES	(Eurasian Water Milfoil, Myriophyllum spicatum*) (Non-Native Aquatic Plants*) Aquatic Plants (Macrophytes)	444
Green Hill Pond	MA51056	Worcester	29	ACRES	Turbidity	498
Howe Reservoirs	MA51071	[West Basin] Millbury	7	ACRES	Aquatic Plants (Macrophytes)	550
Indian Lake	MA51073	Worcester	186	ACRES	(Eurasian Water Milfoil, Myriophyllum spicatum*) Aquatic Plants (Macrophytes) Oxygen, Dissolved	2323 2323
Jordan Pond	MA51078	Shrewsbury	18	ACRES	Turbidity	2385
Lake Quinsigamond	MA51125	Shrewsbury/Worcester	471	ACRES	(Eurasian Water Milfoil, Myriophyllum spicatum*) (Non-Native Aquatic Plants*) Excess Algal Growth Oxygen, Dissolved	644 644
Leesville Pond	MA51087	Auburn/Worcester	34	ACRES	(Non-Native Aquatic Plants*) Oxygen, Dissolved Phosphorus (Total)	671 671
Mill Pond	MA51105	Shrewsbury	12	ACRES	Turbidity	804
Newton Pond	MA51110	Shrewsbury/Boylston	54	ACRES	(Non-Native Aquatic Plants*) Aquatic Plants (Macrophytes)	862



Massachusetts Year 2016 Integrated List of Waters

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



MASSACHUSETTS
DEPARTMENT
OF
ENVIRONMENTAL
PROTECTION

CN 470.1

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
Kathleen A. Theoharides, Secretary
Massachusetts Department of Environmental Protection
Martin Suuberg, Commissioner
Bureau of Water Resources
Kathleen Baskin, Assistant Commissioner

Category 4c waters listed alphabetically by major watershed "Impairment not caused by a pollutant – TMDL not required"

Water Body	Segment ID	Description	Size	Units	Impairment
Blackstone					
Brierly Pond	MA51010	Millbury.	18.00	Acres	(Aquatic Plants (Macrophytes)*) (Non-Native Aquatic Plants*)
Coes Reservoir	MA51024	Worcester.	87.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Dark Brook Reservoir	MA51035	[South Basin] Auburn.	58.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*) (Non-Native Aquatic Plants*)
Dark Brook Reservoir	MA51036	[North Basin] Auburn.	171.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Girard Pond	MA51053	Sutton.	2.00	Acres	(Non-Native Aquatic Plants*)
Howe Reservoirs	MA51070	[East Basin] Millbury.	2.00	Acres	(Dewatering*) (Non-Native Aquatic Plants*)
Ironstone Reservoir	MA51074	Uxbridge.	28.00	Acres	(Non-Native Aquatic Plants*)
Jenks Reservoir	MA51075	Bellingham.	26.00	Acres	(Non-Native Aquatic Plants*)
Mill Pond	MA51104	Upton.	10.00	Acres	(Non-Native Aquatic Plants*)
Miscoe Lake	MA51106	Wrentham (size indicates portion in Massachusetts) (entire portion in MA is from 1000 feet upstream of the state line, these interstate surface waters are public water supply in Rhode Island and designated in MA as Class A/PWS/ORW).	5.00	Acres	(Non-Native Aquatic Plants*)
Newton Pond	MA51110	Shrewsbury/Boylston.	54.00	Acres	(Non-Native Aquatic Plants*)
North Pond	MA51112	Hopkinton/Milford.	231.00	Acres	(Non-Native Aquatic Plants*)
Pratt Pond	MA51123	Upton.	40.00	Acres	(Non-Native Aquatic Plants*)
Quinsigamond River	MA51-09	Headwaters, outlet Flint Pond, Grafton to confluence with the Blackstone River in Fisherville Pond, Grafton (excluding approximately 0.5 mile through Lake Ripple segment MA51135) (segment includes all of Hovey Pond formerly segment MA51068 and a portion of Fisherville Pond formerly segment MA51048).	5.20	Miles	(Eurasian Water Milfoil, Myriophyllum spicatum*) (Non-Native Aquatic Plants*)
Riverlin Street Pond	MA51137	Millbury.	2.00	Acres	(Non-Native Aquatic Plants*)
Rivulet Pond	MA51138	Uxbridge.	4.00	Acres	(Non-Native Aquatic Plants*)
Sibley Reservoir	MA51148	Sutton.	25.00	Acres	(Dewatering*)
Silver Lake	MA51150	Bellingham.	42.00	Acres	(Non-Native Aquatic Plants*)
Silver Lake	MA51151	Grafton.	25.00	Acres	(Dewatering*)
Singletary Pond	MA51152	Sutton/Millbury.	341.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*) (Non-Native Aquatic Plants*)
Stevens Pond	MA51159	Sutton.	85.00	Acres	(Non-Native Aquatic Plants*)
Swans Pond	MA51164	Sutton/Northbridge.	32.00	Acres	(Non-Native Aquatic Plants*)
Taft Pond	MA51165	Upton.	11.00	Acres	(Non-Native Aquatic Plants*)



Appendix 3
Impairments removed from categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category		Impairment Cause	EPA TMDL No.	Explanation
		2014	2016			
Blackstone						
Beaver Brook	MA51-07	5	5	(Debris/Floatables/Trash*)		Applicable WQS attained; reason for recovery unspecified.
				Taste and Odor		Applicable WQS attained; reason for recovery unspecified.
Blackstone River	MA51-04	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Blackstone River	MA51-06	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Brierly Pond	MA51010	4A	4C	Aquatic Plants (Macrophytes)	175	Not caused by a pollutant, impairment still exists.
Dark Brook	MA51-16	5	5	Aquatic Plants (Macrophytes)	2377	Applicable WQS attained; reason for recovery unspecified.
Eddy Pond	MA51043	4A	4A	Aquatic Plants (Macrophytes)	2382	Not caused by a pollutant, impairment still exists.
				Nutrient/Eutrophication Biological Indicators	2382	New impairment, covered under existing TMDL [CN 070.1, 5/2/2002], added to this segment for 2016.
Flint Pond	MA51050	4A	4A	Aquatic Plants (Macrophytes)	444	Not caused by a pollutant, impairment still exists.
				Nutrient/Eutrophication Biological Indicators	444	New impairment, covered under existing TMDL [CN 115.0, 6/28/2002], added to this segment for 2016.
Flint Pond	MA51188	4A	4A	Aquatic Plants (Macrophytes)	444	Not caused by a pollutant, impairment still exists.
				Nutrient/Eutrophication Biological Indicators	444	New impairment, covered under existing TMDL [CN 115.0, 6/28/2002], added to this segment for 2016.
Howe Reservoirs	MA51071	4A	4A	Aquatic Plants (Macrophytes)	550	Not caused by a pollutant, impairment still exists.
				Nutrient/Eutrophication Biological Indicators	550	New impairment, covered under existing TMDL [CN 070.1, 5/2/2002], added to this segment for 2016.
Indian Lake	MA51073	4A	4A	Aquatic Plants (Macrophytes)	2323	Applicable WQS attained; according to new assessment method.
				Harmful Algal Blooms	2323	New impairment, covered under existing TMDL [CN 116.0, 6/28/2002], added to this segment for 2016.
				Nutrient/Eutrophication Biological Indicators	2323	New impairment, covered under existing TMDL [CN 116.0, 6/28/2002], added to this segment for 2016.
Jordan Pond	MA51078	4A	4A	Harmful Algal Blooms	2385	New impairment, covered under existing TMDL [CN 070.1, 5/2/2002], added to this segment for 2016.
Kettle Brook	MA51-01	5	5	(Debris/Floatables/Trash*)		Applicable WQS attained; reason for recovery unspecified.
				Aquatic Plants (Macrophytes)	2391	Applicable WQS attained; reason for recovery unspecified.
				Turbidity	2389	Applicable WQS attained; reason for recovery unspecified.
Mill River	MA51-36	5	5	Aquatic Plants (Macrophytes)		Applicable WQS attained; according to new assessment method.
Newton Pond	MA51110	4A	4C	Aquatic Plants (Macrophytes)	862	Applicable WQS attained; according to new assessment method.
Shirley Street Pond	MA51196	4A	4A	Aquatic Plants (Macrophytes)	2392	Not caused by a pollutant, impairment still exists.
				Nutrient/Eutrophication Biological Indicators	2392	New impairment, covered under existing TMDL [CN 070.1, 5/2/2002], added to this segment for 2016.
Singletary Brook	MA51-31	5	5	Aquatic Plants (Macrophytes)		Original basis for listing was incorrect.



Final Massachusetts Integrated List of Waters for the Clean Water Act 2018/2020 Reporting Cycle



MASSACHUSETTS
DEPARTMENT
OF
ENVIRONMENTAL
PROTECTION

CN 505.1

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
Kathleen A. Theoharides, Secretary
Massachusetts Department of Environmental Protection
Martin Suuberg, Commissioner
Bureau of Water Resources
Kathleen Baskin, Assistant Commissioner

**Category 4c waters listed alphabetically by major watershed
"Impairment not caused by a pollutant – TMDL not required"**

Waterbody	AU_ID	Description	Size	Units	Impairment
Blackstone					
Brierly Pond	MA51010	Millbury.	18.00	Acres	(Aquatic Plants (Macrophytes)*) (Non-Native Aquatic Plants*)
Coes Reservoir	MA51024	Worcester.	87.00	Acres	(Eurasian Water Milfoil, Myriophyllum Spicatum*) (Water Chestnut*)
Dark Brook Reservoir	MA51035	[South Basin] Auburn.	58.00	Acres	(Brittle Naiad, Najas Minor*) (Eurasian Water Milfoil, Myriophyllum Spicatum*)
Dark Brook Reservoir	MA51036	[North Basin] Auburn.	171.00	Acres	(Eurasian Water Milfoil, Myriophyllum Spicatum*)
Girard Pond	MA51053	Sutton.	2.00	Acres	(Fanwort*)
Howe Reservoirs	MA51070	[East Basin] Millbury.	2.00	Acres	(Dewatering*)
Ironstone Reservoir	MA51074	Uxbridge.	28.00	Acres	(Fanwort*)
Jenks Reservoir	MA51075	Bellingham.	26.00	Acres	(Non-Native Aquatic Plants*)
Mill Pond	MA51104	Upton.	10.00	Acres	(Fanwort*) (Non-Native Aquatic Plants*)
Miscoe Lake	MA51106	Wrentham (size indicates portion in Massachusetts) (entire portion in MA is from 1000 feet upstream of the state line, these interstate surface waters are public water supply in Rhode Island and designated in MA as Class A/PWS/ORW).	5.00	Acres	(Fanwort*)
Newton Pond	MA51110	Shrewsbury/Boylston.	54.00	Acres	(Fanwort*) (Non-Native Aquatic Plants*)
North Pond	MA51112	Hopkinton/Milford.	231.00	Acres	(Brittle Naiad, Najas Minor*) (Fanwort*) (Non-Native Aquatic Plants*)
Pratt Pond	MA51123	Upton.	40.00	Acres	(Fanwort*) (Non-Native Aquatic Plants*)
Riverlin Street Pond	MA51137	Millbury.	2.00	Acres	(Curly-leaf Pondweed*) (Non-Native Aquatic Plants*)
Rivulet Pond	MA51138	Uxbridge.	4.00	Acres	(Non-Native Aquatic Plants*)
Sibley Reservoir	MA51148	Sutton.	25.00	Acres	(Dewatering*)
Silver Lake	MA51150	Bellingham.	42.00	Acres	(Non-Native Aquatic Plants*)
Silver Lake	MA51151	Grafton.	25.00	Acres	(Water Chestnut*)
Singletary Pond	MA51152	Sutton/Millbury.	341.00	Acres	(Eurasian Water Milfoil, Myriophyllum Spicatum*)
Stevens Pond	MA51159	Sutton.	85.00	Acres	(Fanwort*)
Swans Pond	MA51164	Sutton/Northbridge.	32.00	Acres	(Non-Native Aquatic Plants*)

