Stormwater Management Program (SWMP) Plan

Town of Holliston, Massachusetts

June 30, 2019

(revised December 29, 2022)

Prepared For:

Town of Holliston
703 Washington Street
Holliston MA 01746

Prepared By:

Comprehensive Environmental Inc.
41 Main Street
Bolton, MA 01740

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Stormwater Management Program (SWMP) Plan 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 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."

Name: _____ Title: _____

Signature: _____ Date: _____

Stormwater Management Program (SWMP) Plan Revision Log

Revision Date	Section Revised	Revisions Made	Revisions Made by
September 29, 2021	1. Section 1.4 2. Section 2.3, 3.1.2 and 9 3. Section 2.4 4. Section 8.3 5. Appendices	1. Section 1.4: Added reference that SWPPPs are prepared as separate documents. 2. Section 2.3, 3.1.2 and 9: Updated impaired waterbodies in text, tables & figures. 3. Section 2.4: Added new section "Measures to Protect Surface Drinking Water Supplies" and Figure 2-4, and renumbered remaining sections. 4. Section 8.3: Removed reference to Appendix F SWPPP Facilities. Added reference that SWPPPs are prepared and maintained as separate standalone documents. Renumbered remaining appendices. 5. Appendix B: Updated impaired waters table and map to track changes since 2014 303(d) list. Appendix C: Updated stormwater map to reflect infrastructure findings during dry weather screening. Appendix D: Added updated regulations. Appendix E: Added map and inventory of Town-owned property. Appendix G: Added BMP inspection results from Year 2. Appendix H: Added Legal Analysis and Funding Source Assessment memos for the Charles River Phosphorus Control Plan. Appendix I: Added 2019, 2020, and 2021 Annual Reports.	A. Huffman, CEI
November 23, 2021	1. Appendices	1. Appendix G: Added BMP inspection results from Year 3.	R. Balke, CEI

Revision Date	Section Revised	Revisions Made	Revisions Made by
December 29, 2022	1. Section 1.4 2. Section 2 3. Section 2.3 and 9 4. Section 4.2 and 4.3 5. Section 11 6. Appendices	1. Section 1.4: Added reference that PCP is prepared as a separate document. 2. Section 2: Updated Town population information and Figures 2-1 through 2-4. 3. Section 2.3 and 9: Updated impaired waterbodies in text, tables and figures. Removed reference to Appendix B Impaired Waterbodies and renumbered remaining appendices. 4. Section 4.2 and 4.3: Clarified stormwater hotline. 5. Section 11: Added BMP status to Table 11-1. 6. Appendix C: Added LID and Green Infrastructure regulatory review. Appendix D: Added municipal property BMP retrofit evaluation. Appendix F: Added BMP inspection results from Year 4. Appendix G: Updated PCP progress memo. Appendix H: Added 2022 Annual Report.	

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1 Introduction

Holliston is one of many Massachusetts communities regulated under the Environmental Protection Agency's (USEPA) National Pollutant Discharge Elimination System (NPDES) Phase II rule (40 CFR 122). The rule requires regulated operators of municipal separate storm sewer systems (MS4) to develop a Stormwater Management Program (SWMP) and Best Management Practices (BMPs) to reduce the impacts of stormwater discharges. The requirements are outlined in the NPDES General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) in Massachusetts, which was signed on April 4, 2016, with an effective date of July 1, 2018. A modified permit was signed on December 7, 2020, with an effective date of January 6, 2021. Hereinafter, the permit is referred to as the 2016 MS4 Permit.

This SWMP Plan describes and details the activities and measures that will be implemented to meet the terms and conditions of the permit.

1.1 Regulatory Background

The Stormwater Phase II Final Rule was promulgated in 1999 and was the next step after the 1987 Phase I Rule in USEPA'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 operators of Small MS4s in urbanized areas, through the use of National Pollutant Discharge Elimination System (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 Areas (UAs) are required to seek NPDES permit coverage for those stormwater discharges.

On May 1, 2003, EPA Region 1 issued its Final General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (2003 MS4 Permit) consistent with the Phase II rule. The 2003 MS4 Permit covered "traditional" (i.e., cities and towns) and "non-traditional" (i.e., certain Federal and state agencies and/or facilities) 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 Permit.

The 2016 MS4 Permit was signed on April 4, 2016 with an effective date of July 1, 2018. A modified permit was signed on December 7, 2020, with an effective date of January 6, 2021. The permit was cosigned by the Massachusetts Department of Environmental Protection (MassDEP) and thus is jointly regulated by EPA and MassDEP.

1.2 MS4 Program Requirements

This permit requires each regulated community to submit a Notice of Intent (NOI) briefly outlining how it will meet the Six Minimum Control Measures (MCMs) and impaired waters requirements of the permit and requesting authorization to discharge under the new permit.

The six MCMs include the following:

1. Public Education and Outreach;
2. Public Involvement and Participation;
3. Illicit Discharge Detection and Elimination Program;
4. Construction Site Stormwater Runoff Control;
5. Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management); and
6. Good Housekeeping and Pollution Prevention for Permittee Owned Operations.

Permittees must also address water quality impacts from waterbodies with approved Total Maximum Daily Loads (TMDLs) and certain impairments, generally known as water quality limited waterbodies.

As required by the 2016 MS4 Permit, the Town of Holliston submitted a NOI and required accompanying information, including endangered species, historic preservation, and an outfall map to EPA Region 1 by the September 29, 2018 deadline (**Appendix A**) requesting authorization to discharge under the new permit. Holliston received official authorization to discharge stormwater from its MS4 as per the letter from USEPA provided in **Appendix A**. Authorization to discharge expired on June 30, 2022, however, the 2016 Permit is administratively continued and remains in force and effect until a new permit is reissued.

This Stormwater Management Program (SWMP) Plan has been developed by the Town of Holliston to detail the activities and measures outlined in the NOI to address the requirements of the 2016 MS4 Permit. This SWMP Plan documents BMPs, plans, activities, and measures that have been implemented to date, those that are ongoing, and those proposed for the future to comply with the 2016 MA MS4 Permit. This is a “living” document and will be updated and/or modified as required during the permit term as the Town’s activities are modified, changed or updated to meet permit conditions. The plan has been organized to allow these updates to primarily occur within the appendices.

1.3 Regulated Area

Requirements of the 2016 MS4 Permit are limited to a regulated area, defined as the Town’s Urbanized Area (UA) which generally constitute the largest and most dense areas of settlement in a region. The Bureau of the Census determines UAs by applying a detailed set of published UA criteria to the latest decennial census data. Although the full UA definition is complex, the Bureau of the Census’ general definition of a UA, based on population and population density, is provided below:

"An urbanized area (UA) is a densely settled core of census tracts and/or census blocks that have population of at least 50,000, along with adjacent territory containing non-residential urban land uses as well as territory with low population density included to link outlying densely settled territory with the densely settled core. It is a calculation used by the Bureau of the Census to determine the geographic boundaries of the most heavily developed and dense urban areas."

The MS4 permit regulates UA areas based on both the 2000 and 2010 Census (**Appendix A**). Thus, areas that are identified as non-urbanized under the 2010 Census but urbanized under the 2000 Census are still regulated areas. In short, the regulated UA cannot shrink and can only expand. The UA is subject to change every ten years based on the application of the Census definition, thus a larger area may be covered in the future.

1.4 How to Use this Plan

For the purposes of the 2016 MS4 Permit and ease of use, the Town's SWMP encompasses six separate written documents:

1. SWMP Plan (this document);
2. Illicit Discharge Detection and Elimination (IDDE) Plan;
3. Operation and Maintenance (O&M) Plan;
4. Stormwater Pollution Prevention Plan (SWPPP) for Holliston Department of Public Works Highway Garage;
5. SWPPP for Holliston Marshall Street Recycling Center; and
6. Phosphorus Control Plan (PCP), Charles River Watershed.

The IDDE Plan, Facilities Operation and Maintenance Plan, Highway Garage SWPPP, Marshall Street Recycling Center SWPPP, and PCP are prepared as separate standalone documents to this SWMP Plan. his SWMP Plan is divided into several sections and includes the following components:

Section 2 **Town Characteristics** – Section 2 provides an overview of relevant characteristics, focusing on those aspects related to stormwater runoff and the water quality of surface waters.

Section 3 **MCM 1: Public Education and Outreach** – regulated operators of MS4s are required to implement a public education program. Section 3 discusses activities to comply with this measure.

Section 4 **MCM 2: Public Participation and Involvement** – regulated MS4s are required to obtain public participation throughout the stormwater management program. Section 4 discusses activities to comply with this measure.

Section 5 **MCM 3: Illicit Discharge, Detection, and Elimination** – regulated MS4s must develop and implement an illicit discharge detection and elimination program and develop a regulation to prohibit illicit discharges

to the storm drain system. Section 5 discusses activities to comply with this measure. A separate standalone IDDE Plan has also been prepared.

Section 6 **MCM 4: Construction Site Stormwater Runoff Control** – regulated MS4s are required to implement and enforce a program to reduce pollutants in stormwater runoff from construction activities that disturb one or more acres. This requires the development of a local regulation requiring implementation of proper erosion and sediment controls. Permittees are also responsible for inspections and enforcement. Section 6 discusses activities to comply with this measure.

Section 7 **MCM 5: Stormwater Management in New Development and Redevelopment** – regulated MS4s are required to develop and enforce a regulation requiring implementation of post-construction runoff controls at sites where construction activities disturb one or more acres. The controls must be designed to treat stormwater runoff from post-development sites and must be maintained over the long-term. Section 7 discusses activities to comply with this measure.

Section 8 **MCM 6: Good Housekeeping and Pollution Prevention** – regulated MS4s must review their infrastructure operations and those at specific facilities and make improvements where needed to minimize pollution to stormwater runoff. Operations and maintenance procedures must be documented in writing. Section 8 discusses activities to comply with this measure. A separate standalone O&M Plan and standalone SWPPPs for the Highway Garage and Marshall Street Recycling Center have also been prepared.

Section 9 **TMDL and Impaired Waters Controls** – regulated MS4s are required to evaluate and address stormwater contributions to impaired waters. Section 9 discusses activities to comply with this measure.

Section 10 **Annual Reporting** – Section 10 provides a summary of annual reporting requirements in order to meet the 2016 MS4 Permit.

Section 11 **Implementation of Best Management Practices** – Section 11 provides a summary of proposed BMPs outlined in Sections 3 through 9 in a concise format for easy reference.

1.5 Program Responsibilities

This plan is intended to be used by Town of Holliston staff whose job involves administering the MS4 permit and associated requirements. The Town's MS4 program will be headed by the following personnel (**Table 1-1**):

Table 1-1. MS4 Responsible Personnel

Name	Title, Department	Contact
Mr. Sean Reese	Director of Public Works Department of Public Works	(508) 429-0603 reese@holliston.k12.ma.us
Ms. Karen Sherman	Town Planner	(508) 429-0635 shermank@holliston.k12.ma.us

The Town of Holliston has 14 departments responsible for implementing portions of its MS4 program as identified in the NOI. **Table 1-2** provides a list of responsible departments and their general responsibilities within the MS4 program. The responsible person is the most senior person within each department listed below. The names of the responsible personnel are not provided so as to avoid the plan frequently becoming out of date due to changes in personnel and positions.

Table 1-2. Program Responsibilities

Department / Division	General Responsibilities
Board of Selectmen	Public participation
Building Department	Public participation; bylaw and regulation development; site plan review procedures; site inspections and procedures; develop O&M procedures; inventory buildings and facilities; TMDL requirements
Community Development	TMDL requirements
Conservation Commission	Information distribution for public education; website and social media management; public participation; bylaw and regulation development; site inspections and procedures; TMDL requirements
Department of Public Works	Information distribution for public education; website and social media management; Sanitary Sewer Overflow (SSO) inventory; system mapping; IDDE program creation and implementation; IDDE training; regulation development; develop O&M procedures; inventory buildings and facilities; SWPPP development and implementation; catch basin cleaning and street sweeping; road salt optimization program; BMP inspections and maintenance; vehicle washing; TMDL requirements
Fire Department	Information distribution for public education (e.g., HHW)
Health Department	Information distribution for public education; Sanitary Sewer Overflow (SSO) inventory; IDDE program creation and implementation; regulation development
Highway Department	Public participation; SWPPP development and implementation; TMDL requirements
Parks and Recreation	Develop O&M procedures; inventory buildings and facilities

Department / Division	General Responsibilities
Planning Board	Information distribution for public education; website and social media management; public participation; bylaw and regulation development; site plan review procedures; site inspections and procedures; TMDL requirements
Public Schools	Information distribution for public education
Technology Department	Website and social media management; public participation;
Town Clerk	Information distribution for public education;
Zoning Board	TMDL requirements

2 Town Characteristics

This section provides some background information on the Town of Holliston, Massachusetts, useful in understanding the Town's characteristics and resources to develop a tailored Stormwater Management Plan. Town characteristics are described below.

2.1 Community Information

Holliston is located in eastern Massachusetts within Middlesex County, approximately 22 miles southwest of Boston and just east of I-495. It is bordered by Ashland, Massachusetts to the north; Sherborn, Massachusetts to the northeast; Millis, Massachusetts to the southeast; Medway, Massachusetts to the south; Milford, Massachusetts to the southwest; and Hopkinton, Massachusetts to the northwest. Holliston is located within the Charles River watershed. Select relevant community profile information is provided below:

- Total Area = 19.0 square miles *(source: Wikipedia)*
- 2020 Population = 14,996 *(source: United States Census Bureau, Population, Census, April 1, 2020)*

2.2 Land Use

Based on the land uses within the Town, as shown in **Figure 2-1**, the Town is developed with a mix of residential, commercial and industrial uses, with a significant portion of forested and wetland lands. The education program will target each of these audiences, as well as developers. Impervious area is shown on **Figure 2-2**.

2.3 303(d) Impaired Waterbodies

The ultimate goal of this Stormwater Management Plan is to outline a program to effectively maintain the Town's stormwater infrastructure and to improve the water quality of receiving waters (waters which receive stormwater discharges from the MS4) in compliance with the 2016 MS4 Permit. 303(d) impaired waters are those surface waters identified by the MassDEP as priority waters that do not meet water quality criteria. As part of the 2016 MS4 Permit, communities must implement BMPs to address waters with an approved Total Maximum Daily Load (TMDL) as of the issuance date of the permit (April 4, 2016) and to address water quality limited waters, including but not limited to waters listed in categories 5 or 4a on the Massachusetts Integrated Report of waters listed pursuant to Clean Water Act section 303(d) and 305(b). **Table 2-1** lists the "impaired waters" for which Holliston must meet MS4 permit requirements based on the Final 2018/2020 Massachusetts Integrated List of Waters produced by MassDEP every two years, along with changes to this list from the 2014 303(d) list that was in effect when the NOI was filed. These waterbodies are shown on **Figure 2-3**.

Table 2-1. Impaired Waters Based on the 2018/2020 303(d) List[1]

Water Body	Segment ID	Category[2]	Impairment	EPA Approved TMDL	Comments
Bogastow Brook	MA72-16	4a	(Dewatering*)		Added in 2018/2020
			Fecal Coliform	32373	
			E. Coli	32373	Added in 2016
Chicken Brook	MA72-34	5	E. Coli		Added in 2016
Factory Pond	MA72037	4a	(Non-Native Aquatic Plants*)		
			Aquatic Plants (Macrophytes)	40319	
Hopping Brook	MA72-35	5	E. Coli		Added in 2016
Houghton Pond	MA72050	4a	(Non-Native Aquatic Plants*)		Removed in 2018/2020
			Algae	40319	
			Turbidity	40319	
Lake Winthrop	MA72140	5	(Fanwort*)		Added in 2018/2020
			(Non-Native Aquatic Plants*)		
			2,3,7,8-Tetrachlorodibenzo-p-dioxin		
			Aquatic Plants (Macrophytes)	40319	
Linden Pond	MA72063	4a	Aquatic Plants (Macrophytes)	40319	
			Turbidity	40319	

1. The information presented in this table is based on the *Final Massachusetts Integrated List of Waters for the Clean Water Act 2018/2020 Reporting Cycle, November 2021*.
2. Category 4a – TMDL is completed.
3. Category 5 – Waters requiring a TMDL. Waters that have an approved TMDL for some pollutants, but not others, remain in Category 5 until TMDLs are approved for all of the pollutants impairing those waters.

*TMDL not required (Non-pollutant)
Green shading – Impairments removed since NOI.
Blue shading – Impairments added since NOI.

Per the table above, Holliston is subject to TMDL requirements for fecal coliform and E. Coli for Bogastow Brook under the "Final Pathogen TMDL for the Charles Watershed" and for phosphorus under the "Total Maximum Daily Load for Nutrients in the Upper/Middle Charles River, Massachusetts". The phosphorus TMDL covers the aquatic plants, excess algal growth and turbidity impairments with TMDL 40319 in **Table 2-1**. Chicken Brook and Hopping Brook are also subject to requirements of the 2016 Permit due to an E. Coli impairment. Requirements are outlined further in **Section 9**. Remaining parameters are not directly covered or addressed by the 2016 MS4 Permit.

2.4 Measures to Protect Surface Drinking Water Supplies

All public drinking water in the Town is obtained from groundwater supply wells that are located on properties owned and/or managed by the Holliston Water Department. The only nearby surface water supply is the headwaters of the Charles River used by the Town of Milford. A portion of the watershed for this supply is located within the Town of Holliston, but it is entirely within the non-urbanized area of Town and Holliston does not have any stormwater outfalls discharging in the watershed (refer to **Figure 2-4**). Based on this information, there are no surface water supplies or tributaries to surface water supplies within the Town that require priority in the implementation of the SWMP.

2.5 Endangered Species Act Determination

To be eligible to discharge stormwater under the 2016 MS4 Permit, the Town of Holliston must certify that its stormwater system is not impacting federally listed rare or endangered species habitat or other critical environmental locations. This was completed in the summer of 2018 as meeting "Criterion C" on the NOI with the results also documented in the NOI (**Appendix A)**. The Northern Long-eared Bat *(Myotis septentrionalis)* was the only species identified as potentially being present within Holliston's regulated area. No critical habitats were identified.

2.6 National Historic Preservation Act Determination

Regulated MS4s must also evaluate whether its discharges have the potential to affect historic properties. If there have been no relevant changes in existing discharges since the 2003 MS4 General Permit, the discharge can still be considered to have no potential to have an effect on historic properties. This has been documented as "Criterion A" on the Notice of Intent (**Appendix A**) and thus no additional information is required for documentation.

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. In these cases, such as during future construction of structural stormwater BMPs, the Town will ensure that historic properties will not be impacted by their activities, or that they are in compliance with a written agreement with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO), or other tribal representative that outlines all measures the applicant will carry out to mitigate or prevent any adverse effects on historic properties. This will be completed as required.

3 MCM 1: Public Education and Outreach

3.1 Summary of Permit Requirements

3.1.1 Core Permit Requirements

Under MCM 1, permittees must develop an educational program, define educational goals, express specific messages, define the targeted audience for each message, and identify responsible parties for program implementation. At a minimum, the program must provide information concerning the impact of stormwater discharges on water bodies within the community, especially those waters that are impaired or identified as priority waters. The program must identify steps and/or activities that the public can take to reduce the pollutants in stormwater runoff and their impacts to the environment.

Permittees must address four core target audiences, unless one of these audiences is not present in the MS4 community. The targeted audiences and educational topics requiring consideration under the permit are outlined below:

1. Residents
   - Effects of outdoor activities such as lawn care (use of pesticides, herbicides, and fertilizers) on water quality;
   - Benefits of appropriate on-site infiltration of stormwater;
   - Effects of automotive work and car washing on water quality;
   - Proper disposal of swimming pool water;
   - Proper management of pet waste; and
   - Maintenance of septic systems.

2. Businesses, Institutions, and Commercial Facilities
   - Proper lawn maintenance (use of pesticides, herbicides and fertilizer);
   - Benefits of appropriate on-site infiltration of stormwater;
   - Building maintenance and storage of materials;
   - Proper use and storage of salt or other de-icing and anti-icing materials;
   - Proper management of waste materials and dumpsters;
   - Proper management of parking lot surfaces;
   - Proper car care activities; and
   - Proper disposal of swimming pool water by entities such as motels, hotels, and health and country clubs.

3. Developers and Construction
   - 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).

4. Industrial facilities
    - Equipment inspection and maintenance;
    - Proper storage of industrial materials (emphasizing pollution prevention);
    - Proper management of dumpsters;
    - Minimization of use of salt or other de-icing/anti-icing materials;
    - Proper storage of salt or other de-icing/anti-icing materials;
    - Benefits of appropriate on-site infiltration of stormwater runoff from areas with low exposure to industrial materials such as roofs or employee parking;
    - Proper maintenance of parking lot surfaces (sweeping); and
    - Requirements for coverage under EPA's MSGP.

At least two educational messages must be distributed to each audience over the permit term spaced at least a year apart.

3.1.2 TMDL and Impaired Water Requirements

Public education and outreach programs must also address impaired waterbodies. Impaired waterbodies are shown in **Table 2-1**. As noted in **Table 2-1**, Holliston has three waterbodies (Bogastow Brook, Chicken Brook and Hopping Brook) listed as impaired for bacteria. Bogastow Brook also has a TMDL for bacteria. Holliston is also subject to the Charles River phosphorus TMDL. The 2016 MS4 Permit does not outline specific public education requirements for permittees subject to the Charles River phosphorus TMDL, but does have specific requirements for those subject to bacteria impairments or TMDLs. Therefore, relevant public information on bacteria topics as outlined in the 2016 MS4 Permit, and summarized below, will be included within the education program.

Bacteria TMDL Requirements (Residents)

- Annual message encouraging the proper management of pet waste, including noting any existing bylaws where appropriate;
- Disseminate educational materials to dog owners at the time of issuance or renewal of a dog license;
- Describe detrimental impacts of improper pet waste management, requirements for waste collection and disposal, and penalties for non-compliance; and
- Provide information to owners of septic systems about proper maintenance.

Due to the extent of impaired waters present throughout the Town, each message will be distributed community-wide.

3.2 Past Public Education Program

In response to requirements under the 2003 permit, Holliston enacted a multifaceted approach to stormwater public education and outreach. The following summarizes the Town's past public education activities:

- **Classroom Education Program** – the Town has provided classroom education on the basics of storm drains, flooding, habitat protection, etc. and the Conservation Agent has mentored an environmental science class at Holliston High School.

- **Cable Access Television** – the Town has provided cable access television educational programming on safety and the environment.

- **Newspaper Articles** – the 'Holliston Reporter' covers all Conservation Commission meetings and proposed bylaw amendments.

- **Stormwater Display** – posters with information on stormwater have been displayed in Town Hall.

- **Educational Flyer** – educational information with general information on stormwater have been distributed at public events.

- **Stormwater Webpage** – the Town's website has an established stormwater management area.

3.3 Ongoing Public Education Program

Tables 3-1 through **3-4** summarize Holliston's public education program, by targeted audience, to meet the requirements of the 2016 MS4 Permit. Measurable goals, responsible departments and a schedule for implementation of all BMPs under the SWMP are provided in **Section 11**. The public education program is also documented in each MS4 Annual Report.

3.4 Measuring Public Education Program Effectiveness

During completion of the Town's annual report as detailed further under Section 11, Holliston will review the effectiveness of each message and the Town's overall education program. Effectiveness is expected to vary by message, however will generally be measured based on the quantity of materials distributed and feedback from applicable town employees based on general observations in their area of work. Educational messages and/or distribution techniques for any of the target audiences will be modified as needed, should program managers determine that they are ineffective.

Table 3-1. Residential Public Outreach Program

BMP ID	BMP Materials/Distribution	BMP Topic Description
1-1	Brochures/Pamphlets with Dog Licenses	Distribute information on pet waste pickup with dog licenses.
	Local Public Service Announcements on Cable Access Television	Continue to run cable access television educational programming regarding safety and environment. Include announcements for cleanups, flooding programs, household hazardous materials days, etc.
	Brochures/Pamphlets via Town Mailings and at Public Events	Continue to distribute general information on stormwater at meetings, via town mailings and at public events.
	Webpage	Provide information on illicit storm drain dumping, septic system maintenance, lawn care, infiltration, vehicle maintenance, and disposal swimming pool water.
	Newspaper Articles/Press Releases of Conservation Commission Meetings and By-law Amendments	Continue to provide local coverage of all Conservation Commission meetings and proposed by-law amendments.
	Displays/Posters/Kiosks in Town Hall	Continue to display posters with stormwater information in Town Hall.
	Social Media through Website	Follow statewide "Think Blue" campaign on social media platforms.

Table 3-2. Businesses, Institutions, & Commercial Public Outreach Program

BMP ID	BMP Materials/Distribution	BMP Topic Description
1-2	Local Public Service Announcements on Cable Access Television	Continue to run cable access television educational programming regarding safety and environment. Include announcements for cleanups, flooding programs, household hazardous materials days, etc.
	Brochures/Pamphlets via Town Mailings and at Public Events	Continue to distribute general information on stormwater at meetings, via town mailings and at public events.
	Newspaper Articles/Press Releases of Conservation Commission Meetings and By-law Amendments	Continue to provide local coverage of all Conservation Commission meetings and proposed by-law amendments.
	Webpage	Provide information on illicit storm drain dumping, lawn care, infiltration, building maintenance, salt use, material storage, and vehicle maintenance.
	Social Media through Website	Follow statewide "Think Blue" campaign on social media platforms.

Table 3-3. Developers Public Outreach Program

BMP ID	BMP Materials/Distribution	BMP Topic Description
1-3	Local Public Service Announcements on Cable Access Television	Continue to run cable access television educational programming regarding safety and environment. Include announcements for cleanups, flooding programs, household hazardous materials days, etc.
	Newspaper Articles/Press Releases of Conservation Commission Meetings and By-law Amendments	Continue to provide local coverage of all Conservation Commission meetings and proposed by-law amendments.
	Displays/Posters/Kiosks in Town Hall	Continue to display posters with stormwater information in Town Hall.
	Webpage	Provide information on erosion and sediment control, Low Impact Development, and the Construction General Permit.
	Social Media through Website	Follow statewide "Think Blue" campaign on social media platforms.

Table 3-4. Industrial Public Outreach Program

BMP ID	BMP Materials/Distribution	BMP Topic Description
1-4	Local Public Service Announcements on Cable Access Television	Continue to run cable access television educational programming regarding safety and environment. Include announcements for cleanups, flooding programs, household hazardous materials days, etc.
	Newspaper Articles/Press Releases of Conservation Commission Meetings and By-law Amendments	Continue to provide local coverage of all Conservation Commission meetings and proposed by-law amendments.
	Webpage	Provide information on equipment maintenance and inspection, material storage, solid waste handling, salt use, infiltration, parking lot maintenance, and the EPA Multi Sector General Permit.
	Social Media through Website	Follow statewide "Think Blue" campaign on social media platforms.

4 MCM 2: Public Participation and Involvement

4.1 Summary of Permit Requirements

Under MCM 2, permittees must provide annual opportunities for public participation in the review and implementation of the Town's SWMP as part of a public education and involvement program. All public involvement activities must comply with state public notice requirements. The SWMP and annual reports must be made available so that the public has opportunities to review and comment.

4.2 Past Public Participation and Involvement Opportunities

The following summarizes Holliston's past public participation activities:

- **Stormwater Hotline** – the Town ensures that any reports or complaints on stormwater issues are directed to the appropriate department to be addressed.
- **River and Pond Cleanup** – the Town holds annual shoreline clean-ups focusing on Town waterbodies, as well as a trail network within the Charles River watershed.
- **Waterway Improvements** – the Town has worked on several waterway improvement projects including water quality improvements to Lake Winthrop, assessment of impaired dams on three ponds deemed by DEP to be hazardous, and culvert repairs at various locations.
- **Storm Drain Marking** – the Town has stenciled storm drains in the past.
- **Native Tree/Shrub Planting** – the Conservation Commission and Planning Board require that native trees be used in wetland replication or remediation.
- **Household Hazardous Waste Collection Day** – the Town remains a partner in the 11-community Charles River Household Hazardous Waste Coalition and participates in an annual household hazardous waste collection day in the summer to encourage the proper disposal of hazardous materials by its residents.

4.3 Ongoing Public Participation and Involvement Opportunities

This written SWMP Plan and annual reports are available for review and comment via the Town's website, along with the name, email address and/or phone number of a contact person from the Town government to request additional information or submit comments. This allows the public to comment on the program at least once per year. An updated SWMP Plan will be posted to the website as additional tasks are completed.

Table 4-1 summarizes Holliston's proposed Public Participation and Involvement Opportunities BMPs to meet the requirements of the 2016 MS4 Permit. Measurable goals, responsible departments and a schedule for implementation of all BMPs under the SWMP are provided in **Section 11**.

Table 4-1. Public Participation and Involvement Program

BMP ID#	BMP	BMP Description
2-1	Public Review	Make written SWMP Plan and annual reports available for review and comment on website, along with the name, email address and/or phone number of a contact person from the Town to request additional information or submit comments.
2-2	Public Participation	Continue to direct inquiries and complaints on stormwater issues to the appropriate department to be addressed.
2-3	Public Review	Continue to hold annual river and pond cleanups.
2-4	Public Participation	Continue to provide one household hazardous waste collection day per year.

5 MCM 3: Illicit Discharge, Detection, and Elimination

5.1 Summary of Permit Requirements

Under MCM 3, permittees must implement an IDDE program to systematically find and eliminate sources of non-stormwater discharges to its MS4 and implement procedures to prevent such discharges. An "illicit discharge" is any discharge to a municipal separate storm sewer that is not composed entirely of stormwater except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the MS4) and discharges resulting from fire-fighting activities. A summary of the required IDDE activities and timelines are provided below.

- **Legal Authority** – the IDDE program shall include adequate legal authority in the form of a currently effective ordinance, bylaw, or other regulatory mechanism to prohibit, investigate, and eliminate illicit discharges. For permittees authorized by the MS4-2003 permit such as Holliston, the ordinance, bylaw, or other regulatory mechanism was required to be effective by May 1, 2008.

- **Sanitary Sewer Overflow** – SSOs are discharges of untreated sanitary wastewater from a municipal sanitary sewer that can contaminate surface waters, cause serious water quality problems and property damage, and threaten public health. SSOs can be caused by blockages, line breaks, sewer defects that allow stormwater and groundwater to overload the system, power failures, improper sewer design, and vandalism. Regulated communities must identify all known locations where sanitary sewer overflows (SSOs) have discharged to the MS4 within the previous 5-years. Permittees must also develop an inventory within 1-year of the effective date and update it annually. Upon detection of an SSO, the permittee must eliminate it as quickly as possible and take interim mitigation measures to minimize or eliminate the discharge of pollutants until remediation work is complete.

- **System Mapping** – regulated communities must complete a comprehensive map of their stormwater system in 2 phases. Phase 1 must be completed within 2 years and include infrastructure such as outfalls and preliminary catchment delineations, waterbodies, open channel conveyances, interconnections with other MS4s, and structural stormwater BMPs. Phase 2 must be completed within 10 years and include information such as outfalls with high accuracy GPS location and refined catchment delineations, catch basins, manholes, pipe connectivity, and sanitary or combined sewer systems as available/applicable.

- **Written Illicit Discharge, Detection, and Elimination Plan** – the 2016 MS4 Permit requires preparation of a comprehensive written IDDE Program or IDDE Plan that provides detailed procedures for assessment and priority ranking of outfalls and interconnections, dry and wet weather outfall sampling, catchment investigation procedures, system vulnerability factor (SVF) assessment, identification of an illicit

discharge, illicit discharge removal, and ongoing screening requirements. The Town has prepared a standalone IDDE Plan separate from this SWMP Plan.

- **Annual IDDE Training** – the 2016 MS4 Permit requires annual IDDE training to be provided to all employees involved in the IDDE program. Training will, at a minimum, include information on how to identify illicit discharges and SSOs and may also include additional training specific to the functions of particular personnel and their function within the framework of the IDDE program.

5.2 Past IDDE Program

The Town of Holliston has conducted multiple efforts to identify and eliminate illicit discharges under the previous permit. The following summarizes Holliston's past IDDE activities:

- **Stormwater System Mapping –** the Town has mapped all known outfalls and the majority of other drainage infrastructure. Results have been incorporated into a town-wide GIS system. A copy of the stormwater system mapping is provided in **Appendix B**.

- **Outfall Inspections –** the Town has performed outfall inspections under dry weather conditions.

5.3 Ongoing IDDE Program

Holliston has a separate written IDDE plan that outlines legal authority, program responsibilities, ranks catchment areas, and outlines procedures for investigation and removal in accordance with the permit. This written plan will be updated and refined as needed to incorporate findings of field investigations.

Table 5-1 outlines Holliston's IDDE program to meet permit requirements. The measurable goals, responsible departments and schedule for implementation of all BMPs under the SWMP are provided in Section 11.

Table 5-1. IDDE Program

BMP ID#	BMP	BMP Description
3-1	SSO Inventory	The Town's population relies entirely on septic systems for wastewater management, therefore SSO considerations will not apply to the Town's program.
3-2	Storm Sewer System Map	The Town has mapped all of its known stormwater outfalls and most of the storm drain infrastructure. The Town will continue to update mapping as new information becomes available such that the full system will be mapped within 10 years of the effective date of the permit. An updated map is maintained in **Appendix B**.
3-3	Written IDDE Program	A written IDDE program has been developed as a separate document from this SWMP.
3-4	Implement IDDE Program	The IDDE program will be implemented following the program plan developed in the IDDE Plan. All illicit discharges will be documented and follow-up catchment investigations will be conducted.
3-5	Employee Training	IDDE training for employees will be conducted before activities commence.
3-6	Conduct Dry Weather Screening	Holliston will conduct dry weather screening in accordance with screening procedures outlined in the IDDE Plan.
3-7	Wet Weather Screening	Holliston will conduct wet weather screening in accordance with screening procedures outlined in the IDDE Plan.
3-8	Ongoing Screening	Holliston will conduct ongoing dry weather and wet weather screening (as necessary) as outlined in the IDDE Plan.
3-9	IDDE Ordinance/Bylaw	Holliston will investigate strengthening existing regulations and/or the creation of a new IDDE bylaw regarding IDDE.

6 MCM 4: Construction Site Stormwater Runoff Control

6.1 Summary of Permit Requirements

Under MCM 4, permittees are required to implement and enforce a program to reduce pollutants in stormwater runoff discharged to the MS4 from all construction activities that result in a land disturbance of greater than or equal to one acre within the regulated area. This program shall also regulate disturbances less than one acre if they are part of a larger common plan of development or sale that would disturb one or more acres. A summary of the required Construction Site Stormwater Runoff Control Program activities and timelines are provided below:

- **Legal Authority** – the Construction Site Stormwater Runoff Control Program shall include adequate legal authority in the form of a currently effective ordinance, bylaw, or other regulatory mechanism to:
    - Require the use of sediment and erosion control practices at construction sites; and
    - Include controls for other wastes on construction sites.

  For permittees authorized by the 2003 MS4 permit such as Holliston, the ordinance, bylaw, or other regulatory mechanism was required to be effective by May 1, 2008.

- **Construction Site Stormwater Runoff Control Program** – the 2016 MS4 Permit requires preparation of written Construction Site Stormwater Runoff Control Program procedures that include the following:
    - Pre-construction plan review of the site design, planned operations, planned BMPs during the construction phase, and planned BMPs to manage runoff after development that includes consideration of potential water quality impacts, and procedures for the receipt and consideration of information submitted by the public. The site plan review procedure shall also include evaluation of opportunities for use of low impact design and green infrastructure;
    - Site inspections and enforcement actions to take place both during construction of BMPs and after construction of BMPs. Procedures must define the person responsible for site inspections, qualifications necessary to perform inspections, who has authority to implement enforcement procedures, the ability to impose sanctions to ensure program compliance, the use of standardized inspection forms (if appropriate), and how the number of inspections and enforcement actions will be tracked for reporting in the Annual Report; and
    - Requirements for construction site operators to implement a sediment and erosion control program that includes BMPs appropriate for the conditions at the construction site.

6.2 Past Construction Site Stormwater Runoff Control Measures

The following summarizes Holliston's past Construction Site Stormwater Runoff Control Program activities:

- **Stormwater Management Legal Authority** – the Town of Holliston enacted the "Stormwater Management and Land Disturbance" bylaw under Article XLI Stormwater Management and Land Disturbance, Sections 1 through 9, along with accompanying regulations. This bylaw and regulations address erosion and sediment control requirements for construction sites and requires a Land Disturbance Permit for any activity that will: result in soil disturbance of 10,000 square feet or more; paving in excess of 500 square feet; disturbance of over 250 square feet of land with 10% or greater slopes; and an alteration, redevelopment or conversion of land use involving auto fueling, service and sale facilities, fleet storage yards, commercial nurseries and landscaping facilities. Design standards for pre and post construction BMPs are also included with plan review performed by the Planning Department.

6.3 Ongoing Construction Site Stormwater Runoff Control Program

Table 6-1 outlines Holliston's plan to meet the requirements of the 2016 MS4 Permit to establish a Construction Site Stormwater Runoff Control Program. Measurable goals, responsible department and schedule for implementation of all BMPs under the SWMP are provided in Section 11.

Table 6-1. Construction Site Stormwater Runoff Control Program

BMP ID	BMP	BMP Description
4-1	Site Inspection and Enforcement of Erosion and Sediment Control (ESC) Measures	Holliston has an existing Stormwater Bylaw and Regulations that outline site inspections and enforcement procedures. The bylaw and regulations were reviewed for completeness and compliance with the permit (**Appendix C**). The authority for site inspection and enforcement is clearly designated to the Planning Board or its agent. Written procedures for site inspections have been prepared and are also included in **Appendix C**.
4-2	Site Plan Review	The existing bylaw/regulations outline the requirements for application submittal and procedures for site plan review. Holliston will track the number of site reviews for annual reporting purposes.
4-3	Erosion and Sediment Control	Currently meet 2016 MS4 Permit. The existing bylaw/regulations require applicants to submit a Land Disturbance Permit that shows: proposed improvements, including drainage facilities; timing, schedules and sequence of development including clearing, stripping, rough grading, construction, final grading, and vegetative stabilization; a maintenance schedule for construction; and stormwater management and O&M plans designed to meet the Massachusetts Stormwater Management Standards and Planning Board's standards provided in the regulation. Updated bylaws/regulations are included in **Appendix C**.
4-4	Waste control	The bylaw and/or regulations will be updated to include specific requirements for construction site operators to control wastes. Updated bylaws/regulations are included in **Appendix C**.
4-5	Erosion Control Bylaw	The bylaw/regulations will be updated to address construction and post construction requirements of the permit, including: • Updating applicability to include development that will disturb more than one acre of land as part of a common plan; • Requiring the control of other wastes on construction sites; and • Incorporation of specific stormwater design criteria as outlined in the permit. Updated bylaws/regulations are included in **Appendix C**.

7 MCM 5: Stormwater Management in New Development and Redevelopment

7.1 Summary of Permit Requirements

Under MCM 5, permittees shall develop, implement, and enforce a program to address post-construction stormwater runoff from new development and redevelopment sites that disturb one or more acres and discharge into an MS4 system. This program shall also regulate disturbances less than one acre if they are part of a larger common plan of development or sale that would disturb one or more acres. A summary of the required Stormwater Management in New Development and Redevelopment, also known as Post Construction Stormwater Management, activities and timelines are provided below:

- **Legal Authority –** the Post Construction Stormwater Management Program shall include adequate legal authority in the form of a currently effective ordinance, bylaw, or other regulatory mechanism to:
    - Require LID site planning and design strategies to the maximum extent feasible;
    - Meet many of the requirements of the Massachusetts Stormwater Handbook and associated stormwater standards;
    - Incorporate runoff volume storage and/or pollutant removal requirements, specifically:
        1. Stormwater management systems on new development sites shall be designed to:
            a) Not allow untreated stormwater discharges (Standard 1), control peak runoff rates (Standard 2), recharge groundwater (Standard 3), eliminate or reduce discharge of pollutants from land uses with higher pollutant loads (Standard 5), protect Zone II or Interim Wellhead Protection Areas (Standard 6), and implement long term maintenance practices (Standard 9); and
            b) Require that all stormwater management systems be designed to:
                - Retain the volume of runoff equal to at least 1.0 inches over the total post-construction impervious surface area on the site and/or
                - Remove 90% of the average annual Total Suspended Solids (TSS) load and 60% of the average annual Total Phosphorus (TP) load from the total post-construction impervious surface area on the site.
        2. Redevelopment Requirements:
            a) Stormwater management systems on Redevelopment sites shall meet the following to the maximum extent feasible:
                - Standards 1, 2, and 3, and pretreatment and structural BMP requirements of Standards 5 and 6.

b) Stormwater management systems on Redevelopment sites shall also improve existing conditions by requiring stormwater BMPs be designed to:
    - Retain the volume of runoff equal to at least 0.80 inches over the total post-construction impervious surface area on the site and/or
    - Remove 80% of the average annual TSS load and 50% of the TP load from the total post-construction impervious area on the site.

c) Redevelopment activities that are limited to maintenance and improvement of existing roads, (including widening less than a single lane, adding shoulders, improving existing drainage systems, and repaving projects) shall improve existing conditions where feasible and are exempt from other parts above.

- Meet additional requirements for TMDL and water quality limited waterbodies.

Updates must be made within three years of the effective permit date.

In addition, the bylaw must include updates to address the requirements of the Charles River phosphorus TMDL. See Section 9 for more information.

- **As-Built Submittals –** the permittee must require the submission of as-built drawings within two years after completion of construction projects and include structural and non-structural controls.

- **Operation and Maintenance –** the program must include procedures to ensure adequate long-term O&M of BMPs are established after completion of a construction project, along with a dedicated funding source within three years of the effective permit date.

- **Regulatory Assessment –** the permittee must complete an assessment of existing regulations that could affect creation of impervious cover to determine if changes are required to support LID. Additionally, the permittee must assess current regulations to ensure that certain green infrastructure is allowable where feasible. Any required changes must be completed within 4 years of the effective permit date.

- **Identification of Potential Retrofit Sites –** the permittee must identify municipal properties and infrastructure within five years of the effective permit date to determine at least five properties that could be modified or retrofitted with stormwater BMP improvements. The permittee must report on all properties that have been modified or retrofitted with BMPs to mitigate impervious area and maintain an ongoing list of five sites until such time as less than five sites remain.

7.2 Past Post Construction Stormwater Management

The Town of Holliston has established some measures for post construction stormwater management. The following summarizes Holliston's past Post-Construction Site Stormwater Management Program activities:

- **Legal Authority** – Holliston enacted "Stormwater Management and Land Disturbance" bylaw under Article XLI Stormwater Management and Land Disturbance, Sections 1 through 9. This bylaw addresses stormwater control requirements for proposed sites and requires consistency with the Massachusetts Stormwater Management Policy.

- **Submittal of As-Built Plans** – The "Stormwater Management and Land Disturbance" bylaw requires the submittal of as-built drawings of all structural stormwater controls and treatment BMPs required for the site, and that they be certified by a Professional Engineer.

- **Design Guidelines** – the "Stormwater Management and Land Disturbance" bylaw includes an Appendix titled "Stormwater BMP Design Guidelines" that establishes best management practices for structural and non-structural stormwater site controls, which new developments are required to incorporate within their sites as per the bylaw.

7.3 Ongoing Post-Construction Stormwater Management Program

Table 7-1 outlines Holliston's Post-Construction Stormwater Management Program to meet the requirements of the 2016 MS4 Permit. Measurable goals, responsible department and schedule for implementation of all BMPs under the SWMP are provided in Section 11.

Table 7-1. Post-Construction Site Stormwater Management Program

BMP ID	BMP	BMP Description
5-1	As-built Plans for On-site Stormwater Control	Holliston requires final submittal of as-built drawings of all structural stormwater controls and treatment BMPs required for the site be certified by a Professional Engineer. Holliston will review its existing regulations to determine if further changes are required and to incorporate procedures to ensure that the adequate long-term O&M of BMPs is accounted for at the conclusion of a construction project, along with a dedicated funding source. Regulatory updates are documented in **Appendix C**.
5-2	Target Properties to Reduce Impervious Areas	Holliston will complete an inventory of municipal properties (**Appendix D**) that could be retrofitted with stormwater BMPs, along with a review of existing site conditions. This inventory will be updated continuously starting in Year 5. Retrofit opportunities must also consider the potential to reduce phosphorus discharges for properties within the Charles River watershed. As BMPs are constructed, the inventory will be updated so that it always contains at least 5 sites in the inventory for potential improvement.
5-3	Allow Green Infrastructure	Holliston will develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist. The report is included in **Appendix C**.
5-4	Street Design and Parking Lot Guidelines	Holliston will 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 LID options. The report is included in **Appendix C**.
5-5	Ensure stormwater controls or management practices for new development and redevelopment meet permit retention or treatment requirements and the Massachusetts Stormwater Handbook	Holliston is reviewing its existing regulations and a sample bylaw and determining changes that must be made to suit the Town. Regulatory updates are documented in **Appendix C**.

8 MCM 6: Good Housekeeping and Pollution Prevention

8.1 Summary of Permit Requirements

Under MCM 6, permittees shall develop and implement an operations and maintenance program to reduce stormwater pollution from permittee activities. This includes optimizing existing activities related to parks and open space, buildings and facilities, vehicles and equipment, and stormwater infrastructure maintenance. A summary of the required Good Housekeeping and Pollution Prevention for Permittee Owned Operations activities and timelines is provided below.

8.1.1 Facility Operations and Maintenance Plans

The permittee must complete an inventory of all parks and open space, buildings and facilities where pollutants are exposed to stormwater runoff, and vehicles and equipment within two years of the permit effective date. The inventory must be reviewed annually and updated as necessary. Upon completion, the permittee must establish written procedures as part of a Facilities O&M Plan within two years of the permit effective date for the following items:

Parks and Open Space

- Proper use, storage, and disposal of pesticides, herbicides, and fertilizers;
- Lawn maintenance and landscaping activities to protect water quality, such as reducing mowing, lawn clippings handling, and use of alternative landscaping materials;
- Pet waste handling collection and disposal locations at all locations where pets are permitted, including signage;
- Control of waterfowl in areas where they congregate to reduce waterfowl droppings from entering the MS4s;
- Management of trash containers; and
- Addressing erosion or poor vegetative cover, particularly near a surface waterbody.

Buildings and Facilities

- Use, storage, and disposal of petroleum products and other potential pollutants;
- Materials handling training to applicable employees;
- Ensuring that Spill Prevention, Control, and Countermeasures (SPCC) Plans are in place if needed (aboveground petroleum storage greater than 1,320 gallons or underground petroleum storage greater than 42,000 gallons);
- Dumpsters and other waste management equipment; and
- Sweeping parking lots and keep facility areas clean to reduce pollutants in runoff.

Vehicles and Equipment

- Storage of vehicles to prevent fluid leaks to stormwater;
- Fueling area evaluation, including feasibility of fueling under cover; and
- Preventing vehicle wash waters from entering surface waters or the MS4.

8.1.2 Infrastructure Operation and Maintenance Plans

The permittee must establish written procedures as part of an Infrastructure O&M Plan within one years of the permit effective date to ensure that MS4 infrastructure is maintained in a timely manner to reduce the discharge of pollutants from the MS4 for the following items:

Catch Basin Cleaning

- Prioritization of catch basins located near construction activities for more frequent inspection and maintenance;
- Establishing a schedule with a goal that at the time of maintenance, no catch basin is more than 50% full;
- For catch basins that are more than 50% full during two consecutive inspections or cleaning events, methods for investigating the contributing drainage area for sources of excessive sediment loads; and
- Establishing a plan for optimizing catch basin cleaning, inspections, and documentation.

Street Sweeping

- Sweeping all streets and permittee-owned parking lots, with the exception of rural uncurbed roads with no catch basins or high-speed limited access highways at least once per year in the spring following winter sanding events;
- More frequent sweeping of targeted areas based on inspections, land use, or known water quality impacts;
- Increasing street sweeping frequency of all municipal owned streets and parking lots to a minimum of two times per year; once in the spring (following winter activities such as sanding) and at least once in the fall (following leaf fall) for areas that discharge to water quality limited waterbodies and their tributaries where phosphorus is the cause of the impairment; and
- Increasing street sweeping to a schedule determined by the permittee to target areas with potential for high pollutant loads for areas that discharge to water quality limited waterbodies and their tributaries where solids, oil and grease, or metals is the cause of impairment.

Catch Basin and Street Sweeping Residuals Management

- Ensure proper storage of catch basin cleanings and street sweepings prior to disposal or reuse such that they do not discharge to receiving waters.

Winter Operation and Maintenance

- Establish and implement procedures for winter road maintenance including the use and storage of salt and sand;
- Minimize the use of sodium chloride and other salts and evaluate opportunities to use alternative materials; and
- Ensure that snow disposal activities do not result in disposal of snow into waters of the United States.

8.1.3 Stormwater Pollution Prevention Plans

The permittee must establish written Stormwater Pollution Prevention Plans for 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 as determined by the permittee. SWPPPs must address a number of components, including the following:

- Pollution Prevention Team;
- Facility description, identification of potential pollutant sources, and identification of stormwater controls;
- Stormwater management practices, including measures to minimize or prevent exposure, good housekeeping and preventative maintenance, spill prevention and response, erosion and sediment control, management of runoff, salt storage, employee training, and control measure maintenance; and
- Procedures for site inspections and sampling.

8.1.4 Stormwater BMP Inspections

The permittee must establish and implement written inspection and maintenance procedures and frequencies for all structural stormwater treatment structures, such as infiltration and detention basins, proprietary stormwater treatment structures, gravel wetlands, etc. All permittee-owned stormwater treatment structures (excluding catch basins) shall be inspected at least annually.

8.2 Past Good Housekeeping and Pollution Prevention Program

The following summarizes Holliston's past good housekeeping and pollution prevention activities:

- **Street and Parking Lot Sweeping** – sweep streets and Town-owned parking lots annually. High priority areas are also swept more frequently, such as heavily developed areas and is done on an as-needed basis.

- **Catch Basin Cleaning** – the Town cleans all catch basins (approximately 2,600 basins) each year.

- **Winter Roadway Maintenance Optimization** – prepared snow and ice management procedures to minimize pollution sources. Holliston prepared and documented existing and proposed winter O&M items to be included under a separate O&M document as noted under Section 1.4.

- **Vehicle Washing** – the Town has performed regular vehicle washing of all town vehicles at the Highway Department using a water recycling and filtration system.

- **Floor Drain Compliance** – All town buildings with floor drain discharges have been plugged and are no longer used.

- **Stormwater BMPs at Highway Facility** – The Town installed a fuel blanket at the Highway Facility to minimize stormwater contact with the fueling station.

8.3 Ongoing Good Housekeeping and Pollution Prevention Program

Table 8-1 outlines Holliston's plans to meet the requirements of the 2016 MS4 Permit to establish a Good Housekeeping and Pollution Prevention Program. Measurable goals, responsible department and schedule for implementation of all BMPs under the SWMP are provided in Section 11.

Table 8-1. Good Housekeeping and Pollution Prevention Program

BMP ID	BMP	BMP Description
6-1	O&M procedures	Holliston will create written O&M procedures for parks and open spaces, buildings and facilities, and vehicles and equipment. These have been incorporated into a separate O&M Plan.
6-2	Inventory all permittee-owned parks and open spaces, buildings and facilities, and vehicles and equipment	Holliston will create an inventory of all Town facilities for incorporation into the O&M Plan. This has been incorporated into the separate O&M Plan.
6-3	Infrastructure O&M	Establish and implement program for repair and rehabilitation of MS4 infrastructure. Infrastructure O&M SOPs have been incorporated into a separate O&M Plan..
6-4	Stormwater Pollution Prevention Plans (SWPPPs)	Holliston will perform a preliminary analysis of its maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater to determine which facilities, if any, are located within areas that drain to the MS4. SWPPPs are required and have been prepared for the Highway Garage and Marshall Street Recycling Center.
6-5	Catch basin cleaning	Holliston currently cleans and inspects all catch basins on an annual basis. The Town has developed a plan for prioritizing catch basin cleaning with a goal that no catch basins are more than 50% full of sediment at any time, which is provided in **Appendix E**. Catch basin cleaning SOPs are also included in the prioritization plan and have been included in the Town's O&M Plan.
6-6	Street sweeping program	Holliston sweeps all streets and permittee-owned lots at least once a year. A street sweeping schedule and SOPs are found in the Town's separate O&M Plan.
6-7	Road salt use optimization program	Holliston developed a SOP for winter road maintenance that optimizes the use of salt. This is included in the Town's separate O&M Plan.
6-8	Inspection and maintenance of stormwater treatment structures	Inspection reports for known structural stormwater BMPs within the Town's regulated area is included in **Appendix F**. SOPs for performing inspections and maintenance are included in the separate O&M Plan.
6-9	O&M Program (Vehicle Washing)	Holliston will perform regular vehicle washing using Highway Department water recycling and filtration system or using other good housekeeping practices.

9 TMDL and Impaired Waters Controls

9.1 Permit Requirements

The 2016 MS4 Permit requires regulated operators of MS4s to determine whether stormwater discharges from their MS4 contribute to any impaired waterbodies, including those subject to an approved TMDL and certain water quality limited waterbodies. Impaired waters are any waterbodies that do not meet applicable water quality standards, including waterbodies listed in categories "4a" and "5" on the Massachusetts Integrated List of Waters, also known as the "303(d) List". MassDEP is responsible for preparing TMDLs for many of these listed waters to identify the problem pollutant and establish water quality goals. As shown in **Table 2-1,** the Town of Holliston has multiple waterbodies on the Massachusetts Integrated List, however, not all of these impairments are associated with pollutants and not all must be addressed under the 2016 MS4 Permit. Under the 2016 MS4 Permit, the Town of Holliston is subject to the TMDL requirements of approved TMDLs. Approved TMDLs are those that have been approved by EPA as of the issuance date of the permit, or April 4, 2016. As shown in **Table 9-1**, the Town has two waterbodies with an approved TMDL that is regulated under the 2016 MS4 Permit and two water bodies with bacteria impairments without TMDLs. Thus, the Town is required to implement the requirements as outlined in Appendix F and H of the 2016 MS4 Permit and summarized in Sections 9.1.1 and 9.1.2.

Table 9-1. TMDL and Impaired Waters Requirements

Waterbody Name	Impairment	2016 Permit Requirements	Notes
Charles River	Phosphorus	Appendix F, Part A.I	Subject to a TMDL. Holliston is located within the Charles River watershed, therefore is subject to the requirements of the Charles River TMDL.
Bogastow Brook	Bacteria (fecal coliform)	Appendix F, Part A.III	Subject to a TMDL.
Chicken Brook	E. Coli	Appendix H, Part III	No TMDL. Added to 2016 303(d) List
Hopping Brook	E. Coli	Appendix H, Part III	No TMDL. Added to 2016 303(d) List

9.1.1 Charles River Phosphorus TMDL Requirements

To address the discharge of phosphorus from its MS4, the Town of Holliston must develop a Phosphorus Control Plan (PCP) designed to reduce the amount of phosphorus in stormwater discharges from its MS4 to the Charles River and its tributaries. This Plan must be completed in 3 phases and should be fully implemented no later than 20 years after the

permit effective date. The timing of each phase over 20 years from the permit effective date is outlined in the **Table 9-2**.

Table 9-2. Phosphorus Control Plan Phase Schedule

Years 1-5	Years 6-10	Years 11-15	Years 16-20
Create Phase 1 Plan	Implement Phase 1		
	Create Phase 2 Plan	Implement Phase 2	
		Create Phase 3 Plan	Implement Phase 3

Phase 1 – The Phase 1 Plan must contain the following elements by the following required milestones:

Item 1 — Legal Analysis – Identify regulatory mechanisms that may be necessary to implement the PCP, complete a legal analysis within 2 years of the permit effective date, and adopt changes by the end of the permit term.

Item 2 — Funding Source Assessment – Identify funding mechanisms that will be used to fund PCP implementation, describe the steps to be taken in implementing the funding plan, and complete funding source assessment within 3 years of permit effective date.

Item 3 — Define PCP Scope, Baseline Load, Reduction Requirement, and Allowable Load – Determine whether to implement the PCP town wide or only in the UA and select the corresponding Baseline Phosphorus Load, Stormwater Phosphorus Reduction Requirement and Allowable Phosphorus Load corresponding to the PCP Area selected as outlined in **Table 9-3**:

Table 9-3. Phosphorus Load Reduction Options

Phosphorus Load	Baseline Watershed (kg/yr)	Stormwater Reduction Requirement (kg/yr)	Allowable (kg/yr)	Stormwater Percent Reduction (%)
Town-Wide	1,543	496	1,046	32%
UA-Only	1,359	466	892	34%

Note that although the UA-Only option has a lower reduction requirement, there are also less options to implement BMPs as the available area of town is smaller. This requirement should be completed within 4 years of the permit effective date.

Item 4 — Non-Structural Controls – Determine non-structural stormwater controls to help reduce phosphorus, including planned measures, areas where measures will be implemented, and expected annual phosphorus

reductions within 5 years of effective permit date. Non-structural BMPs fully implemented within 6 years of the permit effective date.

Item 5 — Structural Controls – Priority rank areas and infrastructure where potential structural phosphorus controls could be implemented, including an assessment of site suitability for phosphorus control measures based on soil types and other factors, within 5 years of effective permit date.

Item 6 — Operation and Maintenance Program – Establish an O&M Program for current and planned structural BMPs, including an inspection and maintenance schedule with program or department responsible within 5 years of effective permit date.

Item 7 — Written Plan – Prepare a written plan to determine implementation cost estimate, and schedule that addresses the above items within 5 years of the effective permit date.

Item 8 — Implementation and Performance Evaluation – Structural BMPs must be designed and constructed per the 8 (20% of the required phosphorus reduction) and 10-year (25% of the required phosphorus reduction) milestones outlined in the permit. Phase 1 shall be fully implemented no later than 10 years after the effective permit date. Phosphorus loading increases and reductions must be evaluated annually.

Phase 2 – Requirements generally follow much of Phase 1 as follows:

- Item 1 – Legal Analysis must be updated as necessary.
- Item 4 – Non-Structural Controls, Item 5 – Structural Controls, Item 6 – O&M Program, and Item 7 – Written Plan must be completed within 10 years of the effective permit date.
- Item 8 – Structural BMPs must be designed and constructed per the 15-year (50% of the required phosphorus reduction) milestone outlined in the permit.

Phase 3 – Requirements generally follow much of Phase 1 as follows:

- Item 1 – Legal Analysis must be updated as necessary.
- Item 4 – Non-Structural Controls, Item 5 – Structural Controls, Item 6 – O&M Program, and Item 7 – Written Plan must be completed within 15 years of the effective permit date.
- Item 8 – Structural BMPs must be designed and constructed per the 18-year (70% of the required phosphorus reduction) and 20-year (100% of the required phosphorus reduction) milestone outlined in the permit.

Reporting – Holliston must include a progress report in each Annual Report on the planning and implementation of the PCP. Once the PCP has started implementation 5 years after the permit effective date, the Annual Report shall also include the following:

- Non-structural control measures implemented during the reporting year along with the calculated phosphorus reduction;
- Structural control measures implemented during the reporting year with location information, calculated phosphorus reduction, and date of last inspection and maintenance;
- Phosphorus load increases due to development; and
- Estimated yearly phosphorus export rate accounting for development and implementation of both non-structural and structural BMPs.

Holliston will implement the Charles River Phosphorus TMDL Requirements as part of its SWMP. A separate PCP will be developed by the end of Year 5.

Progress towards meeting the phosphorus TMDL requirements are included in **Appendix G.**

9.1.2 Bacteria TMDL and Impaired Waters Requirements

The Town of Holliston currently has one waterbody, Bogastow Brook, as outlined in **Table 9-1** with an approved TMDL for fecal coliform and two waterbodies (Chicken Brook and Hopping Brook) listed as impaired for E. Coli. Thus, the Town is required to implement the following requirements as outlined under Appendix F, Part III and Appendix H, Part III of the 2016 Permit.

- **Public Education** – supplement its Residential program with an annual message encouraging the proper management of pet waste and disseminate educational materials to dog owners at the time of issuance or renewal of a dog license. Education materials shall describe the detrimental impacts of improper management of pet waste, requirements for waste collection and disposal, and penalties for non-compliance. The Town also must provide information to owners of septic systems about proper maintenance in any catchment that discharges to a water body impaired for bacteria or pathogens.

- **Illicit Discharge, Detection, and Elimination** – designate catchments draining to pathogen impaired segments as “Problem Catchments” or “High” priority.

Public education requirements have been incorporated into future public education outreach components as described in Section 3. IDDE requirements have been incorporated into Holliston’s IDDE Plan.

10 Annual Reporting

The Town of Holliston will submit annual reports each year of the permit term. 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 this permit shall also cover the period from May 1, 2018 to the permit effective date. The annual report is due 90 days from the close of each reporting period, or approximately by September 29 of each year. The annual reports must contain the following relevant information which should be tracked throughout the year, with documentation maintained within **Appendix H**:

- A self-assessment review of compliance with the permit terms and conditions.
- An assessment of the appropriateness of the selected BMPs.
- The status of any plans or activities, including:
    - Identification of all discharges determined to be causing or contributing to an exceedance of water quality standards and description of response;
    - For discharges subject to TMDL or water quality limited waterbody requirements, identification of BMPs used to address the impairment and assessment of the BMPs effectiveness;
    - For discharges to water quality limited waters a description of each BMP and any deliverables required.
- An assessment of the progress towards achieving the measurable goals and objectives of each of the six MCMs:
    - Evaluation of the public education program including a description of the targeted messages for each audience; method 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 IDDE activities including: status of mapping and results of the ranking and assessment; identification of problem catchments; status of all IDDE Plan components; number and identifier of catchments evaluated; number and identifier of outfalls screened; number of illicit discharges located and removed; gallons of flow removed; identification of tracking indicators and measures of progress; and employee training.
    - Evaluation of construction runoff management including number of project plans reviewed; number of inspections; and number of enforcement actions.
    - Evaluation of stormwater management for new and redevelopment including status of ordinance development; review and status of the street design and barriers to green infrastructure assessment; and inventory status.
    - Status of the O&M Programs.
    - Status of SWPPPs, including inspection results.
- All outfall screening and monitoring data during the reporting period and cumulative for the permit term; and a description of any additional monitoring data received by the Town during the reporting period.
- Description of activities for the next reporting cycle.
- Description of any changes in identified BMPs or measurable goals.
- Description of activities undertaken by any entity contracted for achieving any measurable goal or implementing any control measure.

11 Implementation of Best Management Practices

The Town of Holliston's Best Management Practices Plan as outlined in the Town's NOI (**Appendix A**) is summarized in **Table 11-1**.

For consistency with the six MCMs and impaired water requirements, the BMPs are broken down into seven categories:

1. Public Education and Outreach;
2. Public Participation and Involvement;
3. Illicit Discharge Detection and Elimination;
4. Construction Site Stormwater Runoff Control;
5. Stormwater Management in New Development and Redevelopment;
6. Good Housekeeping and Pollution Prevention; and
7. TMDL and Water Quality Limited Waterbodies Controls

The BMP tables also outline the measurable goals for each BMP to gauge permit compliance, the responsible party(ies) for implementing each BMP, and an implementation schedule to be used throughout the permit period. In addition to the implementation activities outlined in this plan, the Town will also perform the following activities throughout the duration of the permit:

1. **Program Evaluation** – conduct annual evaluations of the Stormwater Management Program for compliance with permit conditions. The evaluation must include a determination of the appropriateness of the selected BMPs in efforts towards achieving the measurable goals outlined in **Table 11-1**.

2. **Record Keeping** – maintain records that pertain to the Stormwater Management Program for a period of at least five years. Records need to be made available to the public and the Town may charge a reasonable fee for copying. Records need not be submitted to EPA or MassDEP unless specifically requested.

3. **Reporting** – submit an annual report to EPA and MassDEP, including the information as noted in Section 10.

Table 11-1. Best Management Practices Plan Summary

BMP ID	BMP	Description	Responsible Department	Measurable Goal	Year / Schedule 1 7/1/18-7/1/19	2 7/1/19-7/1/20	3 7/1/20-7/1/21	4 7/1/21-7/1/22	5 7/1/22-7/1/23	6 7/1/23-7/1/24	BMP Status
1. Public Education and Outreach											
1-1	**Residential Education Program**	Brochures/Pamphlets with Dog Licenses - Distribute information on pet waste pickup with dog licenses.	Town Clerk	Provide information with all applications and renewals	*	*	*	*	*	*	Ongoing
		Local Public Service Announcements on Cable Access Television - Continue to run cable access television educational programming regarding safety and environment. Include announcements for cleanups, flooding programs, household hazardous materials days, etc.	Conservation Commission, DPW, Fire Dept., Public Schools	Continue cable access TV educational program	*	*	*	*	*	*	
		Brochures/Pamphlets via Town Mailings and at Public Events - Continue to distribute general information on stormwater at meetings, via town mailings and at public events.	Conservation Commission, DPW, Planning Board	Continue distribution at meetings, via town mailings, and at public events	*	*	*	*	*	*	
		Webpage - Provide information on illicit storm drain dumping, septic system maintenance, lawn care, infiltration, vehicle maintenance, and disposal swimming pool water.	DPW, Planning Board, Conservation Commission, Technology Department	Provide educational materials on website	*	*	*	*	*	*	
		Newspaper Articles/Press Releases of Conservation Commission Meetings and By-law Amendments - Continue to provide local coverage of all Conservation Commission meetings and proposed by-law	Conservation Commission, Planning Board	Continue news overage of meetings	*	*	*	*	*	*	
		Displays/Posters/Kiosks in Town Hall - Continue to display posters with stormwater information in Town Hall.	DPW, Health Department	Display posters in Town Hall	*	*	*	*	*	*	
		Social Media through Website - Follow statewide "Think Blue" campaign on social media platforms.	DPW, Planning Board, Conservation Commission, Technology Department	Follow statewide "Think Blue" campaign on social media platforms	*	*	*	*	*	*	
1-2	**Businesses, Institutions, and Commercial Education Program**	Local Public Service Announcements on Cable Access Television - Continue to run cable access television educational programming regarding safety and environment. Include announcements for cleanups, flooding programs, household hazardous materials days, etc.	Conservation Commission, DPW, Fire Dept., Public Schools	Continue cable access TV educational program	*	*	*	*	*	*	Ongoing
		Brochures/Pamphlets via Town Mailings and at Public Events - Continue to distribute general information on stormwater at meetings, via town mailings and at public events.	Conservation Commission, DPW, Planning Board	Continue distribution at meetings, via town mailings, and at public events	*	*	*	*	*	*	
		Newspaper Articles/Press Releases of Conservation Commission Meetings and By-law Amendments - Continue to provide local coverage of all Conservation Commission meetings and proposed by-law	Conservation Commission, Planning Board	Continue news overage of meetings	*	*	*	*	*	*	
		Webpage - Provide information on illicit storm drain dumping, lawn care, infiltration, building maintenance, salt use, material storage, and vehicle maintenance.	DPW, Planning Board, Conservation Commission, Technology Department	Provide educational materials on website	*	*	*	*	*	*	
		Social Media through Website - Follow statewide "Think Blue" campaign on social media platforms.	DPW, Planning Board, Conservation Commission, Technology Department	Follow statewide "Think Blue" campaign on social media platforms	*	*	*	*	*	*	

Table 11-1. Best Management Practices Plan Summary

BMP ID	BMP	Description	Responsible Department	Measurable Goal	Year / Schedule 1 7/1/18-7/1/19	2 7/1/19-7/1/20	3 7/1/20-7/1/21	4 7/1/21-7/1/22	5 7/1/22-7/1/23	6 7/1/23-7/1/24	BMP Status
1. Public Education and Outreach											
1-3	**Developer and Construction Education Program**	Local Public Service Announcements on Cable Access Television - Continue to run cable access television educational programming regarding safety and environment. Include announcements for cleanups, flooding programs, household hazardous materials days, etc.	Conservation Commission, DPW, Fire Dept., Public Schools	Continue cable access TV educational program	*	*	*	*	*	*	Ongoing
		Newspaper Articles/Press Releases of Conservation Commission Meetings and By-law Amendments Continue to provide local coverage of all Conservation Commission meetings and proposed by-law amendments.	Conservation Commission, Planning Board	Continue news overage of meetings	*	*	*	*	*	*	
		Displays/Posters/Kiosks in Town Hall - Continue to display posters with stormwater information in Town Hall.	DPW, Health Department	Display posters in Town Hall	*	*	*	*	*	*	
		Webpage - Provide information on proper erosion and sediment control management practices, Low Impact Development (LID) principles and technologies, and EPA's construction general permit (CGP).	DPW, Planning Board, Conservation Commission, Technology Department	Provide educational materials on website	*	*	*	*	*	*	
		Social Media through Website - Follow statewide "Think Blue" campaign on social media platforms.	DPW, Planning Board, Conservation Commission, Technology Department	Follow statewide "Think Blue" campaign on social media platforms	*	*	*	*	*	*	
1-4	**Industrial Education Program**	Local Public Service Announcements on Cable Access Television - Continue to run cable access television educational programming regarding safety and environment. Include announcements for cleanups, flooding programs, household hazardous materials days, etc.	Conservation Commission, DPW, Fire Dept., Public Schools	Continue cable access TV educational program	*	*	*	*	*	*	Ongoing
		Newspaper Articles/Press Releases of Conservation Commission Meetings and By-law Amendments - Continue to provide local coverage of all Conservation Commission meetings and proposed by-law	Conservation Commission, Planning Board	Continue news overage of meetings	*	*	*	*	*	*	
		Webpage - Provide information on equipment maintenance and inspection, material storage, solid waste handling, salt use, infiltration, parking lot maintenance, and the EPA Multi Sector General Permit.	DPW, Planning Board, Conservation Commission, Technology Department	Provide educational materials on website	*	*	*	*	*	*	
		Social Media through Website - Follow statewide "Think Blue" campaign on social media platforms.	DPW, Planning Board, Conservation Commission, Technology Department	Follow statewide "Think Blue" campaign on social media platforms	*	*	*	*	*	*	
2. Public Participation and Involvement											
2-1	**Make SWMP Publicly Available**	Make written SWMP Plan and annual reports available for review and comment via the Town's website.	Conservation Commission, Planning Board, Technology Department	Allow annual review of stormwater management plan and posting of stormwater management plan on website		*	*	*	*	*	SWMP completed Updated annually
2-2	**Stormwater Hotline**	Continue stormwater hotline to allow for public comment or concern regarding stormwater discharges and management.	Planning Board, Building Department, Conservation Commission	# of calls	*	*	*	*	*	*	No dedicated stormwater hotline. Complaints/inquiries sent to the department that has jurisdiction over the project or
2-3	**River and Pond Cleanups**	Continue to hold annual river and pond cleanups.	Conservation Commission, Highway Department	Hold Town cleanups at least once annually.	*	*	*	*	*	*	Ongoing
2-4	**Household Hazardous Waste Collection**	Continue annual household hazardous waste collection day.	Board of Selectmen	Hold annual collection day.	*	*	*	*	*	*	Ongoing

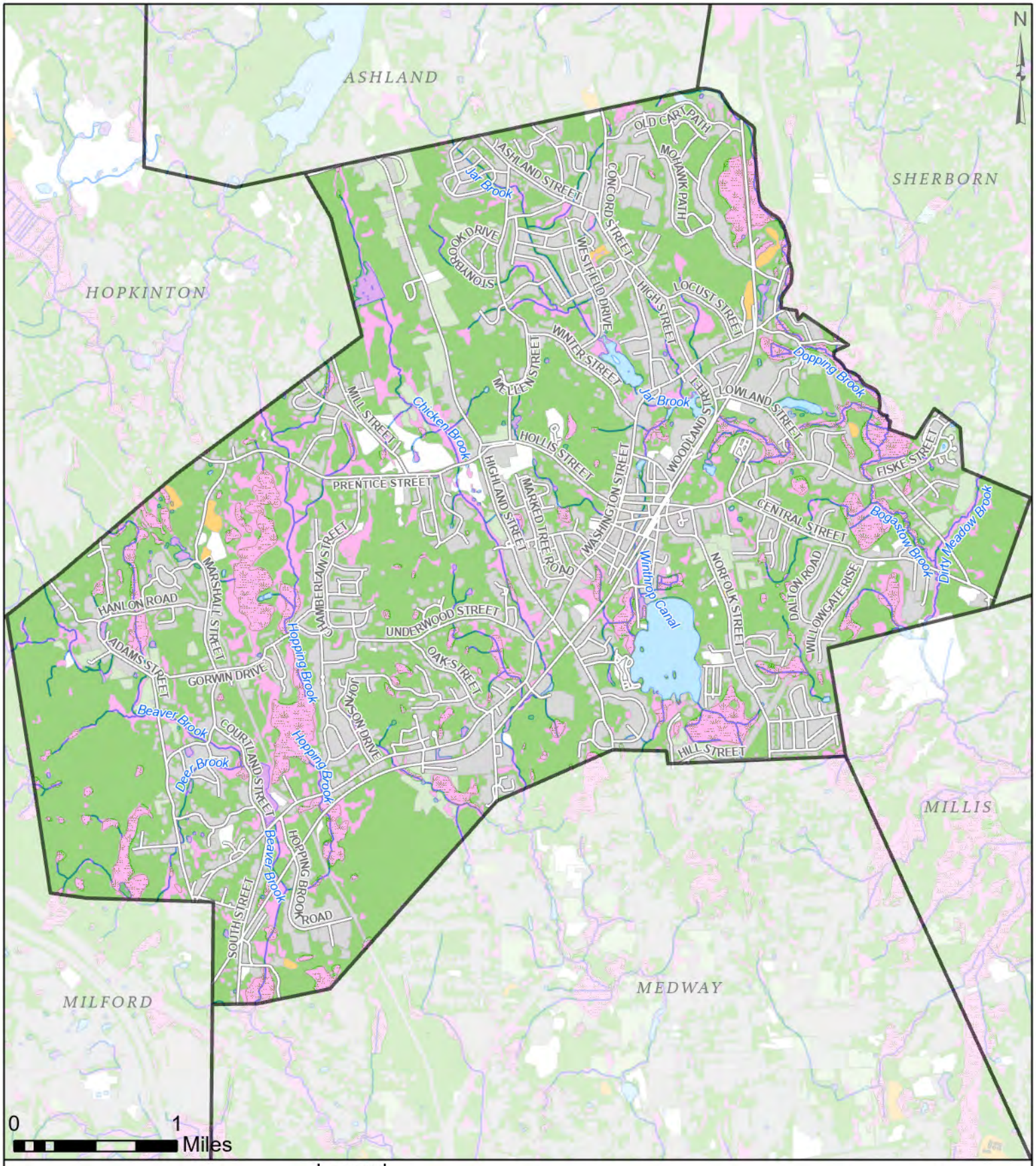
Table 11-1. Best Management Practices Plan Summary												
					Year / Schedule							
					1	2	3	4	5	6		
BMP ID	BMP	Description	Responsible Department	Measurable Goal	7/1/18-7/1/19	7/1/19-7/1/20	7/1/20-7/1/21	7/1/21-7/1/22	7/1/22-7/1/23	7/1/23-7/1/24	BMP Status
3. Illicit Discharge Detection and Elimination												
3-1	**SSO Inventory**	The town relies entirely on septic; SSO considerations do not apply	Planning Board, Health Department	N/A	*	*	*	*	*	*	N/A
3-2	**Phase I Storm Sewer System Map**	Delineate catchment areas based on topography for each MS4 outfall and map in GIS.	DPW	Updated map within 2 years of effective date of permit	*						Completed Updated as new information becomes availabl
		Update outfalls, conveyances receiving waters, interconnections, MS4-owned BMPs & initial catchment delineations.			*	*					
	Phase II Storm Sewer System Map	Update outfall spatial location, pipes, manholes, catch basins, refined catchment delineations as new information becomes available.	DPW	Updated map within 10 years of effective date of permit	*	*	*	*	*	*	Ongoing
3-3	**Written IDDE Program Development**	Develop a written IDDE program. This has been developed as a separate document.	DPW, Health Department	Written plan within 1 year of effective date of permit	*						Completed
3-4	**Implement IDDE Program**	Inspect key catchment structures (manholes, catch basins) during dry weather conditions. Where flowing water is observed, collect samples for analysis.	DPW, Health Department	Problem Outfalls by July 1, 2025, all outfalls by July 1, 2028			*	*	*	*	Ongoing
3-5	**Employee Training**	Provide annual training to employees involved in the IDDE program.	DPW, Health Department	Train applicable employees annually	*	*	*	*	*	*	Ongoing
3-6	**Conduct Dry Weather Screening**	Inspect drainage outfalls classified as High or Low priority during dry weather.	DPW, Health Department	Complete 3 years after effective date of permit		*	*				Completed Outfalls inspected as found during data gap
		Investigate potential illicit discharges, if any.				*	*	*	*	*	Ongoing. None found to date.
		Enforce removal of illicit discharges, if any.				*	*	*	*	*	
3-7	**Conduct Wet Weather Screening**	Sample select outfalls with System Vulnerability Factors under wet weather conditions. Sampling can be done upon completion of any dry weather investigation, but must be completed before catchment investigation is marked as complete.	DPW, Health Department	Complete 10 years after effective date of permit						*	Complete by 2028
3-8	**Ongoing Screening**	Upon completion of catchment investigations, reprioritize outfalls for ongoing screening (as needed).	DPW, Health Department	Conduct ongoing dry and wet weather outfall screening upon completion of the IDDE program							To begin upon completion of all catchment investigations
		Continue performing dry and wet weather sampling according to the new prioritization at least once every 5 years.									
3-9	**Enact and Enforce IDDE Ordinance**	Investigate strengthening existing regulations and/or the creation of a new IDDE bylaw regarding IDDE.	Planning Board, Health Department	Regulatory mechanism in place within 1 year of the permit effective date.	*						Completed

Table 11-1. Best Management Practices Plan Summary												
					Year / Schedule							
					1	2	3	4	5	6		
BMP ID	BMP	Description	Responsible Department	Measurable Goal	7/1/18-7/1/19	7/1/19-7/1/20	7/1/20-7/1/21	7/1/21-7/1/22	7/1/22-7/1/23	7/1/23-7/1/24	BMP Status
4. Construction Site Stormwater Runoff Control											
4-1	**Develop Written Procedures for Site Inspections and Enforcement**	Review and update existing requirements mandating site inspections and enforcement of erosion and sedimen control measures.	Planning Board, Building Department, Conservation Commission	Complete within 1 year of the effective date of permit, track # of inspections and enforcements	*						Completed
4-2	**Develop Written Procedures for Site Plan Review**	Complete written procedures for site plan review and track the number of site review for annual reporting purposes. Review of existing regulations completed - program currently meets permit requirements.	Planning Board, Building Department	# site plan reviews	*						Completed
4-3	**Establish a Sediment and Erosion Control Program**	Adopt requirements for construction operators to implement a sediment and erosion control program. Review of existing regulations completed - program currently meets permit requirements.	Planning Board, Building Department, Board of Health, Conservation Commission	N/A	*						Completed
4-4	**Develop Procedures for Waste Control**	Establish requirements to control construction site wastes within 1 year of the effective date of the permit.	DPW, Planning Board, Building Department, Conservation Commission	Complete within 1 year of the effective date of permit	*						Completed
4-5	**Develop and Enforce Construction Ordinance**	Perform periodic review of bylaw and update as needed.	Planning Board, Building Department, Conservation Commission	Complete within 1 year of the effective date of permit	*						Completed bylaw Review & enforcement ongoing

Table 11-1. Best Management Practices Plan Summary												
					Year / Schedule							
					1	2	3	4	5	6		
BMP ID	BMP	Description	Responsible Department	Measurable Goal	7/1/18-7/1/19	7/1/19-7/1/20	7/1/20-7/1/21	7/1/21-7/1/22	7/1/22-7/1/23	7/1/23-7/1/24	BMP Status
5. Stormwater Management in New Development and Redevelopment												
5-1	**Require Stormwater As-Built Plan Submittal**	As builts currently required. Will develop procedures requiring long term O&M plan with dedicated funding.	Planning Board, Conservation Commission, Building Department	Complete within 2 years of effective date of permit.	*	*					Completed
5-2	**Identify 5 MS4-owned Properties for Potential Retrofits**	Identify 5 properties for potential retrofits to stormwater impacts and consider the potential to reduce phosphorus discharges for properties within the Charles River Watershed.	Planning Board, Conservation Commission, Building Department, DPW	Complete inventory within 4 years of the effective date of the permit and update annually on retrofitted properties				*			Completed
		Track and report annually properties that have been modified or retrofitted with BMPs.						*	*	*	Ongoing
5-3	**Allow Green Infrastructure**	Review existing by-laws, regulations and guidance to determine the feasibility of making green practices allowable.	Planning Board, Conservation Commission, Building Department	Complete regulatory updates within 4 years of the effective date of the permit			*	*			Completed
		Prepare a report assessing existing local regulations to determine the feasibility of allowing green roofs, infiltration practices, and water harvesting devices.						*			
5-4	**Street Design and Parking Lot Guidelines**	Review existing by-laws, regulations and guidance pertaining to current street and parking lot design and all regulations for ability to incorporate LID into designs.	DPW, Highway Department, Planning Board	Complete regulatory updates within 4 years of the effective date of the permit			*				Completed
		Prepare a report assessing whether existing street and parking lot design regulations allow for incorporation of LID practices and recommendations for changes.						*			
5-5	**Require New and Redevelopment BMPs Meet Stormwater Standards**	Review and update bylaws to ensure that requirements are met.	Planning Board, Conservation Commission, Building Department	Complete within 2 years of effective date of permit.	*	*					Completed

Table 11-1. Best Management Practices Plan Summary											
					Year / Schedule						
					1	2	3	4	5	6	
BMP ID	BMP	Description	Responsible Department	Measurable Goal	7/1/18-7/1/19	7/1/19-7/1/20	7/1/20-7/1/21	7/1/21-7/1/22	7/1/22-7/1/23	7/1/23-7/1/24	BMP Status
6. Good Housekeeping and Pollution Prevention											
6-1	**O&M Procedures**	Create written O&M procedures for parks and open spaces, buildings and facilities, and vehicles and equipment.	DPW	Complete within 2 years of the effective date of the permit		*					Completed
6-2	**Inventory MS4 Properties**	Inventory all permittee-owned parks and open spaces, building and facilities (including storm drains), and vehicles and equipment in the regulated area.	DPW, Building Department, Parks and Recreation	Complete within 2 years of the effective date of the permit		*					Completed
6-3	**O&M Procedures for MS4 Infrastructure**	Establish and implement program for repair and rehabilitation of MS4 infrastructure. Infrastructure O&M SOPs will be included in the Town's O&M Manual as they are developed.	DPW	Complete within 2 years of permit effective date		*					Completed
6-4	**SWPPPs**	Evaluate the need for SWPPPs for municipal maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater. Complete SWPPP or document No Exposure as applicable.	DPW, Highway Department, Water Department	Document whether a SWPPP is needed and where required, prepare SWPPP by July 1, 2020.		*					Completed
6-5	**Catch Basin Cleaning**	1. Develop a plan for collecting catch basin cleaning data for use in developing an optimization plan. Establish and implement cleaning schedule to maintain catch basins so that they remain less than 50% full of sediment. Properly manage storage of catch basin residuals	DPW	Plan for collecting catch basin cleaning data	*						Completed
		2. Collect catch basin cleaning data.		Database of data collected during catch basin cleaning		*	*				Ongoing
		3. Develop and implement a schedule for optimizing catch basin cleaning with a goal that catch basins remain less than 50% full of sediment.		Implement catch basin cleaning optimization program				*	*	*	Ongoing
6-6	**Street Sweeping**	Develop and implement program for sweeping streets. Properly manage storage of street sweeping residuals.	DPW	Sweep all streets and parking lots in accordance with plan.	*	*	*	*	*	*	Completed plan Ongoing sweeping
6-7	**Road Salt Optimization Program**	Establish procedures for proper winter road maintenance, including use and storage of salt and sand, and procedures to minimize the use of road salt.	DPW	Implement salt use optimization during winter maintenance operations	*	*	*	*	*	*	Completed plan Ongoing road maintenance
6-8	**Inspect MS4-owned BMPs**	Annually inspect MS4-owned stormwater treatment BMPs. Document inspections and maintenance performed.	DPW	Inspect and maintain treatment structures at least annually	*	*	*	*	*	*	Ongoing
6-9	**O&M Program (Vehicle Washing)**	Perform regular vehicle washing using Highway Department water recycling and filtration system.	DPW	Wash town vehicles at Highway Department	*	*	*	*	*	*	Looking into new DPW Garage site

Table 11-1. Best Management Practices Plan Summary												
					Year / Schedule							
					1	2	3	4	5	6		
BMP ID	BMP	Description	Responsible Department	Measurable Goal	7/1/18-7/1/19	7/1/19-7/1/20	7/1/20-7/1/21	7/1/21-7/1/22	7/1/22-7/1/23	7/1/23-7/1/24	BMP Status
7. TMDL and Impaired Waters												
7-1	**Public Education (Pathogen TMDL - Bogastow Brook)**	Supplement the residential program with an annual message encouraging the proper management of pet waste and disseminate educational materials to dog owners at the time of issuance or renewal of dog licenses.	Community Development, Highway Department, Conservation Commission, Planning Board, Zoning Board, Building Department	Issue additional annual messages	*	*	*	*	*	*	Ongoing
		Provide information to owners of septic systems about proper maintenance in any catchment that discharges to a waterbody impaired for bacteria or pathogens.			*	*	*	*	*	*	
7-2	**Illicit Discharge, Detection, and Elimination (Pathogen TMDL - Bogastow Brook)**	Designate catchments draining to bacteria or pathogen impaired segments as "Problem Catchments" or "HIGH" priority.	Community Development, Highway Department, Conservation Commission, Planning Board, Zoning Board, Building Department	Include in IDDE Plan	*						Completed Updated as new information becomes available
7-3	**Phosphorus Control Plan (PCP) (Phosphorus TMDL - Charles River Watershed)**	Develop a PCP designed to reduce the amount of phosphorus in stormwater discharges from the MS4 to the impaired waterbody or its tributaries consistent with assumptions and requirements of the WLA for the phosphorus loadings published in the phosphorus TMDL.	Community Development, Highway Department, Conservation Commission, Planning Board, Zoning Board, Building Department	Complete five years after effective date of the permit					*	*	Ongoing



Legend

Land Use:

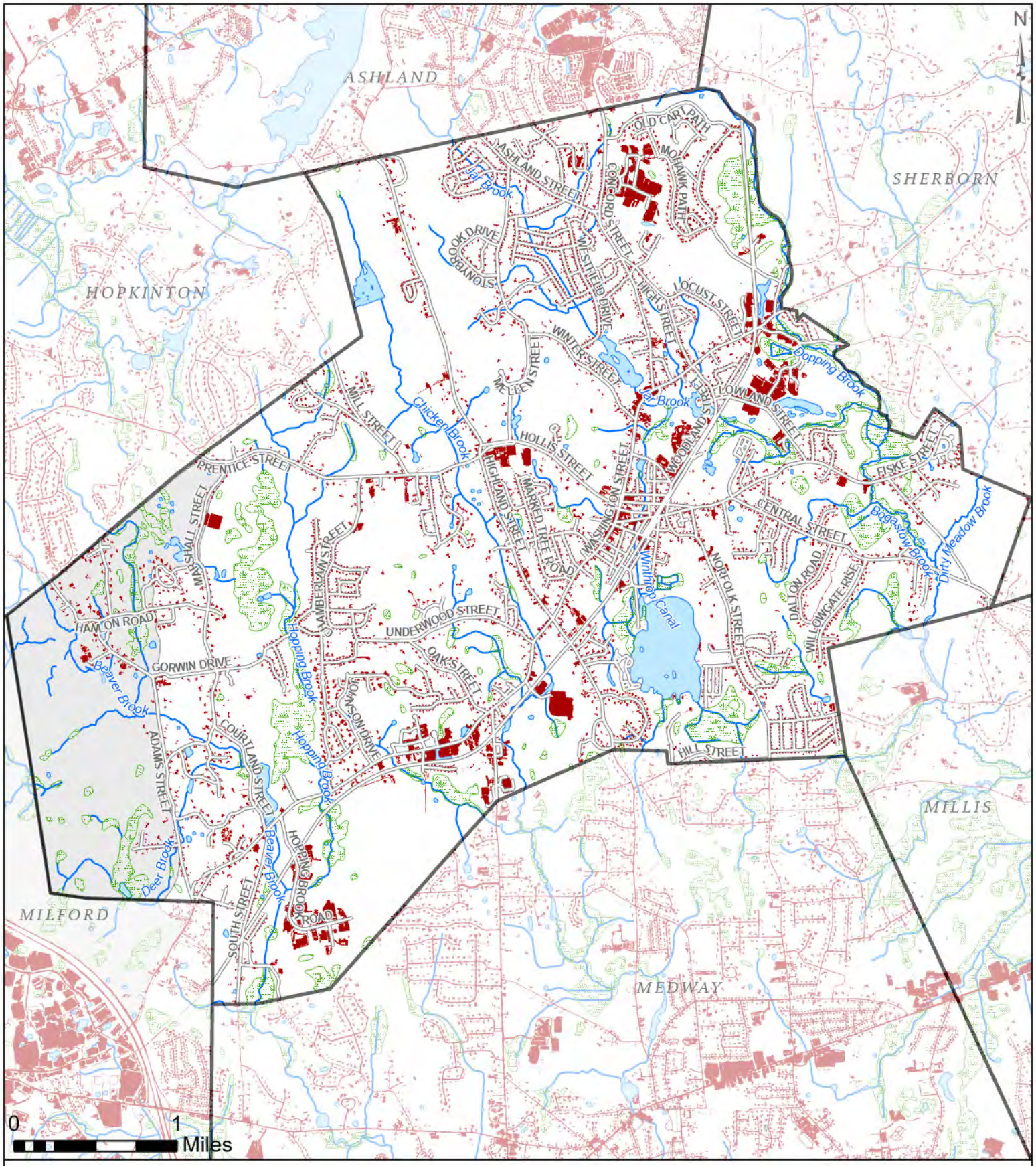
- Residential / Commercial / Industrial
- Agriculture
- Forest
- Water
- Wetland
- Disturbed Land
- Other Cleared Land
- Pond, Reservoir
- Wetland, Marsh
- Stream, Brook
- Roads

Figure 2-1
Land Use
Holliston, MA

Comprehensive Environmental Incorporated

Data Sources: CEI, MassGIS, Town of Holliston

12/28/2022



Legend

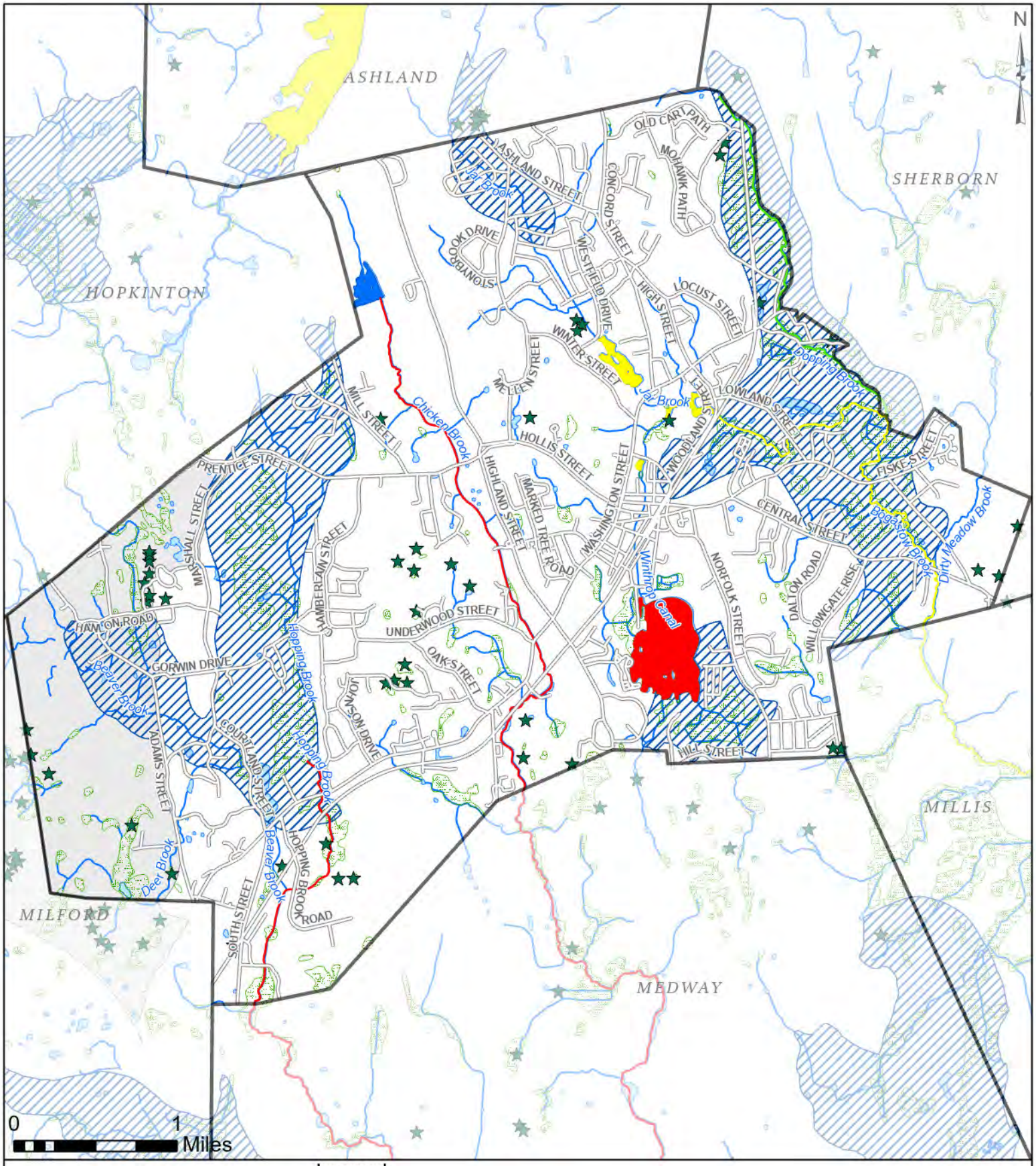
- Impervious Surface
- Pond, Reservoir
- Wetland, Marsh
- Stream, Brook
- Non-Urbanized Area
- Roads

Data Sources: CEI, MassGIS, Town of Holliston

Figure 2-2.
Impervious Area
Holliston, MA

Comprehensive Environmental Incorporated

9/28/2022



Legend

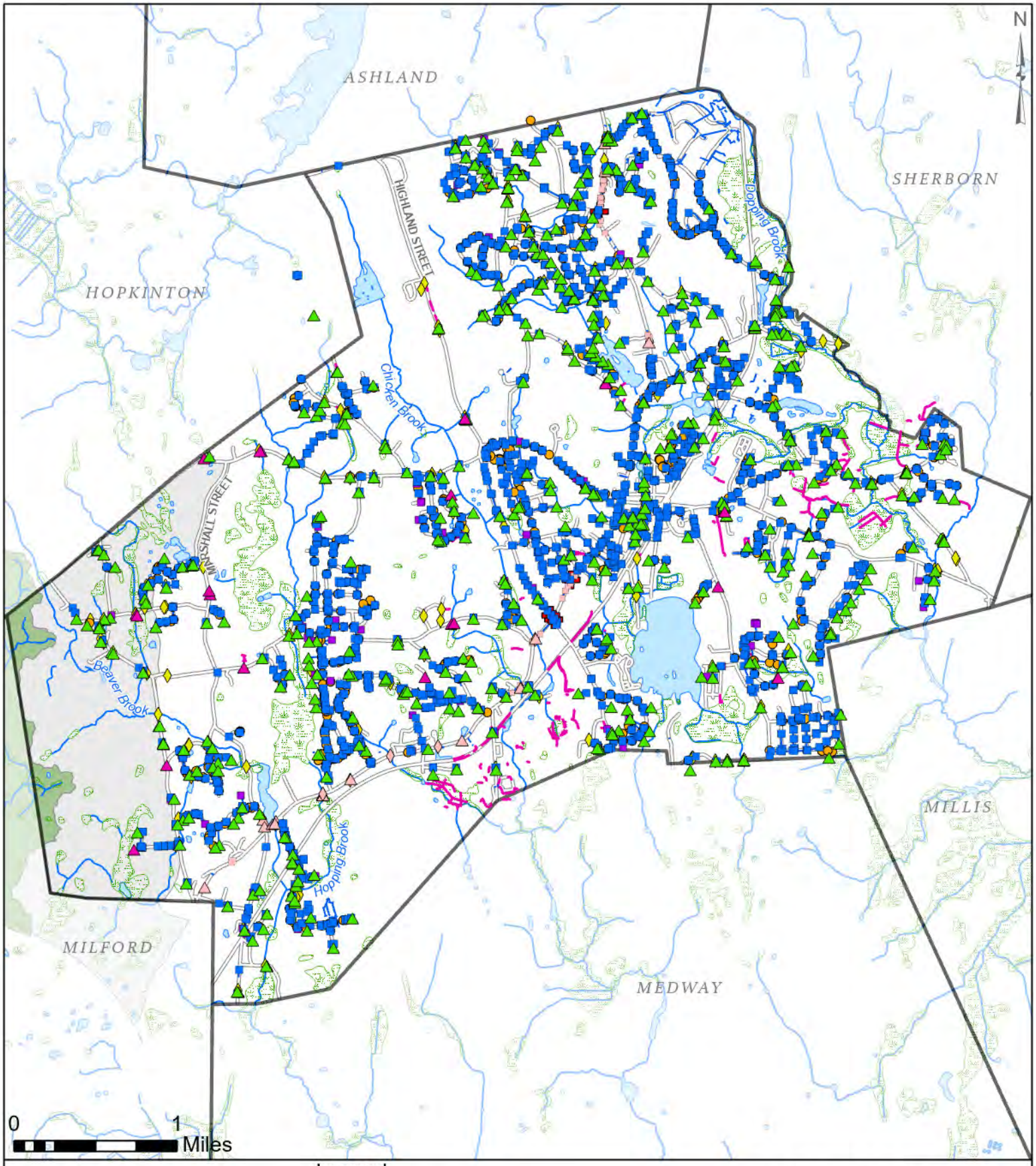
- Certified Vernal Pool
- MassDEP Zone II
- MA DFW Coldwater Fisheries
- Category 2
- Category 3
- Category 4A
- Category 4C
- Category 5
- Category 2
- Category 3
- Category 4A
- Category 4C
- Category 5
- Pond, Reservoir
- Wetland, Marsh
- Stream, Brook
- Non-Urbanized Area
- Roads

Figure 2-3
Resource Waters
Holliston, MA

Comprehensive Environmental Incorporated

Data Sources: CEI, MassGIS, Town of Holliston

9/28/2022



Legend

Surface Water Supply Watersheds
- Charles River
- Outfall
- Open Drain
- Culvert
- Interconnections
- Catch Basin
- Drainage Box
- Inlet
- Manholes
- MassDOT Outfall
- MassDOT Culvert
- MassDOT Catch Basin
- MassDOT Manholes
- Drainage Pipe
- Drainage Ditch
- Pond, Reservoir
- Wetland, Marsh
- Stream, Brook
- Non-Urbanized Area
- Roads

Figure 2-4 Stormwater Infrastructure in Surface Water Supply Watersheds Holliston, MA

Comprehensive Environmental Incorporated

Data Sources: CEI, MassGIS, Town of Holliston

12/28/2022

Appendix A

Notice of Intent and Authorization to Discharge

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

VIA EMAIL

March 5, 2019

Jeff Ritter
Town Administrator

And;

Sean Reese
Director of Public Works
730 Washington Street
Holliston, MA. 01746
reeses@holliston.k12.ma.us

Re: National Pollutant Discharge Elimination System Permit ID #: MAR041122, Town of Holliston

Dear Sean Reese:

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,

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

and;

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

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

Part I: General Conditions

General Information

Name of Municipality or Organization: Town of Holliston State: MA

EPA NPDES Permit Number (if applicable): MAR041122

Primary MS4 Program Manager Contact Information

Name: Sean Reese Title: Director of Public Works

Street Address Line 1: 703 Washington Street

Street Address Line 2:

City: Holliston State: MA Zip Code: 01746

Email: reeses@holliston.k12.ma.us Phone Number: (508) 429-0615

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? Yes

Eligibility Criteria (check all that apply): ☐ A ☐ B ☒ C

National Historic Preservation Act (NHPA) Determination Complete? Yes

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? *(Part II, III, IV or V, Subpart B.3.(a.) of 2003 permit)* 100%

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? *(Part II, III, IV or V, Subpart B.3.(b.) of 2003 permit)* No

Effective Date or Estimated Date of Adoption (MM/DD/YY): 06/30/19

Construction/Erosion and Sediment Control (ESC) Authority Adopted? *(Part II,III,IV or V, Subpart B.4.(a.) of 2003 permit)* Yes

Effective Date or Estimated Date of Adoption (MM/DD/YY): 05/05/08

Post- Construction Stormwater Management Adopted? *(Part II, III, IV or V, Subpart B.5.(a.) of 2003 permit)* Yes

Effective Date or Estimated Date of Adoption (MM/DD/YY): 05/05/08

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

Part II: Summary of Receiving Waters

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

Check off relevant pollutants for discharges to impaired waterbodies (see above 303(d) lists) without an approved TMDL in accordance with part 2.2.2.a of the permit. List any other pollutants in the last column, if applicable.

Waterbody segment that receives flow from the MS4	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
Beaver Brook	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Bogastow Brook (MA72-16)	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	Fecal Coliform
Dirty Meadow Brook	5	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Dopping Brook	7	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Factory Pond (MA72037)	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	Non-Native Aquatic Plants, Aquatic Plants (Macrophytes)
Hopping Brook (MA72-35)	5	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Hopping Brook	3	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Jar Brook	7	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Lake Winthrop (MA72140)	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	2,3,7,8-Tetrachlorodibenzo-p-dioxin (only), Non-Native Aquatic Plants, Aquatic Plants (Macrophytes)
Linden Pond (MA72063)	1	☐	☐	☐	☐	☐	☐	☒	☐	☐	Aquatic Plants (Macrophytes)
Tributaries to Bogastow Brook	11	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Tributaries to Chicken Brook	6	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Tributary to Factory Pond	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Tributary to Jar Brook	5	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Tributary to wetland/small pond, Shaw Farm Road	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Tributary to wetland adjacent to Prentice Street	13	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Tributary to wetland, Marshall Street	3	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Tributaries to wetland/Lake Winthrop	6	☐	☐	☐	☐	☐	☐	☐	☐	☐	

Waterbody segment that receives flow from the MS4	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
Unnamed stream at end of Wedgewood Drive	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Winthrop Canal	10	☐	☐	☐	☐	☐	☐	☐	☐	☐	
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Click to lengthen table

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 an 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 requires a target audience). **Use the drop-down menus in each table or enter your own text to override the drop down menu.**

MCM 1: Public Education and Outreach

BMP Media/Category (enter your own text to override the drop down menu)	**BMP Description**	**Targeted Audience**	**Responsible Department/Parties** (enter your own text to override the drop down menu)	**Measurable Goal**	**Beginning Year of BMP Imple-mentation**
Brochures/Pamphlets	Distribute fact sheets or brochures on pet waste pickup with dog licenses.	Residents	Town Clerk	Provide information with all applications and renewals	2019
Local Public Service Announcements	Run cable access television educational programming regarding safety and environment. Include announcements for cleanups, flooding programs, household hazardous materials days, etc.	Residents, Businesses, Developers, Industrial Facilities	Conservation Commission, Department of Public Works, Fire Departm	Continue cable access TV educational programming	2018
Brochures/Pamphlets	Distribute brochures and fact sheets to residents and businesses.	Residents, Businesses	Conservation Commission, Department of Public Works, Planning Boa	Continue distribution at meetings, via town mailings, and at public events	2018
Web Page	Provide information on website related to illicit storm drain dumping, septic system maintenance, lawn care, infiltration, vehicle maintenance, and disposal of swimming pool water.	Residents	Department of Public Works, Planning Board, Conservation Commissi	Continued webpage maintenance and updates	2019

Newspaper Articles/Press Releases	Local coverage of all Conservation Commission meetings and proposed by-law amendments.	Resident, Businesses, Institutions, and	Conservation Commission, Planning Board	Continued news coverage of meetings	2018
Displays/Posters/Kiosks	Create an active display area to provide stormwater education and information.	Residents, Developers	Department of Public Works, Health Department	Ongoing display of posters placed in Town Hall	2018
Web Page	Provide information on website related to illicit storm drain dumping, lawn care, infiltration, building maintenance, salt use, material storage, and vehicle maintenance.	Businesses, Institutions, and Commercial Facilities	Department of Public Works, Planning Board, Conservation Commissi	Continued webpage maintenance and updates	2019
Web Page	Provide information on website related to erosion and sediment control, Low Impact Development, and the Construction General Permit.	Developers (construction)	Department of Public Works, Planning Board, Conservation Commissi	Continued webpage maintenance and updates	2019
Social Media	Provide relevant stormwater information to different audiences via social media.	Resident, Businesses, Institutions, and Comme	Department of Public Works, Planning Board, Conservation Commissi	Follow statewide "Think Blue" campaign on social media platforms	2019
Web Page	Provide information on website related to equipment maintenance and inspection, material storage, solid waste handling, salt use, infiltration, parking lot maintenance, and the EPA Multi Sector General Permit.	Industrial Facilities	Department of Public Works, Planning Board, Conservation Commissi	Continued webpage maintenance and updates	2019

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

Part III: Stormwater Management Program Summary (continued)

MCM 2: Public Involvement and Participation

BMP Categorization	Brief BMP Description (enter your own text to override the drop down menu)	Responsible Department/Parties (enter your own text to override the drop down menu)	Additional Description/ Measurable Goal	Beginning Year of BMP Imple-mentation
Public Review	SWMP Review	Conservation Commission, Planning Board, Technology Department	Allow annual review of stormwater management plan and posting of stormwater management plan on website	2019
Public Participation	Upload SWMP to the Town website and provide a link to contact inform	Conservation Commission, Planning Board, Technology Department	Allow public to comment on stormwater management plan annually	2019
Public Review	Establish a stormwater hotline	Planning Board, Building Department, Conservation Commission	Record number of calls	2018
Public Participation	Conduct river and pond cleanups	Conservation Commission, Highway Department	Hold annual cleanup	2018
Public Participation	Household haz. waste/used oil collection	Board of Selectmen	Provide one household hazardous waste collection day per year	2018

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

Part III: Stormwater Management Program Summary (continued)

MCM 3: Illicit Discharge Detection and Elimination (IDDE)

BMP Categorization (enter your own text to override the drop down menu)	**BMP Description**	**Responsible Department/Parties** (enter your own text to override the drop down menu)	**Measurable Goal** (all text can be overwritten)	**Beginning Year of BMP Imple-mentation**
SSO inventory	Develop SSO inventory in accordance of permit conditions	Department of Public Works, Health Department	Complete within 1 year of effective date of permit	2018
Storm sewer system map	Create map and update during IDDE program completion	Department of Public Works	Update map within 2 years of effective date of permit and complete full system map 10 years after effective date of permit	2018
Written IDDE program	Create written IDDE program	Department of Public Works, Health Department	Complete within 1 year of the effective date of permit and update as required	2018
Implement IDDE program	Implement catchment investigations according to program and permit conditions	Department of Public Works, Health Department	Complete 10 years after effective date of permit	2020
Employee training	Train employees on IDDE implementation	Department of Public Works, Health Department	Train annually	2019
Conduct dry weather screening	Conduct in accordance with outfall screening procedure and permit conditions	Department of Public Works, Health Department	Complete 3 years after effective date of permit	2019
Conduct wet weather screening	Conduct in accordance with outfall screening procedure	Department of Public Works, Health Department	Complete 10 years after effective date of permit	2024
Ongoing screening	Conduct dry weather and wet weather screening (as necessary)	Department of Public Works, Health Department	Complete ongoing outfall screening upon completion of IDDE program	2028
IDDE Ordinance/Bylaw	Strengthen existing regulations or create a new IDDE bylaw	Planning Department, Health Department	Investigate strengthening of regulations regarding IDDE	2018

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

Part III: Stormwater Management Program Summary (continued)

MCM 4: Construction Site Stormwater Runoff Control

BMP Categorization (enter your own text to override the drop down menu or entered text)	**BMP Description**	**Responsible Department/Parties** (enter your own text to override the drop down menu)	**Measurable Goal** (all text can be overwritten)	**Beginning Year of BMP Imple-mentation**
Site inspection and enforcement of Erosion and Sediment Control (ESC) measures	Complete written procedures of site inspections and enforcement procedures	Planning Department, Conservation Commission, Building Department	Complete within 1 year of the effective date of permit	2018
Site plan review	Complete written procedures of site plan review and begin implementation	Planning Department, Building Department	Complete within 1 year of the effective date of permit	2018
Erosion and Sediment Control	Adoption of requirements for construction operators to implement a sediment and erosion control program	Planning Department, Building Department, Board of Health, Conservation Comr	Complete within 1 year of the effective date of permit	2018
Waste Control	Adoption of requirements to control wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes	Department of Public Works, Planning Department, Building Department, Conser	Complete within 1 year of the effective date of permit	2018
Erosion Control Bylaw	Ongoing implementation of erosion control bylaw. Periodic review of bylaw with updates as needed	Planning Department, Building Department, Conservation Commission	Review and update as needed	2018

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

Part III: Stormwater Management Program Summary (continued)

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

BMP Categorization (enter your own text to override the drop down menu or entered text)	**BMP Description**	**Responsible Department/Parties** (enter your own text to override the drop down menu)	**Measurable Goal** (all text can be overwritten)	**Beginning Year of BMP Imple-mentation**
As-built plans for on-site stormwater control	The procedures to require submission of as-built drawings and ensure long term operation and maintenance will be a part of the SWMP	Planning Board, Conservation Commission, Building Department	Require submission of as-built plans for completed projects	2018
Target properties to reduce impervious areas	Identify at least 5 permittee-owned properties that could be modified or retrofitted with BMPs to reduce impervious areas and update annually	Planning Board, Conservation Commission, Building Department, Department of	Complete 4 years after effective date of permit and report annually on retrofitted properties	2021
Allow green infrastructure	Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist	Planning Board, Conservation Commission, Building Department	Complete 4 years after effective date of permit and implement recommendations of report	2020
Street design 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.	Department of Public Works, Highway Department, Planning Board	Complete 4 years after effective date of permit and implement recommendations of report	2020

Ensure any stormwater controls or management practices for new development and redevelopment meet the retention or treatment requirements of the permit and all applicable requirements of the Massachusetts Stormwater Handbook	Adoption, amendment, or modification of a regulatory mechanism to meet permit requirements	Planning Board, Conservation Commission, Building Department	Complete 2 years after effective date of permit	2019

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

Part III: Stormwater Management Program Summary (continued)

MCM 6: Municipal Good Housekeeping and Pollution Prevention

BMP Categorization (enter your own text to override the drop down menu or entered text)	**BMP Description**	**Responsible Department/Parties** (enter your own text to override the drop down menu)	**Measurable Goal** (all text can be overwritten)	**Beginning Year of BMP Imple-mentation**
O&M procedures	Create written O&M procedures including all requirements contained in 2.3.7.a.ii for parks and open spaces, buildings and facilities, and vehicles and equipment	Department of Public Works, Building Department, Parks and Recreatio	Complete and implement 2 years after effective date of permit	2019
Inventory all permittee-owned parks and open spaces, buildings and facilities, and vehicles and equipment	Create inventory	Department of Public Works, Building Department, Parks and Recreatio	Complete 2 years after effective date of permit and implement annually	2019
Infrastructure O&M	Establish and implement program for repair and rehabilitation of MS4 infrastructure	Department of Public Works	Complete 2 years after effective date of permit	2019
Stormwater Pollution Prevention Plan (SWPPP)	Create SWPPPs for maintenance garages, transfer stations, and other waste-handling facilities	Department of Public Works, Highway Department	Complete and implement 2 years after effective date of permit	2019
Catch basin cleaning	Establish schedule for catch basin cleaning such that each catch basin is no more than 50% full and clean catch basins on that schedule	Department of Public Works	Clean catch basins on established schedule and report number of catch basins cleaned and volume of material moved annually	2018
Street sweeping program	Sweep all streets and permitee-owned parking lots in accordance with permit conditions	Department of Public Works	Sweep all streets and permitee-owned parking lots once per year in the spring	2018
Road salt use optimization program	Establish and implement a program to minimize the use of road salt	Department of Public Works	Implement salt use optimization during deicing season	2018

Inspections and maintenance of stormwater treatment structures	Establish and implement inspection and maintenance procedures and frequencies	Department of Public Works	Inspect and maintain treatment structures at least annually	2018
O&M Program (Vehicle Washing)	Perform regular vehicle washing using Highway Department water recycling and filtration system	Department of Public Works	Ongoing enclosed vehicle washing.	2018

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

Part III: Stormwater Management Program Summary (continued)

Actions for Meeting Total Maximum Daily Load (TMDL) Requirements

Use the drop-down menus to select the applicable TMDL, action description to meet the TMDL requirements, and the responsible department/parties. If no options are applicable, or more than one, **enter your own text to override drop-down menus.**

Applicable TMDL	Action Description	Responsible Department/Parties (enter your own text to override the drop down menu)
Upper/Middle Charles River (Phosphorus)	Adhere to requirements in part A.I of Appendix F	Community Development, Highway Department, Conservation Commi
Charles River Watershed (Bactria/Pathogen)	Adhere to requirements in part A.III of Appendix F	Community Development, Highway Department, Conservation Commi

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

Part III: Stormwater Management Program Summary (continued)

Actions for Meeting Requirements Related to Water Quality Limited Waters

Use the drop-down menus to select the pollutant causing the water quality limitation and enter the waterbody ID(s) experiencing excursions above water quality standards for that pollutant. Choose the action description from the dropdown menu and indicate the responsible party. If no options are applicable, or more than one, **enter your own text to override drop-down menus.**

Pollutant	Waterbody ID(s)	Action Description	Responsible Department/Parties (enter your own text to override the drop down menu)
		Adhere to requirements in part I of Appendix H	
		Adhere to requirements in part V of Appendix H	

Part IV: Notes and additional information

Use the space below to indicate the part(s) of 2.2.1and 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.

The Town of Holliston obtained an official species list for threatened and endangered species via the IPaC system (Consultation Code: 05E1NE00-2018-SLI-2543) within the regulated urbanized area. Per the IPaC system, one species exists within the MS4 regulated area: the Northern Long-eared Bat (Myotis septentrionalis). Based on the following reasons, it is our opinion that the current stormwater discharges will have "no effect" on the listed species:
1. No new construction is proposed under this permit that would disturb the terrestrial habitats of the long-eared bat.
2. Any repair work covered by this permit will only affect previously disturbed areas where stormwater controls are already installed. Due to the nature of stormwater systems, this work falls primarily along roads within urbanized areas, where the risk of encountering and adversely impacting endangered species is limited.
3. Repair work that falls within the wetlands or 100-foot buffer zone is regulated by the Massachusetts Wetlands Protection Act, which triggers a project specific endangered species review, providing more specific protection for those species within the wetlands or buffer zone.
4. All stormwater discharges are pre-existing and Holliston was previously permitted under the 2003 MS4 NOI.
5. If structural Best Management Practices (BMPs) not identified on the NOI are proposed for installation or construction during the course of the permit term, the Town of Holliston agrees to conduct endangered species screening for the proposed site and contact USFWS if it is determined that the new activity "may affect "or is "not likely to adversely affect" listed species or critical habitat under jurisdiction of the USFWS.

Because the Town's population relies entirely on septic systems for wastewater management, SSO considerations will not apply to the Town's program.

Part II identifies the number of outfalls directly discharging to a surface water body based on a proximity of 200 feet or less. There are an additional 131 MS4 outfalls in the urbanized area.

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:	Jeff Ritter	Title:	Town Administrator
Signature:	Jeff Ritter Digitally signed by Jeff Ritter Date: 2018.09.28 11:06:17 -04'00'	Date:	

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

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

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: July 27, 2018
Consultation Code: 05E1NE00-2018-SLI-2543
Event Code: 05E1NE00-2018-E-05963
Project Name: Holliston MS4 Endangered Species Review

Subject: 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-2543

Event Code: 05E1NE00-2018-E-05963

Project Name: Holliston MS4 Endangered Species Review

Project Type: LAND - DRAINAGE

Project Description: Determination of impact of stormwater discharges and discharge related activities to threatened and endangered species per Appendix C of the MA MS4 General Permit. Stormwater discharge occurs from pre-existing outfalls within the regulated zone, as shown on the map.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.252860637000055N71.17613860707156W

Counties: Middlesex, MA | Norfolk, MA | Suffolk, MA | 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 Fisheries[1], 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.

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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 *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

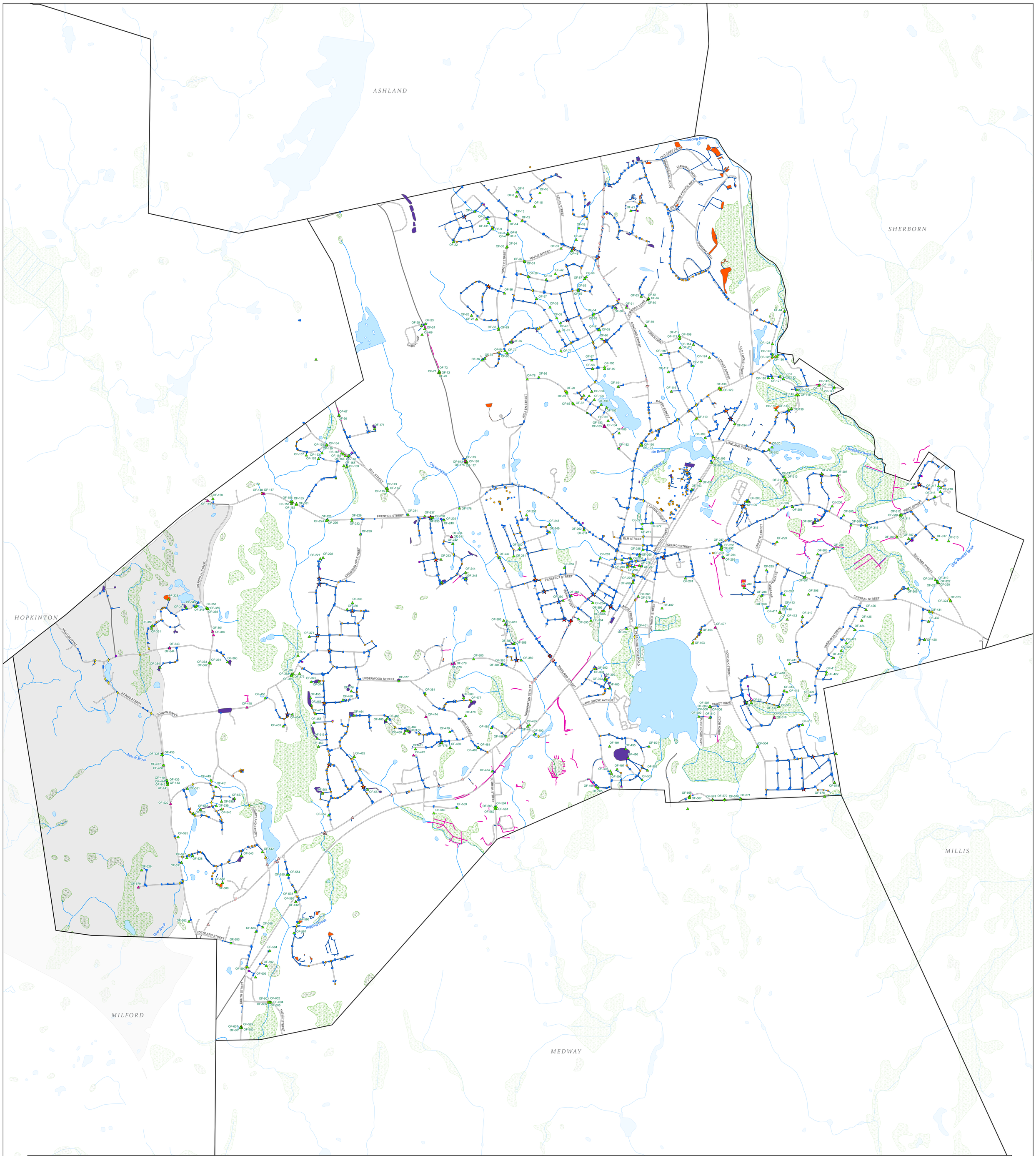
THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Appendix B

Stormwater System Mapping

Mapping Status

Requirement Summary	Status
Phase I – Must be Complete by July 1, 2020	
1. Outfalls and receiving waters	Complete
2. Open channel conveyances	Complete
3. Interconnections with other MS4s	Complete where state drainage is mapped (updates ongoing)
4. Municipally owned structural BMPs	Complete
5. Waterbody names and impairments	Complete
6. Initial catchment delineations by topography	Complete
Phase II – Must be Complete by July 1, 2028	
1. Outfalls with spatial accuracy +/-30 feet	Complete
2. Pipe connectivity	Minimally Complete (updates ongoing)
3. Manholes	Complete
4. Catch basins	Complete
5. Refined catchment delineations	Ongoing as data gaps are filled
6. Municipal sanitary system	Not Applicable
7. Municipal combined sewer system	Not Applicable


ASHLAND
SHERBORN
HOPKINTON
MILLIS
MILFORD
MEDWAY
Legend
Outfall
Open Drainage Outfall
Culverts
Catch Basin
Drainage Box
Inlet
Manholes
MassDOT Outfall
MassDOT Culvert
MassDOT Catch Basin
MassDOT Manholes
Key Junctions
Interconnections
Drainage Pipe
Drainage Ditch
Town Owned BMP
Private BMP
Roads
Lake, Pond, Reservoir
Wetland, Marsh, Swamp
Stream, Brook
Non-Urban Area
N
W
E
S
0
0.25
0.5
1
Miles
Stormwater Infrastructure Map
Holliston, MA
Comprehensive
Environmental
Incorporated
Data Sources: CEI, MassGIS, Town of Holliston
9.28.2021

Appendix C

Regulatory Review and Legal Authority

MS4 Regulatory Review
Regulations
Site Inspection SOPs
LID and Green Infrastructure Regulatory Review

MS4 Regulatory Review

MS4 REGULATORY REVIEW – TOWN OF HOLLISTON

TO: Karen Sherman, Town Planner, Town of Holliston
FROM: Rebecca Balke, P.E., CEI
DATE: April 17, 2019
SUBJECT: MS4 Regulatory Review

Comprehensive Environmental, Inc. (CEI) has performed a preliminary review of Holliston's existing bylaws and applicable regulations to determine compliance with Section 2.3.4.a of Minimum Measure 3 – Illicit Discharge Detection and Elimination (IDDE) Program, and Section 2.3.5 of Minimum Measure 4 – Construction Site Stormwater Runoff Control of the 2016 Massachusetts MS4 General Permit. The bylaws and regulations that were reviewed include the following:

- General Bylaws Article XLI "Stormwater Management and Land Disturbance By-Law," adopted May 5th, 2008
- Planning Board Rules & Regulations Article XI "Stormwater and Land Disturbance Regulations," adopted September 25th, 2008.

The MS4 Permit requires regulated communities to develop or modify, as appropriate, its regulatory mechanism for post construction stormwater management by the end of Year 2 of the permit term. The revisions will include the incorporation of specific design criteria as outlined in the permit. Given the minor nature of the comments below, CEI recommends that all updates be performed at the same time during Year 2, with the exception of developing and adopting an IDDE bylaw, which should be done as soon as practical. Written procedures outside of the regulations, such as inspection checklists, can be developed in the interim to satisfy the MS4 requirements.

The following table summarizes the requirements of the permit, existing regulatory mechanisms in the Town that address the requirements and to what extent, and recommendations for regulatory updates or supplemental information for full compliance.

MS4 REGULATORY REVIEW – TOWN OF HOLLISTON

Minimum Measure 3 – Illicit Discharge, Detection, and Elimination		
Required Elements	**Current Municipal Regulatory Requirements**	**Recommended Changes**
Section 2.3.4.a. Have adequate legal authority to: • Prohibit illicit discharges • Investigate suspected illicit discharge • Eliminate illicit discharges, including those from properties not owned or controlled by the Town • Implement appropriate enforcement procedure and actions	No ordinance currently gives the Town the authority to prohibit, investigate, and eliminate illicit discharges to the MS4 system.	CEI recommends developing a new bylaw to give the town the legal authority to prohibit, investigate, and eliminate illicit discharges to the MS4 system, and implement appropriate enforcement actions.

Minimum Measure 4 – Construction Site Stormwater Runoff Control		
Required Elements	**Current Municipal Regulatory Requirements**	**Recommended Changes**
Section 2.3.5.a. Implement program that reduces stormwater pollutants at construction sites >1 acre, or < 1 acre if part of a larger common plan of development that will disturb >1 acre.	General Bylaws Article XLI "Stormwater Management and Land Disturbance By-Law," Section 3 requires a Land Disturbance Permit for: • Disturbances greater than 10,000sq. ft. (0.23 acres) or 25% of the parcel size • Paving in excess of 500 sq. ft. for commercial and industrial use • Activities that disturb >250sq. ft. of land on with a slope greater than 10 degrees The regulations do not specifically address areas under one acre that are part of a common plan larger than one acre. The bylaw allows for several types of exemptions. These exemptions may not meet permit requirements.	CEI recommends adding additional language to address disturbances <1 acre when part of a larger common plan of development that will disturb >1 acre. The Town must regulate all projects disturbing >1 acre in accordance with the MS4 Permit (i.e., erosion controls and post construction controls). Exemptions should be reviewed to ensure that they still meet these requirements elsewhere in the Town's regulations. If not currently in place, it may be advisable to revise other regulations or bylaws to reference the standards within the Stormwater Regulations.

MS4 REGULATORY REVIEW – TOWN OF HOLLISTON

Minimum Measure 4 – Construction Site Stormwater Runoff Control		
Required Elements	**Current Municipal Regulatory Requirements**	**Recommended Changes**
Section 2.3.5.c.i. and iv. Regulatory mechanism that requires the use of sediment and erosion control practices at construction sites.	Planning Board Rules & Regulations Article XI "Stormwater and Land Disturbance Regulations" requires the submission of a Stormwater Management and Operation and Maintenance Plan that meets both the Massachusetts Stormwater Management and Holliston Planning Board Standards, which require stormwater BMP use during construction.	CEI recommends adding text that both defines construction waste and regulates its control.
Ordinance must include requirement for construction site operators to control other wastes on construction sites, such as demolition debris, litter, concrete truck wash-out, and chemicals.	Regulations do no currently address other construction wastes.	

MS4 REGULATORY REVIEW – TOWN OF HOLLISTON

Minimum Measure 4 – Construction Site Stormwater Runoff Control		
Required Elements	**Current Municipal Regulatory Requirements**	**Recommended Changes**
Section 2.3.5.c.ii. and v. Written procedures for site inspections and enforcement of sediment and erosion control measures. Written procedures must include: • Requirement that inspections occur during and after BMP construction • Inspection procedures • Inspector qualifications • Procedures for tracking number of site reviews, inspections, and enforcement actions • Using mandated inspection form (if appropriate)	No publicly available procedures for site inspection and enforcement are available.	The authority for site inspection and enforcement is clearly designated to the Planning Board or its agent, however, there were no written site inspection procedures available to CEI. CEI recommends making these procedures public, if they exist, or developing them, if they do not. If the Town allows the applicant to hire a third party to perform inspections, these written procedures should be incorporated into the regulations.
Clearly define who has authority to conduct site inspection and enforcement.	Planning Board Rules & Regulations Article XI "Stormwater and Land Disturbance Regulations" states that filing an application for a permit grants the Planning Board, or its agent, permission to enter the site to inspect for compliance with the resulting permit. The regulations also give the Board, or its agent, the authority of enforcement.	
Section 2.3.5.c.iii. Requirements for construction site runoff control programs to include BMPs.	Planning Board Rules & Regulations Article XI "Stormwater and Land Disturbance Regulations" requires the submission of a Stormwater Management and Operation and Maintenance Plan that meets both the Massachusetts Stormwater Management and Holliston Planning Board Standards, which require stormwater BMP use during construction.	No further action necessary.
Program may reference state or Town BMP design standards.	Program references both state and Town-specific standards.	

MS4 REGULATORY REVIEW – TOWN OF HOLLISTON

Minimum Measure 4 – Construction Site Stormwater Runoff Control		
Required Elements	**Current Municipal Regulatory Requirements**	**Recommended Changes**
Section 2.3.5.c.v. Written procedures for site plan review: • Pre-construction review of the site design	Planning Board Rules & Regulations Article XI "Stormwater and Land Disturbance Regulations" outlines the procedures for a site plan review. The plan must include the following: • Existing site zoning and land use, and proposed land use. • The site's existing and proposed topography. • Proposed improvements including location of buildings or other structures, impervious surfaces, and drainage facilities, if applicable.	The Town encourages the use of LID practices in the regulation. During its review, the Town should look for LID opportunities at the site and encourage the project proponent to incorporate these practices into the site design. This could be incorporated into a site review checklist that Town uses to perform reviews. CEI recommends adding a specific procedure for the submission and consideration of comments and information by the general public. A public hearing would serve this purpose if required.
• Planned construction site operations	• Timing, schedules and sequence of development including clearing, stripping, rough grading, construction, final grading, and vegetative stabilization.	
• Planned BMPs during construction • Planned BMPs to manage stormwater after development • Consideration of water quality impacts	• Submission of a Stormwater Management and Maintenance Plan that meets the Massachusetts Stormwater Management and Holliston Planning Board Standards, which requires the use of BMPs during and after development. • A maintenance schedule for the period of construction. • Sufficient information to evaluate environmental impact and effectiveness, and acceptability of the proposed measures reducing adverse stormwater impacts.	
• Evaluation of Low Impact Development (LID) and Green Infrastructure (GI) opportunities • Procedures for the receipt and consideration of information submitted by the public.	The regulations encourage the use of non-structural low impact development practices, but does not specifically evaluate opportunities for them. They also reference requiring a fee for a public hearing, but does not provide additional information.	

Regulations

Office of the Town Clerk
Elizabeth T. Greendale, CMC/CMMC
703 Washington Street
Holliston, MA 01746
Telephone: 508-429-0601 Fax: 508-429-0642
Office Hours: Mon., Wed., Thurs. 8:30 AM – 4:30 PM
Tues. 8:30 AM – 7:00 PM, Fri. 8:30 AM – 1:00 PM

July 24, 2020

Planning Board
703 Washington Street
Holliston, MA 01746

This is to certify that at the Annual Town Meeting of July 20, 2020, the following motion received favorable voting action.

ARTICLE 21. To see if the Town will vote to amend General By-Law Article XL Stormwater Management and Land Disturbance By-Law adopted in May 2008 as follows to reflect goals of the Town's 2019 Stormwater Management Program Plan. New text is represented by ***bold italic*** text and text to be removed is represented by ~~strikethrough~~ text:

A. Purpose

The purpose of this by-law is to control the adverse impacts of increased post-development stormwater runoff, nonpoint source pollution associated with development and redevelopment as well as erosion and sedimentation associated with land disturbance and construction. Increased and contaminated stormwater runoff associated with developed land uses and the accompanying increase in impervious surface are major causes of: impairment of water quality and flow, contamination of drinking water supplies, erosion of stream channels, alteration or destruction of habitat and flooding.

This bylaw seeks to meet the following objectives:

- Minimize damage to public and private property and infrastructure;
- Safeguard the public health, safety, environment and general welfare;
- Protect water resources and prevent contamination of drinking water supplies;
- Require practices that limit soil erosion and sedimentation on construction sites;
- Require practices that control volume and rate of stormwater runoff resulting from land disturbance activities;
- Establish the Town of Holliston's legal authority to ensure compliance with the provisions of this by-law through permitting, inspection, monitoring and enforcement.

B. Authority

This bylaw is adopted under the authority granted by the Home Rule Amendment of the Massachusetts Constitution and the Home Rule statutes, pursuant to the regulations of the federal Clean Water Act, found at 40 CFR 122.34. This bylaw is intended to meet certain provisions of the Town's requirement to comply with the National Pollutant Discharge Elimination System (NPDES) Regulations (Phase I and II Rules).

C. Applicability

No person shall undertake an activity which may include clearing, ***grubbing,*** grading, ***placement of fill,*** excavation ***of soil*** or other site work that will result in a land disturbance exceeding any of the following thresholds, without a Land Disturbance Permit from the Planning Board.

There are two levels of review based on the amount of proposed land to be disturbed as part of a single project as follows:

Minor Land Disturbance Permit (total project disturbance is less than 40,000 s.f.)

1. Any activity that will result in soil disturbance of 10,000 s.f. or more, or more than 25% of the parcel or lot, whichever is less;
2. Paving in excess of a total of 500 s.f. of commercial and industrial driveways, parking lots and other impervious non-roadway surfaces;
3. Any activity that will disturb over 250 s.f. of land with 10% or greater slope.

Major Land Disturbance Permit

1. ***Any activity that will result in disturbance of 40,000 s.f. or more of land;***
2. ***Projects that disturb less than 40,000 s.f. if the project is part of a larger common plan of development or redevelopment which disturbs 40,000 s.f. or more;***
3. ~~4.~~ An alteration, redevelopment or conversion of land use involving the following: auto fueling, service and sale facilities, fleet storage yards, commercial nurseries and landscaping facilities.

D. Exemptions

~~1. Projects which require a Special Permit, Site Plan Review or Definitive Subdivision approval from the Planning Board or which require an Order of Conditions from the Conservation Commission* or requires Board of Health approval of a septic system upgrade.~~

2. Normal maintenance and improvement of land in agricultural or logging use which is consistent with MGL, c. 40A, s. 3 and 310 CMR 10.04.
3. Construction of ***fencing and*** utilities other than drainage ***that disturbs less than 40,000 s.f. and*** which will not alter terrain or drainage patterns.
4. Maintenance of existing dwellings, including landscaping, utility connections and driveways, provided such maintenance does not ***disturb 40,000 s.f. or more or*** alter drainage patterns.
5. Repairs to any stormwater treatment facility deemed necessary by the Planning Board and maintenance, reconstruction or resurfacing of any public way.

~~* For projects and/or activities within the currently regulated jurisdiction of the Conservation Commission or Planning Board as noted above, those specific application submission requirements, public notices, and fee requirements shall apply.~~

E. Administration

1. Authority. The primary authority for the administration, implementation, and enforcement of this bylaw lies with the Planning Board.
2. Land Disturbance Permits. The Planning Board shall have the authority to issue a permit for projects subject to this bylaw. Any such permit requirements may be defined and included as part of any Regulations promulgated as a result of this bylaw.

3. Regulations. The Planning Board shall adopt and periodically amend Regulations which establish and collect permit application fees, inspection fees, and in special cases, consultant fees for review of applications. Such regulations shall elaborate on the terms, conditions, definitions, enforcement, procedures and administration of this bylaw. For execution of the provisions of this bylaw, the Planning Board will utilize the policy, criteria and information, including specifications and standards of the latest editions of the Massachusetts Stormwater Management Policy and Technical Handbooks and Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas, or local equivalents based on improvements in engineering, monitoring and local maintenance experience. The regulations shall be adopted after a public hearing.

4. Waiver. The Board may waive strict compliance with any requirement of this by-law where such action is allowed by federal, state and local statutes and/or regulations, is in the public interest, and is not inconsistent with the purpose and intent of this by-law.

5. Delegation of Authority. The Planning Board may choose to delegate, in writing, its authority in whole or in part, to a qualified representative.

F. General Permit Procedures and Requirements

1. Entry. Filing an application for a permit grants the Planning Board and its agents permission to enter the site to verify the information in the application and to inspect for compliance with permit conditions.
2. Fee Structure. The Board shall obtain with each submission an Application Fee established by the Board to cover expenses connected with ~~the public hearing and~~ application review. ***The Board may, at the applicant's expense per the provisions of G.L. Chapter 44, Section 53G, retain a Registered Professional engineer or other professional consultant to advise the Board on any or all aspects of the application.***
3. Permits. The Planning Board shall, within ~~30~~ ***45*** days of the receipt of a completed application:
   a. Approve the application upon finding that the proposed plan will protect water resources and meets the objectives and requirements of this bylaw;
   b. Approve the permit with conditions, modifications or restrictions that are required to ensure that the project will protect water resources and meets the objectives and requirements of this bylaw;
   c. Disapprove the application if the proposed plan will not protect water resources or fails to meet the objectives or requirements of this bylaw.

   After an application has been submitted, no tree removal, no utility installation, no ditching, grading or construction of drives, no grading of lots or land, no excavation except for purposes of soil testing, no dredging or filling, and no construction of buildings or structures shall commence on any part of the development site until the application has been reviewed and approved in accordance with this by-law and its' implementing regulations.
4. Failure of the Planning Board to take final action upon an application within 30 calendar days of receipt of a complete application shall be deemed to be approval of such application. Upon certification by the Town Clerk that the allowed time has passed without action by the Planning Board, the Permit shall be issued.
5. Project Completion. At completion of the project, the permittee shall submit as-built drawings of all structural stormwater controls and treatment best management practices required for the site. ***The as-built drawing shall document deviations from the approved plans, if any, and be certified by a registered professional engineer.*** This requirement may be waived at the Planning Board's discretion. No occupancy permit shall be granted unless and until the construction of all site improvements are complete or the work remaining to be done is secured.

G. Appeals. A decision of the Planning Board shall be final.

H. Enforcement. The Planning Board or an authorized agent shall enforce this bylaw and its implementing regulations and may pursue all civil and criminal remedies for such violations. Enforcement shall be further defined and included as part of any regulations promulgated as permitted under this bylaw.

I. Severability If the provisions of any portion of this by-law shall be judged invalid by a court of competent jurisdiction, such order of judgment shall not affect or invalidate the remainder of the by-law, or take any action relative thereto. **(Planning Board)**

MOTION: Moved that the Town approve changes to Article XL *Stormwater Management & Land Disturbance*, as printed in the Warrant.

VOTE: Unanimously passed by voice call vote to accept Article 21 as stated in the motion.

A true record, Attest:

Elizabeth T. Greendale

Elizabeth T. Greendale, CMC/CMMC
Town Clerk

cc: Accountant, Treasurer/Collector & Chief Financial Officer

F. STORMWATER MANAGEMENT AND LAND DISTURBANCE PERMITS

ARTICLE XI Regulations for Stormwater Management and Land Disturbance

APPENDICES

Appendix A	**Fee Schedule** **Project Review Fees**
Appendix B	**Stormwater Management and Land Disturbance By-Law**
Appendix C	**Application Form**

ARTICLE XI Regulations for Stormwater Management and Land Disturbance

Introduction
These Regulations establish stormwater management as well as erosion and sedimentation control standards and a permitting process for the conditions that are outlined in the Town's General By-Law Article XL (adopted at the Annual Town Meeting May 6, 2008 and amended June 20, 2020). As established in the by-law, the Planning Board is the designated permitting authority. These Regulations ensure compliance with the purpose and objectives of the by-law through inspection, monitoring and enforcement. *They are hereby adopted by the Planning Board after a public hearing held on April 29, 2021 and May 20, 2021.*

11.1 Administration

The Planning Board shall administer, implement and enforce these regulations. Any powers or duties of the Planning Board may be delegated in writing by the Planning Board to its employees, representatives or agents. A project that has received a Special Permit, Site Plan Review or Definitive Subdivision approval from the Planning Board shall be exempt from these provisions provided the project demonstrates compliance with the stormwater management performance standards, inspection, and operation and maintenance requirements of these regulations and the decision includes a designation as such.

11.2 Definitions

Best Management Practice: An activity, procedure, restraint or structural improvement that helps to reduce the quantity or improve the quality of stormwater runoff.

Board: Planning Board of the Town of Holliston.

Clearing: Any activity that removes the vegetative surface cover. Clearing activities generally include grubbing activity as defined below.

Erosion: The wearing away of the land surface by natural or artificial forces such as wind, water, ice, gravity, or vehicle traffic and the subsequent detachment and transportation of soil particles.

Grubbing: The act of clearing land surface by digging up roots and stumps.

Impervious Surface: Any surface that prevents or significantly impedes the infiltration of water into the underlying soil. This can include but is not limited to: roads, driveways, parking areas and other areas created using non porous material; buildings, rooftops, structures, artificial turf and compacted gravel or soil.

Land-Disturbing Activity: Any activity, including without limitation: clearing, grubbing, grading, digging, cutting, excavation of soil, placement of fill, and construction that causes a change in the position or location of soil, sand, rock, gravel, or similar earth material.

New Development: Any construction activities or land alteration resulting in earth disturbances on an area that has not previously been developed to include impervious cover.

Owner: A person with a legal or equitable interest in property.

Redevelopment: Any construction, land alteration, or improvement of impervious surfaces resulting in earth disturbances that does not meet the definition of new development.

Responsible Parties: Owner(s), persons with financial responsibility, and persons with operational responsibility.

Runoff: Rainfall, snowmelt, or irrigation water flowing over the ground surface.

Sediment: The process or act of deposition of sediment.

Site: Any lot or parcel of land or area of property where land-disturbing activities are, were, or will be performed.

Stabilization: The use, singly or in combination, of mechanical, structural, or vegetative methods, to prevent or retard erosion.

Stormwater: Stormwater runoff, snow melt runoff, and surface water runoff and drainage.

11.3 Minor Land Disturbance Permit Requirements

11.3.1 Application Package

The site owner or designated agent (Applicant) shall file with the Planning Board a completed application package for a Minor Land Disturbance permit (hereinafter Permit) prior to any Land Disturbing Activity. The application for a Minor Land Disturbance Permit shall contain sufficient information for the Board to evaluate the environmental impact, effectiveness, and acceptability of the measures proposed by the Applicant to reduce adverse impacts from stormwater runoff during construction, and on a long-term basis.

A Minor Land Disturbance Permit Application shall include a paper or .pdf copy of the following as well as payment of the application and review fees:

1. Completed application form.

2. A narrative describing the proposed work including existing site conditions, proposed work and methods to mitigate any stormwater impacts.
3. A site plan that includes:
    a. Existing site features including structures, pavement, plantings, and stormwater management systems, etc.
    b. Proposed work including proposed stormwater management systems and limits of disturbance.
    c. Basic erosion and sedimentation controls.
    d. Operation and Maintenance (O&M) Plan (see Section 11.7).

11.3.2 Performance Standards
All projects must be designed to meet the performance standards of 11.10 of this Regulation.

11.4 Major Land Disturbance Permit Requirements

11.4.1 Application Package
The site owner or designated agent (Applicant) shall file with the Planning Board a copy of a completed application package for a Major Land Disturbance permit (hereinafter Permit) prior to any Land Disturbing Activity.

Major Land Disturbance Permit Application shall include a hard copy or .pdf file of the following as well as payment of the application and review fees:
1. Completed application form with original signatures of all owners.
2. List of abutters, certified by the Assessor's Office.
3. Stormwater Management Plan (SMP) (see Section 11.4.3).
4. Erosion Control Plan (ECP) (see Section 11.4.4).
5. Operation and Maintenance Plan (see Section 11.5).

11.4.2 Performance Standards
All projects must be designed to meet the performance standards of 11.10 of this Regulation.

11.4.3 Stormwater Management Plan (SMP)
The Stormwater Management Plan (SMP) shall be prepared to meet the Performance Standards outlined in 11.0.1 of this Regulation and shall contain sufficient information for the Board to evaluate the environmental impact, effectiveness, and acceptability of the measures proposed by the Applicant for reducing adverse impacts from stormwater. The SMP shall fully describe the project in drawings, and narrative. It shall include, as a minimum:
    a. A locus map;
    b. The existing zoning, and land use at the site;
    c. The proposed land use;
    d. The location(s) of existing and proposed easements;
    e. The location of existing and proposed utilities;

f. The site's existing and proposed topography with contours at 1-foot intervals;
g. The existing site hydrology;
h. A description and delineation of existing stormwater conveyances, impoundments, and wetlands on or adjacent to the site or into which stormwater presently flows, or is proposed to flow;
i. A delineation of 100-year flood plains, if applicable;
j. Estimated seasonal high groundwater elevation in areas to be used for stormwater retention, detention, or infiltration;
k. The existing and proposed vegetation and ground surfaces with runoff coefficient for each;
l. A drainage area map showing pre- and post-construction watershed boundaries, drainage areas, and stormwater flow paths;
A description and drawings of all components of the proposed drainage system including:
(1) locations, cross sections, and profiles of all brooks, streams, drainage swales and their method of stabilization;
(2) all measures for the detention, retention, and/or infiltration of stormwater;
(3) all measures for the protection of water quality;
(4) the structural details for all components of the proposed drainage systems and stormwater management facilities;
(5) notes on drawings specifying materials to be used, construction specifications, and typical details and cross-sections; and,
(6) proposed hydrology with supporting calculations.
m. Proposed improvements including location of buildings or other structures, impervious surfaces, and drainage facilities, if applicable;
n. Timing, schedules, and sequence of development including clearing, stripping, rough grading, construction, final grading, and vegetative stabilization;
o. A maintenance schedule for the period of construction;
p. Documents must be stamped and certified by a qualified Professional Engineer (PE) registered in Massachusetts

11.4.4 Erosion Control Plan (ECP)

The ECP shall be designed to meet the Performance Standards in 11.12.2 of these Regulations.

1. If a project requires a Stormwater Pollution Prevention Plan (SWPPP) per the NPDES General Permit for Storm Water Discharges from Construction Activities (and as amended), then the Applicant is required to submit a complete copy of the SWPPP (including the signed Notice of Intent and approval letter). If the SWPPP meets the requirements of these Regulations, it will be considered equivalent to the ECP.
2. The ECP shall contain sufficient information to describe the nature and purpose of the proposed development, pertinent conditions of the site and the adjacent areas, and proposed erosion controls. The Applicant shall submit such material as is necessary to show that the proposed development will comply with the design standards and contain the information listed below.
3. ECP Content. The ECP shall contain the following information:

a. Names, addresses, and telephone numbers of the owner, Applicant, and person(s) or firm(s) preparing the plan;
b. Title, date, north arrow, names of abutters, scale, legend, and locus map;
c. Location and description of natural features including:
   (1) Watercourses and water bodies, wetland resource areas and all floodplain information, including the 100-year flood elevation based upon the most recent Flood Insurance Rate Map, or as calculated by a professional engineer for areas not assessed on these maps;
   (2) Existing vegetation including tree lines, canopy layer, shrub layer, and ground cover, and trees with a caliper twelve (12) inches diameter breast height or larger, noting specimen trees and forest communities; and
   (3) Habitats mapped by the Massachusetts Natural Heritage & Endangered Species Program as Endangered, Threatened or of Special Concern, Estimated Habitats of Rare Wildlife and Certified Vernal Pools, and Priority Habitats within five hundred (500) feet of any construction activity.
d. Lines of existing abutting streets showing drainage and driveway locations and curb cuts;
e. Volume and nature of existing and proposed soil materials;
f. Topographical features including existing and proposed contours at intervals no greater than one (1) foot with spot elevations provided as needed;
g. Surveyed property lines showing distances and monument locations, all existing and proposed easements, rights-of-way, and other encumbrances, the size of the entire parcel, and the delineation and number of square feet of the land area to be disturbed;
h. Drainage patterns and approximate slopes anticipated after major grading activities (Construction Phase Grading Plans);
i. Location and details of erosion and sediment control measures with a narrative of the construction sequence/phasing of the project, including both operation and maintenance for structural and non-structural measures, interim grading, and material stockpiling areas;
j. Path and mechanism to divert uncontaminated water around disturbed areas, to the maximum extent practicable;
k. Location and description of industrial discharges, including stormwater discharges from dedicated asphalt plants and dedicated concrete plants, which are covered by this permit;
l. Stormwater runoff calculations in accordance with these regulations;
m. Location and description of, and implementation schedule for, temporary and permanent seeding, vegetative controls, and other stabilization measures;
n. A description of construction and waste materials expected to be stored on- site, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes. The Plan shall include a description of controls to reduce pollutants from these materials, including storage practices to minimize exposure of the materials to stormwater, and spill prevention and response;
o. A description of where and how construction vehicles and equipment will be

cleaned within the site or at designated entry/egress stations at the site boundary;

p. A description of how fueling of vehicles and equipment will be conducted, including how fuels and other vehicle maintenance substances will be stored and handled during construction;
q. A description of how chemicals and any other materials that constitute a potential source of stormwater contamination will be stored and handled during construction;
r. A detailed description of project phases;
s. Plans must be stamped and certified by a qualified Professional Engineer (PE) registered in Massachusetts or a Certified Professional in Erosion and Sediment Control (CPESC); and
t. Any other information requested by the Board.

11.5 Operation & Maintenance (O&M) Plan

11.5.1 Maintenance

The owner of the property subject to a permit or any other person or agent in control of such property, shall maintain in good condition and promptly repair and restore all grade surfaces, walls, drains, dams, structures, vegetation, erosion and sedimentation controls and other protective devices. Such repairs or restoration and maintenance shall be in accordance with approved plans.

11.5.2 O&M Plan

A stand-alone O&M Plan is required at the time of the application for all projects. The O&M Plan shall be designed to ensure compliance with the Land Disturbance Permit and these Regulations. The Board shall make the final decision of what maintenance option is appropriate in a given situation. The Board will consider natural features, the proximity of the site to the MS4, water bodies and wetlands, the extent of impervious surfaces, size of the site, the types of stormwater management practices, and potential need for ongoing maintenance activities when making this decision. The O&M Plan shall remain on file with the Board and shall be an ongoing requirement.

The O&M Plan shall include:

1. The name(s) of the owner(s) for all components of the system.
2. Maintenance Agreement(s) that specifies:
   a. The names and addresses of the person(s) responsible for operation and maintenance;
   b. The person(s) responsible for financing maintenance and emergency repairs;
   c. A Maintenance Schedule that includes routine inspection along with routine and non-routine maintenance tasks for each BMP;
   d. A list of easements with the purpose and location of each; and
   e. The signature(s) of the owner(s).

f. Estimated operation and maintenance budget.
g. The responsible party shall:
   (1) maintain a log of all operation and maintenance activities for the last three years including inspections, repair, replacement, and disposal (the log shall indicate the type of material and the disposal location);
   (2) make this log available to the Planning Board and/or the Commonwealth of Massachusetts upon request; and,
   (3) allow the Planning Board to inspect each BMP to determine whether the responsible party is implementing the Operation and Maintenance Plan.

11.5.3 Changes to Operation and Maintenance Plan

1. The owner(s) of the stormwater management system must notify the Board of changes in ownership or assignment of financial responsibility.
2. The maintenance schedule in the Maintenance Agreement may be amended to achieve the purposes of these regulations by mutual agreement of the B o a r d and the Responsible Parties. Amendments must be in writing and signed by all Responsible Parties. Responsible Parties shall include owner(s), persons with financial responsibility, and persons with operational responsibility.

11.5.4 Ensuring Compliance with Operation and Maintenance Plans

To ensure adequate long-term operation and maintenance of stormwater management practices, applicants are required to submit an annual certification documenting the work that has been done over the last 12 months to properly operate and maintain the stormwater control measures. The certification shall be signed by the person(s) named in the permit as being responsible for ongoing O&M; if such person(s) works for a company, the head of the company must sign the certification.

11.6 General Permit Procedures and Requirements

11.6.1 Entry

Filing an application for a permit grants the Board, or its agent, permission to enter the site to verify the information in the application and to inspect for compliance with the resulting permit.

11.6.2 Fee Structure

Each application must be accompanied by a fee, as outlined in Appendix A, payable to the Town of Holliston. Applicants shall pay review fees as determined by the Board to cover any expenses connected with the public hearing and review of the Land Disturbance Permit before the review process commences. The Board may, at the Applicant's expense, retain a Registered Professional Engineer or other professional consultant to advise the Board on any or all aspects of the Application.

11.6.3 Plan Changes

The Applicant must notify the Board in writing of any drainage change or alteration in the system authorized in a Permit before any change or alteration is made. If the Board determines that the change or alteration is significant, based on the stormwater management standards and accepted construction practices, the Board may require that an amended application be filed.

11.6.4 Permits

The Planning Board shall, within 45 days of the receipt of a completed application:

1. Approve the application upon finding that the proposed plan will protect water resources and meets the objectives and requirements of this bylaw;
2. Approve the permit with conditions, modifications or restrictions that are required to ensure that the project will protect water resources and meets the objectives and requirements of this bylaw;
3. Disapprove the application if the proposed plan will not protect water resources or fails to meet the objectives or requirements of this bylaw.

After an application has been submitted, no tree removal, no utility installation, no ditching, grading or construction of drives, no grading of lots or land, no excavation except for purposes of soil testing, no dredging or filling, and no construction of buildings or structures shall commence on any part of the development site until the application has been reviewed and approved in accordance with this by-law and its' implementing regulations.

Failure of the Planning Board to take final action upon an application within 45 calendar days of receipt of a complete application shall be deemed to be approval of such application. Upon certification by the Town Clerk that the allowed time has passed without action by the planning Board, the Permit shall be issued.

11.6.5 Denial

The Board is empowered to deny a permit for failure to meet the requirements of the by-law; for failure to submit necessary information or plans requested by the Board; for failure to avoid or prevent unacceptable adverse or cumulative effects upon the resources protected by the by-law; or if in the Board's final judgment such denial is necessary to preserve the quality of the surface water or groundwaters of the Commonwealth and/or the storm drainage system of the Town of Holliston. In the event a permit is denied, the Planning Board shall put its reasons for denial in writing as part of issuance.

11.6.6 Project Completion

At completion of the project, the Applicant shall submit an as-built drawing of all structural stormwater controls and treatment best management practices required for the site. The as-built drawing shall document deviations from the approved plans, if any, and be certified by a registered professional engineer. This requirement may be waived at the Planning Board's discretion. No occupancy permit shall be granted unless and until the construction of all site improvements are complete or the work remaining to be done is secured.

11.7 Enforcement

The Board or authorized agent of the Board shall enforce these regulations and may pursue all civil and criminal remedies for such violations.

11.7.1 Orders

The Board may issue a written order to enforce the provisions of these regulations or the regulations thereunder, which may include requirements to:

- Cease and desist from the land disturbing activity until there is compliance with the by-law and provisions of a permit.
- Maintain or install additional erosion and sediment control measures.
- Monitor and/or perform analyses and reporting.
- Remediate erosion and sedimentation resulting directly or indirectly from the land disturbing activity.

If the Planning Board determines that abatement or remediation of stormwater, erosion and sedimentation is required, the order shall set forth a deadline by which such abatement or remediation must be completed.

11.7.2 Penalties

Any person who violates any provisions of this by-law, regulation, order or permit issued thereunder, shall be punished by a fine of more than $300. Each day or part thereof that such violation occurs or continues shall constitute a separate offense. As an alternative to criminal prosecution or civil action, the Planning Board may elect to utilize the non-criminal disposition procedure set forth in GL, c. 40, s. 21D in the following manner:

A written warning, clearly stating the nature of the violation, the Section of the by-law violated, the required corrective action and the right of appeal to the Board of Selectmen, shall be issued to the alleged violator. This warning may be appealed to the Selectmen within twenty-one (21) days from receipt.

Thirty (30) days after issuance of the warning, a fine of $200 may be imposed in accordance with the provisions of General Laws Chapter 40D, Section 21D if the violation is not corrected or an appeal has not been made to the Board of Selectmen within the aforementioned twenty-one (21) days or upon appeal, the Selectmen find that the warning is legitimate. The penalty for the second violation shall be $400. The penalty for the 3rd and subsequent violations shall be $800. Any fine imposed may be appealed to the Clerk-Magistrate of the Framingham District Court. Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

11.8 Waiver

The Board may waive strict compliance with any requirement of these Regulations where such action is in the public interest and is not inconsistent with the purpose and intent of these regulations. Any Applicant may submit a written request to be granted such a waiver. Such a request shall be accompanied by an explanation or documentation supporting the waiver request and demonstrating that strict application of these regulations does not further the purposes or objectives of these regulations. All waiver

requests shall be discussed and voted on by the Board. If in the Board's opinion, additional information is required for a review of a waiver request and the 30-day timeframe for action is approached, the waiver shall be denied.

11.9 Inspections and Site Supervision

11.9.1 Pre-Construction Meeting

Prior to starting clearing, excavation, construction, or land disturbing activity the Applicant, the Applicant's technical representative, the general contractor or any other person with authority to make changes to the project, shall meet with the Board to review the permitted plans and their implementation. The need for a pre-construction meeting shall be determined by the Board based on the project scope.

11.9.2 Planning Board Inspection

The Board or its agent shall make inspections as hereinafter required and shall either approve that portion of the work completed or shall notify the Applicant wherein the work fails to comply with the Land Disturbance Permit, as approved. The Permit and associated Stormwater Management Plan, Erosion Control Plan, and Operation and Maintenance Plan, bearing the signature of approval of the Board, shall be maintained at the site during the progress of the work. In order to obtain inspections, the Applicant must notify the Planning Board at least two (2) working days before each of the following:

- Erosion and sediment control measures are in place and stabilized;
- Site Clearing has been substantially completed;
- Rough Grading has been substantially completed;
- Final Grading has been substantially completed;
- Close of the Construction Season; and
- Final Landscaping (permanent stabilization) and project final completion.

11.9.3 Applicant Inspections

The Applicant or his/her agent shall conduct and document inspections of all erosion and sediment control measures at least once every seven (7) calendar days or as specified in the Permit, and prior to and within 24 hours of the end of a storm event of 0.25 inch or greater, from the start of construction until the site is permanently stabilized. Inspection frequency may be reduced to at least once a month if the site is determined by the Planning Board or its designee to be temporarily stabilized, such as runoff is unlikely due to winter conditions (e.g., site is covered with snow, ice, or the ground is frozen), or if construction is occurring during seasonal dry periods. The Applicant is required to notify the Stormwater Agency or its designee of any change in inspection frequency, including termination of inspections due to site stabilization.

Erosion control inspections shall be conducted by an approved person knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention, who

possesses the skills to assess conditions at the construction site that could impact stormwater quality, and the skills to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of these Regulations. The Applicant shall submit monthly erosion and sediment control reports to the Board in a format approved by the Board.

11.9.4 Access Permission

To the extent permitted by State law, the Board may enter upon privately owned property for the purpose of performing their duties under these regulations and may make or cause to be made such examinations, surveys or sampling as the Board deems reasonably necessary to determine compliance with the Permit.

11.10 Stormwater Management Performance Standards

11.10.1 Stormwater Management Design Standards

1. Low Impact Development (LID) site planning and design strategies must be implemented unless infeasible in order to reduce the discharge of stormwater from development sites. LID techniques mean innovative stormwater management systems that are modeled after natural hydrologic features. LID techniques manage rainfall at the source using uniformly distributed decentralized micro-scale controls. LID techniques use small cost-effective landscape features located at the lot level.
2. BMPs shall be distributed throughout a site and not concentrated in any one location to better dilute the effects of any pollutants left untreated.
3. All BMPs and their overflow areas shall be located on the site, in drainage easements or the road right-of-way. Separate drainage lots shall not be permitted without permission from the Board.
4. Stormwater management systems design shall be consistent with these performance standards and the requirements of the 2008 Massachusetts Stormwater Handbook (as amended), whichever is more stringent.
5. Peak flows of run-off at the boundaries of the development in a two (2), ten (10), twenty-five (25), fifty (50) and one-hundred (100) year frequency storm, shall be no higher following development than prior to development.
6. Where the site is not proposed to be covered with gravel, hardscape or a building or structure, a planting plan to ensure permanent re-vegetation of the site shall be provided and approved;
7. Areas to be planted shall be loamed with not less than 6” compacted depth of good quality loam and seed with turf grass seed or other appropriate ground cover in accordance with good planting practice;
8. Stormwater management systems shall be designed to remove a percentage of the average annual load of Total Suspended Solids (TSS) and Total Phosphorus (TP) from the total post-construction impervious surface area on the site, as follows:

Pollutant	Removal from New Development Sites	Removal from Redevelopment Sites
Total Suspended Solids (TSS)	90%	80%
Total Phosphorus (TP)	60%	50%

a. Average annual pollutant removal requirements for TSS and TP are met through one of the following methods:
    i. Installing BMPs that meet the pollutant removal percentages based on calculations developed consistent with EPA Region 1's BMP Accounting and Tracking Tool (2016) or other BMP performance evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance, then any federally or State-approved BMP design guidance or performance standards (e.g., State stormwater handbooks and design guidance manual(s)) may be used to calculate BMP performance; or
    ii. Retaining the volume of runoff equivalent to, or greater than:
        1. For *new developments*, one (1) inch multiplied by the total post-construction impervious surface area on the new development site; or
        2. For redevelopments, 0.8 inch multiplied by the total post-construction impervious surface area on the redeveloped site; or
    iii. Meeting a combination of retention and treatment that achieves the above standards, or
    iv. Utilizing offsite mitigation that meets the above standards within the same USGS HUC12 as the new development site.

b. Redevelopment activities that are exclusively limited to maintenance and improvement of existing roadways (including widening less than a single lane, adding shoulders, correcting substandard intersections improving existing drainage systems and repaving projects), shall improve existing conditions unless infeasible and are exempt from Section 11.10.1.9.a.

9. Discharges to water bodies subject to one or more approved Total Maximum Daily Loads (TMDLs) or impaired waterbodies and their tributaries, listed as Category 4b or 5 in the current Massachusetts Integrated List of Waters listed pursuant to the Federal Clean Water Act Sections 303(d) and 305(b), without an EPA approved TMDL impaired waters shall:
    a. For nitrogen and phosphorus impaired waters, stormwater management systems shall be designed using BMPs optimized for nitrogen and/or phosphorus removal, whichever applies.
    b. For chloride impaired waters, the required Operation and Maintenance (O&M) Plan shall outline measures to minimize salt usage or use alternative deicing

materials and practices. The Applicant shall consult with the Holliston Department of Public Works to develop these O&M provisions.

c. For waters impaired due to solids (turbidity), metals, or oil and grease (hydrocarbons), commercial or industrial land use development/redevelopments shall design stormwater management systems to allow shutdown and containment in the event of an emergency spill or other unexpected event. Systems designed to infiltrate shall provide the level of pollutant removal equal to or greater than the level of pollutant removal provided through the use of biofiltration of the same volume of runoff to be infiltrated, prior to infiltration.

11.10.2 Erosion Control Design Standards

The design of erosion and sediment controls shall meet the following requirements:

1. Design of erosion and sediment control practices shall conform to the guidelines described in "Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas" (1997 or amended) or alternative design guidance approved by the Board;
2. Prevent off-site transport of sediment using the following practices. There shall be no adverse impacts to abutting properties from any increase in volume of stormwater runoff including erosion, silting, flooding, sedimentation or impacts to wetlands, groundwater levels or wells;
    a. Minimize total area of disturbance and protect natural resources. Sequence activities to minimize simultaneous areas of disturbance;
    b. Establish perimeter controls around areas that will be disturbed, including on and off-site material storage areas (overburden and stockpiles of dirt, borrow areas, or other areas used solely by the permitted project are considered part of the project);
    c. Maximize infiltration and groundwater recharge;
    d. Runoff flow shall not be routed through areas of protected vegetation or re-vegetated slopes and disturbed areas. Temporary runoff from erosion and sedimentation controls shall be directed to BMPs, such as vegetated swales;
    e. Use stabilized construction site entrances and exits to prevent offsite tracking of sediments. During construction, any site access from a public way shall be improved with a gravel apron not more than 16' feet wide (residential) and 24' wide (commercial and industrial) and a minimum of 15 feet long to prevent unstable material from being transported onto the street by vehicle tires or by runoff;
    f. Stabilize sites when projects are complete or operations have temporarily ceased. Interim and permanent stabilization measures shall be instituted on a disturbed area as soon as practicable but no more than fourteen (14) days after construction activity has temporarily or permanently ceased on that portion of the site. Until a disturbed area is permanently stabilized, sediment in runoff water shall be trapped by using a siltation barrier, siltation fences, and/or sedimentation traps;
    g. Protect slopes on construction sites. Retaining walls may be required where side slopes are steeper than a ratio of 3:1;

   h. Protect all storm drain inlets. The mouths of all catch basins shall be fitted with filter fabric during the entire construction process to minimize siltation or such basins shall be designed as temporary siltation basins with provisions made for final cleaning;
   i. Armor or otherwise stabilize all newly constructed outlets;
   j. Inspect stormwater controls at consistent intervals.
3. Re-vegetation. Proper re-vegetation techniques shall be employed during construction using native plant species, proper seed bed preparation, fertilizer and mulching to protect germinating plants. Re-vegetation shall occur on cleared sites within seven (7) calendar days of final grading and shall occur during the planting season appropriate to the selected plant species;
4. Install and maintain all erosion and sediment control measures in accordance with the manufacturer's specifications and good engineering practices.
5. Erosion control measures shall include the use of erosion control matting, mulches and/or temporary or permanent cover crops. Mulch areas damaged from heavy rainfalls, severe storms and construction activity shall be repaired immediately.
6. Erosion control matting or mulch shall be anchored where plantings are on areas subject to mulch removal by wind or water flows or where side slopes are steeper than 3:1 or exceed 10 feet in height. During the months of October through March when seeding and sodding may be impractical anchored mulch may be applied at the Board's discretion.
7. Comply with applicable Federal, State and local laws and regulations including waste disposal, sanitary sewer or septic system regulations, and air quality requirements, including dust control;
8. Dust control shall be used during all land disturbance project;
9. Prevent significant alteration of habitats mapped by the Massachusetts Natural Heritage and Endangered Species Program as Endangered, Threatened or Of Special Concern, Estimated Habitats of Rare Wildlife and Certified Vernal Pools, and Priority Habitats from the proposed activities;
10. Ensure that any stormwater BMP (for post construction stormwater management) installed during construction will be protected from compaction, siltation, and erosion, or will be restored or replaced such that the BMP will be capable of functioning as designed in accordance with these stormwater regulations.

11.11 Stormwater Management Calculations and Design Practices

1. The Applicant shall provide calculations supporting the design of the stormwater management system and its compliance with the performance standards established in these regulations.
2. All calculations shall comply with the standards, procedures, and methods described in the MassDEP's Massachusetts Stormwater Handbook, Volume 3, except as follows:
   a. The calculations of runoff volumes and peak rates required under Massachusetts Stormwater Management Standard 2 shall be based on precipitation data provided in National Oceanic and Atmospheric Administration (NOAA) -National Weather Service "NOAA Atlas 14" unless otherwise authorized by the Board.

Appendix A
Fees

Fee Schedule

Plan or action	Filing fee	Review Fee Deposit
<u>Minor Permit</u>: **Areas of disturbance up to 40,000 s.f. (>10,000 s.f. or more than 25% of lot)** **Paving in excess of 500 s.f. (Commercial and Industrial)** **Steep Slope Disturbance >250 s.f.**	**$250**	**Will be assessed upon receipt of application.**
<u>Major Permit</u>: **Areas of disturbance equal to or greater than 40,000 s.f. (*Note: Requires NPDES permit as well)*** **Land Uses with higher potential pollutant loads (e.g. automotive, landscaping facilities)**	**$500**	**$600 (unless filing is in conjunction with either a subdivision, site plan review or Special Permit filing)***

*Payable at time of filing. A W-9 form is required for each application in order to establish an escrow account.

Project Review Fees

Deposit fess received pursuant to this section shall be deposited with the municipal treasurer who shall establish a special account for this purpose. This fee is to be deposited into a special account as enabled by G.L. Chapter 44, Section 53G, referred to herein as the "593 Account". This fee shall be imposed on those applications which, as designated by the Planning Board, require the services of outside consultants for the review process due to the size, scale or complexity of a proposed project, because of a project's potential impacts, or because the Town lacks the necessary expertise to perform the review work related to the permit or approval. In hiring outside consultants, the Board may engage engineers, planners, lawyers, designers or other appropriate professionals who can assist the Board in analyzing a project to ensure compliance with all relevant laws, ordinances, bylaws and regulations. Such assistance may include, but not be limited to, analyzing an application, monitoring or inspecting a project or site for compliance with the Board's decisions or regulations, or inspecting a project during construction or implementation. Expenditures from this special account may be made at the direction of the Board without further appropriation and shall be made only in connection with the review of the specific

project for which this review fee has been collected. An additional fee may be collected from the applicant, if during the review, the above deposit is found insufficient to cover the actual cost of the review. The additional review fee shall be based upon a cost estimate, from the consultant(s) performing the review, to complete the review. Reimbursement of these expenses is a requirement of approval, and failure to reimburse shall be cause for denial. The Planning Board may set alternate dates for said reimbursement by setting them as a condition of approval of the Site Plan. Review fees may only be spent for services rendered in connection with the specific project for which they were collected. Accrued interest may also be spent for this purpose.

Appendix B
General By-Law

ARTICLE XL
STORMWATER MANAGEMENT AND LAND DISTURBANCE
(Amended 6/20/2020 – ATM, Art. 21)

Section 1. Purpose

The purpose of this by-law is to control the adverse impacts of increased post-development stormwater runoff, nonpoint source pollution associated with development and redevelopment as well as erosion and sedimentation associated with land disturbance and construction. Increased and contaminated stormwater runoff associated with developed land uses and the accompanying increase in impervious surface are major causes of: impairment of water quality and flow, contamination of drinking water supplies, erosion of stream channels, alteration or destruction of habitat and flooding.

This bylaw seeks to meet the following objectives:

- Minimize damage to public and private property and infrastructure;
- Safeguard the public health, safety, environment and general welfare;
- Protect water resources and prevent contamination of drinking water supplies;
- Require practices that limit soil erosion and sedimentation on construction sites;
- Require practices that control volume and rate of stormwater runoff resulting from land disturbance activities;
- Establish the Town of Holliston's legal authority to ensure compliance with the provisions of this by-law through permitting, inspection, monitoring and enforcement.

Section 2. Authority

This bylaw is adopted under the authority granted by the Home Rule Amendment of the Massachusetts Constitution and the Home Rule statutes, pursuant to the regulations of the federal Clean Water Act, found at 40 CFR 122.34. This bylaw is intended to meet certain provisions of the Town's requirement to comply with the National Pollutant Discharge Elimination System (NPDES) Regulations (Phase I and II Rules).

Section 3. Applicability

No person shall undertake an activity which may include clearing, grubbing, grading, placement of fill**,** excavation of soil or other site work that will result in a land disturbance exceeding any of the following thresholds, without a Land Disturbance Permit from the Planning Board.

There are two levels of review based on the amount of proposed land to be disturbed as part of a single project as follows:

Minor Land Disturbance Permit (total project disturbance is less than 40,000 s.f.)

1. Any activity that will result in soil disturbance of 10,000 s.f or more (but less than 40,000 s.f.), or more than 25% of the parcel or lot, whichever is less;

2. Paving in excess of a total of 500 s.f. of commercial and industrial driveways, parking lots and other impervious non-roadway surfaces;
3. Any activity that will disturb over 250 s.f. of land with 10% or greater slope.

Major Land Disturbance Permit

1. Any activity that will result in disturbance of 40,000 s.f. or more of land;
2. Projects that disturb less than 40,000 s.f. if the project is part of a larger common plan of development or redevelopment which disturbs 40,000 s.f. or more;
3. An alteration, redevelopment or conversion of land use involving the following: auto fueling, service and sale facilities, fleet storage yards, commercial nurseries and landscaping facilities.

Section 4. Exemptions

1. Normal maintenance and improvement of land in agricultural or logging use which is consistent with MGL, c. 40A, s. 3 and 310 CMR 10.04.
2. Construction of fencing and utilities other than drainage that disturbs less than 40,000 safe and which will not alter terrain or drainage patterns.
3. Maintenance of existing dwellings, including landscaping, utility connections and driveways, provided such maintenance does not disturb 40,000 safe or more or alter drainage patterns.
4. Repairs to any stormwater treatment facility deemed necessary by the Planning Board and maintenance, reconstruction or resurfacing of any public way.

Section 5. Administration

1. Authority. The primary authority for the administration, implementation, and enforcement of this bylaw lies with the Planning Board.
2. Land Disturbance Permits. The Planning Board shall have the authority to issue a permit for projects subject to this bylaw. Any such permit requirements may be defined and included as part of any Regulations promulgated as a result of this bylaw.
3. Regulations. The Planning Board shall adopt and periodically amend Regulations which establish and collect permit application fees, inspection fees, and in special cases, consultant fees for review of applications. Such regulations shall elaborate on the terms, conditions, definitions, enforcement, procedures and administration of this bylaw. For execution of the provisions of this bylaw, the Planning Board will utilize the policy, criteria and information, including specifications and standards of the latest editions of the Massachusetts Stormwater Management Policy and Technical Handbooks and Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas, or local equivalents based on improvements in engineering, monitoring and local maintenance experience. The regulations shall be adopted after a public hearing.
4. Waiver. The Board may waive strict compliance with any requirement of this by-law where such action is allowed by federal, state and local statutes and/or regulations, is in the public interest, and is not inconsistent with the purpose and intent of this by-law.

5. Delegation of Authority. The Planning Board may choose to delegate, in writing, its authority in whole or in part, to a qualified representative.

Section 6. General Permit Procedures and Requirements

1. Entry. Filing an application for a permit grants the Planning Board and its agents permission to enter the site to verify the information in the application and to inspect for compliance with permit conditions.
2. Fee Structure. The Board shall obtain with each submission an Application Fee established by the Board to cover expenses connected with application review. The Board may, at the applicant's expense per the provisions of G.L. Chapter 44, Section 53G, retain a Registered Professional engineer or other professional consultant to advise the Board on any or all aspects of the application.
3. Permits. The Planning Board shall, within 45 days of the receipt of a completed application:
    a. Approve the application upon finding that the proposed plan will protect water resources and meets the objectives and requirements of this bylaw;
    b. Approve the permit with conditions, modifications or restrictions that are required to ensure that the project will protect water resources and meets the objectives and requirements of this bylaw;
    c. Disapprove the application if the proposed plan will not protect water resources or fails to meet the objectives or requirements of this bylaw.

    After an application has been submitted, no tree removal, no utility installation, no ditching, grading or construction of drives, no grading of lots or land, no excavation except for purposes of soil testing, no dredging or filling, and no construction of buildings or structures shall commence on any part of the development site until the application has been reviewed and approved in accordance with this by-law and its' implementing regulations.
4. Failure of the Planning Board to take final action upon an application within 45 calendar days of receipt of a complete application shall be deemed to be approval of such application. Upon certification by the Town Clerk that the allowed time has passed without action by the Planning Board, the Permit shall be issued.
5. Project Completion. At completion of the project, the permittee shall submit as-built drawings of all structural stormwater controls and treatment best management practices required for the site. The as-built drawing shall document deviations from the approved plans, if any, and be certified by a registered professional engineer. This requirement may be waived at the Planning Board's discretion. No occupancy permit shall be granted unless and until the construction of all site improvements are complete or the work remaining to be done is secured.

Section G. Enforcement.

The Planning Board or an authorized agent shall enforce this bylaw and its implementing regulations and may pursue all civil and criminal remedies for such violations. Enforcement shall be further defined and included as part of any regulations promulgated as permitted under this bylaw.

Section H. Severability

If the provisions of any portion of this by-law shall be judged invalid by a court of competent jurisdiction, such order of judgment shall not affect or invalidate the remainder of the by-law.

Site Inspection SOPs

SOP. CM-1 Erosion & Sedimentation Control

Description

This SOP describes procedures for reducing or eliminating erosion and sedimentation during municipal projects that disturb soils.

Note that if site disturbance is equal to or greater than one acre, the EPA requires the Town and (if applicable) its contractor to prepare a SWPPP and to file for coverage under the NPDES program Construction General Permit (CGP). No work can proceed until 14 days after filing for such coverage, and all work must be conducted in accordance with the SWPPP and the requirements of the CGP.

Procedures and Practices

- On site personnel should review and understand the conditions of any permit governing the site disturbance.
- If there is a SWPPP or sediment/erosion control plan that applies to the site:
  - Personnel working on the site should be made familiar with the plan's requirements.
  - Keep a copy in a location readily accessible to the personnel working on the site.
- If the work requires an outside contractor, follow the SOP.CM-2.
- Install erosion and sediment control features such as silt fences before initiating activities that remove vegetated cover or otherwise disturb the site.
- Existing vegetation should be maintained on site as long as possible.
- Vegetation should be allowed to establish before introducing flows to channels.
- Construction should proceed progressively on the site in order to minimize exposed soil, and disturbed areas should be restored as soon as possible after work has been completed. As a rule, any area that will remain un-worked for a period greater than 14 days should be stabilized with vegetation or an alternative approved practice for long-term stability.
- Vegetated and wooded buffers must be protected.
- Excessive soil compaction with heavy machinery should be avoided, to the extent possible.
- Construction activities should occur during dryer periods, such as summer months, to limit potential runoff.
- Responsibility for maintaining erosion and sediment control devices shall be clearly identified.
- Soils, including stockpiles, should be stabilized by mulching and/or seeding when they would be exposed for more than one week during the dry season, or more than two days during the rainy season.
- Use regular, light watering for dust control, as this is more effective than infrequent heavy watering.

Inspection and Maintenance

- Inspect erosion and sediment control devices weekly and following heavy rainfall events to ensure they are working properly.
- Inspect silt fence for depth of sediment, tears, secure attachment of fabric to posts, and to ensure fence posts are firmly in the ground. Remove accumulated sediment from silt fencing when it has reached one third the height of the fence.
- Inspect other sediment barriers (e.g., silt socks) according to manufacturer's recommended practices.
- Inspect catch basin silt traps for sediment accumulation and clean out to maintain flow capacity and prevent failure of the trap.
- Temporary construction sediment traps and sediment barriers should be cleaned out regularly based on inspection to reduce clogging and maintain design function.
- Easements and service routes should be maintained, to enable maintenance equipment to access BMPs for regular cleaning.
- Ensure staff are trained on proper erosion and sedimentation control procedures and practices.
- Use the checklist in SOP CM-2 to guide the inspection process and record the findings of the inspection.

Description

This SOP outlines a municipal stormwater Construction Site Inspection program to track, inspect, and enforce local stormwater requirements at construction sites.

General

1. Preconstruction Meeting

   Prior to the initiation of construction activities, the Commission or its representative should conduct a pre-construction meeting with the project owner/applicant and the contractor, to address the following:

   a. Identify persons who will serve as contacts for the Town, the Owner, and the Contractor throughout the project, including compiling contact information for around the clock coverage for contingency events;

   b. Review the requirements of applicable permits;

   c. Review the Contractor's SWPPP for protecting the Holliston MS4 and Waters of the Commonwealth from construction activity impacts;

   d. Brief the owner/applicant and contractor about how this SOP applies to the project, and establish a schedule for regular inspections;

   e. Conduct an initial inspection of the site. If consistent with the requirements of permits or orders of conditions issued for the project, the Contractor may install initial erosion and sediment controls prior to this meeting, with those measures inspected as a part of the initial site walk.

2. Periodic Inspections

   Periodic inspections should be performed according to the following SOP throughout the project, and after any rainfall event that constitutes a threshold for inspection under the Contractor's SWPPP.

3. Final Inspection

   The SOP measures listed below should be followed during an inspection of the site at completion of the project, prior to the owner/applicant and the contractor filing for certificates of completion and (if applicable) a Notice of Termination under the US EPA Construction General Permit.

Procedures and Practices for Inspections

1. Plan the inspection before visiting the construction site.
    - Obtain and review permits, site plans, previous inspection reports, and any other applicable information.
    - Inform the contractor of the planned site visit.

2. Meet with the contractor
    - Review the Construction SWPPP (Stormwater Pollution Prevention Plan) or other document, as required by the municipality's legal authority. Compare BMPs in the approved site plans with those shown in the SWPPP.
    - Review the following, as applicable, and confirm that information shown continues to be accurate:
        - the project's Order of Conditions (issued under Notice of Intent (NOI) under State and Local Wetlands Protection Regulations;
        - the project's Stormwater Permit and supporting documents.
    - Get a general overview of the project from the contractor.
    - Review inspections done by the contractor.
    - Review the status of any issues or corrective actions noted in previous inspection reports.
    - Discuss any complaints or incidents since the last meeting.

3. Inspect perimeter controls
    - Examine perimeter controls to determine if they are adequate, properly installed, and properly maintained.
    - For each structural BMP, check structural integrity to determine if any portion of the BMP needs to be replaced or requires maintenance.

4. Inspect slopes and temporary stockpiles
    - Determine if sediment and erosion controls are effective.
    - Look for slumps, rills, and tracking of stockpiled materials around the site.

5. Compare BMPs in the site plan with the construction site conditions
    - Determine whether BMPs are in place as specified in the site plan and if the BMPs have been adequately installed and maintained.
    - Note any areas where additional BMPs may be needed which are not specified in the site plans.

6. Inspect site entrances/exits
    - Determine if there has been excessive tracking of sediment from the site.
    - Look for evidence of additional entrances/exits which are not on the site plan and are not properly stabilized.
    - If vehicle carriage washing stations are provided at entrances/exits, verify that they are being used and maintained; look for evidence that washing activities are not being conducted and contained within designated areas.

7. Inspect sediment basins
    - Look for signs that sediment has accumulated beyond 50% of the original capacity of the basin.
    - Look for evidence of overflows, embankment erosion, outlet structure mis-function.

8. Inspect pollution prevention and good housekeeping practices
    - Inspect trash areas and material storage/staging areas to ensure that materials are properly maintained and that pollutant sources are not exposed to rainfall or runoff.
    - Inspect vehicle/equipment fueling and maintenance areas for the presence of spill control measures and for evidence of leaks or spills.

9. Inspect discharge points and downstream, off-site areas
    - Walk down the street and/or in other directions off-site to determine if erosion and sedimentation control measures are effective in preventing off-site impacts.
    - Inspect down-slope catch basins to determine if they are protected, and identify whether sediment buildup has occurred.
    - Inspect resource areas (wetlands, streams, ponds, other water bodies) within or adjacent to site for signs of site disturbance or sediment deposition.

10. Meet with the contractor again prior to leaving
    - Discuss the effectiveness of current controls and whether modifications are needed.
    - Discuss possible violations or concerns noted during the site inspection, including discrepancies between approved site plans, the SWPPP, applicable Orders of Conditions or Stormwater Permit conditions and/or the implementation of stormwater controls.
    - Agree on a schedule for addressing all discrepancies, and schedule a follow-up inspection.

11. Provide a written copy of the inspection report to the site owner/applicant.

12. Follow up, as determined, and provide copy of subsequent inspection to the contractor.

13. Utilize the resources of USEPA Region 1 to enforce the contractor's compliance with the Construction General Permit and/or other document, as required by the municipality's legal authority.

Inspection and Maintenance

- Use the attached Construction Site Stormwater Inspection Report to perform and document inspections.

CONSTRUCTION SITE STORMWATER INSPECTION REPORT

(Adapted from Central Massachusetts Regional Stormwater Collaborative SOP 5: Construction Site Inspection)

General Information

Project Name			
Project Location			
Site Operator			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	

Subject to USEPA Construction General Permit? Yes No

If yes, has NOI been approved? Yes No

If yes, attach approved NOI to this report.

If no, contact site operator immediately to determine status of NOI.

If NOI approved, is SWPPP available at site? Yes No

If no, contact site operator immediately to determine status of SWPPP.

Type of Inspection:

Regular Pre-Storm Event During Storm Event Post-Storm Event

Describe the weather conditions at time of inspection	
Describe the current phase of construction	

Do any of the observations of this site visit warrant an update of the SWPPP (if yes, list)?	Yes No	

Site Specific BMP

Customize the following BMP checklist to be consistent with the SWPPP or plans for the site being inspected.

	BMP Description	Installed and Operating Properly?	Corrective Action Needed
1		Yes ☐ No ☐	
2		Yes ☐ No ☐	
3		Yes ☐ No ☐	
4		Yes ☐ No ☐	
5		Yes ☐ No ☐	
6		Yes ☐ No ☐	
7		Yes ☐ No ☐	
8		Yes ☐ No ☐	
9		Yes ☐ No ☐	
10		Yes ☐ No ☐	
11		Yes ☐ No ☐	
12		Yes ☐ No ☐	
13		Yes ☐ No ☐	
14		Yes ☐ No ☐	
15		Yes ☐ No ☐	
16		Yes ☐ No ☐	
17		Yes ☐ No ☐	
18		Yes ☐ No ☐	

Erosion and Sedimentation Control

Document any of the following issues found on the construction site and the corrective action(s) required for each.

Issue	Status	Corrective Action Needed
Have all ESC features been constructed before initiating other construction activities?	Yes ☐ No ☐	
Is the contractor inspecting and maintaining ESC devices regularly?	Yes ☐ No ☐	
Is existing vegetation maintained on the site as long as possible?	Yes ☐ No ☐	
Is construction staged so as to minimize exposed soil and disturbed areas?	Yes ☐ No ☐	
Are disturbed areas restored as soon as possible after work is completed?	Yes ☐ No ☐	
Is clean water being diverted away from the construction site?	Yes ☐ No ☐	
Are sediment traps and sediment barriers cleaned regularly?	Yes ☐ No ☐	
Are vegetated and wooded buffers protected and left undisturbed?	Yes ☐ No ☐	
Are soils stabilized by mulching and/or seeding when they are exposed for a long time?	Yes ☐ No ☐	
Has vegetation been allowed to establish itself before flows are introduced to channels?	Yes ☐ No ☐	
Is regular, light watering used for dust control?	Yes ☐ No ☐	
Is excessive soil compaction with heavy machinery avoided, to the extent possible?	Yes ☐ No ☐	

(continued)

Issue	Status	Corrective Action Needed
Are erosion control blankets used when seeding slopes?	Yes ☐ No ☐	
Are trees and vegetation that are to be retained during construction adequately protected?	Yes ☐ No ☐	
Are areas designated as off-limits to construction equipment flagged or easily distinguishable?	Yes ☐ No ☐	
If excavated topsoil has been salvaged and stockpiled for later use on the project, are stockpiles adequately protected?	Yes ☐ No ☐	
Are temporary slope drains or chutes used to transport water down steep slopes?	Yes ☐ No ☐	
Do all entrances to the storm sewer system have adequate protection?	Yes ☐ No ☐	

Overall Site Conditions

Document any of the following issues found on the construction site and the corrective action(s) required for each.

Issue	Status	Corrective Action Needed
Are slopes and disturbed areas not being actively worked properly stabilized?	Yes ☐ No ☐	
Are material stockpiles covered or protected when not in use?	Yes ☐ No ☐	
Are natural resource areas protected with sediment barriers or other BMPs?	Yes ☐ No ☐	
Are perimeter controls and sediment barriers installed and maintained?	Yes ☐ No ☐	

(continued)

Issue	Status	Corrective Action Needed
Are discharge points and receiving waters free of sediment deposits and turbidity?	Yes ☐ No ☐	
Are storm drain inlets properly protected?	Yes ☐ No ☐	
Is there evidence of sediment being tracked into streets?	Yes ☐ No ☐	
Is trash/litter from the construction site collected and placed in dumpsters?	Yes ☐ No ☐	
Are dumpsters closed/covered at the end of the working day?	Yes ☐ No ☐	
Are vehicle/equipment fueling and maintenance areas free of spills and leaks?	Yes ☐ No ☐	
Are potential stormwater contaminants protected inside or under cover?	Yes ☐ No ☐	
Is dewatering from site properly controlled?	Yes No	
Are portable restroom facilities properly sited and maintained?	Yes ☐ No ☐	
Are all hazardous materials and wastes stored in accordance with local regulations?	Yes ☐ No ☐	

Non-Compliance Actions

The municipality shall provide the site operator with a copy of this report, and notice of the corrective action(s) to be taken. The site operator shall have thirty days from the receipt of the notice to commence curative action of the violation.

LID and Green Infrastructure Regulatory Review

HOLLISTON REGULATORY ASSESSMENT

To: Karen Sherman, Town Planner, Town of Holliston

From: Rebecca Balke, P.E., Comprehensive Environmental Inc.

Date: June 30, 2022

Subject: Review of Holliston's Regulations for LID and Impervious Cover Creation

The Environmental Protection Agency's (EPA's) 2016 National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit, requires regulated communities such as Holliston to develop a report assessing existing town regulations as they pertain to Low Impact Development (LID), green infrastructure (GI), and the creation of impervious area.

Comprehensive Environmental Inc. (CEI) performed a preliminary review of Holliston's existing bylaws and applicable regulations to assess current street design and parking lot guidelines that affect creation of impervious cover to determine whether changes should be made to support LID (Permit Section 2.3.6.b). The assessment included determining the feasibility of making green infrastructure such as green roofs, infiltration practices, and water harvesting devices allowable where appropriate site conditions exist (Permit Section 2.3.4.c). CEI reviewed the following Town of Holliston regulations as part of this assessment:

- General By-Laws (May 10, 2021)
- Zoning By-Laws (May 10, 2021)
- Subdivision Rules and Regulations (May 2021)
- Special Permit and Site Plan Regulations (May 2021)
- Stormwater Management and Land Disturbance Regulations (May 2021)
- Common Driveway Regulations (May 2021)
- Scenic Road Regulations (May 2021)
- Highway Department Regulations for Driveway Openings (not dated)

Table 1 of this memorandum presents the results of this assessment and provides specific recommendations on how to further promote LID in the Town of Holliston. Please note that the order of the list in Table 1 is based on general categories and not necessarily the order in the codes.

The recommended regulatory changes should be made as part of the next major regulatory update undertaken by the town for each by-law or regulation referenced.

If you have any questions or would like additional information, please feel free to contact me at 800.725.2550 x308 or rbalke@ceiengineers.com. Thank you.

Rebecca Balke, P.E.
Principal, Project Manager

Table 1: Recommendations for Updating Existing Regulations Pertaining to LID, Green Infrastructure and Impervious Cover Creation

Topic	Reference	Existing Requirement	Recommendations
General design for environmental sensitivity	Zoning Section VII- Site Plan Review, 5. General Conditions for Approval	Lists considerations for site plan application including adequacy of the methods of drainage, conveniences and safety of vehicular and pedestrian movement, development that harmonizes with neighboring land uses, etc.	Consider expanding this section to include: • Precautions to prevent pollution from stormwater runoff; • Minimization of cuts and fills; and • Minimization of disturbance of steep slopes.
Stormwater Management			
LID and green infrastructure design	Subdivision Article V. Requirements, 5.3. Stormwater Management	Requires stormwater be recharged rather than piped to surface water to the maximum extent feasible.	No changes recommended.
	Stormwater 11.10 Stormwater Management Performance Standards	Requires LID site planning and design strategies be implemented unless infeasible in order to reduce the discharge of stormwater from development sites and provides a description of what is meant by LID.	
Open drainage	Subdivision Article V. Requirements, 5.3. Stormwater Management	Current requirements focus on piped drainage systems with catch basins. General requirements (Section 5.3.6) include catch basins on both sides of the roadway at intervals of not more than 300 feet (Section 5.3.6).	Consider allowing the use of open drainage systems along residential streets. If protection of the roadway edge is a concern, consider allowing alternative designs such as curbs with openings (or leak offs) or flush curbs, that enable the use of bioretention, treatment swales, and open drainage instead of requiring piped drainage systems.
Storm event design	Stormwater 11.10 Stormwater Management Performance Standards	Requires peak flows of runoff in a 2-, 10-, 25-, 50-, and 100-year frequency storm shall be no higher following development than prior to development.	No changes recommended.

Topic	Reference	Existing Requirement	Recommendations
	Stormwater 11.11 Stormwater Management Calculations and Design Practices	Requires all calculations supporting the design of stormwater management systems comply with the MA Stormwater Handbook.	
Rain water harvesting	Town Website Departments – D.P.W. – Water – Outdoor Water Conservation	Recommends collection of roof runoff into rain barrels, even offered discounted rain barrels for residents in May 2021 through a program with the Great American Rain Barrel Company.	No changes recommended. LID practices encourage allowing residential homeowners to use rain water harvesting devices, such as cisterns and rain barrels, to use for outdoor purposes, such as lawn irrigation and gardening on their property.
Open Space			
Dedication of open space	Zoning V- Special Regulations, H. Open Space Residential Development, 4. Minimum Requirements	Requires no less than 50% of the land area within an open space residential development (OSRD) be devoted to common open space.	Consider explicitly allowing LID stormwater management practices (bioretention areas, filter strips, swales, rain gardens, constructed wetlands, etc.) as a permitted use within open space developments and to count towards the fulfillment of required open space areas.
	Zoning V- Special Regulations, H. Open Space Residential Development, 7. Open Space Use and Design Standard	Allows detention and/or retention ponds that are necessary for the construction of improvements be located within the common open space but not qualify towards the minimum open space required.	
Buffers	Zoning V- Special Regulations, H. Open Space Residential Development, 7. Open Space Use and Design Standard	Requires a buffer at the perimeter of the site consisting of trees, shrubs, vegetation, and topographic features sufficient to separate and/or screen abutting properties.	Consider allowing LID stormwater management practices (bioretention areas, filter strips, swales, rain gardens, constructed wetlands, etc.) within the buffer areas of open space development parcels.
Open space residential development (OSRD)	Zoning V- Special Regulations, H. Open Space Residential Development, 2. Applicability	Permits OSRD projects by right within both Agricultural-Residential A & B and Residential zoning districts.	No changes recommended. LID practices encourage permitting open space residential development (OSRD) as a “by right” form of development (no special permit required).

Topic	Reference	Existing Requirement	Recommendations
Street Design			
Width	Subdivision Appendix A: Design Standards, Table 1. Roadway Dimensional Requirements	Requires pavement width of 18-24 feet for rural residential, local residential, and residential feeder streets, and pavement width of 30-36 feet for industrial streets.	Consider allowing narrower pavement widths along sections of roadway where there are no houses, buildings, or intersections, and where on-street parking is not anticipated. For non-residential mixed-use roadways, pavement widths should be set based on traffic volume, types of vehicles, parking and pedestrian requirements.
Materials	Subdivision Article V. Requirements, 5.2. Streets, 5.2.5. Construction	Requires the use of Class I dense bituminous concrete for construction of streets.	Consider allowing the use of permeable materials such as porous pavers, paving stones, and pervious pavement for road shoulders and parking lanes in residential neighborhoods while maintaining the use of conventional paving for travel lanes.
Layout	Subdivision Article V. Requirements, 5.1. General, 5.1.1. Design Guides	Requires all design and construction of subdivisions to increase, to the extent reasonably possible, the use of curvilinear street patterns.	Consider expanding to require street layout be designed to minimize the total paved area (including cul-de-sacs) with the goal of protecting site hydrology.
	Subdivision Article V. Requirements, 5.2. Streets, 5.2.1. Location and Alignment	Requires all streets be designed to provide safe vehicular travel with consideration to existing infrastructure to provide safe access to and from proposed subdivision.	
Curbs and berms	Subdivision Article V. Requirements, 5.2. Streets, 5.2.5. Construction, 5.2.5.5. Curbs	Requires vertical granite curbing at all intersection radii and cul-de-sac roundings, at all catch basins, along the side of traveled ways to protect sidewalks where there is less than a 4-foot grass strip separating the traveled way from the sidewalk, etc.	Consider explicitly allowing the use of “open drainage” along residential streets. If protection of the roadway edge is a concern, consider allowing alternative designs such as curbs with openings (or “leak-offs”) or flush curbs, that enable the use of bioretention, treatment swales, and open

Topic	Reference	Existing Requirement	Recommendations
			drainage instead of requiring piped drainage systems.
Right-of-Way (ROW) width	Subdivision Appendix A: Design Standards, Table 1. Roadway Dimensional Requirements	Requires ROW width between 40-60 feet depending on the type of street.	ROW width is reasonable.
ROW Landscaping	Subdivision Article V. Requirements, 5.5. Other Improvements, 5.5.5. Open Space and Planting	Requires a planting space between the curb line of the roadway and the sidewalk surfaced with topsoil to be seeded and rolled or otherwise vegetated to the satisfaction of the Board.	Consider explicitly allowing LID stormwater management practices (bioretention areas, filter strips, swales, rain gardens, constructed wetlands, etc.) within the required ROW planting space/ green strips.
	Subdivision Appendix A: Design Standards, Table 1. Roadway Dimensional Requirements	Requires green strip width between 7-15 feet.	
Dead-end streets & cul-de-sacs	Subdivision Article V. Requirements, 5.2. Streets, 5.2.4. Dead-End Streets	Requires dead-end streets to end with a cul-de-sac turnaround. Requires closed end turnaround with outside roadway diameter of at least 100 feet. No current provisions regarding the interior island of turnarounds.	Consider a smaller diameter cul-de-sac. Paved diameter of 70-90' or less are encouraged in LID practices. Consider allowing- or better, requiring- the creation of a landscaped island in the center of cul-de-sacs and permitting the use of vegetated stormwater management practices within the island. Consider allowing alternative layouts for turnarounds, such as "hammerhead" turnarounds, to minimize impervious surfaces.
Location of utilities	Subdivision	Requires all utilities be installed underground with service to individual dwellings also underground.	Consider explicitly permitting the placement of utilities under the paved section of the ROW or immediately

Topic	Reference	Existing Requirement	Recommendations
	Article V. Requirements, 5.4 Utilities, 5.4.4. Underground Utilities		adjacent to the road edge so that the land adjacent to the roadway can be used for drainage swales.
Sidewalks			
General requirements	Subdivision Article V. Requirements, 5.5. Other Improvements, 5.5.1. Sidewalks and Shoulders	Requires sidewalks with handicap ramps be constructed on each side of the street, either at extreme outer edge of the layout or meandering, but never leaving less than 2 feet of grass shoulder between street and sidewalk.	Consider allowing sidewalk placement on one side of the street only in low-density residential neighborhoods.
Width	Subdivision Article V. Requirements, 5.5. Other Improvements, 5.5.1. Sidewalks and Shoulders Subdivision Appendix A: Design Standards, Table 1. Roadway Dimensional Requirements	Requires sidewalk width of at least 5 feet.	Consider requiring a sidewalk width of 4 feet.
Materials	Subdivision Article V. Requirements, 5.5. Other Improvements, 5.5.1. Sidewalks and Shoulders	Requires sidewalks be constructed of bituminous concrete.	Consider allowing or requiring the use of permeable surfaces for sidewalks.
Drainage design	Subdivision Article V. Requirements, 5.5. Other Improvements, 5.5.1. Sidewalks and Shoulders	Requires sidewalks be pitched toward the gutter one quarter inch to one foot.	Consider requiring runoff from sidewalks to be “disconnected” from street drainage where feasible by directing it into qualifying vegetated receiving areas or landscaped areas such as tree-box filters or rain gardens. This requirement may need to include provisions for easements to preserve and maintain the vegetated receiving areas if they lie outside of the ROW.

Topic	Reference	Existing Requirement	Recommendations
Driveways			
Width	Site Plan 7.4. Performance Standards for Nonresidential Development, 7.4.2. Standards, F. Pedestrian and Vehicular Access; Traffic Management	Requires curb cuts be limited to the minimum width for safe entering and exiting and in no case exceed 24 feet in width.	For commercial driveways, consider requiring a minimum driveway width of 18 feet for two-way traffic and 9 feet for one-way traffic, as recommended for LID practices.
	Driveway Openings Driveway Specifications	Provides width dimensions for residential and commercial driveways: Residential: Minimum = 8 feet Maximum = 16 feet Commercial: Minimum = 20 feet Maximum = 24 feet	
Common driveways	Common Driveways Article VIII. Common Driveway Regulations	Allows common driveways serving no more than 3 lots.	Consider allowing the use of common residential driveways to serve up to four houses, including cluster development lots that do not meet standard dimensional requirements.
	Zoning Section IV- Intensity Regulations, A. General Requirements		
Materials	Driveway Openings Driveway Specifications	Requires driveways be constructed of a bituminous concrete pavement.	Consider allowing pervious materials (porous pavers, paving stones, pervious concrete) and/or the use of "two-track" driveways, for residential driveways.
Parking Lots			
Size of spaces	Site Plan Appendix A: Parking Design Standards	Table provides minimum dimensional standards for parking lots (stall length and width, aisle width) based on parking angle.	Consider providing dimensional requirements for compact car spots (e.g., 8' width, 16' length).

Topic	Reference	Existing Requirement	Recommendations
		States that dimensional standards are minimums, not ideals, and designs with more generous dimensions would be superior in most cases.	Consider requiring the current dimensional standards for parking spaces as ideals (e.g., standard stall 9' width, 18' length) and encouraging minimization of impervious area/ use of pervious materials for parking stalls.
	Zoning Section V- Special Regulations, G. Apartment District Requirements	Requires on-site paved parking areas including at least 2 parking spaces for every dwelling unit with minimum dimensions of 10 feet by 20 feet.	Consider modifying this requirement by reducing parking spot dimensions to 9 feet by 18 feet and allowing the use of pervious materials for parking stalls.
Number of spaces & shared parking	Zoning Section V- Special Regulations, C. Off-Street Parking	Provides standards for parking demands for different uses (dwellings, offices, restaurants, etc.). Allows for different provisions in order to meet all parking needs for special circumstances such as mixed uses with staggered peak parking hours, businesses with vanpooling arrangements or unusual building occupancy (e.g., by the elderly).	Consider allowing reduced parking for homes and businesses near major transit stops.
	Site Plan 7.4. Performance Standards for Nonresidential Development, 7.4.2. Standards, F. Pedestrian and Vehicular Access; Traffic Management	States that the maximum parking allowed for a development shall be no more than the minimum number of spaces required under zoning.	No changes recommended.
Materials	Zoning Section V- Special Regulations, C. Off-Street Parking	Requires off-street parking areas, loading areas, and access drives, if involving 6 or more parking spaces, be surfaced with bituminous or other paving material unless an alternative surface is approved which, because of only periodic use, will adequately prevent dust, erosion, water accumulation and unsightly conditions.	Consider allowing pervious materials such as porous pavers, paving stones, reinforced grass, and pervious pavement for parking stalls and spillover parking areas.

Topic	Reference	Existing Requirement	Recommendations
Compact car spaces	Site Plan Appendix A: Parking Design Standards	No current provisions for reserving compact car spaces.	Consider recommending or requiring commercial parking lots have up to 30% of spaces reserved for compact cars.
Landscaping	Zoning Section V- Special Regulations, C. Off-Street Parking	Requires at least 10% of the interior of any parking lot having 40 or more spaces be maintained with landscaping including trees, in plots of at least 4 feet in width.	Consider establishing landscaping requirements for parking areas that include vegetated islands with bioretention functions.
	Site Plan 7.4. Performance Standards for Nonresidential Development, 7.4.2. Standards, C. Landscaping		
	Site Plan 7.3. Special Permit and Site Plan Submittal Requirements, 7.3.4. Landscaping	Requires a Landscape Plan be prepared where the site plan requires construction of 5 or more parking spaces.	
Lot Layout			
Lawn requirements	N/A	No current provisions for lawn extent limits.	Consider establishing limits of extent of lawn area on residential lots, either by area or by percentage of lots.
Lot dimensions	Zoning Section IV- Intensity Regulations, B. Schedule of Intensity Regulations	Table provides minimum lot dimensions (area, frontage, and lot depth) and minimum yard setbacks. OSRD allowed by right in agricultural and residential districts (Section V-H), which allows for reductions in lot dimensions.	No changes recommended. Reduced lot dimensions allowed by right in OSRD.
	Zoning Section V- Special Regulations, M. Special Permit for Low or Moderate Income Housing	Allows for construction of a low or moderate income single family dwelling unit on a parcel of land with less than the required minimum lot frontage, area and setbacks by special permit.	

Topic	Reference	Existing Requirement	Recommendations
Buffers	Zoning Section V- Special Regulations, G. Apartment District Requirements	Requires buffer areas no less than 200 feet from any other zoning district and such area be undeveloped except for drives, walks and landscaping.	Consider providing language explicitly allowing LID stormwater management practices (bioretention area, filter strips, swales, rain gardens, constructed wetlands, etc.) within specified buffer zones, provided the location of these structures is not in conflict with other setback criteria.
	Site Plan 7.4. Performance Standards for Nonresidential Development, 7.4.2. Standards, C. Landscaping	Requires street buffer strip at least 5 feet wide to be planted with grass, medium height shrubs, evergreens and shade trees.	
Impervious lot coverage	Zoning Section IV- Intensity Regulations, B. Schedule of Intensity Regulations	Table provides maximum % coverage of buildings, structures, and accessory buildings for different districts, ranging from 20-50%.	Consider limiting impervious lot coverage to 15% in rural, low-density areas. This recommendation is not appropriate for town centers, transit-oriented districts, and moderate density neighborhoods, where compact development should be encouraged.
	Zoning Article V. Requirements, H. Open Space Residential Development	Table of intensity regulations provides maximum % of coverage (buildings and structures) for OSRD lots (25%).	
Site Work			
Site clearing & construction	Subdivision Article V. Requirements, 5.1. General, 5.1.1. Design Guides	Requires all design and construction of subdivisions to reduce, to the extent reasonably possible, volume of cut and fill, area over which existing vegetation will be disturbed, number of mature trees removed, etc.	No changes recommended.
ROW clearing	Site Plan 7.4. Performance Standards for Nonresidential Development, 7.4.2. Standards, E. Site Development Standards	Requires clearing for utility trenching be limited to the minimum area necessary to maneuver a backhoe or other construction equipment.	No changes recommended. LID practices encourage requiring developers to limit clearing within the ROW to the minimum extent necessary to construct roadway, drainage, sidewalk, and utilities.
	Subdivision Article V. Requirements, 5.2. Streets, 5.2.5. Construction	Requires the entire area of each way be cleared of all material which might interfere	

Topic	Reference	Existing Requirement	Recommendations
		with road construction or constitute a traffic hazard.	
Tree removal	Bylaws Article XXXIII: Tree Warden	Establishes regulatory control over setting out, care and maintenance, and removal of all public shade trees, shrubs, and other plants in the Town by the Tree Warden.	No changes recommended.
	Scenic Road	Seeks to minimize the removal of healthy trees in or near the ROW of designated scenic roads and requires the replacement of tree(s) removed.	
	Subdivision Article V. Requirements, 5.1. General, 5.1.1. Design Guides	Requires all design and construction of subdivisions to reduce, to the extent reasonably possible, the number of mature trees removed.	
Soil restoration	Bylaws Article XXII: Removal of Earth Products, Section 3	Requires soil be re-covered with topsoil to a depth of at least that which previously existed or with no less than 4 inches of compacted topsoil in the uppermost layer.	Consider including provisions that address the following: • Minimization of the removal of topsoil from the property; • Restoration of natural soil permeability, such as rototilling of soils, within vegetated/ landscaped areas where construction has compacted soils.
	Zoning Section V- Special Regulations, E. Removal of Earth Products		

Appendix D

Evaluation of Town-Owned Property

Inventory of Municipal Property
Municipal Property BMP Retrofits Evaluation

Inventory of Municipal Property

Inventory of Town-Owned Facilities and Applicable SOPs

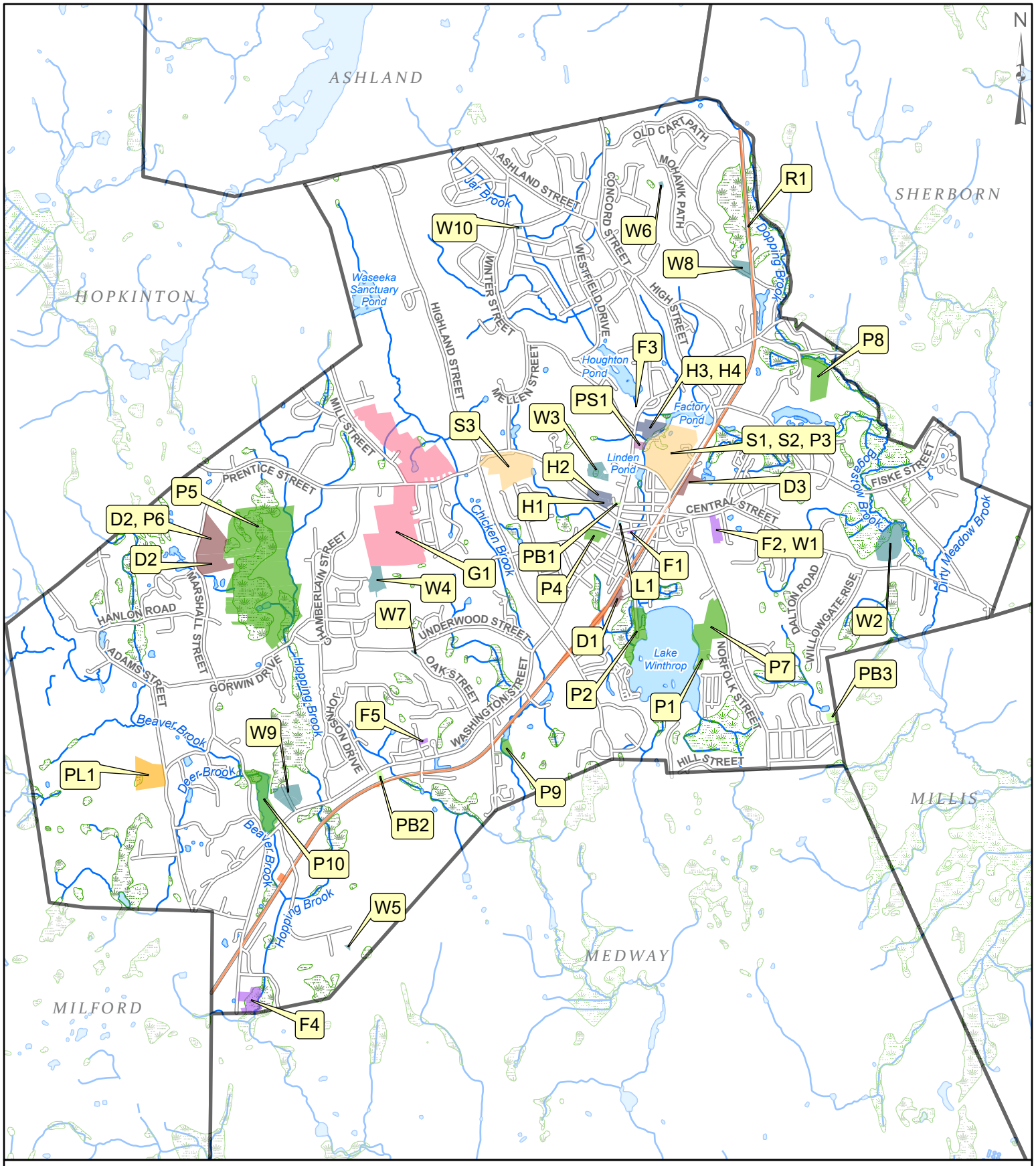
			Municipal Infrastructure*										Vehicle Maintenance and Storage Yards				Spill Prevention, Response and Reporting		Parks and Open Space						Buildings and Facilities						Construction Management*	
		SOP ID:	MI1	MI2	MI3	MI4	MI5	MI6	MI7	MI8	MI9	MI10	VM1	VM2	VM3	VM4	SR1	SR2	PO1	PO2	PO3	PO4	PO5	PO6	BF1	BF2	BF3	BF4	BF5	BF6	CM1	CM2
Site Name	Address	Map Label	Street Sweeping	Catch Basin Cleaning & Inspection	Outfall Inspection & Maintenance	Stormwater & Water Line Maintenance	Asphalt Cleaning & Repair	BMP Inspection & Maintenance	Oil/Water Separator	Floor Drains	Snow Stockpiling/Removal	Winter Road Maintenance	Vehicle & Equipment Storage & Maintenance	Vehicle & Equipment Washing	Vehicle & Equipment Fueling	Parts Cleaning	Spill Response	Spill Reporting & Emergency Contact Info.	Landscape Design & Management	Lawn & Grounds Maintenance	Pet Waste & Litter	Storage & Use of Pesticides & Herbicides	Storage & Use of Fertilizers	Waterfowl Management	Building Washing & Repair	Solid Waste Management	Material Loading/ Unloading	Material Storage	Painting	Sand & Salt Storage	Erosion & Sedimentation Control	Construction Site Inspection
DEPARTMENT OF PUBLIC WORKS																																
Highway Department Building	63 Arch Street	D1								X			X	X	X	X	X	X							X	X	X	X		X		
Old Town Landfill - Marshall Street Recyling Center	92 Marshall Street	D2																	X	X						X						
Rear old VFW	260 Woodland Street	D3																							X							
GOLF COURSES																																
Pinecrest Golf Club	212 Prentice Street	G1																	X	X		X	X		X							
PARKS																																
Stoddard Park and Beach	880 Stoddard Park Drive	P1																	X	X	L	X	X	X		X						
Pleasure Point Park and Beach	100 Pleasure Point Road	P2																			PL			X								
Flagg Field	96 Linden Street	P3																	X	X		X	X									
Goodwill Park	37 Green Street	P4																	X	X	L	X	X									
Brentwood Conservation Land	Near the crossing of Hopping Brook and Gorwin Road	P5																			P											
Marshall Street Field Complex	150 Marshall Street	P6												X	X		X	X	X	X	PL	X	X									
Patoma Park	335 Norfolk Street	P7																			L	X	X	X								
Holliston Community Farm	34 Rogers Street	P8												X	X		X	X	X	X	L	X	X									
Mission Springs Recreation Area	100 Summer Street	P9																	X	X		X	X									
Weston Pond Park	2016 Route 16	P10																	X	X		X	X	X								
RECREATIONAL TRAILS																																
Upper Charles Rail Trail	Near 141 Central Street	R1																			PL											
FIRE STATIONS																																
Central Fire Station	59 Central Street	F1											X	X			X	X	X		P				X	X				X		
Foundry	269 Central Street	F2															X	X	X		P				X							
Clarence W. Gates	443 Washinton Street	F3												X			X	X							X							
McCormack (Braggsville)	386 South Street	F4															X	X	X		P				X							
Pope Industrial Park	52 Pope Road	F5															X	X							X							
POLICE DEPARTMENT																																
Holliston Police Department	550 Washington Street	PS1											X	X			X	X	X	X	L				X							
LIBRARIES																																
Holliston Public Library	752 Washington Street	L1																			L				X							
OTHER PUBLIC BUILDINGS																																
Holliston Town Hall	703 Washington Street	PB1											X						X	X	PL	X	X		X							
Holliston Parks and Recreation Department	1750 Washington Street	PB2																			PL				X							
Holliston Senior Center	150 Goulding Street	PB3									X		X	X					X	X	PL	X	X		X					X		
SCHOOLS																																
Sam Placentino Elementary School	235 Woodland Street	*S1*									X		X	X					X	X	PL	X	X		X	X				X		
Robert Adams Middle School	323 Woodland Street	S2									X		X	X					X	X	PL	X	X		X	X				X		
Holliston High School	370 Hollis Street	*S3*									X		X	X					X	X	PL	X	X		X	X				X		
HOUSING AND REDEVELOPMEMNT AUTHORITY																																
Cutler School Housing	59 Hollis Street	H1									X		X	X			X	X	X	X	PL	X	X		X	X	X	X		X		
Cutler Heights Housing	79 Hollis Street	H2									X		X	X			X	X	X	X	PL	X	X		X	X	X	X		X		
Cole Court	492 Washington Street	*H3*									X		X	X			X	X	X	X	PL	X	X		X	X	X	X		X		
Housing Authority Offices	492 Washington Street	H4									X		X	X			X	X	X	X	PL	X	X		X	X	X	X		X		
WATER DEPARTMENT																																
Holliston Water Department	269 Central Street	W1												X			X	X							X		X	X				
Pump House	774 Central Street	W2																							X							
Water Tank	49 Fairlane Way (End of road)	*W3*																							X							
Water Tank	End of Beatrice Lane	W4																							X							
Water Tank	405 Hopping Brook Road	W5																							X							
Water Tank	Jennings Road (End of road)	W6																							X							
Water Tank	299 Underwood Street (Corner of Underwood and Oak St)	W7																							X							
Dopping Brook Water Treatment Facility	600 Mayflower Landing	W8																							X							
Holliston Water Treatment Plant	1995 Washington Street	W9																							X							
Maple Street Pump Station	105 Maple Street	W10																							X							
PARKING FACILITIES																																
Town Forest Parking Lot	345 Adams Street	PL1																			P											

*Municipal infrastructure and Construction Management SOPs are intended for crews performing these services throughout the City, therefore are not designated to specific facilities, with the exception of MI7, MI8 and MI9, which apply to specific locations as indicated.

P = pets waste only

L = litter only

PL = pet waste and litter



Legend

Municipal Properties:

- Department of Public Works
- Fire Stations
- Golf Courses
- Housing and Redevelopment Authority
- Libraries
- Other Public Buildings
- Parking Facilities
- Parks
- Police Department
- Recreational Trails
- Schools
- Water Department
- Roads
- Pond, Reservoir
- Wetland, Marsh
- Stream, Brook

Data Sources: CEI, MassGIS, Town of Holliston

Municipal Properties

Holliston, MA

Comprehensive Environmental Incorporated

Municipal Property BMP Retrofits Evaluation

MUNICIPAL PROPERTY BMP RETROFITS

To: Karen Sherman, Town Planner

From: Nicole Haggerty, EIT & Rebecca Balke, P.E., Comprehensive Environmental Inc.

Date: June 30, 2022

Subject: Municipal Property BMP Retrofits

Permit Requirements and Project Background

Under the Environmental Protection Agency's (EPA's) 2016 National Pollutant Discharge and Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit, as amended (Permit), the Town of Holliston is required to identify a minimum of five town-owned properties and infrastructure that could potentially be modified or retrofitted with stormwater Best Management Practices (BMPs) designed to reduce the frequency, volume and pollutant loads of stormwater discharges to its MS4 through the mitigation of impervious area. At a minimum, Holliston must consider municipal property with significant impervious area that could be mitigated, existing street right-of-ways, outfalls and conventional stormwater conveyances and controls that could be readily modified or retrofitted.

The potential for retrofitting particular properties must consider factors such as maintenance access; 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. Sites must be priority ranked based on factors such as schedules for planned capital improvements to storm and sanitary sewer infrastructure and paving projects as available; current storm sewer level of service (if known); and control of discharges to impaired or critical receiving waters, first or second order streams, public swimming beaches, drinking water supply sources and shellfish growing areas.

Holliston must maintain a minimum of five sites for retrofits within its inventory, until such time as when it has less than five sites remaining for improvements. Beginning with the fifth year MS4 annual report and in each subsequent annual report, Holliston must report on those permittee-owned properties and infrastructure inventoried that have been retrofitted with BMPs to mitigate impervious area and associated water quality impacts.

This memorandum outlines activities completed by Comprehensive Environmental Inc. (CEI) to assist the Town of Holliston with meeting the above Permit requirements, with a focus on potential retrofit opportunities on developed municipal parcels. Analysis of infrastructure, open space, and undeveloped land available to mitigate stormwater runoff from nearby areas will be evaluated under a future effort.

Municipal Parcel Retrofits

Desktop and Field Analysis

Thirty-nine Town-owned facilities were identified within the MS4 regulated area. These parcels were advanced for additional desktop and field analysis as outlined further in the next section. CEI first developed a series of parcel maps for each facility to be used for recording existing conditions

and field notes. Parcel maps typically showed an aerial view of each facility, along with property lines, topography data, available drainage information, and other relevant information. Nicole Haggerty, EIT of CEI conducted field assessments of all 39 facilities in winter 2022. The goal was to evaluate opportunities to reduce pollutant loads discharging to the MS4 or surface water bodies from the site through reduction or treatment of stormwater runoff from impervious surfaces.

A map of all 39 facilities is provided as **Figure 1** at the end of this memorandum. A summary of the existing conditions for each site is included as **Table 1**, with proposed retrofit conditions provided as **Table 2** the end of this memorandum.

Proposed BMP Selection

Proposed conceptual BMPs have been selected based largely on available space, soil types within the area, and proximity to wetland areas. For planning, pollutant removal, and cost estimating purposes, locations with larger areas available for implementation were assigned BMPs with larger footprints such as infiltration basins, extended detention basins, or constructed wetlands, whereas smaller areas were assigned smaller BMPs such as rain gardens, trenches, or swales. Implementation areas with soils classified primarily as HSG C or D were assigned non-infiltrating BMP types such as extended detention basins. Areas located in close proximity to wetlands are assumed to have relatively high groundwater, and thus were assigned BMP types such as constructed wetlands.

For the purposes of this initial screening effort, BMP selection focused on surface BMPs that could be installed in existing available spaces with little disturbance to existing paved surfaces, as a typical surface BMP is less expensive on a pounds of pollutant removed than a subsurface system installed below a parking lot or ball field. More expensive underground infiltration BMPs (e.g., subsurface infiltration) will be considered for proposed redevelopment projects where demolition, reconstruction and/or repaving are proposed to minimize the costs of installation. The use of subsurface infiltration BMPs would significantly increase treatment costs, as they can cost up to 4-10 times more than surface BMPs. Other BMPs that disturb pavement, including leaching catch basins and porous pavement will also be evaluated during redevelopment projects. Actual BMP types and sizes are expected to be refined as part of future designs and in consideration of the cost benefit (e.g., cost per pound of removal).

BMP Unit Costs

Costs for BMP design and construction were estimated based on a memorandum from EPA titled "Methodology for developing cost estimates for Opti-Tool" (**Attachment A**). This memorandum built on multiple previous studies dating as far back as 2010 to estimate total implementation costs for multiple types of stormwater BMPs on a dollars per cubic foot of constructed volume in 2016 dollars, and assumed that 35% of the construction cost would go towards engineering design and other contingencies. For the purposes of this memorandum, 2016 dollars were converted to 2022 dollars by adding 18% to the total cost in order to account for inflation over the preceding six years.

Additionally, the Opti-Tool memorandum notes that cost adjustment factors may be incorporated to more accurately account for BMP site constraints associated with installation in urban environments as follows:

- Undeveloped areas: 1.0;
- Partially developed areas: 1.5;
- Developed areas: 2.0; and
- Highly urban setting: 3.0.

Based on current development conditions, a cost adjustment factor of 1.5 was applied to all potential BMPs. A summary of costing data is provided in **Table 3** at the end of this memorandum.

Actual engineering costs depend on many factors, and engineering for larger projects generally consist of a lower total percent of the construction cost, with the inverse being true for smaller projects (e.g., a $250,000 construction project may have a $50,000 engineering cost or 20% of construction, whereas a $50,000 construction project may have a $25,000 engineering cost or 50% of construction). Costs outlined in this memorandum are for guidance and comparison purposes only, and incorporate a cost adjustment factor for retrofitting an existing developed site. Future design phases will further refine costs associated with all BMPs.

Prioritization

Facilities were prioritized into groups, or tiers, of sites based on the ability to locate a BMP, the location with respect to an impaired watershed, and public education value, as follows:

- **Tier 1** – sites with good BMP implementation opportunities;
- **Tier 2** – sites with good to fair BMP implementation opportunities that do not meet Tier 1 standards;
- **Tier 3** – sites with existing BMP(s) that require further investigation to determine drainage connections and potential to retrofit additional existing structures;
- **Tier 4** – sites where opportunities are limited to replacing pavement with porous pavement and/or replacing catch basins with leaching catch basins (LCBs) and/or installing subsurface systems – best coordinated with repaving; and,
- **N/A** – sites with no opportunities for improvements and/or no WQ benefits.

Tier 1 sites represent the top locations for recommended BMP implementation. Pre-conceptual designs for the top five sites have been prepared and are included as **Attachment B**.

Conclusions

Most of Holliston's municipal sites have small impervious areas, with many discharging stormwater onto adjacent pervious surfaces, where some existing treatment is provided. Those with the largest impervious areas already have existing stormwater treatment BMPs. This provided limited opportunities for municipal retrofits with large phosphorus reduction impacts.

Based on calculations from the BATT calculator, implementation of the top three stormwater BMPs at Tier 1 facilities will remove a total of 1.94 pounds of phosphorus for a total engineering and construction cost of approximately $158,800 at an average cost of $81,900 per pound of phosphorus removed.

Recommendations and Next Steps

It is recommended that the Town first move forward with further evaluation and design of BMPs at the Tier 1 facilities outlined in **Table 4** below. As noted above, these locations were identified as higher priority as they have good opportunities for retrofit, discharge to waterbodies, or their tributaries, with a phosphorus impairment, and have good public education opportunities.

Table 4 – Tier 1 Priority BMPs

Location		Proposed BMP(s)		Estimate Costs	TP Reduction	
Facility Name	**Address**	**Type**	**Estimated Size**	**Construction & Engineering**	**Lbs / Year**	**Dollars / Pound**
Mission Springs Recreation Area	100 Summer Street	Forebay	15’ x 20’ x 2’ deep	Const: $21,300 Eng: $7,500	0.87	$33,100
		Infiltration basin	50’ x 20’ x 2’ deep			
Fire Station/ Water Department	269 Central Street	Forebay	15’ x 25’ x 2’ deep	Const: $35,200 Eng: $12,300	0.19	$250,000
		Water quality swale	80’ x 20’ x 2’ deep			
Goodwill Park	37 Green Street	Forebay	15’ x 25’ x 2’ deep	Const: $36,800 Eng: $12,900	0.74	$67,200
		Infiltration basin	50’ x 25’ x 3’ deep			
		Rain garden	35’ x 15’ x 2’ deep	Const: $24,300 Eng: $8,500	0.14	$234,300
Holliston High School[1]	370 Hollis Street	Forebay	30’ x 50’ x 3’ deep	Const: $178,400 Eng: $62,400	--	--
		Extended detention basin	100’ x 50’ x 4’deep			
Robert Adams Middle School[1]	235 Woodland Street	Rain garden	30’ x 20’ x 2’ deep	Const: $24,300 Eng: $8,500	--	--

[1] Existing drainage connections of parcel need further investigation before determining treatment area and phosphorus removal potential. Proposed BMP size and cost is based on available space for construction of a BMP.

The Town should also consider investigating, and implementing where feasible, water quality treatment BMPs as part of drainage improvements during roadway improvement projects. These projects also provide an opportunity to incorporate water quality BMPs, however, such opportunities are often restricted to areas located within, or immediately adjacent to, the roadway. Example roadway intersection improvements for Holliston’s consideration are provided in **Attachment C**, however, other alternative designs may also be considered depending on site specific conditions. Implementation of such BMPs requires evaluation on a case-by-case basis in consideration of the size of the right-of-way (ROW), soil type, surrounding drainage infrastructure and location of other utilities. The cost and amount of phosphorus removed from these systems will vary based on the size of the BMP and contributing drainage area.

If you have any further questions or would like additional information, please feel free to contact me at 800.725.2550 x308 or rbalke@ceiengineers.com. Thank you.

Attachments:

- Table 1: Summary of Existing Conditions
- Table 2: Proposed Improvements
- Table 3: BMP Costing Information
- Figure 1: Municipal Properties Visited
- Attachment A: Memorandum report on Methodology for developing cost estimates for Opti-Tool; February 20, 2016
- Attachment B: Pre-Conceptual Designs for Top Five Locations
- Attachment C: Example Roadway and Intersection BMP Improvements

Table 1- Summary of Existing Conditions

Location Description	Address	Facility ID	Tier	Parcel Area		Existing Conditions Description	Existing BMPs	TMDL or Impaired Waterbody Watershed	Direct or Near-Direct Discharge	Soils[1]		
				Total (acres)	Impervious (acres)					Soil Type	Hydric Soil Group	Soil Area (acres)
Mission Springs Recreation Area	100 Summer St	P9	1	4.42	0.58	Before culvert, runoff flows down driveway into existing catch basins and outfalls into nearby Chicken Brook. After culvert, runoff sheet flows off driveway and parking area into woods/ Chicken Brook. Large open grassed area south of parking area. Pavement in fair/poor condition.	N/A	CHARLES RIVER	Yes	Canton fine sandy loam, 3 to 8 percent slopes, extremely bouldery	A	0.14
										Freetown muck, ponded, 0 to 1 percent slopes	B/D	0.10
										Haven silt loam, 3 to 8 percent slopes	A	0.63
										Merrimac-Urban land complex, 0 to 8 percent slopes	A	3.40
										Scarboro mucky fine sandy loam, 0 to 3 percent slopes	A/D	0.13
										Wareham loamy fine sand, 0 to 5 percent slopes	A/D	0.02
Fire Station/ Water Department	269 Central St	F2, W1	1	6.22	1.05	Runoff from parking area captured by existing catch basin, which was completely full of sediment during field investigation. Runoff from areas behind buildings appears to sheet flow into woods. Open space on sides of driveways and in center island. One existing catch basin nearby on Central Street.	N/A	CHARLES RIVER	No	Woodbridge fine sandy loam, 3 to 8 percent slopes	C/D	6.22
Goodwill Park	37 Green St	P4	1	5.29	0.75	Runoff from parking area flows toward Green Street into small vegetated islands/ditch with driveway culvert, connectivity to be determined. Two catch basins on site appear to capture tennis court & recreation building roof runoff. Existing drainage network is connected to structures on Green Street and outfall across the road. Open grassed areas in front of tennis courts and buildings.	N/A	CHARLES RIVER	No	Rainbow silt loam, 3 to 8 percent slopes	C/D	0.01
										Rock outcrop-Hollis complex, 3 to 35 percent slopes	N/A	0.76
										Sudbury fine sandy loam, 3 to 8 percent slopes	B	4.52
Holliston High School	370 Hollis St	S3	3	31.91	13.80	All parcel drainage appears to be captured by existing drainage structures and likely treated by Vortechnics underground stormwater treatment system. Drainage network in front of parcel on Hollis Street potentially outfalls behind parcel. Connections need further investigation. Open grassed areas throughout parcel.	Vortechnics underground stormwater treatment system	CHARLES RIVER	No	Broadbrook very fine sandy loam, 3 to 8 percent slopes, very stony	D	0.05
										Haven silt loam, 3 to 8 percent slopes	A	1.47
										Hollis-Rock outcrop-Charlton complex, 15 to 25 percent slopes	D	0.00
										Narragansett-Hollis-Rock outcrop complex, 3 to 15 percent slopes	A	1.37
										Tisbury silt loam, 0 to 3 percent slopes	C	0.04
										Tisbury silt loam, 3 to 8 percent slopes	C	0.65
										Udorthents-Urban land complex	N/A	27.91
										Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	D	0.41
Miller Elementary School, Sam Placentino Elementary School, Robert Adams Middle School, & Damigella Field	235 Woodland St	S1, S2, P3	3	54.62	18.46	Majority of runoff from Elementary School parking areas is captured by existing drainage network and treated by existing BMPs. Existing drainage connections of Middle School network unknown. Small open space near Middle School entrance, also small open grassed islands in parking area.	Water quality unit, 2 detention ponds	CHARLES RIVER	Yes	Canton fine sandy loam, 8 to 15 percent slopes, extremely bouldery	A	2.11
										Freetown muck, 0 to 1 percent slopes	B/D	8.57
										Hinckley loamy sand, 8 to 15 percent slopes	A	4.09
										Merrimac fine sandy loam, 0 to 3 percent slopes	A	0.26
										Sudbury fine sandy loam, 3 to 8 percent slopes	B	0.44
										Udorthents, wet substratum	N/A	0.73
										Udorthents-Urban land complex	N/A	32.63
										Wareham loamy fine sand, 0 to 5 percent slopes	A/D	5.60
										Water	N/A	0.15
										Windsor loamy sand, 8 to 15 percent slopes	A	0.03
Fire Stations	0 Pope Rd	F5	2	1.02	0.71	Runoff flows south down Pope Road and is captured by existing drainage structures. Parking area mostly dirt.	N/A	CHARLES RIVER	No	Broadbrook very fine sandy loam, 3 to 8 percent slopes, very stony	D	0.02
										Udorthents-Urban land complex	N/A	1.00
Housing and Redevelopment Authority- Cutler School	59 Hollis St	H1	2	2.47	0.76	Runoff from roads flows down driveway and is captured by existing catch basins. Runoff from parking area and roofs flows down existing open drainage path (half paved, half grass) into catch basin on Hollis Street.	N/A	CHARLES RIVER	No	Narragansett silt loam, 8 to 15 percent slopes	A	2.15
										Narragansett-Hollis-Rock outcrop complex, 15 to 25 percent slopes	A	0.32
Holliston Community Farm	34 Rogers St	P8	2	19.16	0.12	Runoff from partially paved driveway flows down and off sides into wooded wetland area before reaching Dopping Brook. No existing drainage structures in the area.	N/A	CHARLES RIVER	Yes	Freetown muck, 0 to 1 percent slopes	B/D	2.33
										Hinckley loamy sand, 8 to 15 percent slopes	A	3.33
										Merrimac fine sandy loam, 3 to 8 percent slopes	A	13.50
Fire Stations	59 Central St	F1	3	0.48	0.44	Runoff is captured by existing drainage structures and treated by existing underground stormwater treatment system.	Recharge structure, water quality unit, oil and grease trap	CHARLES RIVER	No	Urban land	N/A	0.48
Holliston Senior Center	150 Goulding St	PB3	3	2.18	0.82	Runoff from parking areas sheet flows to southeast corner of parcel and is treated by existing BMPs.	Swale, detention pond	CHARLES RIVER	No	Hinckley loamy sand, 15 to 25 percent slopes	A	0.18
										Swansea muck, 0 to 1 percent slopes	B/D	0.59
										Tisbury silt loam, 3 to 8 percent slopes	C	1.37
Police Department	550 Washington St	PS1	3	2.13	0.69	Runoff from parking areas is captured by existing drainage structures and treated by existing BMP.	Detention pond	CHARLES RIVER	Yes	Freetown muck, 0 to 1 percent slopes	B/D	0.74
										Merrimac fine sandy loam, 3 to 8 percent slopes	A	0.64
										Merrimac fine sandy loam, 8 to 15 percent slopes	A	0.75
Water Department	600 Mayflower Landing	W8	3	5.91	1.26	Runoff from street is captured by existing drainage structures. Multiple BMPs on Mayflower Landing. Small detention pond in parcel with inlet on other side of driveway. Open space in front of fence/gate.	Swale & 2 detention ponds on Mayflower Landing	CHARLES RIVER	No	Hinckley loamy sand, 8 to 15 percent slopes	A	0.28
										Swansea muck, 0 to 1 percent slopes	B/D	0.23
										Udorthents, sandy	N/A	5.40
Pinecrest Golf Club	212 Prentice St	G1	3	151.51	3.43	Runoff from parcel is captured by existing drainage structures. Structures likely direct flow to existing BMPs.	Swale, detention pond	CHARLES RIVER	No	Birdsall mucky silt loam, 0 to 1 percent slopes	C/D	5.77
										Broadbrook very fine sandy loam, 3 to 8 percent slopes, very stony	D	5.30
										Hollis-Rock outcrop-Charlton complex, 0 to 15 percent slopes	D	27.03
										Hollis-Rock outcrop-Charlton complex, 15 to 25 percent slopes	D	7.25
										Narragansett-Hollis-Rock outcrop complex, 3 to 15 percent slopes	A	29.10
										Paxton fine sandy loam, 0 to 8 percent slopes, extremely stony	C	5.84
										Paxton fine sandy loam, 8 to 15 percent slopes, extremely stony	C	4.22
										Pits, quarry	N/A	2.10
										Rainbow silt loam, 3 to 8 percent slopes	C/D	1.11
										Raypol silt loam, 0 to 5 percent slopes	B/D	0.05
										Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony	D	12.51
										Scituate fine sandy loam, 3 to 8 percent slopes	D	25.38
										Scituate fine sandy loam, 3 to 8 percent slopes, extremely stony	D	3.71
										Swansea muck, 0 to 1 percent slopes	B/D	2.14
										Tisbury silt loam, 0 to 3 percent slopes	C	15.90
										Udorthents-Urban land complex	N/A	0.19
										Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	D	3.90
Stoddard Park	880 Stoddard Park Rd	P1	1	4.54	0.49	Runoff sheet flows down Stoddard Park Road. Parking area is dirt/sand. No existing drainage structures in the area.	N/A	CHARLES RIVER	Yes	Hollis-Rock outcrop-Charlton complex, 15 to 25 percent slopes	D	0.04
										Sudbury fine sandy loam, 3 to 8 percent slopes	B	4.47
										Water	N/A	0.02

Location Description	Address	Facility ID	Tier	Parcel Area		Existing Conditions Description	Existing BMPs	TMDL or Impaired Waterbody Watershed	Direct or Near-Direct Discharge	Soils[1]		
				Total (acres)	Impervious (acres)					Soil Type	Hydric Soil Group	Soil Area (acres)
Holliston Parks & Recreation Department	1750 Washington St	PB2	1	1.59	1.07	Runoff from parking areas sheet flows south to grassed area in back. No existing drainage structures nearby. Septic vent in back grassed area. Open grassed area east of building.	N/A	CHARLES RIVER	No	Charlton-Hollis-Rock outcrop complex, 8 to 15 percent slopes	B	0.02
										Merrimac fine sandy loam, 8 to 15 percent slopes	A	1.12
										Montauk fine sandy loam, 0 to 8 percent slopes, extremely stony	C	0.42
										Paxton fine sandy loam, 0 to 8 percent slopes, extremely stony	C	0.03
Department of Public Works	63 Arch St (Off)	D1	4	3.28	1.54	Runoff flows down driveway to one existing catch basin. Limited open space.	N/A	CHARLES RIVER	No	Canton fine sandy loam, 8 to 15 percent slopes, extremely bouldery	A	3.04
										Sudbury fine sandy loam, 3 to 8 percent slopes	B	0.23
Fire Stations	0 Washington St (Off)	F3	4	0.06	0.05	Entirely impervious area. No open space.	N/A	CHARLES RIVER	No	Urban land	N/A	0.06
Holliston Public Library	752 Washington St	L1	4	0.23	0.19	Almost entirely impervious area. Runoff from roof and small parking area in back captured by existing catch basin.	N/A	CHARLES RIVER	No	Urban land	N/A	0.23
Holliston Town Hall	703 Washington St	PB1	4	0.60	0.48	Runoff from Jasper Hill Road and nearby parking area flows east down road and is captured by existing catch basins. Small southern grassed area recently redone with new sidewalk and vegetation. No open space in front of building. Extremely steep behind building.	N/A	CHARLES RIVER	No	Merrimac fine sandy loam, 3 to 8 percent slopes	A	0.20
										Narragansett silt loam, 8 to 15 percent slopes	A	0.40
Marshall Street Drop-Off Waste/ Recycling Area	150 Marshall St	D2	N/A	13.76	0.01	Almost entirely pervious area used for dump/ recycling. No existing drainage structures in the area.	N/A	CHARLES RIVER	No	Freetown muck, 0 to 1 percent slopes	B/D	0.01
										Hinckley loamy sand, 3 to 8 percent slopes	A	0.60
										Hinckley loamy sand, 8 to 15 percent slopes	A	0.05
										Pits, gravel	N/A	0.45
										Udorthents, refuse substratum	N/A	12.64
Marshall Street Field Complex	150 Marshall St	D2, P6	N/A	18.78	4.78	Dirt parking lot for new soccer fields. No existing drainage structures in the area. Runoff flows into woods.	N/A	CHARLES RIVER	No	Freetown muck, 0 to 1 percent slopes	B/D	0.56
										Hinckley loamy sand, 25 to 35 percent slopes	A	0.41
										Hinckley loamy sand, 3 to 8 percent slopes	A	3.11
										Hinckley loamy sand, 8 to 15 percent slopes	A	0.22
										Udorthents, refuse substratum	N/A	14.48
Department of Public Works	260 Woodland St	D3	N/A	5.12	0.12	Almost entirely pervious area. No existing drainage structures in the area.	N/A	CHARLES RIVER	No	Freetown muck, ponded, 0 to 1 percent slopes	B/D	0.06
										Sudbury fine sandy loam, 3 to 8 percent slopes	B	0.13
										Swansea muck, 0 to 1 percent slopes	B/D	0.60
										Udorthents-Urban land complex	N/A	2.81
										Windsor loamy sand, 8 to 15 percent slopes	A	1.51
Fire Stations	0 South St	F4	N/A	10.95	0.06	Almost entirely pervious area. No existing drainage structures in the area. Runoff flows off road into wetlands area.	N/A	CHARLES RIVER	No	Merrimac fine sandy loam, 3 to 8 percent slopes	A	2.05
										Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony	D	0.00
										Scarboro mucky fine sandy loam, 0 to 3 percent slopes	A/D	0.23
										Swansea muck, 0 to 1 percent slopes	B/D	8.67
Housing and Redevelopment Authority- Cutler Heights	79 Hollis St	H2	N/A	5.20	0.73	Runoff from parking areas is captured and treated by existing BMP.	Detention pond	CHARLES RIVER	No	Hollis-Rock outcrop-Charlton complex, 15 to 25 percent slopes	D	1.03
										Narragansett silt loam, 8 to 15 percent slopes	A	0.59
										Narragansett-Hollis-Rock outcrop complex, 15 to 25 percent slopes	A	3.52
										Narragansett-Hollis-Rock outcrop complex, 3 to 15 percent slopes	A	0.07
Housing and Redevelopment Authority- Cole Court	492 Washington St	H3, H4	N/A	9.27	2.30	Runoff is captured by existing drainage structures and treated by existing underground stormwater treatment system.	Contech underground stormwater treatment system	CHARLES RIVER	Yes	Freetown muck, 0 to 1 percent slopes	B/D	1.04
										Merrimac fine sandy loam, 3 to 8 percent slopes	A	0.00
										Merrimac fine sandy loam, 8 to 15 percent slopes	A	0.10
										Scarboro mucky fine sandy loam, 0 to 3 percent slopes	A/D	0.17
										Urban land	N/A	5.32
										Water	N/A	0.00
										Windsor loamy sand, 8 to 15 percent slopes	A	2.64
Weston Pond Park	0 Washington St	P10	N/A	23.74	0.01	Entirely pervious area, includes Weston Pond and surrounding wetlands area. No existing drainage structures on nearby roads to pull into parcel for treatment.	N/A	CHARLES RIVER	Yes	Freetown muck, 0 to 1 percent slopes	B/D	0.45
										Freetown muck, ponded, 0 to 1 percent slopes	B/D	9.58
										Hinckley loamy sand, 25 to 35 percent slopes	A	0.43
										Hinckley loamy sand, 8 to 15 percent slopes	A	1.14
										Scarboro mucky fine sandy loam, 0 to 3 percent slopes	A/D	0.02
										Swansea muck, 0 to 1 percent slopes	B/D	2.72
										Tisbury silt loam, 0 to 3 percent slopes	C	0.10
										Udorthents, sandy	N/A	0.54
										Water	N/A	8.77
Pleasure Point Park	Pleasure Point Rd	P2	N/A	14.44	0.49	Almost entirely pervious area. Long, narrow dirt road with dense vegetation on both sides. Dirt parking lot with no existing drainage structures.	N/A	CHARLES RIVER	Yes	Canton fine sandy loam, 8 to 15 percent slopes, extremely bouldery	A	5.45
										Freetown muck, 0 to 1 percent slopes	B/D	2.81
										Freetown muck, ponded, 0 to 1 percent slopes	B/D	5.10
										Hinckley loamy sand, 8 to 15 percent slopes	A	0.82
										Water	N/A	0.26
Parks	Marshall St	P5	N/A	225.21	0.00	Entire parcel is heavily vegetated wetlands area. No drainage structures nearby.	N/A	CHARLES RIVER	Yes	Freetown muck, 0 to 1 percent slopes	B/D	143.15
										Hinckley loamy sand, 15 to 25 percent slopes	A	0.22
										Hinckley loamy sand, 25 to 35 percent slopes	A	29.36
										Hinckley loamy sand, 8 to 15 percent slopes	A	3.46
										Merrimac fine sandy loam, 3 to 8 percent slopes	A	18.33
										Paxton fine sandy loam, 8 to 15 percent slopes, extremely stony	C	0.06
										Pits, gravel	N/A	2.16
										Sudbury fine sandy loam, 3 to 8 percent slopes	B	13.13
										Udorthents, refuse substratum	N/A	0.56
										Udorthents, sandy	N/A	7.32
										Wareham loamy fine sand, 0 to 5 percent slopes	A/D	0.45
										Windsor loamy sand, 3 to 8 percent slopes	A	1.30
										Windsor loamy sand, 8 to 15 percent slopes	A	5.72
Parks	0 Norfolk St	P7	N/A	26.58	0.27	Almost entirely pervious area. Dirt road and parking area. No existing drainage structures in the area.	N/A	CHARLES RIVER	No	Hollis-Rock outcrop-Charlton complex, 0 to 15 percent slopes	D	4.87
										Hollis-Rock outcrop-Charlton complex, 15 to 25 percent slopes	D	3.42
										Montauk fine sandy loam, 3 to 8 percent slopes	C	7.83
										Montauk fine sandy loam, 8 to 15 percent slopes	C	0.00
										Montauk fine sandy loam, 8 to 15 percent slopes, extremely stony	C	2.98
										Sudbury fine sandy loam, 3 to 8 percent slopes	B	4.98
										Water	N/A	0.69
										Woodbridge fine sandy loam, 3 to 8 percent slopes	C/D	1.80

Location Description	Address	Facility ID	Tier	Parcel Area		Existing Conditions Description	Existing BMPs	TMDL or Impaired Waterbody Watershed	Direct or Near-Direct Discharge	Soils[1]		
				Total (acres)	Impervious (acres)					Soil Type	Hydric Soil Group	Soil Area (acres)
Adams Street Parking Lot	0 Adams St	PL1	N/A	18.96	0.13	Conservation area located up hill with dirt parking lot and barely paved driveway. No existing drainage structures in area.	N/A	CHARLES RIVER	No	Broadbrook very fine sandy loam, 15 to 25 percent slopes, very stony	D	0.21
										Broadbrook very fine sandy loam, 8 to 15 percent slopes, very stony	D	6.61
										Hollis-Rock outcrop-Charlton complex, 15 to 25 percent slopes	D	3.39
										Narragansett-Hollis-Rock outcrop complex, 3 to 15 percent slopes	A	5.42
										Swansea muck, 0 to 1 percent slopes	B/D	3.33
Recreational Trails	0 Rail Road Bed	R1	N/A	59.19	2.79	Long, narrow strip of land between parcels. Limited open space and limited opportunities due to location.	N/A	CHARLES RIVER	No	N/A	N/A	N/A
Water Department	105 Maple St	W10	N/A	0.52	0.00	Entirely pervious wooded, open area. No existing drainage structures nearby.	N/A	CHARLES RIVER	No	Canton fine sandy loam, 0 to 8 percent slopes, extremely stony	B	0.31
										Sudbury fine sandy loam, 3 to 8 percent slopes	B	0.22
Water Department	169 Central St	W2	N/A	20.79	0.25	Mostly pervious area located up hill. No existing drainage structures in nearby area.	N/A	CHARLES RIVER	No	Freetown muck, 0 to 1 percent slopes	B/D	6.22
										Haven silt loam, 0 to 3 percent slopes	A	0.12
										Merrimac fine sandy loam, 0 to 3 percent slopes	A	2.62
										Merrimac fine sandy loam, 3 to 8 percent slopes	A	4.39
										Udorthents, sandy	N/A	7.44
Water Department	0 Fairlane Way	W3	N/A	6.92	0.18	Almost entirely pervious area, surrounded by wooded area. No existing drainage structures in the area.	N/A	CHARLES RIVER	No	Freetown muck, ponded, 0 to 1 percent slopes	B/D	0.82
										Hollis-Rock outcrop-Charlton complex, 15 to 25 percent slopes	D	0.51
										Narragansett-Hollis-Rock outcrop complex, 15 to 25 percent slopes	A	0.60
										Narragansett-Hollis-Rock outcrop complex, 3 to 15 percent slopes	A	4.99
Water Department	0 Gorwin Dr (Off)	W4	N/A	8.28	0.17	Almost entirely pervious area, located up hill. No existing drainage structures in the area.	N/A	CHARLES RIVER	No	Charlton-Hollis-Rock outcrop complex, 8 to 15 percent slopes	B	2.21
										Hollis-Rock outcrop-Charlton complex, 0 to 15 percent slopes	D	3.07
										Hollis-Rock outcrop-Charlton complex, 15 to 25 percent slopes	D	3.00
Water Department	405 Hopping Brook Rd.	W5	N/A	0.52	0.04	Parcel is almost entirely pervious. No nearby drainage structures. Runoff from nearby parking area sheet flows into wooded/ wetlands area.	N/A	CHARLES RIVER	No	Montauk fine sandy loam, 0 to 8 percent slopes, extremely stony	C	0.52
Water Department	84 October Hill Rd	W6	N/A	0.64	0.02	Entirely pervious area besides water tower, located up hill. No drainage structures nearby.	N/A	CHARLES RIVER	No	Narragansett-Hollis-Rock outcrop complex, 3 to 15 percent slopes	A	0.64
Water Department	0 Underwood St	W7	N/A	0.48	0.05	Woody, hilly parcel with big boulders. Almost entirely pervious besides water tower. Runoff sheet flows down Oak Street into woods. No existing drainage structures in the area.	N/A	CHARLES RIVER	No	Narragansett-Hollis-Rock outcrop complex, 3 to 15 percent slopes	A	0.48
Water Department	1995 Washington St Off	W9	N/A	12.52	0.79	Runoff from long, narrow driveway flows south until curb cut allows open drainage to wetland area. No existing drainage structures in the area. No open space.	N/A	CHARLES RIVER	No	Freetown muck, 0 to 1 percent slopes	B/D	2.15
										Freetown muck, ponded, 0 to 1 percent slopes	B/D	0.00
										Hinckley loamy sand, 25 to 35 percent slopes	A	3.96
										Hinckley loamy sand, 8 to 15 percent slopes	A	1.54
										Merrimac fine sandy loam, 3 to 8 percent slopes	A	4.32
										Swansea muck, 0 to 1 percent slopes	B/D	0.20
										Udorthents, sandy	N/A	0.00
										Wareham loamy fine sand, 0 to 5 percent slopes	A/D	0.34

1. All soils data obtained from GIS sources.

Table 2- Proposed Improvements

Location Description	Address	Facility ID	Tier	Conclusions and BMP Opportunities	Treatment Area[1]		Pollutant Loading[2]			Proposed BMP(s)		Pollutant Reduction Estimates[3]			BMP Implementation Costs[4,5]				Dollars per Pound of Removal		
					Total (acres)	Impervious (Acres)	Impervious Area TP Load (lbs/yr)	Impervious Area TN Load (lbs/yr)	Impervious Area TSS Load (lbs/yr)	Proposed BMP(s)	Estimated Size	TP Reduction (lbs/yr)	TN Reduction (lbs/yr)	TSS Reduction (lbs/yr)	Unit Construction Cost per CF or LF	Estimated Construction Costs	Estimated Engineering Costs	Total BMP Cost (Design & Construction)	TP Reduction ($$/lb)	TN Reduction ($$/lb)	TSS Reduction ($$/lb)
Mission Springs Recreation Area	100 Summer St	P9	1	Construct BMP in open grassed area south of parking lot. Install additional curbing along driveway and new catch basins in parking area to capture and direct runoff to proposed BMP. Connectivity between existing catch basins in driveway needs further investigation, redirect to proposed BMP if feasible.	0.78	0.67	0.90	6.81	991.69	Forebay	15' x 20' x 2' deep	0.87	6.75	991.69	$8.18	$21,300	$7,500	$28,800	$33,100	$4,300	$30
										Infiltration basin	50' x 20' x 2' deep										
Fire Station/ Water Department	269 Central St	F2, W1	1	Construct BMP in open grassed area east of driveway exit. Install additional drainage structures on parcel driveway to capture runoff and direct it to proposed BMP. Potential to also redirect existing catch basin on Central Street into parcel for treatment.	0.96	0.52	0.70	5.29	769.67	Forebay	15' x 25' x 2' deep	0.19	0.94	661.19	$8.92	$35,200	$12,300	$47,500	$250,000	$50,500	$70
										Water quality swale	80' x 20' x 2' deep										
Goodwill Park	37 Green St	P4	1	Construct BMP in open grassed area in front of tennis courts to treat runoff from the courts. Investigate potential to redirect roof drains to proposed BMP as well. Construct BMP north of park buildings and redirect existing catch basins on Green Street into parcel for treatment.	0.60	0.55	0.74	5.59	814.07	Forebay	15' x 25' x 2' deep	0.74	5.59	814.07	$8.18	$36,800	$12,900	$49,700	$67,200	$8,900	$60
										Infiltration basin	50' x 25' x 3' deep										
					0.22	0.16	0.21	1.63	236.82	Rain garden	35' x 15' x 2' deep	0.14	0.65	236.82	$20.27	$24,300	$8,500	$32,800	$234,300	$50,500	$140
Holliston High School[6]	370 Hollis St	S3	1	Potential to construct BMPs in open grassed areas around the school. Investigate existing drainage connections throughout school parking areas and on Hollis Street. Once outfalls are located and connections are mapped for the drainage networks, evaluate proposed BMP opportunities.	N/A	N/A	N/A	N/A	N/A	Forebay	30' x 50' x 3' deep	N/A	N/A	N/A	$8.92	$178,400	$62,400	$240,800	N/A	N/A	N/A
										Extended detention basin	100' x 50' x 4' deep										
Miller Elementary School, Sam Placentino Elementary School, Robert Adams Middle School, & Damigella Field[6]	235 Woodland St	S1, S2, P3	1	Potential to construct BMP in open grassed area near middle school parking lot entrance on Linden Street. Existing drainage connections throughout the school parking areas must be investigated to determine treatment potential. Also consider removing existing curbing around parking islands and depressing grassed area to allow for stormwater infiltration.	N/A	N/A	N/A	N/A	N/A	Rain garden	30' x 20' x 2' deep	N/A	N/A	N/A	$20.27	$24,300	$8,500	$32,800	N/A	N/A	N/A
Fire Stations	0 Pope Rd	F5	2	Construct BMP in front of building and pull in existing structures from street to capture and treat runoff from Pope Road. Connectivity of existing drainage network needs further investigation to locate outfall.	0.76	0.45	0.60	4.58	666.06	Water quality swale	60' x 15' x 2' deep	0.14	0.64	542.35	$8.92	$16,100	$5,600	$21,700	$155,000	$33,900	$40
Housing and Redevelopment Authority- Cutler School	59 Hollis St	H1	2	Improve existing open drainage. Construct long, narrow BMP to conduct and treat flow before leaving parcel. Potentially redirect existing structures to proposed BMP.	0.32	0.24	0.32	2.44	355.23	Infiltration trench	40' x 10' x 2' deep	0.31	2.43	355.23	$16.38	$13,100	$4,600	$17,700	$57,100	$7,300	$50
Holliston Community Farm	34 Rogers Rd	P8	2	Could construct long, narrow BMP along driveway to capture and treat runoff. Install curbing along driveway to direct runoff. Likely minimal benefit.	0.07	0.07	0.09	0.71	103.61	Infiltration trench	30' x 8' x 2' deep	0.09	0.71	103.61	$16.38	$7,900	$2,800	$10,700	$113,800	$15,100	$100
Fire Stations	59 Central St	F1	3	Investigate drainage connections to existing BMP and the potential to retrofit drainage from Central Street.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Holliston Senior Center	150 Goulding St	PB3	3	Investigate drainage connections to existing BMP and the potential to retrofit drainage from Goulding Street.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Police Department	550 Washington St	PS1	3	Investigate drainage connections to existing BMP and the potential to retrofit drainage from Washington Street.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Water Department	600 Mayflower Landing	W8	3	Investigate drainage connections to existing BMPs and the potential to retrofit drainage from Mayflower Landing.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pinecrest Golf Club	212 Prentice St	G1	3	Investigate drainage connections to existing BMPs to confirm all parcel runoff is being treated. Existing BMPs can be retrofitted if not treating parcel runoff to full potential.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Stoddard Park	880 Stoddard Park Rd	P1	4	Limited opportunities. If there are plans to pave parking lot, consider installing pervious pavement or leaching structures to capture runoff.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Holliston Parks & Recreation Department	1750 Washington St	PB2	4	Limited opportunities other than LCBs.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Department of Public Works	63 Arch St (Off)	D1	4	Limited opportunities other than LCBs.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	0 Washington St (Off)	F3	4	Limited opportunities other than LCBs.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Holliston Public Library	752 Washington St	L1	4	Limited opportunities other than LCBs.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Holliston Town Hall	703 Washington St	PB1	4	Limited opportunities other than LCBs.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Marshall Street Drop-Off Waste/ Recycling Area	150 Marshall St	D2	N/A	No opportunities.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Marshall Street Field Complex	150 Marshall St	D2, P6	N/A	No opportunities.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Department of Public Works	260 Woodland St	D3	N/A	No opportunities.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fire Stations	0 South St	F4	N/A	No opportunities.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Housing and Redevelopment Authority- Cutler Heights	79 Hollis St	H2	N/A	No opportunities.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Housing and Redevelopment Authority- Cole Court	492 Washington St	H3, H4	N/A	No opportunities.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Weston Pond Park	0 Washington St	P10	N/A	No opportunities.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pleasure Point Park	Pleasure Point Rd	P2	N/A	No opportunities.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Parks	Marshall St	P5	N/A	No opportunities.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Parks	0 Norfolk St	P7	N/A	No opportunities.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Adams Street Parking Lot	0 Adams St	PL1	N/A	No opportunities.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

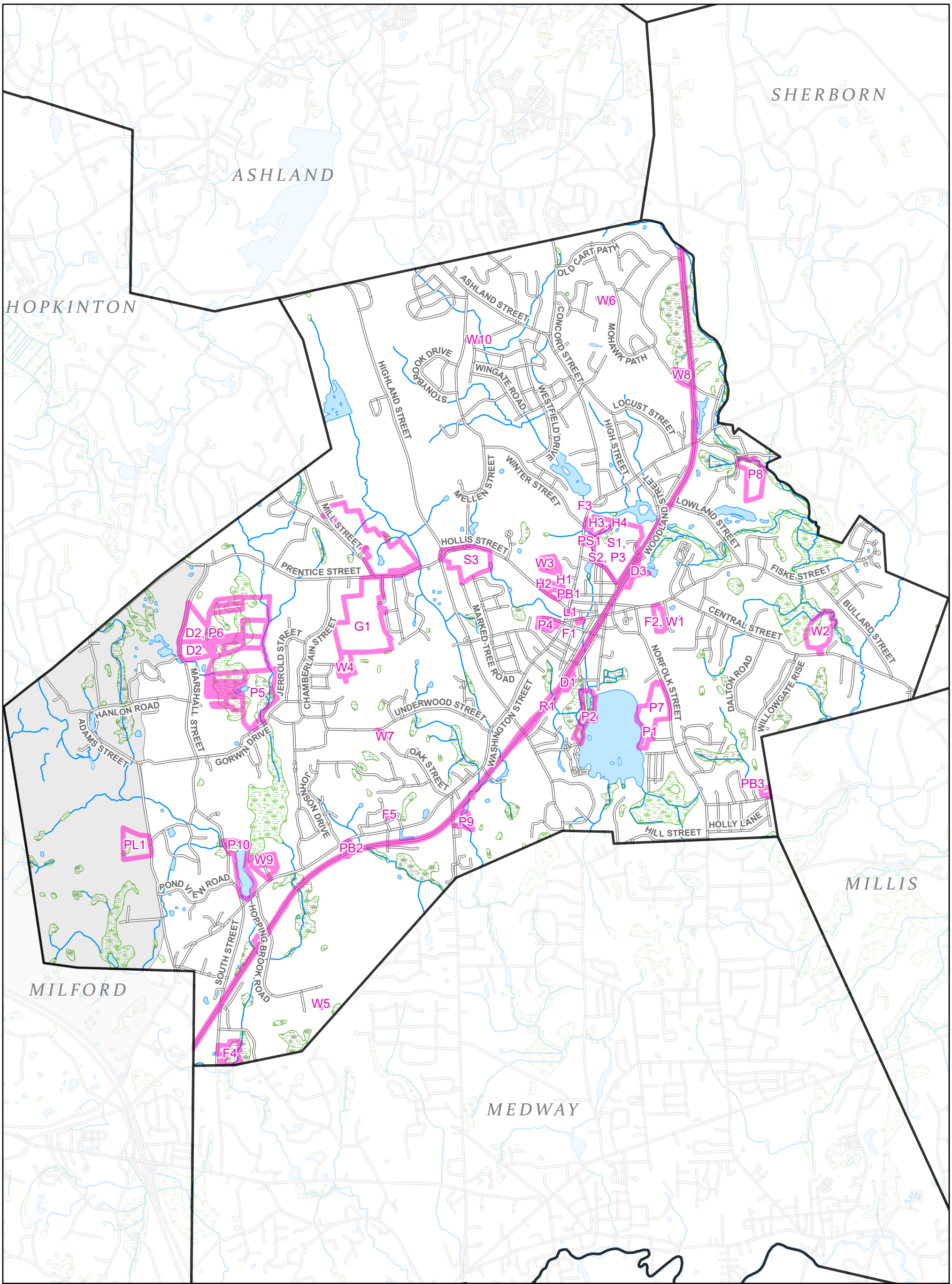
Location Description	Address	Facility ID	Tier	Conclusions and BMP Opportunities	Treatment Area[1]		Pollutant Loading[2]			Proposed BMP(s)		Pollutant Reduction Estimates[3]			BMP Implementation Costs[4,5]				Dollars per Pound of Removal		
					Total (acres)	Impervious (Acres)	Impervious Area TP Load (lbs/yr)	Impervious Area TN Load (lbs/yr)	Impervious Area TSS Load (lbs/yr)	Proposed BMP(s)	Estimated Size	TP Reduction (lbs/yr)	TN Reduction (lbs/yr)	TSS Reduction (lbs/yr)	Unit Construction Cost per CF or LF	Estimated Construction Costs	Estimated Engineering Costs	Total BMP Cost (Design & Construction)	TP Reduction ($$/lb)	TN Reduction ($$/lb)	TSS Reduction ($$/lb)
Recreational Trails	0 Rail Road Bed	R1	N/A	No opportunities.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Water Department	105 Maple St	W10	N/A	No opportunities.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Water Department	169 Central St	W2	N/A	No opportunities.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Water Department	0 Fairlane Way	W3	N/A	No opportunities.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Water Department	0 Gorwin Dr (Off)	W4	N/A	No opportunities.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Water Department	405 Hopping Brook Rd.	W5	N/A	No opportunities.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Water Department	84 October Hill Rd	W6	N/A	No opportunities.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Water Department	0 Underwood St	W7	N/A	No opportunities.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Water Department	1995 Washington St Off	W9	N/A	No opportunities.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
											TOTAL	**2.484**	**17.71**	**3704.96**	**---**	**$357,400**	**$125,100**	**$482,500**	**$194,200**	**$27,200**	**$130**

1. Treatment areas may often consist of areas outside of the parcel area.
2. Pollutant loading calculated for impervious areas only using the land use loading rates provided in the BATT calculator for "Highway". Rates are as follows, in pounds per acre per year: 1.34 pounds of Total Phosphorus; 10.17 pounds of Total Nitrogen; 1,480.13 pounds of Total Suspended Solids.
3. Pollutant reduction estimates calculated through EPA's BATT calculator.
4. Information on BMP costing is attached as Attachment A.
5. BMP implementation cost estimates include cost of proposed forebays and proposed BMPs.
6. Existing drainage connections of parcel need further investigation before determining treatment area potential. Proposed BMP size and cost is based on available space for construction of a BMP.

Table 3 - BMP Costing Information

Stormwater BMP Type	Unit	OptiTool BMP Estimates, 2016[1,2]	OptiTool BMP Estimates, 2022[3]	Adjusted BMP Estimate, 2022[4]	Adjusted Construction Estimate[4]	Adjusted Engineering/ Contingency Estimate[5]
Biorentention / Rain Garden	per CF	$15.46	$18.24	$27.36	$20.27	$7.09
Constructed Wetlands	per CF	$6.80	$8.02	$12.04	$8.92	$3.12
Dry Detention Basin	per CF	$6.80	$8.02	$12.04	$8.92	$3.12
Gravel Wetland	per CF	$8.78	$10.36	$15.54	$11.51	$4.03
Infiltration Basin	per CF	$6.24	$7.36	$11.04	$8.18	$2.86
Infiltration Trench	per CF	$12.49	$14.74	$22.11	$16.38	$5.73
Porous Pavement	per CF	$5.32	$6.28	$9.42	$6.98	$2.44
Sand Filter	per CF	$17.94	$21.17	$31.75	$23.52	$8.23
Wet Detention Basin	per CF	$6.80	$8.02	$12.04	$8.92	$3.12
Subsurface Infiltration/Detention System (aka Infiltration Chamber)	per CF	$67.85	$80.06	$120.09	$88.96	$31.14

1. Memorandum on Methodology for developing cost estimates for Opti-Tool is provided as Attachment A.
2. Total includes cost of construction, engineering, and contingencies.
3. 2022 Estimate assumes a 18% markup from 2016 Estimate due to inflation.
4. Adjustment factor of 1.5 is applied to account for construction in developed areas.
5. Engineering/Contingency Estimate is 35% of the Construction Estimate.



Legend

- Municipal Property
- Lake, Pond, Reservoir
- Wetland, Marsh, Swamp
- Stream, Brook
- Roads
- Non-Urban Area

N
W E
S

0 0.25 0.5 0.75 1
Miles

BMP Retrofit Site Inspection Map Holliston, MA

Comprehensive Environmental Incorporated

Data Sources: MassGIS, Town of Holliston, CEI

7/18/2022

MUNICIPAL PROPERTY BMP RETROFITS

Attachment A:

Memorandum report on Methodology for developing cost estimates for Opti-Tool; February 20, 2016

MEMORANDUM

DATE: February 20, 2016

TO: Opti-Tool TAC

FROM: Karen Mateleska, EPA Region- I

SUBJECT: **Methodology for developing cost estimates for Opti-Tool**

Introduction

EPA – Region I offered to provide TetraTech with BMP cost information for the New England Stormwater Management Optimization Tool (Opti-Tool). The goal was to include the latest available information that would accurately reflect capital costs for select BMPs installed in the New England region. This document describes the approach used to determine these values.

The unit cost estimates originally developed as part of a 2010 study were used as the basis/starting-point for the cost estimates for the Opti-Tool. This study, entitled *Stormwater Management Plan for Spruce Pond Brook Subwatershed,* was produced by the Charles River Watershed Association (CRWA). The full report can be viewed at: http://www.crwa.org/hs-fs/hub/311892/file-636820515-pdf/Our_Work_/Blue_Cities_Initiative/Scientific_and_Technical/CRWA_Franklin_Plan.pdf. This subwatershed in the Town of Franklin (in eastern Massachusetts) was selected, in part, because it represented one of the many communities in the watershed that would be required to reduce nutrient (phosphorus) loads in stormwater runoff as part of EPA's Phase II MS4 General Stormwater Permit and a TMDL for Nutrients in the Upper/Middle Charles River. The cost estimates developed in the study can predominantly be attributed to CRWA and both Rich Claytor and Nigel Pickering of Horsley Witten Group (CRWA *et al.* 2010). The development of these costs was based on a literature review of BMP cost information and Claytor's extensive experience working in this field with Massachusetts communities. These values were originally reported in Appendix B of the aforementioned CRWA document. Those cost estimates have also been used in additional stormwater studies supported by EPA – Region I, including the *Sustainable Stormwater Funding Evaluation for the Upper Charles River Communities of Bellingham, Franklin, and Milford, MA (*2011). (That report can be viewed at: http://www.epa.gov/region1/npdes/charlesriver/pdfs/20110930-SWUtilityReport.pdf)

Before simply relying on the CRWA cost estimates, additional research was conducted of publicly available (online) resources to determine if more recent BMP cost information for the New England region was available. These resources included:

- EPA's LID webpage: http://water.epa.gov/polwaste/green/
- EPA's 2013 Article: *Case Studies Analyzing the Economic Benefits of Low Impact Development and Green Infrastructure Programs: http://water.epa.gov/polwaste/green/upload/lid-gi-programs_report_8-6-13_combined.pdf*

- New England Environmental Finance Center: http://efc.muskie.usm.maine.edu/
- UNC Environmental Finance Center's *Catalog of Finance Publications on Green Infrastructure Approaches to Stormwater Management* (This spreadsheet provides a catalog of 46 publications related on green infrastructure for stormwater management that have finance relevance; Several of the sources from the catalog were reviewed for this document) : http://www.efc.sog.unc.edu/reslib/item/catalog-green-infrastructure-and-stormwater-finance-publications
- Houle, *et al. Comparison of Maintenance Cost, Labor Demands, and System Performance for LID and Conventional Stormwater Management*: http://www.unh.edu/unhsc/sites/unh.edu.unhsc/files/Houle_JEE_July-2013.pdf
- University of New Hampshire Stormwater Center's *Forging the Link: Linking the Economic Benefits of LID and Community Decisions: http://www.unh.edu/unhsc/forging-link-topics*
- Center for Neighborhood Technology's *Green Values Stormwater Tool Box: http://greenvalues.cnt.org/* which included the Green Values Calculator: http://greenvalues.cnt.org/national/calculator.php
- Water Environment Research Foundation (WERF): User's Guide to the BMP and LID Whole Life Cost Models, Version 2.0: www.werf.org/bmpcost
- Low Impact Development Center: http://www.lowimpactdevelopment.org/
- ECONorthwest's *The Economics of Low-Impact Development: A Literature Review:* http://www.econw.com/our-work/publications/the-economics-of-low-impact-development-a-literature-review/
- Drexel University's Low Impact Development Rapid Assessment (LIDRA Model) http://www.lidratool.org/home/publications.aspx

A review of these resources did highlight the multitude of variables that can impact the cost of installing LID BMPs and the variety of cost analysis methods that can be used when assessing the cost effectiveness of various LID storm water controls. For example, many of the resources emphasized that costs tend to be site specific. Costs often differ significantly among different geographical locations, depending upon labor and material expenses and the constraints of a particular site. Unfortunately, most of the aforementioned resources highlighted projects outside of the New England region (with the exception of the articles by Houle of the UNHSC and New England Environmental Finance Center.)

EPA's recent (2013) report entitled *Case Studies Analyzing the Economic Benefits of Low Impact Development and Green Infrastructure Programs* listed the 7 different types of economic analyses that were represented by the 13 case studies highlighted in the report. These ranged from the simplest form of economic analysis (i.e., the capital cost assessment) to more robust forms, including the life cycle cost assessment. Whole life-cycle costs would provide a more accurate estimate of the cost of installing, operating, maintaining, and replacing a project (i.e., BMP) throughout its expected lifetime. However this type of analysis requires solid estimates for capital, land purchase, O&M, and other related costs.

Ideally, the goal was to include a more advanced economic analysis (i.e. – life cycle costs) in the Opti-Tool while still maintaining some level of simplicity for the end user. However, such a robust economic analysis does not currently appear possible because the literary search for more recent BMP cost estimates, reflective of New England states, was largely unsuccessful. However, the search was not

entirely fruitless. Jamie Houle of the UNHSC did provide extremely valuable information on capital and maintenance costs for various BMPs that have been tested at the UNHSC. Cost estimates for a particular BMP available from *both* the CRWA study and UNHSC were discussed among Mark Voorhees of EPA, Jamie Houle of UNHSC, and Karen Mateleska of EPA, and a best professional judgment decision was made.

The recommendation at this time is to use a combination of the CRWA cost estimates **and** UNHSC costs estimates as the basis for the Opti-Tool BMP cost estimates, and to use a modified capital cost assessment (which includes a fixed percentage for Design and Contingency Costs) as well as a separate field for maintenance hours (from the UNHSC). The details supporting this approach are described below.

Overview of Scope and Approach

According to a draft memo, dated 6/20/14 from Tetra Tech to EPA Region I, the current SUSTAIN BMP Cost function has seven major individual components, using a formula that would likely be useful in a more detailed design mode. For purposes of simplicity, EPA Region I is proposing the following cost function formula for the tool's "planning" mode:

General Cost Function Formula = Storage Volume of BMP* (ft^3) X Cost Estimate for BMP ($/$ft^3$)

X Adjustment Factor

* Storage Volume of BMP is more accurately defined as (Design) Physical Storage Capacity of BMP; See Section A below for more details

Initially, the intention was to include the preliminary Operations and Maintenance (O&M) costs in the general formula (page 3) by simply multiplying the formula results by our Preliminary O & M costs. However, such an approach would only include **one year's worth** of operations and maintenance, which could have been misleading because it would not have reflected the true life cycle cost of the BMP (i.e., assume life cycle of 20 years). However, simply including the 20 year life cycle cost (O&M cost *20) in the above formula would have greatly increased the cost value and perhaps have created misconceptions about BMP use and affordability.

Therefore, the subcommittee decided to include the anticipated operation and maintenance **hours** required for each BMP per year instead. This parameter was included as a completely separate field in the Opti-Tool. The rationale was that Opti-Tool users need to understand that operation and maintenance impact the overall cost-effectiveness of BMPs and should be considered when selecting a BMP. Including O&M hours (instead of costs) as a separate field, would still highlight this important consideration for stormwater managers.

A. Storage Volume and Proposed Cost Estimate Values

As highlighted above, the general cost function formula used in the Opti-Tool consists of 3 factors: the BMP storage volume, the proposed BMP storage volume cost estimate, and the adjustment factor. The first two factors will be covered together in this memo because they are so closely linked. Table 1 below summarizes the proposed BMP cost estimates for the Opti-Tool.

Table 1: Proposed BMP Cost Estimates for Opti-Tool

BMP (From Opti-Tool)	Cost ($/ft^3) [1]	Cost ($/ft^3) – 2016 dollars[6]
Bioretention (Includes rain garden)	13.37 [2,4]	15.46
Dry Pond or detention basin	5.88 [2,4]	6.80
Enhanced Bioretention (aka-Bio-filtration Practice)	13.5 [2,3]	15.61
Infiltration Basin (or other Surface Infiltration Practice)	5.4 [2,3]	6.24
Infiltration Trench	10.8 [2,3]	12.49
Porous Pavement - Porous Asphalt Pavement	4.60 [2,4]	5.32
Porous Pavement - Pervious Concrete	15.63 [2,4]	18.07
Sand Filter	15.51 [2,4]	17.94
Gravel Wetland System (aka-subsurface gravel wetland)	7.59 [2,4]	8.78
Wet Pond or wet detention basin	5.88 [2,4]	6.80
Subsurface Infiltration/Detention System (aka-Infiltration Chamber)	54.54[5]	67.85

[1] Footnote: Includes 35% add on for design engineering and contingencies

[2] Costs in 2010 dollars

[3] From CRWA Cost Estimates

[4] From UNHSC Cost Estimates; Most of original costs were from 2004 and converted to 2010 dollars using U.S. Department of Labor (USDOL). (2012). Bureau of Labor Statistics consumer price index inflation calculator. http://www.bls.gov/data/inflation_calculator.htm

[5] From Cost Estimate of MA TT Rizzo Project (2008 Dollars)

[6] 2010 costs were converted to 2016 values to adjust for inflation. The ENR Cost Index Method was used for this conversion.

Table 1 includes all of the BMPs that are included in the Opti-Tool. The unit costs represent the dollar amount ($) per cubic foot of storage volume (ft^3), where the storage volume reflects the (design) physical static storage capacity that the relevant BMP can hold. This volume includes the volume of ponding water *and* the volume of water retained in the porous media or subbase materials if applicable. (This storage volume does *not* represent the *treated* volume of stormwater, which may be significantly higher than the physical storage volume of a BMP particularly for systems that are sized dynamically or

by a water quality flow rate as opposed to a water quality volume.) This unit cost per storage volume captured by a BMP differs from other (perhaps more traditional) methods that can be used. By choosing to use the unit cost per storage volume instead of volume of water treated, we are trying to eliminate confusion over what the actual dimensions of the BMP will be for the costs being estimated. Additionally, this use of the unit cost per storage volume is consistent with the approach used in developing the BMP performance curves (used in the Opti-Tool) where the x-axis is the actual **physical storage capacity** to hold water. Lastly, expressing the unit costs in this manner will benefit users who are simply interested in using the unit costs (outside of the Opti-Tool) by eliminating the step of modeling hydrology and routing the water through the BMP, which can yield widely varying results depending on modeling approach and supporting assumptions. Attachment A describes the method used in calculating the design storage volume for each of the selected BMPs.

Also, each unit cost per storage value represents the capital cost of construction/installation of the BMP and includes a 35% design/engineering/contingency (D & E) cost. This 35% fixed percentage of the total construction cost follows a general "rule of thumb," often used by consulting firms. Based upon a conversation between Mark Voorhees and Jamie Houle (two members of the Opti-Tool cost subcommittee), a decision was made to include this D&E cost. The values in Table 1 do *not* include the cost of purchasing any land, nor does it include any O&M costs (which is discussed in more detail in a subsequent section). Therefore, each unit cost in Table 1 that was based on the CRWA's 2010 values was calculated by multiplying the relevant BMP cost by 1.35.

Since the CRWA study did not include cost estimates for porous pavement or sand filters, which are BMPs included in the Opti-Tool, relevant data was obtained from Jamie Houle of the University of New Hampshire Stormwater Center (UNHSC). He also provided additional cost estimates (as denoted by Footnote 4 in Table 1) for some of the other BMPs included in the tool. UNHSC can provide valuable data because they have been directly involved with the engineering, design and construction of numerous LID controls, as well as evaluating multiple stormwater treatment systems over multiple years at their primary field research facility in Durham, N.H. Since they could provide cost information for both porous asphalt pavement and pervious concrete, separately, the general category of porous pavement was divided into the aforementioned two sub-categories.

It should be noted that the costs used for the Opti-tool *assume linearity*, which will both allow for *and* incentivize the scaling to smaller-sized systems. For example, EPA has estimated that *smaller* capacity designs for BMPs, rather than large-sized BMPs, can increase both the technical and economic feasibility of installing controls, particularly for retrofits. The assumption of linearity was made for the following reasons: 1) Limited data currently exists on the cost of small capacity systems. Until a larger pool of cost data becomes available which will allow for the development of a non-linear cost curve, the current method is the best available alternative; 2) As the installation of smaller systems becomes more wide-spread, it is likely that economies of scale will develop and cost savings will occur. For example, if one entity is contracted to install multiple small systems at once, materials can be bought in bulk and the installation process can become more efficient and less expensive; 3) An undersized system built to treat a large area can be a very cost effective approach. As an example, there should not be a significant cost difference between a 1-inch system treating 1 acre and a 1/10-inch-system that treats 10 acres, since the absolute capacity of the system is the same in both cases. This topic of linearity will be revisited in the future when more data is available.

Since UNHSC typically calculates the capital costs per cubic foot (ft^3) *treated*, using WQv, Jamie Houle converted the costs to represent the capital costs per BMP storage volume (ft^3). This was necessary so the capital cost data would be consistent with the method used in the Opti-Tool. Also, all of the costs were converted to 2010, and ultimately 2015, dollars. As with the CRWA costs, the UNHSC capital costs were already adjusted to include the 35% design/engineering/contingency (D & E) cost. Details of all of these calculations, and any other assumptions made, are presented in Attachment B.

When developing cost estimates, another topic for consideration was whether or not to address the issue of inflation. CRWA's BMP cost estimates were based on capital costs from 2010. As previously stated, UNHSW's cost estimates have also already been converted to constant 2010 dollars using consumer price index inflation rates [U.S. Department of Labor (USDOL) 2014].[1] Therefore, there was the option of converting all of these 2010 costs to 2016 costs, using the U.S. Department of Labor's consumer price index inflation calculator. However, another suggestion was made to use the ENR Cost Index method to adjust for inflation instead because it more closely tracks construction work. At least one New England state (i.e., Vermont) also uses the ENR Cost Index method, so this could provide some consistency, as well. Therefore, the decision was made to ultimately convert all of the costs to 2016 values using the ENR Cost Index method. These values are reflected in Table 1.

To use the index, one calculates the quotient of the current index number (based on the month and year of *current* date) divided by the index number from a given date (e.g., June of 2010). Since the month was not known for the 2010 costs, the month of June was used as an estimate. This assumption was used because it falls mid-way between the construction season and would likely provide a reasonable estimate. Once the quotient was calculated, it was multiplied by the construction cost (found in the middle column in Table 1, above) to provide the 2016 construction cost value

B. Cost Adjustment Factor

Since the cost of installing a BMP will vary depending on the specific site location, the TAC subcommittee believed it was important for the Opti-Tool to include a scalable cost adjustment factor. The proposed cost estimates for the Opti-Tool (in Table 1) are all based on a Cost Adjustment Factor of 1. However, each Opti-Tool user has the option to choose and enter into the tool a cost adjustment factor that is appropriate for their site. This will adjust the storage volume cost function in the Opti-Tool.

For example, the CRWA report included the cost factors summarized in Table 2.

[1] Reference: U.S. Department of Labor (USDOL). (2014). Bureau of Labor Statistics consumer price index inflation calculator." ⟨http://www.bls.gov/data/inflation_calculator.htm⟩(Sep. 12, 2014)

Table 2: Example of Cost Adjustment Factors

BMP Type	**EXAMPLE** Cost Adjustment Factor
New BMP in undeveloped area	1
New BMP in partially developed area	1.5
New BMP in developed area	2
Difficult installation in highly urban settings	3

(Source: Table 4 of Appendix B of CRWA's Spruce Pond Brook Subwatershed Project for Town of Franklin)

The assumption made was that it would cost more to install a new BMP in a developed area (with more site constraints) than it would cost to install the same BMP in a previously undeveloped area. So in the above example, the cost adjustment factor would be 2 for installing a BMP in a previously developed area versus a cost adjustment factor of 1 for installing a BMP in an undeveloped area.

It should be noted that Table 2 (above) provides just *one example* of adjustment factors. The factor should be flexible enough so that another location (or Opti-Tool user) can adjust it, as needed. For example, the Charles River Watershed (in eastern Massachusetts) used an adjustment factor of 2 for installing a BMP in a developed area, while the State of Vermont uses an adjustment factor of 1.4 to estimate the cost of installing a BMP for existing development.

C. Maintenance (O&M) Costs

Originally, one goal was to include Operation and Maintenance (O&M) costs as part of the cost estimates for the Opti-Tool. These O&M costs would help to provide a more realistic reflection of the long-term expenses of structural storm water controls, which is obviously critical in the practical, real-world implementation of BMPs. However, it is difficult to obtain accurate maintenance costs and they will be highly variable depending on the size, location and equipment needed to perform long-term O&M.

This point was highlighted by a key finding in EPA's recent (2013) publication, *Case Studies Analyzing the Economic Benefits of Low Impact Development and Green Infrastructure Programs.* The report indicated that only a small percentage of the entities that implement LID and GI approach for stormwater management conduct economic analyses due to the "uncertainties surrounding costs, operation and maintenance (O&M) requirements, budgetary constraints, and difficulties associated with quantifying the benefits provided by LID/GI" and the need "to obtain better estimates of the O&M costs associated with different types of LID/GI projects" was a key finding of the report.

As previously mentioned, one article entitled, *Comparison of Maintenance Cost, Labor Demands, and System Performance for LID and Conventional Stormwater Management* (Houle *et al. 2013)*, did contain relevant information for BMP costs in the New England region. During initial discussions between EPA Region I (Mark Voorhees) and UNHSC (Jamie Houle), there was concern that not enough data existed on O&M costs to propose accurate values for each of the BMPs included in the Opti-Tool. There was also

the concern that the O&M costs were not scaleable. For example, initial O&M costs for each BMP were based on the cost of operation and maintenance per year per acre of IC treated. Scaled differences such as the annual O&M costs for treating 0.5 acres of IC or 2 acres of IC have **not** been evaluated and may or may **not** result in a simple linear relationship. Yet the Opti-Tool costs subcommittee also realized the importance of including some maintenance parameter in order to *initiate* the conversation on the importance of accounting for O&M to maintain the functionality of the BMPs. Therefore Table 3, below, presents these annual maintenance costs (in $) for select BMPs, as well as the annual maintenance hours. Although the O&M costs have been presented in this memo, only the O&M **hours** will be included (as a separate field) in the Opti-Tool.

Table 3: Maintenance Costs ($) and Hours per year for select BMPs – From UNHSC

BMP	Maintenance Cost ($) per year	Annual Maintenance Hours
Bioretention	$1,890.00	20.7
Chamber System	Not Assessed	Not Assessed
Detention Pond	$2,380.00	24.0
Gravel Wetland	$2,138.33	21.7
Porous Asphalt	$1,080.00	6.0
Pervious Concrete	$1,080.00	6.0
Retention Pond	$3,060.00	28.0
Sand Filter	$2,807.50	28.5

*Note: initial costs based on cost of maintenance per year per acre of IC treated

Annual maintenance strategies were evaluated by directly quantifying hours spent categorizing maintenance activities, and assessing difficulty of those activities. To better illustrate costs and anticipate maintenance burdens, activities were characterized into distinct categories and a standard cost structure was applied. This unit conversion can easily be adapted according to local conditions, current economic climate, and regional cost variations which is why we decided to go with maintenance **hours** as those were directly measured and should remain constant. These maintenance activity categories allow more accurate cost predictions and provide insight into the appropriate assignment of maintenance responsibilities.

Annual maintenance costs were normalized to 2012 dollars and calculated for all SCMs by both dollars and personnel hours per acre of IC treated per system per year. It is important to note that inflation was not considered in life cycle maintenance cost projections.

MUNICIPAL PROPERTY BMP RETROFITS

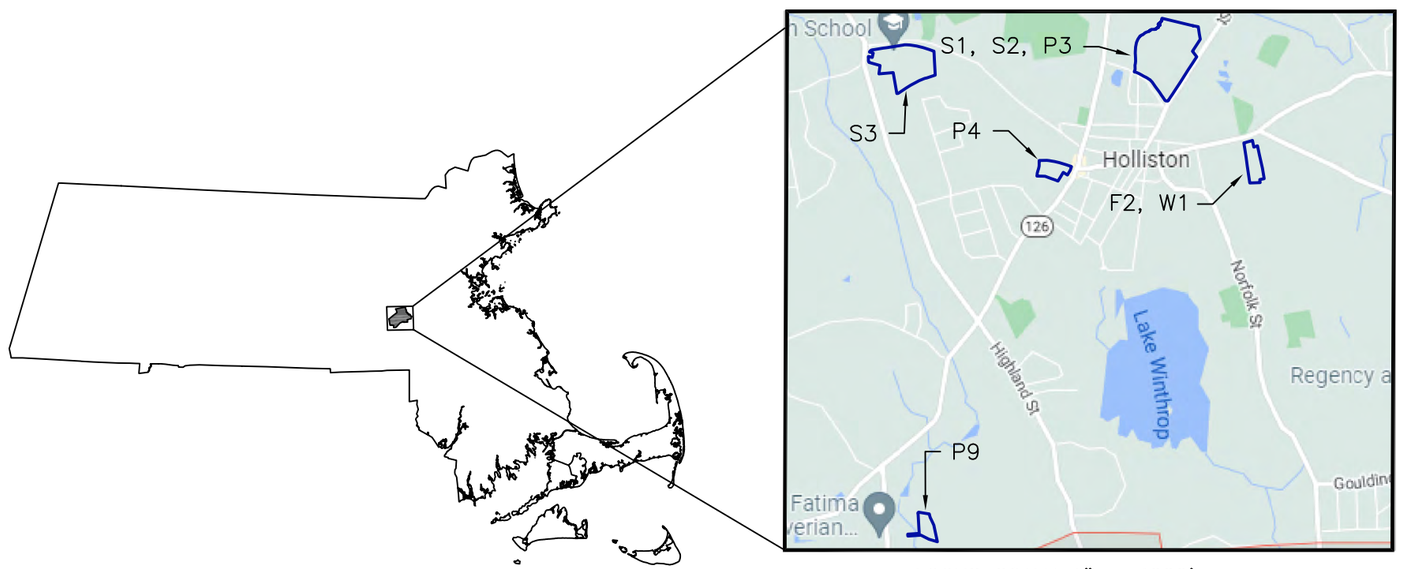
Attachment B:

Pre-Conceptual Designs for Top Five Locations

TOWN OF HOLLISTON

MUNICIPAL PROPERTY BMP RETROFIT OPPORTUNITIES HOLLISTON, MA

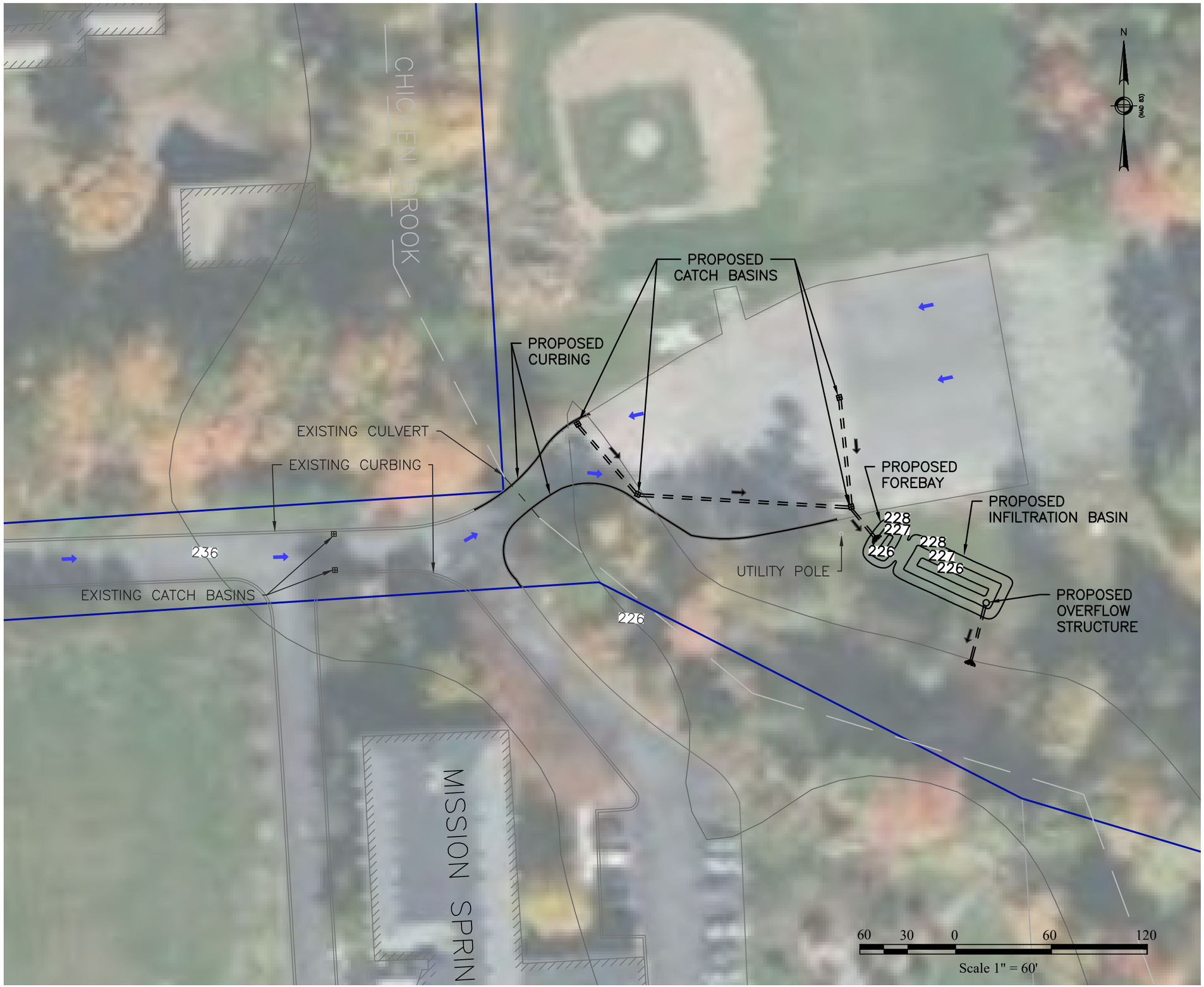
JUNE 2022



LOCUS SCALE 1" = 4000'

SHEET	TITLE
C-1	P9- MISSION SPRINGS RECREATION AREA
C-2	F2, W1- FIRE STATION/ WATER DEPARTMENT
C-3	P4- GOODWILL PARK
C-4	S3- HOLLISTON HIGH SCHOOL
C-5	S1, S2, P3- ROBERT ADAMS MIDDLE SCHOOL

COMPREHENSIVE ENVIRONMENTAL INCORPORATED • BOLTON, MASSACHUSETTS



GENERAL NOTES

LEGEND

- PROJECT PARCEL
- PROPERTY LINE
- EXISTING DRAIN PIPE
- CATCH BASIN
- DRAIN MANHOLE
- BUILDING
- EDGE OF PAVEMENT
- FLOW DIRECTION ARROW
- OUTFALL
- PROPOSED DRAIN PIPE

NOTE: FURTHER INVESTIGATION OF EXISTING DRAINAGE STRUCTURES REQUIRED.

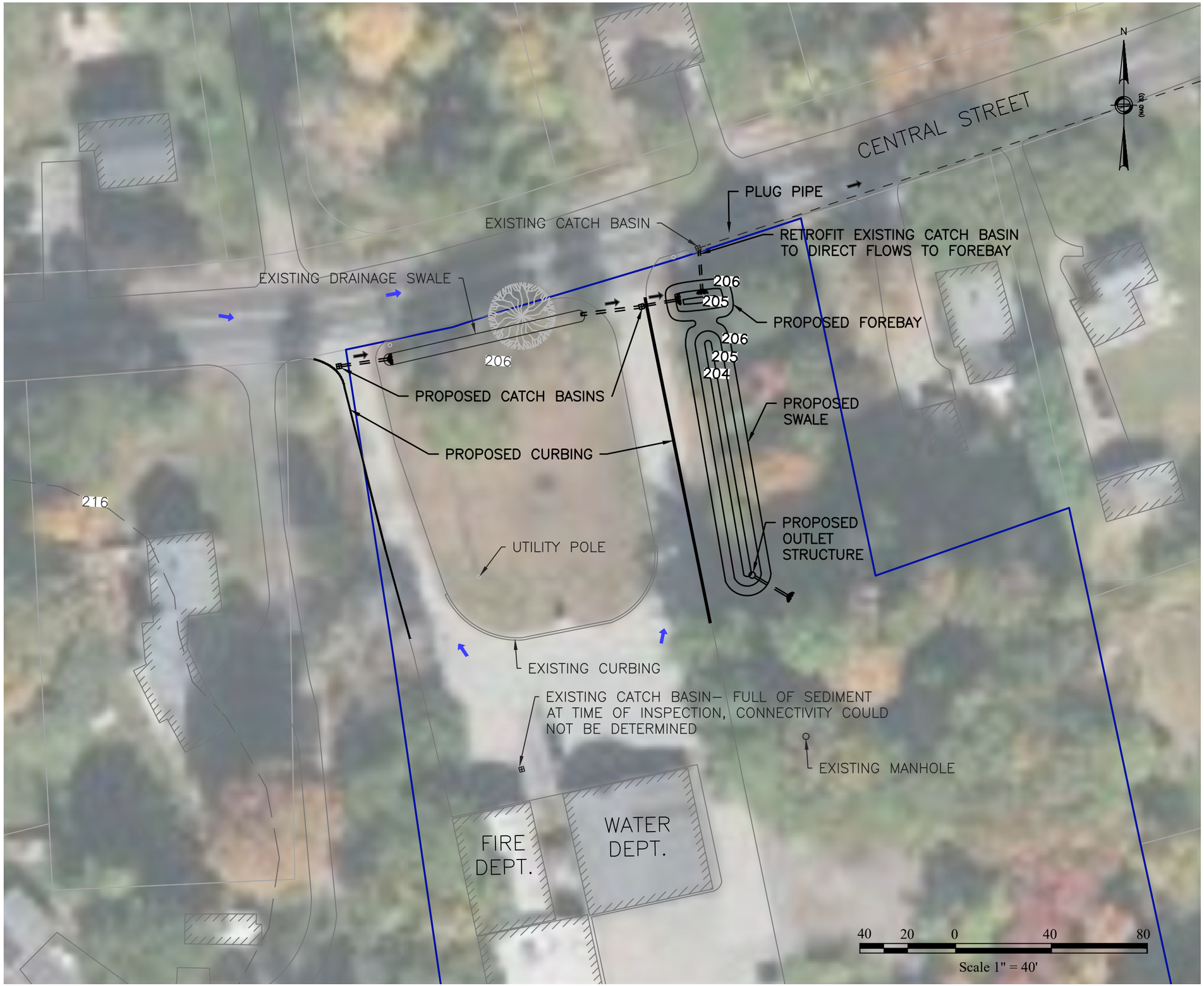
COMPREHENSIVE ENVIRONMENTAL INCORPORATED

41 MAIN ST.
BOLTON, MA 01740

PROPOSED CONDITIONS - P9
MISSION SPRINGS RECREATION AREA
PLAN VIEW

TOWN OF HOLLISTON, MA

Project No.: 173-9 Date: June 2022	Sheet
Drawn By: NH	C-1
Checked By: RB	
Scale: AS SHOWN	



GENERAL NOTES

LEGEND

- PROJECT PARCEL
- PROPERTY LINE
- EXISTING DRAIN PIPE
- CATCH BASIN
- DRAIN MANHOLE
- BUILDING
- EDGE OF PAVEMENT
- FLOW DIRECTION ARROW
- OUTFALL
- PROPOSED DRAIN PIPE

NOTE: FURTHER INVESTIGATION OF EXISTING DRAINAGE STRUCTURES REQUIRED.

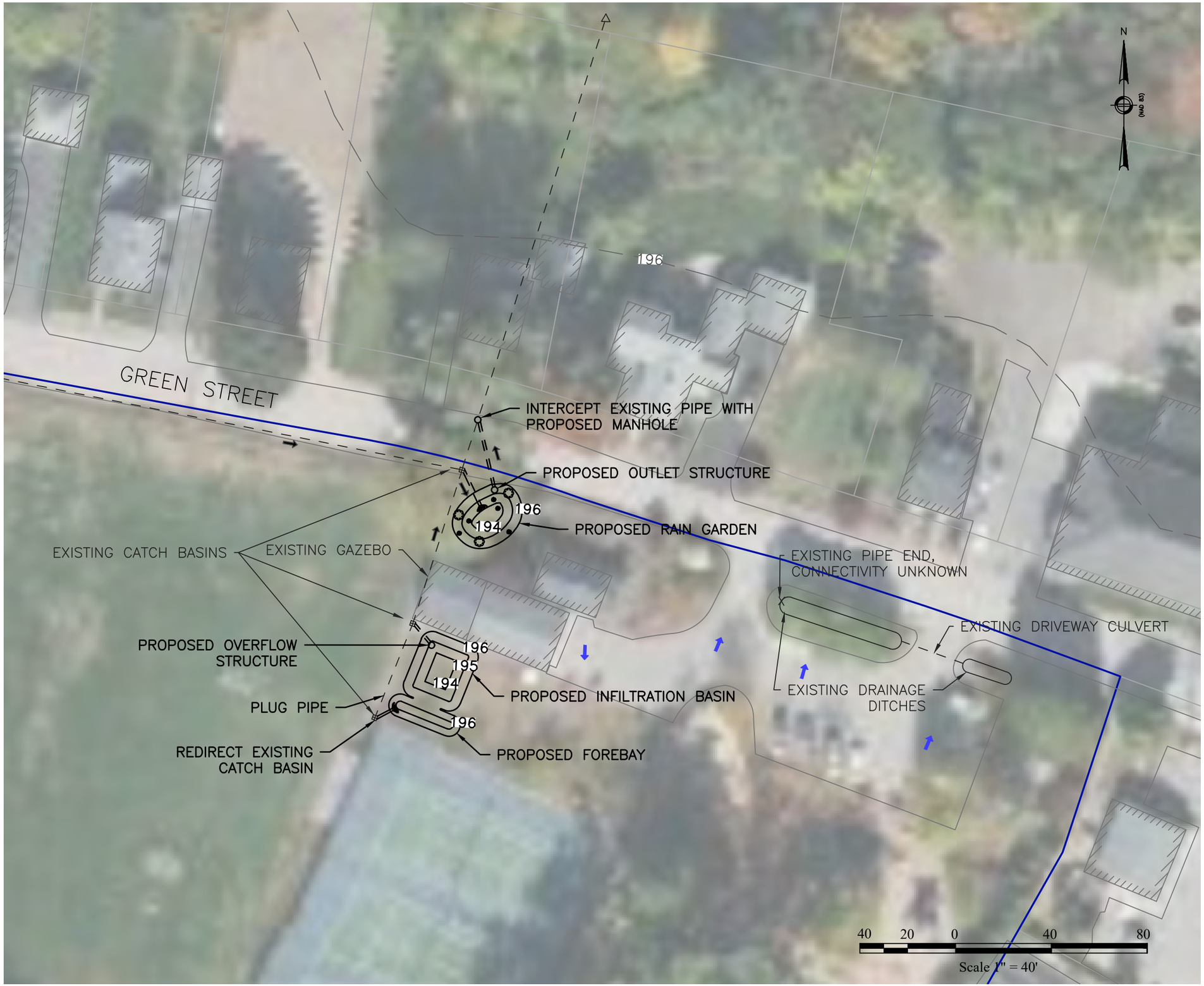
COMPREHENSIVE ENVIRONMENTAL INCORPORATED

41 MAIN ST.
BOLTON, MA 01740

PROPOSED CONDITIONS - F2, W1
FIRE STATION/ WATER DEPARTMENT
PLAN VIEW

TOWN OF HOLLISTON, MA

Project No.: 173–9 Date: June 2022	Sheet
Drawn By: NH	C-2
Checked By: RB	
Scale: AS SHOWN	



GENERAL NOTES

LEGEND

- PROJECT PARCEL
- PROPERTY LINE
- EXISTING DRAIN PIPE
- CATCH BASIN
- DRAIN MANHOLE
- BUILDING
- EDGE OF PAVEMENT
- FLOW DIRECTION ARROW
- OUTFALL
- PROPOSED DRAIN PIPE

NOTE: FURTHER INVESTIGATION OF EXISTING DRAINAGE STRUCTURES REQUIRED.

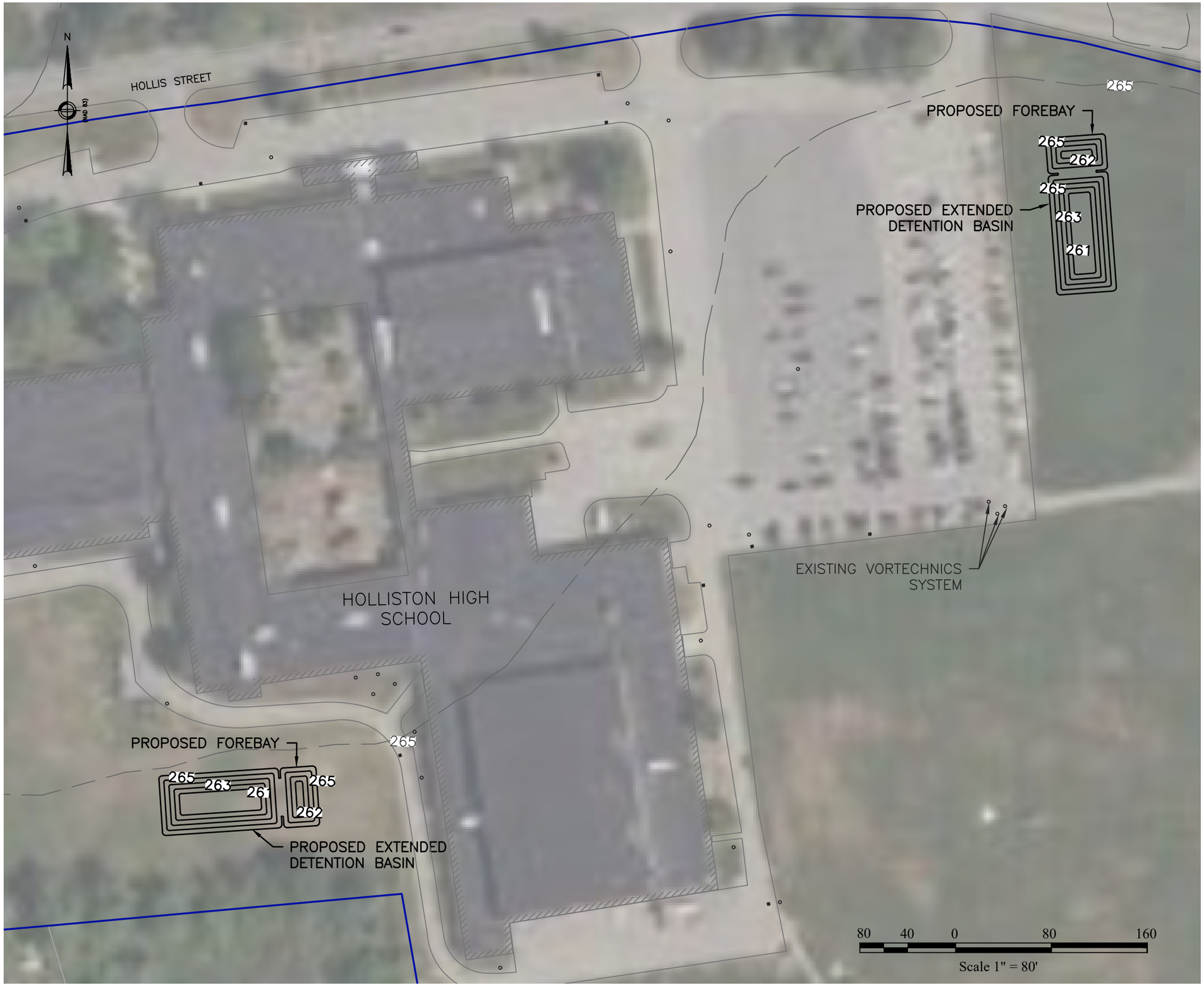
COMPREHENSIVE ENVIRONMENTAL INCORPORATED

41 MAIN ST.
BOLTON, MA 01740

PROPOSED CONDITIONS - P4
GOODWILL PARK
PLAN VIEW

TOWN OF HOLLISTON, MA

Project No.: 173-9 Date: June 2022	Sheet
Drawn By: NH	C-3
Checked By: RB	
Scale: AS SHOWN	



GENERAL NOTES

LEGEND

- PROJECT PARCEL
- PROPERTY LINE
- EXISTING DRAIN PIPE
- CATCH BASIN
- DRAIN MANHOLE
- BUILDING
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- FLOW DIRECTION ARROW
- OUTFALL
- PROPOSED DRAIN PIPE

NOTE: POTENTIAL LOCATION OF BMPS SHOWN. FURTHER INVESTIGATION OF EXISTING DRAINAGE NETWORK REQUIRED FOR EVALUATION OF POSSIBLE CONNECTIONS TO PROPOSED BMPS.

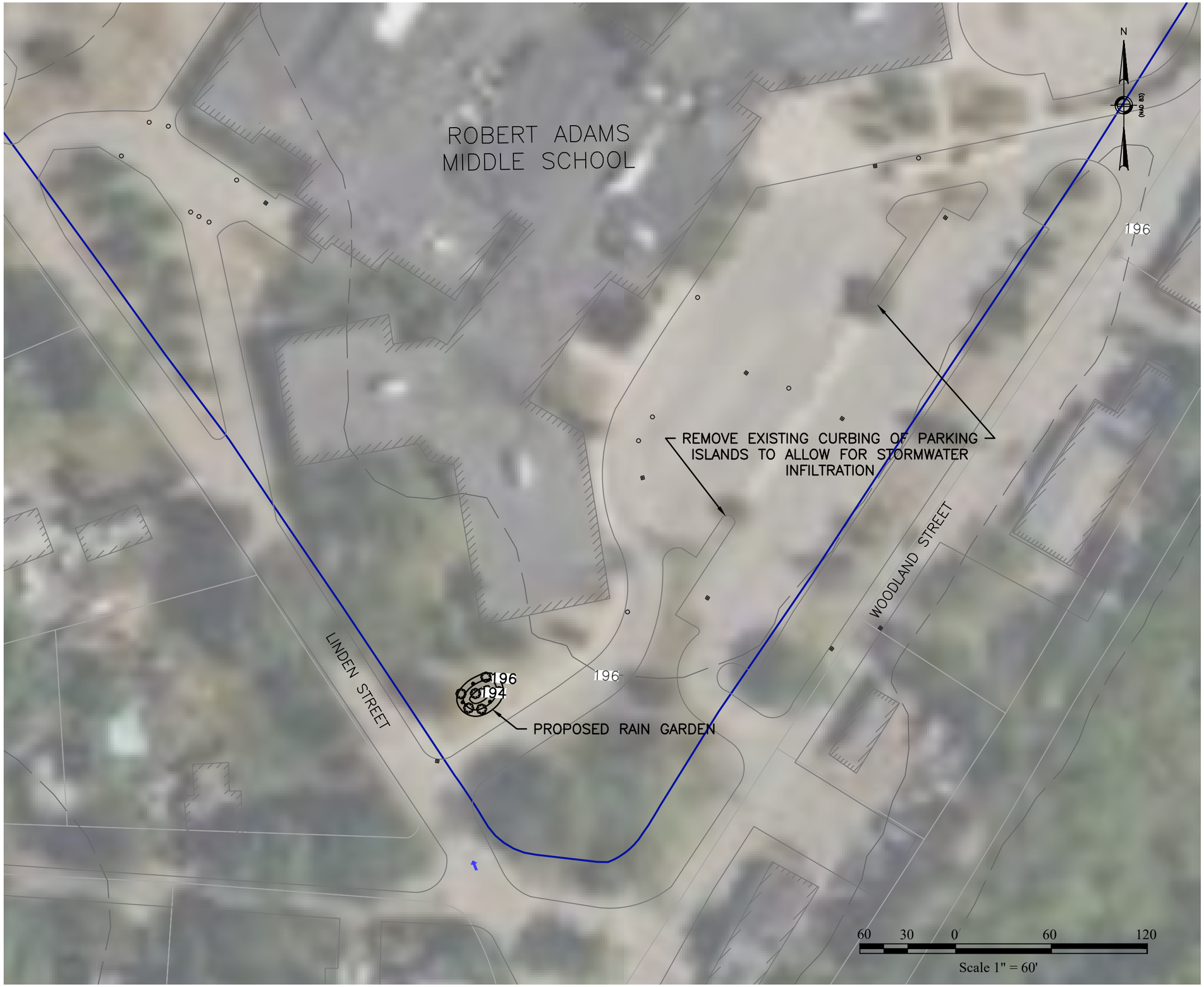
COMPREHENSIVE ENVIRONMENTAL INCORPORATED

41 MAIN ST.
BOLTON, MA 01740

PROPOSED CONDITIONS - S3
HOLLISTON HIGH SCHOOL
PLAN VIEW

TOWN OF HOLLISTON, MA

Project No.: 173–9 Date: June 2022	Sheet
Drawn By: NH	C-4
Checked By: RB	
Scale: AS SHOWN	



GENERAL NOTES

LEGEND

- PROJECT PARCEL
- PROPERTY LINE
- EXISTING DRAIN PIPE
- CATCH BASIN
- DRAIN MANHOLE
- BUILDING
- EDGE OF PAVEMENT
- FLOW DIRECTION ARROW
- OUTFALL
- PROPOSED DRAIN PIPE

NOTE: POTENTIAL LOCATION OF BMP SHOWN. FURTHER INVESTIGATION OF EXISTING DRAINAGE NETWORK REQUIRED FOR EVALUATION OF POSSIBLE CONNECTIONS TO PROPOSED BMP.

COMPREHENSIVE ENVIRONMENTAL INCORPORATED

41 MAIN ST.
BOLTON, MA 01740

PROPOSED CONDITIONS - S1, S2
ROBERT ADAMS MIDDLE SCHOOL
PLAN VIEW

TOWN OF HOLLISTON, MA

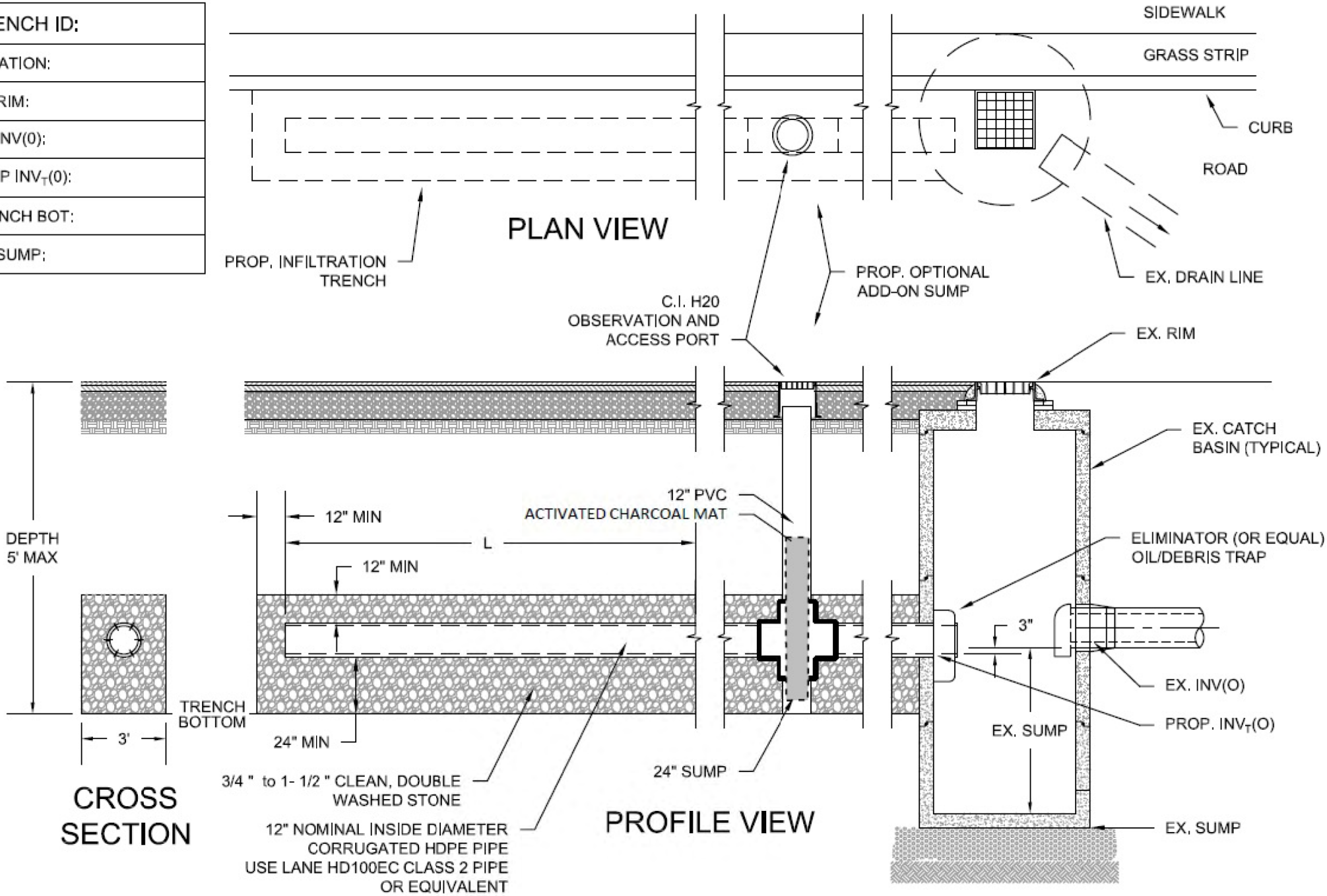
Project No.: 173-9 Date: June 2022	Sheet
Drawn By: NH	C-5
Checked By: RB	
Scale: AS SHOWN	

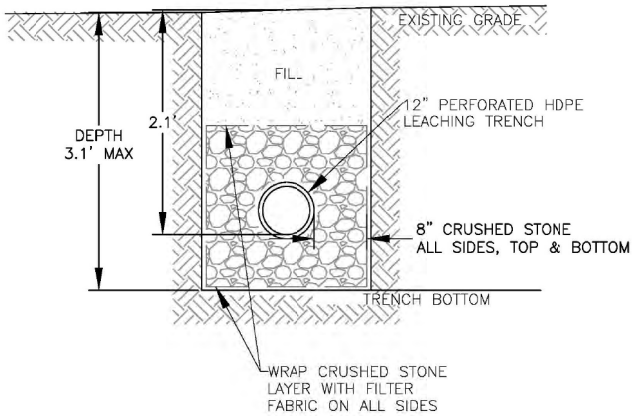
MUNICIPAL PROPERTY BMP RETROFITS

Attachment C:

Example Roadway and Intersection BMP Improvements

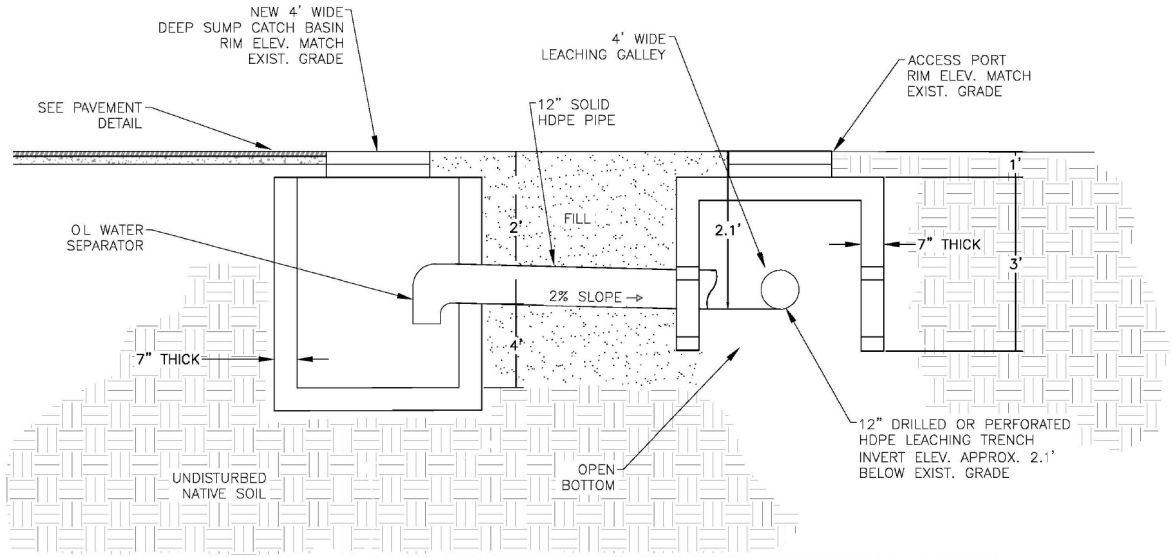
TRENCH ID:
LOCATION:
EX. RIM:
EX. INV(0):
PROP INV_T(0):
TRENCH BOT:
EX. SUMP:





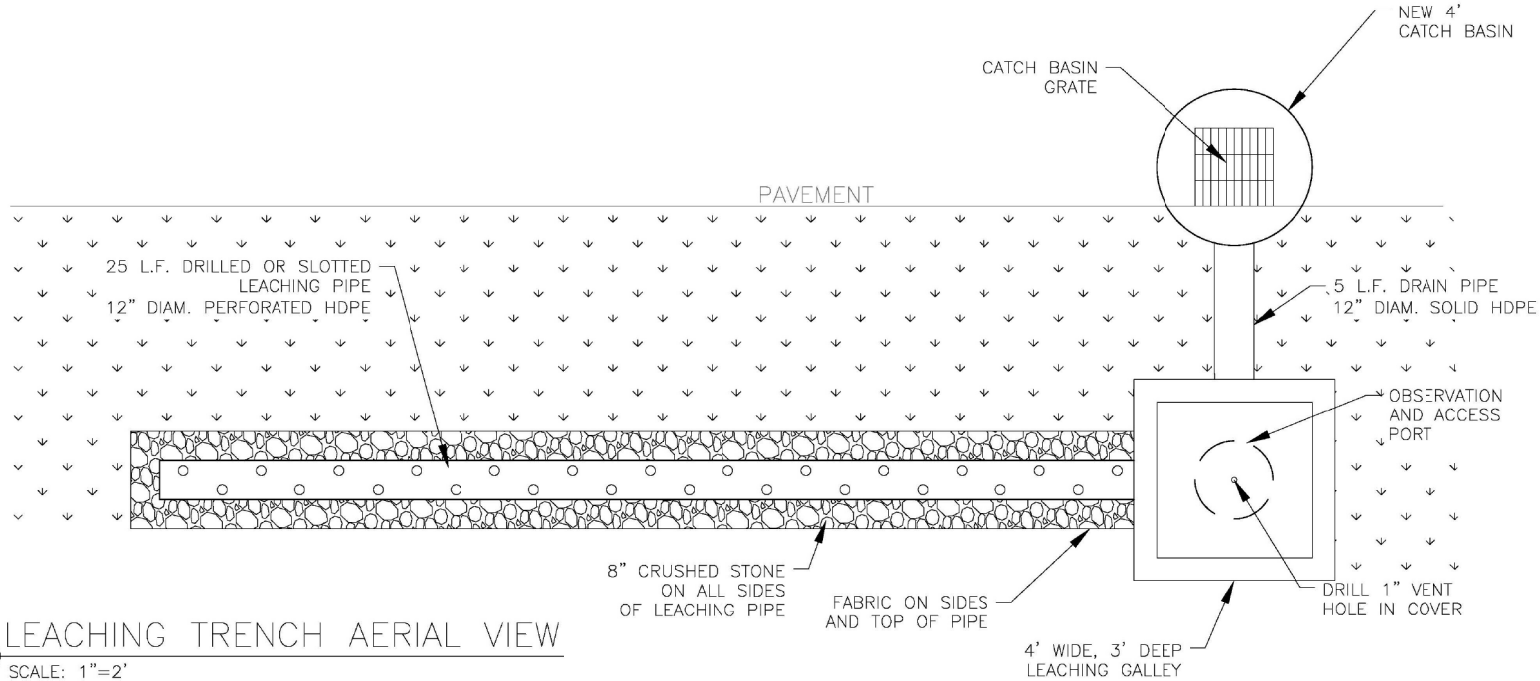
LEACHING TRENCH SECTION VIEW

SCALE N.T.S.



CATCH BASIN AND LEACHING GALLEY SECTION VIEW

SCALE: 1"=3'



LEACHING TRENCH AERIAL VIEW

SCALE: 1"=2'

Appendix E

Catch Basin Optimization Plan

Plan for Optimizing Catch Basin Cleaning

Holliston, MA

June 2019

Prepared For:

The Town of Holliston
703 Washington St
Holliston, MA 01746

Prepared by:

Comprehensive Environmental Inc.
41 Main Street
Bolton, MA 01740

Table of Contents

Plan for Optimizing Catch Basin Cleaning – Holliston, MA

List of Appendices

1 Introduction

This Catch Basin Cleaning Optimization Plan has been prepared by Holliston, MA to address the catch basin inspection, cleaning and maintenance requirements of the United States Environmental Protection Agency's (USEPA's) 2016 National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts, hereafter referred to as the "2016 MS4 Permit."

The 2016 MS4 Permit requires the permittee to document its plan for optimizing catch basin cleaning, inspections, or its schedule for gathering information to develop the optimization plan. This plan documents the Town's existing catch basin cleaning program and its plans for gathering additional information to refine its program to meet the requirements of the permit.

2 Permit Requirements

This Catch Basin Cleaning Optimization Plan addresses Section 2.3.7.1.a.iii.2 of the 2016 MS4 Permit (Infrastructure Operations and Maintenance), which includes the following requirements:

- **Establish a schedule** with the goal that the frequency of routine cleaning will ensure that no catch basin at any time will be more than 50 percent full[1];
- **Prioritize** inspection and maintenance for catch basins:
  - located near construction activities[2]. These should be cleaned more frequently if inspection and maintenance activities indicate excessive sediment or debris loadings;
  - discharging to impaired waters where the pollutant of concern is phosphorus, bacteria/pathogens, or solids; and
  - with sumps more than 50% full during consecutive inspections.
- **Establish proper documentation** of catch basin inspections to include:
  - the location and total number of catch basins;
  - the location and total number of catch basins cleaned or inspected; and
  - the total volume or mass of material removed from catch basins.
- **Develop an optimization plan** for catch basin cleaning, inspection plans, or a schedule for gathering information to develop the optimization plan in the first annual report and in the SWMP.

[1] A catch basin sump is more than 50 percent full if the contents within the sump exceed one half the distance between the bottom interior of the catch basin to the invert of the deepest outlet of the catch basin.
[2] Roadway construction; residential, commercial, or industrial development or redevelopment.

3 Existing Catch Basin Management Program

The Town has approximately 2,600 catch basins to clean and maintain. Refer to the map in **Appendix A**.

The town cleans all catch basins on a yearly basis.

4 Plans to Refine Catch Basin Cleaning Optimization

4.1 Optimization Methodology

The following outlines Holliston's proposed methodology for collecting sediment depth data and optimizing its inspection/cleaning schedule to meet the requirements of the 2016 MS4 Permit.

Moving forward, Holliston will continue to implement its existing annual catch basin cleaning. During this time, it will collect data on the sump depth and sediment depth in each catch basin. A spreadsheet will be developed to track sediment depth at each location. The catch basin inspection form included with the standard operating procedure (SOP) in **Appendix B** will be used to document data collected during cleaning.

A minimum of two years of data will be collected and evaluated to determine the status of the catch basins and whether the sump was more than half full. The catch basins that are more than 50% full will be evaluated for potential factors that may have contributed to it being 50% full (i.e., smaller sump, nearby construction, surrounding land uses, location in town). The evaluation will be used to identify catch basins that require more frequent inspection and/or cleaning and to develop an optimization plan that prioritizes these structures accordingly.

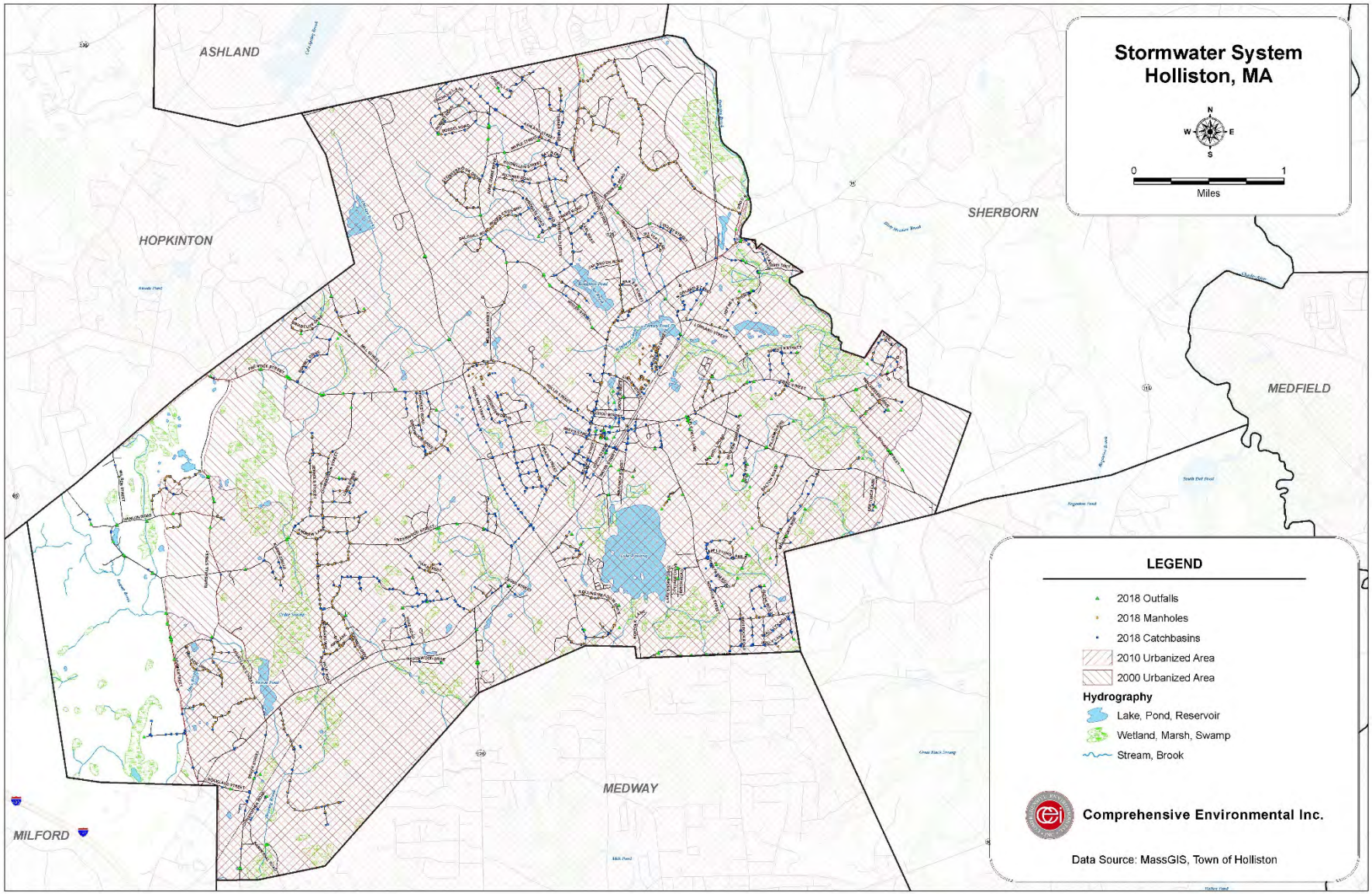
4.2 Catch Basin Cleaning Standard Operation Procedure (SOP)

All catch basins will be inspected and cleaned following the standard operating procedures (SOP) provided in **Appendix B**.

4.3 Catch Basin Cleanings Storage and Disposal

Holliston will explore possible beneficial uses for its collected catch basin cleanings.

Appendix A: Map of Drainage Infrastructure


Stormwater System
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Miles
ASHLAND
HOPKINTON
SHERBORN
MEDFIELD
MEDWAY
MILFORD
LEGEND
2018 Outfalls
2018 Manholes
2018 Catchbasins
2010 Urbanized Area
2000 Urbanized Area
Hydrography
Lake, Pond, Reservoir
Wetland, Marsh, Swamp
Stream, Brook
Comprehensive Environmental Inc.
Data Source: MassGIS, Town of Holliston

Appendix B: SOPs

Standard Operating Procedures for Catch Basin Cleaning and Inspection

SOP. MI-2 Catch Basin Cleaning and Inspection

Permit Requirements

As required by the 2016 MS4 Permit, catch basin inspection and cleaning requirements include the following:

- **Inspect and clean catch basins** to ensure that no catch basin is not more than 50 percent full;
- **Prioritize inspection and maintenance** for catch basins:
  - located near construction activities;
  - discharging to impaired waters; and
  - with sumps more than 50% full during consecutive inspections.
- **Establish proper documentation** of catch basin inspections; and
- **Develop an optimization plan** for catch basin cleaning and inspection**.**

Before Cleaning and/or Inspection

- **Notify residents and business** of catch basin cleaning schedule to restrict parking that could obstruct catch basin cleaning operations.
- **Gather** all required forms and maps.
  - Catch Basin Inspection Form; and
  - Maps of area to be cleaned/inspected

Cleaning and Inspection during Cleaning

1. Clean sediment and trash off of grate.
2. Remove grate.
3. Fill out **Catch Basin Inspection Form** with basin-specific information:
   - **Before cleaning**:
     - Do a visual inspection of outside of grate.
     - Do a visual inspection of the inside of the catch basin to determine cleaning needs and structural issues.
     - Measure depth from rim of catch basin to top of sediment.
     - Measure depth from rim of catch basin to the top of the outlet pipe.
     - Take photo of catch basin.
   - **Clean catch basin**:
     - For manual removal, place removed material in a location protected from potential runoff and place cleanings in a vehicle for transport to designated disposal area.
     - OR use a high-powered vac truck to remove sediment.

- **After cleaning**:
    - Measure depth from rim to bottom of catch basin.
    - Measure depth of sump (outlet pipe to bottom of catch basin).
    - Note if the catch basin is more than 50% full with sediment.
    - Note if the catch basin requires maintenance or it there are pollutants present.
    - Take photo of catch basin.

4. **Storage:** Bring cleanings to designated location for storage and disposal.
5. If any illicit discharges are observed or suspected, notify supervisor.

Interim Inspection between Cleaning Cycles

1. Clean sediment and trash off grate.
2. Remove grate.
3. Fill out **Catch Basin Inspection Form** with basin-specific information:
    - Do a visual inspection of outside of grate.
    - Do a visual inspection of the inside of the catch basin to determine cleaning needs and structural issues.
    - Measure depth from rim of catch basin to top of sediment.
    - Using sump depth collected during previous cleaning, note if the catch basin is more than 50% full with sediment.
    - Note if the catch basin requires maintenance or if there are pollutants present.
4. If any illicit discharges are observed or suspected, notify supervisor.

Catch Basin Inspection Form

Inspection Information			
Catch Basin ID			
Street Location		GPS Location	
Inspector's Name			
Date of Inspection		Time of Inspection	
Weather (circle)	Dry Light Rain Heavy Rain Snow		

Catch Basin Information		
Location	**Surface Type**	**Grate**
☐ Road/Curb ☐ Alley ☐ Ditch ☐ Parking Lot ☐ Driveway ☐ Sidewalk Other:_____	☐ Asphalt ☐ Gravel ☐ Concrete ☐ Grass/Dirt Other:_____	____inches x ____ inches Material: _____ Shape:

Catch Basin Condition	
CB Damage: No Yes	Comment:

	Materials (circle)					**Condition (circle)**			
Grate	Cast Iron	Brick	Concrete	Aluminum	Fiberglass	Poor	Fair	Good	Excellent
Frame	Cast Iron	Brick	Concrete	Aluminum	Fiberglass	Poor	Fair	Good	Excellent
Chimney	Cast Iron	Brick	Concrete	Aluminum	Fiberglass	Poor	Fair	Good	Excellent
Walls	Cast Iron	Brick	Concrete	Aluminum	Fiberglass	Poor	Fair	Good	Excellent
Trap/Hood	Cast Iron	Brick	Concrete	Aluminum	Fiberglass	Poor	Fair	Good	Excellent
Sump	Cast Iron	Brick	Concrete	Aluminum	Fiberglass	Poor	Fair	Good	Excellent

Sediment Depth and IDDE (inches)	
A. Depth from Rim to Top of Sediment: _____ B. Depth from Rim to Bottom of Basin (after vac): _____ C. Sump Depth: _____ D. Depth of Sediment (B-A): _____ E. More than 50% Full of Sediment? (D/C): _____ **CB Cleaned?** No Yes **Suspected illicit discharge?** No Yes	Check those Present: __Sanitary Waste/Smell __Excessive Sediment __Oil Sheen __Floatables/Trash __Pet Waste: Other:_____ Potential Source: _____

Appendix F

Stormwater BMP Inspection Reports

STORMWATER INSPECTION REPORT

To: Karen Sherman, Town Planner

From: Rebecca Balke, P.E., CEI

Date: January 2021

Locations: Alpine Drive, Beaver Brook, Brandon Lane, Cassandra Lane, Colonial Way, Constitution Circle, Country Road, Courtland Pines, Elementary School, Fairview Street, Golf Course, Gorwin Drive, Great Meadow, Hemlock Drive, Howard Street, Indian Ridge Road South, Johnson Street, Juniper Road, Kim's Place, Kingsbury Drive, Lone Oak Circle, Manchester Circle, Morgan's Way, Morse Farm Lane, Noel Drive, October Hill Road, Old Cart Path, Old Sawmill Road, Pamela Drive, Peter Street, Police Station, Pond View Road, Raleigh Road, Rocky Woods Trail, Sabrina Drive, Springdale Circle, Timber Ledge Drive, Underwood Street, Union Street, Winston Road, Woods Crossing

Town: Holliston, MA

Inspectors: Sara Nelson, CEI

Inspection Dates: May 27, 2020 and May 28, 2020

Under the Environmental Protection Agency's (EPA's) 2016 National Pollutant Discharge and Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit, regulated communities such as Holliston are required to annually inspect stormwater Best Management Practices (BMPs) within the regulated Urbanized Area (UA) and maintain as needed. In response, Comprehensive Environmental Inc. (CEI) performed an inspection of stormwater BMPs at the identified locations on May 27, 2020 and May 28, 2020 to evaluate general conditions and document recommended maintenance items for follow-up action in order to meet permit requirements.

Inspections

The Town of Holliston DPW identified 64 different BMPs that required inspections in order to meet permit requirements. Refer to Attachment 1 for a map of BMP locations. Of the 64 identified BMPs, CEI located 58 of them however, was unable to find and/or access those identified in Table 1.

Table 1 – Stormwater Infrastructure That Could Not be Found or Was Not Inspected

Location and ID	Stormwater BMP Type (ID)	Reason
Colonial Way	Leaching Pit	Not accessible/found. Map identifies leaching pit on private property which was not visible from roadway.
Fairview Street (S-14)	Detention Basin	Could not access. Behind private property with no clear accessway.
Gorwin Drive	Leaching Pit	Not found. Map identifies leaching pit on/adjacent to roadway but no indications of leaching pit in vicinity.
Indian Ridge Road South (S-6)	Detention Basin	Location was a heavily wooded area that does not appear to be a typical detention basin. No inlet or outlet found.
Indian Ridge Road (S-7)	Detention Basin	Could not access. Cedar Street closed for construction.
Indian Ridge Road (S-8)	Detention Basin	Could not access. Cedar Street closed for construction.

BMP locations are identified by street name and ID (where available) as depicted in Table 2. Table 2 details the locations and individual BMPs that were inspected and summarizes maintenance needs for each location. BMP inspection results are detailed in the attached inspection sheets attached to this report, along with representative photo documentation.

At the time of the inspections, the weather was approximately 60 to 80 degrees and sunny for both days. Weather over a three-day period leading up to May 27th and May 28th was between 50 and 75 degrees and with some occasions of light rain. Sara Nelson of CEI performed the inspections and noted the following general condition and maintenance needs:

Recommendations

The majority of the BMPs are in good operating order while a few are in fair condition and require minor maintenance as noted in Table 2 and on the attached inspection sheets. Minor maintenance generally includes removal of plant material buildup, sediment vacuuming, trimming back or removal of vegetation, curb or edge of road maintenance, and general landscaping.

Locations should be maintained as needed and inspected annually with the next inspection occurring during Year 3 of the MS4 Permit (July 1, 2020 through June 30, 2021).

Attachments:

- Stormwater BMP Map
- Stormwater inspection reports and photographs

Table 2 – Stormwater Infrastructure Inspected and Maintenance Recommendations

BMP ID	Location	Stormwater BMP Type	Requires Maintenance	Recommendations
--	Brandon Lane	Detention Basin	Yes	• Cut and remove vegetation on side slopes as needed to maintain function and storage capacity. • Remove sediment and vegetative debris from inlet.
--	Fairview Street	Detention Basin	Yes	• Cut vegetation along roadside slope and remove vegetative debris.
--	Johnson Drive	Swale	Yes	• Repair erosion with compacted fill and stabilize with fabric/armoring/vegetation. • Remove dead vegetation and replace vegetation as needed to maintain function.
--	Johnson Drive	Detention Basin	Yes	• Jet and clean inlet pipe. • Cut and remove vegetation on side slopes and bottom to maintain function and storage capacity.
--	Juniper Road	Detention Basin	Yes	• Removed yard waste and dumped trees to restore storage capacity.
--	Underwood Street	Detention Basin	No	
--	Union Street	Leaching Pit	No	
S-1	Old Cart Path	Detention Basin	Yes	• Cut and remove woody vegetation on earthen embankment and by inlet.
S-2	Old Cart Path	Detention Basin	Yes	• Remove and dispose of phragmites in accordance with regulations.
S-3	Old Cart Path	Detention Basin	No	
S-4	Old Cart Path	Detention Basin	No	
S-5	Old Cart Path	Detention Basin	Yes	• Remove floatables to prevent clogging.

STORMWATER INSPECTION REPORT

BMP ID	Location	Stormwater BMP Type	Requires Maintenance	Recommendations
S-9	Woods Crossing	Detention Basin	Yes	• Remove blockage from outlet grate.
S-10	Woods Crossing	Detention Basin	Yes	• Cut and remove woody vegetation on earthen embankment, side slopes, and bottom to maintain function and storage capacity. • Remove dead vegetation/floatables to prevent clogging.
S-11	Noel Drive	Detention Basin	Yes	• Repair erosion from depressions and burrows in embankment with compacted fill and stabilize with fabric/stone/vegetation.
S-12	Pamela Drive	Detention Basin	Yes	• Cut and remove wood growth on embankment to maintain function and storage capacity.
S-13	Rocky Woods Trail	Detention Basin	Yes	• Some buildup of vegetative debris, floatables and sediment. Not impacting function yet, but should be removed to maintain capacity.
S-15	Constitution Circle	Detention Basin	No	
S-16	Lone Oak Circle	Detention Basin	Yes	• Remove and dispose of phragmites in accordance with regulations. • Cut and remove vegetation on side slopes and bottom to maintain function and storage capacity.
S-17	Great Meadow	Detention Basin	Yes	• Remove burnt debris and replace dead vegetation.
S-18	Great Meadow	Detention Basin	Yes	• Cut and remove overgrown vegetation on side slopes as needed to maintain function and storage capacity. • Remove dead vegetation and replace as needed to maintain function. • Clean sediment and vegetation from inlet pipe.

STORMWATER INSPECTION REPORT

BMP ID	Location	Stormwater BMP Type	Requires Maintenance	Recommendations
S-19	Springdale Circle	Detention Basin	Yes	• Remove sediment and debris from inlet pipe.
S-20	Alpine Drive	Retention Basin	Yes	• Remove woody vegetation on embankment to maintain function and storage capacity.
S-21	Winston Road	Detention Basin	Yes	• Cut and remove overgrown vegetation on side slopes and bottom and at inlet as needed to maintain function and storage capacity.
S-22	Howard Street	Detention Basin	No	• Watch sediment and vegetative debris for future maintenance.
S-23	Peter Street	Detention Basin	Yes	• Remove sediment from inlet (~30% full). Remove sediment, vegetative debris and floatables from basin.
S-24	Raleigh Road	Detention Basin	Yes	• Repair erosion on side slopes and bottom with compacted fill and stabilize with fabric/stone armoring/vegetation. • Mow/cut woody vegetation to prevent overgrowth.
S-25	Manchester Circle	Detention Basin	Yes	• Remove vegetation blocking grate/outlet structure. • Repair erosion from depressions and burrows with compacted fill and stabilize with fabric/stone armoring/vegetation.
S-26	Manchester Circle	Detention Basin	No	• Inspect and mow vegetation as needed to prevent overgrowth.
S-27	Sabrina Drive	Detention Basin	Yes	• Remove debris to restore storage capacity. • Jet and clean inlet pipe (~50% filled). • Repair erosion on side slopes and bottom with compacted fill and stabilize with fabric/stone armoring/vegetation.
S-28	Courtland Pines	Stormceptor	Yes	• Remove sediment/floatables accumulation in units (cannot see inlet/outlet pipes)

STORMWATER INSPECTION REPORT

BMP ID	Location	Stormwater BMP Type	Requires Maintenance	Recommendations
S-29	Morgan's Way	Detention Basin	Yes	• Repair erosion from depressions and burrows with compacted fill and stabilize with fabric/stone armoring/vegetation.
S-30	Juniper Road	Retention Basin	No	• Inspect and mow vegetation as need to prevent overgrowth.
S-31	Morgan's Way	Detention Basin	Yes	• Remove floatables to prevent clogging. • Remove and dispose of phragmites in accordance with regulations. • Cut and remove overgrown vegetation on side slopes and bottom as needed to maintain function and storage capacity. • Locate inlet structure(s) and remove debris/sediment as necessary.
S-32	Johnson Drive	Detention Basin	Yes	• Cut and remove overgrown woody vegetation on earthen embankment and side slopes as needed to maintain function and storage capacity. • Repair erosion from depressions and burrows with compacted fill and stabilize with fabric/stone armoring/vegetation.
S-33	Kingsbury Drive	Detention Basin	Yes	• Cut and remove vegetation on side slopes and bottom to maintain function and storage capacity.
S-34	Kingsbury Drive	Detention Basin	Yes	• Cut and remove vegetation around outlet structure to prevent clogging.
S-35	Kingsbury Drive	Detention Basin	Yes	• Cut and remove vegetation as needed to maintain function and capacity.
S-36	Hemlock Drive	Detention Basin	Yes	• Cut and remove vegetation on side slopes and bottom as needed to maintain function and storage capacity.

STORMWATER INSPECTION REPORT

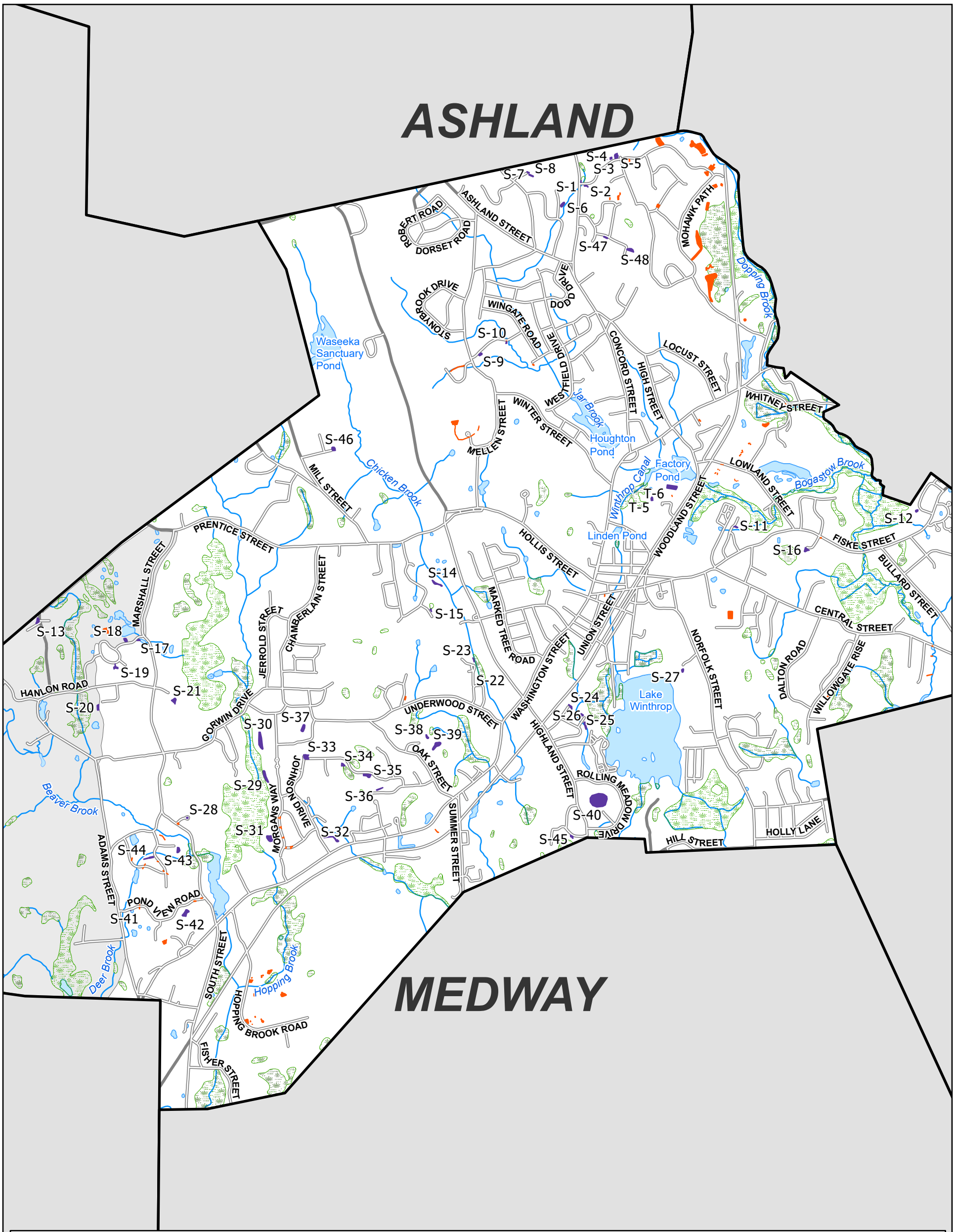
BMP ID	Location	Stormwater BMP Type	Requires Maintenance	Recommendations
S-37	Kim's Place	Detention Basin	Yes	• Cut and remove large (>3" caliper) woody vegetation on earthen embankment.
S-38	Cassandra Lane	Detention Basin	Yes	• Mow/cut vegetation around outlet. • Repair erosion on earthen embankment and side slopes with compacted fill and stabilize with fabric/stone armoring/vegetation.
S-39	Cassandra Lane	Detention Basin	Yes	• Remove floatables to prevent clogging of outlet. • Repair erosion on earthen embankment and side slopes with compacted fill and stabilize with fabric/stone armoring/vegetation
S-40	Morse Farm Lane	Detention Basin	Yes	• Cut and remove vegetation on side slopes and bottom as needed to maintain function and storage capacity. • Remove dead vegetation and vegetative debris in basin. Replace vegetation as needed to maintain function. • Locate inlet and outlet and clear of debris/vegetation.
S-41	Pond View Road	Leaching Galley	No	
S-42	Pond View Road	Detention Basin	Yes	• Remove sediment and vegetation in and around inlet pipe to unclog.
S-43	Beaver Brook Drive	Detention Basin	Yes	• Remove sediment, vegetation and debris in and around inlet pipe to unclog. • Remove and dispose of phragmites in accordance with regulations. • Cut and remove vegetation on side slopes and bottom as needed to maintain function and storage capacity.
S-44	Old Sawmill Road	Swale	Yes	• Add/repair displaced riprap at inlet. • Remove yard waste and educate homeowners.

STORMWATER INSPECTION REPORT

BMP ID	Location	Stormwater BMP Type	Requires Maintenance	Recommendations
S-44	Old Sawmill Road	Detention Basin	Yes	• Remove floatable to prevent clogging. • Remove dead vegetation and replace as needed to maintain function. • Mow/cut woody growth on embankment to prevent overgrowth.
S-45	Timber Ledge Drive	Detention Basin	Yes	• Remove sediment and debris to restore storage capacity. • Remove sediment and debris in and around inlet pipe to unclog.
S-46	Country Road	Detention Basin	Yes	• Remove sediment and debris in and around inlet to unclog (~50% clogging). • Remove and dispose of phragmites in accordance with regulations. • Cut and remove vegetation on side slopes and bottom as needed to maintain function and storage capacity. • Remove dead vegetation and replace as needed to maintain function.
S-47	October Hill Road	Detention Basin	Yes	• Reseed/plant areas of dead vegetation to maintain function.
S-48	October Hill Road	Detention Basin	Yes	• Remove sediment and debris in and around inlet pipe to unclog (>50% clogging). Reseed/plant areas of dead vegetation to maintain function.
T-1	Pinecrest Golf Course	Detention Basin	Yes	• Remove sediment and debris in and around inlet pipe to unclog. • Reseed/plant areas of dead vegetation to maintain function.
T-2	Pinecrest Golf Course	Detention Basin	Yes	• Remove debris to restore storage capacity. • Cut and remove vegetation on side slopes and bottom as needed to maintain function and storage capacity.

STORMWATER INSPECTION REPORT

BMP ID	Location	Stormwater BMP Type	Requires Maintenance	Recommendations
T-3	Pinecrest Golf Course	Detention Basin	Yes	• Remove sediment to restore storage capacity. • Jet and clean inlet pipe. • Cut and remove vegetation on bottom as needed to maintain function.
T-4	Police Station	Detention Basin	No	
T-5	Elementary School	Detention Basin	No	• Keep an eye on vegetative debris buildup around inlet and outlet structures during future inspections. Remove as needed to prevent clogging.
T-6	Elementary School	Detention Basin	Yes	• Remove and dispose of phragmites in accordance with regulations. • Remove sediment and debris from basin to maintain function and storage capacity. • Cut and remove vegetation on bottom and side slopes as needed to maintain function.


ASHLAND
MEDWAY
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S-41
S-42
S-43
S-44
S-45
S-46
S-47
S-48
T-5
T-6
ROBERT ROAD
DORSET ROAD
ASHLAND STREET
STONYBROOK DRIVE
WINGATE ROAD
DOD DRIVE
WESTFIELD DRIVE
CONCORD STREET
HIGH STREET
LOCUST STREET
WHITNEY STREET
MOHAWK PATH
Dopping Brook
Waseeka Sanctuary Pond
Jar Brook
Houghton Pond
Factory Pond
Winthrop Canal
Bogastow Brook
LOWLAND STREET
WOODLAND STREET
Linden Pond
FISKE STREET
BULLARD STREET
CENTRAL STREET
MELLEN STREET
WINTER STREET
MILL STREET
Chicken Brook
PRENTICE STREET
HOLLIS STREET
MARSHALL STREET
CHAMBERLAIN STREET
JERROLD STREET
MARKED TREE ROAD
WASHINGTON STREET
UNION STREET
NORFOLK STREET
DALTON ROAD
WILLOWGATE RISE
HANLON ROAD
GORWIN DRIVE
UNDERWOOD STREET
OAK STREET
HIGHLAND STREET
ROLLING MEADOW DRIVE
Lake Winthrop
HOLLY LANE
HILL STREET
SUMMER STREET
JOHNSON DRIVE
MORGANS WAY
Beaver Brook
ADAMS STREET
POND VIEW ROAD
Deer Brook
SOUTH STREET
Hopping Brook
HOPPING BROOK ROAD
FISHER STREET
Legend
Town Owned BMP
Private BMP
Roads
Non-Urban Area
Lake, Pond, Reservoir
Wetland, Marsh, Swamp
Stream, Brook
N
W
E
S
0
0.25
0.5
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1
Miles
Stormwater BMP Map
Holliston, MA
Comprehensive Environmental Incorporated
Data Sources: CEI, MassGIS, Town of Holliston
09.24.2019

STORMWATER BMP INSPECTION REPORT

To:	Karen Sherman, Town Planner
From:	Rebecca Balke, P.E., CEI
Date:	November 2021
Locations:	Alpine Drive, Beaver Brook Drive, Cassandra Lane, Constitution Circle, Country Road, Colonial Way, Courtland Circle, Elementary School, Fairview Street, Great Meadow, Hemlock Drive, Howard Street, Indian Ridge Road, Indian Ridge Road South, Johnson Drive, Juniper Road, Kim's Place, Kingsbury Drive, Lone Oak Circle, Manchester Circle, Marshall Street, Morgan's Way, Noel Drive, October Hill Road, Old Cart Path, Old Sawmill Road, Pamela Drive, Peter Street, Pinecrest Golf Course, Police Station, Pond View Road, Raleigh Road, Rolling Meadow Drive, Sabrina Drive, Summitpointe Drive, Timber Ledge Drive, Underwood Street, Union Street, Whispering Lane, Winston Road, Woods Crossing
Town:	Holliston, MA
Inspectors:	Sara Nelson and Iain Church, CEI
Inspection Dates:	May 20, 21, and 25, 2021

Under the Environmental Protection Agency's (EPA's) 2016 National Pollutant Discharge and Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit, regulated communities such as Holliston are required to annually inspect stormwater Best Management Practices (BMPs) within the regulated Urbanized Area (UA) and maintain as needed. In response, Comprehensive Environmental Inc. (CEI) performed an inspection of stormwater BMPs at the identified locations on May 20th, 21st, and 25th, 2021 to evaluate general conditions and document recommended maintenance items for follow-up action in order to meet permit requirements.

Inspections

The Town of Holliston DPW identified 68 different BMPs that required inspections in order to meet permit requirements (note, BMP S-33 was split into two BMPs for Year 3 inspection purposes). Refer to Attachment 1 for a map of BMP locations. Of the 68 identified BMPs, CEI located 66 of them and determined that two previously identified BMPs do not exist as shown in Table 1.

Table 1 – Stormwater Infrastructure which No Longer Exists

Location and ID	Stormwater BMP Type (ID)	Reason
Colonial Way	Leaching Pit	Not accessible/found. Map identifies leaching pit on private property but DPW personnel does not believe there is any BMP in this area.
Union Street	Leaching Pit	Not accessible/found. Map identifies leaching pit on private property but DPW personnel does not believe there is any BMP in this area.

BMP locations are identified by street name and ID (where available) as depicted in Table 2. Table 2 details the locations and individual BMPs that were inspected and summarizes maintenance needs for

each location. BMP inspection results are detailed in the attached inspection sheets attached to this report, along with representative photo documentation.

At the time of the inspections, the weather was approximately 60 to 80 degrees and sunny each day. Weather over a three-day period leading up to May 20th, 21st and 25th was between 50 and 80 degrees and dry. Sara Nelson and Iain Church of CEI performed the inspections and noted the general condition and maintenance needs.

Recommendations

22 BMPs are in good operating order and do not require maintenance. The remaining 44 BMPs are in fair condition and require at least some minor maintenance as noted on the attached inspection sheets. Maintenance generally includes removal of plant material buildup, sediment and debris removal, trimming or removal of vegetation, invasive species removal, curb or edge of road maintenance, side slope stabilization, pipe cleaning, and general landscaping. Table 2 below provides a brief summary of maintenance requirements for each BMP where maintenance is required. Comments on all inspected BMPs are provided in the attached inspection reports.

Locations should be maintained as noted and inspected annually with the next inspection occurring during Year 4 of the MS4 Permit (July 1, 2021 through June 30, 2022).

Attachments:

- Stormwater BMP Map
- Stormwater inspection reports and photographs

Table 2 – Stormwater Infrastructure Inspected and Maintenance Recommendations

BMP ID	Location	Stormwater BMP Type	Requires Maintenance	Recommendations
S-1	Old Cart Path	Detention Basin	No	
S-2	Old Cart Path	Detention Basin	Yes	• Remove and dispose of phragmites in accordance with regulations.
S-3	Old Cart Path	Detention Basin	Yes	• Cut and remove vegetation on side slopes, bottom, and spillways to maintain function and storage capacity. • Remove and dispose of multiflora rose in accordance with regulations. • Remove vegetation blocking emergency outlet.
S-4	Old Cart Path	Detention Basin	Yes	• Cut and remove woody and other vegetation on side slopes, bottom, embankment, and spillways to maintain function and storage capacity. • Remove vegetation blocking outlet structures. • Remove and dispose of multiflora rose in accordance with regulations.
S-5	Old Cart Path	Detention Basin	Yes	• Remove floatables to prevent clogging. • Cut and remove vegetation from side slopes around inlet and outlets to maintain function. • Remove and dispose of multiflora rose in accordance with regulations.
S-6	Indian Ridge Road South	Detention Basin	Yes	• Remove and dispose of Japanese Knotweed in accordance with regulations. • Cut and remove other woody vegetation from side slopes, spillway, and embankment. • Remove blockage from outlet grate.
S-7	Indian Ridge Road	Infiltration Basin	Yes	• Cut and remove vegetation on side slopes and bottom to maintain function and storage capacity. • Repair riprap near inlet to restore conveyance grade.
S-8	Indian Ridge Road	Infiltration Basin	Yes	• Remove and dispose of multiflora rose in accordance with regulations.

STORMWATER BMP INSPECTION REPORT

BMP ID	Location	Stormwater BMP Type	Requires Maintenance	Recommendations
S-9	Woods Crossing	Detention Basin	Yes	• Cut and remove woody vegetation on earthen embankment, side slopes, and bottom to maintain function and accessibility. • Remove dead vegetation and replace vegetation as needed to maintain function.
S-10	Woods Crossing	Detention Basin	Yes	• Cut and remove woody vegetation on earthen embankment, side slopes, and bottom to maintain function and storage capacity. • Remove dead vegetation/floatables to prevent clogging. • Repair erosion from depressions and burrows in embankment with compacted fill and stabilize with fabric/stone/vegetation.
S-11	Noel Drive	Detention Basin	Yes	• Repair erosion from depressions and burrows in embankment with compacted fill and stabilize with fabric/stone/vegetation. • Remove dead vegetation/floatables to prevent clogging.
S-12	Pamela Drive	Detention Basin	Yes	• Cut and remove woody growth on embankment to maintain function and mitigate damage to outlet.
S-13	Rocky Woods Trail	Detention Basin	No	
S-14	Fairview Street	Infiltration Basin	Yes	• Repair riprap spillway to maintain function and storage capacity.
S-15	Constitution Circle	Retention Basin	Yes	• Cut and remove vegetation from side slopes and bottom to maintain function and storage capacity. • Remove and dispose of phragmites in accordance with regulations.
S-16	Lone Oak Circle	Detention Basin	Yes	• Remove and dispose of phragmites in accordance with regulations. • Remove dead vegetation on side slopes and bottom to maintain function and storage capacity.
S-17	Great Meadow Road	Detention Basin	No	

STORMWATER BMP INSPECTION REPORT

BMP ID	Location	Stormwater BMP Type	Requires Maintenance	Recommendations
S-18	Great Meadow Road	Detention Basin	Yes	• Jet and clean sediment from inlet pipe.
S-19	Whispering Lane	Detention Basin	Yes	• Remove dead vegetation to maintain function and storage capacity.
S-20	Alpine Drive	Retention Basin	Yes	• Remove sediment and debris including yard waste from side slopes and bottom to maintain function and storage capacity.
S-21	Winston Road	Retention Basin	Yes	• Cut and remove overgrown vegetation on side slopes, bottom, spillway and at inlet as needed to maintain function and storage capacity. • Repair erosion from depressions and burrows with compacted fill and stabilize with fabric/stone armoring/vegetation. • Remove dead vegetation to maintain function and storage capacity. • Remove yard waste from inlet area to maintain function and storage capacity.
S-22	Howard Street	Detention Basin	Yes	• Remove and dispose of Japanese barberry and garlic mustard plants in accordance with regulations.
S-23	Peter Street	Detention Basin	Yes	• Repair erosion from depressions and burrows with compacted fill and stabilize with fabric/stone armoring/vegetation.
S-24	Raleigh Road	Detention Basin	Yes	• Cut and remove overgrown woody and other vegetation on side slopes and bottom to maintain function and storage capacity and enable accessibility. • Repair erosion on side slopes and from inlet with compacted fill and stabilize with fabric/stone armoring/vegetation.
S-25	Manchester Circle	Detention Basin	Yes	• Remove vegetation blocking grate/outlet structures. • Remove and dispose of multiflora rose in accordance with regulations.

STORMWATER BMP INSPECTION REPORT

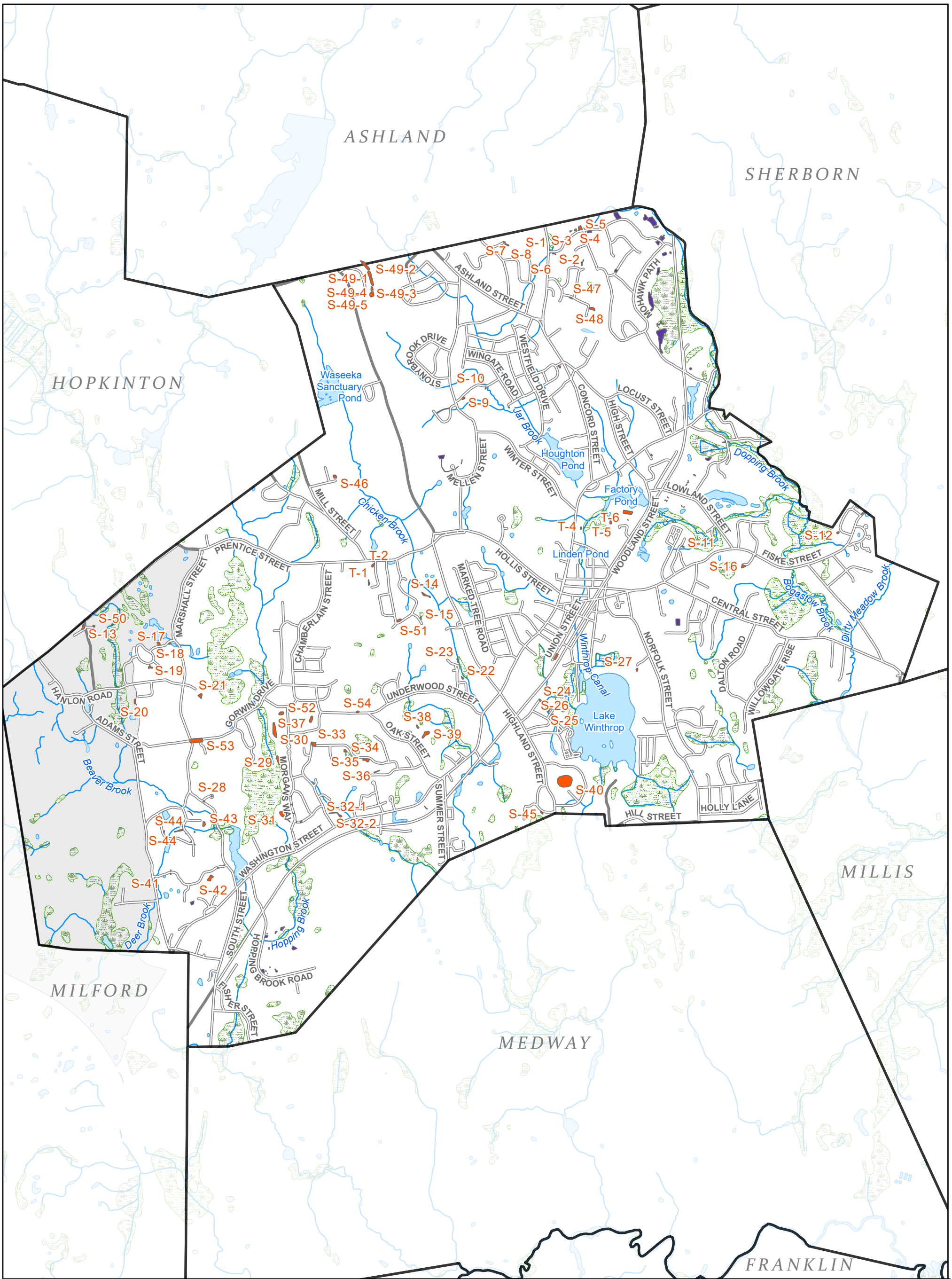
BMP ID	Location	Stormwater BMP Type	Requires Maintenance	Recommendations
S-26	Manchester Circle	Detention Basin	Yes	• Remove vegetation blocking grate/outlet structures.
S-27	Sabina Drive	Detention Basin	No	
S-28	Courtland Circle	Stormceptor	No	
S-29	Morgan's Way	Detention Basin	No	
S-30	Juniper Road	Retention Basin	Yes	• Repair erosion in plunge pool at inlet with compacted fill and stabilize with fabric/stone armoring/vegetation.
S-31	Morgan's Way	Detention Basin	Yes	• Remove and dispose of phragmites in accordance with regulations. • Cut and remove overgrown woody vegetation on side slopes, embankment, and bottom as needed to maintain function and storage capacity.
S-32-1	Johnson Drive	Retention Basin	Yes	• Cut and remove overgrown woody vegetation on earthen embankment and side slopes as needed to maintain function and storage capacity. • Remove dead vegetation to prevent clogging. • Remove excess sediment to uncover outlet and restore storage capacity.
S-32-2	Johnson Drive	Swale	Yes	• Remove dead vegetation and replace vegetation as needed to maintain function.
S-33-122	Kingsbury Drive	Retention Basin	Yes	• Jet and clean inlet pipe.
S-33-123	Kingsbury Drive	Detention Basin	No	
S-34	Kingsbury Drive	Detention Basin	Yes	• Cut and remove vegetation on side slopes and bottom and around outlet structure to prevent clogging. • Remove dead vegetation to prevent clogging.
S-35	Kingsbury Drive	Detention Basin	No	
S-36	Hemlock Drive	Detention Basin	No	
S-37	Kim's Place	Retention Basin	No	

STORMWATER BMP INSPECTION REPORT

BMP ID	Location	Stormwater BMP Type	Requires Maintenance	Recommendations
S-38	Cassandra Lane	Detention Basin	Yes	• Remove dead vegetation to prevent clogging in spillway.
S-39	Cassandra Lane	Retention Basin	Yes	• Repair erosion on earthen embankment and side slopes with compacted fill and stabilize with fabric/stone armoring/vegetation
S-40	Rolling Meadow Drive	Retention Basin	Yes	• Remove excess sediment buildup throughout basin to restore storage capacity and maintain function. • Remove and dispose of phragmites in accordance with regulations.
S-41	Pond View Road	Leaching Galley	No	
S-42	Pond View Road	Detention Basin	No	
S-43	Beaver Brook Drive	Detention Basin	Yes	• Remove and dispose of phragmites in accordance with regulations.
S-44	Old Sawmill Road	Swale	No	
S-44	Old Sawmill Road	Detention Basin	No	
S-45	Timber Ledge Drive	Retention Basin	Yes	• Remove sediment and debris to restore storage capacity. • Remove sediment and debris in and around inlet pipe to unclog. • Remove and dispose of Japanese barberry in accordance with regulations.
S-46	Country Road	Detention Basin	No	
S-47	October Hill Road	Detention Basin	No	
S-48	October Hill Road	Detention Basin	Yes	• Remove sediment and debris in and around outlet pipe to unclog (>50% clogging).
S-49-1	Summitpointe Drive	Retention Basin	Yes	• Remove and dispose of phragmites in accordance with regulations.
S-49-2	Summitpointe Drive	Detention Basin	Yes	• Remove and dispose of phragmites in accordance with regulations.

STORMWATER BMP INSPECTION REPORT

BMP ID	Location	Stormwater BMP Type	Requires Maintenance	Recommendations
S-49-3	Summitpointe Drive	Detention Basin	Yes	• Remove and dispose of multiflora rose in accordance with regulations.
S-49-4	Summitpointe Drive	Detention Basin	Yes	• Remove and dispose of phragmites and multiflora rose in accordance with regulations.
S-49-5	Summitpointe Drive	Infiltration Basin	No	
T-1	Pinecrest Golf Course	Detention Basin	No	
T-2	Pinecrest Golf Course	Detention Basin	Yes	• Remove debris and floatables to restore storage capacity.
T-4	Police Station	Detention Basin	No	
T-5	Elementary School	Detention Basin	No	
T-6	Elementary School	Detention Basin	Yes	• Remove and dispose of phragmites in accordance with regulations. • Remove sediment from basin to maintain function and storage capacity.
S-50	Brandon Lane	Detention Basin	Yes	• Jet and clean inlet pipe.
S-51	Fairview Street	Detention Basin	No	
S-52	Juniper Road	Detention Basin	Yes	• Remove sediment near inlet and in basin to restore storage capacity and maintain function.
S-53	Marshall Street	Leaching Pit	Yes	• Remove sediment, debris, and floatables to restore storage capacity. • Scarify bottom to maintain infiltration capabilities.
S-54	Underwood Street	Detention Basin	No	



Legend

- Town Owned BMP
- Private BMP
- Roads
- Lake, Pond, Reservoir
- Wetland, Marsh, Swamp
- Stream, Brook
- Non-Urban Area

N
W E
S

0 0.25 0.5 0.75 1
Miles

Stormwater BMP Map

Holliston, MA

Comprehensive Environmental Incorporated

Data Sources: MassGIS, Town of Holliston, CEI

12/2/2021

STORMWATER BMP INSPECTION REPORT

To:	Karen Sherman, Town Planner, Town of Holliston
From:	Rebecca Balke, P.E., Project Manager, Comprehensive Environmental Inc.
Date:	November 2, 2022
Locations:	Alpine Drive, Andrew Lane, Beaver Brook Drive, Brandon Lane, Cassandra Lane, Constitution Circle, Country Road, Courtland Circle, Elementary School, Fairview Street, Great Meadow Road, Hemlock Drive, Howard Street, Indian Ridge Road, Indian Ridge Road South, Johnson Drive, Juniper Road, Kim Place, Kingsbury Drive, Lone Oak Circle, Manchester Circle, Marshall Street, Morgans Way, Noel Drive, October Hill Road, Old Cart Path, Old Sawmill Road, Pamela Drive, Peter Street, Pinecrest Golf Course, Police Station, Pond View Road, Raleigh Road, Rocky Woods Trail, Rolling Meadow Drive, Sabrina Drive, Summitpointe Drive, Timber Ledge Drive, Underwood Street, Whispering Lane, Winston Road, Woods Crossing
Town:	Holliston, MA
Inspectors:	Maya Wilk, CEI
Inspection Dates:	May 5, 6, 10, and 11, 2022

Under the Environmental Protection Agency's (EPA's) 2016 National Pollutant Discharge and Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit, regulated communities such as Holliston are required to annually inspect stormwater Best Management Practices (BMPs) within the regulated Urbanized Area (UA) and maintain as needed. In response, Comprehensive Environmental Inc. (CEI) performed an inspection of stormwater BMPs at the identified locations on May 5th, 6th, 10th, and 11th 2022 to evaluate general conditions and document recommended maintenance items for follow-up action in order to meet permit requirements.

Inspections

The Town of Holliston DPW and CEI previously identified 42 different BMP sites/locations with 66 different BMP locations that required inspections in order to meet permit requirements. Of the 66 BMPs inspected, there are four that could not be found and should be field-located to ensure the accuracy of future investigations. The locations and IDs of the missing BMPs are as follows:

- S-41 – Pond View Road
- S-47 – October Hill Road
- S-48 – October Hill Road
- T-3 – Pinecrest Golf Course

All of the remaining BMPs with the exception of S-24 were directly accessed in the field; portions of S-24 were inspected from the adjacent roadway as best as feasible due to extensive overgrowth.

Locations and IDs are shown on a map provided under Attachment 1. Table 1 details the locations and individual BMPs that were inspected and summarizes maintenance recommendations. BMP inspection

results are detailed in the inspection sheets, along with representative photo documentation provided under Attachment 2.

At the time of the inspections, the weather ranged from approximately 60 to 70 degrees and sunny or partially cloudy each day. Weather over a three-day period leading up to May 5th and 6th was approximately 50 and 60 degrees with light rain. In the days prior to the 10th and 11th, the weather was approximately 50 and 60 degrees and dry. Maya Wilk of CEI performed the inspections and noted the general condition and maintenance needs.

Recommendations

9 BMPs are in good operating order and do not require maintenance. The remaining 57 BMPs are in varying condition and require maintenance as noted on the attached inspection sheets. Maintenance typically includes removal of plant material buildup, sediment and debris removal, trimming or removal of vegetation, invasive species removal, erosion repair and stabilization, and pipe cleaning. A number of BMPs were observed to have invasive species present. While these do not appear to be impacting BMP performance or function, they should be removed as best as feasible to minimize further propagation to other locations. Table 1 below provides a brief summary of maintenance requirements for each BMP where maintenance is required. Comments on all inspected BMPs are provided in the attached inspection reports. Locations should be maintained as noted and inspected annually with the next inspection occurring during Year 5 of the MS4 Permit (July 1, 2022 through June 30, 2023).

Upon review of previous inspection reports, comparison to available as-built plans, and evaluation of field conditions, the following BMP locations may not be accurate as currently mapped. It is recommended that the following locations be reassessed during Year 5:

- S-41 does not appear to exist in its currently mapped location, however, a nearby drainage easement may include a separate BMP. It is recommended that this location be inspected during Year 5 to determine if a BMP exists and if maintenance is required.
- S-47 does not appear to exist in its currently mapped location, however, a BMP may exist along the southern side of the Mayflower Medicals building. It is recommended that this location be inspected during Year 5 to determine if a BMP exists and if is maintenance required.
- S-48 does not appear to exist in its currently mapped location, however, a BMP may exist along the eastern side of the Harvard Bioscience building. It is recommended that this location be inspected during Year 5 to determine if a BMP exists and if maintenance is required.
- T-3 should be field located and mapped to reflect its actual location. The BMP is suspected to be in the northern portion of the Pinecrest Golf Course, along the side of a utility shed. It is recommended that this location be inspected during Year 5 to determine if a BMP exists and if maintenance is required.

An additional 14 BMPs were identified as part of an updated review of available plans at the beginning of the summer. These BMPs should also be inspected as part of the Year 5 BMP inspections.

Attachments:

- Stormwater BMP Map
- Stormwater inspection reports and photographs

STORMWATER BMP INSPECTION REPORT

Table 1 – Stormwater Infrastructure Inspected and Maintenance Recommendations

BMP ID	Location	Stormwater BMP Type	Requires Maintenance?	Recommendations
S-1	Old Cart Path	Dry Detention Basin	Yes	• Remove sediment and debris from side slopes and inlet pipe to prevent clogging. • Remove and dispose of multiflora rose in accordance with regulations. • Stabilize side slope and embankment erosion with vegetation, fabric, or stone to prevent excess sedimentation.
S-2	Old Cart Path	Wet Basin	Yes	• Remove and dispose of phragmites in accordance with regulations. • Remove overgrown and dead vegetation, as well as leaf debris from side slopes and embankment to maintain access and function.
S-3	Old Cart Path	Wet Basin	Yes	• Remove floatables (algae growth, leaf debris), excess sediment, and dead vegetation from basin and inlet to prevent clogging.
S-4	Old Cart Path	Wet Basin	No	
S-5	Old Cart Path	Wet Basin	Yes	• Remove dead vegetation within larger basin to restore basin storage capacity and flow.
S-6	Indian Ridge Road South	Grassed Channel / Extended Dry Detention Basin	Yes	• Remove and dispose of Japanese Knotweed in accordance with regulations. • Cut and remove other overgrown, dead, and woody vegetation from side slopes and embankment to restore access. • Remove vegetation from around outlet.
S-7	Indian Ridge Road	Bioretention / Rain Garden	Yes	• Remove dead vegetation and debris on side slopes, bottom, and around inlet to maintain function and storage capacity. • Remove and dispose of multiflora rose in accordance with regulations.
S-8	Indian Ridge Road	Extended Detention Basin	Yes	• Remove and dispose of multiflora rose in accordance with regulations. • Remove leaf debris from side slopes, outlet, and outfall area to improve function and capacity. • Stabilize displaced riprap from outfall area to restore flow capacity.
S-9	Woods Crossing	Wet Basin	Yes	• Remove dead and woody vegetation, leaf debris, and yard waste within basin, along side slope, and around outlet to prevent clogging and restore capacity.

Table 1 – Stormwater Infrastructure Inspected and Maintenance Recommendations Continued

BMP ID	Location	Stormwater BMP Type	Requires Maintenance?	Recommendations
S-10	Woods Crossing	Wet Basin	Yes	• Remove and dispose of multiflora rose and garlic mustard in accordance with regulations. • Remove dead vegetation, fallen branches, and floatables to prevent clogging and impaction of basin capacity.
S-11	Noel Drive	Wet Basin	Yes	• Repair erosion in forebay embankment with compacted fill and stabilize with fabric/stone/vegetation. • Remove overgrown vegetation to preserve access to drainage structures.
S-12	Pamela Drive	Wet Basin	No	
S-13	Rocky Woods Trail	Wet Basin	No	
S-14	Fairview Street	Infiltration Basin	Yes	• Remove overgrown and dead vegetation, fallen trees, debris, and yard waste from basin, side slopes, and spillway to restore basin capacity and unblock drainage grates. • Remove burrows throughout basin and in emergency spillway with compacted fill and stabilize with fabric/stone/vegetation. • Remove and dispose of phragmites, multiflora rose, and garlic mustard throughout basin in accordance with regulations. • Restore riprap stone along the low-flow drainage channel and cleanout underdrains. Scarify basin surface to restore basin function.
S-15	Constitution Circle	Wet Basin	Yes	• Remove and dispose of phragmites and multiflora rose in accordance with regulations, as well as overgrown vegetation from embankment.
S-16	Lone Oak Circle	Wet Basin	Yes	• Remove and dispose of phragmites in accordance with regulations. • Remove overgrown and dead vegetation on side slopes near inlet and bottom to maintain function and storage capacity.
S-17	Great Meadow Road	Extended Dry Detention Basin	Yes	• Remove and dispose of garlic mustard, tree of heaven, and autumn olive in accordance with regulations • Remove overgrown and dead vegetation within basin to restore capacity and access.

Table 1 – Stormwater Infrastructure Inspected and Maintenance Recommendations Continued

BMP ID	Location	Stormwater BMP Type	Requires Maintenance?	Recommendations
S-18	Great Meadow Road	Extended Dry Detention Basin	No	
S-19	Whispering Lane	Extended Dry Detention Basin	Yes	• Remove overgrown and dead vegetation, fallen trees, and debris to maintain function and storage capacity. • Remove and dispose of Japanese barberry, multiflora rose, and garlic mustard in accordance with regulations. • Repair or replace plastic debris screen on outlet structure.
S-20	Alpine Drive	Wet Basin	Yes	• Remove debris and yard waste from side slopes, bottom, and inlet to maintain function and storage capacity.
S-21	Winston Road	Wet Basin	Yes	• Cut and remove overgrown and dead vegetation on side slopes, bottom, spillway, and at inlet as needed to maintain function and storage capacity. • Remove yard waste from inlet area to prevent clogging. • Remove and dispose of Japanese knotweed, multiflora rose, autumn olive, and garlic mustard in accordance with regulations.
S-22	Howard Street	Infiltration Basin	No	
S-23	Peter Street	Extended Dry Detention Basin	Yes	• Remove and dispose of multiflora rose in accordance with regulations. • Remove dead vegetation from basin and outlet to prevent blockage. • Repair erosion from depressions and burrows with compacted fill and stabilize with fabric/stone armoring/vegetation.
S-24	Raleigh Road	Wet Basin	Yes	• Cut and remove overgrown woody and other vegetation on side slopes, embankment, and bottom to maintain function and storage capacity and enable accessibility. • Remove multiflora rose and phragmites in accordance with regulations. • Repair erosion on side slopes and from inlet with compacted fill and stabilize with fabric/stone armoring/vegetation.

Table 1 – Stormwater Infrastructure Inspected and Maintenance Recommendations Continued

BMP ID	Location	Stormwater BMP Type	Requires Maintenance?	Recommendations
S-25	Manchester Circle	Extended Dry Detention Basin	Yes	• Remove vegetation blocking grate/outlet structures. • Remove and dispose of multiflora rose and garlic mustard in accordance with regulations. • Remove overgrown and dead vegetation, as well as yard waste and debris to restore access and basin capacity.
S-26	Manchester Circle	Drainage Channel / Extended Dry Detention Basin	Yes	• Remove debris and vegetation from outlet structures.
S-27	Sabina Drive	Extended Dry Detention Basin	Yes	• Remove leaf debris and yard waste from basin, inlet, and outlet pipping to prevent clogging.
S-28	Courtland Circle	Stormceptor	No	
S-29	Morgans Way	Infiltration Basin	Yes	• Remove overgrown and dead vegetation, leaf debris, sediment, and fallen tree to restore access, basin capacity, and stormwater flow. • Remove and dispose of multiflora rose and autumn olive in accordance with regulations.
S-30	Juniper Road	Wet Basin	Yes	• Repair erosion in plunge pool at first inlet and erosion on side slope under second inlet with compacted fill and stabilize with fabric/stone armoring/vegetation. • Remove and dispose of multiflora rose and autumn olive in accordance with regulations.
S-31	Morgans Way	Wet Basin	Yes	• Remove and dispose of phragmites and multiflora rose in accordance with regulations. • Cut and remove overgrown and dead vegetation from outlet structures to maintain function and prevent clogging.

Table 1 – Stormwater Infrastructure Inspected and Maintenance Recommendations Continued

BMP ID	Location	Stormwater BMP Type	Requires Maintenance?	Recommendations
S-32-1	Johnson Drive	Wet Basin	Yes	• Cut and remove overgrown and dead vegetation, fallen trees, and leaf debris from embankments, side slopes, and bottom of basin to restore function and storage capacity, and to unclog basin and outlets. • Locate or uncover outlet and restore storage capacity.
S-32-2	Johnson Drive	Wet Swale	Yes	• Remove fallen trees, dead vegetation, and leaf debris to restore swale function, flow, and accessibility.
S-33-122	Kingsbury Drive	Wet Basin	Yes	• Remove overgrown and dead vegetation, sediment, and leaf debris from embankment and basin to relieve excess ponding, unclog outlet, and restore basin capacity, function, and accessibility.
S-33-123	Kingsbury Drive	Wet Basin	Yes	• Remove and dispose of multiflora rose and autumn olive in accordance with regulations.
S-34	Kingsbury Drive	Extended Dry Detention Basin	Yes	• Cut and remove overgrown and dead vegetation on side slopes, forebay divide, and around outlet structure to prevent clogging and restore accessibility. • Remove and dispose of multiflora rose and autumn olive in accordance with regulations.
S-35	Kingsbury Drive	Wet Basin	Yes	• Remove multiflora rose in accordance with regulations. • Remove overgrown woody vegetation to maintain accessibility and storage capacity.
S-36	Hemlock Drive	Extended Dry Detention Basin	Yes	• Remove leaf and branch debris from inlet area and pip to prevent clogging and restore function. • Remove and dispose of multiflora rose in accordance with regulations.
S-37	Kim Place	Wet Basin	Yes	• Remove overgrown vegetation and yard waste to restore accessibility and prevent clogging. • Remove and dispose of multiflora rose in accordance with regulations.

Table 1 – Stormwater Infrastructure Inspected and Maintenance Recommendations Continued

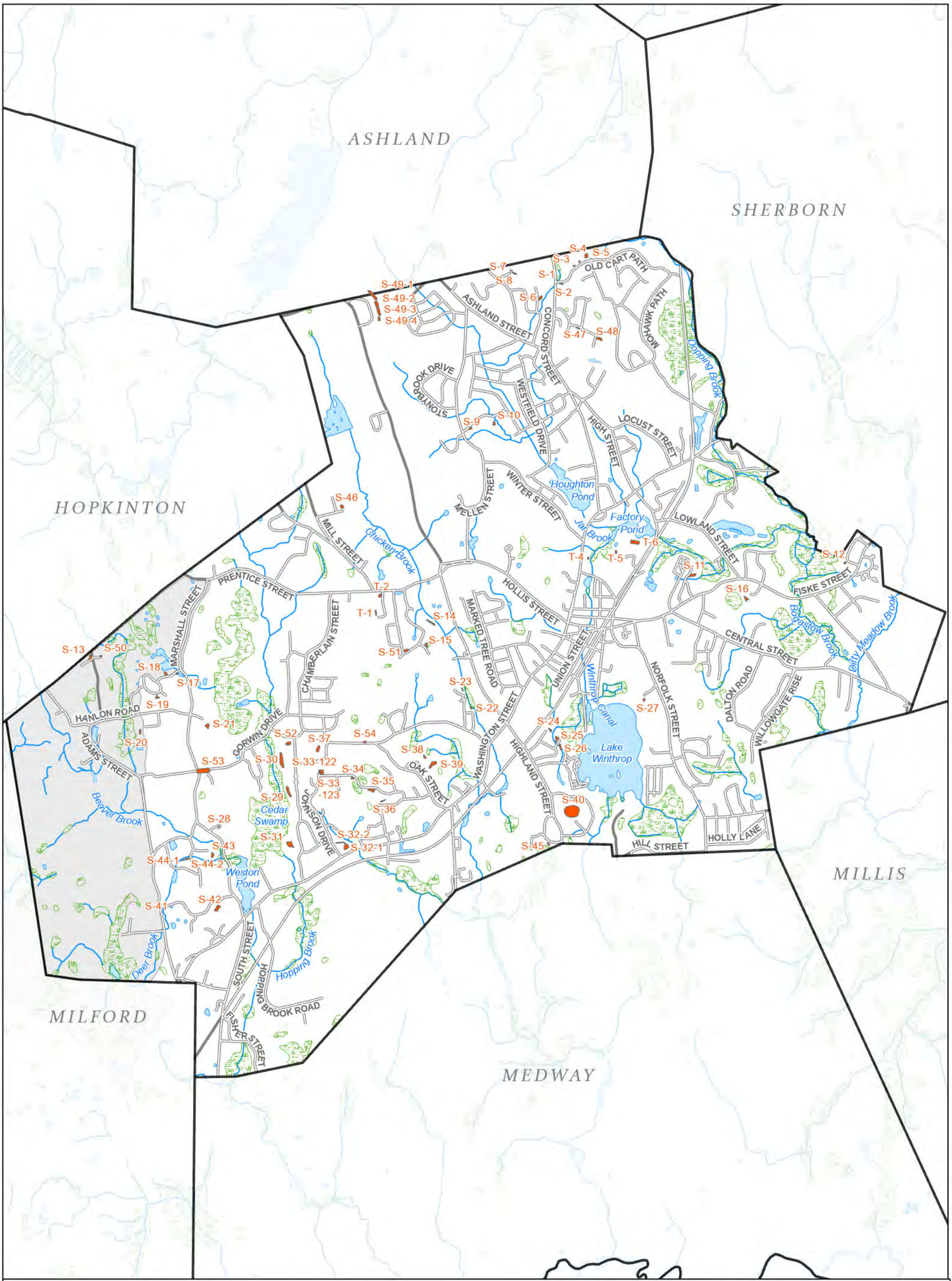
BMP ID	Location	Stormwater BMP Type	Requires Maintenance?	Recommendations
S-38	Cassandra Lane	Wet Basin	Yes	• Remove overgrown and dead vegetation along side slopes and pathway to restore access. • Repair erosion behind outlet headwall with compacted fill and stabilize with vegetation.
S-39	Cassandra Lane	Wet Basin	Yes	• Remove overgrown vegetation along side slopes and pathway to restore access to basin. • Repair erosion with compacted fill and stabilize with fabric/stone/vegetation.
S-40	Rolling Meadow Drive	Wet Basin	Yes	• Remove leaf and tree debris throughout basin, as well as the many yard waste piles along side slopes to restore storage capacity and maintain function. • Remove and dispose of phragmites, multiflora rose, and garlic mustard in accordance with regulations.
S-42	Pond View Road	Extended Dry Detention Basin	No	
S-43	Beaver Brook Drive	Wet Basin	Yes	• Remove and dispose of phragmites, multiflora rose, and autumn olive in accordance with regulations. • Remove yard waste and dead vegetation from side slopes and inlet to prevent clogging.
S-44-1	Old Sawmill Road	Water Quality Swale	Yes	• Remove and dispose of multiflora rose in accordance to regulations. • Remove overgrown and dead vegetation, as well as yard waste piles, to preserve function and restore accessibility.
S-44-2	Old Sawmill Road	Wet Basin	Yes	• Remove and dispose of multiflora rose in accordance with regulations. • Remove leaf debris and dead and overgrown vegetation to prevent clogging and restore access to outlet area of basin.
S-45	Timber Ledge Drive	Wet Basin	Yes	• Remove and dispose of Japanese barberry and multiflora rose from inlet and outlet area in accordance with regulations. • Remove excess sediment to improve both flow and basin storage capacity, primarily around the inlet areas.

Table 1 – Stormwater Infrastructure Inspected and Maintenance Recommendations Continued

BMP ID	Location	Stormwater BMP Type	Requires Maintenance?	Recommendations
S-46	Country Road	Wet Basin	Yes	• Remove and dispose of phragmites in accordance with regulations. • Remove sediment in bottom of basin and in outfall area on other side of outlet and level to bottom of pipe grade to prevent erosion and restore basin capacity. Restore vegetation as needed.
S-49-1	Summitpointe Drive	Wet Basin	Yes	• Remove and dispose of phragmites and multiflora rose in accordance with regulations. • Repair erosion at forebay and northwest corner of basin with compacted fill and stabilize with riprap stone.
S-49-2	Summitpointe Drive	Wet Basin	Yes	• Remove and dispose of phragmites and multiflora rose in accordance with regulations. • Repair erosion with compacted fill and stabilize with vegetation or stone.
S-49-3	Summitpointe Drive	Wet Basin	Yes	• Remove and dispose of phragmites and multiflora rose in accordance with regulations.
S-49-4	Summitpointe Drive	Wet Basin	Yes	• Remove and dispose of phragmites and multiflora rose in accordance with regulations.
S-49-5	Summitpointe Drive	Wet Basin	Yes	• Remove dead vegetation and yard waste to prevent clogging and restore basin capacity. • Remove phragmites and multiflora rose in accordance with regulations.
S-50	Brandon Lane	Wet Basin	Yes	• Remove dead and overgrown vegetation as well as leaf debris along side slopes and basin to restore basin capacity and prevent clogging on inlet. • Remove and dispose of multiflora rose in accordance with regulations.
S-51	Fairview Street	Bioretention Area (No Underdrain)	Yes	• Remove dead vegetation and leaf debris from basin and inlet pipe to restore flow and capacity. • Remove animal burrow and excess sediment, repair with compacted fill.
S-52	Andrew Lane	Wet Basin	Yes	• Remove dead vegetation and fallen trees restore storage capacity and maintain function. • Repair dislodged rock in headwall and cracked inlet pipe.

Table 1 – Stormwater Infrastructure Inspected and Maintenance Recommendations Continued

BMP ID	Location	Stormwater BMP Type	Requires Maintenance?	Recommendations
S-53	Marshall Street	Leeching Catch Basin (Infiltration)	Yes	• Remove sediment and debris to restore storage capacity and outflow function.
S-54	Underwood Street	Bioretention Area (With Underdrain)	Yes	• Remove dead vegetation and leaf debris from spillway to restore function and flow. • Remove felled tree over spillway to prevent damage to side slopes and restore basin capacity and flow.
T-1	Pinecrest Golf Course	Extended Dry Detention Basin	No	
T-2	Pinecrest Golf Course	Wet Basin	Yes	• Remove woody vegetation from emergency spillway to restore spillway function and capacity. Repair with compacted fill and stabilize with fabric/stone/vegetation.
T-4	Police Station	Bioretention Area	No	
T-5	Elementary School	Extended Dry Detention Basin	Yes	• Remove overgrown vegetation along side slopes and embankment to restore access and basin capacity. • Remove of multiflora rose and autumn olive in accordance with regulations.
T-6	Elementary School	Wet Basin	Yes	• Remove and dispose of phragmites in accordance with regulations. • Remove overgrown and dead vegetation to restore accessibility and basin capacity. • Repair or replace damaged inlet pipe to prevent clogging and ensure proper operation.



Legend

- Town Owned BMP
- Roads
- Lake, Pond, Reservoir
- Wetland, Marsh, Swamp
- Stream, Brook
- Non-Urban Area

N W E S

0 0.25 0.5 0.75 1
Miles

Stormwater BMP Map

Holliston, MA

Comprehensive Environmental Incorporated

Data Sources: MassGIS, Town of Holliston, CEI

9/22/2022

Appendix G

TMDL and Impaired Waters Progress

Charles River Phosphorus TMDL Progress

Charles River Phosphorus TMDL Progress

CHARLES RIVER PHOSPHORUS TMDL PROGRESS

For:	SWMP Update
From:	Rebecca Balke, P.E., Comprehensive Environmental Inc.
Date:	December 2022
City:	Holliston, MA
Re:	Progress on Charles River Phosphorus TMDL for Holliston

Under the Environmental Protection Agency's (EPA's) 2016 National Pollutant Discharge and Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit, Holliston is required to develop a Phosphorus Control Plan (PCP) designed to reduce the amount of phosphorus in stormwater discharges from its MS4 to the Charles River and its tributaries. This Plan must be completed in 3 phases and should be fully implemented as soon as possible but no later than 20 years after the permit effective date. To comply with the Phase I permit requirements outlined in Appendix F of the 2016 MS4, the Town is developing a Phosphorus Control Plan to address the discharge of phosphorus to the waterbodies listed above. As of June 30, 2022, the Phosphorus Control Plan includes the Legal Analysis, Funding Assessment, and selected PCP Area (urbanized area portion within the Charles River watershed) required for the PCP. The Legal Analysis and Funding Assessment are also included in the SWMP Appendix G. Potential municipal retrofits were identified independent of the PCP and will be incorporated into the final plan. The Phase I PCP will be finalized by June 30, 2022.

LEGAL ANALYSIS FOR THE PCP

To:	Karen Sherman, Town Planner, Town of Holliston
From:	Rebecca Balke, P.E., Comprehensive Environmental Inc.
Date:	June 2020, Amended January 20, 2021
Town:	Holliston, MA
Inspectors:	Legal Analysis for the Charles River Phosphorus Control Plan

Regulatory Background

Under the Environmental Protection Agency's (EPA's) 2016 National Pollutant Discharge and Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit, some regulated communities are required to develop Phosphorus Control Plans (PCPs). On October 17, 2007, EPA approved the Final TMDL for Nutrients in the Lower Charles River Basin (Lower Charles TMDL) and on June 10, 2011, EPA approved the Total Maximum Daily Load for Nutrients in the Upper/Middle Charles River (Upper/Middle Charles TMDL) specifying phosphorus reductions within the watersheds required to meet water quality requirements. Approximately 35 municipalities in the Commonwealth of Massachusetts lie inside the Charles River watershed and are therefore subject to the requirements of the Charles River TMDLs as outlined in the MS4 Permit, Appendix F, Part A.I.

The Town of Holliston lies inside the Charles River watershed and must address the discharge of phosphorus from its MS4 to the River and its tributaries. The written PCP must be completed within five years of the permit effective date and outline a plan to reduce the phosphorus load to the Charles River from Holliston. Future years will involve implementing the plan, including designing and constructing structural stormwater Best Management Practices (BMPs).

As an initial step in developing the Charles River PCP for the Town of Holliston, a legal analysis, or an assessment of the regulatory mechanisms available to the Town to implement the PCP must be conducted. This analysis includes identifying existing regulatory mechanisms available to the MS4 such as by-laws and ordinances, and describes any changes to regulatory mechanisms that may be necessary to effectively implement the entire PCP. 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 [June 30, 2023].

The purpose of this memo is to address this requirement.

Legal Analysis

Existing Regulations

A review of relevant municipal regulations and bylaws was conducted as an initial step in the preparation of the PCP for the Town of Holliston. The following regulations were determined to have the greatest likelihood to impact implementation of the PCP:

- General Bylaws Article XLI "Stormwater Management and Land Disturbance By-Law," adopted May 5th, 2008
- Planning Board Rules & Regulations Article XI "Stormwater and Land Disturbance Regulations," adopted September 25th, 2008.

The Stormwater Management and Land Disturbance By-Law was revised and approved in July 2020 and the accompanying regulations are currently being revised for adoption by June 30, 2021. The above bylaws and regulations establish the stormwater requirements that developers and property owners must meet when developing, redeveloping or disturbing land. The proposed revisions to the regulations will require new and redevelopment projects to remove 60% of total phosphorus from new development sites and 50% of total phosphorus from re-development sites. This will apply at a minimum to projects that disturb 40,000 or more square feet of land with similar or lesser requirements for smaller development thresholds.

Holliston's existing and proposed regulations will assist the Town in minimizing new phosphorus loads under the PCP once developed. However, these regulations only apply to new and re-development projects and do not apply to existing developed private properties that currently contribute phosphorus loads to the Town's MS4 and/or impaired waters. As the Town is required to reduce its total phosphorus load from its MS4 by approximately 34% for its TMDL watershed, a reduction in phosphorus from existing developed private properties that discharge to the MS4 may also be required as these load reduction goals are unlikely to be attainable by focusing only on municipal properties and new and re-development sites alone.

As there are no current regulations in place to address the phosphorus load from existing developed commercial and industrial properties, the Town of Holliston may need to develop new systems to make these properties accountable for their contribution and associated required reduction of phosphorus loads to the MS4 and impaired waters. Options for reducing the phosphorus load from existing developed properties include the development of a Stormwater General Permit through local regulations and/or a Stormwater Utility. Each of these options is described further below.

Options for Regulatory Updates to Meet PCP Requirements

Development of Local Regulations and a Stormwater General Permit

The Town could develop a new bylaw and/or regulation that requires existing developed properties that discharge into the MS4 to reduce their phosphorus contributions by the same percentage imposed

on the Town by EPA under the MS4 Permit. For Holliston, properties within the watershed would need to reduce phosphorus contributions by 34% and provide proof to the Town that any installed BMP(s) provide sufficient phosphorus reduction credit by using the same calculation procedures outlined by EPA in the 2016 MS4 Permit. CEI is unaware of any municipal governments with these types of regulations, however, such an approach is currently underway or being considered at the state level in Vermont and Massachusetts. A brief description of these programs is described below to provide some context on a regulation and framework that could be used at the municipal level to regulate and track phosphorus reductions from existing private developments.

Vermont Stormwater General Permit

The State of Vermont is the first in the region to develop stormwater regulations addressing runoff from existing developed properties. Lake Champlain and Lake Memphremagog are both impaired for phosphorus and the State of Vermont has been working to address these impaired water bodies for many years. Existing stormwater regulations were determined inadequate to address the large phosphorus loads from developed areas and led to the development of Vermont's Stormwater General Permit 3-9050. This permit addresses stormwater runoff from properties statewide that have impervious surfaces greater than three acres and that were developed before 2002, when their stormwater MS4 requirements for new and re-development projects went into effect. The permit requires property owners to retrofit existing properties to meet phosphorus standards.

The General Permit 3-9050 was issued on September 1, 2020 and went into effect on December 1, 2020. The Vermont Department of Environmental Conservation (Vermont DEC) notifies property owners if they are eligible for coverage under this new permit. The initial permit application is due on a staggered schedule, starting twelve months from the effective date of the Permit through early 2023. Permittees will have eighteen months to complete an engineering analysis and submit a stormwater system plan for approval. Once approved, permittees have up to five years to install their new stormwater systems. Upon completion, the permittee must submit an annual inspection report on the operation, maintenance, and condition of the stormwater management system as well as any noncompliance of the system within 24 hours.

Vermont DEC is working with property owners to allow for some flexibility of implementation. For instance, as some of these properties may not have adequate space for the implementation of new stormwater treatment, property owners can work with the municipality to channel stormwater from their site to a larger treatment area off-site, such as through construction of a joint municipal-private stormwater BMP. In other cases, if the property owner can show they cannot feasibly accomplish the required reductions, property owners can pay offset fees to reduce stormwater pollution elsewhere.

Massachusetts Stormwater General Permit

In 2008, the Massachusetts Department of Environmental Protection published proposed stormwater regulations creating a statewide general permit program regulating stormwater from private property with five or more acres of impervious surfaces. In the Charles River watershed, this threshold would

be reduced to two acres. Under the proposed regulations, permittees would submit an initial certification and request for coverage under the permit and create a Stormwater Management Team and Stormwater Management Plan. Permittees would also be required to submit an Annual Compliance Certification to the State. Properties would have five years to design retrofit measures for their properties with an additional five years to construct and implement those measures.

These regulations did not become finalized and no program currently exists. However, in August 2020, EPA notified stakeholders in the Charles River watershed that EPA was at the beginning stages of evaluating whether a new program is needed to control stormwater pollution from certain commercial, industrial, and institutional sources in the Charles River watershed at sites not currently covered under any existing stormwater permits. EPA is expected to release additional information as this program moves forward. If implemented, this would help to address phosphorus loads from existing developed sites throughout the Charles River Watershed, including Holliston.

Stormwater Utility

A stormwater utility collects stormwater "user fees" from property owners which are used to fund efforts to meet or exceed specific compliance requirements in a municipality's stormwater permit as well as improve stormwater management through the municipality. These fees are often based on the impervious surfaces such as roofs, roads, driveways, and parking lots of each property within the stormwater utility district though some programs have set fees for specific property types. Stormwater utilities can be developed in any number of ways, however, typically shift the majority of the funding burden to large commercial and industrial sites that have larger impervious surfaces with much smaller fees required for residential properties. There are currently over 1,200 stormwater utilities nationwide including over a dozen in Massachusetts.

Municipalities in Massachusetts are authorized to establish a stormwater management authority, allowing them to charge fees to property owners under Massachusetts General Laws Part I. Title XIV. Chapter 83. Section 16. Under this law, funds collected for stormwater may be used to plan, construct, operate and maintain stormwater facilities, and to conduct stormwater programs, including identification and elimination of illicit discharges, street sweeping, catch basin cleaning, infrastructure inspection and maintenance, and installation of structural stormwater BMPs to remove phosphorus from stormwater. As property owners pay fees directly related to the amount of impervious area that discharges untreated from a site, a stormwater utility would also provide incentives for existing private property owners to implement stormwater treatment BMPs by offering credits or fee reductions.

Recommendations

In order to fully determine if and to what extent additional requirements are needed to meet PCP requirements, the Town should first work to complete the full written plan within 5 years of the effective permit date, or by June 30, 2023. Part of this plan will include completing a detailed analysis and calculations of the Town's actual phosphorus contributions to the Charles River which will provide a more accurate determination of the Town's required phosphorus reduction.

Once a more accurate phosphorus reduction is determined, the Town will be in the position to determine if additional regulatory requirements may be required to meet phosphorus reduction requirements. These items may require regulating existing development, regulating smaller development projects, and/or enacting a stormwater utility as outlined above. In addition, it is recommended that the Town continue to follow the progress of EPA's potential Stormwater General Permit for the Charles River as well as evaluate the feasibility of developing municipal regulations and a Stormwater General Permit in consultation with Town Counsel to require phosphorus reductions from existing private developed properties that discharge into the Town's regulated MS4 or TMDL waters.

If you have any further questions or would like additional information, please feel free to contact me at 800.725.2550 x308 or rbalke@ceiengineers.com. Thank you.

FUNDING SOURCE ASSESSMENT FOR THE PCP

To:	Karen Sherman, Town Planner, Town of Holliston
From:	Rebecca Balke, P.E., Comprehensive Environmental Inc.
Date:	June 30, 2021
Town:	Holliston, MA
Inspectors:	Funding Source Assessment for the Charles River Phosphorus Control Plan

Regulatory Background

Under the Environmental Protection Agency's (EPA's) 2016 National Pollutant Discharge and Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit (as amended), some regulated communities are required to develop Phosphorus Control Plans (PCPs). On October 17, 2007, EPA approved the Final TMDL for Nutrients in the Lower Charles River Basin (Lower Charles TMDL) and on June 10, 2011, EPA approved the Total Maximum Daily Load for Nutrients in the Upper/Middle Charles River (Upper/Middle Charles TMDL) specifying phosphorus reductions within the watersheds required to meet water quality requirements. Approximately 35 municipalities in the Commonwealth of Massachusetts lie inside the Charles River watershed and are therefore subject to the requirements of the Charles River TMDLs as outlined in the MS4 Permit, Appendix F, Part A.I.

The Town of Holliston lies inside the Charles River watershed and must address the discharge of phosphorus from its MS4 to the River and its tributaries. The written PCP must be completed within five years of the permit effective date and outline a plan to reduce the phosphorus load to the Charles River from Holliston. Future years will involve implementing the plan, including designing and constructing structural stormwater Best Management Practices (BMPs).

The first step to completing the written plan included completing a legal analysis, which was performed and summarized in a June 2020 (Revised January 20, 2021) memorandum. The second step involves a funding source assessment due by June 30, 2021 to describe known and anticipated funding mechanisms and steps to implement a funding plan. This will require updating by June 30, 2023 once the PCP is fully developed and costs for implementation have been identified.

The purpose of this memo is to address this requirement.

Funding Source Assessment

The 2016 MS4 Permit (as amended) requires that a review of known and anticipated funding mechanisms that will be used to fund PCP implementation be conducted. The Town of Holliston currently plans to fund any improvements required by the PCP through local budget allocations and does not anticipate needing to acquire alternative funding sources at this time. However, as

the PCP is developed and amended in the future to include implementation costs, the need for other funding sources will be re-evaluated. The need for additional funding will also be based on the progress and implementation of the stormwater control program being considered for commercial, industrial and institutional sources in the Charles River watershed. Additional funding sources to be considered may include a local stormwater utility as discussed in the *June 2020 (Revised January 20, 2021) Legal Analysis for the PCP memorandum* and/or loans and grants offered at the state and federal level. A summary of potential state and federal funding sources is listed in Table 1. Additional resources can be found on the MassDEP Grant Program Directory webpage.

Table 1. Summary of Funding Programs

Funding Program	Description
Planning and Implementation Programs	
MassDEP Stormwater MS4 Municipal Assistance Grant Program	The MassDEP Stormwater MS4 Municipal Assistance Grant program is available for Massachusetts municipalities, Regional Planning Agencies, stormwater coalitions, and non-profit organizations for innovative projects that will assist multiple communities in meeting the requirements of the MS4 permit. Eligible projects include assessment tools for prioritizing retrofit sites, tracking tools for regional stormwater retrofits, development of templates, formation of new regional stormwater coalitions, and other tasks that benefit multiple Massachusetts municipalities in seeking compliance with their MS4 permit.
MassDEP Clean Water State Revolving Fund	The SRF Clean Water program provides a low-cost financing method to help communities meet water quality standards. The program addresses issues such as watershed management priorities, stormwater management, and green infrastructure. SRF also supplies financial assistance to address communities with septic systems.

Funding Program	Description
MassDEP Watershed Assistance Grants	Water Quality Planning and 604(b) grants are available for water quality planning purposes. Other eligible projects include development of preliminary designs and implementation plans to address water quality impairments, and the development of green infrastructure projects. MassDEP also provides funding appropriated through the USEPA under Section 319 of the Clean Water Act to support local initiatives to restore impaired waters or protect high quality waters. 319-grant funds are targeted toward implementation of completed watershed-based plans. A minimum of 40% non-federal match is required for these grants. While 319 funds may not be used to fund work that is specifically required in the MS4 permit, work in the non-regulated area of town is eligible for these funds.
Climate Resiliency Programs	
Massachusetts Executive Office of Energy and Environmental Affairs (EEA) Municipal Vulnerability Preparedness (MVP) Grant Program	The MVP grant program provides support for cities and towns in Massachusetts to begin the process of planning for climate change resiliency and implementing priority projects. The state awards communities with funding to complete vulnerability assessments and develop action-oriented resiliency plans. Communities who complete an MVP planning grant become certified as an MVP community and are eligible for MVP Action Grant funding and other opportunities.
Habitat Improvement Programs	
Massachusetts Division of Ecological Restoration (DER) Grant Programs	The Culvert Replacement Municipal Assistance Grant Program is for municipalities interested in replacing an undersized, perched, and/or degraded culvert located in an area of high ecological value. This funding is to encourage municipalities to replace aging culverts with better designed crossings that meet improved structural and environmental design standards and flood resiliency criteria. The Restoration and Revitalization Priority Projects Program selects projects that restore and protect Massachusetts rivers, wetlands, and watersheds for the benefit of people and the environment. The Priority Projects Program selects ecological and urban stream revitalization projects that present significant benefits to Massachusetts. Eligible applicants include restoration project site landowners, non-profit and/or non-governmental organizations, regional planning organizations, municipalities, and state and federal agencies. Current project focus is on cranberry bog wetland

Funding Program	Description
	restoration, stream restoration, and urban stream and river revitalization.
NOAA Community-Based Restoration Program Partnership	Grant funding provided for stream barrier removal projects that help restore riverine ecosystems, enhance public safety and community resilience, and have clear and identifiable benefits to diadromous fish populations.
National Fish and Wildlife Foundation (NFWF) Grant Programs	NFWF Five Star and Urban Waters Restoration Program provides funds to local partnerships for wetland, forest, riparian and coastal habitat restoration, with a focus on urban waters and watersheds. Funds approximately $1,500,000 annually, with average grants between $25,000 to $35,000 and 1:1 match requirement. NFWF New England Forests and Rivers Fund dedicated to restoring and sustaining healthy forests and rivers that provide habitat for diverse native bird and freshwater fish populations in New England. Annually awards grants ranging from $50,000 to $200,000 each.
Recreation and Trail Programs	
Fields Pond Foundation	Funds trail making and other enhancement of public access to conservation lands, land acquisitions for conservation, and establishing funds for stewardship. Funding levels: $25,000 maximum, $2,000 - $10,000 typical.
National Park Service – Rivers and Trails Program	Funds projects focused on protection of natural resources and enhancement of outdoor recreational opportunities.
Agricultural Programs	

Funding Program	Description
Natural Resource Conservation Service (NRCS) Grant Programs	Environmental Quality Incentives Program (EQIP) provides financial and technical assistance to agricultural producers to address natural resources concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, reduced soil erosion, and improved wildlife habitat. Conservation Stewardship Program (CSP) is the largest conservation program in the United States with a goal of enhancing natural resources and improving agricultural operations. The program helps agricultural operations build on existing conservation efforts while strengthening their operations. The program focuses on improving grazing conditions, increasing crop yields, developing wildlife habitat, and increasing resilience to weather extremes.

If you have any further questions or would like additional information, please feel free to contact me at 800.725.2550 x308 or rbalke@ceiengineers.com. Thank you.

Appendix H

Annual Reports

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: Town of Holliston

EPA NPDES Permit Number: MAR041122

Primary MS4 Program Manager Contact Information

Name: Sean Reese Title: Director of Public Works

Street Address Line 1: 730 Washington Street

Street Address Line 2: na

City: Holliston State: MA Zip Code: 01746

Email: reeses@holliston.k12.ma.us Phone Number: (508) 429-0615

Fax Number: na

Stormwater Management Program (SWMP) Information

SWMP Location (web address): https://www.townofholliston.us/dpw/pages/stormwater-discharge-plan

Date SWMP was Last Updated: June 30, 2019

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:
- ☒ 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:

    https://www.townofholliston.us/dpw/pages/stormwater-discharge-plan - Appendix B of IDDE Plan
- ☒ 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

Bacteria/ Pathogens (Combination of Impaired Waters Requirements and TMDL Requirements as Applicable)

Annual Requirements

*Public Education and Outreach**

- ☒ Annual message encouraging the proper management of pet waste, including noting any existing ordinances where appropriate
- ☒ Permittee or its agents disseminate educational material to dog owners at the time of issuance or renewal of dog license, or other appropriate time
- ☒ Provide information to owners of septic systems about proper maintenance in any catchment that discharges to a water body impaired for bacteria

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

Charles River Watershed Phosphorus TMDL

- ☐ Begin Phase 1 Phosphorus Control Plan (PCP)

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 - Not applicable because the entire town relies on septic systems.

Catch Basin Cleaning Log - The Town logs the number of basins cleaned and any obvious repairs needed by street as work is completed. A more detailed catch basin cleaning tracking log was developed under the Plan for Optimizing Catch Basin Cleaning developed during Year 1 and will be used beginning in Year 2.

BMP Inspections - The Town updated its inventory of Town-owned BMPs to include an additional nine BMPs (54 BMPs in total). The previously inventoried BMPs (45 detention basins and 1 retention basin) were inspected and/or cleaned during the reporting period.

IDDE Training - An employee IDDE Training program will be developed during Year 2, with annual training to be performed starting in Year 2. Training will correspond with the start of outfall inspection activities.

PCP - The Town will begin Phase 1 of the PCP in Year 2, including the legal analysis due in 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: 4

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: Fact Sheets Through Website

Message Description and Distribution Method:

The Town has a webpage dedicated to Stormwater Management educational materials. The webpage can be linked from the DPW website where the SWMP and and IDDE Plan are made available online. A Stormwater Management fact sheet and Stormwater Management Helpful Hints fact sheet are available and contain information on: erosion, hazardous waste collection; outside water use, septic management, pet waste management, and water conservation. The Town also posts a "Take the Stormwater Runoff Challenge" word puzzle and a brochure on water efficient landscaping.

Targeted Audience: Residents, Businesses, institutions and commercial facilities

Responsible Department/Parties: DPW, Planning Board, Conservation Commission, Technology Dept.

Measurable Goal(s):

Continued webpage maintenance updates.

Message Date(s): Continuous posting.

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: Stormwater and the Construction Industry Through Website

Message Description and Distribution Method:

The Town has a webpage dedicated to Stormwater Management educational materials. The webpage can be linked from the DPW website where the SWMP and and IDDE Plan are made available online. A "Stormwater Management and the Construction Industry" brochure is available and contains information on planning and implementing erosion and sediment control practices and maintaining construction BMPs.

Targeted Audience: Developers (construction)

Responsible Department/Parties: DPW, Planning Board, Conservation Commission, Technology Dept.

Measurable Goal(s):

Continued webpage maintenance updates.

Message Date(s): Continuous posting.

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: Flyers

Message Description and Distribution Method:

The following flyers are made available at the Land Use Department public information counter: Pet Waste on Bathing Beaches: Guidelines for Pet Owners (MA Dept. of Public Health), Swimming Pools and Surface Water Quality: Best Practices Guide for Swimming Pool Owners in the Wachusett Watershed (Mass. DCR), Healthy Lawns and Landscapes (Mass. Pesticide Awareness Collaborative), A Homeowner's Guide to Septic Systems (EPA).

Targeted Audience: Residents, Businesses, institutions and commercial facilities

Responsible Department/Parties: Conservation Commission, DPW, Planning Board

Measurable Goal(s):

Distribution of flyers through public office.

Message Date(s): Continuously available.

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: Pet Waste Management Through Dog Licensure

Message Description and Distribution Method:

A copy of the Animal Control By-Law, including Section 13 Dog Waste, is distributed to all license applicants during annual licensure in April.

Targeted Audience: Residents

Responsible Department/Parties: Town Clerk

Measurable Goal(s):

Provide information with all applications and renewals.

Message Date(s): April 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:

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:

SWMP Plan for Download - The Town has posted the SWMP Plan on Town website along with contact information to allow for public comment.

The Town's policy for handling stormwater complaints or inquiries is to send it to the department that has jurisdiction over the project or issue.

River and Pond Cleanups - The Highway Department did debris clean-up in the Winthrop Canal (between Lake Winthrop and Linden Pond). Central Mass. Mosquito Control Project did some work in that area as well, including beaver dam mitigation. The Board of Health issued a 10-day emergency beaver permit to the DPW in March 2019 for beaver mitigation because of roadway flooding and a compromised culvert at Westfield Drive. Ultimately the culvert collapsed and is currently under construction. The roadway was closed most of the summer. Highway Dept. crews have cleaned debris along that brook as well as a result (Jarr Brook). The Parks and Recreation Department does seasonal debris cleanup annually at both park areas on Lake Winthrop (Stoddard Park and Pleasure Point) using lifeguards and camp counselors. They also employ benthic mats for weed control and rake and re-position periodically.

Annual household hazardous waste collection day provided July 13, 2018 with nearly 300 cars/residents participating. Clean Harbors Environmental Services conducted the event and disposed of materials collected (e.g., solvents, aerosols, pesticides, paints, motor oil, lead acid batteries, etc.). Holliston's annual expense is about $16,000. Flyers and postings are distributed by the Town Clerk, Board of Health and https://www.townofholliston.us/sustainable-waste-management-and-recycling-committee

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:

Stormwater management was identified as a top issue in the Town's Community Resiliency Building planning process that resulted int he Town being designed as a Municipal Vulnerability preparedness (MVP) community by the Massachusetts EEA earlier this month. Link to the plan is also in the DPW stormwater area of the web page.

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: N/A

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: N/A

Total number of SSOs removed: N/A

MS4 System Mapping

Describe the status of your MS4 map, including any progress made during the reporting period:

The Town has mapped known stormwater outfalls and receiving waters including impairments, open channel conveyances, stormwater treatment structures, pipes, manholes, catch basins, and initial catchment delineations. The Town will work toward identifying any interconnections with other towns/entities in Year 2 and will continue to update mapping as new information is obtained throughout the permit term.

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 - none completed to date

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

Number of outfalls screened: 0

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

Percent of total outfalls screened: 0

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 - none completed to date

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

Number of catchment investigations completed this reporting period: 0

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:

N/A - not started yet

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 - no illicit discharges found

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: 0

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: 0

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

N/A

Employee Training

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

An employee IDDE Training program will be developed during Year 2, with annual training to be performed starting in Year 2.

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: 11

Number of inspections completed: ~50

Number of enforcement actions taken: 2

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 has a Stormwater Management and Land Disturbance By-Law and Regulations that will be updated in Year 2 to comply with the MS4 Permit requirements and design standards.

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:

The Town's existing bylaw and regulations require the permittee to submit as-built drawings of all structural stormwater controls and treatment best management practices at the completion of the project. Stormwater Management and Operation and Maintenance Plan are also required under the regulations. These regulations will be reviewed and modified as needed in Year 2 to ensure compliance with the MS4 Permit requirements.

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:

No work completed in Year 1. To be completed in future years.

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:

No work completed in Year 1. To be completed in future years.

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:

No work completed in Year 1. To be completed in future years, upon completion of an inventory of Town-owned property.

MCM6: Good Housekeeping

Catch Basin Cleaning

Describe the status of the catch basin cleaning optimization plan:

A plan for optimizing catch basin cleaning was completed and included as Appendix G to the SWMP. The Plar

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:

https://www.townofholliston.us/dpw/pages/stormwater-discharge-plan - Appendix G of SWMP Plan

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: 2,140

Number of catch basins cleaned: 2,140

Total volume or mass of material removed from all catch basins: 250 cy

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

Total number of catch basins: 2,140

If applicable:

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

Not yet applicable. Pending collection of sediment data in accordance with the Plan for Optimizing Catch Basin Cleaning.

Street Sweeping

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

The Town currently sweeps all streets and permittee-owned lots at least once a year, which is in compliance with the MS4 Permit. The Town developed a street sweeping SOP that will be included as part of a larger comprehensive Operation and Maintenance (O&M) Plan to be developed in Year 2 that covers other facilities and stormwater infrastructure.

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: 130 tons

If applicable:

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

DPW personnel observe all regulated town-owned roadways for maintenance needs, including street sweeping, during routine operations. Personnel also observe suspect trouble areas, such as large-scale construction projects or projects with substantial land disturbance, for evidence of runoff-laden sediment onto roadways that may require more frequent sweeping in addition to that outlined under the Street Sweeping SOP. Should areas in need of additional sweeping be observed, the Town will document these areas and schedule additional sweeping as needed. Note that the Town does not apply sand to roadways during winter operations, and thus observed sweeping needs are typically minimal. Inspections of rural uncurbed roadways conducted to date have not yet observed any needs for additional sweeping within regulated urbanized area

roadways.

Winter Road Maintenance

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

The Town developed an SOP for winter road maintenance during Year 1. The SOP will be included as part of a larger comprehensive Operation and Maintenance (O&M) Plan during Year 2 that covers other facilities and stormwater infrastructure.

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:

No work completed in Year 1. The Town will develop an inventory by the end of 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:

No work completed in Year 1. The Town will develop an inventory by the end of 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:

No work completed in Year 1. To be completed in Year 2. A preliminary review indicates two SWPPPs will be needed: one for the Highway Garage and one for the Woodland Street facility where catch basin cleaning and street sweeping are stored before disposal.

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

Number of site inspections completed: 0

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

N/A

O&M Procedures for Stormwater Treatment Structures

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

The Town is currently developing an inventory of its town-owned stormwater BMPs. Once complete, the Town will inspect all regulated stormwater BMPs annually and perform maintenance as needed.

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:

N/A

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:

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)*

<u>Annual Requirements</u>

- 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:

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: Sean

Title: Reese

Signature: Sean Reese Digitally signed by Sean Reese DN: cn=Sean Reese, o=Town of Holliston, ou=DPW, email=reeses@holliston.k12.ma.us, c=US Date: 2019.09.27 08:23:06 -04'00'

Date:

[Signatory may be a duly authorized representative]

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: Town of Holliston

EPA NPDES Permit Number: MAR041122

Primary MS4 Program Manager Contact Information

Name: Sean Reese Title: Director of Public Works

Street Address Line 1: 730 Washington Street

Street Address Line 2: na

City: Holliston State: MA Zip Code: 01746

Email: reeses@holliston.k12.ma.us Phone Number: (508) 429-0615

Stormwater Management Program (SWMP) Information

SWMP Location (web address): https://www.townofholliston.us/dpw/pages/stormwater-discharge-plan

Date SWMP was Last Updated: Jun 30, 2019

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 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:

Phase I mapping - All known drainage infrastructure has been mapped, including outfalls, open channels, catch basins and pipes. Some data gaps were identified and are being investigated as part of the ongoing outfall and catchment investigations. Any changes in locations and/or new infrastructure will be incorporated

into the map as the investigations are completed.

Annual Requirements

- [x] Provided an opportunity for public participation in review and implementation of SWMP and complied with State Public Notice requirements
- [x] 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:

- [x] Properly stored and disposed of catch basin cleanings and street sweepings so they did not discharge to receiving waters
- [x] Provided training to employees involved in IDDE program within the reporting period
- [x] All curbed roadways were swept at least once within the reporting period
- [x] 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:

The outfall and interconnection inventory is updated on an ongoing basis as dry weather screening is performed. The priority ranking will be updated after dry weather inspections are completed and before catchment investigations commence.

Bacteria/ Pathogens (Combination of Impaired Waters Requirements and TMDL Requirements as Applicable)

Annual Requirements

*Public Education and Outreach**

- [x] Annual message was distributed encouraging the proper management of pet waste, including noting any existing ordinances where appropriate
- [x] Permittee or its agents disseminated educational material to dog owners at the time of issuance or renewal of dog license, or other appropriate time
- [x] Provided information to owners of septic systems about proper maintenance in any catchment that discharges to a water body impaired for bacteria

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

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:

Charles River Watershed 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:

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

The MS4 Permit requires the Town to reduce phosphorus loads to the Charles River, a portion of which comes from existing privately developed properties that discharge to the Town's MS4 or directly to surface waters. These existing private properties are currently not subject to stormwater permits and are not regulated to reduce their share of phosphorus contributions to TMDL waters. Instead, the Town is responsible for achieving phosphorus reductions from these private developments because these developments are located within Holliston's MS4. The Town supports exploring a state or federal level stormwater permit for existing large commercial, industrial, and institutional properties located within the Charles River watershed to help mitigate impacts from development per EPA's August 13, 2020 stakeholder letter.

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 2016 Integrated List of Waters was finalized and includes the following new impairments and/or TMDLs in Holliston:

-Bogastow Brook (MA72-16) has a TMDL for E.Coli (previously just fecal coliform)
-Chicken Brook (MA72-34) is impaired for E.Coli
-Hopping Brook (MA72-35) is impaired for E.Coli

An updated list of outfalls and receiving waters is ongoing as outfall inspections are performed and will be included in the Town's updated IDDE Plan, which includes a detailed list of each outfall by ID and receiving water.

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**: 8

*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: Follow Think Blue Campaign on Facebook

Message Description and Distribution Method:

The Town follows the state Think Blue campaign on its Facebook page. The Think Blue campaign provides tips for residents (pet waste, yard waste, lawn care, lawn watering, chemical disposal, care care, infiltration, septic systems and pool care), businesses (waste and material storage, infiltration, snow and ice removal, outdoor cleaning, landscaping, irrigation, fleet care), developers (permitting, LID, pre-construction planning, erosion control, site maintenance) and industrial facilities (permitting, equipment maintenance, site landscaping, irrigation, waste disposal, chemical storage, spill prevention/response and snow and ice removal) to prevent stormwater pollution.

Targeted Audience: Residents, Businesses, institutions and commercial facilities, industrial

Responsible Department/Parties: DPW, Planning Board, Conservation Commission, Technology Dept.

Measurable Goal(s):

593 Facebook reaches.

Message Date(s): Posted on Facebook March 2020. Continuous posting.

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: Pet Waste Education

Message Description and Distribution Method:

The Think Blue Do Your Doody flyer was modified to include reference to Holliston's dog waste bylaw. The flyer was posted on Facebook, copies were provided at the Town Clerk's counter, copies were distributed to dog owners by the Town Clerk during dog licensing in April, copies were posted by the Recreation Department at Pleasure Point, Stoddard Park, Mission Springs and Weston Pond, copies were posted by the Trails Committee along the Upper Charles Trail, and a copy was posted at the Board of Health information kiosk in Town Hall. The "Pet Waste on Bathing Beaches: Guidelines for Pet Owners (MA Dept. of Public

Health)" flyer was also posted at the Board of Health information kiosk in Town Hall. Additionally, the Town follows the Think Blue campaign on Facebook, which provides additional pet waste tips.

Targeted Audience: Residents

Responsible Department/Parties: DPW, Town Clerk, Recreation Department

Measurable Goal(s):

778 Facebook reaches, 1583 dog licenses issued.

Message Date(s): Dog licensing in April 2020. Flyers continuously available at Town Clerk's office. Do Your Doody flyer posted on Facebook, recreation areas and parks in March 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: Stormwater and the Construction Industry Outreach

Message Description and Distribution Method:

The Town has a webpage dedicated to Stormwater Management educational materials. The webpage can be linked from the DPW website where the SWMP and and IDDE Plan are made available online. A "Stormwater Management and the Construction Industry" brochure is available and contains information on planning and implementing erosion and sediment control practices and maintaining construction BMPs.

Targeted Audience: Developers (construction)

Responsible Department/Parties: DPW, Planning Board, Conservation Commission, Technology Dept.

Measurable Goal(s):

Continued webpage maintenance updates.

Message Date(s): Continuous posting.

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: Swimming Pool Outreach

Message Description and Distribution Method:

The "Swimming Pools and Surface Water Quality: Best Practices Guide for Swimming Pool Owners in the Wachusett Watershed (Mass. DCR) is posted at the Board of Health information kiosk in Town Hall.

Targeted Audience: Residents

Responsible Department/Parties: DPW, Planning Board, Conservation Commission

Measurable Goal(s):

Distribution of flyers through public office.

Message Date(s): Continuous posting.

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: Waste Disposal Outreach

Message Description and Distribution Method:

The Town posted hazardous waste day disposal/don't dump it down the drain information on Facebook. The Town also posted information on the Board of Health tire drop off day. All hazardous waste days, tire drops, mosquito spraying and Earth Day clean-ups are run as public service announcements on local cable access television.

Targeted Audience: Residents and Business, institutions and commercial facilities

Responsible Department/Parties: DPW, Planning Board, Board of Health, Technology Dept.

Measurable Goal(s):

521 Facebook reaches for the hazardous waste posting and 1129 Facebook reaches for the tire drop off day.

Message Date(s): March 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: Pollution Prevention Outreach

Message Description and Distribution Method:

The Town has a webpage dedicated to Stormwater Management educational materials. The webpage can be linked from the DPW website where the SWMP and and IDDE Plan are made available online. A Stormwater Management fact sheet and Stormwater Management Helpful Hints fact sheet are available and contain information on: erosion, hazardous waste collection; outside water use, septic management, pet waste management, and water conservation. The Town also posts a "Take the Stormwater Runoff Challenge" word puzzle and a brochure on water efficient landscaping. A "Clean Water begins with you. Let's Think Blue!" poster is displayed in Town Hall.

Targeted Audience: Residents, Businesses, institutions and commercial facilities

Responsible Department/Parties: DPW, Planning Board, Conservation Commission, Technology Dept.

Measurable Goal(s):

Continued webpage maintenance updates and display of materials in Town Hall.

Message Date(s): Continuous posting.

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: Septic System Maintenance

Message Description and Distribution Method:

In addition to following Think Blue pollution prevention tips, the EPA's "A Homeowner's Guide to Septic Systems" is available in the public information slot in Town Hall. The Board of Health also has a link to MassDEP's website for tips on caring for your septic system.

Targeted Audience: Residents, Business, institutions and commercial facilities, industrial facilities

Responsible Department/Parties: DPW, Planning Board, Board of Health

Measurable Goal(s):

Distribution of brochure through Town Hall and tips through website.

Message Date(s): Continuous posting.

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: Local Coverage of Conservation Commission Meetings

Message Description and Distribution Method:

Local coverage of Conservation Commission meetings is provided through newspaper articles/press releases twice monthly. Since March 2020, all regulatory boards are being covered by HCAT and being recorded and posted. Stormwater topics and water quality protection are often discussed at these meetings.

Targeted Audience: Residents

Responsible Department/Parties: Conservation Commission, Planning Board, Technology Dept.

Measurable Goal(s):

Broadcast public meetings.

Message Date(s): Twice monthly.

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**:

SWMP Plan for Download - The Town has posted the SWMP Plan on Town website along with contact information to allow for public comment.

The Town's policy for handling stormwater complaints or inquiries is to send it to the department that has jurisdiction over the project or issue.

River and Pond Cleanups - The Parks and Recreation Department does seasonal debris cleanup annually at both park areas on Lake Winthrop (Stoddard Park and Pleasure Point) using lifeguards and camp counselors. They also employ benthic mats for weed control and rake and re-position periodically.

Annual household hazardous waste collection day provided 7/11/2019 with nearly 277 cars/residents participating. Clean Harbors Environmental Services conducted the event and disposed of materials collected (e.g., solvents, aerosols, pesticides, paints, motor oil, lead acid batteries, etc.). Holliston paid $13,198 to Clean

Harbors Environmental Services.

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**:

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: 0

Number of SSOs removed: 0

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 has mapped all known outfalls and receiving waters/waterbodies, open channel conveyances, stormwater BMPs, and completed initial catchment delineations. Additionally, most of the known catch basins, manholes, and piping have been mapped which is not required until Year 10. Interconnections along state owned portions of Route 16 and Route 126 have been mapped where mapping of state infrastructure was readily available. The Town expects that MassDOT will lead the effort to map additional interconnections along state owned roads as part of their TS4 Permit.

Some data gaps in the mapping were identified and are being investigated/reconciled as part of the ongoing outfall and catchment investigations. Any changes in locations and/or new infrastructure will be incorporated into the map as the investigations are completed.

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: 128

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: 0

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 performed this period.

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:

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: 0

Estimated volume of sewage removed: 0 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: 0

Total number of illicit discharges removed: 0

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

No illicit discharges found this period.

Employee Training

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

IDDE training was performed on March 4, 2020 and included background information on stormwater pollution, MS4 requirements, illicit discharge program requirements and investigations and general good housekeeping practices.

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: 6

Number of inspections completed: 11

Number of enforcement actions taken: 2

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

There are a total of 11 projects with ongoing periodic inspections: Nine projects are inspected periodically by Planning Board third party inspectors; two projects are inspected periodically by the Conservation agent on wetlands district projects not in common jurisdiction. The Town is working on a tracking system to document the total number of inspections performed.

One enforcement action under the Land Disturbance and Stormwater Management By-Law and one enforcement action under the local Wetland By-law (resulted in stormwater design retrofit currently under construction).

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:

The Town's existing bylaw and regulations require the permittee to submit as-built drawings of all structural stormwater controls and treatment best management practices at the completion of the project. Stormwater Management and Operation and Maintenance Plan are also required under the regulations. As a result of the COVID-19 outbreak, regulations have not been adopted as planned during Permit Year 2. The Town now anticipates adopting stormwater regulatory updates as part of the Year 3 requirements under EPA's pending updated permit schedule.

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:

N/A, to be completed during future permit years.

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:

N/A, to be completed during future permit years.

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:

The Town completed an inventory of its permittee-owned properties. Facilities will be evaluated for potential BMP retrofit opportunities during future permit years.

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: 1,500

Number of catch basins cleaned: 1,500

Total volume or mass of material removed from all catch basins: 454 tons

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

Total number of catch basins: 2,100

If applicable:

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

Not yet applicable.

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: 620 tons

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: 0

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

SWPPPs were developed at the end of Permit Year 2. SWPPP inspections will begin in Permit Year 3.

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 held a tire recycling day in October 2019 in partnership with Central Mass. Mosquito Control 248 tires were removed.

The Town adopted an illicit discharge bylaw in October 2019.

The Recreation Department spent $1200 on Canadian goose management at Stoddard Park fields and beachfront to improve the water quality at Lake Winthrop.

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:

The Highway Department had a limited work schedule between March 20 and July 9, 2020 due to COVID-19. Employees at Town Hall worked a flexible remote schedule during this same period. Any normal public education postings at the Annual Town Meeting were banned.

Due to COVID-19, Town meeting was rescheduled for July 2020 at which time the Town's updated Stormwater and Land Disturbance Bylaw was adopted. Accompanying regulations have been updated and are expected to be adopted as part of the Year 3 requirements under EPA's pending updated permit schedule.

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 SWMP and IDDE Plan will be updated in FY-21 to address work performed through Year 3. This will include incorporating the above items as necessary, results from outfall dry weather screening, as well as documenting results of other annual activities such as BMP inspections.

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:	Sean Reese	Title:	Director of Public Works
Signature:	Sean M. Reese	Date:	9/15/20

[Signatory may be a duly authorized representative]

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: Town of Holliston

EPA NPDES Permit Number: MAR041122

Primary MS4 Program Manager Contact Information

Name: Sean Reese Title: Director of Public Works

Street Address Line 1: 730 Washington Street

Street Address Line 2: na

City: Holliston State: MA Zip Code: 01746

Email: reeses@holliston.k12.ma.us Phone Number: (508) 429-0615

Stormwater Management Program (SWMP) Information

SWMP Location (web address): https://www.townofholliston.us/dpw/pages/stormwater-illicit-discharge-plans

Date SWMP was Last Updated: September 2021

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 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:

-Dry Weather Outfall Screening: The Town has attempted to inspect 490 stormwater outfalls and interconnections within the urbanized area during dry weather. In most cases where an outfall could not be found, the location was revisited again when there was less vegetation. In the event it still could not be located, or was inaccessible, the upgradient catch basin or manhole was inspected for dry weather flows. Ten of the 490 locations that could not be found did not have an upgradient proxy structure and will be revisited in 2021.

-Updated Outfall Priority Ranking: The outfall priority ranking was updated as the investigations were performed with priority placed on revisiting outfalls with signs of illicit discharges to collect additional information for prioritization of drainage areas for catchment investigations. A new prioritization table and map was created.

-Post-Construction Bylaw and Regulations: The Town updated its Stormwater Management and Land

Disturbance Regulations, Subdivision Regulations and Special Permit and Site Plan Review Regulations to meet the requirements of the MS4 Permit. The updated regulations were were adopted on May 20, 2021.

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:

Bacteria/ Pathogens (Combination of Impaired Waters Requirements and TMDL Requirements as Applicable)

Annual Requirements

*Public Education and Outreach**

- ☒ Annual message was distributed encouraging the proper management of pet waste, including noting any existing ordinances where appropriate
- ☒ Permittee or its agents disseminated educational material to dog owners at the time of issuance or renewal of dog license, or other appropriate time
- ☒ Provided information to owners of septic systems about proper maintenance in any catchment that discharges to a water body impaired for bacteria

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

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:

Charles River Watershed 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:

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

The MS4 Permit requires the Town to reduce phosphorus loads to the Charles River, a portion of which comes from existing privately developed properties that discharge to the Town's MS4 or directly to surface waters. These existing private properties are currently not subject to stormwater permits and are not regulated to reduce their share of phosphorus contributions to TMDL waters. Instead, the Town is responsible for achieving phosphorus reductions from these private developments because these developments are located within Holliston's MS4. The Town supports exploring a state or federal level stormwater permit for existing large commercial, industrial, and institutional properties located within the Charles River watershed to help mitigate impacts from development per EPA's August 13, 2020 stakeholder letter.

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 2016 Integrated List of Waters was finalized and includes the following new impairments and/or TMDLs in Holliston:

-Bogastow Brook (MA72-16) has a TMDL for E.Coli (previously just fecal coliform)
-Chicken Brook (MA72-34) is impaired for E.Coli
-Hopping Brook (MA72-35) is impaired for E.Coli

An updated list of outfalls and receiving waters is ongoing as outfall inspections are performed and will be included in the Town's updated SWMP Plan and IDDE Plan, which includes a detailed list of each outfall by ID and receiving water.

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**: 11

*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:Pet Waste Education

Message Description and Distribution Method:

The Think Blue Do Your Doody flyer was provided at the Town Clerk's counter, copies were distributed to dog owners by the Town Clerk during dog licensing in April, copies are posted by the Recreation Department at Pleasure Point, Stoddard Park, Mission Springs and Weston Pond, copies are posted by the Trails Committee along the Upper Charles Trail, and a copy is posted at the Board of Health information kiosk in Town Hall. The "Pet Waste on Bathing Beaches: Guidelines for Pet Owners (MA Dept. of Public Health)" flyer was also posted at the Board of Health information kiosk in Town Hall and in the two public bathing areas at Stoddard Park and Pleasure Point beaches on Lake Winthrop. Other permanent signage about pet waste is also posted in those two public bathing beaches. Additionally, the Town follows the Think Blue campaign on Facebook, which provides additional pet waste tips.

Targeted Audience: Residents

Responsible Department/Parties: DPW, Town Clerk, Recreation Department

Measurable Goal(s):

1100 dog licenses issued.

Message Date(s): Ongoing (with dog licenses due in April), Continuous posting

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:Rain Barrel Program

Message Description and Distribution Method:

The Town hosted a rain barrel event on 5/8/2021 and offered 100 rain barrels at a 60% off retail price. A flyer was included with water bills and posted on the Town's website that outlined benefits of rain barrels, specifics on the rain barrels being offered by the Town, and instructions on how to purchase one.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

Number of rain barrels purchased and distributed (105 barrels)

Message Date(s): 5/8/2021

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:

To help promote and improve residential stormwater management.

BMP:Curbside Food Waste Compost Message

Message Description and Distribution Method:

Two flyers describing the curbside food waste composting were posted on the Town's website and posted at various locations around Town. Additional public outreach took place while securing Select Board approval for the initiative by placing lawn signs at several locations.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

167 households participating in the curbside food waste program.

Message Date(s): October 2020, January 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:

To promote awareness of green solutions and reduce waste.

BMP: Green Grass and Clear Water Message

Message Description and Distribution Method:

Two flyers "Be a Leaf Hero" and "Green Grass & Clear Water" were posted on the Town's website and posted at the Town Hall, the Board of Health PSA area, the Town Clerk's counter, and at the Town Meeting.

Targeted Audience: Residents, Businesses, institutions and commercial facilities

Responsible Department/Parties: DPW, Board of Health, Town Clerk

Measurable Goal(s):

50 flyers at Town Hall, the Board of Health, and the Town Clerk's counter. 100 flyers at the Town Meeting.

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: Waste Disposal Outreach

Message Description and Distribution Method:

The Town posted the Household Hazardous Waste Day pamphlet on the Town's website, the Facebook page, and it was read at all Select Board meetings in June. Flyers were placed around Town at a local hardware store, the Town Clerk's office, the Board of Health, and at Town meetings. The Town also participates in the Charles River Household Hazardous Waste Consortium.

Targeted Audience: Residents and Business, institutions and commercial facilities

Responsible Department/Parties: DPW, Planning Board, Board of Health

Measurable Goal(s):

Number of flyers (200 flyers).

Message Date(s): June 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:

BMP:Pollution Prevention Outreach

Message Description and Distribution Method:

The Town has a webpage dedicated to Stormwater Management educational materials. The webpage can be linked from the DPW website where the SWMP and and IDDE Plan are made available online. A Stormwater Management fact sheet and Stormwater Management Helpful Hints fact sheet are available and contain information on: erosion, hazardous waste collection; outside water use, septic management, pet waste management, and water conservation. The Town also posts a "Take the Stormwater Runoff Challenge" word

puzzle and a brochure on water efficient landscaping. A "Clean Water begins with you. Let's Think Blue!" poster is displayed in Town Hall.

Targeted Audience: Residents, Businesses, institutions and commercial facilities

Responsible Department/Parties: DPW, Planning Board, Conservation Commission, Technology Dept.

Measurable Goal(s):

Continued webpage maintenance updates and display of materials in Town Hall.

Message Date(s): Continuous posting

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:Stormwater and the Construction Industry Outreach

Message Description and Distribution Method:

The Town has a webpage dedicated to Stormwater Management educational materials. The webpage can be linked from the DPW website where the SWMP and and IDDE Plan are made available online. A "Stormwater Management and the Construction Industry" brochure is available and contains information on planning and implementing erosion and sediment control practices and maintaining construction BMPs.

Targeted Audience: Developers (construction)

Responsible Department/Parties: DPW, Planning Board, Conservation Commission, Technology Dept.

Measurable Goal(s):

Continuous webpage maintenance updates.

Message Date(s): Continuous posting.

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:Swimming Pool Outreach

Message Description and Distribution Method:

The "Swimming Pools and Surface Water Quality: Best Practices Guide for Swimming Pool Owners in the

Wachusett Watershed (Mass. DCR) is posted at the Board of Health information kiosk in Town Hall.

Targeted Audience: Residents

Responsible Department/Parties: DPW, Planning Board, Conservation Commission

Measurable Goal(s):

Distribution of flyers through public office.

Message Date(s): Continuous posting.

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: Follow Think Blue Campaign on Facebook

Message Description and Distribution Method:

The Town follows the state Think Blue campaign on its Facebook page. The Think Blue campaign provides tips for residents (pet waste, yard waste, lawn care, lawn watering, chemical disposal, care care, infiltration, septic systems and pool care), businesses (waste and material storage, infiltration, snow and ice removal, outdoor cleaning, landscaping, irrigation, fleet care), developers (permitting, LID, pre-construction planning, erosion control, site maintenance) and industrial facilities (permitting, equipment maintenance, site landscaping, irrigation, waste disposal, chemical storage, spill prevention/response and snow and ice removal) to prevent stormwater pollution.

Targeted Audience: Residents, Businesses, institutions and commercial facilities, industrial

Responsible Department/Parties: DPW, Planning Board, Conservation Commission, Technology Dept.

Measurable Goal(s):

631 Facebook reaches.

Message Date(s): Continuous posting.

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:Septic System Maintenance

Message Description and Distribution Method:

In addition to following Think Blue pollution prevention tips, the EPA's "A Homeowner's Guide to Septic Systems" is available in the public information slot in Town Hall. The Board of Health also has a link to MassDEP's website for tips on caring for your septic system.

Targeted Audience: Residents, Business, institutions and commercial facilities, industrial facilities

Responsible Department/Parties: DPW, Planning Board, Board of Health

Measurable Goal(s):

Distribution of brochure through Town Hall and tips through website.

Message Date(s): Continuous posting.

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: Local Coverage of Conservation Commission Meetings

Message Description and Distribution Method:

Local coverage of Conservation Commission meetings is provided through newspaper articles/press releases twice monthly. Since April 2020, all board meetings have been remote and are being covered by HCAT and being recorded and posted. Stormwater topics and water quality protection are often discussed at these meetings.

Targeted Audience: Residents

Responsible Department/Parties: Conservation Commission, Planning Board, Technology Dept.

Measurable Goal(s):

Broadcast public meetings.

Message Date(s): Twice monthly

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**:

SWMP Plan for Download - The Town has posted the SWMP Plan on Town website along with contact information to allow for public comment.

The Town's policy for handling stormwater complaints or inquiries is to send it to the department that has jurisdiction over the project or issue.

River and Pond Cleanups - The Parks and Recreation Department does seasonal debris cleanup annually at both park areas on Lake Winthrop (Stoddard Park and Pleasure Point) using lifeguards and camp counselors. They also employ benthic mats for weed control and rake and re-position periodically.

Annual household hazardous waste collection day provided in July 2020 with 277 cars/residents participating. Clean Harbors Environmental Services conducted the event and disposed of materials collected (e.g., solvents, aerosols, pesticides, paints, motor oil, lead acid batteries, etc.). Approximately 1500 gallons/lbs were collected.

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**:

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: 0

Number of SSOs removed: 0

MS4 System Mapping

Optional: Provide additional status information regarding your map:

The Town has mapped all known outfalls and receiving waters/waterbodies, open channel conveyances, stormwater BMPs, and completed initial catchment delineations. Additionally, most of the known catch basins, manholes, and piping have been mapped which is not required until Year 10. Interconnections along state owned portions of Route 16 and Route 126 have been mapped where mapping of state infrastructure was readily available. The Town expects that MassDOT will lead the effort to map additional interconnections along state owned roads as part of their TS4 Permit.

Some data gaps in the mapping were identified and are being investigated/reconciled as part of the ongoing outfall and catchment investigations. Any changes in locations and/or new infrastructure will be incorporated into the map as the investigations are completed.

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: 260

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

Percent of outfalls screened: 97.4

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

As of June 30, 2021, the Town attempted to inspect all 490 stormwater outfalls/interconnections within the urbanized area during dry weather to investigate for potential illicit discharges. Of the 490 outfalls/ interconnections inspected, 34 are believed not to exist (e.g., no evidence of outfall or upgradient drainage infrastructure), 54 were identified to be something other than an outfall (e.g., inlet or culvert pipe), 358 were found and screened, 34 were not found/accessible and inspected through an upgradient proxy structure, and 10 could not be found or inspected by proxy (6 of these were open drainage that couldn't be found and 4 were collapsed headwalls with no upgradient drainage infrastructure found). These will be reinspected during Year 4 while investigating and mapping identified infrastructure data gaps.

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: 0

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:

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: 0

Number of illicit discharges removed: 0

Estimated volume of sewage removed: 0 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: 0

Total number of illicit discharges removed: 0

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**:

IDDE and SWPPP training was performed on 2/23/2021 and included background information on stormwater pollution, MS4 requirements, illicit discharge program requirements and investigations, the SWPPPs for the DPW Garage and Town Recycling Center (potential pollution sources, BMPs, inspections and general good housekeeping practices). The SWPPP Attendees included members from the DPW, Highway Department, and the Town Planner.

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: 6

Number of inspections completed: 67

Number of enforcement actions taken: 5

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

37 inspections were performed by third party inspectors and provided to the Town for review. 30 inspections were performed by the Conservation Commission.

Of the enforcement actions taken, 1 was through the Planning Board and addressed a Superior Court temporary restraining order and injunction. The others were for minor deficiencies (e.g., erosion controls).

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:

The Town's existing bylaw and regulations require the permittee to submit as-built drawings of all structural stormwater controls and treatment best management practices at the completion of the project. Stormwater Management and Operation and Maintenance Plan are also required under the regulations.

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:

N/A, to be completed during future permit years.

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:

N/A, to be completed during future permit years.

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:

The Town designed a parking lot retrofit and septic upgrade at Town Hall that is to be implemented in FY22. The historic Mudville neighborhood will be getting a roadway facelift, including a retrofit of drainage, with activities planned for FY21 and FY22. A new drinking water treatment plant with stormwater BMPs will be constructed at well site #5 in FY21 and FY22.

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: 1,500

Number of catch basins cleaned: 1,375

Total volume or mass of material removed from all catch basins: 275 cubic yards

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

Total number of catch basins: 2,100

If applicable:

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

During Permit Year 3, the Town developed a GIS-based catch basin inspection and cleaning program to help

track the amount of sediment accumulation in each basin. The data will be used to evaluate trends and optimize catch basin cleaning.

Street Sweeping

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

- ○ Number of miles cleaned: 74
- ◉ Volume of material removed: 450 cubic yards
- ○ 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: 2

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

The Town hires a consultant to perform formal, written quarterly SWPPP inspections. The Permit Year 3 contract was not executed until January 2021 because Town meeting was pushed out due to COVID-19. Town personnel perform informal inspections when on-site. No corrective actions were taken at the facility this period.

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:

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:

Catch basin cleaning was impacted in 2020 by staffing shortages due to COVID-19. Highway was closed down several times with staff cases.

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:

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:	Travis Ahern	Title:	Town Administrator
Signature:		Date:	9-28-21

[Signatory may be a duly authorized representative]

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: Town of Holliston

EPA NPDES Permit Number: MAR041122

Primary MS4 Program Manager Contact Information

Name: Sean Reese Title: Director of Public Works

Street Address Line 1: 730 Washington Street

Street Address Line 2: NA

City: Holliston State: MA Zip Code: 01746

Email: resses@holliston.k12.ma.us Phone Number: (508) 429-0615

Stormwater Management Program (SWMP) Information

SWMP Location (web address): https://www.townofholliston.us/dpw/pages/stormwater-plans-and-educational-materials

Date SWMP was Last Updated: Nov 23, 2021

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:

To be determined pending discussions with other departments. Estimated June 30, 2027.

☒ 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:

To be determined pending discussions with other departments. Estimated June 30, 2027.

☒ 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:

Bacteria/ Pathogens (Combination of Impaired Waters Requirements and TMDL Requirements as Applicable)

Annual Requirements

*Public Education and Outreach**

- ☒ Annual message was distributed encouraging the proper management of pet waste, including noting any existing ordinances where appropriate
- ☒ Permittee or its agents disseminated educational material to dog owners at the time of issuance or renewal of dog license, or other appropriate time

☒ Provided information to owners of septic systems about proper maintenance in any catchment that discharges to a water body impaired for bacteria

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

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:

Charles River Watershed Phosphorus TMDL

☒ Defined the scope of the Phosphorus Control Plan (PCP). *Please select one of the following:*

- ○ The PCP scope is the entire area within our jurisdiction within the Charles River Watershed
- ◉ The PCP scope is the urbanized area portion of our jurisdiction within the Charles River Watershed

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 MS4 Permit requires the Town to reduce phosphorus loads to the Charles River, a portion of which comes from existing privately developed properties that discharge to the Town's MS4 or directly to surface waters. These existing private properties are currently not subject to stormwater permits and are not regulated to reduce their share of phosphorus contributions to TMDL waters. Instead, the Town is responsible for achieving phosphorus reductions from these private developments because these developments are located within Holliston's MS4. The Town supports exploring a state or federal level stormwater permit for existing large commercial, industrial, and institutional properties located within the Charles River watershed to help mitigate impacts from development per EPA's August 13, 2020 stakeholder letter.

NON-TRADITIONAL AND TRANSPORTATION MS4s ONLY- municipalities please skip this section:

☐ Estimated the current impervious area of permittee owned property, determined the Land Use information for permittee owned property, calculated the phosphorus removal in pounds per year for any structural BMP owned by the permittee in accordance with Appendix F Attachment 3, and recorded the date of last maintenance activity for all structural BMPs for which phosphorus removal is calculated

- ○ The above information is attached to the email submission
- ○ The above information can be found at the following website:

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:

Changes to Impairments or TMDLs since NOI:

-Bogastow Brook (MA72-16): TMDL for E. Coli added in 2016, impairment for Dewatering* added in 2018/2020
-Chicken Brook (MA72-34): new impairment for E. Coli added in 2016
-Houghton Pond (MA72050): part of Charles River phosphorus TMDL, non-native aquatic plants impairment removed in 2018/2020
-Hopping Brook (MA72-35): impairment for E. Coli added in 2016
-Lake Winthrop (MA72140): impairment for Fanwort* added in 2018/2020

*Impairments that do not require a TMDL

An updated list of outfalls and receiving waters is ongoing as data gaps are being resolved, and will be included in the Town's updated SWMP and IDDE Plan, which includes a detailed list of each outfall by ID and receiving water.

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**: 11

*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: Pet Waste Education

Message Description and Distribution Method:

The "Think Blue: Do Your Doody" flyer was distributed to dog owners by the Town Clerk with dog licensing, posted at the Board of Health and Town Clerk kiosks, and posted by the Parks Department at all park facilities. Other pet waste signage is also provided at all park facilities. Additionally, the Town follows the Think Blue campaign on Facebook, which provides additional pet waste tips.

Targeted Audience: Residents

Responsible Department/Parties: DPW, Town Clerk, Recreation Department

Measurable Goal(s):

Number of dog licenses issued (1798 dog licenses). Continued webpage maintenance updates and display of materials in Town.

Message Date(s): Ongoing (with dog licenses due in April). Continuous posting.

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: Rain Barrel Program

Message Description and Distribution Method:

The Town hosts a rain barrel event. A link to the rain barrel information on the website was included with water bills, posted on the social media page, and posted on the Town's website that outlined benefits of rain barrels, specifics on the rain barrels being offered by the Town, and instructions on how to purchase one.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

Number of rain barrels purchased and distributed (112 barrels). Water bills with link sent to ~5000

households.

Message Date(s): June 3, 2022 (Rain Barrel Event).

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:

To help promote and improve residential stormwater management.

BMP: Curbside Food Waste Compost Message

Message Description and Distribution Method:

The Town teamed with the Town of Ashland for Black Earth food waste curbside composting pickup service. Information describing the curbside food waste composting were posted on the Town's social media page and website, and at the Town Hall, Town library, Senior Center, 1750 Washington Street, and Marshal Street.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

Number of households participating in the curbside composting pickup service (300+ households).

Message Date(s): April 27, 2022 (Compost Pickup).

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:

To promote awareness of green solutions and reduce waste.

BMP: Lawn and Yard Messages

Message Description and Distribution Method:

"Green Grass & Clear Water" flyer posted in the Board of Health kiosk in Town Hall.

"Be a Leaf Hero" flyer posted on Town website and in the Board of Health and Town Clerk kiosks in Town Hall. Also posted on social media in the fall. The Town has two a curbside leaf pickup days annually, which is advertised on social media.

Targeted Audience: Residents, Businesses, Institutions, and Commercial Facilities

Responsible Department/Parties: DPW, Board of Health, Town Clerk

Measurable Goal(s):

50 "Be a Leaf Hero" flyers distributed through Town Hall. Several thousand households participate in the curbside leaf pickup service. Continued webpage maintenance updates and display of materials in Town.

Message Date(s): Continuous (Be a Leaf Hero on Town website and kiosks); 10/28/21 (Be a Leaf Hero post on Facebook and Instagram); November 2022 (Leaf Pickup).

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: Waste Disposal Outreach

Message Description and Distribution Method:

The Town has two Hazardous Waste Collection Days annually. The Town posted the Household Hazardous Waste Day pamphlet on the Town's website, the social media page, and it was read at all Select Board meetings in June. Flyers were placed around Town at a local hardware store, the Town Clerk's office, the Board of Health, and at Town meetings. The Town also has a recycling program, which is advertised on social media.

Targeted Audience: Residents, Businesses, Institutions, and Commercial Facilities

Responsible Department/Parties: DPW, Planning Board, Board of Health

Measurable Goal(s):

HHW: 146 vehicles, equating to 92 "households" participated; 1012 - 2300 gallons of waste collected. Continued webpage maintenance updates and display of materials in Town.

Message Date(s): 7/8/21 and 7/12/21 (Haz-Waste Collection). 9/14/21 (Recycling Program).

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: Pollution Prevention Outreach

Message Description and Distribution Method:

The Town has a webpage dedicated to Stormwater Management educational materials. The webpage can be linked from the DPW website where the SWMP and and IDDE Plan are made available online. Links to resources such as "Homeowners Guide to Stormwater Management", "What is Stormwater Management", "Stormwater Management Helpful Hints", "Stormwater and Construction - BMPs" and "Stormwater and Construction - Erosion Controls" are available on the Town's website and contain information on: erosion,

hazardous waste collection; outside water use, septic management, pet waste management, and water conservation. The Town also posts a link to a "Take the Stormwater Runoff Challenge" word puzzle and a "Water Efficient Landscaping" brochure. The "Think Blue Massachusetts web campaign" is also linked on the Town's website.

Additionally, "Clean Water begins with you. Let's Think Blue!" poster is displayed in Town Hall and "Healthy Lawns and Landscapes" brochure is provided at the Board of Health information kiosk in Town Hall. "Homeowners Guide to Stormwater Management" and "Lawn and Garden Tips to Help Curb Stormwater Pollution" flyers were distributed at the annual Town Meeting.

Targeted Audience: Residents, Businesses, Institutions, and Commercial Facilities

Responsible Department/Parties: DPW, Planning Board, Conservation Commission, Technology Dept.

Measurable Goal(s):

Number of flyers distributed at annual Town Meeting (50 each). Continued webpage maintenance updates and display of materials in Town.

Message Date(s): Continuous Posting.

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: Stormwater and the Construction Industry Outreach

Message Description and Distribution Method:

The Town has a webpage dedicated to Stormwater Management educational materials. The webpage can be linked from the DPW website where the SWMP and and IDDE Plan are made available online. Links to resources such as "Stormwater and Construction BMPs" and "Stormwater and Construction Erosion Controls" are available on the Town's website and contains information on planning and implementing erosion and sediment control practices and maintaining construction BMPs.

Targeted Audience: Developers (construction)

Responsible Department/Parties: DPW, Planning Board, Conservation Commission, Technology Dept.

Measurable Goal(s):

Continuous webpage maintenance updates.

Message Date(s): Continuous Posting.

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: Swimming Pool Outreach

Message Description and Distribution Method:

The "Swimming Pools and Surface Water Quality: Best Practices Guide for Swimming Pool Owners in the Wachusett Watershed" (Mass. DCR) is posted at the Board of Health information kiosk in Town Hall.

Targeted Audience: Residents

Responsible Department/Parties: DPW, Planning Board, Conservation Commission

Measurable Goal(s):

Continued display of materials in Town.

Message Date(s): Continuous Posting.

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: Follow Think Blue Campaign on Facebook

Message Description and Distribution Method:

The Town follows the state Think Blue campaign on its Facebook page and posts a link to it on its website. The Think Blue campaign provides tips for residents (pet waste, yard waste, lawn care, lawn watering, chemical disposal, care care, infiltration, septic systems and pool care), businesses (waste and material storage, infiltration, snow and ice removal, outdoor cleaning, landscaping, irrigation, fleet care), developers (permitting, LID, pre-construction planning, erosion control, site maintenance) and industrial facilities (permitting, equipment maintenance, site landscaping, irrigation, waste disposal, chemical storage, spill prevention/response and snow and ice removal)
to prevent stormwater pollution.

Targeted Audience: Residents, Businesses, Institutions, Commercial Facilities, and Industrial

Responsible Department/Parties: DPW, Planning Board, Conservation Commission, Technology Dept.

Measurable Goal(s):

2100 Facebook impressions.

Message Date(s): Continuous Posting.

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: Septic System Maintenance

Message Description and Distribution Method:

In addition to following the Think Blue pollution prevention tips, the EPA's "A Homeowner's Guide to Septic Systems" is available at the Board of Health information kiosk in Town Hall. The Board of Health also has a link to MassDEP's website for tips on caring for your septic system.

Targeted Audience: Residents, Businesses, Institutions, Commercial Facilities, and Industrial

Responsible Department/Parties: DPW, Planning Board, Board of Health

Measurable Goal(s):

Continued webpage maintenance updates and display of materials in Town.

Message Date(s): Continuous Posting.

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: Local Coverage of Conservation Commission Meetings

Message Description and Distribution Method:

Local coverage of Conservation Commission meetings is provided through newspaper articles/press releases twice monthly. Since April 2020, all board meetings have been remote and are being covered by HCAT and being recorded and posted. Stormwater topics and water quality protection are often discussed at these meetings.

Targeted Audience: Residents

Responsible Department/Parties: Conservation Commission, Planning Board, Technology Dept.

Measurable Goal(s):

Broadcast public meetings.

Message Date(s): Twice monthly

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**:

SWMP Plan for Download - The Town has posted the SWMP Plan on the Town website.

The Town's policy for handling stormwater complaints or inquiries is to send it to the department that has jurisdiction over the project or issue.

River and Pond Cleanups - The Parks and Recreation Department does seasonal debris cleanup annually at both park areas on Lake Winthrop (Stoddard Park and Pleasure Point) using lifeguards and camp counselors. They also employ benthic mats for weed control and rake and re-position periodically.

Annual household hazardous waste collection days provided on July 8 and July 12, 2021. Clean Harbors Environmental Services conducted the event and disposed of materials collected (e.g., solvents, aerosols, pesticides, paints, motor oil, lead acid batteries, etc.).

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**:

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: 0

Number of SSOs removed: 0

MS4 System Mapping

Optional: Provide additional status information regarding your map:

The Town has mapped all known outfalls and receiving waters/waterbodies, open channel conveyances, stormwater BMPs, and completed initial catchment delineations. Additionally, most of the known catch basins, manholes, and piping have been mapped which is not required until Year 10. Interconnections along state owned portions of Route 16 and Route 126 have been mapped where mapping of state infrastructure was readily available. The Town expects that MassDOT will lead the effort to map additional interconnections along state owned roads as part of their TS4 Permit.

Some data gaps in the mapping were identified and are being investigated/reconciled as part of the ongoing catchment investigations. Any changes in locations and/or new infrastructure are incorporated into an online GIS map as they are found with QC performed in the office.

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: 19

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

Percent of outfalls screened: 100

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

As of June 30, 2022, all known outfalls/interconnections within the urbanized area have been screened during dry weather. If an outfall could not be found, the immediate upgradient structure was screened as a proxy. The Town is currently investigating and mapping data gaps identified in the drainage mapping and will document and inspect any additional outfalls found during these efforts.

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: 0

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:

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: 0

Number of illicit discharges removed: 0

Estimated volume of sewage removed: 0 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: 0

Total number of illicit discharges removed: 0

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**:

IDDE and SWPPP training was performed on 9/22/2021 and included background information on stormwater pollution, MS4 requirements, illicit discharge program requirements and investigations, the SWPPPs for the DPW Garage and Town Recycling Center (potential pollution sources, BMPs, inspections and general good housekeeping practices). The SWPPP Attendees included members from the Highway Department.

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: 8

Number of inspections completed: 34

Number of enforcement actions taken: 5

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

Inspections: 34 inspections were performed for 4 active subdivisions.

Enforcement actions: 5 by conservation commission & planning - 4 residential and 1 commercial

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

Ordinance or Regulatory Mechanism

Date update was completed (due in year 3): Stormwater Management and Land Disturbance By-Law approved 7/20/2020

Stormwater Management and Land Disturbance Regulations approved 5/20/2021

As-built Drawings

Below, report on the number of as-built drawings received ***during this reporting period****.*

Number of as-built drawings received: 6

Optional: Enter any additional information relevant to the submission of as-built drawings:

6 as-built drawings were received - 4 commercial and 2 residential.

Retrofit Properties Inventory

Below, list the permittee-owned properties that could be modified or retrofitted with BMPs to mitigate impervious areas (at least 5):

-Mission Springs Recreation Area (100 Summer Street)
-Fire Station/Water Department (269 Central Street)
-Goodwill Park (37 Green Street)
-Holliston High School (370 Hollis Street)
-Robert Adams Middle School (25 Woodland Street)

Specifics on BMP retrofit prioritization, designs, and cost will be incorporated into the Town's Phosphorus Control Plan for the Charles River Watershed due at the end of Year 5.

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: 718

Number of catch basins cleaned: 703

Total volume or mass of material removed from all catch basins: 114.53 tons

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

Total number of catch basins: 2,227

If applicable:

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

The Town is using a GIS-based catch basin inspection and cleaning program to help track the amount of sediment accumulation in each basin. This was developed in Permit Year 3 and the Town has not yet completed two cleaning cycles using the program. The data will be used to evaluate trends and optimize catch basin cleaning.

Street Sweeping

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

- ○ Number of miles cleaned: 90
- ○ Volume of material removed: [Select Units]
- ◉ Weight of material removed: 115.7 tons

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: 4

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

The Town hires a consultant to perform formal, written quarterly SWPPP inspections. Site inspections of the DPW Garage and Marshall Street Recycling Center were completed in September 2021, December 2021, March 2022, and June 2022. No corrective actions were taken at either facility this period.

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:

Town conservation and sustainability staff has continued to participate in the Charles River Watershed "Flood Model Project".

The Envisioning Future Holliston Committee has had two community surveys completed.

Holliston has implemented a trial off-leash dog park at Weston Pond fields in an effort to combat an overabundance of goose activity that create unsanitary field conditions.

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:

N/A

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:

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:	Travis Ahern	Title:	Town Administrator
Signature:	Travis Ahern Digitally signed by Travis Ahern DN: cn=Travis Ahern, o=Town of Holliston, ou, email=mccc@holliston.k12.ma.us, c=US Date: 2022.09.28 09:14:53 -04'00'	Date:	1/4/23

[Signatory may be a duly authorized representative]