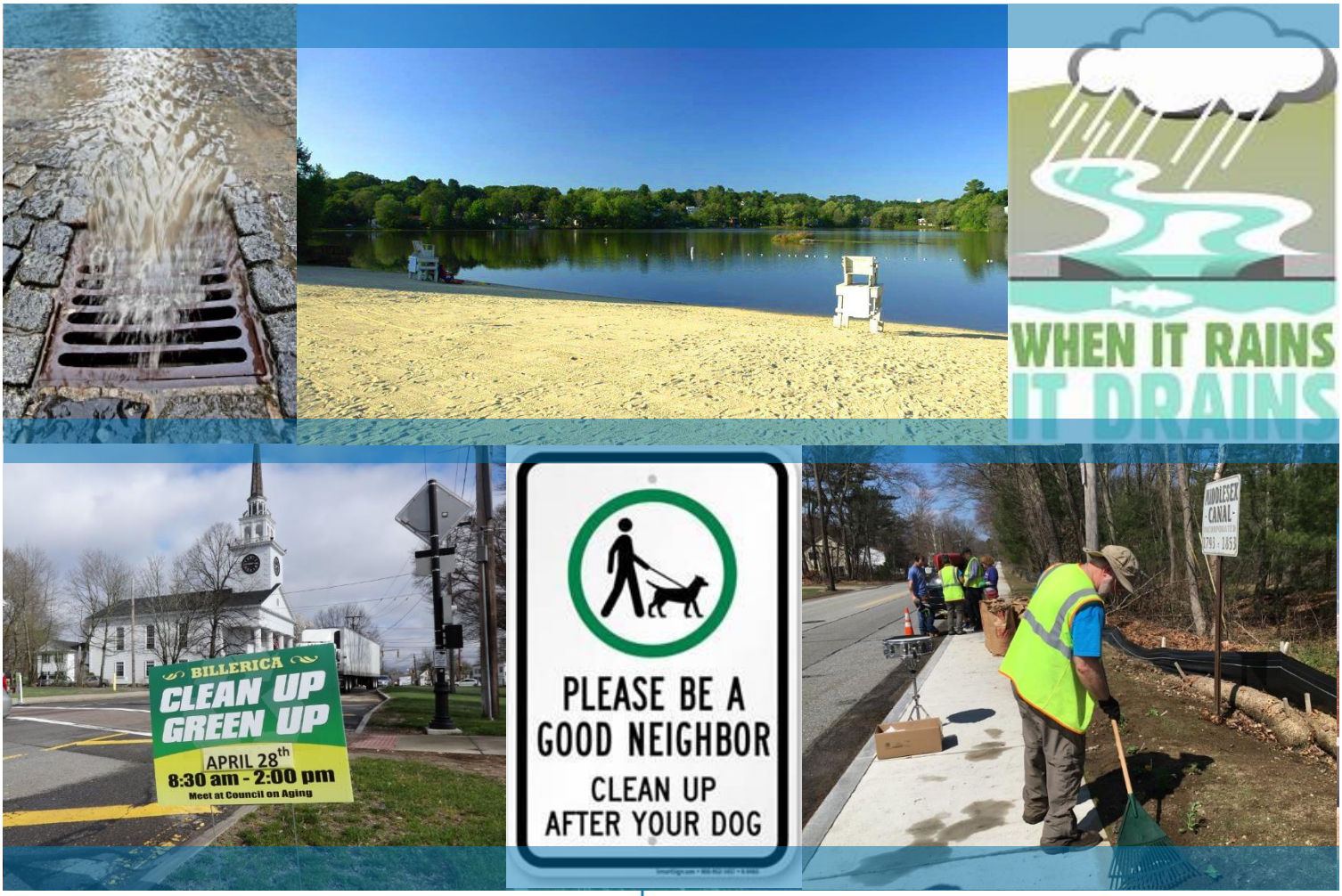


Tighe&Bond

Stormwater Management Plan

Prepared For:

Town of Billerica

June 2018
Updated November 2024

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Section 1
Introduction

Billerica is located in Middlesex County in the northeastern portion of Massachusetts, approximately 25 miles northwest of Boston. It is abutted by the Towns of Tewksbury and Wilmington to the east, the City of Lowell to the north, the Towns of Carlisle and Chelmsford to the west, and the Towns of Bedford and Burlington to the south. There are approximately 0.5 square miles of water within its 26.4 square mile footprint.



Figure 1-1 Location of Billerica, Massachusetts

According to the 2010 United States (U.S.) Census, Billerica is home to approximately 40,200 residents in more than 14,000 households.

Protecting the quality of Billerica's water resources, including lakes, ponds, rivers, and groundwater supplies is a priority for the Town of Billerica. Pollutants from stormwater runoff are a contributing factor to the impairment of Billerica's waterbodies, including low dissolved oxygen levels and bacterial contamination. The Town has developed stormwater policy initiatives, provided education to its businesses and citizens, publicly discussed the issues related to stormwater runoff, and offered many opportunities for residents and businesses to pitch in with clean-up efforts.

1.1 Purpose of this Plan

In an on-going effort to minimize stormwater impacts within Billerica, the Town has developed this Stormwater Management Plan (SWMP). The SWMP is required by the U.S. Environmental Protection Agency's (EPA's) National Pollutant Discharge Elimination System (NPDES) General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) in Massachusetts ("Small MS4 General Permit"). The SWMP describes and details the activities and measures that will be implemented by Billerica to meet the terms and conditions of the permit.

The SWMP will be updated and/or modified during the permit term as the Town's activities are modified, changed, or updated to meet permit conditions. Other requirements of the Small MS4 General Permit, such as a Notice of Intent (NOI), Authorization to Discharge letter, and documentation showing Endangered Species Act and Historic Properties eligibility criteria have been certified and are located in the Appendices of this Plan.

1.2 Regulatory Requirements

1.2.1 Overview of EPA's NPDES MS4 Program

Through the NPDES program, the EPA nationally regulates the discharge of stormwater runoff that is transported into local water bodies via MS4s. EPA's MS4 stormwater program was enacted in two phases:

- Phase I, issued in 1990, requires *medium* and *large* cities or certain counties with populations of 100,000 or more to obtain NPDES permit coverage for their stormwater discharges.
- Phase II, issued in 1999, requires regulated *small* MS4s in urbanized areas, as well as small MS4s outside the urbanized areas that are designated by the permitting authority, to obtain NPDES permit coverage for their stormwater discharges.

A **municipal separate storm sewer system (MS4)** is a conveyance or system of conveyances that is:

- owned by a state, city, town, village, or other public entity that discharges to waters of the U.S.,
- designed or used to collect or convey stormwater (e.g., storm drains, pipes, ditches),
- not a combined sewer, and
- not part of a sewage treatment plant, or publicly owned treatment works (POTW).

In Massachusetts, the EPA Region 1 and the Massachusetts Department of Environmental Protection (MassDEP) jointly administer the municipal stormwater program. EPA and MassDEP originally authorized Billerica to discharge stormwater in 2003 under a *NPDES General Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems*, known as the "2003 General Permit." Under this permit, the Town has developed and implemented a Stormwater Management Program to reduce the contamination of stormwater runoff.

The 2003 General Permit expired in May 2008, but remained in full force and effect until a replacement permit was issued on April 13, 2016. The reissued NPDES *General Permit for Stormwater Discharges from Small MS4 in Massachusetts* substantially increases stormwater management requirements and mandates specific timelines for compliance. On June 30, 2017, an EPA stay delayed the effective date of the General Permit until July 1, 2018. The MassDEP also adopted this delayed effective date.

This SWMP was developed to be consistent with the requirements of the 2016 Small MS4 General Permit for Massachusetts. Once implemented, the SWMP described herein will satisfy the requirements for compliance under the 2016 General Permit.

The reissued General Permit is intended to be more prescriptive than the 2003 General Permit, and to build upon the regulations already in place. The 2016 General Permit substantially increases stormwater management requirements and mandates specific timelines for compliance. A few of the major differences for each minimum control measure are summarized in the following points:

- **Public Education and Outreach**: More specific messages required and prescriptive deadlines compared to the 2003 General Permit.

- **Public Involvement and Participation**: No substantial change from the 2003 General Permit.
- **Illicit Discharge Detection and Elimination (IDDE) Program**: Complete drainage system mapping, building on outfall mapping developed under the 2003 General Permit. Add interconnections to the outfall inventory. Delineate catchment areas and prioritize catchment investigations. Perform dry weather screening and sampling of high priority and low priority MS4 interconnections and outfalls by the end of Year 3. Perform wet weather screening in the spring for the catchments that indicate the presence of one or more System Vulnerability Factors. Complete catchment investigations. For impaired waters without Total Maximum Daily Loads (TMDLs), implement a multi-step approach to address the discharges including BMPs, source identification, and an evaluation of retrofit feasibility.
- **Construction Site Stormwater Runoff Control**: If it does not already exist, add inspection and enforcement to the site plan review procedure.
- **Stormwater Management in New Development and Redevelopment**: For new development, retain the first 1 inch of runoff from all impervious surfaces on site, or provide pollutant removal with a BMP. For redevelopment, retain the first 0.80 inches of runoff from all impervious surfaces on site or provide pollutant removal with a BMP. Offsite mitigation may be used for redevelopment projects. Evaluate local code for consistency with smart growth principles and green infrastructure.
- **Good Housekeeping and Pollution Prevention**: Develop a program to repair and rehabilitate the MS4 infrastructure. Sweep/clean municipal streets once in the spring. Include all activities that occur at a municipal facility and potential pollutants associated with each activity in the stormwater pollution prevention plan (SWPPP) for the facility.

1.2.2 Billerica's Regulated Area

The Town of Billerica meets EPA's regulatory threshold for Phase II of the MS4 program, and therefore is required to be covered under a NPDES permit for its stormwater discharges from the MS4 in its Urbanized Area. The Town of Billerica is charged by the EPA with operating and maintaining its MS4 to manage stormwater runoff, as well as to protect public health and safety, preserve environmental resources, and safeguard town character.

Urbanized Areas (also known as "regulated areas") are defined by the latest U.S. decennial census. An urbanized area encompasses a densely settled territory that consists of core census block groups or blocks that have a population of at least 1,000 people per square mile and surrounding census blocks that have an overall density of at least 500 people per square mile or are included to link outlying densely settled territory with a densely settled urban core. [1] According to EPA Region 1, the area covered by either the 2000 census or the 2010 census are regulated by EPA under the MS4 program. The 2000 census was used to determine that approximately 23 square miles (86%) of Billerica was

[1] U.S. EPA. *Fact Sheet: Draft General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts.* September 2014. For a complete definition of Urbanized Area see Federal Register, August 24, 2011. Vol. 76 No. 164 p. 53030. URL: http://www2.census.gov/geo/pdfs/reference/fedreg/fedregv76n164.pdf.

urbanized and therefore regulated under the 2003 General Permit. On March 26, 2012, the Census Bureau published the final listing of urbanized areas for the 2010 census, which increased Billerica's urbanized area by approximately 3.5 square miles, or 13%. In total, 99% of Billerica is considered an urbanized area, as illustrated by the hatching in Figure 1-2[2]. This SWMP must be implemented within all regulated portions of Town at a minimum.

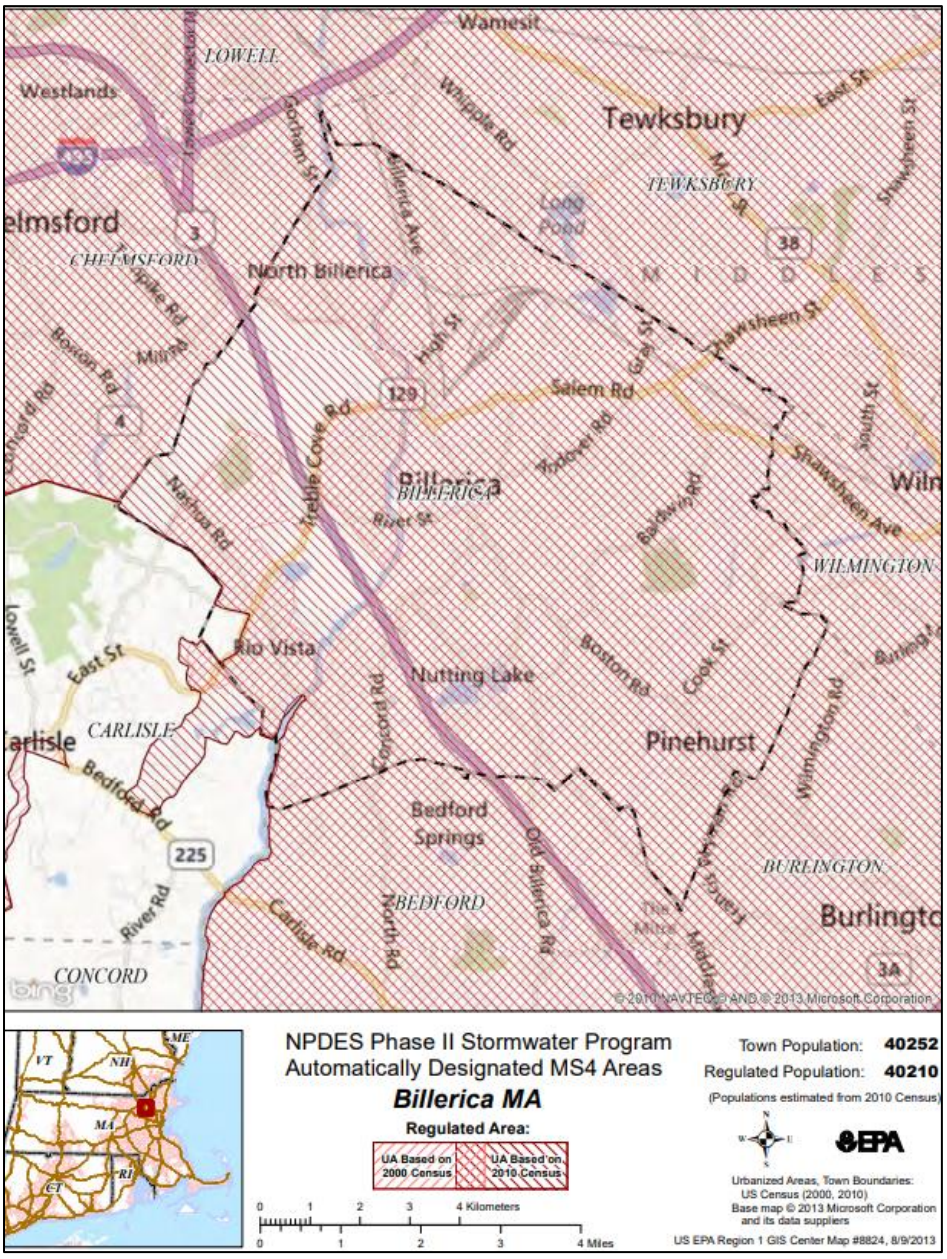


Figure 1-2 Town of Billerica's Urbanized Area based on 2000 and 2010 census

[2] U.S. EPA, 2014.

1.3 Summary of Billerica's Stormwater Management Program under the 2003 Small MS4 General Permit

Billerica's stormwater management program is managed within the Department of Public Works (DPW). Currently, stormwater management tasks are carried out by various Town departments and volunteer boards, including the Engineering Department, Highway Department, Conservation Commission, Recreation Department, and Board of Health.

The Town of Billerica has achieved all of the measurable goals for the BMPs selected in the 2003 Notice of Intent and those added in subsequent years to reflect unplanned stormwater activities by the Town. The following paragraphs include brief descriptions of current practices the Town undertakes as part of its Stormwater Management Program.

1.3.1 MCM 1 - Public Education and Outreach

The Town has been able to provide a robust multi-media public education program related to nonpoint source pollution and stormwater management targeted at multiple audiences. The Town has achieved this by distributing educational and outreach materials at community events (i.e., "Clean-Up/Green-Up") and on social media, displaying educational brochures at municipal offices and at public kiosks, incorporating educational programs into the local school, incorporating stormwater into the annual water quality report, installing storm drain markers, and discouraging pet waste through flyers. In particular, some highlights of Billerica's program include:

- Wastewater staff annually educate approximately 100 classrooms in six elementary schools about water quality and stormwater pollution.
- A comprehensive stormwater management webpage that is routinely updated.
- Annually distributing information about stormwater management in the Water Department's water quality report.
- Leveraging Northern Middlesex Stormwater Collaborative (NMSC) educational materials throughout the permit term to educate residents and businesses.

1.3.2 MCM 2 – Public Involvement and Participation

Notice of public meetings complies with State and Local public meeting notice requirements. There are opportunities for residents of all ages to participate in Billerica's stormwater program and overall environmental stewardship, including an annual town-wide "Clean-Up/Green-Up" event.

1.3.3 MCM 3 – Illicit Discharge and Detection Elimination

Billerica has spent considerable effort on their IDDE Program. Highlights of this program include:

- The Town has exceeded the mapping requirements of the 2003 General Permit and is well on the way to meeting the requirements in the 2016 Small MS4 General Permit.
- Billerica has developed procedures for locating illicit discharges, performed an outfall inventory and dry weather screening effort for 100% of their outfalls, and identified priority areas for additional work.

- In 2007, Billerica adopted the *By-law Governing Discharges to the Municipal Storm Sewer System*, which regulates illicit discharges and illegal connections to the MS4. The Board of Health serves as the enforcement agency and actively has enforced issues (e.g., illegal dumping into catch basins) through this bylaw since it was adopted.
- Town Staff have been trained, and are provided regular training opportunities, on illicit discharges and stormwater outfall investigations and sampling. Town staff look for the presence of illicit discharges during regular operations activities.

1.3.4 MCM 4 – Construction Site Stormwater Runoff Control and MCM 5 – Post-Construction Stormwater Management

Billerica adopted the *Stormwater Management By-law* in 2007 and subsequently adopted regulations entitled *Chapter 6: Stormwater Management Regulations*. The Bylaw and regulations require that all new development and redevelopment projects greater than one acre of land disturbance must obtain a stormwater permit, meet performance standards, and implement a management plan or face penalties. In addition, new projects disturbing one acre of land or greater require a public hearing and implementation of erosion and sediment controls. The Town also manages construction solid waste by sending out permits to garbage haulers to require dumpster registrations.

In addition, the Town of Billerica Stormwater Management Regulations address stormwater construction issues through site plan review requirements. Procedures for site plan reviews are established and enforced, and routine reviews and inspections are conducted by multiple Town departments. These reviews include regular inspections and communication with the developer to ensure adherence to local requirements during construction, specifically erosion and sediment controls.

Of note, Billerica Board of Health tracks and enforces requirements to maintain best management practices (BMPs) following completion of construction based on the *Stormwater Management By-law* and associated regulations. These regulations highlight private BMP operation and maintenance procedures including maintenance and inspection reporting.

1.3.5 MCM 6 – Pollution Prevention and Good Housekeeping

Billerica has a robust municipal pollution prevention program. Highlights of this program include:

- The Town has a written Town-wide program that includes good housekeeping standard operating procedures for municipal activities and facilities, including road sand/salt application and storage; snow stockpiling and removal; materials management; hazardous material storage; vehicle fueling, maintenance and storage; vehicle washing; spill prevention and response; lawn and grounds maintenance; street and parking lot sweeping; catch basin cleaning; stormwater line maintenance; pet waste and litter; and mosquito control.
- Staff have been trained on numerous actions to reduce pollutant runoff from municipal operations.
- Billerica completes catch basin cleaning and street sweeping programs annually.
- Staff actively implement a DPW Facility SWPPP.

- Billerica has an "asset management program" using PeopleForms to track complaints, catch basin cleaning, and drainage repairs.

1.3.6 Additional Permit Requirements

Groundwater Recharge and Infiltration: Through implementation of the Stormwater Management By-law, Wetlands Protection By-law and Regulations, and Zoning By-laws, the Town evaluates site conditions relative to stormwater infiltration. Additionally, the Town of Billerica Stormwater Management Regulations includes infiltration and groundwater recharge design requirements which promote surface infiltration and require recharge to the maximum extent practicable.

Public Drinking Water Supply Requirements: The Town considers areas discharging to water supply sources (e.g., Concord River) and within drinking water protection areas a priority for stormwater management, particularly IDDE activities.

Record Keeping: The Town of Billerica maintains stormwater management program records that are organized by permit year and are stored in both paper and digital format.

Water Quality Impaired Waters and Total Maximum Daily Load (TMDL) Allocations: Billerica's stormwater program is addressing many of the current requirements for discharges to impaired waterbodies. Through implementation of its current stormwater program, the Town is addressing the discharge of the pollutants of concern.

1.3.7 Building on 2003 BMPs

According to Section 1.10.b of the 2016 General Permit, Billerica must modify or update the BMPs being implemented under the 2003 General Permit to meet the terms and conditions of part 2.3 of the 2016 General Permit. Appendix B includes a list of BMPs completed under the 2003 Small MS4 General Permit and BMPs included in the Notice of Intent and SWMP which comply with the 2016 Small MS4 General Permit. This list identifies how the intent of each 2003 BMP is being met under the 2016 BMPs (further description of 2016 BMPs is included in Section 3 of this SWMP).

1.4 General Eligibility Determination

Section 1.2.1 of the Small MS4 General Permit authorizes the discharge of stormwater from small MS4s if the MS4 is determined to meet general eligibility criteria:

- *Small MS4 within the Commonwealth of Massachusetts*

  The Town of Billerica is located within Middlesex County, Massachusetts.

- *Not a large or medium MS4 as defined in 40 CFR 122.26(b)(4) or (7)*

  The population of Billerica is 40,200 according to the 2010 Census, the MS4 is not within a designated County, and the Town has not been designated by the Director as part of a large or medium MS4.

- *Located either fully or partially within an urbanized area as determined by the 2010 Census or located in a geographic area designated by EPA as requiring a permit*

  Figure 1-2 shows the Regulated MS4 Areas for the Town of Billerica, based on 2000 and 2010 census listings. Billerica is fully within an urbanized area.

1.5 Special Eligibility Determinations

1.5.1 Endangered Species

On behalf of the Town of Billerica, Tighe & Bond completed the National Endangered Species Eligibility Determination screening process in accordance with Part 1.9.1 and Appendix C of the Small MS4 General Permit, and determined that the Town of Billerica meets **Criterion C**, where it has been determined that the Town's stormwater discharges and discharge related activities will have "no affect" on any federally threatened or endangered listed species or designated critical habitat under the jurisdiction of the US Fish and Wildlife Service. Refer to Appendix C of the SWMP for supporting information, including the US Fish and Wildlife Service Official Species List for the project area and the Endangered Species Act Certification.

1.5.2 Historic Properties

On behalf of the Town of Billerica, Tighe & Bond completed the National Historic Preservation Act Eligibility Determination screening process in accordance with Part 1.9.2 and Appendix D of the Small MS4 General Permit, and determined that the Town of Billerica meets **Criterion A**, as the discharges do not have the potential to cause effects on historic properties. Please refer to Appendix D of the SWMP for supporting information, including a list of the federal- and state-listed historic areas, buildings, burial grounds, objects, and structures in the Town of Billerica's regulated area downloaded from the Massachusetts Cultural Resource Information System (MACRIS).

1.6 Authorization for Billerica to Discharge Stormwater

A NOI must be submitted within 90 days of the effective date of the permit. A copy of the NOI is included in Appendix A. Documentation of the Town of Billerica's Authorization to Discharge by EPA will also be provided in Appendix A once issued by EPA. This written SWMP must be finalized within one year of the effective date of the permit.

Section 2
Watershed Resources

2.1 Watershed Inventory

The Town of Billerica is located within the Sudbury-Assabet-Concord (SuAsCo) Watershed, Shawsheen River Watershed, and Ipswich River Watershed, as shown in Figure 2-1[5].

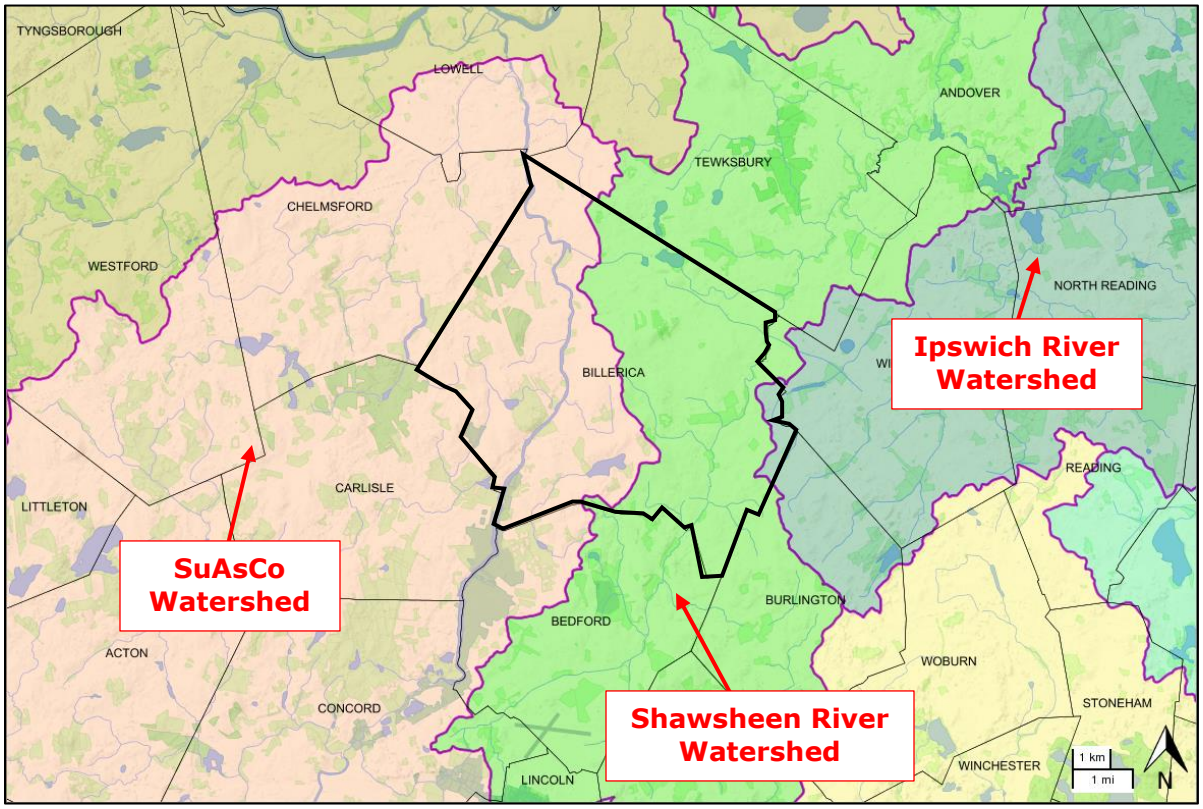


Figure 2-1 Major basins in Billerica, MA

The western half of Billerica is within the SuAsCo Watershed, which encompasses most of central Massachusetts and extends from the town of Hopkinton to the City of Lowell. The watershed is bordered by the Blackstone River and Nashua River Watersheds to the west; the Charles River and Shawsheen River Watersheds to the east; and the Merrimack River Watershed to the north.

Most of the eastern half of Billerica is within the Shawsheen Watershed, which is a fairly small watershed in eastern Massachusetts. The watershed is bordered by the SuAsCo Watershed to the west; the Ipswich River and Boston Harbor Watersheds to the east; the Merrimack River Watershed to the north; and the Charles River Watershed to the south.

[5] Figure created using the MassGIS OLIVER online mapping tool.

The eastern most portion of Billerica is within the Ipswich River Watershed, which is located in the northeastern portion of Massachusetts and extends to the Atlantic Ocean. The watershed is bordered by the Shawsheen River Watershed to the west; the Parker River and Merrimack River Watersheds to the north; and the North Coastal and Boston Harbor Watersheds to the south.

Table 2-1 identifies the natural drainage basins within the Town of Billerica for waterbodies that are included in the 2014 Integrated List of Waters (see discussion in Section 2.2 for additional information). Note that there are additional waterbodies within Town that are not included in the Integrated List. The NOI includes a more comprehensive list of the waterbodies that receive stormwater discharges from the MS4 and excludes waters where stormwater does not directly discharge.

Table 2-1
Natural Drainage Basins within the Town of Billerica

Major Basin	Main Stem Basin
SuAsCo Watershed	MA82A-07 – Concord River
	MA82A-08 – Concord River
	MA82088 – Nutting Lake (east basin)
	MA82123 – Winning Pond
	MA82124 – Nutting Lake (west basin)
Shawsheen River Watershed	MA83-09 – Content Brook
	MA83-14 – Spring Brook
	MA83-17 – Shawsheen River
	MA83-18 – Shawsheen River
	MA83-22 – Webb Brook
	MA83020 – Richardson Pond North
	MA83021 – Pond Street Pond
Ipswich River Watershed	MA92-05 – Lubbers Brook

2.2 Water Quality

To meet the requirements of the Clean Water Act (CWA) Section 303(d), Massachusetts must assess and categorize surface waterbodies for attainment of designated uses (such as habitat for aquatic wildlife, aquatic wildlife consumption, and primary and secondary recreation), as well as identify any waterbodies that are not expected to meet surface water quality standards after implementation of controls. These sources are prioritized for establishing TMDLs for use in permit setting.

Massachusetts meets the CWA reporting requirements through the development of an Integrated List of Waters, in which waters in the Commonwealth are categorized for attainment of designated uses. The Integrated List assigns each waterbody or waterway with one of five categories:

- **Category 1**: waters that are unimpaired and not threatened for all designated uses
- **Category 2**: waters that are unimpaired for some uses and not assessed for others
- **Category 3**: waters with insufficient information to make assessments for any uses
- **Category 4a**: waters with a completed TMDL
- **Category 4c**: waters that are impaired or threatened for one or more uses, but not by a pollutant and therefore not requiring the calculation of a TMDL
- **Category 5**: waters that are impaired or threatened for one or more uses and requiring a TMDL

Waterbodies classified as Category 4a (waterbodies with a TMDL) and Category 5 ("water quality limited" waterbodies) do not meet CWA designated uses, and stormwater pollutants of concern will need to be addressed. The Small MS4 General Permit includes additional requirements for waterbodies not meeting water quality standards; these are summarized in Section 4 of this Plan.

Water quality within the Ipswich River, Shawsheen River and SuAsCo Watersheds was assessed by the Massachusetts Department of Environmental Protection, Division of Watershed Management in 2000[7], 2000[8], 2001[9], respectively. See the applicable MassDEP reports for further information.

2.2.1 2014 Integrated List of Waters

As of the date of this SWMP, Massachusetts waters categorized as impaired surface waters were identified in the Final Massachusetts Year 2014 Integrated List of Waters.[10] Waterbodies identified on Integrated List within Billerica are listed in Table 2-2.

[7] MassDEP, Division of Watershed Management, "Ipswich River Watersheds 2000 Water Quality Assessment Report".
[8] MassDEP, Division of Watershed Management, "Shawsheen River Watersheds 2000 Water Quality Assessment Report".
[9] MassDEP, Division of Watershed Management, "Sudbury-Assabet-Concord Watershed 2001 Water Quality Assessment Report".
[10] MassDEP, Bureau of Water Resources "Final Massachusetts Year 2014 Integrated List of Waters". December 2015. Accessed online at: http://www.mass.gov/eea/docs/dep/water/resources/07v5/14list2.pdf.

Table 2-2
Summary of 2014 Integrated List of Waters - Status of Billerica's Receiving Waters

Category 5 Waters: waters requiring a TMDL					
Indicator contributing to impairment:	Nutting Lake (east basin) MA82088	Concord River MA82A-07	Concord River MA82A-08	Shawsheen River MA83-17	Shawsheen River MA83-18
Eurasian Water Milfoil, Myriophyllum spicatum*		X	X		
Mercury in Fish Tissue	X	X	X		X
E. coli	X				
Fecal Coliform		X		X	X
Non-native Aquatic Plants*	X	X	X		
Phosphorus (Total)		X	X		
Physical substrate habitat alterations*					
Turbidity					
Dissolved Oxygen				X	X

Category 4a Waters: TMDL complete		
Indicator contributing to impairment:	Nutting Lake (west basin) MA82124	Spring Brook MA83-14
Mercury in Fish Tissue	X	
Fecal Coliform		X

Category 4c Waters: TMDL not required	
Indicator contributing to impairment:	Winning Pond MA82123
Eurasian Water Milfoil, Myriophyllum spicatum*	X

Category 3 Waters: no uses assessed	
Richardson Pond North MA83020	Pond Street Pond MA83021

Category 2 Waters: attaining some uses; other uses not assessed		
Uses attained:	Lubbers Brook MA92-05	Content Brook MA83-09
Aesthetic	X	
Fish, other Aquatic Life and Wildlife	X	
Primary Contact Recreation		X
Secondary Contact Recreation		X

*TMDL not required (Non-pollutant)

Note that a draft 2016 Integrated List of Waters is available from MassDEP, which removes Spring Brook as an impaired water but adds Lubbers Brook, Content Brook, and Webb Brook. The 2016 Integrated List also removes the total phosphorus impairment for the entire Town. However, the 2016 Integrated List of Waters has not been finalized and is not yet the official EPA 303(d) list.

2.2.2 Pollutants of Concern

Based on the 2014 Integrated List of Waters, the pollutants of concern for Billerica's impaired waters related to stormwater include bacteria, nutrients, and dissolved oxygen concentrations. More information about these pollutants and their potential sources are included in Appendix E.

2.2.3 Applicable TMDLs

Several waterbodies within the Town of Billerica are identified as Category 5 waters (impaired and requiring a TMDL), as described in Section 2.2.1. Currently, two TMDLs are established and final for Billerica. The *Bacteria TMDL for the Shawsheen River Watershed* (2002) includes the following waterbodies in Billerica: Spring Brook and Shawsheen River (segments MA83-17 and MA83-18). The *Northeast Regional Mercury Total Maximum Daily Load* (2007) includes Nutting Lake (east and west basins, MA82088 and MA82124 respectively), however, mercury is considered a legacy pollutant not related to stormwater discharges.

Section 3
Best Management Practices (BMPs) to Address Minimum Control Measures (MCMs)

This section includes descriptions of each BMP included in Billerica's NOI, an implementation plan, guidelines and resources, and lists of important documentation to best address the MCMs in the General Permit.

3.1 MCM 1: Public Education and Outreach

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

This section of the SWMP describes how to comply with the Public Education and Outreach requirements in General Permit Section 2.3.2.

3.1.1 MCM 1 BMPs from NOI

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

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

3.1.2 MCM 1 Implementation Plan

BMP 1A Education and Outreach to Residents

Education and outreach goals for BMP 1A include:

- Increasing awareness of the impact of human activities on stormwater runoff and water quality;
- Changing residential behavior over time; and
- Reaching broad audiences with information that appeals to a diverse public.

Billerica will provide educational materials and general outreach to residents for stormwater management topics relevant to the Town. Topics may include:

- Information about Billerica's impaired waterbodies;
- Effects of outdoor activities such as lawn care on water quality (use of pesticides, herbicides, and fertilizers);
- Benefits of appropriate on-site infiltration of stormwater;
- Effects of automotive work and car washing on water quality;
- Proper disposal of swimming pool water; and

- Proper management of pet waste. This is a required educational topic for residents in the Shawsheen River watershed, at a minimum. See Section 4.2 of this plan for additional information.

The Town will build upon the existing public education and outreach program to disseminate educational materials to residents via the internet, direct mailing, informational kiosks regarding proper pet waste management, and/or print materials at public buildings. The Town will coordinate public educational strategies with local watershed groups and take advantage of existing materials wherever possible. Section 3.1.5 includes free resources the Town can take advantage of to supplement the program, including educational documents targeted towards residents.

BMP 1B Education and Outreach to Businesses, Institutions, and Commercial Facilities

Education and outreach goals for BMP 1B include:

- Increasing awareness of business practices that may contribute to stormwater pollution;
- Changing behavior over time; and
- Improving compliance with local code.

Billerica will provide educational materials and general outreach to businesses, institutions, and commercial facilities within Town for stormwater management topics relevant to Billerica. Topics may include:

- Information about Billerica's impaired waterbodies;
- Proper lawn maintenance (use of pesticides, herbicides and fertilizer);
- Benefits of appropriate on-site infiltration of stormwater;
- Building maintenance (use of detergents);
- Minimizing the use of salt or other de-icing and anti-icing materials;
- Proper storage of salt or other de-icing/anti-icing materials (cover/prevent runoff to storm system and contamination to groundwater);
- Proper storage of materials (emphasize pollution prevention);
- Proper management of waste materials and dumpsters (cover and pollution prevention);
- Proper management of parking lot surfaces (sweeping);
- Proper car care activities (washing of vehicles and maintenance); and
- Proper disposal of swimming pool water by entities such as motels, hotels, and health and country clubs (discharges must be dechlorinated and otherwise free from pollutants).

The Town will build upon the existing public education and outreach program to disseminate educational materials to businesses, institutions, and commercial facilities within Town via the internet, direct mailing, and/or print materials at public buildings. The Town will coordinate public educational strategies with local watershed groups and take advantage of existing materials wherever possible. Section 3.1.5 includes free resources

the Town can take advantage of to supplement the program, including educational documents targeted towards businesses, institutions, and commercial facilities.

BMP 1C Education and Outreach to Developers

Education and outreach goals for BMP 1C include:

- Increasing awareness of the impact of construction activities on stormwater runoff and water quality;
- Changing developer behavior over time; and
- Improving compliance with local code.

Billerica will provide educational materials and general outreach to developers for stormwater management topics relevant to Billerica. Topics may include:

- Information about Billerica's impaired waterbodies;
- 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).

The Town will build upon the existing public education and outreach program to disseminate educational materials to developers via the internet and/or attaching educational materials to permit applications. The Town will coordinate public educational strategies with local watershed groups and take advantage of existing materials wherever possible. Section 3.1.5 includes free resources the Town can take advantage of to supplement the program, including educational documents targeted towards developers.

BMP 1D Education and Outreach to Industrial Facilities

Education and outreach goals for BMP 1D include:

- Increasing awareness of industrial activities that may contribute to stormwater pollution;
- Changing behavior over time; and
- Improving compliance with local code.

Billerica will provide educational materials and general outreach to industrial facilities within Town for stormwater management topics relevant to Billerica. Topics may include:

- Information about Billerica's impaired waterbodies;
- Equipment inspection and maintenance;
- Proper storage of industrial materials (emphasize pollution prevention);
- Proper management and disposal of wastes;
- Proper management of dumpsters;
- Minimization of use of salt or other de-icing/anti-icing materials;
- Proper storage of salt or other de-icing/anti-icing materials (cover/prevent runoff to storm system and groundwater contamination);

- 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 Multi-Sector General Permit (MSGP).

The Town will build upon the existing public education and outreach program to disseminate educational materials to industrial facilities within Town via the internet and/or direct mailing. The Town will coordinate public educational strategies with local watershed groups and take advantage of existing materials wherever possible. Section 3.1.5 includes free resources the Town can take advantage of to supplement the program, including educational documents targeted towards industrial facilities.

3.1.3 MCM 1 Implementation Schedule

Outreach Method	PY1	PY2	PY3	PY4	PY5
Social media	■	■	■	■	■
Signage and brochures	■	■	■	■	■
Targeted outreach	Residents		Residents		
Targeted outreach		Businesses, Institutions, and Commercial Facilities		Businesses, Institutions, and Commercial Facilities	
Targeted outreach	Developers		Developers		
Targeted outreach		Industrial Facilities		Industrial Facilities	
Survey	All Audiences				All Audiences

3.1.4 Public Education and Outreach Goals and Progress

Per Section 2.3.2.e of the General Permit, the public education and outreach program shall provide focused messages for specific audiences and show evidence that progress toward the goals of the program have been achieved. The following methods may be used by the Town to evaluate the effectiveness of the educational messages and overall education program:

- Quantify the number of each audience that is reached during direct mailings.
- Develop survey for each audience and distribute in Permit Year 1 and again in Permit Year 5 to determine whether there has been a change in knowledge or behavior. This survey may be developed and deployed by the State-wide Municipal Stormwater Coalition, Northern Middlesex Stormwater Collaborative (NMSC), or another regional partner.
- Track changes in behavior for specific issues addressed with education throughout the permit term (e.g., issues with erosion/sediment control during construction, pet waste bags found in catch basins, etc.).

The above methods used to evaluate the effectiveness of the program, and any additional methods developed after the date of this SWMP, shall be tied to the defined goals of the program and the overall objective of **changes in behavior and knowledge**.

3.1.5 MCM 1 Guidelines and Resources

The following links include free or low-cost resources Billerica can use to supplement the Public Education program.

EPA Public Education
https://cfpub.epa.gov/npstbx/

EPA Stormwater Management Program Resources – Public Education
https://www.epa.gov/npdes-permits/stormwater-tools-new-england#peo

EPA Stormwater Education Toolkit (SET)
http://www.stormwater.ucf.edu/toolkit/

EPA National Menu of BMPs for Stormwater
https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater#edu

MassDEP Public Education
https://www.mass.gov/guides/stormwater-outreach-materials-to-help-towns-comply-with-the-ms4-permit

Developing an Effective Stormwater Education and Outreach Program for Your Community
http://www.urbanwaterslearningnetwork.org/wp-content/uploads/2016/04/Manual-Stormwater-Education-and-Outreach_2014.pdf

EPA Evaluation of the Role of Public Outreach and Stakeholder Engagement in Stormwater Funding Decisions in New England: Lessons from Communities
https://www.epa.gov/sites/production/files/2015-09/documents/eval-sw-fundingnew-england.pdf

Northern Middlesex Stormwater Collaborative Resources
http://www.nmstormwater.org/resources-stormwater-collaborative

Northern Middlesex Stormwater Collaborative Education and Outreach Materials
http://www.nmstormwater.org/education-and-outreach-materials

Urban Waters
http://www.nmstormwater.org/for-municipalities

OARS (information for the Assabet, Sudbury, and Concord Rivers)
http://www.oars3rivers.org/river

Think Blue Massachusetts: Residents, Businesses, Developers, Industrial Facilities, and MS4 Communities
https://www.thinkbluemassachusetts.org/

3.1.6 MCM 1 Checklist of Key Documentation

Documentation of BMP progress should be kept in Appendix F. The following checklist includes the required documentation for MCM 1. See Section 5 of this Plan for additional record keeping information.

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

3.2 MCM 2: Public Involvement and Participation

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

This section of the SWMP describes how to comply with the Public Involvement and Participation requirements in General Permit Section 2.3.3.

3.2.1 MCM 2 BMPs from NOI

BMP ID	BMP Category	BMP Description	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation
2A	Public Review	SWMP review (Plan and reports available on web and public meetings)	Engineering	Annually provide the public with an opportunity to participate in the review and implementation of the SWMP	2018 (PY1)
2B	Public Participation	Provide opportunities for public involvement and participation in Billerica's stormwater program (including clean up events and school programs). Specific activities, schedule, and lead departments are included in the SWMP.	Engineering/DPW/ Board of Health	Ongoing compliance	2018 (PY1)

BMP ID	BMP Category	BMP Description	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation
2C	Public Review	Continue Stormwater Working Group (Engineering, DPW, Conservation Commission, Board of Health)	Engineering/DPW	At a minimum, stormwater working group will meet annually.	2018 (PY1)

3.2.2 MCM 2 Implementation Plan

BMP 2A Stormwater Management Plan Public Review

Billerica shall provide the public with an opportunity to review this Stormwater Management Plan prior to finalizing it, and with other opportunities to participate in the Town's Stormwater Program on an annual basis.

While the Engineering Department is the responsible party for this BMP, multiple Town Departments can help aid in successful implementation, as public participation in stormwater management initiatives often crosses Departments.

This SWMP will be presented at a public meeting in early 2019 to solicit input from the general public. Additionally, the SWMP will be posted online and available to the public for review and comment.

BMP 2B Public Participation in Stormwater Management Program

Public involvement and participation goals for BMP 2B include:

- Increasing public involvement in and knowledge of Billerica's stormwater program; and
- Improving water quality through local clean up and waste collection events.

Billerica shall continue to provide notice for public meetings per Massachusetts General Law requirements, including meetings pertaining to the Stormwater Management Program.

The Town shall continue to provide annual opportunities for public participation in the Program. These opportunities may include, but are not limited to:

- Stormwater-related events with school groups;
- Hazardous waste drop off day;
- Yard waste collection days; and/or
- Stream clean ups.

Appendix E includes a document with helpful tips for organizing and conducting volunteer clean-up events that Billerica may reference. The Town shall document all public participation activities in the Annual Reports, and documentation should seek to quantify results or impact to better evaluate the public involvement and participation program effectiveness.

BMP 2C Stormwater Working Group

The Town has implemented a Stormwater Working Group, which meets on an as-needed basis. The Committee will continue to meet annually and/or as needed during the Permit term.

3.2.3 MCM 2 Implementation Schedule

BMP	PY1	PY2	PY3	PY4	PY5
2A Stormwater Management Plan Public Review	●	●	●	●	●
2B Public Participation in Stormwater Management Program	⟷				
2C Stormwater Working Group	●	●	●	●	●

● = annual requirement

⟷ = ongoing requirement

3.2.4 MCM 2 Guidelines and Resources

The following links include free or low-cost resources Billerica can use to supplement the Public Involvement program.

EPA National Menu of BMPs for Stormwater
https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater#inv

EPA Evaluation of the Role of Public Outreach and Stakeholder Engagement in Stormwater Funding Decisions in New England: Lessons from Communities
https://www.epa.gov/sites/production/files/2015-09/documents/eval-sw-funding-new-england.pdf

Manchester Urban Ponds Restoration Program: Tips for Organizing and Conducting Volunteer Clean-up Events
Available in Appendix E of this SWMP

Massachusetts Open Meeting Law Guide
http://www.mass.gov/ago/docs/government/oml/oml-guide.pdf

3.2.5 MCM 2 Checklist of Key Documentation

Documentation of BMP progress should be kept in Appendix F. The following checklist includes the required documentation for MCM 2. See Section 5 of this Plan for additional record keeping information.

- ☐ Public meeting dates and topics when stormwater management-related topic is discussed
- ☐ Dates of public participation activities and quantification of participation (such as number of volunteers/participants, number of bags collected, etc.)
- ☐ Meeting dates, topics, and attendees for Stormwater Working Group meetings

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

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

This section of the SWMP describes how to comply with the Illicit Discharge Detection and Elimination Program requirements in General Permit Section 2.3.4.

3.3.1 MCM 3 BMPs from NOI

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

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

3.3.2 MCM 3 Implementation Plan

A written Illicit Discharge Detection and Elimination Plan (2018) was developed for the Town of Billerica. Refer to this Plan for the complete IDDE program and requirements of MCM 3. This SWMP section presents a brief summary of the information presented in the IDDE Plan.

BMP 3A IDDE Bylaw

The IDDE program shall include adequate legal authority to prohibit, investigate, and eliminate illicit discharges and implement enforcement procedures and actions. Billerica has met this requirement by adopting a bylaw entitled *By-law Governing Discharges to the Municipal Storm Sewer System* at the Annual Fall Town Meeting in 2007. This bylaw prohibits illicit discharges to the Town's drainage system. The Board of Health serves as the enforcement agency for the bylaw.

BMP 3A is complete. See Section 4 of the IDDE Plan for additional information.

BMP 3B SSO Inventory

The Town must identify all known locations where sanitary sewer overflows (SSOs) have discharged to the municipal drainage system within the past five (5) years and create an inventory that includes the following information:

- Location, date, time, and volume of each occurrence;
- Whether the discharge entered surface water or the MS4;
- Description, indicating known or suspected cause(s); and
- Mitigation and corrective measures planned and completed.

This inventory must be kept up to date and appended to this SWMP. Each municipal Department can aid in the development and maintenance of the inventory by reporting instances of SSOs found during field work to the DPW.

BMP 3B is complete for Permit Year 1. The SSO inventory is available in Appendix G (2013 through 2017). See Section 2 of the IDDE Plan for additional information.

BMP 3C Storm Sewer System Map

A comprehensive map of Billerica's drainage system has been developed, and the Town has met a large portion of the requirements of this BMP. The total number of MS4 outfalls increased from 467 (as reported in Annual Reports) to 647 in the NOI due to a comprehensive review of historic drainage system mapping and outfall investigations completed in Fiscal Year 2018. Town staff should continue to update the map as necessary to reflect newly discovered information, corrections or modifications, improved connectivity, and progress made.

BMP 3C is ongoing. The outfall inventory is complete. See Section 3 of the IDDE Plan for additional information.

BMP 3D Written IDDE Program

Billerica has implemented a town-wide IDDE Plan, finalized in 2018, which includes procedures and timelines developed in accordance with the final General Permit. The Town should continue to update and modify the Plan on an as-needed basis.

BMP 3D is complete. See the IDDE Plan for additional information.

BMP 3E-1 Outfall/Interconnection Inventory and Initial Ranking

BMP 3E-1 is complete and is documented in Section 6 of the IDDE Plan. The Town has assessed and priority ranked each outfall within the MS4 in terms of their potential to have illicit discharges and SSOs, and the related public health significance. Refer to Section 4 of this plan for additional prioritization criteria related to waters subject to a TMDL and public drinking water supply.

BMP 3E-1 is complete. See the IDDE Plan for additional information.

BMP 3E-2 Dry Weather Outfall/Interconnection Screening and Sampling

Field investigations must be completed during dry weather conditions to confirm whether any Low or High Priority outfalls have dry weather flow, which may be indicative of illicit connections/discharges. The initial catchment delineation and priority ranking must be updated by the end of Permit Year 3 based on the data gathered in the field. All data gathered during implementation of this BMP must be reported annually.

BMP 3E-2 is ongoing. See Section 7.1 of the IDDE Plan for additional information.

BMP 3E-3 Outfall/Interconnection Catchment Investigations

Each catchment associated with an outfall or interconnection within the MS4 must be investigated based on identified System Vulnerability Factors (SVF, i.e., the likelihood that illicit discharges/connections exist) in that particular area. For all catchments, key junction manholes shall be opened and inspected for evidence of illicit connections during dry weather conditions. For catchments with one or more SVF, wet weather monitoring must be completed. The Town will identify the number of outfall catchments in the MS4 that have been evaluated using the catchment investigation procedure developed under BMP 3D. All data gathered during implementation of this BMP must be reported annually.

At the conclusion of field work for this BMP, the outfall/interconnection inventory should be updated and reprioritized for ongoing screening once every five years.

BMP 3E-3 is ongoing. See Section 7.2 of the IDDE Plan for additional information.

BMP 3F Employee Training

Employees involved in the IDDE Program must be trained annually on the Program, including how to recognize illicit discharges and SSOs in accordance with the IDDE Plan.

See Section 9.2 of the IDDE Plan for additional information.

3.3.3 MCM 3 Implementation Schedule

EPA's implementation timeline for the IDDE Program is available in Appendix E.

BMP	PY1	PY2	PY3	PY4	PY5
3A IDDE Bylaw	✓				
3B SSO Inventory	✓	●	●	●	●
3C Storm Sewer System Map	←	●	—	—	→
3D Written IDDE Program	✓				
3E-1 Outfall/Interconnection Inventory and Initial Ranking	✓				
3E-2 Dry Weather Screening and Sampling	←	—	→		
3E-3 Catchment Investigations		←	—	—	→
3F Employee Training	●	●	●	●	●

✓ = BMP complete
● = annual requirement or year due
← — → = ongoing requirement

3.3.4 MCM 3 Guidelines and Resources

The following links include free or low-cost resources Billerica can use to supplement the IDDE program. The Town-specific procedures in the IDDE Plan were developed using the IDDE Guidance Manual and New England Source Tracking Protocol linked below.

Center for Watershed Protection Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments
https://www3.epa.gov/npdes/pubs/idde_manualwithappendices.pdf

EPA Stormwater Management Program Resources – IDDE
https://www.epa.gov/npdes-permits/stormwater-tools-new-england#idde

EPA New England Bacterial Source Tracking Protocol
https://www3.epa.gov/region1/npdes/stormwater/ma/2014AppendixI.pdf

EPA National Menu of BMPs for Stormwater
https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater#ill

Billerica *Discharges to the Municipal Storm Sewer System* Bylaw
https://www.town.billerica.ma.us/DocumentCenter/View/314/Discharges-to-the-Municipal-Storm-Sewer-System-Article-XXVI?bidId=

3.3.5 MCM 3 Checklist of Key Documentation

Documentation of BMP progress should be kept in Appendix F. The following checklist includes the required documentation for MCM 3. More information about IDDE reporting is located in Section 10 of the IDDE Plan. See Section 5 of this Plan for additional record keeping information.

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

3.4 MCM 4: Construction Site Stormwater Runoff Control

Objective: *To minimize or eliminate erosion and maintain sediment on site so that it is not transported in stormwater and allowed to discharge to a water of the U.S. through the permittee's MS4.*

This section of the SWMP describes how to comply with the Construction Site Stormwater Runoff Control requirements in General Permit Section 2.3.5.

3.4.1 MCM 4 BMPs from NOI

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

3.4.2 MCM 4 Implementation Plan

Per the General Permit, Billerica must develop and implement the following items, which will be adopted as either Bylaw/regulation modifications or a formalized policy or procedure. Note that while Billerica can choose to implement these items Town-wide, they are only required for disturbances within the regulated area that are greater than or equal to one (1) acre or less than one (1) acre if that disturbance is part of a larger common plan of development or sale that would disturb one (1) or more acres.

- A regulatory mechanism that requires the use of sediment and erosion control practices at construction sites, as well as controls for other wastes on construction sites such as demolition debris, litter, and sanitary wastes;
- Written procedures for site inspections and enforcement of sediment and erosion control measures, including the responsible party for site inspections and enforcement authority, due within one (1) year of the effective date of the permit;
- Requirements for construction site operators performing land disturbance activities within the MS4 jurisdiction that result in stormwater discharges to the MS4 to

implement a sediment and erosion control program that includes BMPs appropriate for the conditions at the construction site;

- Requirements for construction site operators within the MS4 jurisdiction to control wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes; and
- Written procedures for site plan review and inspection and enforcement, due within one (1) year of the effective date of the permit.

BMP 4A Construction Bylaw and Regulations

The Town shall implement and enforce a program to reduce pollutants in stormwater runoff discharged to the municipal drainage system from construction activities, including use of sediment and erosion control practices, at sites greater than one acre. Billerica has met this requirement by adopting a bylaw entitled *Stormwater Management By-Law* in 2007 and associated regulations. This bylaw provides guidance for site planning and stormwater runoff control during construction and post-construction to protect local water resources from discharges. The Board of Health serves as the enforcement agency for the bylaw.

The Town will review the existing bylaw and regulations with respect to the 2016 General Permit and modify it if needed.

BMP 4B Construction Policy and Procedures

Billerica shall develop written procedures for site inspections and enforcement of sediment and erosion control measures. They will include procedures for tracking the number of site reviews, inspections, and enforcement actions.

3.4.3 MCM 4 Implementation Schedule

BMP	PY1	PY2	PY3	PY4	PY5
4A Construction Bylaw and Regulations	●				
4B Construction Policy and Procedures	●				

● = year due

3.4.4 MCM 4 Guidelines and Resources

The following links include free or low-cost resources Billerica can use to supplement the Construction program.

EPA Construction General Permit SWPPP template, including inspection forms
https://www.epa.gov/npdes/epas-2017-construction-general-permit-cgp-and-related-documents

Massachusetts Stormwater Handbook
https://www.mass.gov/guides/massachusetts-stormwater-handbook-and-stormwater-standards

EPA Stormwater Management Program Resources – Construction Site Runoff Control
https://www.epa.gov/npdes-permits/stormwater-tools-new-england#csrc

EPA National Menu of BMPs for Stormwater
https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater#constr

Billerica *Stormwater Management By-Law*
https://www.town.billerica.ma.us/DocumentCenter/View/315/Stormwater-Management-Bylaw-Article-XXV?bidId=

Billerica Stormwater Management Regulations
https://www.town.billerica.ma.us/DocumentCenter/View/3634/Rules-and-Regulations-Chapter-6-

Central Massachusetts Regional Stormwater Coalition SOP 5: Construction Site Inspection
http://www.centralmastormwater.org/Pages/crsc_toolbox/Construction%20Inspection%20SOP_FINAL.pdf

Central Massachusetts Regional Stormwater Coalition SOP 6: Erosion and Sedimentation Control
http://www.centralmastormwater.org/Pages/crsc_toolbox/Erosion%20and%20Sedimentation%20Control%20SOP_FINAL.pdf

3.4.5 MCM 4 Checklist of Key Documentation

Documentation of BMP progress should be kept in Appendix F. The following checklist includes the required documentation for MCM 4. See Section 5 of this Plan for additional record keeping information.

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

3.5 MCM 5: Post-Construction Stormwater Management

Objective: *Reduce the discharge of pollutants found in stormwater through the retention or treatment of stormwater after construction on new or redeveloped sites.*

This section of the SWMP describes how to comply with the Stormwater Management in New Development and Redevelopment requirements in General Permit Section 2.3.6.

3.5.1 MCM 5 BMPs from NOI

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

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

3.5.2 MCM 5 Implementation Plan

BMP 5A Post-Construction Bylaw and Regulations

The Town shall implement and enforce a program to reduce pollutants in stormwater runoff discharged to the municipal drainage system from post-construction activities for all new development and redevelopment sites greater than one acre. Billerica has met this requirement by adopting a bylaw entitled *Stormwater Management By-Law* in 2007 and associated regulations. This bylaw provides guidance for site planning and stormwater runoff control during construction and post-construction to protect local water resources from discharges. The Board of Health serves as the enforcement agency for the bylaw.

The Town will need to review the existing bylaw with respect to the 2016 General Permit and modify it if needed. Additionally, the Town must have procedures in place to require the submission of as-built plans after the completion of construction projects and ensure long-term operation and maintenance of stormwater management practices in place at construction sites. The Town has already met these requirements through Section 12 of the *Stormwater Management Regulations*.

BMP 5B Assess Street and Parking Lot Guidelines

In accordance with General Permit Section 2.3.6.b, Billerica shall develop a report assessing current street design and parking lot guidelines and other local requirements that affect the creation of impervious cover. This assessment shall be used to provide information to allow the Town to determine if changes to design standards for streets and parking lots can be made to support low impact design (LID) options. Input will be gathered from multiple Town departments. The final report will be appended to this SWMP once completed.

BMP 5C Assess Feasibility of Allowing Green Infrastructure

As detailed in General Permit Section 2.3.6.c, Billerica shall develop a report assessing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable when appropriate site conditions exist. The Town shall implement all recommendations in accordance with the schedules contained in the assessment.

BMP 5D Retrofit Feasibility Assessment

The Town must identify at least five town-owned properties that could potentially be modified or retrofitted with BMPs designed to reduce the frequency, volume, and pollutant loads of stormwater discharges through a reduction of impervious area. This inventory must be updated annually starting in Permit Year 5. General Permit Section 2.3.6.d describes factors and considerations for selecting potential sites with the goal of reducing impervious area and improving water quality. The Town should continue to look for cost-efficient opportunities to improve drainage, replace existing catch basins with deep sump catch basins, and add water quality BMPs as part of the Town's Roadway Management Program[11]. Long-term tracking of O&M should be recorded in the Town's GIS database for recent drainage improvement projects and going forward.

3.5.3 MCM 5 Implementation Schedule

BMP	PY1	PY2	PY3	PY4	PY5
5A Post-Construction Bylaw and Regulations		●			
5B Assess Street and Parking Lot Guidelines				●	
5C Assess Feasibility of Allowing Green Infrastructure				●	
5D Retrofit Feasibility Assessment				●→	

● = year due

[11] Additional information about the Town's Roadway Management Program can be found online at: https://www.town.billerica.ma.us/439/Roadway-Management

3.5.4 MCM 5 Guidelines and Resources

The following links include free or low-cost resources Billerica can use to supplement the Post-Construction program.

Massachusetts Stormwater Handbook
https://www.mass.gov/guides/massachusetts-stormwater-handbook-and-stormwater-standards

EPA Stormwater Management Program Resources – Post Construction Stormwater Control
https://www.epa.gov/npdes-permits/stormwater-tools-new-england#pcsm

EPA National Menu of BMPs for Stormwater
https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater#post

Billerica *Stormwater Management By-Law*
https://www.town.billerica.ma.us/DocumentCenter/View/315/Stormwater-Management-Bylaw-Article-XXV?bidId=

Billerica Stormwater Management Regulations
https://www.town.billerica.ma.us/DocumentCenter/View/3634/Rules-and-Regulations-Chapter-6-

Managing Stormwater in Your Community: A Guide for Building an Effective Post-Construction Program
https://www3.epa.gov/npdes/pubs/stormwaterinthecommunity.pdf

EPA Managing Stormwater with LID Practices: Addressing Barriers to LID
https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/AddressingBarrier2LID.pdf

Metropolitan Area Planning Council LID Toolkit
https://www.mapc.org/resource-library/low-impact-development-toolkit/

Central Massachusetts Regional Stormwater Coalition SOP 5: Construction Site Inspection
http://www.centralmastormwater.org/Pages/crsc_toolbox/Construction%20Inspection%20SOP_FINAL.pdf

Central Massachusetts Regional Stormwater Coalition SOP 6: Erosion and Sedimentation Control
http://www.centralmastormwater.org/Pages/crsc_toolbox/Erosion%20and%20Sedimentation%20Control%20SOP_FINAL.pdf

3.5.5 MCM 5 Checklist of Key Documentation

Documentation of BMP progress should be kept in Appendix F. The following checklist includes the required documentation for MCM 5. See Section 5 of this Plan for additional record keeping information.

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

3.6 MCM 6: Good Housekeeping and Pollution Prevention

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

This section of the SWMP describes how to comply with the Good Housekeeping and Pollution Prevention requirements in General Permit Section 2.3.7.

3.6.1 MCM 6 BMPs from NOI

BMP ID	BMP Category	BMP Description	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation
6A	Operation & Maintenance Program	Inventory and create O&M procedures for all permittee-owned parks and open spaces, buildings and facilities (including their storm drains), and vehicles and equipment	DPW	Complete two (2) years after permit effective date, implement in following years	2019 (PY2)
6B	Operation & Maintenance Program	Establish and implement program for repair and rehabilitation of MS4 infrastructure	DPW	Complete two (2) years after permit effective date, implement in following years	2019 (PY2)

BMP ID	BMP Category	BMP Description	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation
6C	Stormwater Pollution Prevention Plan (SWPPP)	Develop and implement a SWPPP for DPW facility.	DPW	Complete SWPPPs within two (2) years of permit effective date, implement in following years	2019 (PY2)
6D-1	Operation & Maintenance Program	Implement procedures to optimize catch basin cleaning developed under BMP 6B	DPW	Track frequency and material quantity of catch basin cleaning in town. In first Annual Report and in SWMP, document plan for optimizing catch basin cleaning.	2018 (PY1)
6D-2	Operation & Maintenance Program	Implement procedures for street and parking lot sweeping developed under BMP 6B	DPW	Annually track number of miles cleaned or the volume or mass of material removed.	2018 (PY1)
6D-3	Operation & Maintenance Program	Implement procedures for use and storage of deicing materials developed under BMP 6B	DPW	Implement program for winter road maintenance throughout permit term.	2018 (PY1)
6D-4	Operation & Maintenance Program	Implement procedures to inspect and maintain Town-owned structural stormwater BMPs	DPW	Develop an inventory of Town-owned BMPs within two (2) years of permit effective date. Report on inspection and maintenance conducted annually.	2018 (PY1)

3.6.2 MCM 6 Implementation Plan

BMP 6A Operation and Maintenance Program for Municipal Facilities and Equipment

Billerica must develop a written Town-Wide Operation and Maintenance Program for municipal facilities and equipment, including:

- Parks and open space;
- Buildings and facilities, including schools, where pollutants are exposed to stormwater runoff; and
- Vehicles and equipment.

This plan will include an inventory of the municipally-owned facilities and equipment. The inventory and written program will be appended to this SWMP.

BMP 6B Operation and Maintenance Program for MS4 Infrastructure

The Town shall develop a plan describing the activities and procedures used to maintain MS4 infrastructure in a timely manner to reduce the discharge of pollutants from the MS4. The written program developed under this BMP will be appended to the SWMP.

BMP 6C Stormwater Pollution Prevention Plans

The Town has prepared and is implementing a SWPPP for the Town's DPW facility. In accordance with General Permit Section 2.3.7.b, Billerica must also develop and implement a SWPPP for other town-owned or operated waste handling facilities where pollutants are exposed to stormwater. SWPPP requirements include "regular" employee training for all members of the Pollution Prevention Team (at a minimum). Additionally, quarterly site inspections are required at these sites according to General Permit Section 2.3.7.b.iii.

BMP 6D-1 Catch Basin Cleaning

The Town must clean and inspect catch basins to make sure that catch basins are no more than 50% full. Develop and implement a program to optimize routine inspections, cleaning, and maintenance of catch basins. If a catch basin is consistently less than 50% fill, the Town can reduce the frequency of cleanings. If a catch basin is more than 50% full during two consecutive cleanings/inspections, the Town must investigate the contributing drainage area for sources of excessive sediment loading abate contributing sources when possible. Store and dispose/reuse catch basin cleanings according to MassDEP policies.

BMP 6D-2 Street Sweeping

Establish and implement procedures for sweeping and/or cleaning streets and Town-owned parking lots. All streets must be swept and/or cleaned at least once per year in the spring (excluding rural streets with no curbs or catch basins). More frequent sweeping shall occur in targeted areas on the basis of pollutant load reduction potential. Store and dispose/reuse street sweepings according to MassDEP policies.

For rural streets with no curbs or catch basins, the Town must sweep at least once per year or develop a targeted inspection and sweeping plan for those streets.

BMP 6D-3 Deicing Materials

Establish and implement procedures for winter road maintenance, including the use and storage of salt and sand.

BMP 6D-4 Inspection and Maintenance of Town-Owned BMPs

The Town shall develop inspection and maintenance procedures and frequencies for all stormwater treatment structures. An important first step will be to improve the inventory, mapping, and record keeping procedures for Town-owned or operated stormwater BMPs, such as detention ponds and swales. The inventory should be developed within two (2) years of the permit effective date, per Section 2.3.4.5.a of the General Permit. All Town-owned water quality BMPs must be inspected annually at a minimum. Note that drainage manholes and catch basins are not considered stormwater treatment structures for this BMP (structure maintenance procedures will be developed and implemented under BMPs 6B and 6D-1).

3.6.3 MCM 6 Implementation Schedule

BMP	PY1	PY2	PY3	PY4	PY5
6A O&M Program for Municipal Facilities and Equipment		●			
6B O&M Program for MS4 Infrastructure		●			
6C Stormwater Pollution Prevention Plans		●			
6D-1 Catch Basin Cleaning	●	↔	↔	↔	↔
6D-2 Street Sweeping		●	↔	↔	↔
6D-3 Deicing Materials		↔	↔	↔	↔
6D-4 Inspection and Maintenance of Town-Owned BMPs	●	●	●	●	●

● = annual requirement or year due

↔ = ongoing requirement

3.6.4 MCM 6 Guidelines and Resources

The following links include free or low-cost resources Billerica can use to supplement the Good Housekeeping and Pollution Prevention program.

EPA Stormwater Management Program Resources – Good Housekeeping
https://www.epa.gov/npdes-permits/stormwater-tools-new-england#gh

EPA National Menu of BMPs for Stormwater
https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater#poll

Center for Watershed Protection Municipal Pollution Prevention/Good Housekeeping Practices
http://cdrpc.org/wp-content/uploads/2015/05/CWP_Municipal_Pollution_Prevention.pdf

MassDEP Management of Catch Basin Cleanings
https://www.mass.gov/files/documents/2018/03/09/catch-basins.pdf

MassDEP Reuse & Disposal of Street Sweepings
https://www.mass.gov/files/documents/2018/05/14/street-sweepings.pdf

MassDEP Snow Disposal Guidance
https://www.mass.gov/guides/snow-disposal-guidance

Central Massachusetts Regional Stormwater Coalition SOP: Inspecting Constructed BMPs
http://centralmastormwater.org/Pages/crsc_toolbox/Constructed%20BMP%20Inspection%20SOP_FINAL.pdf

3.6.5 MCM 6 Checklist of Key Documentation

Documentation of BMP progress should be kept in Appendix F. The following checklist includes the required documentation for MCM 6. See Section 5 of this Plan for additional record keeping information.

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

Section 4
BMPs to Address Specific Waterbody Requirements

4.1 Impaired Waterbodies

As described in Sections 2 of the SWMP, several surface waterbodies within Billerica were identified in the 2014 Integrated List of Waters as Category 5 waters needing a TMDL. Concord River is impaired for bacteria and total phosphorus. Nutting Lake (east basin) is impaired for bacteria. Per Appendix H of the General Permit, the Town must comply with the additional requirements listed in Sections 4.1.1 and 4.1.2 below to address bacteria and total phosphorus in their stormwater discharges.

Although both segments of the Shawsheen River are impaired for dissolved oxygen, no additional BMPs are required for these waterbodies. The 2016 General Permit does not require BMPs or outreach to be completed for dissolved oxygen impairments beyond the outfall/interconnection monitoring described in the IDDE Plan.

Additionally, while Nutting Lake and Concord River are impaired for mercury in fish tissue with a final TMDL, no BMPs are required to address this legacy pollutant.

4.1.1 Enhanced BMPs for Bacteria or Pathogens – Concord River and Nutting Lake East Basin

General Permit Part 2.3.2: Public Education and Outreach

Billerica shall supplement the residential public education program with an annual message about the proper management of pet waste, including noting any existing bylaws where appropriate, and disseminating 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 shall also provide information to owners of septic systems about proper maintenance in any catchment that discharges to a waterbody impaired for bacteria or pathogens (i.e., Concord River and Nutting Lake).

General Permit Part 2.3.4: Illicit Discharge

Billerica shall implement the IDDE program required by the General Permit and described in Section 3.3 of this SWMP. Additionally, catchments draining to any waterbody impaired for bacteria or pathogens shall be designated either Problem Catchments or High Priority in implementation of the IDDE program.

4.1.2 Enhanced BMPs for Total Phosphorus – Concord River

General Permit Part 2.3.2: Public Education and Outreach

Billerica shall supplement the residential and business/commercial/institution public education program with an annual message about various topics, including:

- Spring – the proper use and disposal of grass clippings and encouraging the proper use of slow-release and phosphorus-free fertilizers;
- Summer – the proper management of pet waste, including noting any existing bylaws where appropriate; and
- Fall – the proper disposal of leaf litter.

General Permit Part 2.3.6: Stormwater Management in New Development and Redevelopment

Billerica's *Stormwater Management By-Law* or regulations shall include requirements that new development and redevelopment stormwater management BMPs be optimized for phosphorus removal. Additionally, the Town's retrofit inventory developed under BMP 5D shall consider BMPs that infiltrate stormwater when possible.

General Permit Part 2.3.7: Good House Keeping and Pollution Prevention for Permittee Owned Operations

The Town shall establish a program to properly manage grass cuttings and leaf litter on Town-owned properties, including prohibiting blowing organic waste onto impervious surfaces. Billerica shall also increase street sweeping to a minimum of two occurrences per year, once in the spring and at least once in the fall.

Phosphorus Source Identification Report

Within four years of the permit effective date, the Town must complete a Phosphorus Source Identification Report that includes the following components:

- Calculation of total MS4 area draining to the water quality limited receiving water segments or their tributaries, including updated mapping and catchment delineations completed under the IDDE Program;
- All screening and monitoring results targeting the receiving water segment(s);
- Impervious area and directly connected impervious area for the target catchment;
- Identification, delineation and prioritization of potential catchments with high phosphorus loading; and
- Identification of potential retrofit opportunities or opportunities for the installation of structural BMPs during redevelopment, including the removal of impervious area.

Potential Structural BMPs

Within five years of the permit effective date, the Town must evaluate all Town-owned properties identified as presenting retrofit opportunities or areas for structural BMP installation under the Good Housekeeping Program or in the Phosphorus Source Identification Report that are within the drainage area of the water quality limited water or its tributaries. The evaluation shall include:

- The next planned infrastructure, resurfacing, or redevelopment activity planned for the property (if applicable) OR planned retrofit date;
- The estimated cost of redevelopment or retrofit BMPs; and
- The engineering and regulatory feasibility of redevelopment or retrofit BMPs.

The Town must also provide a list of planned structural BMPs and a plan and schedule for implementation. At least one structural BMP must be installed as a "demonstration project" within a catchment with high phosphorus load potential within six years of the permit effective date.

The estimated phosphorus removal by structural BMPs installed in Billerica's regulated area must be tracked.

4.2 Shawsheen River Watershed Bacteria TMDL

As described in Section 2.2.3 of the SWMP, a final TMDL for bacteria has been developed for the Shawsheen River Watershed. This TMDL requires that Towns discharging to the impaired waterways within the Shawsheen River Watershed comply with requirements in Appendix F of the General Permit. These requirements are summarized below as they apply to Billerica's program.

4.2.1 Enhanced BMPs

General Permit Part 2.3.3: Public Education and Outreach

Billerica shall supplement the residential public education program with an annual message about the proper management of pet waste. Educational materials should also be provided to dog owners during issuance or renewal of dog licenses. All pet waste management educational materials should:

- Reference Section 2.4, Cleaning Up After Dogs, of Article VII in the General Bylaws, which requires removal of any pet waste from public and private property;
- Describe the detrimental impacts of improper management of pet waste;
- Include requirements for waste collection and disposal; and
- List the penalties for non-compliance.

General Permit Part 2.3.4: Illicit Discharge Detection and Elimination Program

Catchments that drain to waterbodies impaired for bacteria or pathogens must be designated as "Problem" or "High Priority" catchments during implementation of the IDDE Program. This includes all outfalls discharging to Spring Brook and Shawsheen River in Billerica. These outfalls have been categorized as "High Priority" in the IDDE Program.

4.3 Additional Requirements for Discharges to Surface Drinking Water Supplies and Their Tributaries

According to Section 3.0 of the 2016 Small MS4 General Permit, MS4s that discharge to public surface drinking water supply sources or their tributaries should consider these waters a priority in the implementation of the SWMP. The Concord River is a Class B drinking water source for the Town of Billerica that runs south to north across the length of town into Lowell. According to MassDEP's Source Water Assessment and Protection report for Billerica[12]:

> *A Class B water body source such as the Concord River does not have Zone A, B and C protection areas, as do Class A water body sources. For the purposes of the SWAP assessments, a 400-foot setback area along the river and all feeder streams has been delineated for Class B water body sources that is referred to as an "Emergency Planning Zone". Land uses and activities within this zone are of particular concern for source protection and emergency planning because of their proximity to the water supply.*
>
> *River drinking water sources are particularly susceptible to spills and accidental releases from public and private discharges; accidents related to vehicles, railroads, airports, boats; utility easements; fixed site releases at industrial and public facilities; inappropriate use of pesticides and fertilizers; improper disposal of hazardous household waste; and illegal dumping of a variety of substances.*

The Concord River has been a Small MS4 Program priority for the Town since 2003. Many of the potential sources of pollution to the Concord River are addressed in the Small SM4 General Permit and this Plan. The Water Department has an emergency response plan for any spills upstream of the raw water intake which includes deploying booms and absorbent pads around the intake.

Additionally, Billerica should provide pretreatment and spill control measures to any stormwater discharges directly to the Concord River and its tributaries upstream of the intake. These outfalls have been identified as high priority for investigation in the IDDE Program, and ongoing mapping and catch basin investigations will identify existing infrastructure and pretreatment at these outfalls.

[12] MassDEP. *Source Water Assessment and Protection (SWAP) Report for Billerica Water Department*. September 9, 2003. URL: https://www.mass.gov/files/documents/2016/08/ue/3031000.pdf

Section 5
Program Evaluation, Record Keeping, and Reporting

5.1 Program Evaluation

The Town will annually self-evaluate its compliance with the terms and conditions of the 2016 General Permit, including the appropriateness of selected BMPs and progress toward defined measurable goals. The self-evaluation will be submitted as part of the Annual Report and maintained as part of the SWMP.

5.2 Record Keeping

The Town will keep all records required by the 2016 General Permit for **at least five years**, including, but not limited to the following key information:

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

Checklists of record keeping items Billerica should maintain are also included under each BMP in Section 3 of the SWMP. Records relating to the 2016 General Permit, including the SWMP, will be made available to the public, as required by Section 4.2.c of the Permit.

5.3 Annual Reports

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

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

i. A self-assessment review of compliance with the permit terms and conditions.

ii. An assessment of the appropriateness of the selected BMPs.

iii. The status of any plans or activities required by part 2.1 and/ or part 2.2, including:

- *Identification of all discharges determined to be causing or contributing to an exceedance of water quality standards and description of response including all items required by part 2.1.1;*
- *For discharges subject to TMDL related requirements, identification of specific BMPs used to address the pollutant identified as the cause of impairment and assessment of the BMPs effectiveness at controlling the pollutant (part 2.2.1. and Appendix F) and any deliverables required by Appendix F;*
- *For discharges to water quality limited waters a description of each BMP required by Appendix H and any deliverables required by Appendix H.*

iv. *An assessment of the progress towards achieving the measurable goals and objectives of each control measure in part 2.3 including:*

- *Evaluation of the public education program including a description of the targeted messages for each audience; method of distribution and dates of distribution; methods used to evaluate the program; and any changes to the program.*
- *Description of the activities used to promote public participation including documentation of compliance with state public notice regulations.*
- *Description of the activities related to implementation of the IDDE program including: status of the map; status and results of the illicit discharge potential ranking and assessment; identification of problem catchments; status of all protocols described in part 2.3.4.(program responsibilities and systematic procedure); number and identifier of catchments evaluated; number and identifier of outfalls screened; number of illicit discharges located; number of illicit discharges removed; gallons of flow removed; identification of tracking indicators and measures of progress based on those indicators; and employee training.*
- *Evaluation of the construction runoff management including number of project plans reviewed; number of inspections; and number of enforcement actions.*
- *Evaluation of stormwater management for new development and redevelopment including status of ordinance development (2.3.6.a.ii.), review and status of the street design assessment (2.3.6.b.), assessments to barriers to green infrastructure (2.3.6.c), and retrofit inventory status (2.3.6.d.)*
- *Status of the O&M Programs required by part 2.3.7.a.*
- *Status of SWPPP required by part 2.3.7.b. including inspection results.*
- *Any additional reporting requirements in part 3.0.*

v. *All outfall screening and monitoring data collected by or on behalf of the permittee during the reporting period and cumulative for the permit term, including but not limited to all data collected pursuant to part 2.3.4. The permittee shall also provide a description of any additional monitoring data received by the permittee during the reporting period.*

vi. *Description of activities for the next reporting cycle.*

vii. *Description of any changes in identified BMPs or measurable goals.*

viii. *Description of activities undertaken by any entity contracted for achieving any measurable goal or implementing any control measure.*

5.4 SWMP Modifications

Per Section 4.1 of the 2016 General Permit, the Town shall complete the following tasks:

a. *The permittee shall annually self-evaluate its compliance with the terms and conditions of this permit and submit each self-evaluation in the Annual Report. The permittee shall also maintain the annual evaluation documentation as part of the SWMP.*

b. *The permittee shall evaluate the appropriateness of the selected BMPs in achieving the objectives of each control measure and the defined measurable goals. Where a BMP is found to be ineffective the permittee shall change BMPs in accordance with the provisions below. In addition, permittees may augment or change BMPs at any time following the provisions below:*

    - *Changes adding (but not subtracting or replacing) components or controls may be made at any time.*
    - *Changes replacing an ineffective or infeasible BMP specifically identified in the SWMP with an alternative BMP may be made as long as the basis for the changes is documented in the SWMP by, at a minimum:*
        - *An analysis of why the BMP is ineffective or infeasible;*
        - *Expectations on the effectiveness of the replacement BMP; and*
        - *An analysis of why the replacement BMP is expected to achieve the defined goals of the BMP to be replaced.*

    The permittee shall indicate BMP modifications along with a brief explanation of the modification in each Annual Report.

c. *EPA or MassDEP may require the permittee to add, modify, repair, replace or change BMPs or other measures described in the annual reports as needed:*
    - *To address impacts to receiving water quality caused or contributed to by discharges from the MS4; or*
    - *To satisfy conditions of this permit*

    Any changes requested by EPA or MassDEP will be in writing and will set forth the schedule for the permittee to develop the changes and will offer the permittee the opportunity to propose alternative program changes to meet the objective of the requested modification.

The Town may update or revise the SWMP as needed as the Town's activities are modified, changed, or updated to meet permit conditions during the permit term. If it is necessary to modify or update the SWMP, the Town should follow this procedure to formalize the changes:

- Keep a log with a description of the modification, the date, and the name and signature of the person making it; and
- Re-sign and date the certification statement in Section 6 of this SWMP.

A SWMP amendment log and additional certification statements are located in Appendix H.

Section 6
SWMP 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: Abdul Alkhatib Title: Director of Public Works

Signature: [signature] Date: 3/13/19

A letter that authorizes the Town of Billerica Director of Public Works to sign and certify certain documents prepared under the Small MS4 General Permit is included in Appendix I.

Appendix A

Notice of Intent
and
Authorization to Discharge Letter from EPA

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

Part I: General Conditions

General Information

Name of Municipality or Organization: Town of Billerica

State: MA

EPA NPDES Permit Number (if applicable): MA041182

Primary MS4 Program Manager Contact Information

Name: Kelley Conway

Title: Town Engineer

Street Address Line 1: DPW - Engineering Division

Street Address Line 2: 365 Boston Rd

City: Billerica

State: MA

Zip Code: 01821

Email: kconway@town.billerica.ma.us

Phone Number: (978) 671-1300

Fax Number: (978) 671-0958

Other Information

Stormwater Management Program (SWMP) Location (web address or physical location, if already completed): https://www.town.billerica.ma.us/214/Stormwater-Management

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: https://www.mapsonline.net/billericama/public.html

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)*: Yes

Effective Date or Estimated Date of Adoption (MM/DD/YY): 10/02/07

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): 10/02/07

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): 10/02/07

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
Direct Discharge to Concord River (MA82A-07)	12	☐	☐	☐	☐	☐	☒	☐	☐	☐	Eurasian Water Milfoil, Myriophyllum spicatum, Non-Native Aquatic Plants, Fecal Coliform, Mercury in Fish Tissue
Tributary/Wetland to Concord River (MA82A-07)	16	☐	☐	☐	☐	☐	☒	☐	☐	☐	Eurasian Water Milfoil, Myriophyllum spicatum, Non-Native Aquatic Plants, Fecal Coliform, Mercury in Fish Tissue
Direct Discharge to Concord River (MA82A-08)	19	☐	☐	☐	☐	☐	☒	☐	☐	☐	Eurasian Water Milfoil, Myriophyllum spicatum, Non-Native Aquatic Plants, Mercury in Fish Tissue
Tributary/Wetland to Concord River (MA82A-08)	8	☐	☐	☐	☐	☐	☒	☐	☐	☐	Eurasian Water Milfoil, Myriophyllum spicatum, Non-Native Aquatic Plants, Mercury in Fish Tissue
Direct Discharge to Content Brook (MA83-09)	9	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Tributary/Wetland to Content Brook (MA83-09)	3	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Tributary/Wetland to Greenough Pond	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Direct Discharge to Jones Brook	4	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Tributary/Wetland to Jones Brook	15	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Tributary/Wetland to Lubbers Brook (MA92-05)	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Tributary/Wetland to Middlesex Canal	6	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Direct Discharge to Mill Brook	4	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Tributary/Wetland to Mill Brook	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Direct Discharge to Nutting Lake East Basin (MA82088)	2	☐	☐	☐	☐	☐	☐	☐	☒	☐	Non-Native Aquatic Plants
Tributary/Wetland to Nutting Lake East Basin (MA82088)	6	☐	☐	☐	☐	☐	☐	☐	☒	☐	Non-Native Aquatic Plants
Direct Discharge to Nutting Lake West Basin (MA82124)	3	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Tributary/Wetland to Pond Street Pond (MA83021)	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Tributary/Wetland to River Meadow Brook	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	

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
Direct Discharge to Shawsheen River (MA83-17)	8	☐	☐	☒	☐	☐	☐	☐	☐	☐	
Tributary/Wetland to Shawsheen River (MA83-17)	15	☐	☐	☒	☐	☐	☐	☐	☐	☐	
Direct Discharge to Shawsheen River (MA83-18)	13	☐	☐	☒	☐	☐	☐	☐	☐	☐	Mercury in Fish Tissue
Tributary/Wetland to Shawsheen River (MA83-18)	3	☐	☐	☒	☐	☐	☐	☐	☐	☐	Mercury in Fish Tissue
Direct Discharge to Unnamed Isolated Wetland	16	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Direct Discharge to Webb Brook	3	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Tributary/Wetland to Webb Brook	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Direct Discharge to Winning Pond (MA82123)	4	☐	☐	☐	☐	☐	☐	☐	☐	☐	Eurasian Water Milfoil, Myriophyllum spicatum
Interconnection with Tewksbury MS4	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Other MS4 Outfalls in Regulated Area	468	☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
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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 applicable waste load allocation (WLA), identify any additional BMPs employed to specifically support the achievement of the WLA in the TMDL section at the end of Part III.

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

MCM 1: Public Education and Outreach

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

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

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

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

Part III: Stormwater Management Program Summary

MCM 2: Public Involvement and Participation

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

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

Part III: Stormwater Management Program Summary

MCM 3: Illicit Discharge Detection and Elimination (IDDE)

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

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

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

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

Part III: Stormwater Management Program Summary

MCM 4: Construction Site Stormwater Runoff Control

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

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

Part III: Stormwater Management Program Summary

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

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

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

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

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

Part III: Stormwater Management Program Summary

MCM 6: Municipal Good Housekeeping and Pollution Prevention

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

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

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

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)
Shawsheen River (Bactria/Pathogen)	Adhere to requirements in part A.III of Appendix F	DPW

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)
Phosphorus	Concord River (MA82A-07 & MA82A-08)	Adhere to requirements in part II of Appendix H	DPW
Fecal Coliform	Concord River (MA82A-07)	Adhere to requirements in part III of Appendix H	DPW
E. Coli	Nutting Lake East Basin (MA82088)	Adhere to requirements in part III of Appendix H	DPW

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.

1. BMPs identified in the 2003 General Permit NOI have evolved over the permit term due to staff changes and Stormwater Program modifications. The intent of the 2003 BMPs are being met under the proposed 2016 General Permit BMPs included in the Stormwater Management Plan. The Plan will describe how the BMPs under the 2003 permit fit into the new program, particularly where BMPs and/or measurable goals that are outdated or no longer appropriate have been replaced or updated.

2. The National Endangered Species Eligibility Determination screening process has been completed and the Town of Billerica meets Criterion C. The Town's stormwater discharges and discharge related activities will have no affect on listed species or critical habitat. The Town will consult with U.S. Fish and Wildlife as needed during the permit term.

3. The National Historic Preservation Act Eligibility Determination screening process has been completed and the Town of Billerica meets Criterion A. The Town's stormwater discharges do not have the potential to cause effects on historic properties. The Town will consult with the State Historic Preservation Officer as needed during the permit term.

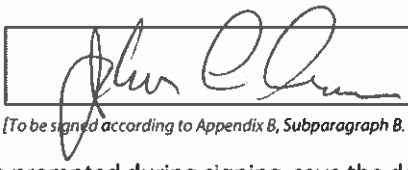
4. The total number of MS4 outfalls increased from 467 to 647 due to a comprehensive review of historic drainage system mapping and outfall investigations in Fiscal Year 2018. This is further explained in the SWMP. The outfalls and associated receiving waters in Part II are based on mapping as of September 2018 and are subject to change during implementation of the Stormwater Management Program as newly constructed outfalls are added to the map and inventory; locations are adjusted; or outfalls are removed if they are determined to be non-municipally owned/operated or reclassified as a BMP inlet, culvert, or other structure. Changes to the outfall inventory and mapping will be formalized in Annual Reports to EPA.

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

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

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:	John C. Curran	Title:	Town Manager
Signature:		Date:	9/25/2018

[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

Outfalls and Receiving Waterbodies

Outfalls

Receiving Water

- Concord River MA82A-07
- Wetland/Tributary to Concord River MA82A-07
- Concord River MA82A-08
- Wetland/Tributary to Concord River MA82A-08
- Content Brook
- Wetland/Tributary to Content Brook
- Wetland/Tributary to Greenough Pond
- Jones Brook
- Wetland/Tributary to Jones Brook
- Wetland/Tributary to Lubbers Brook
- Wetland/Tributary to Middlesex Canal
- Mill Brook
- Wetland/Tributary to Mill Brook
- Nutting Lake East Basin MA82088
- Wetland/Tributary to Nutting Lake MA82088
- Nutting Lake West Basin MA82124
- Wetland/Tributary to Pond Street Pond
- Wetland/Tributary to River Meadow Brook
- Shawsheen River MA83-17
- Wetland/Tributary to Shawsheen River MA83-17
- Shawsheen River MA83-18
- Wetland/Tributary to Shawsheen River MA83-18
- Unnamed Isolated Wetland
- Webb Brook
- Wetland/Tributary to Webb Brook
- Winning Pond
- Interconnection with Tewksbury MS4
- MS4 Outfalls Outside Receiving Area

LEGEND

Roads

Type

- Limited Access Highway
- Multi-Lane Highway, NOT Limited Access
- Other Numbered Highway
- Major Road - Collector
- Minor Street or Road
- Major Drainage Basin
- Subbasin
- Urban Area (2000 and 2010 Census)
- Town Boundary

Flood Zone Designations

- 100 Year Flood Zone
- Public Surface Water Supply (PSWS)
- Water Bodies
- Inland Wetlands
- Stream/Intermittent Stream
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- NWI Rivers and Streams

Water Body Segments - Rivers

Category

- 2 - Attaining some uses; other uses not assessed
- 3 - No uses assessed
- 4A -Impaired - TMDL is completed
- 4C - Impairment not caused by a pollutant
- 5 - Impaired - TMDL required

Water Body Segments - Lakes, Estuaries

Category

- 2 - Attaining some uses; other uses not assessed
- 3 - No uses assessed
- 4A -Impaired - TMDL is completed
- 4C - Impairment not caused by a pollutant
- 5 - Impaired - TMDL required

LOCUS MAP



0 3,600

Feet

1:21,600

NOTES

1. Based on USGS Topo Map (1987)
2. MassGIS: 2014 Integrated List Data (2016), Major Drainage Basins (2003), Subbasins (2007), Community Boundary (2017), National Wetlands Inventory (2007), FEMA National Flood Hazard (2017), MassDOT Major Roads (2014)
3. Town of Billerica: Outfalls

Notice of Intent
Billerica, Massachusetts

September 2018

Tighe&Bond
Engineers | Environmental Specialists

G:\GIS\MA\BillericaMA\MapDocument\NOIReceivingWaterMap_24x36.mxd Date Saved: 8/30/2018 User: Ngkoncki

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

VIA EMAIL

March 5, 2019

John C. Curran
Town Manager

And;

Kelley Conway
Town Engineer
DPW - Engineering Division
365 Boston Rd
Billerica, MA. 01821
MAR041182

Re: National Pollutant Discharge Elimination System Permit ID #: MAR041182, Town of Billerica

Dear Kelley Conway:

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.

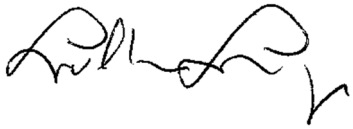
Information about the permit and available resources can be found on our website: https://www.epa.gov/npdes-permits/massachusetts-small-ms4-general-permit. Should you have any questions regarding this permit please contact Newton Tedder at tedder.newton@epa.gov or (617) 918-1038.

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

Appendix B

Summary of 2003 and 2016 MS4 General Permit BMPs

Appendix B
Summary of 2003 and 2016 MS4 General Permit BMPs

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

MCM 1: Public Education and Outreach

1.3.1 – Partner with Local Organization - now under BMP 2B
1.3.2 – Public Education Materials - now under BMP 1 (A-D)
1.3.3 – Local schools education program - now under BMPs 1A and 2B
1.3.4 – Stormwater Web Page - now under BMP 1 (A-D)
1.3.5 – Cable Access TV Show - now under BMP 1 (A-D)
1.3.6 – Public Access GIS Tool - now under BMP 1 (A-D)
1.4.1 – Stormwater flyer to residents - now under BMP 1A
1.4.2 – Stormwater lesson plan - now under BMPs 1A and 2B
1.4.3 – Media toolkit and stormwater PowerPoint program - now under BMP 1 (A-D)
1.4.4 – Business Flyer & Storm Drain Marking - now under BMPs 1B and 2B
1.4.5 – Stormwater Outreach Materials - now under BMP 1 (A-D)

MCM 2: Public Involvement and Participation

2.3.1 – Partner/Support a Watershed Organization - now under BMP 2B
2.3.2 – Storm Drain Stenciling Program - now under BMP 2B
2.3.3 – Stormwater Public Meetings Program - now under BMPs 2A and 2B
2.3.4 – Recognition Programs - *Substituted 2.3.7 for 2.3.4 in Permit Year 4* - N/A
2.3.5 – Recreation Department Public Education Program - now under BMPs 1 (A-D) and 2C
2.3.6 – Annual “Clean the Stream” Program - now under BMP 2B
2.3.7 – Develop Stormwater By-Law Advisory Group - now under BMP 2C
2.4.1 – Stormwater traveling display - now under BMP 1 (A-D)
2.4.2 – Stormwater poster contest - now under BMP 2B
2.4.3 – Stormwater photo contest - now under BMP 2B
2.4.4 – Stormwater summit special event - now under BMP 2B
2.4.5 – Stormwater super summit - now under BMP 2B

MCM 3: Illicit Discharge Detection and Elimination

3.4.1 – Asset Management Program - now under BMP 3D, 6A, and 6B
3.4.2 – Storm Drain Map - now under BMP 3C
3.4.3 – TMDL, Critical Habitat, Historic Property - now under “Actions for Meeting Total Maximum Daily Load (TMDL) Requirements” and “Eligibility Determination” as outlined in the 2016 General Permit Notice of Intent
3.4.4 – Stormwater By-Law - now under BMP 3A
3.4.5 – Illicit Discharge Detection Program - now under BMP 3D and 3E
3.4.6 – Illicit Discharge Elimination Program - now under BMP 3A, 3D, and 3E
3.4.7 – Resident education program - now under BMP 1A

Appendix B
Summary of 2003 and 2016 MS4 General Permit BMPs

MCM 4: Construction Site Stormwater Runoff Control

4.2.1 – Regulatory Controls - now under BMP 4 (A-B)

4.2.2 – Review and site inspection procedures - now under BMP 4B

4.2.3 – Enforcement procedures - now under BMP 4 (A-B)

4.2.4 – Procedures for Handling Public Comment - now under BMP 4B

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

5.3.1 – Structural Stormwater Controls - now under BMP 5A

5.3.2 – Local By-Laws - now under BMP 5A

5.3.3 – Planning Strategies - now under BMP 5 (A-D)

5.3.4 – Conditions for private stormwater systems - now under BMPs 4A and 5A

5.3.5 – Stormwater infrastructure inspection program - now under BMPs 6B and 6D-4

MCM 6: Pollution Prevention and Good Housekeeping in Municipal Operations

6.3.1 – Pollution Prevention Planning - now under BMP 6C

6.3.2 – Employee Training Program - now under BMP 6A, 6B, and 6C

6.3.3 – Recycling Program - now under BMP 2B

6.3.4 – Catch Basin Cleaning Program - now under BMPs 6B and 6D-1

6.3.5 – Street Sweeping Program - now under BMPs 6B and D-2

6.3.6 – Operations and Maintenance - now under BMP 6 (A-D)

6.3.7 – Reporting - ongoing tracking for all MCMs to be included in annual reports

6.3.8 – Mosquito Control Project & Drainage System Maintenance - now under BMPs 6B and 6D-1

BMPs for Meeting Total Maximum Daily Load (TMDL) Waste Load Allocations (WLA)

7.2.1 – Monitor Current Impairment Lists - now under “Actions for Meeting Total Maximum Daily Load (TMDL) Requirements” in the 2016 General Permit Notice of Intent

Appendix C

Endangered Species Act Eligibility Criteria Documentation

Endangered Species Act Eligibility Certification

TO: Town of Billerica Stormwater Management Program Files

FROM: Tighe & Bond

COPY: Abdul Alkhatib, Director of Public Works
Kelley Conway, P.E., Town Engineer

DATE: December 19, 2018

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

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

Tighe & Bond went to the USFWS Information for Planning and Consultation (IPaC) website[1] and requested an Official Species List from the USFWS New England Ecological Services Field Office, included in Attachment B to this memorandum. The Official Species List for Billerica lists the following species that may occur or could potentially be affected by activities in the Town:

- Northern Long-eared Bat

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

Tighe & Bond then went to the USFWS New England Field Office website for Endangered Species Reviews/Consultations[2] and selected the Massachusetts state list[3] to review which Towns have federally-listed species. A copy of the list of Federally Listed Endangered and Threatened Species in Massachusetts is included in Attachment C to this memorandum. Based on review of this list, the Northern Long-eared Bat is listed statewide.

Tighe & Bond then reviewed Step 1 Part B of the USFWS endangered species consultation and visited the Massachusetts Natural Heritage and Endangered Species Program (NHESP) species information and conservation website about the Northern Long-eared Bat[4]. The NHESP website included a map showing the known locations of the Northern Long-eared Bat within Massachusetts. Attachment D includes the NHESP fact sheet for the Northern Long-eared Bat and a map showing there are no roost trees or hibernating locations within Billerica.

[1] http://ecos.fws.gov/ipac/
[2] https://www.fws.gov/newengland/EndangeredSpec-Consultation_Project_Review.htm
[3] https://www.fws.gov/newengland/pdfs/MA%20species%20by%20town.pdf
[4] http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/species-information-and-conservation/rare-mammals/northern-long-eared-bat.html

Based on the results of the NHESP website review, Tighe & Bond determined there is no potential habitat for any listed species within the action area and therefore no further coordination is required with the USFWS. Attachment E provides the results of Tighe & Bond's informal consultation on behalf of the Town of Billerica with USFWS "no species present" letter that states "no species are known to occur in the project area".

Step 1 – Determine if you can meet USFWS Criterion A

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

No, the Town of Billerica's IPaC action area potentially contains the Northern Long-eared Bat, a federally listed species.

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

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

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

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

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

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

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

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

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

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

3) Do you agree that if, during the course of the permit term, you plan to install a structural BMP not identified in the NOI that you will conduct an endangered species screening for the proposed site and contact the USFWS if you determine that the new activity "may affect" or is "not likely to adversely affect" listed species or critical habitat under the jurisdiction of the USFWS."

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

Tighe & Bond's review of all questions under Step 3 resulted in "Yes" and thereby we determined the Town of Billerica's action area meets the endangered species' eligibility requirements included in **Criterion C**.

J:\B\B0874 Town of Billerica MA Stormwater\FY18 Stormwater Program Assistance\SWMP\Appendices\Appendix C - ESA\Endangered Species Act Eligibility Certification.docx

Attachment A

Appendix C of U.S. EPA's National Pollutant Discharge Elimination System (NPDES) General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) in Massachusetts

APPENDIX C
ENDANGERED SPECIES GUIDANCE

A. Background

In order to meet its obligations under the Clean Water Act and the Endangered Species Act (ESA), and to promote the goals of those Acts, the Environmental Protection Agency (EPA) is seeking to ensure the activities regulated by this general permit do not adversely affect endangered and threatened species or critical habitat. Applicants applying for permit coverage must assess the impacts of their stormwater discharges and discharge-related activities on federally listed endangered and threatened species ("listed species") and designated critical habitat ("critical habitat") to ensure that those goals are met. Prior to obtaining general permit coverage, applicants must meet the ESA eligibility provisions of this permit by following the steps in this Appendix[1].

Applicants also have an independent ESA obligation to ensure that their activities do not result in any prohibited "take" of listed species[12]. The term "Take" is used in the ESA to include harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering. "Harass" is defined as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Many of the measures required in this general permit and in these instructions to protect species may also assist in ensuring that the applicant's activities do not result in a prohibited take of species in violation of section 9 of the ESA. If the applicant has plans or activities in an area where endangered and threatened species are located, they may wish to ensure that they are protected from potential take liability under ESA section 9 by obtaining an ESA section 10 permit or by requesting formal consultation under ESA section 7. Applicants that are unsure whether to pursue a section 10 permit or a section 7 consultation for takings protection should confer with the appropriate United States Fish and Wildlife Service (USFWS) office or the National Marine Fisheries Service (NMFS), (jointly the Services).

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

[1] EPA strongly encourages applicants to begin this process at the earliest possible stage to ensure the notification requirements for general permit coverage are complete upon Notice of Intent (NOI) submission.
[2] Section 9 of the ESA prohibits any person from "taking" a listed species (e.g. harassing or harming it) unless: (1) the taking is authorized through an "incidental take statement" as part of completion of formal consultation according to ESA section 7; (2) where an incidental take permit is obtained under ESA section 10 (which requires the development of a habitat conversion plan; or (3) where otherwise authorized or exempted under the ESA. This prohibition applies to all entities including private individuals, businesses, and governments.

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

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

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

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

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

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

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

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

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

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

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

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

Step 1 – Determine if you can meet USFWS Criterion A

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

USFWS Effects Determination Guidance:

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

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

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

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

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

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

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

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

Step 4 - Document Results of the Eligibility Determination

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

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

C. Submittal of Notice of Intent

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

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

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

E. Services Information

United States Fish and Wildlife Service Office

National websites for Endangered Species Information:
Endangered Species home page: http://endangered.fws.gov
ESA Section 7 Consultations: http://endangered.fws.gov/consultation/index.html
Information, Planning, and Conservation System (IPAC): http://ecos.fws.gov/ipac/

U.S. FWS – Region 5
Supervisor

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

Natural Heritage Network

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

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

U.S. Fish and Wildlife IPaC system instructions

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

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

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

a. Indicate the action area[1] for the MS4 by either:
    a. Drawing the boundary on the map or by uploading a shapefile.
    Select "Continue"

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

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

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

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

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

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

Attachment B

Billerica IPaC Official Species List

United States Department of the Interior

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

In Reply Refer To:
Consultation Code: 05E1NE00-2018-SLI-1419
Event Code: 05E1NE00-2019-E-01300
Project Name: Billerica Stormwater

December 19, 2018

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2018-SLI-1419

Event Code: 05E1NE00-2019-E-01300

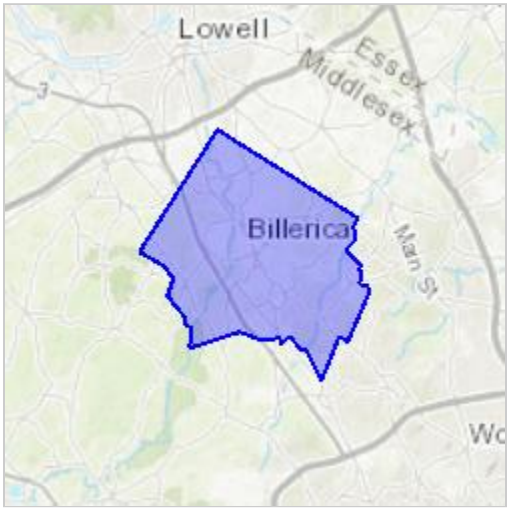
Project Name: Billerica Stormwater

Project Type: Regulation Promulgation

Project Description: This is part of development of a Stormwater Master Plan, Town will be looking at several different projects Town-wide to improve stormwater management.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.55881264049508N71.27271047884905W



Counties: Middlesex, 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.

Attachment C

Federally Listed Endangered and Threatened Species in Massachusetts

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN MASSACHUSETTS

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

Updated 02/05/2016

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN MASSACHUSETTS

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

Updated 02/05/2016

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN MASSACHUSETTS

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

[1]Migratory only, scattered along the coast in small numbers

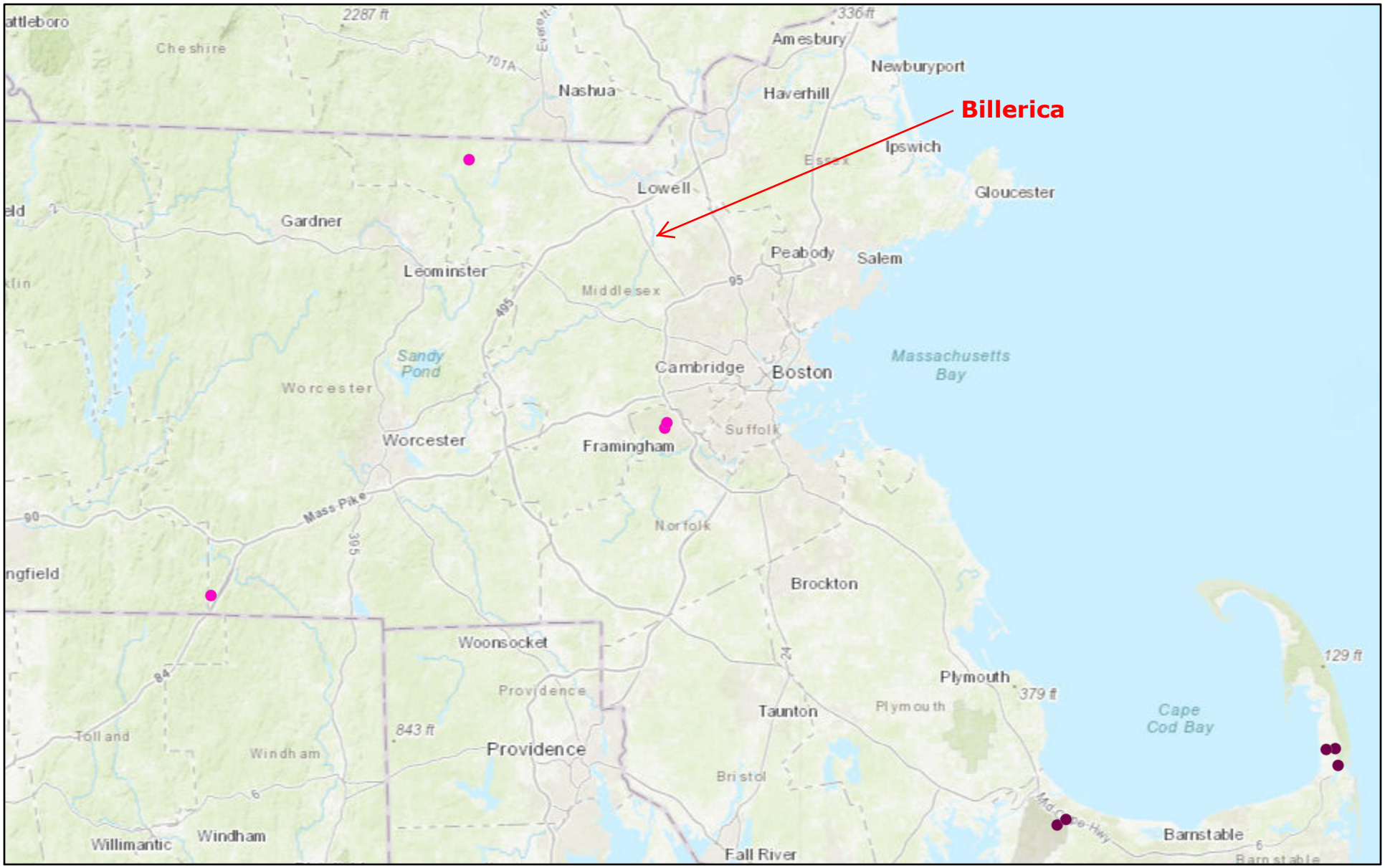
-Eastern cougar and gray wolf are considered extirpated in Massachusetts.
-Endangered gray wolves are not known to be present in Massachusetts, but dispersing individuals from source populations in Canada may occur statewide.
-Critical habitat for the Northern Red-bellied Cooter is present in Plymouth County.

Updated 02/05/2016

Attachment D

Northern Long-eared Bat Hibernaculum and Maternity Roost Location Map and Fact Sheet

Northern Long-eared Bat Hibernacula & Maternity Roosts



December 19, 2018

Statewide NLEB Symbology

- Maternity Roost Tree
- Hibernaculum
- MA_Northern_Long_eared_Bat_Maternity_Roost_Trees
- MA Northern Long-eared Bat Winter Hibernacula (with ¼ mile buffer)

1:1,155,581

0 5 10 20 mi

0 10 20 40 km

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS,

Natural Heritage & Endangered Species Program

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

Northern Myotis
Myotis septentrionalis

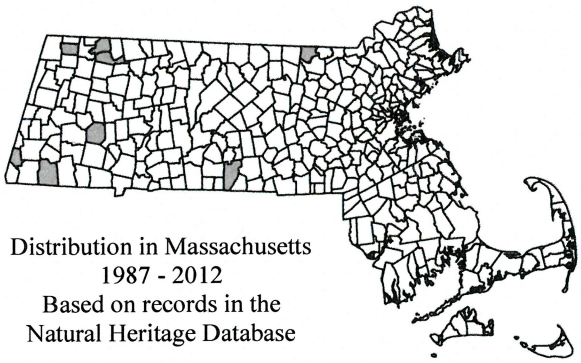
State Status: **Endangered**
Federal Status: **Threatened**

DESCRIPTION: The Northern Myotis is a small bat with large ears, which when pushed forward extend at least 4 mm past its nose. Its fur and wing membranes are light brown, giving it an overall somewhat uniform brown appearance. The hairs on its back are bicolored, with a dark base and lighter tip. The Northern Myotis averages 50-95 mm in total length, with a tail of 35-42 mm. In weight, it averages 5-8 g. This bat is typically found roosting in trees and feeding in forested habitats, but may occasionally be found in human habitations.

SIMILAR SPECIES: The best diagnostic character to distinguish the Northern Myotis from other species in Massachusetts is its long ears. The rare Little Brown Myotis (*Myotis lucifugus*, Endangered) and Indiana Myotis (*Myotis sodalis*, Endangered, federally Endangered) are similar in appearance, but have shorter ears which typically do not extend beyond their nose when pushed forward. The tragus, which is a fleshy projection which sticks up in front of the ear opening, is long and narrowly pointed in the Northern Myotis, while it is shorter and blunt in the Little Brown Myotis. The Little Brown Myotis also has glossier fur and a shorter tail relative to its body length. The Indiana Myotis has a keeled calcar (a ridge of cartilage between the foot and the tail), which the Northern Myotis lacks. Other features of interest in identification include the bat's hairless interfemoral membrane (the skin stretching between the legs and tail) and lack of a black face mask (which is characteristic of Small-footed Myotis, *Myotis leibii*, Endangered).



Photo: Tammy Ciesla, MassWildlife



Distribution in Massachusetts
1987 - 2012
Based on records in the
Natural Heritage Database

HABITAT IN MASSACHUSETTS: In the warmer months, colonies of Northern Myotis may be found roosting and foraging in forested areas. Preferred roosts are in clustered stands of large trees, especially in live or dead hardwoods with large, tall cavities. These bats are found in other tree roosts as well, and occasionally in human-made structures. Northern Myotis forage under the forest canopy in structurally complex habitats, often above small ponds, vernal pools or streams, along gravel paths or roads, and at the forest edge. The bats are widespread in Massachusetts, and have been found in 11

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.
www.mass.gov/nhesp

of 14 counties. In winter, Northern Myotis hibernate in natural caves and abandoned mines, preferring habitats where the humidity is so high that water droplets sometimes cover their fur. Winter hibernacula (hibernation sites) have been reported in Berkshire, Franklin, Hampden, Middlesex, and Worcester counties.

RANGE: The Northern Myotis is found across forested parts of the eastern United States and Canada, west to British Columbia, Wyoming, and Montana, and south into Florida. It was historically common in New England, the Canadian Maritimes, Quebec and Ontario, and uncommon in the western extremes of its range.

LIFE CYCLE/BEHAVIOR: In the summer months, Northern Myotis emerge at dusk from daytime roosts for the first in a series of feeding flights. Their long tails and large wing membranes allow the bats to fly slowly and navigate through cluttered environments. These special adaptations also enable them to glean prey from foliage, in addition to catching insects on the fly. These bats locate resting insects through a combination of passive listening and the emission of high frequency echolocation calls.

Between August and October, the body weight of Northern Myotis increases by up to 45%, as they store fat for winter. In late summer, the bats begin to "swarm" around the entrances of caves, and are thought to be testing the air of possible hibernacula. This is the time when mating occurs, with females storing the sperm within their bodies until spring. By early November, the bats enter hibernation sites. Their metabolisms slow and they enter torpor, but will rouse occasionally throughout the winter to drink water. Northern Myotis share caves with a number of other species, but tend to hibernate singly or in small groups in deep cracks or crevices. They return to the same hibernacula in multiple years, but may not hibernate in the same location every year. Little data are available on migration, but the bats are known to travel up to 56 km from foraging sites to winter hibernacula.

Females bear and rear single young from mid-May through July. The longevity record for the Northern Myotis is 18 years.

POPULATION STATUS IN MASSACHUSETTS, INCLUDING THREATS: The Northern Myotis is listed as Endangered under the Massachusetts Endangered Species Act. All listed species are protected from killing, collecting, possessing, or sale and from activities that would destroy habitat and thus directly or indirectly cause mortality or disrupt critical behaviors. In addition, listed animals are specifically protected from activities that disrupt nesting, breeding, feeding, or migration.

Once a common species in the northern United States, populations of the Northern Myotis have been devastated by the spread of White-nose Syndrome. Populations in infected hibernacula in the Northeast have suffered catastrophic losses of 90-100%. White-nose Syndrome is caused by a newly described fungus, *Pseudogymnoascus destructans*, which is believed to be a non-native species accidently introduced from caves in western Europe. European species of bats have co-evolved with this fungus, so they have a high degree of immunity. The fungus grows over bats while they hibernate, causing them to rouse from dormancy frequently, lose valuable stored fat, and fail to survive the winter. The fungus is believed to be passed from cave to cave primarily by the movements of breeding male bats, but human transport is also thought to be responsible for the infection of some hibernacula.

MANAGEMENT RECOMMENDATIONS: The U.S. Fish & Wildlife Service is working in concert with government and non-profit groups to understand the spread of the fungus and potential for stopping its spread, as well as exploring opportunities for captive breeding of the most vulnerable species. Access to suitable undisturbed hibernacula is essential to the survival of the Northern Myotis, and protection of known sites is paramount. Human disturbance of hibernacula can be discouraged or prevented with the use of gated entrances, in order to avoid arousal of hibernating bats and the spread of fungal spores.

REFERENCES:

Caceres, M.C., and R.M. Barclay. 2000. Myotis septentrionalis. *Mammalian Species* 634: 1-4.

French, T.W., J.E. Cardoza, and G.S. Jones. *Homeowner's Guide to Bats*. Massachusetts Department of Fisheries & Wildlife: Westborough, MA.

Hamilton, Jr., W.J., and J.O. Whitaker, Jr. 1979. *Mammals of the Eastern United States*, Second Edition. Cornell University Press: Ithaca, NY.

U.S. Fish & Wildlife Service. 2012. "White-nose Syndrome." http://whitenosesyndrome.org/

Updated 2015

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.
www.mass.gov/nhesp

Attachment E

U.S. Fish and Wildlife Service New England Field Office
“No Species Present” Review Letter

United States Department of the Interior

FISH AND WILDLIFE SERVICE

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

January 8, 2018

To Whom It May Concern:

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

http://www.fws.gov/newengland/EndangeredSpec-Consultation.htm (accessed January 2018)

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

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

Sincerely yours,

Thomas R. Chapman
Supervisor
New England Field Office

Appendix D

Historic Properties Eligibility Criteria Documentation

National Historic Preservation Act Eligibility Certification

TO: Town of Billerica Stormwater Management Program Files

FROM: Tighe & Bond

COPY: Abdul Alkhatib, Director of Public Works
Kelley Conway, P.E., Town Engineer

DATE: December 19, 2018

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

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

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

Attachment B to this memorandum includes a list of the federal- and state-listed historic areas, buildings, burial grounds, objects, and structures downloaded from the Massachusetts Cultural Resource Information System (MACRIS) that is current as of March 28, 2018. If the Town undertakes construction on or around a property that is listed or eligible for listing, the Town will coordinate with the State Historic Preservation Officer (SHPO) (i.e. the Massachusetts Historical Commission) by submitting a Project Notification Form and associated documentation for the project. As applicable for each project, the Town will implement measures to avoid or minimize adverse impacts on places listed, or eligible for listing, on the NRHP, including any conditions imposed by the SHPO or THPO. If the Town fails to document and implement such measures, those discharges are ineligible for coverage under EPA's Small MS4 General Permit.

Attachment A

Appendix D of U.S. EPA's National Pollutant Discharge Elimination System (NPDES) General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) in Massachusetts

Appendix D
National Historic Preservation Act Guidance

Background

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

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

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

Activities with No Potential to Have an Effect on Historic Properties

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

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

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

Activities with Potential to Have an Effect on Historic Properties

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

Examples of Control Measures Which Involve Subsurface Disturbance

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

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

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

Certification

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

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

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

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

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

Screening Process

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

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

YES - The applicant should certify that fact in writing and file the statement with the EPA. This certification must be maintained as part of the records associated with the permit.
The applicant should certify eligibility for this permit using Criterion A on their Notice of Intent for permit coverage. The applicant does not need to contact the state Historic Commission. Based on that statement, EPA will document that the project has "no potential to cause effects" (36 CFR 800.3(a)(1)). There are no further obligations under the Section 106 regulations.

NO- Go to Question 2.

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

NO - The applicant should certify that fact in writing and file the statement with the EPA. This certification must be maintained as part of the records associated with the permit.
The applicant should certify eligibility for this permit using Criterion B on their Notice of Intent for permit coverage. The applicant does not need to contact the state Historic Commission. Based on that statement, EPA will document that the project has "no potential to cause effects" (36 CFR 800.3(a)(1)). There are no further obligations under the Section 106 regulations.

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

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

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

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

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

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

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

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

Attachment B

Massachusetts Cultural Resource Information System (MACRIS)
List of federal- and state-listed historic areas, buildings, burial grounds, objects, and structures in the Town of Billerica

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

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

Inv. No.	Property Name	Street	Town	Year
BIL.A	Billerica Town Common Historic District		Billerica	
BIL.B	Billerica Village - North		Billerica	
BIL.C	Andover Road Area		Billerica	
BIL.D	Billerica Village - South		Billerica	
BIL.E	Billerica Mills Historic District		Billerica	
BIL.F	The Corner		Billerica	
BIL.G	Pattenville		Billerica	
BIL.H	Richardson's Mill Historic District		Billerica	
BIL.I	Boston Road Area		Billerica	
BIL.K	Middlesex Canal		Billerica	
BIL.L	First Period Buildings of Eastern Massachusetts		Billerica	
BIL.M	Billerica Center Historic District		Billerica	
BIL.N	Corner Historic District		Billerica	
BIL.O	Billerica Mills Historic District		Billerica	
BIL.P	Middlesex Canal Area		Billerica	
BIL.Q	Manning, Warren H. State Forest		Billerica	
BIL.R	Manning, Warren H. State Forest - Wading Pool Area		Billerica	
BIL.S	Billerica State Forest - Gilson Hill		Billerica	
BIL.T	Middlesex Canal Historic and Archaeological		Billerica	
BIL.U	Two Brothers Rocks - Dudley Road Historic District		Billerica	
BIL.V	Billerica Center Extension		Billerica	
BIL.W	Middlesex County House of Correction		Billerica	
BIL.166	French, William House	Allen Rd	Billerica	c 1735
BIL.19	Cook House	Andover Rd	Billerica	r 1850
BIL.35	Pollard School	Andover Rd	Billerica	1896

Inv. No.	Property Name	Street	Town	Year
BIL.916	Andover Road Bridge over B & M Railroad	Andover Rd	Billerica	c 1900
BIL.296		1A-1C Andover Rd	Billerica	c 1950
BIL.39	Ray, E. N. House	7 Andover Rd	Billerica	1898
BIL.298	Morey, Frederick A. Block	8 Andover Rd	Billerica	c 1914
BIL.20	Blodgett Homestead	10 Andover Rd	Billerica	r 1750
BIL.21	Blodgett, Jennie House	12 Andover Rd	Billerica	r 1895
BIL.45	Graham Building	12 Andover Rd	Billerica	r 1975
BIL.37	Tucker, Samuel G. House	13 Andover Rd	Billerica	c 1880
BIL.29	Baldwin, John House	14-16 Andover Rd	Billerica	1810
BIL.36	Jenkins House	17 Andover Rd	Billerica	c 1853
BIL.30	First Congregational Church of Billerica	18 Andover Rd	Billerica	1830
BIL.31	Sabbath Day House	20 Andover Rd	Billerica	c 1765
BIL.34	Shedd, Thomas House	23 Andover Rd	Billerica	1845
BIL.38	Greenwood, Oliver P. House	24 Andover Rd	Billerica	c 1884
BIL.33	Bacon, George House	27 Andover Rd	Billerica	1846
BIL.32	Sheldon, John House	28 Andover Rd	Billerica	1698
BIL.40	Stearns, W. B. House	29 Andover Rd	Billerica	c 1898
BIL.6	Richardson Cottage #2	33 Andover Rd	Billerica	c 1898
BIL.28	Spaulding House	34 Andover Rd	Billerica	r 1900
BIL.7	Richardson Cottage	37 Andover Rd	Billerica	r 1885
BIL.27	Bull, Dea. John E. House	38 Andover Rd	Billerica	r 1880
BIL.8	Watts House	39 Andover Rd	Billerica	1878
BIL.26	Livingston House	40 Andover Rd	Billerica	r 1880
BIL.12	Bennick, Gerrit H. House	41 Andover Rd	Billerica	1877
BIL.14	Johnson, Lewis House	43 Andover Rd	Billerica	c 1877
BIL.15	Baldwin, Widow Martha House	45 Andover Rd	Billerica	r 1850
BIL.163	Dimmock, D. H. House	49-51 Andover Rd	Billerica	c 1898
BIL.17	Turner, Douglas E. House	55 Andover Rd	Billerica	c 1897
BIL.18	Wright, Dea. Edward House	57 Andover Rd	Billerica	r 1840
BIL.164	Cook, Sears James House	58 Andover Rd	Billerica	c 1880
BIL.165	Menty, Charles A. House	62 Andover Rd	Billerica	1884
BIL.24	Underhill, Rufus Kitteredge House	67 Andover Rd	Billerica	c 1875
BIL.148	Allen's Tavern	286 Andover Rd	Billerica	c 1740
BIL.331		296 Andover Rd	Billerica	c 1973
BIL.330		298 Andover Rd	Billerica	c 1979
BIL.332		299 Andover Rd	Billerica	c 1955
BIL.143	King, Samuel H. House	350 Andover Rd	Billerica	c 1855
BIL.144		352 Andover Rd	Billerica	c 1875

Inv. No.	Property Name	Street	Town	Year
BIL.145		354 Andover Rd	Billerica	r 1865
BIL.146		369 Andover Rd	Billerica	c 1875
BIL.147		373 Andover Rd	Billerica	r 1865
BIL.168	Edmonds, Dea. Thomas B. House	57 Baldwin Rd	Billerica	c 1835
BIL.939	Manning, Warren H. State Forest - Spruce Pond	Billerica Forest	Billerica	
BIL.940	Manning, Warren H. State Forest - Trails and Roads	Billerica Forest	Billerica	c 1900
BIL.314		95 Boston Post Rd	Billerica	c 1960
BIL.901	World War I and II Monument	Boston Rd	Billerica	c 1948
BIL.902	Billerica Meeting House Site Memorial	Boston Rd	Billerica	1901
BIL.903	Civil War Soldiers' Memorial	Boston Rd	Billerica	1873
BIL.904	Naval Cannon Monument	Boston Rd	Billerica	1907
BIL.905	Kohlrausch, Charles H. Memorial Fountain	Boston Rd	Billerica	1912
BIL.906	Stone Road Marker	Boston Rd	Billerica	
BIL.907	Billerica Town Common Bandstand	Boston Rd	Billerica	1890
BIL.912	Boston Road Bridge over Concord River	Boston Rd	Billerica	1920
BIL.919	Boston Road Bridge over Shawsheen River	Boston Rd	Billerica	1915
BIL.945	Billerica World War I and II Memorial	Boston Rd	Billerica	2004
BIL.965	Billerica Town Common	Boston Rd	Billerica	1655
BIL.130	Stearns, Joseph House	179 Boston Rd	Billerica	c 1825
BIL.131	Stearns, Sarah House	186 Boston Rd	Billerica	c 1848
BIL.132	Billerica Town Water Supply Pumping Station	250 Boston Rd	Billerica	1898
BIL.137	Mason, William D. House	314 Boston Rd	Billerica	1842
BIL.304	Robinson, James P. House	317 Boston Rd	Billerica	1910
BIL.13	Walnuts, The	327 Boston Rd	Billerica	1873
BIL.157	Shed, John House	329 Boston Rd	Billerica	c 1727
BIL.158	Farmer, Oliver House	336 Boston Rd	Billerica	c 1760
BIL.156	Fitch, David W. House	341 Boston Rd	Billerica	1886
BIL.155	Cole, Elmer E. - Allen, Arthur E. House	345 Boston Rd	Billerica	1886
BIL.154	Pillsbury, Dr. Harlin House	349 Boston Rd	Billerica	c 1875
BIL.153	Sanborn, William F. House	357 Boston Rd	Billerica	1869
BIL.48		367 Boston Rd	Billerica	c 1870
BIL.49	Chandler, H. P. House	371 Boston Rd	Billerica	c 1870
BIL.50	Foster, John D. House	373 Boston Rd	Billerica	c 1900
BIL.160	Baldwin, John House	376 Boston Rd	Billerica	c 1700
BIL.51	Foster, Dudley House	377 Boston Rd	Billerica	1838
BIL.52	Locke, Joseph House	381 Boston Rd	Billerica	1811
BIL.47		388 Boston Rd	Billerica	r 1880

Inv. No.	Property Name	Street	Town	Year
BIL.46	Howe School	390 Boston Rd	Billerica	1852
BIL.44	Danforth, Ensign Jonathan Jr. House	396 Boston Rd	Billerica	1682
BIL.43	Richardson, John A. House	398 Boston Rd	Billerica	c 1885
BIL.42	Richardson, John O. House	400 Boston Rd	Billerica	c 1885
BIL.71	Martin's Block	403-405 Boston Rd	Billerica	c 1875
BIL.41	Preston, Marshall House	404 Boston Rd	Billerica	1822
BIL.297	Lyons, Thomas F. Building	406-408 Boston Rd	Billerica	c 1914
BIL.72	Richardson, Capt. William House	409 Boston Rd	Billerica	1822
BIL.73		411 Boston Rd	Billerica	c 1800
BIL.25	Faulkner, Luther W. House	414 Boston Rd	Billerica	1833
BIL.295		428 Boston Rd	Billerica	c 1925
BIL.294		430 Boston Rd	Billerica	c 1928
BIL.23	Abbott, James House	432 Boston Rd	Billerica	1796
BIL.22	Central Block	438 Boston Rd	Billerica	1894
BIL.76	Page, Arza House	447 Boston Rd	Billerica	1840
BIL.194	Heald, Benjamin K. House	475 Boston Rd	Billerica	c 1845
BIL.196		520 Boston Rd	Billerica	c 1840
BIL.195		524 Boston Rd	Billerica	c 1850
BIL.197	Hamlet, William - Farley, Caleb House	562 Boston Rd	Billerica	r 1680
BIL.198		577 Boston Rd	Billerica	r 1680
BIL.913	Brown Street Bridge over B & M Railroad	Brown St	Billerica	r 1915
BIL.340		7 Charme Rd	Billerica	c 1967
BIL.339		8 Charme Rd	Billerica	c 1970
BIL.75	Holt, Paul Jr. House	10 Charnstaff Ln	Billerica	1846
BIL.74	Winter, Stephen House	12 Charnstaff Ln	Billerica	1849
BIL.312	Manning, Warren H. State Forest - Equipment Cabin	Chelmsford Rd	Billerica	c 1953
BIL.936	Manning, Warren H. State Forest - Wading Pool	Chelmsford Rd	Billerica	c 1953
BIL.937	Manning, Warren H. Office Memorial	Chelmsford Rd	Billerica	r 1945
BIL.129	Manning Manse	56 Chelmsford Rd	Billerica	1696
BIL.927	Kohlrausch Playground	Colson St	Billerica	1913
BIL.244		12 Colson St	Billerica	
BIL.256		16 Colson St	Billerica	c 1920
BIL.243	North Billerica Baptist Church Parsonage	17 Colson St	Billerica	c 1925
BIL.257		18-20 Colson St	Billerica	
BIL.242		19 Colson St	Billerica	r 1955
BIL.241	Talbot Woolen Mills Worker Housing	21-23 Colson St	Billerica	c 1888
BIL.258		22-24 Colson St	Billerica	

Inv. No.	Property Name	Street	Town	Year
BIL.240	Kohlrausch House	25-27 Colson St	Billerica	c 1886
BIL.239		29 Colson St	Billerica	c 1954
BIL.259	Kohlrausch House	30 Colson St	Billerica	1901
BIL.260		32 Colson St	Billerica	1920
BIL.98	Farmer, Oliver II House	34 Colson St	Billerica	1803
BIL.261	Colson Barn	36 Colson St	Billerica	c 1803
BIL.262		40-42 Colson St	Billerica	
BIL.263		44 Colson St	Billerica	c 1915
BIL.293	Billerica Public Library	Concord Rd	Billerica	1979
BIL.910	Maine Garrison House Site Marker	Concord Rd	Billerica	1900
BIL.932	Concord Road Bridge over Route 3	Concord Rd	Billerica	1953
BIL.1	Providence House, Old	1 Concord Rd	Billerica	1804
BIL.2	Bennett Public Library	3 Concord Rd	Billerica	1880
BIL.3	Billerica First Parish Unitarian Univ. Church	5 Concord Rd	Billerica	1970
BIL.4	Billerica Masonic Temple	7 Concord Rd	Billerica	c 1850
BIL.5	Billerica Town Hall	15 Concord Rd	Billerica	1895
BIL.9	Billerica Baptist Church	29 Concord Rd	Billerica	c 1828
BIL.69	Hannaford House	30 Concord Rd	Billerica	c 1845
BIL.70	Mills, John R. House	32 Concord Rd	Billerica	c 1845
BIL.59	Whitman, George H. House	33 Concord Rd	Billerica	1845
BIL.68	Sexton, Clara E. House	36 Concord Rd	Billerica	1810
BIL.67	Shedd Family Homestead	38 Concord Rd	Billerica	1700
BIL.60		39 Concord Rd	Billerica	c 1830
BIL.66		46 Concord Rd	Billerica	1851
BIL.65		50 Concord Rd	Billerica	c 1850
BIL.64		52 Concord Rd	Billerica	c 1900
BIL.63		54 Concord Rd	Billerica	c 1850
BIL.61		55-57 Concord Rd	Billerica	c 1830
BIL.62		60 Concord Rd	Billerica	c 1900
BIL.169	Jaquith, Abraham House	161 Concord Rd	Billerica	c 1725
BIL.170	Jaquith, Joseph I House	164 Concord Rd	Billerica	1812
BIL.171	Hill, Samuel House	187 Concord Rd	Billerica	c 1698
BIL.174	Cole, Samuel House #1	263 Concord Rd	Billerica	1835
BIL.175	Ranlett, Capt. Charles A. House	287 Concord Rd	Billerica	c 1853
BIL.311	Adams, Susan Dodge - Stoker, Ralph House	294 Concord Rd	Billerica	c 1850
BIL.177	Ranlett, Col. Charles A. House	305 Concord Rd	Billerica	r 1855
BIL.176	Hill, Jonathan House	312 Concord Rd	Billerica	r 1780
BIL.178	Hill School	329 Concord Rd	Billerica	c 1845

Inv. No.	Property Name	Street	Town	Year
BIL.179	Hill, Charles Henry House	332 Concord Rd	Billerica	1870
BIL.180	Dane, Joseph House	354 Concord Rd	Billerica	c 1844
BIL.181	Snow, Harvey House	356 Concord Rd	Billerica	c 1850
BIL.183	Stearns, Samuel House	480 Concord Rd	Billerica	c 1749
BIL.203	College Farm	93 Cook St	Billerica	r 1750
BIL.10	Dickinson, Edward House	1 Cummings St	Billerica	1870
BIL.11	Wright, Jackson House	6 Cummings St	Billerica	c 1858
BIL.362	Herrick Greenhouse - Pickman Barn	Dudley Rd	Billerica	c 1901
BIL.959	Billerica - Bedford Town Line Marker	Dudley Rd	Billerica	r 1850
BIL.960	Dudley Road Bridge over Mill Brook	Dudley Rd	Billerica	r 1920
BIL.961	Dudley, Gov. Thomas Park	Dudley Rd	Billerica	
BIL.962	Witness Mark Boulder	Dudley Rd	Billerica	c 1700
BIL.963	Dudley Road Stone Wall System	Dudley Rd	Billerica	c 1700
BIL.964	Dudley Road Fence System	Dudley Rd	Billerica	c 1970
BIL.193	Gorham, Capt. John J. House	19 Dudley Rd	Billerica	1846
BIL.184	Stearns, Lt. John House	77 Dudley Rd	Billerica	1715
BIL.185	Stearns, Capt. John - Greenwood, Moses House	96 Dudley Rd	Billerica	c 1689
BIL.358	Stearns, Capt. John - Greenwood, Moses Farm Shop	96A Dudley Rd	Billerica	2006
BIL.359	Card, Andrew T. House	100 Dudley Rd	Billerica	1983
BIL.360		115 Dudley Rd	Billerica	1992
BIL.361		117 Dudley Rd	Billerica	2005
BIL.186	Stearns, Abner - Pickman, Edward House	141 Dudley Rd	Billerica	1798
BIL.924	Elliot Street Bridge over Route 3	Elliot St	Billerica	1953
BIL.90	McCurdy, John House	Elm St	Billerica	1847
BIL.96	North Billerica Baptist Church	Elm St	Billerica	1869
BIL.99	Wilson, Daniel House	Elm St	Billerica	1848
BIL.92	Canal Block, The	1-7 Elm St	Billerica	c 1835
BIL.95	Dix, Capt. Joel House	2 Elm St	Billerica	1815
BIL.94	Mears Tavern	12 Elm St	Billerica	c 1814
BIL.93	Talbot, C. P. Textile Mill Housing	18 Elm St	Billerica	c 1889
BIL.88	Talbot, C. P. Mill Worker Housing	19-21 Elm St	Billerica	r 1870
BIL.87	Talbot, C. P. Mill Worker Housing	23-25 Elm St	Billerica	r 1870
BIL.251	Talbot Textile Mill Worker Housing	24 Elm St	Billerica	c 1874
BIL.254	Talbot Textile Mills Worker Housing	27-29 Elm St	Billerica	r 1865
BIL.97	Talbot Mill Worker Housing	33-35 Elm St	Billerica	c 1860
BIL.252	Talbot Textile Mill Worker Housing	34-36 Elm St	Billerica	c 1892
BIL.253	Talbot Textile Mill Worker Housing	37 Elm St	Billerica	c 1887

Inv. No.	Property Name	Street	Town	Year
BIL.89	Mixer, John House	596 Elm St	Billerica	1827
BIL.159		17 Farmer's Ln	Billerica	r 1720
BIL.78	Faulkner Kindergarten	Faulkner St	Billerica	1826
BIL.267		Faulkner St	Billerica	c 1930
BIL.317		Faulkner St	Billerica	c 1890
BIL.900	Middlesex Canal Dam and Locks	Faulkner St	Billerica	c 1828
BIL.935	Faulkner Street Bridge over Concord River	Faulkner St	Billerica	1910
BIL.79	Faulkner, James R. House	1 Faulkner St	Billerica	1859
BIL.77	Faulkner, J. R. Mills	71 Faulkner St	Billerica	1840
BIL.357		4 Garnet Rd	Billerica	c 1963
BIL.355		5 Garnet Rd	Billerica	c 1963
BIL.354		7 Garnet Rd	Billerica	c 1962
BIL.353		13 George Brown St	Billerica	c 1963
BIL.915	Gray Street Bridge over B & M Railroad	Gray St	Billerica	1950
BIL.306	Canal House	52 Gray St	Billerica	1877
BIL.324		53 Gray St	Billerica	c 1960
BIL.307	Bohonon, Peter Shed	66 Gray St	Billerica	1845
BIL.308	Bohonon, Peter House	68 Gray St	Billerica	1845
BIL.310	Boston and Lowell Railraod Station Agent's House	69 Gray St	Billerica	1874
BIL.142	Richardson, John O. House	73 Gray St	Billerica	1843
BIL.138	Richardson, John O. House	78 Gray St	Billerica	1764
BIL.141	Gray, William House	79 Gray St	Billerica	1845
BIL.139	Symmes, William House	82 Gray St	Billerica	1860
BIL.140	Patten, William H. - Sanborn, David House	86 Gray St	Billerica	1870
BIL.309	Symmes, William House	87 Gray St	Billerica	1909
BIL.326		8 Harvard Rd	Billerica	c 1977
BIL.327		10 Harvard Rd	Billerica	c 1980
BIL.328		12 Harvard Rd	Billerica	c 1978
BIL.299	Boston and Maine Railroad Billerica Shop Complex	High St	Billerica	c 1912
BIL.300	Boston and Maine Railroad Equipment Storage Shed	High St	Billerica	c 1912
BIL.301	Boston and Maine Railroad Maintenance Shop	High St	Billerica	c 1912
BIL.302	Boston and Maine Railroad Power Plant	High St	Billerica	c 1912
BIL.918	High Street Bridge over B & M Railroad	High St	Billerica	r 1915
BIL.934	Middlesex Canal Monument	High St	Billerica	1997
BIL.292	Barker House	44 High St	Billerica	c 1801
BIL.291	Danforth, Benjamin House	65 High St	Billerica	c 1750

Inv. No.	Property Name	Street	Town	Year
BIL.318		96 High St	Billerica	c 1985
BIL.319		200R High St	Billerica	c 1962
BIL.947	Middlesex Canal Stone Culvert	Holt St	Billerica	c 1802
BIL.341		7 Keyes Rd	Billerica	c 1950
BIL.278		2-4 Letchworth Ave	Billerica	
BIL.279	Faulkner Manufacturing Company Worker Housing	6-8 Letchworth Ave	Billerica	r 1880
BIL.280	Faulkner Manufacturing Company Worker Housing	10-12 Letchworth Ave	Billerica	r 1880
BIL.202	Kitchener Farm	81 Lexington Rd	Billerica	c 1750
BIL.192	Bowman's Tavern	106 Lexington Rd	Billerica	1804
BIL.946	Middlesex Canal Culvert	Lowell St	Billerica	c 1802
BIL.948	Middlesex Canal - Concord River Sluiceway	Lowell St	Billerica	c 1802
BIL.949	Middlesex Canal - Red Lock Basin Retaining Wall	Lowell St	Billerica	c 1802
BIL.950	Middlesex Canal - Red Lock Basin	Lowell St	Billerica	c 1802
BIL.86	Talbot, C. P. Mill Worker Housing	1-3 Lowell St	Billerica	r 1870
BIL.264	Talbot Textile Mill Worker Housing	2-4 Lowell St	Billerica	r 1865
BIL.265	Talbot Textile Mill Worker Housing	5-7 Lowell St	Billerica	r 1865
BIL.313	Father Matthew Hall	6 Lowell St	Billerica	1886
BIL.81	Talbot, C. P. Mill Worker Housing	8 Lowell St	Billerica	r 1870
BIL.83	Talbot, C. P. Mill Worker Housing	9-11 Lowell St	Billerica	r 1870
BIL.82	Talbot, C. P. Mill Worker Housing	13-15 Lowell St	Billerica	r 1870
BIL.266		17 Lowell St	Billerica	c 1963
BIL.316	Billerica Fire Station	21 Lowell St	Billerica	c 1950
BIL.970	Carlisle - Billerica Corner Monument	Maple St	Billerica	r 1865
BIL.268		2-4 Mason Ave	Billerica	c 1925
BIL.277	Faulkner, William E. House	3 Mason Ave	Billerica	c 1826
BIL.269		6-8 Mason Ave	Billerica	
BIL.929	Middlesex Canal	Middlesex Canal	Billerica	c 1802
BIL.951	Middlesex Canal - Guard Lock	Middlesex Canal	Billerica	c 1802
BIL.953	Middlesex Canal Floating Towpath Peninsula	Middlesex Canal	Billerica	c 1802
BIL.954	Middlesex Canal Culvert	Middlesex Canal	Billerica	c 1802
BIL.955	Middlesex Canal - Content Brook Sluiceway	Middlesex Canal	Billerica	c 1802
BIL.956	Middlesex Canal - Richardson Mill Sluiceway	Middlesex Canal	Billerica	c 1802
BIL.957	Middlesex Canal - Brown's Bridge Abutments	Middlesex Canal	Billerica	c 1802
BIL.958	Middlesex Canal - Double Culvert	Middlesex Canal	Billerica	c 1802
BIL.187	Burtt, J. House	429 Middlesex Tpk	Billerica	c 1850
BIL.188	Stearns, Charles House	477 Middlesex Tpk	Billerica	c 1830

Inv. No.	Property Name	Street	Town	Year
BIL.189	Hill, Calvin B. House	590 Middlesex Tpk	Billerica	c 1845
BIL.190	Bowers, Henry House	594 Middlesex Tpk	Billerica	c 1850
BIL.191	Crosby, Seth House	616 Middlesex Tpk	Billerica	1810
BIL.920	Lowell Railroad Bridge (Milepost #21.72)	Mount Pleasant St	Billerica	1929
BIL.284	Whittemore, James House	16 Mount Pleasant St	Billerica	c 1865
BIL.285	Stott, James House	20 Mount Pleasant St	Billerica	c 1811
BIL.286	Talbot, Joseph Feree House	32 Mount Pleasant St	Billerica	1893
BIL.287	Clark, Frederick S. House	36 Mount Pleasant St	Billerica	c 1874
BIL.288	Rogers, Calvin House	37 Mount Pleasant St	Billerica	c 1860
BIL.290	Gould, Joseph D. House	43 Mount Pleasant St	Billerica	c 1880
BIL.289	Billerica Baptist Church Parsonage	47 Mount Pleasant St	Billerica	c 1870
BIL.204	Spaulding, Dea. Edward House	Nashua Rd	Billerica	1824
BIL.211	Simonds, Ned House	Nashua Rd	Billerica	c 1890
BIL.213	Dutton, Alexander House	Nashua Rd	Billerica	c 1853
BIL.911	Nashua Road Bridge over Concord River	Nashua Rd	Billerica	1926
BIL.205	Hartford, Daniel House	35 Nashua Rd	Billerica	1855
BIL.210	Wilson, Horace N. House	119 Nashua Rd	Billerica	c 1850
BIL.969	North Road Road Stone	North Rd	Billerica	r 1865
BIL.80	Talbot Mills	10 Old Elm St	Billerica	1857
BIL.91	Bussey, Isaiah House	22 Old Elm St	Billerica	c 1830
BIL.57	Gilbert, Benjamin F. House	5 Page's Ct	Billerica	c 1845
BIL.58	Brown, John House	6 Page's Ct	Billerica	c 1846
BIL.967	Carlisle - Billerica Corner Monument	30 Patch Meadow Ln	Billerica	c 1894
BIL.342		10 Pichowicz Rd	Billerica	c 1950
BIL.344		11 Pichowicz Rd	Billerica	c 1959
BIL.800	Corner Burying Ground, The	Pollard St	Billerica	1715
BIL.925	Fordway Bridge	Pollard St	Billerica	1912
BIL.136	Barrett, Stephen House	201 Pollard St	Billerica	1800
BIL.917	Pond Street Bridge over B & M Railroad	Pond St	Billerica	1834
BIL.162	Baker House	4 Pond St	Billerica	1860
BIL.161	Dutton - Holden Homestead	28 Pond St	Billerica	c 1724
BIL.923	Rangeway Road Bridge over Route 3	Rangeway Rd	Billerica	1953
BIL.209	Lincoln, Otis House	120 Rangeway Rd	Billerica	c 1840
BIL.208	Brown, Thomas House	121 Rangeway Rd	Billerica	c 1800
BIL.908	Water Pump and Trough and Canopy	River St	Billerica	1881
BIL.926	River Street Bridge over Concord River	River St	Billerica	1933
BIL.53	Ruggles, Samuel - Parker, John House	5 River St	Billerica	1710
BIL.54		9 River St	Billerica	c 1850

Inv. No.	Property Name	Street	Town	Year
BIL.56	Bryant, Loring G. House	10 River St	Billerica	r 1880
BIL.55	Nelson, John - Parker House	16 River St	Billerica	r 1910
BIL.172	Hill, Solomon House	31 Riverhurst Rd	Billerica	r 1750
BIL.173	Hill, Dea. Samuel House	33 Riverhurst Rd	Billerica	c 1725
BIL.274	Talbot Woolen Mills Worker Housing	3-7 Rogers Ct	Billerica	r 1865
BIL.273	Talbot Woolen Mills Worker Housing	4-6 Rogers Ct	Billerica	r 1865
BIL.270		10 Rogers St	Billerica	
BIL.271	Faulkner Manufacturing Company Worker Housing	14-16 Rogers St	Billerica	r 1880
BIL.128	Rogers, William House - Toothaker Tavern	18 Rogers St	Billerica	c 1807
BIL.272	Salter House	29 Rogers St	Billerica	c 1850
BIL.283		31 Rogers St	Billerica	
BIL.909	Shawsheen Aqueduct	Rt 129	Billerica	c 1796
BIL.922	Northbound Route 3 Bridge over Concord River	Rt 3	Billerica	1953
BIL.930	Route 3 Bridge over Mill Brook	Rt 3	Billerica	1953
BIL.931	Route 3 Bridge over Unspecified Farm Road	Rt 3	Billerica	1953
BIL.282	Boston and Maine Railroad Depot	Ruggles St	Billerica	
BIL.275		3 Ruggles St	Billerica	c 1852
BIL.133	Kidder, Ephraim Jr. House	Salem Rd	Billerica	1801
BIL.149	Richardson School	Salem Rd	Billerica	1845
BIL.134	Samuel Parker House	16 Salem Rd	Billerica	1801
BIL.135	Tavern at the Corner	24 Salem Rd	Billerica	1759
BIL.150	Brown Family Homestead	248 Salem Rd	Billerica	c 1800
BIL.152	Patten Homestead	308 Salem Rd	Billerica	c 1700
BIL.921	Lowell Railroad Bridge (Milepost #17.92)	Shawsheen River	Billerica	1835
BIL.182	Kemp, R. House	1 Spring St	Billerica	c 1840
BIL.334		39 Staples St	Billerica	c 1920
BIL.281		6 Station St	Billerica	1982
BIL.276		11 Station St	Billerica	r 1880
BIL.206	Duren, John House	Sullivan Rd	Billerica	
BIL.207		Sullivan Rd	Billerica	
BIL.231	Saint Andrews Roman Catholic Church	Talbot Ave	Billerica	c 1915
BIL.232	Saint Andrews Roman Catholic Rectory	Talbot Ave	Billerica	c 1915
BIL.233	Talbot School	Talbot Ave	Billerica	1902
BIL.928	Talbot Avenue Oval Park	Talbot Ave	Billerica	1903
BIL.255	Talbot Textile Mills Worker Housing	2-4 Talbot Ave	Billerica	1899
BIL.220	Talbot Woolen Mills Worker Housing	6-8 Talbot Ave	Billerica	1899
BIL.238		7 Talbot Ave	Billerica	c 1970

Inv. No.	Property Name	Street	Town	Year
BIL.221	Talbot Woolen Mills Worker Housing	10-12 Talbot Ave	Billerica	1899
BIL.222	Talbot Woolen Mills Worker Housing	14-16 Talbot Ave	Billerica	1902
BIL.223	Talbot Woolen Mills Worker Housing	18-20 Talbot Ave	Billerica	1902
BIL.237		21 Talbot Ave	Billerica	
BIL.224	Talbot Woolen Mills Worker Housing	22-24 Talbot Ave	Billerica	1899
BIL.236		23 Talbot Ave	Billerica	
BIL.235		25 Talbot Ave	Billerica	
BIL.225	Talbot Woolen Mills Worker Housing	26-28 Talbot Ave	Billerica	1902
BIL.234		29 Talbot Ave	Billerica	
BIL.226	Talbot Woolen Mills Worker Housing	30-32 Talbot Ave	Billerica	1902
BIL.227	Talbot Woolen Mills Worker Housing	34-36 Talbot Ave	Billerica	1899
BIL.228	Talbot Woolen Mills Worker Housing	38-40 Talbot Ave	Billerica	1899
BIL.229		42 Talbot Ave	Billerica	
BIL.230		44 Talbot Ave	Billerica	
BIL.335		53 Tow Path Dr	Billerica	c 1999
BIL.337		57 Tow Path Dr	Billerica	c 1996
BIL.914	Town Farm Lane Bridge over B & M Railroad	Town Farm Ln	Billerica	r 1915
BIL.933	Treble Cove Road Bridge over Route 3	Treble Cove Rd	Billerica	1953
BIL.938	Gilson Hill State Forest - Rowell Memorial Stone	Treble Cove Rd	Billerica	c 1927
BIL.944	Gilson Hill State Forest Woodland Trails	Treble Cove Rd	Billerica	r 1880
BIL.303	Middlesex County House of Correction - Main Bldg.	269 Treble Cove Rd	Billerica	1931
BIL.363	Middlesex County House of Correction - Cell Blocks	269 Treble Cove Rd	Billerica	1931
BIL.364	Middlesex Co. House of Correction - Power House	269 Treble Cove Rd	Billerica	1931
BIL.365	Middlesex County House of Correction - Dormitory	269 Treble Cove Rd	Billerica	1930
BIL.366	Middlesex Co. House of Correction - Central Core	269 Treble Cove Rd	Billerica	2005
BIL.367	Middlesex Co. House of Correction - Units 1 and 2	269 Treble Cove Rd	Billerica	2005
BIL.368	Middlesex Co. House of Correction - Inmate Shelter	269 Treble Cove Rd	Billerica	2005
BIL.369	Bailey, Dr. John M. House	269 Treble Cove Rd	Billerica	r 1820
BIL.370	Middlesex Co. House of Corrections - Warden House	269 Treble Cove Rd	Billerica	1930
BIL.371	Middlesex Co. House of Corrections - Visitor Cntr.	269 Treble Cove Rd	Billerica	2005
BIL.372	Middlesex County House of Corrections - Warehouse	269 Treble Cove Rd	Billerica	2005

Inv. No.	Property Name	Street	Town	Year
BIL.966	Middlesex County Sheriff's Office Monument	269 Treble Cove Rd	Billerica	2011
BIL.305	Pasho, Chester A. House and Market Farm	15 Webb Brook Rd	Billerica	1916
BIL.167	Webb Brook Country Club	36 Webb Brook Rd	Billerica	1740
BIL.212	Hill, Asa House	17 West St	Billerica	1825
BIL.250		1-3 Wilson St	Billerica	c 1880
BIL.107	Talbot Textile Mill Worker Housing	4-6 Wilson St	Billerica	c 1885
BIL.103	Talbot Textile Mill Worker Housing	5-7 Wilson St	Billerica	r 1870
BIL.108	Talbot Textile Mill Worker Housing	8-10 Wilson St	Billerica	r 1880
BIL.104	Talbot Textile Mill Worker Housing	9-11 Wilson St	Billerica	r 1870
BIL.109	Talbot Textile Mill Worker Housing	12-14 Wilson St	Billerica	r 1880
BIL.105	Talbot Textile Mill Worker Housing	13-15 Wilson St	Billerica	r 1870
BIL.119	Talbot Textile Mill Worker Housing	15-25 Wilson St	Billerica	c 1865
BIL.110	North Billerica Market	16-18 Wilson St	Billerica	c 1885
BIL.106	Talbot Textile Mill Worker Housing	17-19 Wilson St	Billerica	r 1870
BIL.111	Talbot Textile Mills Worker Housing	20-22 Wilson St	Billerica	c 1890
BIL.247		21-23 Wilson St	Billerica	c 1860
BIL.112	Talbot Textile Mills Worker Housing	24-26 Wilson St	Billerica	c 1870
BIL.246		25-27 Wilson St	Billerica	c 1860
BIL.113	Talbot Textile Mills Worker Housing	28-28 1/2 Wilson St	Billerica	
BIL.102	Talbot Textile Mill Worker Housing	29-31 Wilson St	Billerica	r 1870
BIL.214		30-32 Wilson St	Billerica	r 1890
BIL.101	Talbot Textile Mill Worker Housing	33-35 Wilson St	Billerica	r 1870
BIL.114	Gannon, Lawrence B. House	34 Wilson St	Billerica	c 1880
BIL.245		37-39 Wilson St	Billerica	c 1874
BIL.215		38-40 Wilson St	Billerica	c 1860
BIL.219	Talbot Woolen Mills Worker Housing	41-43 Wilson St	Billerica	c 1875
BIL.118	Salter, Joseph House	42 Wilson St	Billerica	1846
BIL.120	Talbot Textile Mill Worker Housing	44-46 Wilson St	Billerica	c 1865
BIL.218	Talbot Woolen Mills Worker Housing	45-47 Wilson St	Billerica	1885
BIL.121	Talbot Textile Mill Worker Housing	48-50 Wilson St	Billerica	c 1865
BIL.217	Talbot Woolen Mills Worker Housing	49-51 Wilson St	Billerica	1885
BIL.122	Talbot Textile Mill Worker Housing	52-54 Wilson St	Billerica	c 1868
BIL.216	Talbot Woolen Mills Worker Housing	53-55 Wilson St	Billerica	c 1892
BIL.123	Talbot Textile Mills Worker Housing	56-58 Wilson St	Billerica	r 1860
BIL.124	Talbot Textile Mills Worker Housing	60-62 Wilson St	Billerica	r 1860
BIL.125	Mill Worker Housing	64-66 Wilson St	Billerica	r 1860
BIL.126	Talbot Textile Mills Worker Housing	68-78 Wilson St	Billerica	r 1885
BIL.127	Talbot Textile Mills Worker Housing	80-90 Wilson St	Billerica	c 1890

Inv. No.	Property Name	Street	Town	Year
BIL.199	Knowles, John House	15 Wyman Rd	Billerica	1858
BIL.200	Merriam, Jonas House	16 Wyman Rd	Billerica	c 1835
BIL.201	Blanchard, Joseph House	49 Wyman Rd	Billerica	1759

Appendix E

Reference Documents

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

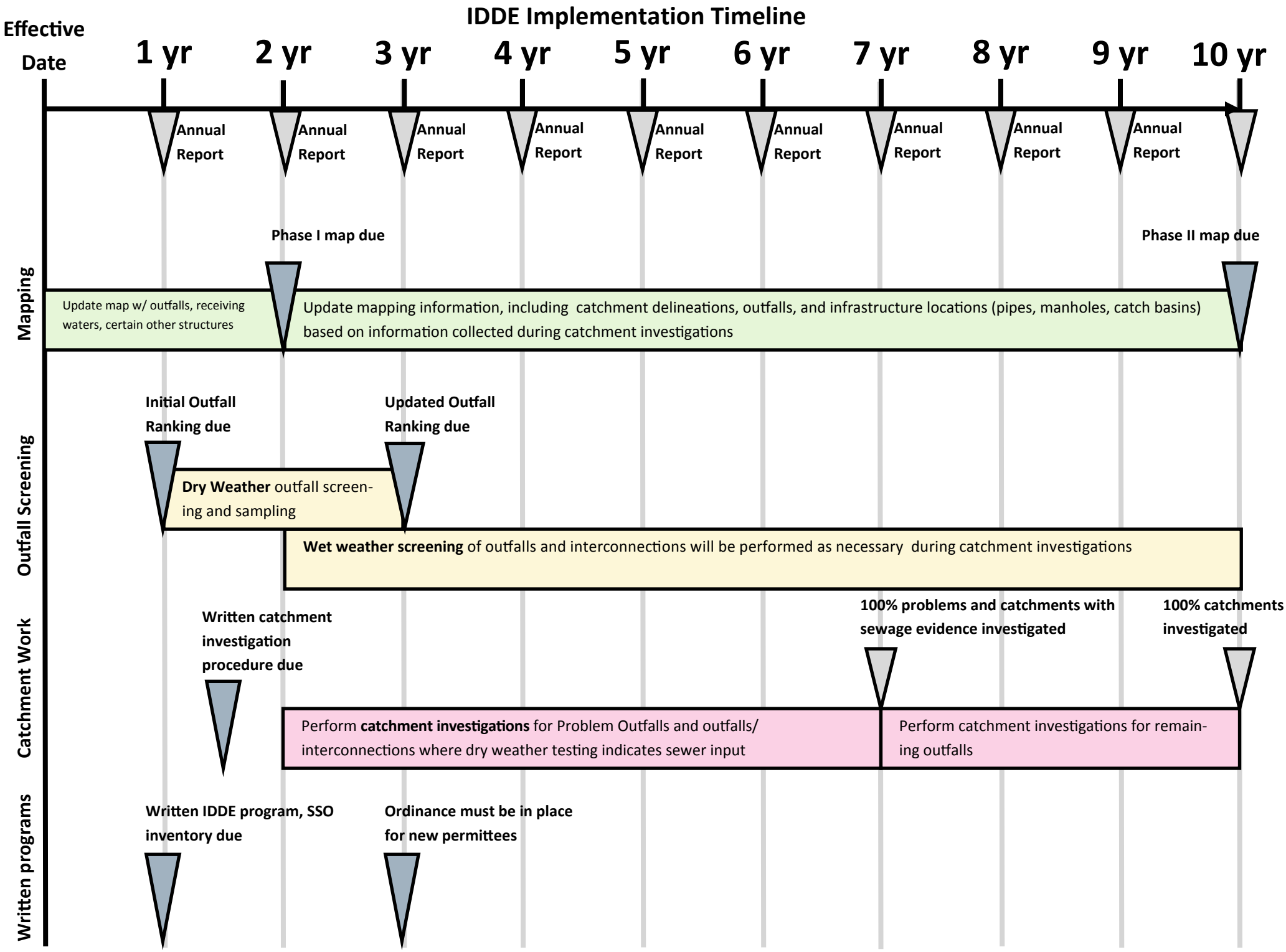
Source: California Stormwater Quality Association, Stormwater BMP Handbook, 2003.

Potential pollutants likely associated with specific *municipal facilities*

Municipality Facility Activity	Potential Pollutants								
	Sediment	Nutrients	Trash	Metals	Bacteria	Oil & Grease	Organics	Pesticides	Oxygen Demanding Substances
Building and Grounds Maintenance and Repair	X	X	X	X	X	X	X	X	X
Parking/Storage Area Maintenance	X	X	X	X	X	X	X		X
Waste Handling and Disposal	X	X	X	X	X	X	X	X	X
Vehicle and Equipment Fueling			X	X		X	X		
Vehicle and Equipment Maintenance and Repair				X		X	X		
Vehicle and Equipment Washing and Steam Cleaning	X	X	X	X		X	X		
Outdoor Loading and Unloading of Materials	X	X	X	X		X	X	X	X
Outdoor Container Storage of Liquids		X		X		X	X	X	X
Outdoor Storage of Raw Materials	X	X	X			X	X	X	X
Outdoor Process Equipment	X		X	X		X	X		
Overwater Activities			X	X	X	X	X	X	X
Landscape Maintenance	X	X	X		X			X	X
Source: California Stormwater BMP Handbook (http://www.cabmphandbooks.com/)(slightly modified)									

Potential pollutants likely associated with *municipal activities*

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


IDDE Implementation Timeline
Effective Date
1 yr
2 yr
3 yr
4 yr
5 yr
6 yr
7 yr
8 yr
9 yr
10 yr
Annual Report
Mapping
Phase I map due
Phase II map due
Update map w/ outfalls, receiving waters, certain other structures
Update mapping information, including catchment delineations, outfalls, and infrastructure locations (pipes, manholes, catch basins) based on information collected during catchment investigations
Outfall Screening
Initial Outfall Ranking due
Updated Outfall Ranking due
Dry Weather outfall screening and sampling
Wet weather screening of outfalls and interconnections will be performed as necessary during catchment investigations
Catchment Work
Written catchment investigation procedure due
100% problems and catchments with sewage evidence investigated
100% catchments investigated
Perform catchment investigations for Problem Outfalls and outfalls/ interconnections where dry weather testing indicates sewer input
Perform catchment investigations for remaining outfalls
Written programs
Written IDDE program, SSO inventory due
Ordinance must be in place for new permittees

Tips for Organizing and Conducting Volunteer Clean-up Events

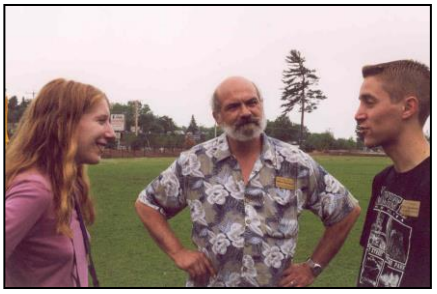
By: Jen Drociak –Acting Coordinator / Volunteer, Manchester Urban Ponds Restoration Program (UPRP)

Step 1: Plan Your Clean-Up Event



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

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



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

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



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

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

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



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

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

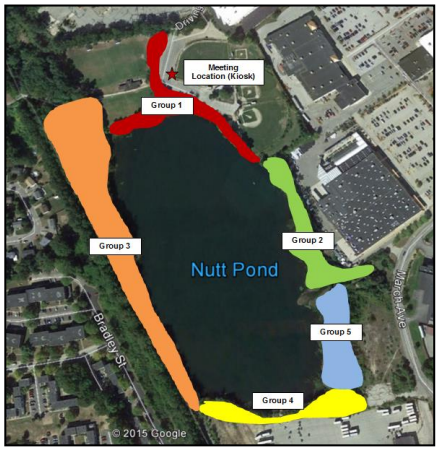


The UPRP generally seeks volunteers of all ages for clean-up events and encourage everyone, despite their age or ability, to participate in a manner of how they most feel comfortable.

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

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

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



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

Step 2: Schedule Your Clean-Up Event

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



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

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



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

Step 3: Determine and Obtain Necessary Supplies

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



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

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

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

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

The UPRP has one First-Aid kit for use.

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



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

Step 4: Determine Your Waste Disposal Options





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

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

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



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

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

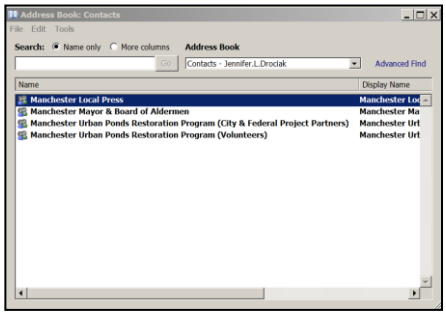


B. Determine the Best Way(s) to Advertise Your Clean-Up Event: Determine the target audience of volunteers and consider the best way(s) to advertise your clean-up event. Is it by e-mail? Website? Post-card? Posting of a flyer on a community bulletin board and / or kiosk? An annual lake association newsletter?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

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

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

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



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

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



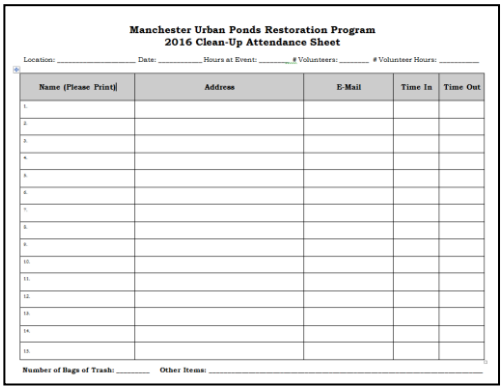
For Example: Seeking volunteers of all ages to assist in an annual trash clean-up at Black Brook and Blodget Park in Manchester on Saturday, April 23, 2016 from 9:00AM – 11:00AM. Volunteers will partner to clean the park and skirt the edges of the brook and wetland complex to remove accumulated trash.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

Step 6: Conduct Your Clean-Up Event

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

The UPRP coordinator(s) typically meet on-site approximately 15-30 minutes in advance of volunteers to set up trash bags, latex gloves, and the "Clean-Up Attendance Sheet". We also survey the site to identify any new trash or safety hazards to relay to volunteers.

B. Welcome Your Volunteers and Ask Them to Sign-In: Welcome each volunteer upon arrival and ask that they sign a "Clean-Up Attendance Sheet" so that your group may account for number of volunteers and volunteer hours contributed to the clean-up event. Consider leaving the "Clean-Up Attendance Sheet" at the check-in location for those volunteers who may have to leave (and sign out) earlier than the full allotted time.



Manchester Urban Ponds Restoration Program
2016 Clean-Up Attendance Sheet

Location: _____ Date: _____ Hours at Event: _____ # Volunteers: _____ # Volunteer Hours: _____

	Name (Please Print)	Address	E-Mail	Time In	Time Out
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					

Number of Bags of Trash: _____ Other Items: _____

The UPRP "Clean-Up Attendance Sheet" typically notes the location and date of the event, and has room to tally the number of volunteers, number of volunteer hours, number of bags of trash and other debris. It also has fields for volunteers to print their name, address, and e-mail, and note the time they checked in, and the time they checked out.

C. Ask Volunteers to Sign a Liability Waiver and Photo-Release Form: Trash found in a waterbody will likely be dirty, rusty, slimy, and sharp. In addition, your group may find broken glass, hypodermic needles and hazardous wastes. Heavy items should not be lifted alone. Caution is needed when handling all trash in order to avoid cuts and other injuries. Consider asking volunteers to sign a liability waiver and photo-release form. These can be two documents, or combined into one. The form should explain any dangers associated with the clean-up event and reminds volunteers to act responsibly for their own safety. The form helps protect you and your organization from potential liability if a volunteer is injured. In addition, with their permission, it allows you to use photographs taken that day. Examples of these forms can be found on-line.

D. Introduce Yourself and Provide Opening Remarks: Introduce yourself, thank special guests, sponsors / project partners (who have helped by providing goods or services), and volunteers. If the media is there, they may want to interview you or for you to provide a brief quote. Consider preparing remarks ahead-of-time, and allowing any special guests to also provide opening remarks to the group.

The UPRP coordinators typically introduce themselves, and thank any special guests (city aldermen, city employees, etc.), sponsors (municipal and local), and volunteers themselves.

E. Provide Volunteers with a Brief Background / History of the Area(s): To acquaint new volunteers to your group / program and to the area, consider providing a brief background / history about the waterbody / area, distinguishing features, and its importance to the community. Consider showing volunteers a map of the waterbody and / or watershed. Also consider providing information such as points of interest, recent (or upcoming) restoration projects in the area, and / or information relative to water quality / monitoring, exotic species, other volunteer opportunities, etc.



Many of the UPRP volunteers are returning volunteers. However, with any new volunteers, we typically offer basic information on the program itself, as well as the watershed, inlet / outlet, history fun-facts, and any recent / upcoming restoration projects. We have fact sheets on each of our ponds on our website, which we can also direct them to for more information.



Manchester Urban Ponds Restoration Program

Nutts Pond Facts

- **Namesake:** Named after a local circus performer, "Commodore" George Washington Nutt
- **Location:** Driving Park Road, off of South Willow Street in south Manchester
- **Type of Waterbody:** Natural Pond fed by Tannery Brook
- **Inlet/Outlet:** Tannery Brook, flowing into Nutts Pond to the south of Home Depot, and emptying into the Merrimack River near the Riverwalk in downtown Manchester
- **Watershed Area:** 635 acres
- **Waterbody Size:** 16.1 acres
- **Volume of Water:** 260,500 m³
- **Mean/Average Water Depth:** 13.12 feet
- **Maximum Water Depth:** 30.10 feet
- **Shoreline Length:** 3,116 feet
- **Elevation:** 237 feet
- **Uses:** Paddling, fishing
- **Public Boat Launch:** Gravel, trailer or car-top
- **Amenities:** Prescourt Park athletic fields
- **Local Legend:** "Commodore" Nutt the circus performer who toured with the P.T. Barnum Circus show with Tom Thumb



Manchester Urban Ponds Restoration Program

The History of Nutts Pond

"Commodore" Nutt



Manchester Urban Ponds Restoration Program

Nutts Pond Stormwater Best Management Practices (BMP) Summary

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



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

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

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

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



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

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



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

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



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

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



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

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



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

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





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

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

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





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

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







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

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





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

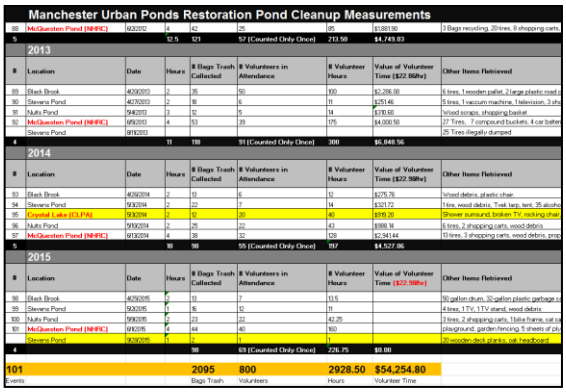
Above Right: Cake served to volunteers at the 100th official cleanup of the Manchester Urban Ponds Restoration Program .

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

Step 7: Follow Up After the Clean-Up Event

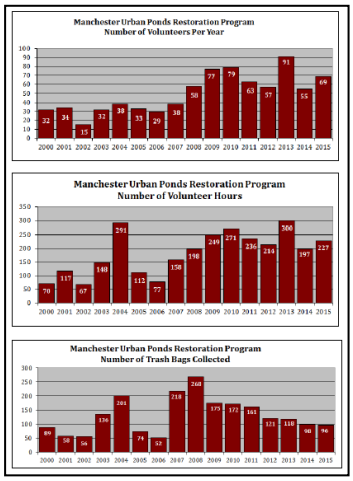
A. Update Your Electronic Records: Now is the time to transpose the information collected on the "Clean-Up Attendance Sheet" into an electronic record-retention system if you have access to one. Perhaps you have access to a database. If not, consider using a Microsoft Excel workbook / spreadsheet system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

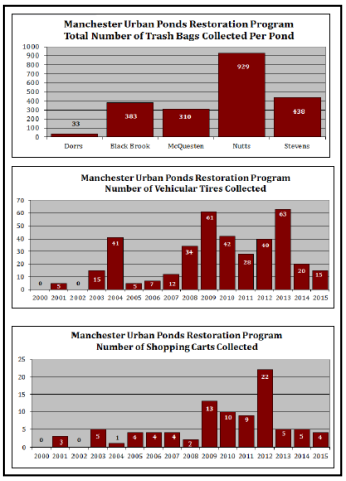
The UPRP has consistently used Microsoft Excel to track clean-up measurements. In the first worksheet of the workbook, we account for the number of our clean-up event, the location, date, hours spent at the event, numbers of bags of trash collected at the event, number of volunteers at the event, number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



Manchester Urban Ponds Restoration Pond Cleanup Measurements

#	Location	Date	Hours	# Bags Trash Collected	# Volunteers in Attendance	# Volunteer Hours	Value of Volunteer Time ($22.95/hr)	Other Items Retrieved
88	McQuesten Pond (NHFIC)	4/3/2012	4	42	25	85	$1,881.30	3 Bags recycling, 20 tires, 8 shopping carts
5			12.5	121	57 (Counted Only Once)	213.50	$4,749.93	
	2013							
89	Black Brook	4/29/2013	2	35	50	100	$2,295.00	6 tires, 1 wooden pallet, 2 large plastic road c
90	Stevens Pond	4/29/2013	2	16	6	11	$251.46	5 tires, 1 vacuum machine, 1 television, 2 sh
91	Nutts Pond	5/4/2013	3	12	5	14	$310.60	Wood scraps, shopping basket
92	McQuesten Pond (NHFIC)	6/5/2013	4	53	39	175	$4,000.50	27 Tires, 7 compound buckets, 4 car batter
	Stevens Pond	6/18/2013						25 Tires illegally dumped
4			11	118	91 (Counted Only Once)	300	$6,848.56	
	2014							
#	Location	Date	Hours	# Bags Trash Collected	# Volunteers in Attendance	# Volunteer Hours	Value of Volunteer Time ($22.95/hr)	Other Items Retrieved
93	Black Brook	4/26/2014	2	13	6	12	$275.76	Wood debris, plastic chair
94	Stevens Pond	5/3/2014	2	22	7	14	$321.72	1 tire, wood debris, Tivek tarp, tent, 35 alcohe
95	Crystal Lake (CL) PA)	5/3/2014	2	10	20	40	$919.20	Shower surround, broken TV, rocking chair
96	Nutts Pond	5/10/2014	2	25	22	43	$988.14	6 tires, 2 shopping carts, wood debris
97	McQuesten Pond (NHFIC)	6/13/2014	4	38	32	128	$2,941.44	13 tires, 3 shopping carts, wood debris, prop
5			10	108	55 (Counted Only Once)	197	$4,527.06	
	2015							
#	Location	Date	Hours	# Bags Trash Collected	# Volunteers in Attendance	# Volunteer Hours	Value of Volunteer Time ($22.95/hr)	Other Items Retrieved
98	Black Brook	4/25/2015	2	13	7	13.5		50 gallon drum, 32 gallon plastic garbage c
99	Stevens Pond	5/2/2015	2	16	12	11		4 tires, 1 TV, 1 TV stand, wood debris
100	Nutts Pond	5/9/2015	2	23	22	42.25		3 tires, 2 shopping carts, 1 bike frame, cat ca
101	McQuesten Pond (NHFIC)	6/1/2015	4	44	40	160		playground, garden fencing, 5 sheets of pla
	Stevens Pond	6/16/2015	1	1	1	1		10 wooden deck planks, oak headboard
4			10	98	69 (Counted Only Once)	226.75	$0.00	
101				2095	800	2928.50	$54,254.80	
Events				Bags Trash	Volunteers	Hours	Volunteer Time	





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



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

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



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

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



Jen Drociak lives in Manchester, NH and holds a Bachelor of Science degree in Environmental Conservation from the University of New Hampshire. She is employed with the New Hampshire Department of Environmental Services where she has worked as a program specialist for the Pollution Prevention Program, a restoration specialist for the NH Coastal Program where she established a monitoring program for pre- and post-restoration projects in NH's salt marshes, and as the Volunteer River Assessment Program Coordinator where she provided technical assistance to approximately 200 volunteers who collected water quality samples for surface water quality assessments on NH's rivers and streams. Jen has also worked for the Wastewater Engineering Bureau as a grants management specialist and is currently working for the Land Resources Management Bureau as a compliance specialist. Since 2000, Jen has also been involved with the Manchester Urban Ponds Restoration Program, and has served as acting coordinator since 2006 where she largely coordinates annual clean-up events and water quality monitoring.

Appendix F

Record Keeping

MS4 Record Keeping Update
Billerica, MA
November 2024

Tighe&Bond

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

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

- Illicit Discharge Detection and Elimination Program, June 2018
- Outfall Inventory and Dry Weather Screening Field Effort Summary – Spring 2018, June 2018
- Billerica MS4 Catchment Investigation Procedures, December 2019
- Billerica Outfall Inventory and Dry Weather Screening Field Effort Summary – FY2019 and FY2020, June 2020
- Phase I MS4 System Map, September 2020
- Billerica Outfall Inventory and Dry Weather Screening Field Effort Summary – FY2021, November 2021
- Billerica Catchment Investigations Summary, September 2024
- Location and Description of Unauthorized Discharges (sanitary sewer overflow inventory), updated annually
- Illicit discharge removal reports, updated annually
- Employee training records, updated annually
- Summary of Billerica's TMDLs and Impaired Waters, 2016 303(d) List
- Summary of Billerica's TMDLs and Impaired Waters, 2018/2020 303(d) List
- Summary of Billerica's TMDLs and Impaired Waters, 2022 303(d) List

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

- Chapter 6 of the Board of Health Rules and Regulations, Stormwater Management Regulations, require submission of as-built drawings and long-term operation and maintenance. The Rules and Regulations are available online here: https://www.town.billerica.ma.us/DocumentCenter/View/3634/Rules-and-Regulations-Chapter-6-
- Town of Billerica – Local Code Assessment, June 2022. A report assessing current street design and parking lot guidelines and other local requirements that affect the creation of impervious cover; as well as assessing existing local regulations to determine the feasibility of making green infrastructure and LID practices allowable. Mass Audubon's *By-Law Review for LID & Climate-Smart, Nature Based Solutions* is *available electronically*.
- Retrofit Assessment and Phosphorus Source Identification Report, Draft June 2022, Updated June 2023

MS4 Record Keeping Update
Billerica, MA
November 2024

Tighe&Bond

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

- Department of Public Works Highway Facility Stormwater Pollution Prevention Plan, February 2019
    - Quarterly inspection records are available from the Billerica Engineering Division
- Good Housekeeping and Pollution Prevention Operations and Maintenance Plan, June 2020
- Culvert Standard Operating Procedure

Reporting includes:

- Year 1 Annual Report and attachments:
    - Location and Description of Unauthorized Discharges 2013 – June 30, 2019
    - Permit Year 1 Outfall Inventory *(available electronically)*
    - Outfall Inventory and Dry Weather Screening Field Effort Summary – Spring 2018 *(available electronically)*
    - Outfall Sampling Results Summary – 2019 *(available electronically)*
    - Billerica Catch Basin Cleaning Optimization Plan Schedule
- Year 2 Annual Report and attachments:
    - Summary of Billerica's TMDLs and Impaired Waters
    - Location and Description of Unauthorized Discharges 2015 – June 30, 2020
    - Illicit Discharge Removal Report
    - Permit Year 2 Outfall Investigation Summary *(available electronically)*
    - Permit Year 2 Outfall Investigation Water Quality Summary *(available electronically)*
- Year 3 Annual Report and attachments:
    - Location and Description of Unauthorized Discharges 2016 – June 30, 2021
    - Illicit Discharge Removal Report
    - Permit Year 3 Outfall Inventory and Inspection Data *(available electronically)*
    - Permit Year 3 Outfall Investigation Water Quality Summary *(available electronically)*
    - Permit Year 3 Catchment Investigation Data *(available electronically)*
- Year 4 Annual Report and attachments:
    - Summary of Billerica's TMDLs and Impaired Waters
    - Retrofit Assessment and Phosphorus Source Identification Report – Draft June 2022 *(available electronically)*
    - Permit Year 4 Outfall Investigation Summary *(available electronically)*

- Year 5 Annual Report and attachments:
    - Summary of Billerica's TMDLs and Impaired Waters
    - Retrofit Assessment and Phosphorus Source Identification Report – Updated June 2023 *(available electronically)*
    - BMP Phosphorus Removal Estimate Calculations
    - Catchment Investigations Summary – Permit Year 5 *(available electronically)*
- Year 6 Annual Report and attachments:
    - Location and Description of Unauthorized Discharges 2016 – June 30, 2024, and Middlesex Turnpike sewer break summary
    - Illicit Discharge Violation Correction Letter
    - BMP Phosphorus Removal Estimate Calculations
    - Catchment Investigations Summary – Permit Year 6 *(available electronically)*

Permit Year 1 Annual Report

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 Billerica, MA

EPA NPDES Permit Number: MA041182

Primary MS4 Program Manager Contact Information

Name: Kelley Conway Title: Town Engineer

Street Address Line 1: DPW - Engineering Division

Street Address Line 2: 365 Boston Road

City: Billerica State: MA Zip Code: 01821

Email: kconway@town.billerica.ma.us Phone Number: (978) 671-1300

Fax Number: (978) 671-0958

Stormwater Management Program (SWMP) Information

SWMP Location (web address): https://www.town.billerica.ma.us/214/Stormwater-Management

Date SWMP was Last Updated: March 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:
- ☒ 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)*

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

Annual Requirements

*Public Education and Outreach**

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

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

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

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

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

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

Potential structural BMPs

☐ Any structural BMPs listed in Attachment 3 to Appendix F already existing or installed in the regulated area by the permittee or its agents shall be tracked and the permittee shall estimate the phosphorus removal by the BMP consistent with Attachment 1 to Appendix H. Document the BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated phosphorus removed in mass per year by the BMP in each each annual report

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:

Year 1 Requirements, Inspect all stormwater treatment structures: Mapping of structural BMPs and stormwater treatment structures is not due until Permit Year 2. Therefore, all BMPs were not inspected during Permit Year 1. This will begin in Permit Year 3, after Town-owned structural BMPs and treatment structures have been identified and mapped as part of Phase I mapping efforts.

Phosphorus Good Housekeeping: All paved streets are swept at least once annually, and priority areas are swept twice annually. The town anticipates increasing the street sweeping frequency in target watersheds in future Permit Years to meet impairment and TMDL requirements, dependent on available funding.

Phosphorus Potential Structural BMPs: Mapping of structural BMPs and stormwater treatment structures is not due until Permit Year 2. Therefore, BMPs have not been tracked or estimated for phosphorus removal. This will begin during Permit Year 3, after Town-owned structural BMPs and treatment structures have been identified and mapped as part of Phase I mapping efforts.

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:

During Permit Year 1, the Town has modified its outfall mapping as the GIS is improved and outfall investigation field work is completed. 85 outfalls were removed from the MS4 mapping because they were determined to be privately-owned or a different stormwater asset (e.g., culvert or BMP structure), which removed the following receiving water from what was listed in the NOI: Wetland to Unnamed Tributary to Lubbers Brook. This did not change any impairments or TMDLs listed in the NOI.

The Town completed a desktop exercise throughout Permit Year 1 to improve mapping and identified 41 new outfalls. Assigning receiving waters and a priority ranking for each outfall is in progress, but was not finalized in time to be included in the submission of this annual report. This effort will be completed in Permit Year 2, prior to visiting outfalls for IDDE field investigations.

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: 6+

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:Education and Outreach to Residents: Neighborhood Meetings

Message Description and Distribution Method:

Post cards, pamphlets, and flyers were distributed to residents at neighborhood meetings. Topics of the educational materials included avoiding excessive fertilizer use, proper disposal of waste oil, low impact development, proper pet waste disposal, and general information about stormwater conveyance.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

Copies of the materials were available to residents during the neighborhood meetings. There were approximately 100 attendees at the neighborhood meetings.

Message Date(s): 6/10/2019, 6/11/2019, 6/12/2019 (two meetings), 6/13/2019

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to Residents and Businesses: 2018 Water Quality Report

Message Description and Distribution Method:

The 2018 Drinking Water Quality report included two pages dedicated to stormwater, including an overview of the Small MS4 program, general stormwater management topics, and a discussion about proper pet waste disposal. The report was mailed out to all Billerica properties with water accounts.

Targeted Audience: Residents and Businesses, institutions and commercial facilities

Responsible Department/Parties: DPW

Measurable Goal(s):

Copies of the drinking water quality reported were distributed to all Billerica addresses that receive a water

bill (more than 14,000 residential and business properties).

Message Date(s): Spring 2019

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to All Audiences: Stormwater Webpage

Message Description and Distribution Method:

Billerica maintains a robust stormwater webpage that includes links to the Town's stormwater bylaws and regulations, educational topics regarding IDDE and pollution prevention (including proper lawn care, pet waste management, and automobile maintenance), and other stormwater-related documents, including the SWMP and NOI. Additional stormwater-related messages are also provided on other Town webpages, including proper septic system maintenance information on the Board of Health FAQ page.

Targeted Audience: All audiences

Responsible Department/Parties: DPW

Measurable Goal(s):

There were 210 page hits on the stormwater webpage during Permit Year 1.

Message Date(s): Ongoing

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to Residents: ThinkBlue Messaging

Message Description and Distribution Method:

The Town is a member of the Northern Middlesex Stormwater Collaborative (NMSC), which participated in the Think Blue Massachusetts educational advertisement campaign. Think Blue Massachusetts created a baseline survey to gauge community knowledge on stormwater, released an advertising campaign that targeted member communities, and carried out a follow-up survey to measure the impact of the advertising campaign. A "Fowl Water" video was shared across Facebook, Instagram, and YouTube to educate the public on stormwater runoff, and highlighted proper pet waste management as an example.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

The follow-up survey indicated that 15.25% of respondents recalled seeing the "Fowl Water" video and those that saw the video were more likely to correctly answer that stormwater pollution ends up in local waterways. The ad campaign received 54,651 impressions across Facebook, Instagram, and YouTube for Billerica.

Message Date(s): June 23 to July 12, 2019

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to Residents: Yard Waste Collection

Message Description and Distribution Method:

Yard Waste collection is advertised on the Town's website and DPW Facebook page. In addition, Waste Management provides a "collection guide" that includes the schedule for yard waste collection and describes how to properly dispose of the yard waste.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

A 4/25/2019 Facebook post about yard waste collection had 15 comments, 24 likes, and 20 shares. The "collection guide" was mailed to all residents receiving trash pick up.

Message Date(s): Ongoing

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to Residents: School Education Program

Message Description and Distribution Method:

Wastewater staff annually educate school classrooms, from elementary schools to colleges, about water quality and stormwater pollution. Stormwater-related materials were distributed amongst the classrooms, including topics such as pet waste, littering, rain barrels and low impact development, illegal dumping, lawn care and fertilizers, "green" stormwater habits, and stormwater puzzles. Staff also conducted a World Water Monitoring Day with students from the Dutile Elementary School on May 22, 2019.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

Approximately 110 elementary school classrooms and 20 high school classrooms were visited in Permit Year 1. 50 copies of each educational material were distributed throughout the classrooms. Approximately 10 tours of the wastewater treatment plant were given to middle school, high school, and college groups.

Message Date(s): Ongoing

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

Add an Educational Message

MCM2: Public Participation

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

The Stormwater Management Program (SWMP) was posted for public review on the Town's website and comments were requested from the public. On September 10, 2018, an email was sent to the DPW's distribution list advertising the draft Notice of Intent on the stormwater webpage. The SWMP was also discussed at 5 neighborhood meetings throughout Billerica in June 2019.

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:

3 household hazardous waste (HHW) drop-off events were hosted during this reporting period (5/19/2018, 10/20/2018, and 5/18/2019). A total of 19,799 pounds of HHW was collected during these events. Billerica also holds monthly waste oil drop-off days throughout the Permit Year. In Permit Year 1, more than 200 residents disposed of approximately 1,200 gallons of waste oil.

Waste Management provided yard waste collection during the spring and fall with the regular curbside trash and recycling removal.

The Town partners with the Central Massachusetts Mosquito Control Project for restoration and maintenance of almost 9,000 feet of wetlands and ditches, as well as cleaning 19 culverts. Brush, tires, and other accumulated debris were removed from culverts and streams. Efforts also included insertion of larvicides into almost 3,000 Town catch basins.

Billerica's annual 'Clean Up, Green Up' event was held on 4/28/2018 and 5/4/2019. 265+ volunteers participated in these events and the Highway Department disposes of the trash that is collected.

OARS, a local organization whose mission is to protect, improve and preserve the Assabet, Sudbury, and Concord Rivers and their watersheds, held the 32nd annual river cleanup along the Assabet River in Billerica on September 15, 2018. More than 130 volunteers helped pick up trash and debris from the watershed during the event.

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: 2

Number of SSOs removed: 2

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: 37

Total number of SSOs removed: 37

MS4 System Mapping

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

The Town has improved the stormwater mapping throughout Permit Year 1. Most Phase I mapping elements are complete and the Town is working to add Town-owned stormwater treatment structures. Many Phase II mapping elements are complete, including manholes, catch basins, and most connectivity. The Town will continue to improve the map as modifications are made and the IDDE Program is implemented.

Screening of Outfalls/Interconnections

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

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

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

Number of outfalls screened: 308

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

Percent of total outfalls screened: 51

Catchment Investigations

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

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

N/A

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

Number of catchment investigations completed this reporting period: 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 were completed during Permit Year 1 and are not required until Permit Year 2. There are no known problem catchments.

IDDE Progress

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

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

N/A

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

Number of illicit discharges identified: 0

Number of illicit discharges removed: N/A

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

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

Total number of illicit discharges identified: 0

Total number of illicit discharges removed: N/A

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

Employee Training

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

On 6/25/2019, Tighe & Bond hosted an 'MS4 "101" Training' for 31 Billerica employees from multiple departments, including DPW, Highway, Engineering, Conservation, Facilities, and Schools. Topics included an overview of the MS4 program, Billerica's stormwater management program, illicit discharges to the drainage system, and an overview of good housekeeping in municipal operations.

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: 5

Number of inspections completed: 65

Number of enforcement actions taken: 0

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

Ordinance Development

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

The Stormwater Management By-law, Article XXV of the General By-laws, was adopted in 2007. The Town will review the Stormwater Management Regulations, Chapter 6 of the Board of Health Rules and Regulations, to determine whether updates or additions are needed to meet the requirements of the General Permit in Permit Year 2.

As-built Drawings

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

Complete. Chapter 6 of the Board of Health Rules and Regulations, Stormwater Management Regulations, require submission of as-built drawings and long-term operation and maintenance.

Street Design and Parking Lots Report

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

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

Green Infrastructure Report

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

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

Retrofit Properties Inventory

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

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

MCM6: Good Housekeeping

Catch Basin Cleaning

Describe the status of the catch basin cleaning optimization plan:

The schedule to gather information to develop the catch basin cleaning optimization plan is attached.

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:

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: 3,808

Number of catch basins cleaned: 3,808

Total volume or mass of material removed from all catch basins: 390.73 tons

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

Total number of catch basins: 4,793

If applicable:

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

In Permit Year 2, the Town will complete targeted catch basin cleaning for catch basins that were more than 40% full during the last cleaning.

Street Sweeping

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

Billerica's Highway Division sweeps all streets annually from late spring until late autumn, and some streets are swept twice. Written procedures for street sweeping will be formalized during development of a written operation and maintenance plan in Permit Year 2.

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

- ○ Number of miles cleaned:
- ◉ Volume of material removed: 576 CY
- ○ Weight of material removed: [UNITS]

If applicable:

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

Winter Road Maintenance

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

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

Inventory of Permittee-Owned Properties

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

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

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

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

Operation and maintenance procedures associated with the properties included in the inventory will be formalized during development of a written operation and maintenance plan in Permit Year 2.

Stormwater Pollution Prevention Plan (SWPPP)

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

The Town has an established SWPPP for the Wastewater Treatment Facility (September 2015). A SWPPP has been drafted for the Department of Public Works Highway Facility and will be finalized in Permit Year 2. The Town will identify any additional properties and facilities that are in need of a SWPPP and will prepare these in accordance with the General Permit by the end of Permit Year 2.

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

Number of site inspections completed: 4

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

None

O&M Procedures for Stormwater Treatment Structures

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

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

Additional Information

Monitoring or Study Results

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

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

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

Additional Information

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

Billerica has completed a significant portion of the dry weather screening field effort. Two rounds of field work have been completed, in Summer 2018 and in Summer 2019, by the Town's stormwater consultant, Town staff, and Billerica summer interns. Included in this annual report is the data for all of the field work completed to date. The data completed prior to Permit Year 1 is included in a memorandum summarizing the work completed. The data completed at the end of Permit Year 1 should be considered draft as it is being finalized by the Town's stormwater consultant. The Town continues to implement its IDDE Program and complete dry weather outfall screening in accordance with the General 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 2 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree ☒

- Complete system mapping Phase I
- Begin investigations of catchments associated with Problem Outfalls
- Develop or modify an ordinance or other regulatory mechanism for post-construction stormwater runoff from new development and redevelopment
- Establish and implement written procedures to require the submission of as-built drawings no later than two years after the completion of construction projects
- Develop, if not already developed, written operations and maintenance procedures

- Develop an inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; review annually and update as necessary
- Establish a written program detailing the activities and procedures the permittee will implement so that the MS4 infrastructure is maintained in a timely manner
- Develop and implement a written SWPPP for maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater
- Enclose or cover storage piles of salt or piles containing salt used for deicing or other purposes
- Develop, if not already developed, written procedures for sweeping streets and municipal-owned lots
- Develop, if not already developed, written procedures for winter road maintenance including storage of salt and sand
- Develop, if not already developed, a schedule for catch basin cleaning
- Develop, if not already developed, a written procedure for stormwater treatment structure maintenance
- Develop a written catchment investigation procedure *(18 months)*

Annual Requirements

- Annual report submitted and available to the public
- Annual opportunity for public participation in review and implementation of SWMP
- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- Annual training to employees involved in IDDE program
- Update inventory of all known locations where SSOs have discharged to the MS4 in the last 5 years
- Continue public education and outreach program
- Update outfall and interconnection inventory and priority ranking and include data collected in connection with the dry weather screening and other relevant inspections conducted
- Implement IDDE program
- Review site plans of construction sites as part of the construction stormwater runoff control program
- Conduct site inspection of construction sites as necessary
- Inspect and maintain stormwater treatment structures
- Log catch basins cleaned or inspected
- Sweep all uncurbed streets at least annually

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

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

Part V: Certification of Small MS4 Annual Report 2019

40 CFR 144.32(d) Certification

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

Name:	Abdul Alkhatib	Title:	Director of Public Works
Signature:		Date:	9/30/19

[Signatory may be a duly authorized representative]

Location and Description of Unauthorized Discharges 2013 – June 30, 2019

Bridle Road – February 24, 2013
An overflow of an unknown volume occurred in the basement of 159 Bridle Road for approximately 2 hours. The overflow was due to a blockage in the line. The line was cleared and the overflow stopped.

Lindsay Road – February 25, 2013
An overflow of an unknown volume occurred at 36 Lindsay Road for approximately 3 hours. The overflow was due to grease and roots plugging the line. The line was cleared and the overflow stopped.

Boston Road – February 26, 2013
An overflow of an unknown volume occurred in the building at 279 Boston Road for approximately 8.5 hours. The overflow was due to debris built up in the line. The debris was cleared, and the overflow stopped.

Boston Road – March 5, 2013
An overflow occurred in the building at 279 Boston Road for an unknown amount of time and an unknown volume. The overflow was due to a hole in the pipe. The pipe was repaired and the overflow stopped.

Simmons Lane – March 13, 2013
An overflow of an unknown volume occurred in the basement of 6 Simmons Lane for approximately 2 hours. The overflow was due to a broken line that was pierced by a water line during directional drilling. The broken pipe was repaired and the overflow stopped.

Todd Lane – April 23, 2013
An overflow occurred on the ground of Todd Lane for an unknown amount of time and of an unknown volume. The overflow was due to a leak in the low pressure sewer. The leak was repaired and the overflow stopped.

Tremont Street – May 12, 2013
An overflow of approximately 2,500 gallons occurred in the street in front of 21 Tremont Street for about 4 hours due to an unknown source. The line was cleared and the overflow stopped.

Indian Knoll Road – May 14, 2013
An overflow of approximately 1,000 gallons occurred in the street at 11 Indian Knoll Road for an unknown amount of time. The overflow was due to grease built up in the line. The line was cleared and the overflow stopped.

Mason Avenue – June 24, 2013
An overflow of approximately 3 gallons occurred in the basement of 13 Mason Avenue for approximately 1 hour. The overflow was due to grease and rags in the service line. The line was cleared and the overflow stopped.

Mason Avenue – June 24, 2013
An overflow of approximately 3 gallons occurred in the basement of 15 Mason Avenue for approximately 1 hour. The overflow was due to grease and rags in the service line. The line was cleared and the overflow stopped.

Rainbow Avenue – August 5, 2013
An overflow of approximately 1,000 gallons occurred on the ground by 12 Rainbow Avenue for approximately 4 hours. The overflow was due to a blockage in the line. The line was cleared and the overflow stopped.

Todd Lane – November 6, 2013
An overflow of approximately 1 gallon occurred on the ground of Todd Lane for an unknown duration. The overflow was due to a cracked pipe in the low pressure system. The line was repaired and the overflow stopped.

Richardson Street Pump Station – November 19, 2013
An overflow of approximately 1,000 gallons occurred on the ground by Richardson Street Pump Station for approximately 1 hour. The overflow was due to float malfunctions in the wet well. The floats were adjusted and the overflow stopped.

Todd Lane – December 1, 2013
An overflow of an unknown volume occurred on the road by 21 Todd Lane for approximately 1 hour. The overflow was due to extensive corrosion of a galvanized low pressure sewer pipe. The line was repaired and the overflow stopped.

Shawsheen Technical High School – December 19, 2013
An overflow of approximately 22,000 gallons occurred at the Shawsheen Technical High School from December 3rd to December 21st near a waterway and wetlands. A private contractor working for the high school was installing storm water treatment units when the sewer line broke in two locations. The sewer line was repaired immediately and the overflow stopped.

Richardson Street Pump Station – January 18, 2014
An overflow of approximately 1,500 gallons occurred on the ground by Richardson Street Pump Station for approximately 30 minutes. The overflow was caused by float malfunctions in the wet well due to a power failure. The floats were adjusted, the pumps were reset, and the overflow stopped.

Richardson Street Pump Station – March 27, 2014
An overflow of approximately 1,000 gallons occurred on the ground by Richardson Street Pump Station for approximately 45 minutes. The overflow was caused by a transducer failure. The transducer was replaced and the overflow stopped.

Middlesex Turnpike – May 24, 2014
An overflow of approximately 200 gallons occurred on the road by 512 Middlesex Turnpike for approximately 3 hours. The overflow was due to a blockage in the sewer line. The line was cleared and the overflow stopped.

Poe Road – July 20, 2014
Work being performed by the Town's Contractor led to an overflow of an unknown quantity on the ground on Poe Road for approximately four hours. The overflow was caused by a temporary cap failure on an abandoned force main. The cap was replaced and the overflow stopped.

Westwood Avenue – September 22, 2014
An overflow of an unknown quantity occurred on the ground by 13 Westwood Avenue for approximately 30 minutes. The cause of the overflow was unknown. The line was jetted and the overflow stopped.

Westwood Avenue – November 5, 2014
An overflow of an unknown quantity occurred into a basement sink at 5 Westwood Avenue for approximately 1 hour. The overflow was due to a 12" plug and 10" cap in the line. The plug was removed and the line was cleaned to stop the overflow.

Date	Location	Gallons	Cause	Action
01/08/15	8 Federal Street[1]	Unknown	Unknown	Removed blockage
01/28/15	132 Lexington Road	Unknown	Grease from this residence	Removed blockage and warned resident
03/25/15	8 Federal Street	Unknown	Grease and rags	Cleared blockage, visited several commercial locations discharging to this line
04/26/15	Treble Cove & Republic Road	Unknown	Debris from House of Correction	Jetted line to clear
04/28/15	Treble Cove & Republic Road.	Unknown	Debris from House of Correction	Removed debris including bed sheet
09/14/15	27 Shaffer Street	50	Plastic flower pot wedged in line	Removed flower pot
1/11/16	426 Middlesex Tpke	1,500	Blockage in easement	Removed blockage
9/19/16	41 Lindsay Rd	Unknown	Blockage	Removed blockage
12/16/16	Nashua Rd Pump Station	Unknown	Broken coupling on force main	Lined force main
12/22/16	5 Farmer Lane	Unknown	Broken low pressure line	Temporary replacement of line segment. Permanent replacement schedule for Spring 2017
2/16/17	24 Lowell Street	500	Blockage	Removed blockage
3/17/17	Intersection of Lake and Lexington	200	Broken water line caused chimney in sewer manhole to collapse	Cleaned the lines and repaired the chimney and 12 feet of service line
6/18/17	2 Lake Street	75	Blockage	Removed blockage

79 Glad Valley Drive – November 24, 2017
An overflow to the ground of approximately 150 gallons was reported at 79 Glad Valley Drive. The overflow was caused by a blockage that was cleared by the Town's Wastewater Staff.

Suburban Park and Middlesex Turnpike – June 27, 2018
An overflow to the ground of approximately 200 gallons was reported at Suburban Park and Middlesex Turnpike. The overflow was caused by a blockage that was cleared by the Town's Wastewater Staff.

9 Ridge Road – September 20, 2018
An overflow to the ground of approximately 350 to 500 gallons was reported on Ridge Road. The overflow was caused by a blockage that was cleared by the Town's Wastewater Staff.

Permit Year 1 Outfall Inventory

The Permit Year 1 Outfall Inventory is available electronically in the Billerica Engineering Department's record keeping files.

Permit Year 1 Outfall Investigation Summary

The Permit Year 1 Outfall Investigation Summary and Permit Year 1 Outfall Investigation Water Quality Summary are included in the summary memorandum entitled "*Outfall Inventory and Dry Weather Screening Field Effort Summary – Spring 2018*" in Billerica's IDDE Program, available from the Engineering Division.

Billerica Catch Basin Cleaning Optimization Plan Schedule

TO: Billerica Stormwater Management Program Files

DATE: September 2019

Section 2.3.7.a.iii.2 of the 2016 Small MS4 General Permit requires that Billerica optimize routine inspections, cleaning, and maintenance of catch basins to meet the following criteria:

- Prioritize inspection and maintenance for catch basins located near construction activities and clean catch basins more frequently if excessive sediment or debris loadings is found.
- Establish a catch basin cleaning schedule that ensures no catch basin is ever more than 50 percent full.

The Town has begun using a GIS-based tablet application to track catch basin cleaning and inspections, including percent full. Over the past few Permit Years, all Town-owned catch basins have been cleaned at least once and tracking information was recorded in GIS. In Permit Year 2, the Town is focusing cleaning efforts on catch basins that were more than 40% full in the previous cleaning. Starting in Permit Year 3, the Town plans to clean all Town-owned catch basins again. The data collected during both rounds of catch basin cleaning will be analyzed to determine which catch basins require more frequent cleaning, to help to prioritize cleaning locations, and to identify and address areas in Town that may experience excessive sediment or debris loading.

The catch basin cleaning optimization plan will be finalized and updated as the catch basin cleaning program is implemented throughout the Permit Term.

J:\B\B0874 Town of Billerica MA Stormwater\FY20 Stormwater Program Assistance\2019 Annual Report\Attachments to Submit to EPA\CB Cleaning Optimization Plan.docx

Permit Year 2 Annual Report

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 Billerica, MA

EPA NPDES Permit Number: MA041182

Primary MS4 Program Manager Contact Information

Name: Kelley Conway Title: Town Engineer

Street Address Line 1: DPW - Engineering Division

Street Address Line 2: 365 Boston Road

City: Billerica State: MA Zip Code: 01821

Email: kconway@town.billerica.ma.us Phone Number: (978) 671-1300

Stormwater Management Program (SWMP) Information

SWMP Location (web address): https://www.town.billerica.ma.us/214/Stormwater-Management

Date SWMP was Last Updated: September 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:

Annual Requirements

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

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

In Permit Year 2, the Highway Division swept an estimated 85% of all municipal streets and parking lots. All paved streets are typically swept at least once annually, but the Highway Division was operating at 50% of staff during spring 2020 due to COVID-19.

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:

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

Annual Requirements

*Public Education and Outreach**

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

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

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

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

Potential structural BMPs

- ☐ Any structural BMPs already existing or installed in the regulated area by the permittee or its agents was tracked and the phosphorus removal by the BMP was estimated consistent with Attachment 3 to Appendix F. The BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated phosphorus removed in mass per year by the BMP were documented.
  - ○ The BMP information is attached to the email submission
  - ○ The BMP information can be found at the following website:

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

Phosphorus Good Housekeeping: In Permit Year 2, the Highway Division swept an estimated 85% of all municipal streets and parking lots. An estimated 50% of streets within the Concord River watershed were swept twice. The Town is working to increase street sweeping frequency for all streets in the Concord River watershed to meet the downstream Merrimack River phosphorus impairment requirements. All paved streets are typically swept at least once annually, but the Highway Division was operating at 50% of staff during spring 2020 due to COVID-19.

Phosphorus Potential Structural BMPs: In Permit Year 2, Billerica identified and mapped approximately 180 BMPs and stormwater treatment structures as part of Phase I mapping efforts. The Town is currently in the process of completing file reviews to confirm whether any of these BMPs are privately owned or operated. Since mapping of BMPs was due in Permit Year 2, BMPs were not tracked or estimated for phosphorus removal. This information will be documented for the municipal BMPs in Permit Year 3.

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

Part III: Receiving Waters/Impaired Waters/TMDL

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

- (•) Yes
- ( ) No

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

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

During outfall investigations completed in Permit Year 2, the Town removed 5 outfalls from the MS4 mapping because they are private or a different type of drainage structure (e.g., culvert, BMP inlet). We will evaluate changes to receiving waters in Permit Year 3.

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**: 6

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

BMP:Education and Outreach to Residents and Businesses: 2019 Water Quality Report

Message Description and Distribution Method:

The 2019 Drinking Water Quality report included two pages dedicated to stormwater, including a discussion on the NPDES program; general stormwater management topics; and proper pet waste management, leaf litter and yard waste disposal, and fertilizer use. The report was mailed out to all Billerica properties with water accounts.

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

Responsible Department/Parties: DPW

Measurable Goal(s):

Copies of the drinking water quality reported were distributed to all Billerica addresses that receive a water bill (more than 14,000 residential and business properties).

Message Date(s): Spring 2020

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to Residents: Pet Waste Education

Message Description and Distribution Method:

A brochure discussing proper pet waste management and its impacts on stormwater pollution, including a reference to the Town's "Regulation of Dogs" General By-law (Article VII, Section 2), was distributed with dog license issuances and renewals.

Information on proper pet waste management was advertised on the DPW Facebook and Twitter pages and the Town's Nextdoor page.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

2,600 pet waste management brochures were distributed with dog licenses in Permit Year 2.
The social media posts reached the following:
-Facebook post: 1,058 impressions and 133 engagements, including 9 likes and 3 shares;
-Twitter post: 1,103 impressions and 117 engagements, including 3 likes;
-Nextdoor post: 1,247 impressions and 1 like.

Message Date(s): Dog license messaging: Ongoing
Social media posts: June 1, 2020

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to Residents: Yard Waste Collection and Fertilizer Use (Multi-Media Me

Message Description and Distribution Method:

Information on yard waste collection, lawn maintenance, and proper fertilizer use including phosphorus-free fertilizers is advertised on the "Lawns and Landscape Fact Sheet" on the Town's Stormwater Management webpage, the DPW Facebook and Twitter pages, and the Town's Nextdoor page. Waste Management provides a "collection guide" that includes the schedule for yard waste collection and describes how to properly dispose of the yard waste. In addition, a flyer on proper leaf litter disposal was posted on the Town's Public Works webpage.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

The Lawns and Landscape Fact Sheet information and Leaf Litter flyer are available to all visitors of the Town's Stormwater Management and Public Works webpages.
The "collection guide" was mailed to all residents receiving trash pick up.
The social media posts reached the following:
-Facebook post: 1,664 impressions and 291 engagements, including 5 comments, 11 likes, and 6 shares;
-Twitter post: 1,112 impressions and 153 engagements, including 1 like;
-Nextdoor post: 1,730 impressions and 3 likes.

Message Date(s): Fact sheet, flyers, and collection guide: Ongoing
Social media posts: April 2, 2020

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to All Audiences: ThinkBlue Messaging

Message Description and Distribution Method:

The Town is a member of the Northern Middlesex Stormwater Collaborative (NMSC), which participated in the Think Blue Massachusetts educational advertisement campaign in Permit Year 2. Think Blue Massachusetts shared a "Fowl Water" video across Facebook, Instagram, and YouTube to educate the public in member communities on stormwater runoff. The video includes references to proper management of pet waste. A post-campaign survey was distributed to measure the impact of the advertising campaign.

Targeted Audience: All Audiences

Responsible Department/Parties: DPW

Measurable Goal(s):

In 2020, the follow-up survey indicated that 17% of respondents recalled seeing the "Fowl Water" video and were more likely to know that stormwater pollution ends up in local waterways. The 2020 ad campaign received 127,521 impressions across Facebook, Instagram, and YouTube for Billerica.

Message Date(s): May 16 to July 5, 2020

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to Residents: School Education Program

Message Description and Distribution Method:

Annually, staff from the Wastewater Division visit school classrooms, from elementary schools to colleges, to educate students about water quality and stormwater pollution. Staff also hosted tours of the Town's wastewater treatment plant for college students. Staff also planned to conduct a World Water Monitoring Day with students but the event was canceled due to COVID-19.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

Approximately 7 classrooms were visited in Permit Year 2. 60 additional classroom visits were scheduled for Spring 2020 but were canceled due to COVID-19.

Message Date(s): Ongoing

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☐

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

If yes, describe why the change was made:

BMP:Education and Outreach to All Audiences: Stormwater Webpage

Message Description and Distribution Method:

Billerica's robust Stormwater Management webpage that discusses stormwater runoff and pollution, the Town's Stormwater Management Program including details on the Town's efforts to complete each MCM. The webpage includes links to the Town's SWMP, NOI, Permit Year 1 Annual Report, stormwater bylaws and regulations, the Think Blue MA "Fowl Water" video, a guide for developers on stormwater management and green development, and other stormwater-related documents (including pet waste management, lawn care, and automobile maintenance). The Stormwater Management webpage was updated in Permit Year 2 to provide information about all aspects of the Town's MS4 program. Additional stormwater-related messages are also provided on other Town webpages, including proper septic system maintenance information on the Board of Health FAQ page.

Targeted Audience: All Audiences

Responsible Department/Parties: DPW

Measurable Goal(s):

There were 249 page hits on the stormwater webpage during Permit Year 2.

Message Date(s): Ongoing

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

Add an Educational Message

MCM2: Public Participation

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

The Stormwater Management Program (SWMP) is available for public review and input on the Town's website.
As part of the Municipal Vulnerability Preparedness Community Resilience Building stakeholder workshops, the Town held two meetings during which the Billerica Stormwater Program was discussed, including an infrastructure workshop on May 20, 2020 with 13 attendees and a natural environment workshop on June 3,

2020 with 16 attendees.

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**:

A household hazardous waste (HHW) drop-off event was hosted on October 19, 2019. An estimated 700 residents participated in the event with approximately 13,500 pounds of HHW collected.

The Town holds monthly waste oil drop off days. From July 2019 through March 2020, about 500 gallons of waste oil was collected from almost 100 residents and disposed of properly. The drop off days were canceled in April through June 2020 due to COVID-19 but are anticipated to begin again when possible.

Waste Management provided yard waste collection during the spring and fall with the regular curbside trash and recycling removal.

The Town partners with the Central Massachusetts Mosquito Control Project for restoration and maintenance of approximately 4,160 feet of wetlands and ditches, as well as cleaning 18 culverts. Brush, tires, and other accumulated debris were removed from culverts and streams. Efforts also included insertion of larvicides into 3,902 Town catch basins.

Billerica's annual 'Clean Up, Green Up' event was scheduled to occur on April 25, 2020 but the large town-wide event was unable to be held due to COVID-19. Instead, Beautify Billerica and the Shawsheen River Watershed Association held multiple smaller group clean-ups throughout Town in coordination with the Conservation Department and the Department of Public Works including a cleanup of the Sheridan Street Conservation Area. Over 20 volunteers participated in the cleanup and the DPW disposed of the trash that was collected.

OARS, a local organization whose mission is to protect, improve and preserve the Assabet, Sudbury, and Concord Rivers and their watersheds, held the 33rd annual river cleanup along the Concord River in Billerica on September 14, 2019. Many volunteers helped pick up trash and debris from the watershed during the event.

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: 1

Number of SSOs removed: 1

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:

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: 111

Catchment Investigations

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

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

N/A

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

Number of catchment investigations completed this reporting period: 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:

The Town has not identified any problem catchments.

IDDE Progress

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

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

*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: 1

Number of illicit discharges removed: 1

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: 1

Total number of illicit discharges removed: 1

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

See the enclosed illicit discharge (illegal dumping) removal report for additional information about the pet waste found in and removed from catch basins in Permit Year 2.

Employee Training

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

Town staff participated in several Northern Middlesex Stormwater Collaborative meetings and workshops about the MS4 program, including the training held in Westford on August 14, 2019. During this training, communities were educated about the MS4 Permit Annual Report and shown how to test water quality at outfalls for the IDDE Program.

On June 25-30, 2020, a virtual training was completed by 22 Town employees from multiple departments, including Engineering, Highway, Water, Cemetery, and Parks and Trees. The training reviewed the overall MS4 program, illicit discharges to the drain, IDDE Program responsibilities, and reporting.

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: 2

Number of inspections completed: 36

Number of enforcement actions taken: 0

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

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:

Chapter 6 of the Board of Health Rules and Regulations, Stormwater Management Regulations, require submission of as-built drawings and long-term operation and maintenance.

Street Design and Parking Lots Report

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

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

Green Infrastructure Report

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

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

Retrofit Properties Inventory

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

Preparation for the Retrofit Properties Inventory has not yet begun as this requirement is due in Permit Year 4. The inventory of municipal facilities developed as part of the Town-wide Operation & Maintenance Plan may serve as a baseline for the retrofit inventory.

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: 3,130

Number of catch basins cleaned: 3,130

Total volume or mass of material removed from all catch basins: 574.32 tons

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

Total number of catch basins: 4,793

If applicable:

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

In Permit Year 2, the Town focused cleaning efforts on basins that were more than forty percent (40%) full during the previous cleaning in Permit Year 1 and in areas that had not been recently cleaned, such as school parking lots.

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: 602 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:

N/A
Note that due to COVID-19, rollout of the Department of Public Works facility SWPPP was delayed. Inspections and employee training 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's Stormwater Management By-law, Article XXV of the General By-laws, and the Stormwater Management Regulations, Chapter 6 of the Board of Health Rules and Regulations, fulfill part of the MCM 4 and MCM 5 Construction and Post-Construction Stormwater Management requirements. Due to the delay of the MassDEP Stormwater Handbook update, the Town's regulatory mechanism is currently being updated for consistency with the revised General Permit requirements. The Town participated in the Northern Middlesex Stormwater Collaborative (NMSC) "Capacity Building for Local Oversight of Development and Redevelopment Projects" project funded through a 2019-2020 MS4 Municipal Assistance Grant to assist with the update, and participated in 3 workshops in Permit Years 2 and 3 (May 21, Aug. 13, and Aug. 27). It is anticipated that the updates will be complete by the end of Permit Year 3.

Billerica completed dry weather screening of outfalls during Permit Year 2. The Town's stormwater consultant completed 5 days of outfall screening and sampling field investigations. Town staff completed additional pre-screening investigations to collect outfall inventory data. Additional field work to sample at these outfalls will be completed in Permit Year 3. The data included in the annual report should be considered draft as it is being finalized by the Town's stormwater consultant. The Town continues to implement its IDDE Program and complete dry weather outfall screening in accordance with the General Permit schedule.

COVID-19 Impacts

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

Activities Planned for Next Reporting Period

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

Yes, I agree ☒

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

Annual Requirements

- Annual report submitted and available to the public
- Annual opportunity for public participation in review and implementation of SWMP
- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- Annual training to employees involved in IDDE program
- Update inventory of all known locations where SSOs have discharged to the MS4
- Continue public education and outreach program
- Update outfall and interconnection inventory and priority ranking and include data collected in connection with the dry weather screening and other relevant inspections conducted
- Implement IDDE program
- Review site plans of construction sites as part of the construction stormwater runoff control program
- Conduct site inspection of construction sites as necessary
- Inspect and maintain stormwater treatment structures
- Log catch basins cleaned or inspected
- Sweep all uncurbed streets at least annually
- Continue investigations of catchments associated with Problem Outfalls
- Review inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; update if necessary

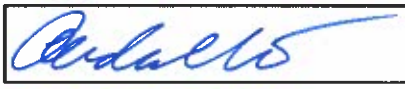
Provide any additional details on activities planned for permit year 3 below:

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

Part V: Certification of Small MS4 Annual Report 2020

40 CFR 144.32(d) Certification

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

Name:	Abdul Alkhatib	Title:	Director of Public Works
Signature:		Date:	9/28/2020

[Signatory may be a duly authorized representative]

Summary of Billerica's TMDLs and Impaired Waters [1, 2, 3, 4]

Receiving Waterbody	2014 Category	2014 Water Quality Impairments [5]	2016 Category	2016 Water Quality Impairments [5]	Applicable General Permit Section	Change to Permit Requirements
Concord River (MA82A-07)	5	Phosphorus Fecal Coliform Eurasion Water Milfoil, Myriophyllum spicatum Non-Native Aquatic Plants Mercury in Fish Tissue	5	E. Coli Fecal Coliform Eurasion Water Milfoil, Myriophyllum spicatum Non-Native Aquatic Plants Mercury in Fish Tissue	Appendix H, Section II - Phosphorus [7] Appendix H, Section III - Pathogens	None [7]
Concord River (MA82A-08)	5	Phosphorus Eurasion Water Milfoil, Myriophyllum spicatum Non-Native Aquatic Plants Mercury in Fish Tissue	5	Eurasion Water Milfoil, Myriophyllum spicatum Non-Native Aquatic Plants Mercury in Fish Tissue	Appendix H, Section II - Phosphorus [7]	None [7]
Nutting Lake East Basin (MA82088)	5	E. Coli Non-Native Aquatic Plants	5	E. Coli Non-Native Aquatic Plants	Appendix H, Section III - Pathogens	None
Nutting Lake West Basin (MA82124)	4a		4a			None
Content Brook (MA83-09)	2		5	Benthic Macroinvertebrates Dewatering		None
Lubbers Brook[6] (MA92-05)	2		5	Dissolved Oxygen	See Footnotes 2 and 6	None
Pond Street Pond[6] (MA83021)	3		3	E. Coli		None
River Meadow Brook[6] (MA82A-10)	5	Debris/Floatables/Trash Non-Native Aquatic Plants Fecal Coliform	5	Debris Trash Non-Native Aquatic Plants E. Coli Fecal Coliform	See Footnotes 2 and 6	None
Shawsheen River (MA83-17)	5	Dissolved Oxygen	5	Dissolved Oxygen		None
Shawsheen River (MA83-18)	5	Dissolved Oxygen Mercury in Fish Tissue	5	Dissolved Oxygen		None
Winning Pond (MA82123)	4c	Eurasion Water Milfoil, Myriophyllum spicatum	4c	Eurasion Water Milfoil, Myriophyllum spicatum		None
Webb Brook (MA83-22)			5	E. Coli	Appendix H, Section III - Pathogens	Requirements of Appendix H, Section III - Pathogens are added
TMDL of Bacteria for the Shawsheen River Basin					Appendix F, Section A.III - Bacteria and Pathogen TMDL	None

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

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

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

[4] Impairments in red were removed in the 2016 Integrated List of Waters.

[5] Impairments applicable to Billerica that have been renamed between 2014 and 2016 Integrated List of Waters include the following: Aquatic Macroinvertebrates Bioassessments -> Benthic Macroinvertebrates; Low Flow Alterations -> Dewatering; Debris/Floatables/Trash -> Debris; Debris/Floatables/Trash -> Trash

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

[7] Based on discussions with EPA, while the phosphorus impairment was removed from the Concord River, the downstream Merrimack River segment is impaired for phosphorus so Appendix H requirements are still applicable.

Location and Description of Unauthorized Discharges
2015 – June 30, 2020

Date	Location	Gallons	Cause	Action
01/08/15	8 Federal Street[1]	Unknown	Unknown	Removed blockage
01/28/15	132 Lexington Road	Unknown	Grease from this residence	Removed blockage and warned resident
03/25/15	8 Federal Street	Unknown	Grease and rags	Cleared blockage, visited several commercial locations discharging to this line
04/26/15	Treble Cove & Republic Road	Unknown	Debris from House of Correction	Jetted line to clear
04/28/15	Treble Cove & Republic Road.	Unknown	Debris from House of Correction	Removed debris including bed sheet
09/14/15	27 Shaffer Street	50	Plastic flower pot wedged in line	Removed flower pot
1/11/16	426 Middlesex Tpke	1,500	Blockage in easement	Removed blockage
9/19/16	41 Lindsay Rd	Unknown	Blockage	Removed blockage
12/16/16	Nashua Rd Pump Station	Unknown	Broken coupling on force main	Lined force main
12/22/16	5 Farmer Lane	Unknown	Broken low pressure line	Temporary replacement of line segment. Permanent replacement schedule for Spring 2017
2/16/17	24 Lowell Street	500	Blockage	Removed blockage
3/17/17	Intersection of Lake and Lexington	200	Broken water line caused chimney in sewer manhole to collapse	Cleaned the lines and repaired the chimney and 12 feet of service line
6/18/17	2 Lake Street	75	Blockage	Removed blockage

79 Glad Valley Drive – November 24, 2017
An overflow to the ground of approximately 150 gallons was reported at 79 Glad Valley Drive. The overflow was caused by a blockage that was cleared by the Town's Wastewater Staff.

Suburban Park and Middlesex Turnpike – June 27, 2018
An overflow to the ground of approximately 200 gallons was reported at Suburban Park and Middlesex Turnpike. The overflow was caused by a blockage that was cleared by the Town's Wastewater Staff.

9 Ridge Road – September 20, 2018
An overflow to the ground of approximately 350 to 500 gallons was reported on Ridge Road. The overflow was caused by a blockage that was cleared by the Town's Wastewater Staff.

No SSOs occurred in 2019.

279 Pond Street – June 14, 2020
An overflow from a force main was reported near the Billerica Rod and Gun Club on Pond Street. A 10-foot section of pipe surrounding the area was replaced to remove the overflow.

Illicit Discharge Removal Report

Town of Billerica

During spring 2020 field work efforts, the Town of Billerica identified one illicit discharge constituting illegal dumping of pet waste in catch basins on May 14, 2020 in the neighborhood of Bankside Drive, Griffin Circle, Neighborly Way and Shanpauly Drive. To address the illicit discharge, the Department of Public Works cleaned all the necessary catch basins to remove the pet waste and the Board of Health sent a letter notifying the neighboring residences that this dumping is in violation of the Town's General By-Laws and can result in a fine. In addition, the letter discussed the impacts of pet waste accumulation in catch basins on stormwater management and pollution and a pet waste educational brochure with additional information was sent to the residences with the notification letter.

Attachments: Notification Letter
Pet Waste Educational Brochure

Billerica Board of Health

Town Hall
365 Boston Road
Billerica, MA 01821
Phone: 978-671-0931
Fax 978-671-0919
Web Site www.town.billerica.ma.us

Mike Grady, Chairman
Robert Reader, Vice Chairman
Sandra Giroux, Secretary
Marie O'Rourke
Elizabeth Villar, Ph. D.

Kristel Bennett, Director

May 14, 2020

Dear Residents of Bankside Drive, Griffin Circle, Neighborly Way and Shanpauly Drive,

It has come to the attention of the Board of Health that there has been illegal dumping of dog waste on the catch basins in your neighborhood. Please be advised that the Department of Public Works has cleaned out all the catch basins. This activity constitutes a violation of the General By-Laws of the Town of Billerica, Article XXI, Section 4 and Article XXIV, Section 1. Any person who violates this provision of the By-Law may be punished by a fine of not more than three hundred (300) dollars per offense.

The Board of Health asks your help in preventing this activity by properly disposing of pet waste Pet waste pollutes our drinking water. An accumulation of pet waste in our storm drains can create blockages which may cause storm drains to backup and flood streets. If you have any questions regarding this matter, please feel free to contact me.

Sincerely,

Kristel Bennett
Director of Public Health

cc: Kelley Conway, Town Engineer
Ed Tierney, Highway Division
Heather Chew, Engineering Division

Clean Up Your Pet's Waste and Protect Our Water Supply

For Regulation of Dogs
Refer to Town of Billerica
General By-Laws
Article VII - Section 2



Proper Disposal of Dog Waste



What Can You Do?

- **Bring It!** Carry a scooper bag when you walk your dog
- **Scoop It!** Use the baggie like a glove, scoop the poop, invert and seal the bag.
- **Toss It!** It belongs in the trash.
- **Place a Sign!** Put a "Scoop the Poop" sign in your yard to encourage your neighbors to scoop it up too!

Northern Middlesex STORMWATER COLLABORATIVE

www.nmstormwater.org

Member Community of the Northern Middlesex Stormwater Collaborative

Protect Our Water Supply and Your Health

Leave no pile behind!

Be sure to clean up after your pet



What's the Problem?

Pet waste is a major source of water contamination and contains harmful bacteria and parasites. Dog feces can contain fecal coliform bacteria, which can spread diseases like Giardia, Salmonella, and Campylobacter, causing serious illness in humans.

Rain and water from melting snow flows across yards, dog parks, and other surfaces on its way to our water bodies, via our streets and storm drains.

Be a responsible pet owner and clean up your pet's waste every time. Never dispose of dog waste in a catch basin, which flows directly into our waterways. Tips for proper disposal of dog waste are detailed on the back of this brochure.



What about pet waste that is left on the ground?

- It's toxic to plants and can create dead spots on the lawn.
- It can contain e-coli, roundworm, giardia, and other germs that make people and pets sick.
- Some of these disease-causing organisms remain infectious in the soil for weeks or years.
- It washes from land and into our waterways and ground water, causing contamination.
- It causes harmful algae and aquatic weeds to grow and reduces oxygen in the water for fish and other wildlife.



But I'm A Cat Lover…

Proper disposal of cat waste is also important. Dangers may lurk inside your cat's litter box, making proper disposal a must for good health. Some cat feces may contain the bacteria Toxoplasma gondii, which has been linked to many health problems and is especially dangerous for pregnant women. Take the necessary steps to properly handle cat litter:

- Scoop your cat's waste into a receptacle lined with a plastic bag.
- Tie off the plastic bag and deposit it into an outside waste can.
- Wash your cat's scoop with soap and warm water. Use disposable paper towels to eliminate the possibility of transferring waste to a cleaning rag. Wear rubber gloves while performing this step.
- Clean your cat's litter pan monthly if you're using clumping litter, or weekly if you're using the non-clumping brands. Use soap, warm water, and paper towels. Dispose of the paper towels in a plastic bag and tie it off.

Permit Year 2 Outfall Investigation Summaries

The Permit Year 2 Outfall Investigation Summary and Permit Year 2 Outfall Investigation Water Quality Summary are included in the summary memorandum entitled "*Billerica Outfall Inventory and Dry Weather Screening Field Effort Summary – FY2019 and FY2020*" in Billerica's IDDE Program, available from the Engineering Division.

Phase I MS4 System Map

Summary of Billerica's TMDLs and Impaired Waters [1, 2, 3, 4]

Tighe&Bond

Receiving Waterbody	2014 Category	2014 Water Quality Impairments [5]	2016 Category	2016 Water Quality Impairments [5]	Applicable General Permit Section	Change to Permit Requirements
Concord River (MA82A-07)	5	Phosphorus Fecal Coliform Eurasion Water Milfoil, Myriophyllum spicatum Non-Native Aquatic Plants Mercury in Fish Tissue	5	E. Coli Fecal Coliform Eurasion Water Milfoil, Myriophyllum spicatum Non-Native Aquatic Plants Mercury in Fish Tissue	Appendix H, Section II - Phosphorus[7] Appendix H, Section III - Pathogens	None [7]
Concord River (MA82A-08)	5	Phosphorus Eurasion Water Milfoil, Myriophyllum spicatum Non-Native Aquatic Plants Mercury in Fish Tissue	5	Eurasion Water Milfoil, Myriophyllum spicatum Non-Native Aquatic Plants Mercury in Fish Tissue	Appendix H, Section II - Phosphorus[7]	None [7]
Nutting Lake East Basin (MA82088)	5	E. Coli Non-Native Aquatic Plants	5	E. Coli Non-Native Aquatic Plants	Appendix H, Section III - Pathogens	None
Nutting Lake West Basin (MA82124)	4a		4a			None
Content Brook (MA83-09)	2		5	Benthic Macroinvertebrates Dewatering		None
Lubbers Brook[6] (MA92-05)	2		5	Dissolved Oxygen E. Coli	See Footnotes 2 and 6	None
Pond Street Pond[6] (MA83021)	3		3	Debris Trash		None
River Meadow Brook[6] (MA82A-10)	5	Debris/Floatables/Trash Non-Native Aquatic Plants Fecal Coliform	5	Non-Native Aquatic Plants E. Coli Fecal Coliform	See Footnotes 2 and 6	None
Shawsheen River (MA83-17)	5	Dissolved Oxygen	5	Dissolved Oxygen		None
Shawsheen River (MA83-18)	5	Dissolved Oxygen Mercury in Fish Tissue	5	Dissolved Oxygen		None
Winning Pond (MA82123)	4c	Eurasion Water Milfoil, Myriophyllum spicatum	4c	Eurasion Water Milfoil, Myriophyllum spicatum		None
Webb Brook (MA83-22)			5	E. Coli	Appendix H, Section III - Pathogens	Requirements of Appendix H, Section III - Pathogens are added
TMDL of Bacteria for the Shawsheen River Basin					Appendix F, Section A.III - Bacteria and Pathogen TMDL	None

[1] TMDLs associated with major rivers may apply to additional waterbodies within the watershed.
[2] Any TMDL or impairments related to nutrients (nitrogen and phosphorus) apply to all receiving waterbodies within the watershed.
[3] Impairments and waterbodies in blue were added in the 2016 Integrated List of Waters.
[4] Impairments in red were removed in the 2016 Integrated List of Waters.
[5] Impairments applicable to Billerica that have been renamed between 2014 and 2016 Integrated List of Waters include the following: Aquatic Macroinvertebrates Bioassessments -> Benthic Macroinvertebrates; Low Flow Alterations -> Dewatering; Debris/Floatables/Trash -> Debris; Debris/Floatables/Trash -> Trash
[6] Waterbody does not receive direct discharge from the MS4. MS4 discharges to a tributary/wetland of the waterbody. Included for reference only.
[7] Based on discussions with EPA, while the phosphorus impairment was removed from the Concord River, the downstream Merrimack River segment is impaired for phosphorus so Appendix H requirements are still applicable.

PHASE I MAPPING

LEGEND

- Outfall
- BMP
- Catch Basin
- Inlet
- Manhole
- Interconnection
- Drain Line
- Swale
- Outfall Catchment
- MassDEP Open Water
- MassDEP Inland Wetlands
- Stream/Intermittent Stream
- Public Surface Water Supply (PSWS)
- Water Bodies
- Town Boundary
- Urbanized Area 2010
- Urbanized Area 2000
- Limited Access Highway
- Multi-Lane Highway, NOT Limited Access
- Other Numbered Highway
- Major Road - Collector
- Minor Street or Road

LOCUS MAP



N

1:24,000

0 1,000 2,000 4,000
Feet

NOTES

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

Permit Year 2 Annual Report
Billerica, Massachusetts

September 2020

Tighe&Bond

Permit Year 3 Annual Report

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 Billerica, MA

EPA NPDES Permit Number: MA041182

Primary MS4 Program Manager Contact Information

Name: Kelley Conway, PE Title: Town Engineer

Street Address Line 1: DPW - Engineering Division

Street Address Line 2: 365 Boston Road

City: Billerica State: MA Zip Code: 01821

Email: kconway@town.billerica.ma.us Phone Number: (978) 671-1300

Stormwater Management Program (SWMP) Information

SWMP Location (web address): https://www.town.billerica.ma.us/214/Stormwater-Management

Date SWMP was Last Updated: October 2020

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:

In Permit Year 3, the Town and their stormwater consultant completed outfall investigations to screen outfalls that had not been visited in a previous Permit Year and also attempted to field verify outfalls that could not be located during previous field efforts. 95% of the Town's MS4 outfalls (more than 600 outfalls) have been inventoried and screened as of June 30, 2021 and the outfall inventory was updated as necessary. 35 mapped outfalls have not been screened because they have proved to be difficult to locate or access and require significant extra effort by Engineering Division staff to field verify. The Town will continue to complete field work to locate and screen the few remaining outfalls in Permit Year 4. The updated inventory and ranking for the Town's 640 MS4 outfalls and interconnections is attached.

Billerica's current Stormwater Management Regulations, Chapter 6 of the Board of Health Rules and Regulations, are largely compliant with the 2016 Small MS4 General Permit but it was determined additional clarifications and specifics are needed to meet the more stringent post-construction requirements. The Town updated the Board of Health Rules and Regulations for consistency with the General Permit requirements in

Permit Year 3. The draft update was presented at the June 7, 2021 Board of Health meeting for public and Board comment. The Town was planning to adopt the updated Regulations at the July 2021 Board of Health meeting but they have been continued to a later meeting due to significant COVID-19 impacts. The Board of Health is the enforcing entity of the Regulations, and the Board and the Health Director have been immersed in contact tracing and other COVID-related issues. The updated Regulations are anticipated to be adopted at a Board of Health public meeting in fall of 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:

Updated information in the attached SSO inventory was reported in Woodard & Curran's July 23, 2021 letter to Kevin Brander, PE, Section Chief of MassDEP's Wastewater Management Program RE: Semi-Annual Report ACOP-NE-10-1N005.

The Town-wide "Good Housekeeping and Pollution Prevention Operations and Maintenance Plan" developed in Permit Year 2 includes maintenance procedures for Town facilities and MS4 infrastructure, which are implemented to the maximum extent practicable.

In Permit Year 3, the Town inspected some municipal BMPs and completed maintenance as needed. During outfall investigations, partial BMP inspections are completed to determine the condition of the BMP outlet. School detention basins are mowed regularly and the School Maintenance Department anticipates establishing a routine BMP inspection program in Permit Year 4. Billerica continues to improve the BMP inventory in PeopleGIS and has identified public/private ownership for many BMPs. The Town anticipates developing a GIS-based inspection form in Permit Year 4 that will help streamline inspection results and any corrective actions needed/taken as the inspection program is enhanced and implemented in future Permit Years.

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:

A message regarding proper maintenance of septic systems was posted on the Town's Facebook page on August 4, 2021 which was intended to meet the Year 3 public education requirement.

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

Annual Requirements

*Public Education and Outreach**

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

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

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

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

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

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

Potential structural BMPs

☐ Any structural BMPs already existing or installed in the regulated area by the permittee or its agents was tracked and the phosphorus removal by the BMP was estimated consistent with Attachment 3 to Appendix F. The BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated phosphorus removed in mass per year by the BMP were documented.

- ○ The BMP information is attached to the email submission
- ◉ The BMP information can be found at the following website:

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:

Street Sweeping: In Permit Year 3, the Highway Division swept all paved municipal streets and parking lots at least once. Approximately a third of streets within the Concord River watershed were swept twice. Due to weather conditions and staffing issues due to COVID-19, the Highway Division could not complete all streets a second time. The Town continues to work towards increasing sweeping frequency for all streets in the Concord River watershed to meet the downstream Merrimack River phosphorus impairment requirements.

BMPs: Because phosphorus load removal has not historically been calculated for stormwater BMPs and design reports are difficult to locate for older projects, the Town estimated phosphorus removal for municipal BMPs in the Concord River watershed that were in the current GIS mapping using preliminary catchment delineations, basin volume derived from LiDAR, surficial geology, and other readily available data. These estimates proved to be inaccurate . It should be noted that these BMPs were installed prior to the issuance of the General Permit. The Town identified a few additional municipal BMPs that have been installed since the Permit issuance date during development of this annual report that are not currently in the GIS mapping. This information will be tracked for these BMPs in Permit Year 4 based on stormwater reports and design calcs (if available), as well as for new BMPs installed within the Concord River watershed.

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:

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

During outfall investigations completed in Permit Year 3, the Town added 1 new outfall to the MS4 mapping and removed 17 outfalls from the MS4 mapping because they are a different type of drainage structure (e.g., culvert, BMP inlet). These modifications removed the following receiving waters from what was listed in the NOI:

- Tributary/Wetland to Jones Brook
- Wetland to Unnamed Tributary to Lubbers Brook (as listed in Permit Year 1 Annual Report)

This did not change any impairments or TMDLs listed in the NOI and Permit Year 2 receiving water update.

Billerica updates the drainage system mapping as needed as field work is completed and discrepancies are found.

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**: 10

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

BMP:Education and Outreach to Residents and Businesses: 2020 Water Quality Report

Message Description and Distribution Method:

The Town's 2020 Drinking Water Quality report included two pages dedicated to stormwater. Information within the report includes an overview of the NPDES MS4 program; general stormwater management topics, leaf litter and yard waste disposal, proper pet waste management, and fertilizer use. The Water Quality report was mailed out to all Billerica properties with water accounts. Copies of the report were also available to visitors of municipal offices.

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

Responsible Department/Parties: DPW

Measurable Goal(s):

Copies of the drinking water quality report were distributed to all Billerica addresses that receive a water bill (16,743 reports mailed to residents and buisnesses).

Message Date(s): The 2020 Water Quality Report was mailed on 6/28/21

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to Residents: Pet Waste Education

Message Description and Distribution Method:

A brochure discussing proper pet waste management and its connection to stormwater pollution, including a reference to the Town's "Regulation of Dogs" General By-law (Article VII, Section 2), was given with dog license issuances and renewals.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

2,500 pet waste management brochures were distributed with dog licenses in Permit Year 3.

Message Date(s): Ongoing

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to Residents: Lawn Care, Yard Waste, and Fertilizer Use

Message Description and Distribution Method:

Information on lawn maintenance, yard waste collection, and proper fertilizer use including phosphorus-free options is advertised on the "Lawns and Landscape Fact Sheet" document on the Town's Stormwater Management webpage, the DPW Twitter and Facebook pages, and the Town's Nextdoor webpage. Waste Management distributes a "collection guide" to applicable residents that includes the schedule for yard waste collection including information on proper disposal. In addition, a flyer on proper leaf litter disposal is posted on the Town's Public Works webpage.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

The Lawns and Landscape Fact Sheet document and leaf litter flyer are available to all visitors of the Town's Stormwater Management and Public Works webpages.
The "collection guide" was mailed to all residents receiving trash pick up.
The social media posts reached the following:
-Facebook Fertilizer post: 75 engagements and 1,059 people reached, including 1 comment, 13 likes, and 2 shares;
-Twitter Lawn Care post: 3 engagements, including 2 likes and 1 retweet;
-Town Nextdoor Yard Waste Collection post: 8 likes.

Message Date(s):
Website materials: Ongoing
Facebook Fertilizer post: May 13, 2021
Twitter Lawn Care post: April 13, 2021
Nextdoor Yard Waste Collection post: October 23, 2020

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to Residents: ThinkBlue Messaging

Message Description and Distribution Method:

The Town is a member of the Northern Middlesex Stormwater Collaborative (NMSC), which participated in the Think Blue Massachusetts educational advertisement campaign during Permit Year 3. Think Blue Massachusetts shared a "Fowl Water" video across YouTube, Instagram, and Facebook educating the public in member communities on stormwater runoff. The video includes information on proper management of pet waste. A post-campaign survey was distributed to analyze the impact of the advertising campaign.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

In 2021, the post-campaign survey illustrated that 16% of respondents recalled seeing the "Fowl Water" video and were more likely to know that stormwater pollution ends up in local waterways. The 2021 ad campaign for the Town received 70,133 impressions across Facebook, Instagram, and YouTube.

Message Date(s): May 17th to July 4th, 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:Education and Outreach to Residents: School Education Program

Message Description and Distribution Method:

Typically, staff from the Wastewater Division conduct annual visits to school classrooms, from elementary schools to colleges, to educate and inform students about water quality and stormwater pollution. However, school visitor restrictions as a result of COVID-19 resulted in the inability to conduct these visits in person. Wastewater staff were able to provide tours for residents during Permit Year 3. Additionally, the Town's Water Resource Recovery Facility Superintendent created an educational video for the local high school about career options in water resources.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

3 tours were provided in Permit Year 3 and attended by 6 to 10 people in each tour. The video was given to the Town high school to show to any classroom students who may be interested in viewing.

Message Date(s): Ongoing

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☐

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

If yes, describe why the change was made:

BMP:Education and Outreach to All Audiences: Stormwater Webpage

Message Description and Distribution Method:

The Town's comprehensive Stormwater Management webpage discusses stormwater runoff, pollution, and the Town's Stormwater Management Program, including details on Billerica's efforts to complete each MCM. The webpage has links to the Town's SWMP, Permit Year 2 Annual Report, NOI, stormwater bylaws and regulations, the Think Blue MA "Fowl Water" video, an educational guide for developers on stormwater management and green development, and other stormwater-related documents (such as pet waste management, lawn care, and automobile maintenance). The Stormwater Management webpage was updated in Permit Year 2 to provide information about all aspects of the Town's MS4 program and may be updated moving forward as the SWMP is implemented. Additional stormwater-related messages are also provided on other Town webpages, including proper septic system maintenance information found on the Board of Health FAQ page.

Targeted Audience: All Audiences

Responsible Department/Parties: DPW

Measurable Goal(s):

There were 445 page hits on the stormwater webpage during Permit Year 3.

Message Date(s): Ongoing

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach in Municipal Offices

Message Description and Distribution Method:

Numerous municipal offices have stormwater brochures and messages pertaining to each department's area of interest. The Town Clerk's Office has brochures on cleaning up pet waste, and not disposing into storm drains as part of dog licensing registration. The Board of Health has information about construction site stormwater mitigation measures and how to install controls. The Conservation Commission has brochures on what household items can pollute the rivers and streams if not used correctly. DPW Engineering has multiple brochures, books, post cards, and posters that have been developed to date for topics related to stormwater.

Targeted Audience: All Audiences

Responsible Department/Parties: DPW

Measurable Goal(s):

These brochures are available to all visitors of the municipal offices.

Message Date(s): DPW

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to Residents: Septic System Maintenance

Message Description and Distribution Method:

A message regarding proper septic system maintenance, including not flushing wipes, was posted to the DPW Facebook page on August 4, 2021. This message was intended to meet the Permit Year 3 education requirement.

Information about proper septic system maintenance is also included in the Board of Health Frequently Asked Questions webpage.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

The post received 6 likes and 2 shares.
Additional educational information is available to all visitors of the Board of Health webpage.

Message Date(s): Facebook post: August 4, 2021
Board of Health webpage: Ongoing

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to Residents: Leaf Litter

Message Description and Distribution Method:

The Billerica DPW posted a message on Twitter with a "Be a Leaf Hero" graphic suggesting tips to properly dispose of leaf litter and help keep waterways healthy.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

The Twitter post received 4 likes and could be viewed by all followers of the DPW account.

Message Date(s): October 29, 2020

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to Developers (Construction)

Message Description and Distribution Method:

Two brochures were customized in Permit Year 3 for developers, including EPA's "10 Steps to Stormwater Pollution Prevention on Small Residential Construction Sites" and DCR's "General Construction and Site Supervision Stormwater Tips", which discuss proper construction site procedures and pollution prevention, SWPPPs, and reference Billerica's Stormwater Management By-Law.

Targeted Audience: Developers (construction)

Responsible Department/Parties: DPW

Measurable Goal(s):

The brochures are available at the Board of Health Permitting office.

Message Date(s): Ongoing

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☐

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

If yes, describe why the change was made:

Add an Educational Message

MCM2: Public Participation

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

The Stormwater Management Program (SWMP) is available for public review and input on the Town's website. Social media posts related to stormwater topics included a link to the Town's stormwater webpage.

As part of development of the updated Board of Health Rules and Regulations, a Board of Health public meeting was held on June 7, 2021 where public input was solicited.

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**:

Household hazardous waste (HHW) drop-off events were hosted on October 17, 2020 and May 15, 2021. Approximately 17.47 tons of HHW was collected from the two drop off events.

The Town holds monthly waste oil drop off days on the 3rd Saturday of every month from 9 AM to 1 PM. In Permit Year 3, a total of approximately 415 gallons of waste oil was dropped off from a total of 100 residents.

Waste Management provided yard waste collection during the spring and fall with the regular curbside trash and recycling removal (October 26 - December 4, 2020 and April 26 - May 21, 2021). Christmas trees are also accepted during a drop off week after Christmas and during regular curbside collection from January 11 - 15, 2021.

The Town partners with the Central Massachusetts Mosquito Control Project for restoration and maintenance of approximately 17,975 feet of wetlands and ditches, as well as cleaning 74 culverts. Brush, tires, and other accumulated debris were removed from culverts and streams. Efforts also included insertion of larvicides into 3,136 Town catch basins.

Billerica's annual 'Clean Up, Green Up' event occurred on April 24, 2021 with residents and volunteers collecting two 20 yard containers of trash that were disposed of. The Town's Beautify Billerica group also organized a cleanup around the Locke Middle School on July 11, 2020.

OARS, a local organization whose mission is to protect, improve and preserve the Assabet, Sudbury, and Concord Rivers and their watersheds, held the 34th annual river cleanup along the Concord River in Billerica from September 25-27, 2020. More than 70 volunteers helped pick up trash and debris from the watershed during the event.

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: 3

Number of SSOs removed: 3

MS4 System Mapping

Optional: Provide additional status information regarding your map:

The Town continues to refine the MS4 GIS mapping as the IDDE Program is implemented and field 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: 227

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

Percent of outfalls screened: 95

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

In Permit Year 3, the Town and their stormwater consultant completed outfall investigations to screen outfalls that had not been visited in a previous Permit Year and also attempted to field verify outfalls that could not be located during previous field efforts. 605 of the Town's MS4 outfalls have been inventoried and screened as of June 30, 2021 and the outfall inventory was updated as necessary. This is 95% of the MS4 outfalls. 35 mapped outfalls have not been screened because they have proved to be difficult to locate or access and require extra effort by Engineering Division staff to field verify. The Town will continue to complete field work to locate and screen the remaining outfalls in Permit Year 4. The updated inventory and ranking for the Town's 640 MS4 outfalls and interconnections is attached.

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: 18

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

Percent of total catchments investigated: 3

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

Billerica begin catchment investigations in Permit Year 3 and completed two days of field work on June 22, 2021 (dry weather key junction manhole inspections) and July 2, 2021 (wet weather outfall sampling). The Town intends to continue investigations in Permit Year 4 and future Permit Years. The data included herein will be part of an overall summary document developed in Permit Year 4 for both Year 3 and Year 4 catchment investigations.

On June 22, 2021, 20 catchments were investigated during dry weather conditions and 25 key junction manholes were screened. Of the 25 manholes, 6 had dry weather flow and were sampled. 1 of the manholes had 2 inlets with flow and therefore was sampled twice. No manholes had water quality results that met EPA's criteria for a likely sewer input. 1 additional manhole had flow but sampling was completed only once at another manhole in the catchment, as both had the same source of flow. Based on the information collected, 13 catchments should be considered successfully screened and complete because they either had no flow or had flow but in-situ testing results were below benchmark.

An initial analysis of System Vulnerability Factors was completed to determine outfalls that require wet weather sampling. 11 outfalls were visited and wet weather outfall screening and sampling was completed. It should be noted that the rain stopped partway through the work day on July 2, 2021, so 4 outfalls visited were dry and sampling could not be completed. Of the outfalls sampled, most had E. coli and phosphorus levels above EPA benchmarks. This is expected for wet weather nonpoint source pollution and may not be indicative of a sanitary input to the drain or SSOs because the surfactants levels were all non-detect or below EPA benchmarks.

In accordance with the Town's MS4 Catchment Investigation Procedures (December 2019), outfall catchments that do not include a junction manhole (e.g., the catchment may be small and only contain a number of individual catch basins) do not require dry weather key junction manhole inspections; the dry weather screening completed at the catchment's outfall fulfills the intent of the manhole inspection requirement when screening does not indicate the presence of a potential illicit discharge. For catchments that meet this criteria and do not require wet weather screening, the catchment investigation is considered complete. For catchments analyzed in Permit Year 3, 5 fell into this category.

The number of catchment investigations completed this reporting period reported above includes the 13 catchments successfully completed and the 5 catchments with no junction manholes. The percent of total catchments investigated assumes each MS4 outfall (640 total) has its own catchment, though the initial catchment delineations in the GIS mapping is not yet as refined as this.

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: 1

Number of illicit discharges removed: 1

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: 2

Total number of illicit discharges removed: 2

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

There was one documented illicit discharge of motor oil from a broken motor bike to the storm drain in front of 3 Christina Avenue on May 6, 2021. The catch basin was inspected by the Town and the Highway Division and Fire Department investigated the discharge and confirmed the presence of motor oil adjacent to the storm drain. No oil was reported at the outfall. According to the Town Board of Health, the amount discharged was less than a quart of oil. The Director of Public Health issued a warning letter to the current resident of the property advising that the activity constitutes a violation of Town Stormwater Bylaws and may be subject to fines for future offenses.

Employee Training

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

A live, virtual training was completed by the Town's stormwater consultant for multiple Town employees on June 3, 2021. The training provided an overview the Town's IDDE program, and discussed how to recognize and report illicit discharges and SSOs. 14 town employees attended the training, including representatives from DPW, Highway, WWTF, and Schools.

The Northern Middlesex Stormwater Collaborative (NMSC) held a training on April 27, 2021 for member communities. The training topics included municipal good housekeeping practices and oil spill prevention, control, and countermeasures. 32 town employees attended the training, including representatives from DPW, Highway, WWTF, Schools, and the Fire Department. Town representatives also attended the NMSC meeting on March 5, 2021 that discussed the then-proposed General Permit modifications, annual report expectations, and municipal good housekeeping and GIS best practices. Representatives from the Town typically attended other NMSC and statewide stormwater coalition meetings held in Permit Year 3.

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: 303

Number of enforcement actions taken: 1

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

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: 13

Optional: Enter any additional information relevant to the submission of as-built drawings:

Chapter 6 of the Board of Health Rules and Regulations, Stormwater Management Regulations, require submission of as-built drawings and long-term operation and maintenance. 2 final as-built drawings were received in Permit Year 3, and 11 additional as-built drawings were submitted during Permit Year 3 but are still under review and are not yet finalized.

Street Design and Parking Lots Report

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

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

Green Infrastructure Report

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

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

Retrofit Properties Inventory

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

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

MCM6: Good Housekeeping

Catch Basin Cleaning

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

Number of catch basins inspected: 3,159

Number of catch basins cleaned: 3,159

Total volume or mass of material removed from all catch basins: 378.8 tons

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

Total number of catch basins: 4,793

If applicable:

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

In Permit Year 3, the Town focused cleaning efforts on basins that had not been previously inspected or were more than 40% full during the previous cleaning(s). Both clam shell and vacuum cleaning methods were used. Additional structure cleanings, drain line jetting, and hydro-vac services are completed on an as-needed basis as part of routine drainage infrastructure O&M.

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: 652 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:

Outfalls and catch basins on-site were cleaned 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:

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:

Activities Planned for Next Reporting Period

Please confirm that your SWMP has been, or will be, updated to comply with all applicable permit requirements including but not limited to the year 4 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree ☒

- Develop a report assessing current street design and parking lot guidelines and other local requirements within the municipality that affect the creation of impervious cover
- Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist
- Identify a minimum of 5 permittee-owned properties that could potentially be modified or retrofitted with BMPs to reduce impervious areas

Annual Requirements

- Annual report submitted and available to the public
- Annual opportunity for public participation in review and implementation of SWMP
- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- Annual training to employees involved in IDDE program
- Update inventory of all known locations where SSOs have discharged to the MS4
- Continue public education and outreach program
- Update outfall and interconnection inventory and priority ranking and include data collected in connection with the dry weather screening and other relevant inspections conducted
- Implement IDDE program
- Review site plans of construction sites as part of the construction stormwater runoff control program
- Conduct site inspection of construction sites as necessary
- Inspect and maintain stormwater treatment structures
- Log catch basins cleaned or inspected
- Sweep all curbed streets at least annually
- Continue investigations of catchments associated with Problem Outfalls
- Implemented SWPPPs for all permittee owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities
- Review inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; update if necessary
- Review O&M programs for all permittee owned facilities; update if necessary
- Implement all maintenance procedures for permittee owned facilities in accordance with O&M

programs
- Implement program for MS4 infrastructure maintenance to reduce the discharge of pollutants
- Enclose all road salt storage piles or facilities and implemented winter road maintenance procedures to minimize the use of road salt
- Review as-built drawings for new and redevelopment to ensure compliance with post construction bylaws, regulations, or regulatory mechanism consistent with permit requirements
- Inspect all permittee owned treatment structures (excluding catch basins)

Provide any additional details on activities planned for permit year 4 below:

The Town acknowledges the General Permit Year 4 requirements and will complete as many activities as possible based on funding and staff availability.

Part V: Certification of Small MS4 Annual Report 2021

40 CFR 144.32(d) Certification

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

Name: Abdul Alkhatib Title: Director of Public Works

Signature: Abdul Alkhatib Date: 9/28/21

[Signatory may be a duly authorized representative]

Location and Description of Unauthorized Discharges

2016 – June 30, 2021

Date	Location	Gallons	Cause	Action
1/11/16	426 Middlesex Tpke	1,500	Blockage in easement	Removed blockage
9/19/16	41 Lindsay Rd	Unknown	Blockage	Removed blockage
12/16/16	Nashua Rd Pump Station	Unknown	Broken coupling on force main	Lined force main
12/22/16	5 Farmer Lane	Unknown	Broken low pressure line	Temporary replacement of line segment. Permanent replacement schedule for Spring 2017
2/16/17	24 Lowell Street	500	Blockage	Removed blockage
3/17/17	Intersection of Lake and Lexington	200	Broken water line caused chimney in sewer manhole to collapse	Cleaned the lines and repaired the chimney and 12 feet of service line
6/18/17	2 Lake Street	75	Blockage	Removed blockage

79 Glad Valley Drive – November 24, 2017
An overflow to the ground of approximately 150 gallons was reported at 79 Glad Valley Drive. The overflow was caused by a blockage that was cleared by the Town's Wastewater Staff.

Suburban Park and Middlesex Turnpike – June 27, 2018
An overflow to the ground of approximately 200 gallons was reported at Suburban Park and Middlesex Turnpike. The overflow was caused by a blockage that was cleared by the Town's Wastewater Staff.

9 Ridge Road – September 20, 2018
An overflow to the ground of approximately 350 to 500 gallons was reported on Ridge Road. The overflow was caused by a blockage that was cleared by the Town's Wastewater Staff.

No SSOs occurred in 2019.

279 Pond Street – June 14, 2020
An overflow from a force main was reported near the Billerica Rod and Gun Club on Pond Street. A 10-foot section of pipe surrounding the area was replaced to remove the overflow.

Salem Road – February 16, 2021
An overflow to the ground of less than 20 gallons (estimated by the Town) occurred around 8 o'clock in the evening near 138 Salem Road. The overflow was caused by a blockage. The blockage was subsequently cleared by jetting 150 feet of sewer line.

Cheryl Lane – March 3, 2021
An overflow of less than 100 gallons (estimated by the Town) occurred on Cheryl Lane. The overflow was caused by a blockage. The blockage was subsequently cleared by jetting the sewer line.

Pond Street and Railroad Bridge Intersection – March 11, 2021

An overflow to the ground of unknown volume (estimated by the Town at less than 5,000 gallons) occurred in the Town easement on MBTA property in the vicinity of the Pond Street railroad bridge. The overflow was caused by a break in a corroded sewer force main. The Town reported the break to DEP and coordinated with the Department throughout the repair process. Wastewater was hauled from the Brown Street Force Main until force main bypass was connected on 3/24/21 in order to minimize overflow. The repair took approximately 50-days to complete due to complications with the railroad. As a result of this break, the Town has contracted with Woodard & Curran to design the rehabilitation of the entire force main.

Illicit Discharge Removal Report

Town of Billerica

There was one documented illicit discharge of motor oil from a broken motor bike to the storm drain in front of 3 Christina Avenue on May 6, 2021. The catch basin was inspected by the Town and the Highway Division and Fire Department investigated the discharge and confirmed the presence of motor oil adjacent to the storm drain. No oil was reported at the outfall. According to the Town Board of Health, the amount discharged was less than a quart of oil. The Director of Public Health issued a warning letter to the current resident of the property advising that the activity constitutes a violation of Town Stormwater Bylaws and may be subject to fines for future offenses.

Attachments: Notification Letter
Motor Oil Educational Brochure

Billerica Board of Health

Town Hall
365 Boston Road
Billerica, MA 01821
Phone: 978-671-0931
Fax 978-671-0919
Web Site www.town.billerica.ma.us

Mike Grady, Chairman
Robert Reader, Vice Chairman
Sandra Giroux, Secretary
Marie O'Rourke, Member

Kristel Bennett, Director

May 6, 2021

Michael Bayless and Lisa Marie Centola, or Current Resident
3 Christina Avenue
Billerica, MA 01821

RE: Illicit Discharge to Catch Basin - 3 Christina Avenue
COP 21-063

To Whom This May Concern:

The Town of Billerica received an anonymous complaint regarding an alleged discharge of motor oil to the storm drain in front of 3 Christina Avenue. The catch basin has been inspected by the town. The Highway Division and Fire Department investigated the matter and validated the presence of motor oil adjacent to the catch basin.

WARNING

Please be advised that this activity constitutes a violation of the General By-Laws of the Town of Billerica, Article XXI, Section 4. Any person who violates this provision of the By-Law may be punished by a fine of not more than three hundred ($300) dollars per offense.

Illicit discharges of solid and liquid waste pollute our drinking water. The Board of Health asks for your help in preventing this activity by properly disposing of hazardous waste. **According to Massachusetts State Law, any business that sells motor oil must take it back with a receipt. Otherwise, please save used oil in an appropriate container and bring it to the Motor Oil Drop Off at the Billerica Highway Division on the third Saturday, monthly, 9AM-1PM**. The oil must be in a somewhat transparent container so personnel can determine if there is water mixed in the oil. If you have any questions regarding this matter, please feel free to contact me.

Sincerely,

Kristel Bennett, MPA, REHS/RS, CP-FS
Director of Public Health

cc: Abdul, Alkhatib, DPW Director
Ed Tierney, Highway Division
Heather Chew, Engineering Division
Phavy Pheng, Health Agent

Motor Oil

When your car leaks oil on the street, remember - it's not just leaking oil on the street.

Leaking oil goes from car to street. Then it gets washed from the street into the storm drain and into our lakes, rivers, and streams. Now imagine the number of cars in the area and you can imagine the amount of oil that finds its way from leaky gaskets into our water. So please, fix oil leaks.

What's the problem with motor oil?

Oil doesn't dissolve in water. It lasts a long time and sticks to everything from beach sand to bird feathers. Oil and petroleum products are toxic to people, wildlife, and plants. One quart of motor oil can pollute 250,000 gallons of water, and one gallon of gasoline can pollute 750,000 gallons of water! Oil that leaks from our cars onto roads and driveways is washed into storm drains, and then usually flows directly into a lake or stream. Used motor oil is the largest single source of oil pollution in lakes, streams, and rivers. Americans spill 180 million gallons of used oil each year into the nation's waters. This is 16 times the amount spilled by the Exxon Valdez in Alaska!

Clean Water Tips: How can you maintain your vehicle and help keep waters clean?

- Check for oil leaks from your vehicle regularly and fix them promptly!
- Never dispose of oil or other engine fluids down the storm drain, on the ground, or into a ditch. Recycle used motor oil. For more information on recycling, contact the closest MassDEP Regional Office.
- Buy recycled oil to use in your car.
- Use dropcloths or drip pans beneath your vehicle if you have leaks or are doing engine work. Clean up spills!

SOURCE:
https://www.mass.gov/guides/education-in-nonpoint-source-pollution-prevention#-motor-oil-

Permit Year 3 Outfall and Catchment Investigation Summaries

The Permit Year 3 Outfall Inventory and Inspection Data, Permit Year 3 Outfall Investigation Water Quality Summary, and Permit Year 3 Catchment Investigation Data are available electronically in Billerica's IDDE Program, available from the Engineering Division.

Permit Year 4 Annual Report

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 Billerica, MA

EPA NPDES Permit Number: MA041182

Primary MS4 Program Manager Contact Information

Name: Kelley Conway, PE Title: Town Engineer

Street Address Line 1: DPW - Engineering Division

Street Address Line 2: 365 Boston Road

City: Billerica State: MA Zip Code: 01821

Email: kconway@town.billerica.ma.us Phone Number: (978)-671-1300

Stormwater Management Program (SWMP) Information

SWMP Location (web address): https://www.town.billerica.ma.us/214/Stormwater-Management

Date SWMP was Last Updated: November 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:

Anticipated by July 2025 for Subdivision Regulations and July 2026 for Zoning Bylaw

☒ 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:

Anticipated by July 2025 for Subdivision Regulations and July 2026 for Zoning Bylaw

☒ Identified a minimum of 5 permittee-owned properties that could potentially be modified or retrofitted with BMPs to reduce impervious cover

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

Annual Requirements

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

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

The Town-wide "Good Housekeeping and Pollution Prevention Operations and Maintenance Plan" developed in Permit Year 2 includes maintenance procedures for Town facilities and MS4 infrastructure, which are implemented to the maximum extent practicable.

The Town conducted inspections on April 4, 2022 at high priority municipal BMPs. The inspection included a general condition assessment and noted any maintenance needs. The Town hired a contractor to perform maintenance on two of the high priority BMPs in Permit Year 4. Following the April 4, 2022 inspection efforts, Town interns inspected and mapped with a GPS all detention basins over the past summer (Permit Year 4/Permit Year 5).

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:

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

Annual Requirements

*Public Education and Outreach**

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

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

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

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

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

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

Phosphorus Source Identification Report

☒ Completed the Phosphorus Source Identification Report

- ◉ The Phosphorus Sourchace Identification Report is attached to the email submission
- ○ The Phosphorus Source Identification Report can be found at the following website:

Potential structural BMPs

☒ Any structural BMPs already existing or installed in the regulated area by the permittee or its agents was tracked and the phosphorus removal by the BMP was estimated consistent with Attachment 3 to Appendix F. The BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated phosphorus removed in mass per year by the BMP were documented.

- ○ The BMP information is attached to the email submission
- ◉ The BMP information can be found at the following website:

N/A

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

Phosphorus Source Identification Report: The Phosphorus Source Identification Report for the Concord River watershed was completed in Permit Year 4. The work completed is documented in the attached Retrofit Assessment and Phosphorus Source Identification Report and associated Outfall Inventory & Phosphorus Data spreadsheet. Note that the report is considered a draft while it is undergoing final review. The Town anticipates further assessing the plan and schedule for BMP retrofits in accordance with the Appendix H General Permit requirements, and will update the final report accordingly.

Potential Structural BMPs: In Permit Year 4, the Town identified a few municipal BMPs that were installed by the Highway Division within the Concord River watershed since the Permit issuance date, however design plans and stormwater reports were not developed as part of the installation and therefore phosphorus removal by BMP cannot be determined. Phosphorus removal information will be tracked for new BMPs constructed within the Concord River watershed moving forward based on stormwater reports and design calculations (if available).

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:

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

In Permit Year 4, the Town evaluated any changes to the impairments and/or receiving waters based on the final 2018/2020 303(d) List and the analysis is included as an attachment with this report. The changes described herein do not add, remove, or change any receiving waters or Appendix H impairments as listed in the NOI, Permit Year 2 receiving water update, and Permit Year 3 annual report.

The Town updates the drainage system mapping, including outfall ownership, as needed as field work is completed and discrepancies are found.

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**: 22

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

BMP: Education and Outreach to Residents: Lawn Care, Yard Waste, and Fertilizer Use

Message Description and Distribution Method:

The Town's Facebook page provided several posts that gave information on how resident's lawn care can affect stormwater pollution. "Grass Clippings and Storm Drains Do Not Mix" and "Stormwater Pollution & Yard Waste" posts on the Town's DPW Facebook page address these topics. The posts provided information on grass clipping and yard waste disposal.

The DPW posted an infographic on their Facebook page entitled "Buying Fertilizer?" which encourages purchasing of phosphorous-free fertilizer and discusses the water quality impacts of phosphorus runoff from lawns.

The Town's Trash & Recycling webpage provides a link to a "collection guide" by Waste Management. The guide provides information for proper waste disposal and the schedule for yard waste collection. The guide was mailed directly to residents.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

"Grass Clippings and Storm Drains Do Not Mix" Facebook post received 28 likes, 5 shares, and 2,457 people were reached.
"Stormwater Pollution and Yard Waste" Facebook post received 1 share and 564 people were reached.
The Waste Management Collection Guide is available to all visitors of the Town's Trash & Recycling webpage.
"Buying Fertilizer?" Facebook post received 7 likes, 1 comment, 3 shares, and 982 people were reached.
16,300 Waste Management Collection Guides were mailed to residents.

Message Date(s):

"Grass Clippings and Storm Drains Do Not Mix" Facebook post: April 22, 2022
"Stormwater Pollution and Yard Waste" Facebook post: April 13, 2022
Waste Management Collection Guide: Ongoing
"Buying Fertilizer?" Facebook post: April 19, 2022

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to Residents: Leaf Litter and Yard Waste Collection

Message Description and Distribution Method:

A post with information on the importance of raking leaves, proper leaf disposal, and keeping ponds and waterways clean of debris was advertised on the Town's DPW Facebook page. The post also included the dates for the Town's fall yard waste collection and information related to proper handling. The DPW posted three additional posts reminding residents of fall yard waste collection. The DPW Facebook page also advertised two posts about spring yard waste collection discussing collection dates and what are acceptable items to dispose of as yard waste.

The Town's DPW Facebook page provided information on not feeding ducks bread. The rotting bread can pollute waterways, cause algae growth and odor, and kill fish. It serves as a reminder on the importance of keeping waterways clean.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

Fall Leaf Litter Disposal & Yard Waste Collection Facebook post reached 1,171 people and received 3 likes and 2 shares.
"Yard waste collection! Starts October 25" Facebook post reached 756 people and received 4 likes and 3 shares.
"Two more weeks of curbside yard waste collection in Bellerica" Facebook post reached 3,216 and received 15 likes and 2 shares.
"Reminder: Last week for yard waste pick up" Facebook post reached 809 and received 1 like and 2 comments.
April 8, 2022 Spring Yard Waste Collection Facebook post reached 1,902 people and received 17 likes, 5 comments, and 13 shares.
May 2, 2022 Spring Yard Waste Collection Facebook post reached 2,046 people and received 10 likes and 6 shares.
April 27, 2022 "Clean Water Begins at Home" Facebook post reached 3,240 people and received 56 likes and 26 shares.

Message Date(s):

Fall Leaf Litter Disposal & Yard Waste Collection Facebook post: October 1, 2021
"Yard waste collection! Starts October 25" Facebook post: October 21, 2021
"Two more weeks of curbside yard waste collection in Billerica" Facebook post: November 19, 2021
"Reminder: Last week for yard waste pick up" Facebook post: November 29, 2021
Spring Yard Waste Collection Facebook posts: April 8, 2021 and May 2, 2021
"Clean Water Begins at Home" Facebook post: April 27, 2022

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education & Outreach to Residents, Businesses, Industrial Facilities: 2021 Water Quality Report

Message Description and Distribution Method:

The Town's 2021 Drinking Water Quality report addressed stormwater management and how residents, business, and industrial facilities can help reduce stormwater pollution. The report explained what stormwater is and the importance of preventing stormwater pollution. Additional topics addressed in the Water Quality Report include an overview of the NPDES MS4 program and Billerica's stormwater management program; best practices for residents, businesses, and institutions for leaf litter and yard waste disposal and proper fertilizer use; a targeted message for industrial facility stormwater management responsibilities; information regarding proper septic system maintenance; and best practices for proper pet waste management, including a reference to the Town's Animals By-Law. The report includes links to the Town's stormwater webpage, Yard Waste webpage, ThinkBlue Industrial website, and EPA's septic website for those who want additional information on the discussed topics.

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

Responsible Department/Parties: DPW

Measurable Goal(s):

The 2021 Water Quality Report was distributed to all Billerica addresses that receive a water bill (17,036 reports mailed to residents and businesses). Copies of the report were also available to visitors of municipal offices.

Message Date(s): The 2021 Water Quality Report was mailed on May 11, 2022

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to All Audiences: Stormwater Webpage and LinkedIn

Message Description and Distribution Method:

The Town's Stormwater Management webpage discusses several topics related to stormwater. The webpage includes the Town’s Stormwater Management Program and an overview the Town's compliance efforts. The Town provides links to the Permit Year 3 Annual Report, the SWMP, NOI, stormwater bylaws and regulations, the Think Blue MA “Fowl Water” video, and an educational guide for developers on stormwater management and green development. Additionally the webpage includes tips for reducing stormwater pollution (including pet waste management, lawn care, and automobile maintenance) and other stormwater-related documents (including lawn maintenance and phosphorus free fertilizer use). The webpage includes links to additional educational resources discussing yard waste and how lawn care can affect a watershed.

Throughout the year, the Town's Water Resource Recovery Facility Superintendent posts educational messages on LinkedIn, including summaries of their World Water Day and classroom educational programs,

and discussing how stormwater is discharged into the environment untreated and common sources of stormwater pollution.

Targeted Audience: All Audiences

Responsible Department/Parties: DPW

Measurable Goal(s):

Stormwater Management webpage received 245 unique page views on the webpage during Permit Year 4.
Linked In post received 33 likes and 7 comments.

Message Date(s): Stormwater Management webpage: Ongoing
LinkedIn post: February 3, 2022

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to Residents: Pet Waste Education

Message Description and Distribution Method:

A message and a link to a Youtube video regarding proper disposal of pet waste was posted on the DPW Facebook page. A message was also posted on the DPW Twitter and Facebook page about pet waste disposal and why it is important to ensure the waterways are kept clean.

A brochure discussing proper pet waste management are distributed with dog licenses. Additionally, the brochure is available for the public to view at the Town Clerk's counter and the Engineering office in Town Hall.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

Facebook video post reached 1,063 people and received 19 likes and 2 shares.
Twitter pet waste disposal post received 2 likes.
Facebook pet waste disposal post reached 775 people and received 8 likes.
Approximately 2,400 brochures were distributed with dog licenses.

Message Date(s): Facebook video post: June 16, 2022
Twitter & Facebook pet waste disposal post: August 31, 2021
The brochures are ongoing.

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to Residents: ThinkBlue Messaging

Message Description and Distribution Method:

The Town is a member of the Northern Middlesex Stormwater Collaborative (NMSC), which participated in the Think Blue Massachusetts educational advertisement campaign during Permit Year 4. Think Blue Massachusetts shared a "Fowl Water" video across social media to raise awareness to stormwater runoff and educate the public. Impressions and surveys from residents of member Towns were accounted for to analyze the effectiveness of the campaign. The video depicts the pathway of pet waste, oil, and litter in stormwater.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

In 2022, the post-campaign survey indicated that 56% of the viewers recalled seeing the "Fowl Water" video and were more likely to know that stormwater pollution ends up in local waterways. The 2022 ad campaign for the Town received a total of 43,786 impressions including 24,874 Facebook and Instagram impressions, 12,763 Youtube Ad impressions, and 6,149 Spanish Language impressions.

Message Date(s): May 31st to June 17th 2022

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to Residents: Septic System Maintenance

Message Description and Distribution Method:

The DPW posted about the requirements for septic system maintenance on Facebook. The post addressed the importance of not flushing wipes.
The Board of Health Frequently Asked Questions webpage includes information on proper septic system maintenance. It is available for the public to view at any time.
A dedicated message about proper septic system maintenance was included in the 2021 Water Quality Report, which included a link to EPA's Septic webpage.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

Facebook post reached 1,008 people and received 6 likes and 2 shares.
Additional educational information is available to all visitors of the Board of Health webpage.

Message Date(s): Facebook post: August 4, 2021
Board of Health webpage: Ongoing

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to Residents: Town Hall Bulletin Board

Message Description and Distribution Method:

The Town Hall has a bulletin board posted that addresses various stormwater related topics. The bulletin board provides information on pet waste disposal, septic system maintenance, benefits of rain gardens, not to feed ducks, lawn care, yard waste, fertilizer use, leaf litter, and yard waste collection details.

Targeted Audience: All Audiences

Responsible Department/Parties: DPW

Measurable Goal(s):

The board is available to all visitors of the Town Hall.

Message Date(s): Ongoing

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

Add an Educational Message

MCM2: Public Participation

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

The SWMP is available for public review and input on the Town's website.

As part of development of the updated Board of Health Rules and Regulations for stormwater management, a Board of Health public meeting was held on December 6, 2021 where public input was solicited and the

updated Regulations were adopted.

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**:

OARs is a local organization that protects, improves and preserves the Assabet, Sudbury, and Concord Rivers and their watersheds. The organization holds an annual cleanup that is held in Billerica along the Concord River. This past year it took place over Septemeber 17-19, 2021. It was the cleanup's 35th annual event where they picked up litter and debris. More than 70 volunteers participated in the cleanup.

The Town of Billerica hosted two additional cleanup events in Permit Year 4. Billerica's annual 'Clean Up, Green Up' event occurred on April 23, 2022. The residents and volunteers collected two large dumpsters full of trash that were disposed of by the DPW. The second clean up was held by the Town's Beautify Billerica group around the Locke Middle School on June 5, 2022. These events were attended by residents of all ages.

Yard waste collection by Waste Management occurred in the spring and fall. Residents could dispose of yard waste along with normal curbside trash and recycling removal (October 25 - December 3, 2021 and April 25 - May 20, 2022). Waste Management accepted Christmas tree disposal drop off the week after Christmas and disposal was offered during the regular curbside collection from January 10 - 14, 2022. Household hazardous waste (HHW) drop-off events were hosted on October 16, 2021 and May 21, 2022. Approximately 14.6 tons of HHW was collected from the two drop off events. The Town holds monthly waste oil drop off days on the 3rd Saturday of every month from 9 AM to 1 PM. In Permit Year 4, a total of approximately 700 gallons of waste oil was dropped off from a total of 105 residents on the monthly drop off days.

Marshall Middle School and Locke Middle School's 5th grade class in Billerica were given stormwater pollution lessons in May and June 2022. The Town's Engineering staff presented information on stormwater pollution and used a watershed model to demonstrate how water flows and can pick up pollutants. These lessons were given to approximately 400 students in the 5th grade.

The Town held the 14th Annual World Water Monitoring Day event at Nuttings Lake in Billerica. Staff from the Billerica Water Resource Recovery Facility (WRRF), Engineering Division, and consultant engineers accompanied 44 students from the local elementary school to test the water for pH, D.O., temperature, and turbidity. In April 2022, the Billerica WRRF Superintendent visited 14 classrooms to educate students on the water cycle, water pollution, and the process of water sampling.

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 continues to refine the MS4 GIS mapping as the IDDE Program is implemented and field 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: 9

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

Percent of outfalls screened: 96

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

To date, more than 600 of the Town's MS4 outfalls have been inventoried and screened. In Permit Year 4, Engineering Division staff continued efforts to locate and screen the remaining mapped MS4 outfalls that have proved to be difficult to field verify in previous permit years. This year, 9 additional MS4 outfalls were successfully screened with no flow observed; outfall monitoring results are attached. Field work to locate and screen the remaining MS4 outfalls continues in Permit Year 5.

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: 3

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

Billerica began catchment investigations in Permit Year 3, including dry weather key junction manhole inspections and wet weather outfall sampling. In Permit Year 4, the Town continued catchment investigations and conducted wet weather outfall sampling at four outfalls in June 2022; outfall monitoring results are attached. Dry weather key junction manhole inspections were completed in July 2022 (Permit Year 5) and therefore results will be included in the Permit Year 5 annual report. The Town intends to continue catchment investigations in Permit Year 5 and future Permit Years.

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: 2

Total number of illicit discharges removed: 2

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**:

The Northern Middlesex Stormwater Collaborative (NMSC) held a training on May 19, 2022 for member communities. The training topics included an IDDE Program refresher on identifying illicit discharges, dry weather screening data, and catchment investigations; municipal good housekeeping practices and common challenges; and oil spill prevention, control, and countermeasures. 14 Town employees attended the training,

including representatives from DPW, Engineering, Parks and Trees Division, WWTF, and Schools.

Representatives from the Town also attended other NMSC and statewide stormwater coalition meetings held in Permit Year 4. Engineering staff attended "Going Green for Good: Long-Term Considerations for Operations and Maintenance of Green Infrastructure" workshop on April 28, 2022. Additionally, Engineering staff attended "Stormwater Asset Management: Letting Your Green Infrastructure Assets Work for You" training on June 14, 2022.

MCM4: Construction Site Stormwater Runoff Control

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

Number of site plan reviews completed: 7

Number of inspections completed: 347

Number of enforcement actions taken: 0

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

Billerica utilizes outside consultants for stormwater review and site inspections. No formal enforcement actions were necessary.

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

Ordinance or Regulatory Mechanism

Date update was completed (due in year 3): December 2021

As-built Drawings

*Below, report on the number of as-built drawings received **during this reporting period**.*

Number of as-built drawings received: 5

Optional: Enter any additional information relevant to the submission of as-built drawings:

Retrofit Properties Inventory

Below, list the permittee-owned properties that could be modified or retrofitted with BMPs to mitigate impervious areas (at least 5):

The Town's BMP Retrofit Assessment was completed in June 2022 which identified 14 sites in Town for potential BMP retrofits, 9 of which are located within the Concord River watershed and are considered high priority sites. Of the 14 sites (see list below), the Town has already completed BMP retrofits at 6 of the sites, has construction in progress for BMP retrofits at 2 of the sites with anticipated completion in 2022/2023, and has bidding phase in progress for 2 of the sites with construction anticipated to begin in 2023. For the remaining 4 sites, design is either in progress or planned to begin in future years. See the attached Retrofit Inventory and Phosphorus Source Identification Report for more information.
-Broadleaf Street
-Middlesex Sheriffs Training Facility (Old Ditson School), 793 Boston Road
-Vining Elementary School, 121 Lexington Road
-Pinehurst Fire Station, 832 Boston Road
-Billerica Memorial High School, 35 River Street
-Howe School (Billerica Access Television), 390 Boston Road
-Peggy Hannon-Rizza Recreation Complex, 1 Ed Hayes Way
-Middlesex Turnpike from Crosby Drive/Plank Street in Bedford to Manning Road in Billerica
-Boston Road (Route 3A) from Simmons Lane to River Street
-Katie Durand Memorial Park (Carter Avenue)
-Town Hall, 365 Boston Road
-New DPW Facility, 273 Treble Cove Road
-Webb Brook and Allen Road neighborhoods
-Nashua Road and Concord Road neighborhoods at southern town line

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: 2,813

Number of catch basins cleaned: 2,813

Total volume or mass of material removed from all catch basins: 303.73 tons

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

Total number of catch basins: 4,793

If applicable:

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

Street Sweeping

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

- ○ Number of miles cleaned:
- ○ Volume of material removed: [Select Units]
- ◉ Weight of material removed: 494.1 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 detention basin located on site was mowed. The Highway department removed and replaced rip rap at an outfall that discharges to a tributary to the Concord River.

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 Central Massachusetts Mosquito Control Project and the Town work together for the for restoration and maintenance of approximately 8,400 feet of wetlands and ditches, as well as cleaning 68 culverts. During this maintenance brush, tires, litter, and other accumulated debris were removed from culverts and streams. Efforts also included insertion of larvicides into 2,154 Town catch basins.

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:

The Town has experienced staffing shortages due to COVID-19, which impacts the implementation of the stormwater management program and routine DPW operations.

Activities Planned for Next Reporting Period

Please confirm that your SWMP has been, or will be, updated to comply with all applicable permit requirements including but not limited to the year 5 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree ☒

Annual Requirements

- Annual report submitted and available to the public
- Annual opportunity for public participation in review and implementation of SWMP
- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- Annual training to employees involved in IDDE program
- Update inventory of all known locations where SSOs have discharged to the MS4
- Continue public education and outreach program
- Update outfall and interconnection inventory and priority ranking and include data collected in connection with the dry weather screening and other relevant inspections conducted
- Implement IDDE program
- Review site plans of construction sites as part of the construction stormwater runoff control program
- Conduct site inspection of construction sites as necessary
- Inspect and maintain stormwater treatment structures
- Log catch basins cleaned or inspected
- Sweep all curbed streets at least annually

- Continue investigations of catchments associated with Problem Outfalls
- Implemented SWPPPs for all permittee owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities
- Review inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; update if necessary
- Review O&M programs for all permittee owned facilities; update if necessary
- Implement all maintenance procedures for permittee owned facilities in accordance with O&M programs
- Implement program for MS4 infrastructure maintenance to reduce the discharge of pollutants
- Enclose all road salt storage piles or facilities and implemented winter road maintenance procedures to minimize the use of road salt
- Review as-built drawings for new and redevelopment to ensure compliance with post construction bylaws, regulations, or regulatory mechanism consistent with permit requirements
- Inspect all permittee owned treatment structures (excluding catch basins)
- Identify additional permittee-owned properties that could potentially be modified or retrofitted with BMPs to reduce impervious areas so that the permittee maintains a minimum of 5 sites in their inventory, until such a time when the permittee has less than 5 sites remaining

Provide any additional details on activities planned for permit year 5 below:

The Town acknowledges the General Permit Year 5 requirements and will complete as many activities as possible based on funding and staff availability.

Part V: Certification of Small MS4 Annual Report 2021

40 CFR 144.32(d) Certification

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

Name:	Fred Russell	Title:	Director of Public Works
Signature:		Date:	09/28/22

[Signatory may be a duly authorized representative]

Summary of Billerica's TMDLs and Impaired Waters [1, 2]

Receiving Waterbody	2016 Category	2016 Water Quality Impairments	2018/2020 Category	2018/2020 Water Quality Impairments [3, 4]	Applicable General Permit Section	Change to Permit Requirements
Concord River (MA82A-07)	5	E. Coli Fecal Coliform Eurasion Water Milfoil, Myriophyllum spicatum Non-Native Aquatic Plants Mercury in Fish Tissue	5	Curly-leaf Pondweed Fanwort Non-Native Fish/Shellfish/Zooplankton Water Chestnut E. Coli Fecal Coliform Eurasion Water Milfoil, Myriophyllum Spicatum Non-Native Aquatic Plants Mercury in Fish Tissue	Appendix H, Section II - Phosphorus [6] Appendix H, Section III - Pathogens	None [6]
Concord River (MA82A-08)	5	Eurasion Water Milfoil, Myriophyllum spicatum Non-Native Aquatic Plants Mercury in Fish Tissue	5	Fanwort Fish Passage Barrier Water Chesnut Eurasion Water Milfoil, Myriophyllum Spicatum Non-Native Aquatic Plants Mercury in Fish Tissue	Appendix H, Section II - Phosphorus [6]	None [6]
Nutting Lake East Basin (MA82088)	5	E. Coli Non-Native Aquatic Plants Mercury in Fish Tissue	5	E. Coli Water Chestnut Mercury in Fish Tissue	Appendix H, Section III - Pathogens Appendix F, Section C - Mercury TMDL	None
Nutting Lake West Basin (MA82124)	4a	Mercury in Fish Tissue	4a	Mercury in Fish Tissue	Appendix F, Section C - Mercury TMDL	None
Content Brook (MA83-09)	5	Benthic Macroinvertebrates E. Coli	5	Benthic Macroinvertebrates E. Coli	Appendix F, Section A.III - Bacteria and Pathogen TMDL	None
Shawsheen River (MA83-17)	5	Dissolved Oxygen E. Coli Fecal Coliform	5	Dissolved Oxygen E. Coli Fecal Coliform	Appendix F, Section A.III - Bacteria and Pathogen TMDL	None
Shawsheen River (MA83-18)	5	Dissolved Oxygen E. Coli Fecal Coliform	5	Dissolved Oxygen E. Coli Fecal Coliform	Appendix F, Section A.III - Bacteria and Pathogen TMDL	None
Winning Pond (MA82123)	4c	Eurasion Water Milfoil, Myriophyllum spicatum	4c	Eurasion Water Milfoil, Myriophyllum Spicatum Non-Native Aquatic Plants Water Chesnut		None
Webb Brook (MA83-22)	5	E. Coli	5	E. Coli	Appendix H, Section III - Pathogens	None
Pond Street Pond[5] (MA83021)	3		3			None
River Meadow Brook[5] (MA82A-10)	5	Debris Trash Non-Native Aquatic Plants E. Coli Fecal Coliform	5	Debris Trash Water Chesnut Temperature E. Coli Fecal Coliform	Footnote 5	None
TMDL of Bacteria for the Shawsheen River Basin					Appendix F, Section A.III - Bacteria and Pathogen TMDL	None

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

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

[3] Impairments in blue were added in the 2018/2022 Integrated List of Waters.

[4] Impairments applicable to Billerica that have been renamed between 2016 and 2018/2020 Integrated List of Waters include the following but do not represent actual changes in the status of the waters exhibiting these impairments: Non-Native Aquatic Plants -> Specific species of non-native plants (i.e. Curly-leaf Pondweed, Fanwort, Water Chestnut)

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

[6] Based on discussions with EPA, while the phosphorus impairment was removed from the Concord River, the downstream Merrimack River segment is impaired for phosphorus so Appendix H requirements are still applicable.

Retrofit Assessment and Phosphorus Source Identification Report
Draft June 2022

The Retrofit Assessment and Phosphorus Source Identification Report are available from the Engineering Division.

Permit Year 4 Outfall Investigation Summaries

The Permit Year 4 Outfall Investigation Dry/Wet Weather Summaries are available electronically in Billerica's IDDE Program, available from the Engineering Division.

Local Code Assessment

The following memorandum meets the MCM 5 requirements to complete an assessment of current street design, parking lot guidelines and other local requirements that affect the creation of impervious cover; and to evaluate existing regulations to determine feasibility of making green infrastructure practices allowable when appropriate site conditions exist.

Town of Billerica – Local Code Assessment

TO: Billerica Stormwater Working Group

FROM: Cassandra LaRochelle, PE, Project Manager
Emma Burleson, EIT, Staff Engineer

COPY: Emily Scerbo, PE, Project Director

DATE: June 27, 2022

Sections 2.3.6.b. and 2.3.6.c of the United States Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NDPES) General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts (referred to herein as "2016 Small MS4 General Permit") requires permittees, within four (4) years of the Permit effective date, to:

- Develop a report assessing current street design and parking lot guidelines and other local requirements that affect the creation of impervious cover; and
- Develop a report evaluating existing local regulations to determine the feasibility of making the following green infrastructure practices allowable when appropriate site conditions exist:
    - Green roofs;
    - Infiltration practices, such as rain gardens, curb extensions, planter gardens, porous and pervious pavements, and other designs to manage stormwater using landscaping and structured or augmented soils; and
    - Water harvesting devices, such as rain barrels and cisterns, and the use of stormwater for non-potable uses.

The following memorandum summarizes Tighe & Bond's assessment of the Town of Billerica's local code related to these practices with potential to impact stormwater runoff. The assessment included review of current street design and parking lot guidelines that affect the creation of impervious cover and requirements related to stormwater management to allow the Town to determine if changes to design standards for streets and parking lots can be made to support low impact development (LID) options as required by the 2016 Small MS4 General Permit. The assessment also included review of allowable green infrastructure practices and under what circumstances they are allowed.

According to the 2016 Small MS4 General Permit:

> Section 2.3.6.b. related to generation of impervious cover: *If the assessment indicates that changes can be made, the* ***assessment shall include recommendations and proposed schedules*** *to incorporate policies and standards into relevant documents and*

What are GI and LID?

Green Infrastructure (GI) includes both natural features such as forests and wetlands, as well as engineered landscapes that mimic these natural processes such as a rain garden.

Low Impact Development (LID) works to preserve the natural landscape and minimize impervious surfaces to keep stormwater close to the source and use it as a resource rather than a waste product.

Together, LID and GI not only manage stormwater and improve groundwater supplies, but also offer many free ecosystem services including cleaner air and water, flood control, shade and energy savings, recreational opportunities, and enhanced property values and quality of life.

Source: MassAudubon LID Fact Sheets. https://www.massaudubon.org

procedures to minimize impervious cover attributable to parking areas and street designs. The permittee shall implement all recommendations, in accordance with the schedules, contained in the assessment.

Section 2.3.6.c. related to allowing specific practices: *If the practices are not allowed, the **permittee shall determine what hinders the use of these practices, what changes in local regulations may be made to make them allowable, and provide a schedule for implementation of recommendations**. The permittee shall implement all recommendations, in accordance with the schedules, contained in the assessment.*

Recommended changes to the Town's By-laws and Regulations are outlined in this memorandum and should be refined through collaboration with the Town's Planning Board and Engineering Department.

Review of Existing By-Laws and Regulations

The following existing by-laws and regulations of the Town of Billerica were assessed relative to requirements that affect the creation of impervious cover or implementation of green infrastructure practices.

- The Rules and Regulations Governing the Subdivision of Land in Billerica, Massachusetts (as amended December 1998)
- Zoning By-Laws of the Town of Billerica and associated zoning map (as amended May 2021)
- Billerica Board of Health Rules and Regulations (as amended June 2021), including:
    - Chapter 5: Environmental and Miscellaneous Regulations
    - Chapter 6: Stormwater Management Regulations
- General By-Laws of the Town of Billerica (as amended May 8, 2021), including:
    - Building Department provisions on earth removal (Article IX)
    - Wetlands Protection By-Law (Article XXII) and associated Regulations
    - Stormwater Management By-Law (Article XXV) (as adopted Fall 2007)

The following documents were also discussed, but not included in the analysis:

- The Scenic Roadway Rules & Regulations were adopted by the Planning Board in March 2012 to establish procedures to regulate certain types of work within the public right-of-way of designated Scenic Roads (Concord Road and Dudley Road), particularly the cutting of trees and modifications to stone walls. However, they do not include provisions related to street design, parking, or green infrastructure and therefore no changes are recommended at this time as part of this assessment.
- Sustainable Neighborhood Road Design: A Guidebook for Massachusetts Cities and Towns (May 2011) is available on the Planning Board webpage and can serve as a guideline to applicants for roadway design. As discussed in the Recommendations section of this memorandum, there are provisions in this Guidebook that could be incorporated into the Town's local code.
- Guidelines for Site Plan Special Permits & Special Permits (September 2007) is available on the Planning Board webpage and can serve as a guideline to applicants for Site Plan submittals and design parameters.
- Flood Plain Maps ("Green Maps") were developed in 1972 by Green Engineering Affiliates, Inc. and are available on the Town's GIS webpage. These maps are encoded

in the Zoning By-law to determine the Town's Flood Plain District and can also be referenced by applicants to determine existing hydrology in Town.

- The Town of Billerica Conservation Commission Wetlands Protection Regulations were reviewed, and while several sections had applicable requirements for activities within resource area protection areas, they are largely governed by the Massachusetts Wetlands Protection Act (WPA) Regulations (310 CMR 10.00). Because the WPA Regulations and the Massachusetts Stormwater Management Handbook are being updated, no changes are recommended at this time.

To document our review of local code and understand opportunities for improvement, Tighe & Bond used Mass Audubon's *Bylaw Review for LID & Climate-Smart, Nature Based Solutions*.[1] As described in the Mass Audubon checklist, it provides a framework to:

> *…evaluate local land use regulations in relation to models and examples from the Commonwealth of Massachusetts' Smart Growth/Smart Energy Toolkit and other sources in relation to the use of LID and Green Infrastructure (GI) techniques. The focus is primarily on residential development, but the concepts are also applicable to other forms of development and redevelopment.*
>
> *Best practices minimize the alteration of natural green infrastructure such as forests; reduce creation of impervious surfaces; support retention of naturally vegetated buffers along wetlands and waterways; minimize grading and alterations to natural flow patterns; and support the use of LID techniques as the preferred, most easily permitted methods for managing stormwater.*

The key areas of analysis in the checklist include overall site design (such as open space residential design or "OSRD" versus conventional subdivisions), project design and layout standards in relation to LID (such as preservation and protection of natural resources, minimizing the area of disturbance, road layout and width, curbing, drainage, sidewalks, parking, landscaping), maintenance and operations, and mechanisms for enforcement. See Tabs 1 through 4 in the checklist for additional information about the tool.

The analysis portion of the checklist is separated into two tabs; Tab 5 summarizes factors related to OSRD and Tab 6 summarizes factors related to Mass Audubon's five major goals of a robust LID program:

- Goal 1: Protect natural resources and open space
- Goal 2: Promote efficient, compact development patterns and infill
- Goal 3: Smart designs that reduce overall imperviousness
- Goal 4: Adopt green infrastructure stormwater management provisions
- Goal 5: Encourage efficient parking

A color-coded ranking system is used to categorize the state of current code compared to Mass Audubon's "Conventional", "Better", and "Best" categories for each factor. This allows the Town to visually perceive whether the Town's current code related to a particular LID goal or factor follows a more conventional approach and therefore may present an opportunity to update the code with more LID-focused parameters. Note that there is no EPA requirement

[1] Mass Audubon. *Bylaw Review: Encouraging Nature-Based Solutions.* URL: https://www.massaudubon.org/our-conservation-work/policy-advocacy/shaping-climate-resilient-communities/publications-community-resources/bylaw-review

to meet the "Best" category for each factor in the checklist, and the recommendations presented here are primarily focused on meeting the Small MS4 General Permit requirements.

Tighe & Bond met with the Town on May 5, 2022 to obtain initial input on this assessment. The final Code Assessment Summary checklist is enclosed in this memorandum (delivered electronically in Excel).

Summary of Findings

Tighe & Bond's assessment of the Town of Billerica's local code has determined that several By-laws and Regulations include provisions that affect the creation of impervious cover. As noted in the Recommendations section of this memorandum, there are some opportunities to update the code to incorporate policies and standards to minimize impervious cover attributable to parking areas and street designs.

Several By-laws and Regulations allow for the implementation of green roofs, infiltration practices, and water harvesting devices when appropriate site conditions exist. Tighe & Bond found no hinderances to these practices within the existing local codes, however there are opportunities to encourage their use more proactively, as described in the Recommendations section of this memorandum.

This section provides a brief summary of findings from each code reviewed. For a more detailed summary of existing provisions included in the By-laws or Regulations listed below, refer to the enclosed Code Assessment Summary.

Rules and Regulations Governing the Subdivision of Land in Billerica

The Rules and Regulations Governing the Subdivision of Land in Billerica (herein referred to as the "Subdivision Regulations") contain paved street width, right-of-way width, cul-de-sac radius, and sidewalk requirements that affect the creation of impervious cover associated with subdivisions. The Subdivision Regulations set forward street layout and design standards that regulate the location, alignment, intersections, drainage, widths, and access of the streets of Billerica. In general, streets shall be designed to provide safe vehicular travel through the proper provision of adequate sight distances, width of pavement, grades, intersection design, and other engineering standards.

Overall, the Subdivision Regulations provide excellent protection for natural resources and open space within subdivisions, but there are opportunities to increase provisions to support the reduction of impervious cover during development and to encourage the use of green infrastructure stormwater provisions, as discussed in the Recommendations section of this memorandum. Refer to the Code Assessment Summary (see Enclosure, Tab 6) for details of the applicable standards within the Subdivision Regulations relative to the creation of impervious cover and green infrastructure within Billerica.

Zoning By-Laws of the Town of Billerica

The Town's Zoning By-law was enacted in accordance with M.G.L., CH.40A, and the Home Rule Amendment, Article 89 of the Amendments to the Massachusetts Constitution. The purpose of the by-law is to promote the public health, convenience, safety, and welfare of the inhabitants of the Town, and the objectives are: to lessen congestion in the streets; to conserve health; to secure safety from fire, flood, panic and other dangers; to provide adequate light and air; to prevent overcrowding of land, to avoid undue concentration of population; to encourage housing for persons of all income levels; to conserve the value of land, buildings, and structures; to conserve natural resources; to prevent blight; to prevent pollution of the environment; to encourage the most appropriate use of land throughout the

town; to preserve and increase amenities; to preserve and enhance the development of the natural, scenic, and aesthetic qualities of the community; to consider recommendations of the Town's master plan, comprehensive plan, and strategic plan; to prevent obnoxious, hazardous, or injurious uses to the neighborhood or to the property; and to facilitate the adequate provision of transportation, water supply, drainage, sewage disposal, schools, parks, open space, and other public requirements.

Billerica's Zoning By-laws include specific provisions for different uses in various zoning and overlay districts, which include the following:

- Residential Districts (Village, Neighborhood, Rural, and Multi-Family);
- Business Districts (Neighborhood, General, and Commercial);
- Industrial District;
- Special Districts (Refuse Transfer, Private/Public Dumping Ground, Alcohol & Drug Rehabilitation, Composting, and Adult Entertainment); and
- Overlay Districts (Flood Plain, Historic, Residential Cluster, Townhouse, Elderly Housing, Self-Service Storage Facility, Mill Conversion and Reuse, Medical Marijuana, Adult Use Marijuana, and Mixed Use).

The Dimensional Regulations Table included in Section 7 of the Zoning By-laws includes specifications on minimum lot frontage and width, minimum yard dimensional limits, maximum building height, maximum lot coverage percentages, and minimum lot landscaping percentages. Additional requirements related to the creation of impervious cover and use of green infrastructure techniques may be more or less stringent depending on the zoning or overlay district the proposed development is located within. The Zoning By-law typically provides provisions to protect natural resources and open space, but there are opportunities to encourage efficient parking and promote efficient, compact development patterns with flexible or minimized lot sizes, setbacks, and frontage areas, as discussed in the Recommendations section of this memorandum. Applicable standards as they relate to open space residential design, street design, parking, impervious cover, and green infrastructure is summarized in more detail in the Code Assessment Summary (see Enclosure, Tab 6).

While Billerica does not have a standalone Open Space Residential Design (OSRD) or Flexible Development By-law, open space standards are included in the Zoning By-laws under Section 5.E.3, Residential Cluster Overlay District, which is intended to encourage the conservation of open space and the efficient use of land in harmony with its natural features. In general, the Residential Cluster Overlay District has some factors that are considered "Best Practice" by the Mass Audubon standards for ORSD or Flexible Development, but also has areas that could be improved in terms of application submittals and ongoing monitoring, as discussed in the Recommendations section of this memorandum.

Stormwater Management By-Law and Board of Health Rules and Regulations

The Town's Stormwater Management By-law was adopted in 2007 to regulate new development and redevelopment of subdivisions requiring a Definitive Plan, any activity that results in a land disturbance greater than one acre, any activity that results in a land disturbance of less than one acre if the project is part of a larger common plan of development that eventually will disturb more than one acre, and any alteration, redevelopment, or land use conversion in an area with "higher potential pollutant loads" as described in Standard 5 of the Massachusetts Stormwater Handbook.

The Billerica Board of Health adopted associated Rules and Regulations to provide submittal requirements and performance and design standards for applicants. Chapter 6 of the Board

of Health Rules and Regulations covers Stormwater Management Regulations for sites subject to the By-law, and was updated in 2021 for compliance with the more stringent requirements in the 2016 Small MS4 General Permit. For compliance with the standards in these Regulations, the applicant must include a Stormwater Management Plan, project description, Erosion and Sediment Control Plan, Operation and Maintenance Plan, and Inspection and Maintenance agreement with the application for a Stormwater Management Permit. Section 7.0 of the Stormwater Management Regulations define performance standards for stormwater management and state that stormwater management shall be designed in accordance with the requirements of the NPDES Small MS4 General Permit for Massachusetts and the Stormwater Management Standards described in the Stormwater Handbook using current Best Management Practices (BMPs).

Additionally, Chapter 6 requires that LID site planning and design strategies must be utilized to the maximum extent feasible. Within the Stormwater Management Regulations, LID is defined as "Site planning and design strategies that use or mimic natural processes that result in the infiltration, evapotranspiration or use of stormwater in order to protect water quality and associated aquatic habitat. LID employs principles such as preserving and recreating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treat stormwater as a resource rather than a waste product. LID practices include but are not limited to bioretention facilities, rain gardens, vegetated rooftops, rain barrels and permeable paving."

Chapter 5 of the Board of Health Rules and Regulations, Environmental and Miscellaneous Regulations, includes criteria for approval of drainage designs for projects not subject to Chapter 6. This Regulation also requires that the use of LID techniques and environmentally sensitive site design be employed to the maximum extent feasible.

Refer to the Code Assessment Summary (see Enclosure, Tab 6) for more detail of the applicable standards within the Stormwater Management By-law and Regulations relative to the creation of impervious cover and green infrastructure within Billerica.

General By-Laws of the Town of Billerica

Note that while the Town of Billerica General By-laws were reviewed, there were minimal provisions related to street design, parking, or green infrastructure. Some commentary was included in the checklist from the Building Department provisions on earth removal and Stormwater Management By-law (as discussed previously).

Recommendations

The majority of Tighe & Bond's recommendations are limited to updates to the Subdivision Regulations and the Zoning By-law, which have the most opportunity to generate impervious cover through construction of buildings, parking, streets, and sidewalks. While we have provided recommended areas for potential improvement, the ultimate updates to Town code will be determined after careful consideration by the Town's professional staff in Engineering and Planning; discussion with the Planning Board, Board of Health, and other enforcing entities; and a process for public input.

Recommended Revisions to Subdivision Regulations

Responsible Parties: Planning Board
Target Completion Date: July 2025

The Town's Subdivision Regulations were adopted in 1998 and would benefit from modifications designed to promote the use of LID and stormwater management techniques

that improve water quality. In general, such modifications would reduce impervious area, incorporate more LID and GI, and better preserve open space.

The list below provides more specific recommendations on how to further promote LID in the Town of Billerica for discussion and collaboration with the Town's Planning Board, Department of Public Works, and the Fire Department based on recommendations from the Massachusetts Low Impact Development Toolkit[2] and the American Planning Association (APA) guidebook, *Sustainable Neighborhood Road Design: A Guidebook for Massachusetts Cities and Towns*.[3]

Street Design

- There are opportunities within the Town's various requirements for street design to encourage green infrastructure and reduce pavement. For example, Section 6.A.5 Design Standards: Dead-End Streets, *Dead-End streets shall be provided at the closed end with a turn-around with an outside roadway diameter of 100 feet, and a property line diameter of not less than 120 feet. The width of the paved roadway shall not be diminished at the turn-around.* This minimum diameter is considered a "conventional" practice, however a vegetated center landscaping and more specifically a Bioretention Area (sometimes called a Rain Garden) for stormwater management could be provided within the turn-around. The Town could also allow a hammerhead turnaround or a smaller end diameter (less than 70 feet) to reduce pavement.
- In Section 6.A.3, Design Standards: Streets (Width), required minimum road widths range from 24 to 32 feet depending on the street categorization. Consider minimizing residential road widths to the extent possible. Consider low-density residential widths of 18 to 22 feet. Consider allowing narrow widths in lower density residential areas or where on-street parking is not anticipated. This will require meeting with the Fire Department to resolve conflicts between standards in Subdivision Regulations and requirements and/or preferences of the Fire Department for emergency vehicle access.
- The Subdivision Regulations require installation of curbing on both sides of all roadways. Consider allowing curb installation on only one side of the roadway or allowing curb breaks and encouraging open drainage with vegetated LID features or roadside swales.

Stormwater Management

- Because Definitive Subdivision Plans explicitly require a permit under the Town's Stormwater Management Bylaw and Regulations, these projects will meet the most up-to-date State and Federal design requirements. Modifications to Section 6 could be updated for consistency with the Stormwater Management Regulations, MA Stormwater Handbook, and the Town's current design preferences. Although there are maintenance concerns for green infrastructure, consider encouraging these practices where deemed appropriate.
- Consider requirements to address runoff from roofs. Roof runoff is not specifically required to be infiltrated or directed to landscaped or naturally vegetated areas capable of absorbing clean water. Green roofs, downspout disconnection, and rainwater harvesting could be encouraged in some cases through the permitting process. Downspout disconnection and rainwater harvesting are both considered green infrastructure elements.[4]

[2] https:www.mapc.org/resource-library/low-impact-development-toolkit/
[3] https://www.apa-ma.org/wp-content/uploads/2018/12/NRB_Guidebook_2011.pdf
[4] U.S. EPA. *What is Green Infrastructure?* URL: https://www.epa.gov/green-infrastructure/what-green-infrastructure

Driveways

- In Section 6.H, which addresses curb cuts and driveways, consider adding language to allow 9-foot wide one-lane or 18-foot two-lane residential driveways per LID standards. Consider allowing pervious materials for single-family home driveways.
- The Subdivision Regulations do not currently include provisions for common driveways. Consider establishing common driveway requirements or including a reference in the Subdivision Regulations to the associated requirements in the Zoning By-laws.

Sidewalks and Pedestrians

- Sidewalk construction must meet Americans with Disabilities Act (ADA) standards and guidelines. For example, if sidewalks are less than 5 feet wide, passing spaces that are at least 5 feet on all sides must be constructed every 200 feet (which could be a driveway). Pavement from sidewalks may still be reduced by modifying the Subdivision Regulations to allow a 4-foot sidewalk, or permeable pavement some circumstances (as long as the owner is able to properly maintain permeable sidewalks for safe travel and permeability). Consider reducing or eliminating some sidewalk requirements and/or requiring sidewalk on one side of the street instead of both sides (Section 7.D).

Recommended Revisions to the Zoning By-law

Responsible Parties: Planning Board, Building Inspector
Target Completion Date: July 2026 *(As noted at the May 5, 2022 working meeting, the Town has established a Zoning By-Law review committee in 2022; the schedule for Zoning-related modifications may be adjusted as needed to coordinate with the committee schedule.)*

The Town's Zoning By-law has established a Residential Cluster Overlay District, which allows for more flexible dimensional requirements to create open space for residential uses. Site plan approval (Section 6) objectives include adequacy of landscaping and open space to screen, buffer, and separate adjoining uses; and review criteria include retaining open space whenever possible. Additional open space provisions are included for commercial uses within the Neighborhood Business District. The dimensional requirements for Child Daycare Centers in the Village Residential, Neighborhood Residential and Rural Residential Districts also require that impervious surfaces shall not cover more than 50% of the site.

The list below provides more specific recommendations on how to further promote LID and reduce impervious area in the Town of Billerica for discussion and collaboration with the Town's Planning Board and Department of Public Works based on recommendations from the Massachusetts Low Impact Development Toolkit and the American Planning Association (APA) guidebook, *Sustainable Neighborhood Road Design: A Guidebook for Massachusetts Cities and Towns*.

Parking Requirements and Standards

- Section 8 of the Zoning By-laws include parking requirements, which specify a minimum number of off-street parking spaces based on the use. The Mixed Use Overlay District also allows for Shared Parking (i.e., common off-street parking areas). Consider opportunities to reduce impervious area creation while still providing reasonable parking accommodations by updating the Parking Requirements to set a maximum number of parking spaces and/or providing additional opportunities in other overlay districts for Shared Parking.
- Consider allowing the Planning Board to waive the actual installation of one or more parking spaces (i.e., green bank or land bank parking spaces) provided that site drainage is designed to accommodate full build-out, and provided that the Building Commissioner can require installation of some of the land banked parking spaces if

needed. Land banking allows for designating a portion of land on a site that would be required for parking to be held and preserved as open space, rather than constructed as parking. Allowing a certain percentage (e.g., up to 25%) of the required parking spaces could be added to the Site Plan Review process.

- Consider allowing pervious materials for some stalls and spillover areas. Consider adding language such as: "Pervious materials such as porous pavers, paving stones, reinforced grass, and pervious pavement may be allowed in lower volume stalls or overflow parking areas."
- Section 8.B calls for landscaping within parking and loading areas, including curbed planting strips. Consider allowing or requiring stormwater practices in islands, landscaped areas, and setbacks. Consider adding language such to this section as: "Low impact stormwater management techniques such as bioretention areas, rain gardens, vegetated swales, and filter strips may be located within the landscaped areas and count towards the requirement." This would require planting strips to be lower than the paved area with curb cuts to allow runoff into the landscaped area.
- Section 8.C of the Zoning By-laws sets the Town's current parking stall dimensions at 9 feet by 19 feet for angled parking and 8 feet by 22 feet for parallel parking. Consider reducing the dimension for depth of a parking stall from 19 feet to the standard 18 feet for residential and commercial parking.

Driveways

- The Zoning By-laws do not address common driveways. Consider allowing up to four residential units to share a common driveway. Also consider requiring or encouraging common driveways to be constructed with permeable pavers or pavement.
- In Section 8.B, which addresses parking and loading, consider reducing the required driveway width to allow 9-foot wide one-lane or 18-foot two-lane residential driveways per LID standards. Consider allowing pervious materials for single-family home driveways.

Lot Layout and Dimensional and Density Requirements

- In low-density areas, consider establishing limits on impervious lot coverage (e.g., <15%). Note this is not appropriate for town centers or moderate density neighborhoods where compact development should be encouraged. Consider adding language to set impervious cover limits tailored to the community and district type.
- In Section 7.L Dimensional Table, look for opportunities to examine minimum setback requirements in certain districts such as Commercial and Industrial (at a minimum). Some of the current requirements may result in unneeded impervious area. Consider permitting the location of green infrastructure and LID techniques in green strips and green spaces.

Stormwater Management and Landscaping Requirements

- Consider adding provisions to the Zoning By-laws to allow for easy siting of LID features on lots, common open space, setback areas, or road rights-of-way and easements. Green infrastructure could count toward fulfillment of landscaping and open space requirements. Examples include allowing an increase in floor area ratio or other developmental incentives for green roofs for commercial development, specifying commercial landscaping requirements for parking areas, and allowing for vegetated areas with bioretention functions in commercial landscaping areas.
- Billerica is currently taking steps to protect natural resources by requiring at least one native tree per 50 feet of green strip in Section 7.G.2. Consider adding language to

require street trees for private and public development projects. Additionally, consider developing a new Tree Protection By-law (see Additional Recommendations below).

- Consider requirements to address runoff from roofs in coordination with building permits. Roof runoff is not specifically required to be infiltrated or directed to landscaped or naturally vegetated areas capable of absorbing clean water. Green roofs, downspout disconnection, and rainwater harvesting could be encouraged in some cases through the permitting process. Downspout disconnection and rainwater harvesting are both considered green infrastructure elements.

Open Space Requirements

- Consider creating a standalone Open Space Residential Design by-law. Currently, Section 5.E.3 of the Zoning By-law outlines requirements for open space and flexible development within the Residential Cluster Overlay District.
- Green infrastructure could count toward fulfillment of landscaping/open space requirements of the Residential Cluster Overlay District. Consider adding language such as "Low impact development techniques such as bioretention areas, rain gardens, vegetated swales, and filter strips may be located within the open space area and count towards the requirement."

Additional Recommendations

Responsible Parties: Board of Health, Department of Public Works, Building Inspector
Target Completion Date: July 2027

- Consider updating the Scope and Applicability of the Stormwater Management By-law to reduce area of land disturbance required to trigger a Stormwater Management Permit. This might eliminate the need for Chapter 5 of the Board of Health Rules and Regulations, which provides stormwater management requirements for smaller projects that do not require a Stormwater Management Permit, and create a clearer review process and design criteria for smaller projects.
- Consider implementing a Tree Protection By-law. The Massachusetts Department of conservation and Recreation (DCR) published a *Guide to Local Tree Bylaws for Communities in Massachusetts*[5] in March 2021.
- Consider a capital project to update the Flood Plain Maps ("Green Maps") that were developed in 1972 by Green Engineering Affiliates, Inc. From discussions with Town staff, these maps provide more detailed information than FEMA flood maps about local flooding and drainage patterns that has proven to be valuable for oversight of public and private development and redevelopment projects. Seek State or Federal grant funding opportunities.
- Provide opportunities for staff participation in LID workshops or conferences.
- Implement a new green infrastructure or LID demonstration project on Town-owned property.

[5] https://www.mass.gov/doc/tree-bylaw-and-ordinance-guide/download

- Modify and distribute public education materials available from MassDEP and EPA regarding design, uses, and appropriate site conditions for green infrastructure such as rain gardens and porous pavement.[6] [7] [8] [9] [10]
- Participate in a rain barrel sale and distribution program such as those offered by the Great American Rain Barrel company.[11] Provide education to residents and developers about rainwater harvesting.

Next Steps

The proposed recommendations for revision presented herein should be discussed and refined through a joint working meeting of relevant boards and commissions including the Town's Planning Board, Department of Public Works, Building Inspector, and Fire Department. Per the 2016 Small MS4 General Permit, recommended changes must have a corresponding proposed schedule to incorporate policies and standards into relevant documents and procedures to minimize impervious cover attributable to parking areas and street designs. The joint meeting should also include development of a schedule of implementation of proposed revisions and recommended actions.

Enclosures

Billerica code assessment summary via Mass Audubon's *Bylaw Review for LID & Climate-Smart, Nature Based Solutions* (delivered electronically)

J:\B\B0874 Town of Billerica MA Stormwater\014 FY22 Stormwater Program Assistance\Local Code Review\Billerica Local Code Review Memo.docx

[6] https://www.epa.gov/green-infrastructure/overcoming-barriers-green-infrastructure
[7] https://www.epa.gov/soakuptherain
[8] https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/BMPRetrofit.pdf
[9] https://www.thinkbluemassachusetts.org/
[10] https://www.mass.gov/guides/stormwater-outreach-materials-to-help-towns-comply-with-the-ms4-permit
[11] https://www.greatamericanrainbarrel.com/

Mass Audubon's *By-Law Review for LID & Climate-Smart, Nature Based Solutions*

The Billerica Code Assessment Summary via ***Mass Audubon's By-Law Review for LID & Climate-Smart, Nature Based Solutions*** is available electronically in the Engineering Division record keeping files.

Permit Year 5 Annual Report

Year 5 Annual Report
Massachusetts Small MS4 General Permit
Reporting Period: July 1, 2022-June 30, 2023

Please DO NOT attach any documents to this form. Instead, attach all requested documents to an email when submitting the form. Also ensure any websites included on this form are to publicly accessible sites

Unless otherwise noted, all fields are required to be filled out. If a field is left blank, it will be assumed the requirement or task has not been completed. Please ONLY report on activities between July 1, 2022 and June 30, 2023 unless otherwise requested.

Part I: Contact Information

Name of Municipality or Organization: Town of Billerica, MA

EPA NPDES Permit Number: MAR041182

Primary MS4 Program Manager Contact Information

Name: Kelley Conway, PE Title: Town Engineer

Street Address Line 1: DPW - Engineering Division

Street Address Line 2: 365 Boston Road

City: Billerica State: MA Zip Code: 01821

Email: kconway@town.billerica.ma.us Phone Number: (978)-671-1300

Stormwater Management Program (SWMP) Information

SWMP Location (publicly available web address): https://www.town.billerica.ma.us/214/Stormwater-Management

Date SWMP was Last Updated: October 2022

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.*

Annual Requirements

☒ Provided an opportunity for public participation in review and implementation of SWMP and complied with State Public Notice requirements

☒ Kept records relating to the permit available for 5 years and made available to the public

☒ The SSO inventory has been updated, including the status of mitigation and corrective measures implemented

- ○ This is not applicable because we do not have sanitary sewer
- ◉ This is not applicable because we did not find any new SSOs
- ○ The updated SSO inventory is attached to the email submission
- ○ The updated SSO inventory can be found at the following publicly available website:

☒ Updated system map due in year 2 as necessary

☒ Provided training to employees involved in IDDE program within the reporting period

☒ Properly stored and disposed of catch basin cleanings and street sweepings so they did not discharge to receiving waters

☒ All curbed roadways were swept at least once within the reporting period

☒ Enclosed all road salt storage piles or facilities and implemented winter road maintenance procedures to minimize the use of road salt

☒ Implemented SWPPPs for all permittee owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities

☒ Updated inventory of all permittee owned facilities as necessary

☒ O&M programs for all permittee owned facilities have been completed and updated as necessary

☒ Implemented all maintenance procedures for permittee owned facilities in accordance with O&M programs

☒ Implemented program for MS4 infrastructure maintenance to reduce the discharge of pollutants

☒ Inspected all permittee owned treatment structures (excluding catch basins)

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

The Town-wide "Good Housekeeping and Pollution Prevention Operations and Maintenance Plan" developed in Permit Year 2 includes maintenance procedures for Town facilities and MS4 infrastructure, which are implemented to the maximum extent practicable.

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

☐ This is not applicable because there are no septic systems present

** 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:

Chloride

Annual Requirements

Public Education and Outreach

☐ Included an annual message in November/ December to private road salt applicators and commercial industrial site owners on the proper storage and application rates of winter deicing material, along with the steps that can be taken to minimize salt use and protect local waterbodies

The following type(s) of salt were applied **during this reporting period (year 5)**:

☐ Sodium chloride

☐ Calcium chloride

☐ Potassium chloride

☐ Magnesium chloride

☐ Brine solution

Total amount of salt applied **during this reporting period (year 5) including units**:

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:

Per the 2022 Integrated List of Waters, chloride was added as an impairment for Concord River (MA82A-08). The requirements of Appendix H, Part IV are now applicable for Billerica within the Concord River Watershed. In accordance with Appendix H, Part IV.2 and Part IV.3, the Town shall develop a Salt Reduction Plan and begin tracking the above information within three years (by June 30, 2026), and fully implement the Plan within the watershed within five years (by June 30, 2028).

As part of the Town's robust public education program, multiple messages were posted to the DPW Facebook page in January and February 2023 regarding the proper use and application of road salt. Additionally, proper use of salt was a topic featured on the bulletin board in Town offices during the winter months.

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

Annual Requirements

*Public Education and Outreach**

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

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

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

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

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

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

Structural BMPs

☒ Completed the evaluation of all permittee owned properties identified as presenting retrofit opportunities or areas for structural BMP installation under permit part 2.3.6.d or identified in the Phosphorus Source Identification Report, including: *(select the items of the evaluation that have been completed below)*

- ☒ Next planned infrastructure, resurfacing, or redevelopment activity planned for the property (if applicable) OR planned retrofit date
- ☒ Estimated cost of redevelopment or retrofit BMPs
- ☒ Engineering and regulatory feasibility of redevelopment or retrofit BMPs

☒ Completed a listing of planned structural BMPs and a plan and schedule for implementation

- ◉ The BMP list and implementation schedule is attached to the email submission

○ The BMP list and implementation schedule can be found at the following publicly available website:

Any structural BMPs already existing or installed in the regulated area by the permittee or its agents was tracked and the phosphorus removal by the BMP was estimated consistent with Attachment 3 to Appendix F. The BMP type, total area treated by the BMP, the design storage volume of the BMP, and the estimated phosphorus removed in mass per year by the BMP were documented.

☒

○ No BMPs were installed

◉ The above referenced BMP information is attached to the email submission

○ The above referenced BMP information can be found at the following publicly available website:

Total estimated phosphorus removed in **lbs/year** from the installed BMPs: 1.12

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 Phosphorus Source Identification Report was updated to include new BMP retrofit opportunities within the Concord River watershed identified in Permit Year 5 and the BMP implementation schedule, see enclosed report.

BMP phosphorus removal calculations for the Katie Durand Memorial Park and Peggy Hannon-Rizza Recreation Complex (completed in Permit Year 5) are enclosed.

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:

Billerica's NOI listed water quality impairments and TMDLs for the Town's receiving waters based on the 2014 303(d) List. In Permit Year 2, the Town evaluated changes to the impairments and/or receiving waters based on the final 2016 303(d) List and the analysis was submitted with the Town's Permit Year 2 Annual Report and is available in the Town's SWMP. In Permit Year 4, the Town evaluated changes to the impairments and/or receiving waters based on the final 2018/2020 303(d) List and the analysis was submitted with the Town's Permit Year 4 Annual Report and is available in the Town's SWMP.

The Town has evaluated changes to the impairments and/or receiving waters based on the final 2022 303(d) List and the analysis is included as an attachment with this report. Per the 2022 Integrated List, chloride and E. Coli were added as impairments for Concord River (MA82A-08). The requirements of Appendix H, Part IV and Appendix H, Part III are now applicable for Billerica within the Concord River Watershed. In accordance with Appendix H, Part IV.2 and Part IV.3, the Town shall develop a Salt Reduction Plan within three years (by June 30, 2026), and fully implement the Plan within the watershed within five years (by June 30, 2028).

The Town updates the drainage system mapping, including outfall ownership, as needed as field work is completed and discrepancies are found. In Permit Year 5, 11 outfalls were removed from the inventory as they were found to not exist and 10 outfalls were added from the inventory as they were discovered during other IDDE field work or based on record drawings. The changes described do not add, remove, or change any receiving waters.

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**: 47

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

BMP: Education Outreach to Residents: Lawn Care, Yard Waste, and Fertilizer Use

Message Description and Distribution Method:

The Town's Facebook page and the Town's DPW Facebook page provided several posts that gave information on how resident's lawn care can affect stormwater pollution. Posts such as "Don't 'P' on your lawn" and "Fertilizer doesn't belong in our waterways" encourage the public to purchase phosphorus-free fertilizer and be cautious of their fertilizer use.

The DPW and the Town's Facebook pages posted an infographic entitled "Protect Our Waterways" which provides information to the general public, encouraging them to partake in proper yard waste disposal techniques.

The Town's Trash & Recycling webpage provides a link to a "collection guide" by Waste Management. The guide provides information for proper waste disposal and the schedule for yard waste collection. The guide was also mailed directly to residents.

The DPW Facebook page reposted a CMRSWC message regarding the importance of native plants and their lesser need for fertilizer use. The DPW page also posted gardening tips, how to properly apply fertilizer, and the benefits of zero-phosphorus fertilizers.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

The Facebook posts had a total of 4,843 impressions.
"Don't 'P' on your lawn" Facebook post received 4 likes and 2 shares.
"Fertilizer doesn't belong in our waterways" Facebook post received 2 likes.
"Protect Our Waterways" Facebook post received 1 comment, 1 like, and 1 share.
The Waste Management Collection Guide was mailed to all residents and is available to all visitors of the Town's Trash & Recycling webpage.
CMRSWC message received 4 likes.
Fertilizer and gardening tips post received 8 likes and 2 shares.

Message Date(s):

"Don't 'P' on your lawn" Facebook Post: April 4, 2023.
Fertilizer and gardening tips post: May 12, 2023.
CMRSWC message: June 6, 2023.
"Fertilizer doesn't belong in our waterways" Facebook Post: June 29, 2023.
"Protect Our Waterways" Facebook Post: October 4, 2022.

Waste Management Collection Guide: Mailed in June 2023, ongoing online

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP: Education and Outreach to Residents: Leaf Litter and Yard Waste Collection

Message Description and Distribution Method:

13 unique messages about leaf removal and proper disposal were shared on Facebook. To highlight a few:
A post announcing the beginning of Yard Waste Collection was advertised on the Town's Facebook page. The post also included the dates for the Town's fall yard waste collection and information related to proper handling.
Another post reminded residents of the last week for collection. The DPW Facebook page also advertised three posts about spring yard waste collection discussing collection dates and what are acceptable items to dispose of as yard waste.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

The Facebook posts had a total of 17,315 impressions.
Fall Leaf Litter Disposal & Yard Waste Collection Facebook post received 20 likes, 3 comments and 9 shares.
Final Week Reminder of Fall Leaf Litter Disposal & Yard Waste Collection Facebook post received 2 likes, 5 comments and 8 shares.
Spring Yard Waste Day DPW Facebook post received 6 comments and 11 shares.
"Two More Weeks of Yard Waste Collection" DPW Facebook post received 5 likes and 4 shares.
"Keep Grass Clippings and Yard Debris Away from Storm Drains" combined with a reminder of "One More Week of Collection" DPW Facebook post received 5 likes and 2 shares.

Message Date(s):

Fall Leaf Litter Disposal & Yard Waste Collection Facebook post: October 26, 2022.
Final Week Reminder of Fall Leaf Litter Disposal & Yard Waste Collection Facebook post: November 28, 2022.
Spring Yard Waste Day DPW Facebook post: April 14, 2023.
"Two More Weeks of Yard waste Collection" DPW Facebook post: May 5, 2023.
"Keep Grass Clippings and Yard Debris Away from Storm Drains" combined with a reminder of "One More Week of Collection" DPW Facebook post: May 13, 2023.
Additional posts: October 4, 2022, October 20, 2022, October 22, 2022, June 25, 2023, April 10, 2023, April 28, 2023, November 7, 2023, and November 21, 2023.

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP: Education Outreach to All Audiences: Stormwater Webpage and LinkedIn

Message Description and Distribution Method:

The Town's Stormwater Management webpage discusses several topics related to stormwater. The webpage includes the most up-to-date Stormwater Management Program and an overview the Town's compliance efforts. The Town provides links to the Permit Year 4 Annual Report, the SWMP, NOI, stormwater bylaws and regulations, the Think Blue MA "Fowl Water" video, and an educational guide for developers on stormwater management and green development. Additionally the webpage includes tips for reducing stormwater pollution (including pet waste management, lawn care, and automobile maintenance) and other stormwater-related documents (including lawn maintenance and phosphorus free fertilizer use). The webpage includes many helpful links.

Throughout the year, the Town's Water Resource Recovery Facility Superintendent posts educational messages on LinkedIn, including summaries of their many educational programs, and discussing how stormwater is discharged into the environment untreated and common sources of stormwater pollution.

The Town's Stormwater Engineer posts on LinkedIn about her efforts to educate the students on stormwater pollution.

Targeted Audience: All Audiences

Responsible Department/Parties: DPW

Measurable Goal(s):

Stormwater Management webpage received 275 unique page views during Permit Year 5.
LinkedIn Post received 405 overall impressions.

Message Date(s): Stormwater Management webpage: Ongoing
LinkedIn posts: January 2023, April 2023

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP: Education and Outreach to Residents: Pet Waste Education

Message Description and Distribution Method:

Educational bulletin boards are in the Town Hall to educate residents on proper pet waste disposal.
3 messages were posted on Facebook containing information about the harmful effects of pet waste on stormwater. A brochure discussing proper pet waste management are distributed with dog licenses. Additionally, the brochure is available for the public to view at the Town Clerk's counter and the Engineering office in Town Hall. The brochure also discusses fines related to failure to remove pet waste.

Targeted Audience: Residents

Responsible Department/Parties: Engineering

Measurable Goal(s):

Proper pet waste disposal methods on webpage are available to all visitors to the website.
The bulletin board is available to all visitors of the Town Hall.
Total Facebook impressions: 3,131
Approximately 2,400 brochures were distributed with dog licenses.

Message Date(s):

Proper waste disposal methods on webpage: Ongoing.
Town Hall Bulletin Boards: Ongoing.
Brochures: Ongoing
Facebook messages were posted on the following dates: Aug 26, 2022, June 2, 2023, and December 12, 2022

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP: Education and Outreach to Residents: Septic System Maintenence

Message Description and Distribution Method:

Educational bulletin boards are in the Town's Engineering Hall at Town Hall to educate residents on septic system maintenance tips.
The DPW Facebook account posted photos of these boards with a message regarding the information available on the boards at Town Hall.
The Board of Health Frequently Asked Questions webpage includes information on proper septic system maintenance. It is available for the public to view at any time.
A dedicated message about proper septic system maintenance was included in the 2022 Water Quality Report, which included a link to EPA's Septic webpage.

Targeted Audience: All Audiences

Responsible Department/Parties: Engineering

Measurable Goal(s):

The Facebook posts received a total of 2,270 impressions.
The bulletin board is available to all visitors of the Town Hall.
Additional educational information is available to all visitors of the Board of Health webpage.
The 2022 Water Quality Report was distributed to all Town properties.

Message Date(s):

Septic Systems Bulletin Board DPW Facebook post: July 12, 2023.
Town Hall Bulletin Boards: Ongoing.
Board of Health webpage: Ongoing.
2022 Water Quality Report: April 28, 2023.

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP: Education and Outreach to Residents: Town Hall Bulletin Board

Message Description and Distribution Method:

The Town Hall has a bulletin board posted highlighting various stormwater related topics. The bulletin board provides information on pet waste disposal, septic system maintenance, benefits of rain gardens, not to feed ducks, lawn care, yard waste, fertilizer use, leaf litter, construction erosion control, safe carwash tips, smart de-icer use, eutrophication and yard waste collection details. This is also where the stormwater posters are displayed that were created by the 5th graders who participated in annual stormwater lessons.

Targeted Audience: All Audiences

Responsible Department/Parties: Engineering

Measurable Goal(s):

The board is available to all visitors of the Town Hall.

Message Date(s): Ongoing

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP: Education and Outreach to Residents: Stormwater Pollution Prevention and Salt Use

Message Description and Distribution Method:

Facebook posts from the DPW provided information regarding proper use and disposal of various substances to prevent stormwater pollution. The posts relating to stormwater pollution prevention were "Chlorinated Water Belongs in Pools", a valentines-themed post titled "Roses are Red, Salt is White, Please Stop Over Salting..." reminding residents of the proper uses of road salt, "Know Your Risk Zone" providing information about early applications of de-icer, and "Help Prevent Stormwater Pollution at Work and Home" providing information on snow melt. In addition, Facebook messages also included education regarding soap, oil, car maintenance, and proper disposal of cigarette butts.

Targeted Audience: Residents

Responsible Department/Parties: Engineering

Measurable Goal(s):

"Chlorinated Water Belongs in Pools" DPW Facebook post received 3 likes.
"Roses are red, Salt is white, please stop over salting..." DPW Facebook post received 5 likes and 1 share.
"Know Your Risk Zone" DPW Facebook post received 5 likes and 1 share.

Overall impressions: 3,275 impressions for messages about de-icers, 1,673 impressions for messages about pools, 3,345 impressions for messages about car maintenance, 1,589 impressions for messages about cigarette butts.

Message Date(s): "Chlorinated Water Belongs in Pools" DPW Facebook post: June 23, 2023.
"Roses are Red, Salt is White, Please Stop Over Salting..." DPW Facebook post: February 14, 2023.
"Know Your Risk Zone" DPW Facebook post: January 12, 2023.
"Help Prevent Stormwater Pollution at Work and Home" DPW Facebook post: January 22, 2023.
Additional dates of Facebook posts: December 19, 2022, January 15, 2023, February 15, 2023, March 31, 2023, and June 23, 2023.

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP: Stormwater Asset Management Project - Public Messaging

Message Description and Distribution Method:

The Town completed a Stormwater Asset Management Project in Permit Year 5, which included MS4 field work such as drainage system assessments (catchment investigations) and culvert assessments. Messages were sent to the public via the Town's DPW Facebook page, Twitter, and the Town website's News Flash to let residents know about the stormwater work. Messages also mentioned yard work best practices for the spring.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

The Facebook post on March 16 received 6 likes.
The Twitter post on March 16 received 1 retweet and 2 likes.

Message Date(s): March 16, 2023; May 5, 2023

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP: Education and Outreach for Industry, Businesses, and Contractors

Message Description and Distribution Method:

The Town shared numerous messages were shared on Facebook regarding trash and dumpster maintenance,

erosion control, and construction best practices such as stockpiles and sweeping.

Targeted Audience: Industrial facilities/Businesses, Contractors

Responsible Department/Parties: Engineering and DPW

Measurable Goal(s):

The Facebook posts received a total of 1,416 impressions.

Message Date(s): Dates of Facebook posts: Sept 16, 2022 , March 7, 2023 , May 31, 2023.

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP: Public Education and Outreach: Water Quality Report

Message Description and Distribution Method:

The Town's 2022 Drinking Water Quality report addressed stormwater management and how residents, business, and industrial facilities can help reduce stormwater pollution. The report explained what stormwater is and the importance of preventing stormwater pollution. Additional topics addressed in the Water Quality Report include an overview of the NPDES MS4 program and Billerica's stormwater management program; best practices for residents, businesses, and institutions for leaf litter and yard waste disposal and proper fertilizer use; a targeted message for industrial facility stormwater management responsibilities; information regarding proper septic system maintenance; and best practices for proper pet waste management, including a reference to the Town's Animals By-Law. The report includes links to the Town's stormwater webpage, Yard Waste webpage, and EPA's septic website for those who want additional information on the discussed topics.

Targeted Audience: All Audiences

Responsible Department/Parties: DPW

Measurable Goal(s):

Approximately 17,000 Water Quality Reports were distributed to all Billerica addresses that receive a water bill. Copies of the report are available to all visitors of municipal offices.

Message Date(s): Water Quality Report was mailed on April 28, 2023.

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☒

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

If yes, describe why the change was made:

Add an Educational Message

MCM2: Public Participation

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

The SWMP is available for public review and input on the Town's Stormwater Management website.
As part of development of the updated Board of Health Rules and Regulations for stormwater management, a Board of Health public meeting was held on February 6, 2023 where public input was solicited. The updates focused on transferring authority from the Board of Health to the DPW in the Bylaw. Unfortunately, the updated Bylaw was struck from the 2023 Annual Town Meeting warrant. The Engineering Division continues to strive toward implementing changes to update the Bylaw and Regulations.

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

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

The Town of Billerica hosted the annual 'Clean Up, Green Up' event occurred on April 22, 2023. The residents and volunteers collected more than two large dumpsters full of trash that were disposed of by the DPW. The First Parish Church crew hauled out 80 tires, a TV, car parts and 21 bags of trash. These events were attended by residents of all ages.

The Town's Engineering staff completed a school education program and visited the 5th grade classrooms in both middle schools to discuss water quality and stormwater pollution. They use an Enviroscape model, which demonstrates how pollutants may reach waterways in stormwater runoff. Classroom visits were completed in April 2023. 350 students participated in the lessons. They were also asked to design a stormwater poster to help others learn more about the importance of keeping stormwater clean.

Two summer interns in the Engineering Division, who are also residents of Billerica, helped to place over 100 plastic storm drain markers along the parade route prior to the Yankee Doodle Parade, which takes place the third weekend of September. The Parade hosts hundreds of people. The message on the drain markers was "Don't Pollute, Drains To Waterways".

Yard waste collection by Waste Management occurred in the spring and fall. Residents could dispose of yard waste along with normal curbside trash and recycling removal (October 24 - December 2, 2022 and April 24 - May 19, 2023). Waste Management accepted Christmas tree disposal drop off the week after Christmas and disposal was offered during the regular curbside collection from January 9-13, 2023.

Household hazardous waste (HHW) events were hosted on October 15, 2022, February 18, 2023 (specifically for motor oil), and May 20, 2023. Approximately 7 tons of HHW were collected on October 15, 2022 and approximately 14 tons were collected May 20, 2023.

OARs is a local organization that protects, improves and preserves the Assabet, Sudbury, and Concord Rivers and their watersheds. The organization holds an annual cleanup in Billerica along the Concord River. This past year it took place over September 16-18, 2022. It was the cleanup's 36th annual event where they picked up litter and debris.

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 continues to refine the MS4 GIS mapping as the IDDE Program is implemented and field investigations are completed. This was also updated as part of the Town's Stormwater Asset Management Plan completed in Permit Year 5. GPS units are used to collect missing data, especially over the summer when the Town has interns helping with stormwater field work and BMP inspections.

Screening of Outfalls/Interconnections

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

○ No outfalls were inspected

◉ The above referenced outfall screening data is attached to the email submission

○ The above referenced outfall screening data can be found at the following publicly available website:

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

Number of outfalls screened: 5

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

Percent of outfalls screened: 96

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

To date, more than 600 of the Town's MS4 outfalls have been inventoried and screened. In Permit Year 5, Engineering Division staff continued efforts to locate and screen the remaining mapped MS4 outfalls that have proved to be difficult to field verify in previous permit years. Screening data for the outfalls investigated in Permit Year 5 is attached. 3 were noted to have dry weather flow; water quality screening was not completed at the time of inspection and sampling will be completed in Permit Year 6. Field work to locate and screen the

remaining MS4 outfalls continues in Permit Year 6.

Catchment Investigations

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

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

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

Number of catchment investigations completed this reporting period: 80

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

Percent of total catchments investigated: 16

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

Catchment investigations were conducted as part of the Town's IDDE Program implementation and Stormwater Asset Management Plan completed in Permit Year 5, and will continue in future Permit Years.

IDDE Progress

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

- ◉ No illicit discharges were found
- ○ The illicit discharge removal report is attached to the email submission
- ○ The illicit discharge removal report can be found at the following publicly available website:

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

Number of illicit discharges identified: 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: 2

Total number of illicit discharges removed: 2

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**:

The Northern Middlesex Stormwater Collaborative (NMSC) held a training on June 22, 2023 for member communities. The training topics included an IDDE Program refresher on identifying illicit discharges, dry weather screening data, and catchment investigations; municipal good housekeeping practices and common challenges; and oil spill prevention, control, and countermeasures. Many Town employees attended the training, including representatives from Engineering, Schools, and the DPW.

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: 13

Number of inspections completed: 305

Number of enforcement actions taken: 0

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

Billerica utilizes outside consultants for stormwater review and site inspections.
Corrective actions, when needed, are communicated to developers at the time of inspection. No formal enforcement was necessary in Permit Year 5.

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

Ordinance or Regulatory Mechanism

Date update was completed (due in year 3): December 2021

Website of ordinance or regulatory mechanism: https://www.town.billerica.ma.us/246/Stormwater-Bylaws
https://www.town.billerica.ma.us/175/Rules-Regulations

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:

Street Design and Parking Lots Report

Below, describe any changes made or planned to be made to local regulations and guidelines based on the report completed in Year 4:

The local code assessment was completed June 27, 2022 by Tighe & Bond consultants, and has been instrumental while revising the current Billerica Subdivision Regulations. The Planning Board, in conjunction with the various divisions of the DPW, are proposing significant changes to the Subdivision Regulations. These changes incorporate new street design and parking lot standards to be in line with the Stormwater priorities. These changes will be voted on by the Planning Board this Fall 2023.

Green Infrastructure Report

Below, describe progress towards making green infrastructure practices allowable based on the report completed in Year 4:

The local code assessment was completed June 27, 2022 by Tighe & Bond consultants, and has been instrumental while revising the current Billerica Subdivision Regulations. The Planning Board, in conjunction with the various divisions of the DPW, are proposing significant changes to the Subdivision Regulations. These changes incorporate additional green infrastructure allowances within design standards. This will be in line with Stormwater priorities. These changes will be voted on by the Planning Board this Fall 2023.

Retrofit Properties Inventory

Below, list remaining permittee-owned properties that could be modified or retrofitted with BMPs to mitigate impervious areas (must maintain a minimum of 5 sites in inventory until less than 5 sites remain):

The Town's BMP Retrofit Assessment and Concord River watershed Phosphorus Identification Report was completed in June 2022 and updated in June 2023, which identified 16 sites in Town for potential BMP retrofits, 8 of which are located within the Concord River watershed and are considered high priority sites.

-Middlesex Turnpike from Crosby Drive/Plank Street in Bedford to Manning Road in Billerica (construction in progress)
-Boston Road (Route 3A) from Simmons Lane to River Street (construction in progress)
-Town Hall, 365 Boston Road
-New DPW Facility, 270 Treble Cove Road
-Webb Brook and Allen Road neighborhoods

-Nashua Road and Concord Road neighborhoods at southern town line
- Lexington/Glad Valley Intersection Improvements
- Sheridan Street River Access

Below, list all properties that have been modified or retrofitted with BMPs to mitigate impervious area that were inventoried as part of 2.3.6.d of the permit. Non-MS4 owned properties that have been modified or retrofitted with BMPs to mitigate impervious area may also be listed, but must be indicated as non-MS4.

-Broadleaf Street - Completed
-Middlesex Sheriffs Training Facility (Old Ditson School), 793 Boston Road - Completed
-Vining Elementary School, 121 Lexington Road - Completed
-Pinehurst Fire Station, 832 Boston Road- Completed
-Billerica Memorial High School, 35 River Street - Completed
-Howe School (Billerica Access Television), 390 Boston Road - Completed
-Peggy Hannon-Rizza Recreation Complex, 1 Ed Hayes Way- Completed
- Katie Durand Memorial Park - 8 Carter Ave - Completed in Permit Year 5 and serves as the Town's "demonstration BMP" under the Concord River Watershed Phosphorus requirements. Signage was installed to explain stormwater management and the BMP.

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: 4,630

Number of catch basins cleaned: 4,630

Total volume or mass of material removed from all catch basins: 472 tons

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

Total number of catch basins: 4,793

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 still collecting data during catch basin cleaning and improving on the process each year so it is more streamlined. The Town currently has 541 basins that were noted to be over 50% full during the Permit Year 5 catch basin cleaning work. These catch basins were cleaned in Permit Year 5 and will continue to be prioritized during future cleaning efforts.

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: 304.4 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: 3

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

Due to staffing constraints, the quarter 1 inspection was missed. The detention basin was mowed, however the excessive rain caused changes in the rip rap at the outfall. The Highway department replaced the rip rap at the outfall discharge to the tributary to the Concord River.

Additional Information

Monitoring or Study Results

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

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

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. If any of the above year 5 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

The Town has experienced staffing shortages due to COVID-19, which impacts the implementation of the

stormwater management program and routine DPW operations.

Activities Planned for Next Reporting Period

Please confirm that your SWMP has been, or will be, updated to comply with all applicable permit requirements including but not limited to the year 6 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree ☒

Annual Requirements

- Annual report submitted and available to the public
- Annual opportunity for public participation in review and implementation of SWMP
- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- Annual training to employees involved in IDDE program
- Update inventory of all known locations where SSOs have discharged to the MS4
- Continue public education and outreach program
- Update outfall and interconnection inventory and priority ranking and include data collected in connection with the dry weather screening and other relevant inspections conducted
- Implement IDDE program
- Review site plans of construction sites as part of the construction stormwater runoff control program
- Conduct site inspection of construction sites as necessary
- Inspect and maintain stormwater treatment structures
- Log catch basins cleaned or inspected
- Sweep all curbed streets at least annually
- Continue investigations of catchments associated with Problem Outfalls
- Implemented SWPPPs for all permittee owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities
- Review inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; update if necessary
- Review O&M programs for all permittee owned facilities; update if necessary
- Implement all maintenance procedures for permittee owned facilities in accordance with O&M programs
- Implement program for MS4 infrastructure maintenance to reduce the discharge of pollutants
- Enclose all road salt storage piles or facilities and implemented winter road maintenance procedures to minimize the use of road salt
- Review as-built drawings for new and redevelopment to ensure compliance with post construction bylaws, regulations, or regulatory mechanism consistent with permit requirements
- Inspect all permittee owned treatment structures (excluding catch basins)
- Identify additional permittee-owned properties that could potentially be modified or retrofitted with BMPs to reduce impervious areas so that the permittee maintains a minimum of 5 sites in their inventory, until such a time when the permittee has less than 5 sites remaining

Provide any additional details on activities planned for permit year 6 below:

The Town acknowledges the General Permit Year 6 requirements and will complete as many activities as possible based on funding and staff availability.

Part V: Certification of Small MS4 Annual Report 2023

40 CFR 144.32(d) Certification

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

Name:	Fred Russell	Title:	Director of Public Works
Signature:		Date:	09/27/2023

[Signatory may be a duly authorized representative]

Summary of Billerica's TMDLs and Impaired Waters [1]

Receiving Waterbody	2018/2020 Category	2018/2020 Water Quality Impairments[2]	2022 Category	2022 Water Quality Impairments[2,3]	Applicable General Permit Section	Change to Permit Requirements
Concord River (MA82A-07)	5	Curly-leaf Pondweed* Fanwort* Non-Native Fish/Shellfish/Zooplankton* Water Chestnut* E. Coli Fecal Coliform Eurasion Water Milfoil, Myriophyllum Spicatum* Non-Native Aquatic Plants* Mercury in Fish Tissue	5	Curly-leaf Pondweed* Fanwort* Asian Clam* Water Chestnut* E. Coli Fecal Coliform Eurasian Water Milfoil, Myriophyllum Spicatum* European Water Clover* Mercury in Fish Tissue	Appendix H, Section II - Phosphorus [6] Appendix H, Section III - Pathogens	None
Concord River (MA82A-08)	5	Fanwort* Fish Passage Barrier* Water Chesnut* Eurasion Water Milfoil, Myriophyllum Spicatum* Non-Native Aquatic Plants* Mercury in Fish Tissue	5	Fanwort* Fish Passage Barrier* Water Chestnut* Eurasian Water Milfoil, Myriophyllum Spicatum* European Water Clover* Mercury in Fish Tissue Chloride E. Coli Trash	Appendix H, Section II - Phosphorus [6] Appendix H, Section III - Pathogens Appendix H, Section IV - Chloride	Requirements of Appendix H Section III - Pathogens and Appendix H Section IV - Chloride are added
Nutting Lake East Basin (MA82088)	5	E. Coli Water Chestnut* Mercury in Fish Tissue (TMDL 33880)	5	E. Coli Water Chestnut* Mercury in Fish Tissue (TMDL 33880)	Appendix H, Section III - Pathogens Appendix F, Section C - Mercury TMDL	None
Nutting Lake West Basin (MA82124)	4a	Mercury in Fish Tissue (TMDL)	4a	Mercury in Fish Tissue (TMDL 33880)	Appendix F, Section C - Mercury TMDL	None
Winning Pond (MA82123)	4c	Eurasion Water Milfoil, Myriophyllum Spicatum* Non-Native Aquatic Plants* Water Chesnut*	4c	Eurasian Water Milfoil, Myriophyllum Spicatum* Non-Native Aquatic Plants* Water Chestnut*		None
Content Brook (MA83-09)	5	Benthic Macroinvertebrates E. Coli (TMDL 2587)	5	Benthic Macroinvertebrates E. Coli (TMDL 2587)	Appendix F, Section A.III - Bacteria and Pathogen TMDL	None
Shawsheen River (MA83-17)	5	Dissolved Oxygen E. Coli (TMDL 2587) Fecal Coliform (TMDL 2587)	5	Dissolved Oxygen E. Coli (TMDL 2587) Fecal Coliform (TMDL) Curly-leaf Pondweed*	Appendix F, Section A.III - Bacteria and Pathogen TMDL	None
Shawsheen River (MA83-18)	5	Dissolved Oxygen E. Coli (TMDL 2587) Fecal Coliform (TMDL 2587)	5	Dissolved Oxygen E. Coli (TMDL 2587) Fecal Coliform (TMDL)	Appendix F, Section A.III - Bacteria and Pathogen TMDL	None
Webb Brook (MA83-22)	5	E. Coli	5	E. Coli	Appendix H, Section III - Pathogens	None
Pond Street Pond (MA83021)[4]	3		3			None

Summary of Billerica's TMDLs and Impaired Waters [1]

Receiving Waterbody	2018/2020 Category	2018/2020 Water Quality Impairments[2]	2022 Category	2022 Water Quality Impairments[2,3]	Applicable General Permit Section	Change to Permit Requirements
River Meadow Brook (MA82A-10)[4] (Chelmsford/Lowell)	5	Debris* Trash* Water Chesnut* Temperature E. Coli Fecal Coliform	5	Debris* Trash Water Chestnut* Temperature E. Coli Fecal Coliform Benthic Macroinvertebrates Chloride Dissolved Oxygen	See Footnote 4	None
Richardson Pond North (MA83020)[5]	3		3			None
Rogers Brook (MA83-04)[5]	4a	Physical Substrate Habitat Alterations* E. Coli (TMDL 2587) Fecal Coliform (TMDL 2587)	4a	Physical Substrate Habitat Alterations* E. Coli (TMDL 2587) Fecal Coliform (TMDL 2587)	See Footnote 5	None
Spring Brook (MA83-14)[5]	2		5	Dewatering* E. Coli	See Footnote 5	None
Lubbers Brook (MA92-05)[5]	5	Dewatering* Dissolved Oxygen E. Coli	5	Dewatering* Dissolved Oxygen E. Coli	See Footnote 5	None
Northeast Regional Mercury TMDL					Appendix F, Section C.I - Northeast Regional Mercury TMDL	None
TMDL of Bacteria for the Shawsheen River Basin					Appendix F, Section A.III - Bacteria and Pathogen TMDL	None

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

[2] Impairments applicable to Billerica that have been renamed between 2018/2020 and 2022 Integrated List of Waters include the following but do not represent actual changes in the status of the waters exhibiting these impairments: Non-Native Aquatic Plants to European Water Clover, Non-Native Fish/Shellfish/Zooplankton to Asian Clam (see 2022 Integrated List, Appendix 4).

[3] Impairments in blue were added and categories in green were updated in the 2022 Integrated List.

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

[5] Waterbody does not receive direct discharge from the MS4. Included for reference only.

[6] Based on discussions with EPA, while the phosphorus impairment was removed from the Concord River, the downstream Merrimack River segment is impaired for phosphorus so Appendix H requirements are still applicable.

* TMDL not required (non-pollutant)

Retrofit Assessment and Phosphorus Source Identification Report
Updated June 2023

The Retrofit Assessment and Phosphorus Source Identification Report are available from the Engineering Division.

Billerica BMP Phosphorus
Removal Estimate Calculations

BMP Location	Type	Infiltration Rate/ Rawls Rate (in/hr)[1]	Hydrologic Soil Group[1]	BMP Storage Volume (ft^3)[1]	Catchment Areas[1]							BATT Phosphorus Removed (lbs/yr)
					Pervious Open Space (Woods, Good) (acres)	Pervious Open Space (Gravel surface) (acres)	Pervious Open Space (>75% Grass Cover, Good) (acres)	Pervious Open Space (Meadow, non-grazed)	Impervious Area Open Space (acres)	Water	Total Area (acres)	
Katie Durand Memorial Park Carter Ave	Infiltration Basin	1.02	B	488	0.01	0.00	0.03	0.02	0.04	0.01	0.09	**0.07**
	Infiltration Basin	1.02	B	374	0.00	0.00	0.01	0.01	0.02	0.01	0.04	**0.03**
	Infiltration Basin	1.02	B	766	0.00	0.03	0.04	0.01	0.05	0.01	0.13	**0.09**
Peggy Hanlon-Rizza Recreation Complex 1 Ed Hayes Way	Infiltration Basin 1	1.02	A	1,654	0.00	0.00	0.07	0.00	0.25	0.00	0.31	**0.37**
	Infiltration Basin 2	1.02	A	527	0.00	0.00	0.04	0.00	0.15	0.00	0.19	**0.22**
	Infiltration Trench 1	1.02	A	261	0.00	0.00	0.10	0.00	0.11	0.00	0.22	**0.15**
	Bioretention 1	1.02	A	859	0.00	0.00	0.13	0.00	0.06	0.00	0.19	**0.09**
	Bioretention 2	1.02	A	12,592	0.00	0.00	0.33	0.00	0.07	0.00	0.40	**0.10**
											TOTAL	**1.12**

Notes:
1. From HydroCAD report "Proposed Conditions " of designed stormwater system.

Permit Year 5 Catchment Investigations Summary

The Permit Year 5 Catchment Investigations Summary is available electronically in Billerica's IDDE Program, available from the Engineering Division.

Culvert Standard Operating Procedure

STANDARD OPERATING PROCEDURE

Culvert Inspection and Maintenance

Culverts carry rivers, brooks, and streams under roadways throughout town. A culvert assessment protocol was developed to be used during field assessments. The protocol uses Tighe & Bond's experience with culvert assessments and the following resources:

- *Culvert Condition Assessment Manual* and *Culvert Assessment Form*, developed by UMass Transportation Center, the Nature Conservancy, North Atlantic Aquatic Connectivity Collaborative (NAACC), and the Center for Agriculture, Food, and the Environment, 2019
- *NAACC Stream Crossing Instruction Manual for Aquatic Passability Assessments in Non-tidal Stream and Rivers* and *Aquatic Connectivity Stream Crossing Survey Data Form*, developed by the North Atlantic Aquatic Connectivity Collaborative, UMass Amherst, November 2019

Suggested Standard Operating Procedures

Implement the following practices to reduce potential modes of failure to the maximum extent practicable.

- Target maintenance for early spring.
- Repair damaged culverts.
- The Highway Department should maintain an inventory of maintenance activities.
- Inform employees that culverts are a part of the stormwater drainage system.
- Report any illicit (illegal) discharges to the Highway Department. Report oil spills immediately to the Fire Department and Highway Department.

Routine Inspection and Maintenance

Routinely inspect Town culverts and address issues as needed to maintain culvert functionality and proper streamflow. When present, check and maintain beaver deceivers and inlet grates. As stated by the US DOT *Culvert Repair Practices* Manual, regular maintenance of culverts is important to assessing the condition of the culvert "as the life of the culvert progresses and land use in the vicinity of the culvert changes". NAACC's *Culvert Condition Assessment Manual* and *Culvert Assessment Form* includes the following problems that require action. US DOT's *Culvert Repair Practices* Manual provides details on routine maintenance for a variety of items, as described below.

Debris/Vegetation Removal:

- NAACC Action:
  - Debris/Vegetation Blockage at least 1/3 of the rise
- US DOT Maintenance:
  - Remove debris collecting at the inlet or within the culvert by tying a rope to a long stick or pole. Push the stick and rope through the culvert to the other end, tie it to a piece of wood or metal bucket. Have crew on other end pull the rope and bucket through.
  - Vegetation impeding stream flow should be pruned, trimmed or removed.

- Consider the need for debris-control structures in cases of frequent, large amounts of blockage.

Flushing/Sediment Removal:

- NAACC Action:
  - Sediment Blockage of at least 1/2 of the opening
- US DOT Maintenance:
  - Sediment deposits reduce size and capacity of the culvert, and should be removed via hand cleaning, mechanized cleaning, or high pressure water stream.

Streambed Maintenance:

- NAACC Action:
  - Buoyancy or Crushing-Related Inlet Failure
  - Local Outlet Scour
  - Channel Degradation/Headcut
  - Embankment Piping
  - Embankment Slope Instability
  - No Access/Ends Totally Buried/Submerged
  - Poor Channel Alignment
- US DOT Maintenance:
  - Use vegetation or geotextiles to stabilize and protect streambanks from erosion.
  - Scour hole repair – May be filled, at least temporarily, with crushed stone, rubble, or riprap. The installation should be inspected to assess its performance after a number of storm events.
  - Channel – Inspect for scour undermining of the culvert or eroding of the embankment. If a lining system (riprap) appears insufficient, other methods of channel lining should be considered.
  - Alignment horizontal – Indications of erosion and changes in the horizontal direction of the stream channel should be noted, as changes cause increased erosion along the outside and inside of the curve as well as damage to the culvert.
  - Alignment vertical – Vertical alignment issues (culvert barrel is higher or lower than the streambed) can cause scour and sediment problems.

Depending on the severity, these items may need to be flagged for more in-depth repair or replacement. Other Items that should be flagged include:

- Previous and/or Frequent Overtopping
- Aggressive Abrasion/Corrosion/Chemical
- Exposed Footing (Open-Bottom Culvert Only)

Reporting

- Report any repair or maintenance problems to the Highway Department. Repair problems may include culvert replacement.
- Keep a log of culverts inspected or maintained.

References

NAACC. *Culvert Condition Assessment Manual* and *Culvert Assessment Form*. URL: https://streamcontinuity.org/sites/streamcontinuity.org/files/pdf-doc-ppt/CulvertManual_2019_082919.pdf

NAACC. *Stream Crossing Instruction Manual for Aquatic Passability Assessments in Non-tidal Stream and Rivers*. URL: https://streamcontinuity.org/sites/streamcontinuity.org/files/pdf-doc-ppt/NAACC_Non-tidal%20Aquatic%20Assessment%20Instructions%206-2-19.pdf

US DOT, Federal Highway Administration. *Culvert Repair Practices Manual Volume 1*. URL: https://www.fhwa.dot.gov/engineering/hydraulics/library_arc.cfm?pub_number=36&id=94

US DOT, Federal Highway Administration. *Culvert Repair Practices Manual Volume 2*. URL: https://rosap.ntl.bts.gov/view/dot/58544

Permit Year 6 Annual Report

Year 6 Annual Report
Massachusetts Small MS4 General Permit
Reporting Period: July 1, 2023-June 30, 2024

Please DO NOT attach any documents to this form. Instead, attach all requested documents to an email when submitting the form. Also ensure any websites included on this form are to publicly accessible sites

Unless otherwise noted, all fields are required to be filled out. If a field is left blank, it will be assumed the requirement or task has not been completed. Please ONLY report on activities between July 1, 2023 and June 30, 2024 unless otherwise requested.

Part I: Contact Information

Name of Municipality or Organization: Town of Billerica, MA

EPA NPDES Permit Number: MAR041182

Primary MS4 Program Manager Contact Information

Name: Christina Papadopoulos, PE Title: Stormwater Engineer

Street Address Line 1: DPW - Engineering Division

Street Address Line 2: 365 Boston Rd

City: Billerica State: MA Zip Code: 01821

Email: cpapadopoulos@town.billerica.ma.us Phone Number: 978-671-1300

Stormwater Management Program (SWMP) Information

SWMP Location (publicly available web address): https://www.town.billerica.ma.us/1016/Documentation

Date SWMP was Last Updated: Oct 2, 2023

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.*

Annual Requirements

☒ Provided an opportunity for public participation in review and implementation of SWMP and complied with State Public Notice requirements

☒ Kept records relating to the permit available for 5 years and made available to the public

☒ The SSO inventory has been updated, including the status of mitigation and corrective measures implemented

- ○ This is not applicable because we do not have sanitary sewer
- ○ This is not applicable because we did not find any new SSOs
- ◉ The updated SSO inventory is attached to the email submission
- ○ The updated SSO inventory can be found at the following publicly available website:

☒ Updated system map due in year 10 with information from completed catchment investigations

☒ Provided training to employees involved in IDDE program within the reporting period

☒ Properly stored and disposed of catch basin cleanings and street sweepings so they did not discharge to receiving waters

☒ All curbed roadways were swept at least once within the reporting period

☒ Enclosed all road salt storage piles or facilities and implemented winter road maintenance procedures to minimize the use of road salt

☒ Implemented SWPPPs for all permittee owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities

☒ Updated inventory of all permittee owned facilities as necessary

☒ O&M programs for all permittee owned facilities have been completed and updated as necessary

☒ Implemented all maintenance procedures for permittee owned facilities in accordance with O&M programs

☒ Implemented program for MS4 infrastructure maintenance to reduce the discharge of pollutants

☒ Inspected all permittee owned treatment structures (excluding catch basins)

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

The Town-wide Operation and Maintenance Plan (O+M) was implemented to the maximum extent practicable for all Town facilities.
Additional mapping updates to link the O+M plans and documents to our GIS have begun.

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

☐ This is not applicable because there are no septic systems present

** 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:

Chloride

Annual Requirements

Public Education and Outreach

☐ Included an annual message in November/ December to private road salt applicators and commercial industrial site owners on the proper storage and application rates of winter deicing material, along with the steps that can be taken to minimize salt use and protect local waterbodies

The following type(s) of salt were applied **during this reporting period (year 6)**:

☐ Sodium chloride

☐ Calcium chloride

☐ Potassium chloride

☐ Magnesium chloride

☐ Brine solution

Total amount of salt applied **during this reporting period (year 6) including units**: 0

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:

Per the 2022 Integrated List, chloride was added as an impairment for Concord River (MA82A-08). In accordance with Appendix H, Part IV.2 and Part IV.3, the Town shall develop a Salt Reduction Plan and begin tracking the above information within three years (by June 30, 2026), and fully implement the Plan within the watershed within five years (by June 30, 2028). The Town plans to develop the Salt Reduction Plan in Permit Year 7.

As part of the Town's robust education program, multiple messages were posted to the DPW Facebook page in November 2023 and February 2024 regarding the proper use and application of road salt. Additionally, proper salt use was a featured topic on the bulletin board in Town offices during the winter months.

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

Annual Requirements

*Public Education and Outreach**

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

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

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

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

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

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

Structural BMPs

☒ Installed a structural BMP as a demonstration project within the drainage area of the water quality limited water or its tributaries. The type of BMP installed is (*e.g. biofiltration)*:

Infiltration Basins

☒ Any structural BMPs already existing or installed in the regulated area by the permittee or its agents was tracked and the phosphorus removal by the BMP was estimated consistent with Attachment 3 to Appendix F. The BMP type, total area treated by the BMP, the design storage volume of the BMP, and the estimated phosphorus removed in mass per year by the BMP were documented.

- ○ No BMPs were installed
- ◉ The above referenced BMP information is attached to the email submission
- ○ The above referenced BMP information can be found at the following publicly available website:

Total estimated phosphorus removed in **lbs/year** from the installed BMPs: 2.74

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:

BMP phosphorus removal calculations for the Katie Durand Memorial Park, Peggy Hannon-Rizza Complex, Howe School, as well as roadway improvement projects (Apple Orchard Dr., Purcell Dr., Treble Cove Rd., Friendship St., and Ed Hayes Way) are enclosed.

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:

Billerica's NOI listed water quality impairments and TMDLs for the Town's receiving waters based on the 2014 303(d) List. In Permit Year 2, the Town evaluated changes to the impairments and/or receiving waters based on the final 2016 303(d) list and the analysis was submitted with the Town's Permit Year 2 Annual Report and is available in the Town's SWMP. In Permit Year 4, the Town evaluated changes to the impairments and/or receiving waters based on the final 2018/2020 303 (d) list and the analysis was submitted with the Town's Permit Year 4 Annual Report and is available in the Town's SWMP. In Permit Year 5, the Town evaluated changes to the impairments and /or receiving waters based on the final 2022 303(d) list and the analysis was submitted with the Town's Permit Year 5 Annual Report and is available in the Town's SWMP.

The Town updates the drainage system mapping, including outfall ownership, as needed as field work is completed and discrepancies are found. In Permit Year 6, 5 outfalls were removed from the inventory as they were found to not exist and 24 outfalls were added to the inventory as they were discovered during other IDDE field work, roadway improvement inspections or based on record drawings. The changes described do not add, remove, or change any receiving waters.

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**: 36

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

BMP: Education Outreach to Residents: Lawn Care, Yard Waste, and Fertilizer Use

Message Description and Distribution Method:

The Town's Facebook page and the Town's DPW Facebook page provided several posts that gave information on how resident's lawn care can affect stormwater pollution. For example, the Facebook pages posted an infographic entitled "Five Ways to use fallen leaves" which provides information to the general public, encouraging them to partake in proper yard waste management.

The Town's Trash & Recycling webpage provides a link to a "collection guide" by Waste Management. The guide provides information for proper waste disposal and the schedule for yard waste collection. The guide was also mailed directly to residents.

The DPW Facebook page also posted gardening tips, how to properly apply fertilizer, and the benefits of zero-phosphorus fertilizers.

Targeted Audience: Residents

Responsible Department/Parties: DPW

Measurable Goal(s):

These Facebook posts had a total of 25,214 impressions.
"Tips on lawn debris" post received 13 likes and had a reach of 1,100
"Low maintenance plants" post received 13 likes and had a reach of 1,200
"Want to incorporate a rain garden" post received 11 likes and had a reach of 1,700
"Protect our roads from yard waste and debris this fall" post received 1 like and a reach of 339
"Leaf litter this fall, manage leaves" post received 3 likes and a reach of 530
"At least 5 ways to use fallen leaves" post received 6 likes and a reach of 898
"Leaf litter makes great compost" post received 6 likes and a reach of 485
"Monday Yard Waste Collection starts" post received 11 likes and a reach of 402
"EPA released the bioretention design handbook" post received 2 likes and a reach of 702
"Christmas tree disposal" post received 12 likes and a reach of 1,410
"DPW crews ask you to clear the leaves off the stormdrains" post received 17 likes and a reach of 1,691
"Reminder of tree collection" post received 25 likes and a reach of 3,201
"Two reminders, clear leaves off storm drains and don't dump yard debris in ditches" post received 25 likes and a reach of 2,823
"Spring cleanup has begun" post received 10 likes and a reach of 1,029
"Time for spring cleaning - curbside collection" post received 19 likes and a reach of 1,324
"Using your own grass clipping is free"post received 9 likes and a reach of 1,059

"Do you want to build a rain garden" post received 17 likes and a reach of 4,597
"Use less fertilizer" post received 9 likes and a reach of 724

Message Date(s):
"Tips on lawn debris" July 12, 2023
"Low maintenance plants" July 18, 2023
"Want to incorporate a rain garden" July 19, 2023
"Protect our roads from yard waste and debris this fall" September 18, 2023
"Leaf litter this fall, manage leaves" October 4, 2023
"At least 5 ways to use fallen leaves" October 11, 2023
"Leaf litter makes great compost" October 13, 2023
"Monday Yard Waste Collection starts" October 31, 2023
"EPA released the bioretention design handbook" November 22, 2023
"Christmas tree disposal" December 23, 2023
"DPW crews ask you to clear the leaves off the stormdrains" December 18, 2023
"Reminder of tree collection" January 2, 2024
"Two reminders, clear leaves off storm drains and don't dump yard debris in ditches" January 12, 2024
"Spring cleanup has begun" April 1, 2024
"Time for spring cleaning - curbside collection" May 7, 2024
"Using your own grass clipping is free" May 23, 2024
"Do you want to build a rain garden" May 26, 2024
"Use less fertilizer" June 5, 2024

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to Residents: Pet Waste Education

Message Description and Distribution Method:

Educational bulletin boards are in the Town Hall to educate residents on proper pet waste disposal.
7 messages were posted on Facebook containing information about the harmful effects of pet waste on stormwater. A brochure discussing proper pet waste management are distributed with dog licenses. Additionally, the brochure is available for the public to view at the Town Clerk's counter, DPW front office and the Engineering office in Town Hall. The brochure also discusses fines related to failure to remove pet waste.

Targeted Audience: Residents

Responsible Department/Parties: Engineering

Measurable Goal(s):

Proper pet waste disposal methods on webpage are available to all visitors to the website.
The bulletin board is available to all visitors of the Town Hall.
Total Facebook impressions: 3,012

"Poop Fairy – mow less" received 1 like and had a reach of 337.
"Dog waste is a common source of stormwater pollution" received 2 likes and had a reach of 431.
"Scooping the poop is not about the mess" received 4 likes and had a reach of 576.
"No Poop Fairy PSA" received 1 like and had a reach of 305.
"Dog waste contributes to harmful bacteria" received 3 likes and had a reach of 381.
"Remember to scoop the poop" received 7 likes and had a reach of 443.
"Pet waste washes into pipes and pollutes parks" received 4 likes and had a reach of 246.

Message Date(s):

Proper waste disposal methods on webpage: Ongoing.
Town Hall Bulletin Boards: Ongoing.
Brochures: Ongoing
"Poop Fairy – mow less" post: July 12, 2023
"Dog waste is a common source of stormwater pollution" post: August 10, 2023
"Scooping the poop is not about the mess" post: August 31, 2023
"No Poop Fairy PSA" post: September 25, 2023
"Dog waste contributes to harmful bacteria" post: June 3, 2024
"Remember to scoop the poop" post: June 21, 2024
"Pet waste washes into pipes and pollutes parks" post: June 26, 2024

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to All Audiences: Stormwater Pollution Prevention and Salt Use

Message Description and Distribution Method:

Facebook posts from the DPW provided information regarding proper use and disposal of various substances to prevent stormwater pollution. Also posts relating to salt use reminded everyone of the proper uses of road salt.

Targeted Audience: All Audiences

Responsible Department/Parties: Engineering

Measurable Goal(s):

These Facebook posts had a total of 5,348 impressions.
"Getting salt piles ready for the winter" received 6 likes and had a reach of 876.
"Hazardous waste can come in the form of cleaning supplies" received 8 likes and had a reach of 726.
"Industrial facilities can pollute waterways" received 3 likes and had a reach of 534.
"Are you using too much salt in the winter?" received 8 likes and had a reach of 977.
"Snowmelt is also stormwater" received 13 likes and had a reach of 1,048.
"Zero waste day at the Marshall" received 17 likes and had a reach of 1,187.

"Getting salt piles ready for the winter" post: November 6, 2023

Message Date(s): “Hazardous waste can come in the form of cleaning supplies” post: November 8, 2023
“Industrial facilities can pollute waterways” post: November 15, 2023
“Are you using too much salt in the winter?” post: November 30, 2023
“Snowmelt is also stormwater” post: February 22, 2024
“Zero waste day at the Marshall” post: June 7, 2024

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to All Audiences: Septic System Maintenence

Message Description and Distribution Method:

Educational bulletin boards are in the Town's Engineering Hall at Town Hall to educate residents on septic system maintenance tips.
The DPW Facebook account posted photos of these boards with a message regarding the information available on the boards at Town Hall.
The Board of Health Frequently Asked Questions webpage includes information on proper septic system maintenance. It is available for the public to view at any time.
A dedicated message about proper septic system maintenance was included in the FY 2024 Water Quality Report, which included a link to EPA's Septic webpage.

Targeted Audience: All Audiences

Responsible Department/Parties: Engineering

Measurable Goal(s):

These Facebook posts had a total of 882 impressions.
“Learn how your septic tank works” received 0 likes and had a reach of 413.
“Malfunctioning or leaking septic tanks” received 2 likes and had a reach of 469.

Message Date(s): “Learn how your septic tank works” post: September 1, 2023
“Malfunctioning or leaking septic tanks” post: September 22, 2023

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

BMP:Education and Outreach to all: Town Hall Bulletin Board

Message Description and Distribution Method:

The Town Hall has a bulletin board which posts various stormwater related topics based on the season. The displays are changed every 3 months. The bulletin board provides information on pet waste disposal, septic system maintenance, benefits of rain gardens, not to feed ducks, lawn care, yard waste, fertilizer use, leaf litter, construction erosion control, safe carwash tips, smart de-icer use, eutrophication, pool chemical care and yard waste collection details. This is also where the stormwater posters are displayed that were created by the 5th graders who participated in annual stormwater lessons.

Targeted Audience: All Audiences

Responsible Department/Parties: Engineering

Measurable Goal(s):

The board is visited often by all visitors of the Town Hall.

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: Stormwater Asset Management Project - Public Messaging

Message Description and Distribution Method:

The Town finalized a Stormwater Asset Management Project in Permit Year 6, which included MS4 field work such as drainage system assessments (catchment investigations) and culvert assessments. The Town's website was updated with a final report on this topic.

Targeted Audience: All Audiences

Responsible Department/Parties: Engineering

Measurable Goal(s):

Anyone can view on the Town's Website - received 43 views in Year 6
https://www.town.billerica.ma.us/DocumentCenter/View/11963/Stormwater-Asset-Management-Plan-Executive-Summary

Message Date(s): May 2024

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:Public Education and Outreach: Water Quality Report

Message Description and Distribution Method:

The Town's 2023 Drinking Water Quality report addressed stormwater management and how residents, business, and industrial facilities can help reduce stormwater pollution. The report explained what stormwater is and the importance of preventing stormwater pollution. Additional topics addressed in the Water Quality Report include an overview of how water gets contaminated by pesticides, fertilizer, septic systems, pet waste, industrial processes, oil and bacteria. It also discusses PFAS and cross-connections. This year the Billerica Water Department initiated Electronic Delivery. It is a functional URL which was added to the water bills. Additionally hard copies were dropped off at various locations as well as notifications of the URL change in "best faith efforts". This was all in accordance with Mass DEP's electronic delivery protocols.

Targeted Audience: All Audiences

Responsible Department/Parties: DPW

Measurable Goal(s):

Approximately 15,500 Water Quality Reports were distributed (via URL) to all Billerica addresses that receive a water bill. Copies of the report are available to all visitors of municipal offices.

Message Date(s): April 2024

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 Webpage

Message Description and Distribution Method:

The Town's Stormwater Management webpage was completely redone and updated in October, 2023. The pages discuss numerous stormwater related topics. The webpage includes the most up-to-date Stormwater Management Program and an overview the Town's compliance efforts. The Town provides links to the Annual MS4 Report, the SWMP, NOI, stormwater bylaws and regulations, the Think Blue MA "Fowl Water" video, and an educational guide for developers on stormwater management and green development. Additionally the webpage includes tips for reducing stormwater pollution (including pet waste management, lawn care, and automobile maintenance) and other stormwater-related documents (including lawn debris and phosphorus free fertilizer use). The webpage includes many helpful links.

Targeted Audience: All Audiences

Responsible Department/Parties: Engineering

Measurable Goal(s):

The webpage received 596 unique page views during permit year 6.

Message Date(s): Ongoing - updated October 2023

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

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

If yes, describe why the change was made:

Add an Educational Message

MCM2: Public Participation

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

The SWMP is available for public review and input on the Town's Stormwater Management website.
As part of development of the updated Board of Health Rules and Regulations for stormwater management, a Board of Health public meeting was held on February 5, 2024 where public input was solicited.

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

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

The Town of Billerica hosted the annual 'Clean Up, Green Up' event occurred on April 20, 2024. The residents and volunteers collected tires, mattresses, ladders, bed frames, computer parts, shingles, cans and trash. These events were attended by residents of all ages and church groups.

The Town's Engineering staff completed a school education program and visited all the 5th grade classrooms in both middle schools to discuss water quality and stormwater pollution. They use an Enviroscape model, which demonstrates how pollutants may reach waterways in stormwater runoff. Classroom visits were completed in February 2024. In total, 371 students participated in the lessons. They were also asked to design a stormwater poster to help others learn more about the importance of keeping stormwater clean. These posters are displayed at Town Hall so everyone who visits can see what the students in Billerica are learning about.

Summer interns in the Engineering Division, who are also residents of Billerica, helped to map the storm drains around Town. They were mapping structures part-time for 8 weeks.

Yard waste collection by Waste Management occurred in the spring and fall. Residents could dispose of yard waste along with normal curbside trash and recycling removal (October 30 - December 8, 2023 and April 22 - May 17, 2024). Waste Management accepted Christmas tree disposal drop off the week after Christmas and disposal was offered during the regular curbside collection from January 8-12, 2024.

Household hazardous waste (HHW) events were hosted on October 21, 2023 and May 18, 2024. The Town had 443 cars drop off hazardous waste in October and 330 cars in May . Approximately 12.6 Tons of hazardous waste was collected from these two events.

The annual Town-wide Zero waste day was held on June 8, 2024, they took used bikes, bottles, computers, machines, equipment, tvs, phones, speakers, tires, books, mattresses, batteries and bulbs. They had 557cars drop off items.

OARs is a local organization that protects, improves and preserves the Assabet, Sudbury, and Concord Rivers and their watersheds. The organization holds an annual cleanup in Billerica along the Concord River. This past year it took place over September, 2023.

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: 1

Number of SSOs removed: 1

MS4 System Mapping

Percent of Phase II map complete: 98

Optional: Provide additional status information regarding your map:

The Town continues to refine the MS4 GIS mapping as the IDDE Program is implemented and field investigations are completed. This was also updated as part of the Town's Stormwater Asset Management Plan. Sub-foot GPS units are used to collect new and missing data, especially over the summer when the Engineering office gets interns to help with stormwater field work. This year, 24 new outfalls were added to the map, and 5 were removed.

Screening of Outfalls/Interconnections

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

- ◉ No outfalls were inspected
- ○ The above referenced outfall screening data is attached to the email submission
- ○ The above referenced outfall screening data can be found at the following publicly available website:

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

Number of outfalls screened: 0

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

Percent of outfalls screened: 96

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

This year, the focus was on catchment investigations, completing the drainage connectivity, and mapping the 24 new outfalls. It is planned to screen the new outfalls in Permit Yr 7.

Catchment Investigations

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

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

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

Number of catchment investigations completed this reporting period: 171

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

Percent of total catchments investigated: 43

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

Catchment investigations were conducted as part of the Town's ongoing IDDE Program. Further investigations will continue in future Permit Years.

IDDE Progress

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

- ◉ No illicit discharges were found
- ○ The illicit discharge removal report is attached to the email submission
- ○ The illicit discharge removal report can be found at the following publicly available website:

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

Number of illicit discharges identified: 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: 2

Total number of illicit discharges removed: 2

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

January 19, 2024 a violation letter was issued to a property which was believed to have an illicit connection. After much investigation, there was no illicit connection found. See attached letter.

Employee Training

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

The Northern Middlesex Stormwater Collaborative (NMSC) held a training on April 16, 2024 for member communities. The training topics included an IDDE Program refresher on identifying illicit discharges, dry weather screening data, and catchment investigations; municipal good housekeeping practices and common challenges; and oil spill prevention, control, and countermeasures. Many Town employees attended the training, including representatives from Engineering, Highway, Parks, Schools, Facilities and the Wastewater Division.

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: 69

Number of enforcement actions taken: 0

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

Billerica utilizes outside consultants for stormwater review and site inspections. Many more projects get reviewed for stormwater compliance, however they are under one acre.
Corrective actions, when needed, are communicated to developers at the time of inspection. No formal enforcement was necessary in Permit Year 6.
Since July 2023, all additions over 500 sf and all new houses must recharge stormwater to get a building permit.

Board of Health issued 4 stormwater permits.
DPW issued 1 administrative permit (under one acre).
Board of Health issued 4 extensions for previous stormwater permits.

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

Ordinance or Regulatory Mechanism

Date update was completed (due in year 3):	December 2021
Website of ordinance or regulatory mechanism:	https://www.town.billerica.ma.us/DocumentCenter/View/315/Stormwater-Management-Bylaw-Article-XXV?bidId= https://www.town.billerica.ma.us/DocumentCenter/View/3634/Rules-and-Regulations-Chapter-6-

As-built Drawings

Below, report on the number of as-built drawings received ***during this reporting period****.*

Number of as-built drawings received: 5

Optional: Enter any additional information relevant to the submission of as-built drawings:

This is only reporting on projects disturbing an acre or more.

Street Design and Parking Lots Report

Below, describe any changes made or planned to be made to local regulations and guidelines based on the report completed in Year 4:

The local code assessment was completed June 27, 2022 by Tighe & Bond consultants, and has been instrumental while revising the current Billerica Subdivision Regulations. The Planning Board, in conjunction with the various divisions of the DPW, are proposing significant changes to the Subdivision Regulations. These changes incorporate new street design in line with Stormwater priorities. These changes are expected to be adopted by the Planning Board in 2025. Parking lot standards will be revised in the Site Plan Regulations. Site Plan Regulations will be updated following completion of the Subdivision Regulation updates.

Green Infrastructure Report

Below, describe progress towards making green infrastructure practices allowable based on the report completed in Year 4:

The local code assessment was completed June 27, 2022 by Tighe & Bond consultants, and has been

instrumental while revising the current Billerica Subdivision Regulations. The Planning Board, in conjunction with the various divisions of the DPW, are proposing significant changes to the Subdivision Regulations. These changes incorporate additional green infrastructure allowances within design standards. This will be in line with Stormwater priorities. These changes are expected to be adopted by the Planning Board in 2025.

Retrofit Properties Inventory

Below, list remaining permittee-owned properties that could be modified or retrofitted with BMPs to mitigate impervious areas (must maintain a minimum of 5 sites in inventory until less than 5 sites remain):

The Town's BMP Retrofit Assessment and Concord River watershed Phosphorus Identification Report was completed in June 2022 and updated in June 2023, which identified 16 sites in Town for potential BMP retrofits, 8 of which are located within the Concord River watershed and are considered high priority sites.

-Middlesex Turnpike from Crosby Drive/Plank Street in Bedford to Manning Road in Billerica (construction in progress)
-Boston Road (Route 3A) from Simmons Lane to River Street (construction in progress)
-Town Hall, 365 Boston Road (design in progress, partial construction in progress)
-New DPW Facility, 270 Treble Cove Road (design completed, construction to begin Fall 2024)
-Webb Brook and Allen Road neighborhoods (construction to begin Fall 2025)
-Nashua Road and Concord Road neighborhoods at southern town line (construction to begin spring 2027)
- Lexington/Glad Valley Intersection Improvements (construction to begin summer 2025)
- Sheridan Street River Access (design in progress)

Below, list all properties that have been modified or retrofitted with BMPs to mitigate impervious area that were inventoried as part of 2.3.6.d of the permit and the type of BMP(s) implemented. Non-MS4 owned properties that have been modified or retrofitted with BMPs to mitigate impervious area may also be listed, but must be indicated as non-MS4.

-Broadleaf Street – Completed (grass swales and hydrodynamic separators, water quality units)
-Middlesex Sheriffs Training Facility (Old Ditson School), 793 Boston Road – Completed (replacing impervious cover with grass)
-Vining Elementary School, 121 Lexington Road - Completed (replacing impervious cover with grass)
-Pinehurst Fire Station, 832 Boston Road- Completed (cultec infiltration chambers with pre-treatment)
-Billerica Memorial High School, 35 River Street - Completed (cultec infiltration chambers with pre-treatment)
-Howe School (Billerica Access Television), 390 Boston Road – Completed (infiltration basin)
-Peggy Hannon-Rizza Recreation Complex, 1 Ed Hayes Way- Completed (bioretention habitat, infiltration)
- Katie Durand Memorial Park - 8 Carter Ave - Completed in Permit Year 5 and serves as the Town's "demonstration BMP" under the Concord River Watershed Phosphorus requirements. Signage was installed to explain stormwater management and the BMP.
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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: 2,064

Number of catch basins cleaned: 2,064

Total volume or mass of material removed from all catch basins: 300.62 tons

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

Total number of catch basins: 4,921

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 still collecting data during catch basin cleaning and improving on the process each year so it is more streamlined. The Town currently has 498 basins that were noted to be over 50% full during the Permit Year 6 catch basin cleaning work. These catch basins were cleaned in Permit Year 6 and will continue to be prioritized during future cleaning efforts.

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: 347 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:

During heavy rain storms, the rip rap at the outfall at the highway department gets damaged. The highway department replaced the rip rap at the outfall discharge to the tributary to the Concord River. This is a common issue.

Additional Information

Monitoring or Study Results

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

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

https://oars3rivers.org/our-work/river-science/monitoring-and-studies/

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:

OARS conducts monitoring and studies that often include Billerica.

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.

Staffing shortages through the DPW impacted implementation of the SWMP and routine DPW operations. We are always striving to improve each year.

Year 7

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 7 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree ☒

- Complete investigations of catchments associated with Problem Outfalls
- Complete investigations of catchments where any information gathered on the outfall/interconnection identifies sewer input

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 7 below:

The Town acknowledges the General Permit Year 7 requirements and will complete as many activities as possible based on funding and staff availability.
The Town has plans to build a new Salt Shed with modern stormwater treatment.
The Town will begin a new public education program at the Public Library.
The 24 new outfalls will be screened.
The Town will continue to perform catchment investigations.

Part V: Certification of Small MS4 Annual Report ~~2023~~ 2024

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:	Frederick W. Russell	Title:	Director of Public Works
Signature:		Date:	09/26/2024

[Signatory may be a duly authorized representative]

Billerica - Location and Description of Unauthorized Discharges

2016 – June 30, 2024

Date	Location	Gallons	Cause	Action
1/11/16	426 Middlesex Tpke	1,500	Blockage in easement	Removed blockage
9/19/16	41 Lindsay Rd	Unknown	Blockage	Removed blockage
12/16/16	Nashua Rd Pump Station	Unknown	Broken coupling on force main	Lined force main
12/22/16	5 Farmer Lane	Unknown	Broken low pressure line	Temporary replacement of line segment. Permanent replacement schedule for Spring 2017
2/16/17	24 Lowell Street	500	Blockage	Removed blockage
3/17/17	Intersection of Lake and Lexington	200	Broken water line caused chimney in sewer manhole to collapse	Cleaned the lines and repaired the chimney and 12 feet of service line
6/18/17	2 Lake Street	75	Blockage	Removed blockage

79 Glad Valley Drive – November 24, 2017

An overflow to the ground of approximately 150 gallons was reported at 79 Glad Valley Drive.

The overflow was caused by a blockage that was cleared by the Town's Wastewater Staff.

Suburban Park and Middlesex Turnpike – June 27, 2018

An overflow to the ground of approximately 200 gallons was reported at Suburban Park and Middlesex Turnpike. The overflow was caused by a blockage that was cleared by the Town's Wastewater Staff.

9 Ridge Road – September 20, 2018

An overflow to the ground of approximately 350 to 500 gallons was reported on Ridge Road.

The overflow was caused by a blockage that was cleared by the Town's Wastewater Staff.

No SSOs occurred in 2019.

279 Pond Street – June 14, 2020

An overflow from a force main was reported near the Billerica Rod and Gun Club on Pond Street. A 10-foot section of pipe surrounding the area was replaced to remove the overflow.

Salem Road – February 16, 2021

An overflow to the ground of less than 20 gallons (estimated by the Town) occurred around 8 o'clock in the evening near 138 Salem Road. The overflow was caused by a blockage. The blockage was subsequently cleared by jetting 150 feet of sewer line.

Cheryl Lane – March 3, 2021

An overflow of less than 100 gallons (estimated by the Town) occurred on Cheryl Lane. The overflow was caused by a blockage. The blockage was subsequently cleared by jetting the sewer line.

Pond Street and Railroad Bridge Intersection – March 11, 2021

An overflow to the ground of unknown volume (estimated by the Town at less than 5,000 gallons) occurred in the Town easement on MBTA property in the vicinity of the Pond Street railroad bridge. The overflow was caused by a break in a corroded sewer force main. The Town reported the break to DEP and coordinated with the Department throughout the repair process. Wastewater was hauled from the Brown Street Force Main until force main bypass was connected on 3/24/21 in order to minimize overflow. The repair took approximately 50-days to complete due to complications with the railroad. As a result of this break, the Town has contracted with Woodard & Curran to design the rehabilitation of the entire force main.

No SSOs occurred in 2020.

No SSOs occurred in 2021.

No SSOs occurred in 2022.

Micozzi Beach – August 19, 2023

Sewer break near Micozzi Beach. (Unknown volume) Overflow caused by a 3ft long by 8 inch wide hole in the sewer line combined with high groundwater table. Repair completed within 12 hours of reported overflow.

Town of Billerica Middlesex Turnpike Sewer Break – 08/19/23

The Middlesex Turnpike sewer broke in front of the Middlesex Pump Station which is located in front of Micozzi Beach on Middlesex Turnpike in Billerica MA, close to the intersection with Marshall Street. Middlesex Pump Station feeds a force main that runs up hill along Middlesex Turnpike to the intersection with Stewart Street. It also merges with the force main that comes from the Lake Street Pump Station roughly halfway between Middlesex Pump Station and Stewart Street. At the time of this incident this station was pumping at double its normal flow on a daily basis due to high groundwater. This is an estimated 168,000 gallons a day based on pump run times at Middlesex Station this August. The increase in flow is attributed to groundwater infiltration following some massive rain events in the month of August.

On the morning of Saturday 8/19/23 at roughly 6:30 am Chris Zechner from the Water Department noticed the leak coming from around the electric pole in front of Middlesex Station and contacted Rafael Vega from the Wastewater Division. Chris and Rafael inspected the leak and confirmed that it was sewer and not drinking water. Due to the amount of groundwater in the flow this was not immediately obvious. Rafael then contacted Mike McCaughey (Collection Supervisor) and myself, Nick Evans, Wastewater Superintendent.

Both Mike and I were onsite by 7 am where we immediately began contacting contractors and figuring out how to mitigate flow until we were able to get the line repaired. Strongback systems was brought in to do the excavating. Clean Basins and Rooter-Man were initially brought in to help Strongback with excavation but were utilized to help prevent sewage from getting to the catch basins in the area. Waynes Drains was also initially contacted but they were unable to respond. Dig safe and National Grid were immediately contacted as well as the DEP. We contacted BMC Corp and they were able to provide 2 more vac trucks to help intercept flow from coming to the site. The Town's Vac Truck was also onsite. Between the Town and its Contractors, there were a total of seven trucks onsite intercepting flow to the site.

The initial job setup had a Rooter-Man pump truck behind the vac being used by Clean Basins on the excavation itself in front of Middlesex Pump Station. The goal was to eliminate as much flow from getting to the catch basin as possible, whether its groundwater, sewer, or hydro excavation water being used to expose the pipe. Typically, that trucks' main concern would be the hydro excavation, but this was significantly complicated by the fact that it was a force main at the bottom of a hill and because of the excessive groundwater. The Town's vac was being used on the Middlesex Pump Station wet well and BMC setup at a manhole located before Middlesex Station to eliminate flow from entering the station all together.

This seemed to be a solid setup to mitigate environmental impacts and to allow Strongback to safely fix the line. The combination of groundwater and/or sewer appeared to keep coming from unknown sources during the excavation process, making it hard to clear the pipe off and observe the scope of the repair. Mike McCaughey reviewed drawings of this area and found that Lake Street Pumping Station feeds a force main that meets with Middlesex at a 90 degree junction. It was previously thought that Lake Street's force main had its own line. So at times even though the trucks appeared to be in place to keep Strongback dry, there was flow coming down from Lake Street Pumping station. We then moved

BMC Corp's trucks up to Lake Street so that the water would not come back down into the hole with the workers and Rooter-Man had to move to the manhole ahead of Middlesex to keep flow from getting to the station. Given the assets we had available this was the best setup to get the repair done. Some of the hydro excavation debris and water did release onto the road and into to the catch basin where silt bags were installed.

At that point the excavation finally made headway and it was discovered that there was a close to 3 foot long, 8 inch wide hole in the line. Mike Haines Jr. from the Water Department was able to go back to the water department and cut a piece of pipe for the repair. The material of the damaged pipe as well as the replacement pipe was concrete lined ductile iron. Strongback cut it to make the repair and installed it with two couplings. The hole was then backfilled with the proper materials to give the work site the stability to test the line. The pipe was fully installed by 5:30 pm and under pressure by 6 pm. Cleanup continued until after 8 pm.

After the repair was completed, upon the request and recommendations of the Town's Conservation Commission any debris that could be associated with the break on the beach and in the woods was cleaned. We also removed silt bags from catch basins and cleaned any debris and silt out of those basins with the Town vac truck. The Department of Health has monitored the water quality since the break.

Department of Public Works – Engineering Division
Town Hall, 365 Boston Road, Billerica, Massachusetts 01821
PH: (978) 671-1300

Frederick W. Russell, PE, Director
Kelley J. Conway, PE, Town Engineer

CORRECTION NOTICE

John Fuller, Jr.
Facilities Coordinator
Middlesex County Retirement System
25 Linnell Circle
Billerica, MA 01865

April 23, 2024

Re: 25 Linnell Circle
Correction Notice

Dear Mr. Fuller:

In response to our request to correct the violation of the illicit connection to the Town's drainage system, you hired a consultant. Your consultant has provided ample information from investigations performed that indicate that the connection is not illicit. Given that the owner was unable to identify any fixture or equipment within the building that is tied into the underground pipe, and were unable to witness flow during dry-weather events, it appears the connection is not illicit. This matter is considered **CORRECTED**, and no further action is necessary. Thank you for your timely attention to this matter.

If you have any questions, please do not hesitate to contact Christina Papadopoulos at 978-671-1300.

Sincerely,

Kristel Bennett, MPA, REHS/RS, CP-FS
Director of Public Health

Christina Papadopoulos, P.E.
Stormwater Engineer

Cc: Mark LaLumiere
Frederick Russell

Updated September 2024

Billerica Town-owned BMPs
EPA BATT: Phosphorus Removal Estimate Calculations

BMP Location	Type[a]	BMP Storage Volume[b] (ft^3)	Hydrologic Soil Group[b]	Infiltration Rate (in/hr)[c]	Catchment Area									BATT Phosphorus Removed (lbs/yr)
					Pervious Forest (acres)	Developed Open Space (acres)	Pervious Open Space (Woods, Good) (acres)	Pervious Open Space (Gravel surface) (acres)	Pervious Open Space (>75% Grass Cover, Good) (acres)	Pervious Open Space (Meadow, non-grazed) (acres)	Impervious Area Open Space (acres)	Water (acres)	Total Area (acres)	
Permit Year 5[d]														
Katie Durand Memorial Park Carter Ave	Infiltration Basin	488	B	14.17	0.00	0.00	0.01	0.00	0.03	0.02	0.04	0.01	0.09	**0.07**
	Infiltration Basin	374	B	14.17	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.04	**0.03**
	Infiltration Basin	766	B	14.17	0.00	0.00	0.00	0.03	0.04	0.01	0.05	0.01	0.13	**0.09**
Peggy Hanlon-Rizza Recreation Complex 1 Ed Hayes Way	Infiltration Basin 1	1,654	A	1.02	0.00	0.00	0.00	0.00	0.07	0.00	0.25	0.00	0.31	**0.38**
	Infiltration Basin 2	527	A	1.02	0.00	0.00	0.00	0.00	0.04	0.00	0.15	0.00	0.19	**0.22**
	Subsurface Infiltration System	261	A	1.02	0.00	0.00	0.00	0.00	0.10	0.00	0.11	0.00	0.22	**0.15**
	Bioretention 1	859	A	1.02	0.00	0.00	0.00	0.00	0.13	0.00	0.06	0.00	0.19	**0.09**
	Bioretention 2	12,592	A	1.02	0.00	0.00	0.00	0.00	0.33	0.00	0.07	0.00	0.40	**0.11**
Permit Year 6														
Howe School 390 Boston Rd	Subsurface Infiltration System	741	C	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.09	**0.13**
	Infiltration Basin	5,459	C	0.48	0.00	0.00	0.00	0.00	0.10	0.00	0.35	0.03	0.49	**0.52**
Roadway Improvement Projects [e]														
Apple Orchard Drive	6" Subdrain (110')	112	C	1.07	0.14	0.14	0.00	0.00	0.00	0.00	0.29	0.00	0.58	**0.03**
Purcell Drive	6" Subdrain (150')	153	D	0.48	0.42	0.42	0.00	0.00	0.00	0.00	0.84	0.00	1.69	**0.05**
Treble Cove Road	6" Subdrain (330')	237	A	14.17	3.48	0.00	0.00	0.00	0.00	0.00	1.16	0.00	4.65	**0.17**
Friendship Street	40' Infiltration Swale	95	A	3.30	0.05	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.26	**0.06**
Ed Hayes Way	12" Subdrain (220')	456	A	14.17	0.57	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.76	**0.28**
	12" Subdrain (290')	601	A	14.17	0.27	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.54	**0.35**
												TOTAL		**2.74**

Notes:

a. Per applicable structural stormwater control performance curve in BATT User Manual Appendix A: Subsurface infiltration system, infiltration swale, and subdrains were run in BATT as type "Infiltration Trench"; Bioretention basins were run as "Infiltration Basin".

b. "Storage Volume" and HSG of each Pond obtained from HydroCAD report.

c. Value (as available) obtained from saturated hydraulic conductivity data from USDA NRCS Web Soil Survey (https://websoilsurvey.nrcs.usda.gov/app/). If unavailable, infiltration rate used from HydroCAD report.

d. After Permit Year 5 calculations, the drafted Massachusetts Stormwater Handbook indicated Rawls Rate was outdated methodology for determining infiltration rates. USDA recommends the use of NRCS Web Soil Survey's saturated hydraulic conductivity values. Permit Year 5 calculations have been updated to reflect this revised methodology. When calculations were re-run for Peggy Hanlon-Rizza Recreation Complex, two BMPs' phosphorous removal estimates were updated due to data errors found in the initial input. The updated values are shown here.

e. Storage volume, soil data, and catchment areas estimated based on limited available information (geographic location, topography, 2016 Land Use/Land Cover MassGIS data).

Permit Year 6 Catchment Investigations Summary

The Permit Year 6 Catchment Investigations Summary is available electronically in Billerica's IDDE Program, available from the Engineering Division.

Appendix G

Sanitary Sewer Overflow Inventory

Billerica - Location and Description of Unauthorized Discharges

2016 – June 30, 2024

Date	Location	Gallons	Cause	Action
1/11/16	426 Middlesex Tpke	1,500	Blockage in easement	Removed blockage
9/19/16	41 Lindsay Rd	Unknown	Blockage	Removed blockage
12/16/16	Nashua Rd Pump Station	Unknown	Broken coupling on force main	Lined force main
12/22/16	5 Farmer Lane	Unknown	Broken low pressure line	Temporary replacement of line segment. Permanent replacement schedule for Spring 2017
2/16/17	24 Lowell Street	500	Blockage	Removed blockage
3/17/17	Intersection of Lake and Lexington	200	Broken water line caused chimney in sewer manhole to collapse	Cleaned the lines and repaired the chimney and 12 feet of service line
6/18/17	2 Lake Street	75	Blockage	Removed blockage

79 Glad Valley Drive – November 24, 2017

An overflow to the ground of approximately 150 gallons was reported at 79 Glad Valley Drive.

The overflow was caused by a blockage that was cleared by the Town's Wastewater Staff.

Suburban Park and Middlesex Turnpike – June 27, 2018

An overflow to the ground of approximately 200 gallons was reported at Suburban Park and Middlesex Turnpike. The overflow was caused by a blockage that was cleared by the Town's Wastewater Staff.

9 Ridge Road – September 20, 2018

An overflow to the ground of approximately 350 to 500 gallons was reported on Ridge Road.

The overflow was caused by a blockage that was cleared by the Town's Wastewater Staff.

No SSOs occurred in 2019.

279 Pond Street – June 14, 2020

An overflow from a force main was reported near the Billerica Rod and Gun Club on Pond Street. A 10-foot section of pipe surrounding the area was replaced to remove the overflow.

Salem Road – February 16, 2021

An overflow to the ground of less than 20 gallons (estimated by the Town) occurred around 8 o'clock in the evening near 138 Salem Road. The overflow was caused by a blockage. The blockage was subsequently cleared by jetting 150 feet of sewer line.

Cheryl Lane – March 3, 2021

An overflow of less than 100 gallons (estimated by the Town) occurred on Cheryl Lane. The overflow was caused by a blockage. The blockage was subsequently cleared by jetting the sewer line.

Pond Street and Railroad Bridge Intersection – March 11, 2021

An overflow to the ground of unknown volume (estimated by the Town at less than 5,000 gallons) occurred in the Town easement on MBTA property in the vicinity of the Pond Street railroad bridge. The overflow was caused by a break in a corroded sewer force main. The Town reported the break to DEP and coordinated with the Department throughout the repair process. Wastewater was hauled from the Brown Street Force Main until force main bypass was connected on 3/24/21 in order to minimize overflow. The repair took approximately 50-days to complete due to complications with the railroad. As a result of this break, the Town has contracted with Woodard & Curran to design the rehabilitation of the entire force main.

No SSOs occurred in 2020.

No SSOs occurred in 2021.

No SSOs occurred in 2022.

Micozzi Beach – August 19, 2023

Sewer break near Micozzi Beach. (Unknown volume) Overflow caused by a 3ft long by 8 inch wide hole in the sewer line combined with high groundwater table. Repair completed within 12 hours of reported overflow.

Appendix H

Plan Amendment Log

STORMWATER MANAGEMENT PLAN AMENDMENT LOG

Amend. No.	Description of the Amendment	Date of Amendment	Amendment Prepared by (Name/Signature)

1	The Stormwater Management Plan has been amended as follows:
	• Added the following documents to Appendix F, Record Keeping -
	  o MS4 record keeping log
	  o Year 1, Year 2, and Year 3 Annual Reports and associated attachments
	  o Phase I MS4 System Map
	• Updated Appendix G, Sanitary Sewer Overflow Inventory
	
	The Illicit Discharge Detection and Elimination Plan has been amended as follows:
	• Appendix C - updated SSO Inventory
	• Appendix D - added Phase I MS4 System Map
	• Appendix F - added Catchment Investigation Procedures
	• Appendix G - added summary of TMDLs and Impaired Waters based on the 2016 303(d) List. This supersedes information provided in Sections 2.2.1, 2.2.2, and 4.1 of the SWMP and Section 7.1.1 of the IDDE Plan regarding the 2014 Integrated List of Waters.
	• Appendix H - added the following documents:
	  o Outfall inventory and dry weather screening field effort summary memoranda (FY2018-FY2021)
	  o Illicit discharge removal reports
	• Appendix I - added employee training records
		November 2021	Cassandra LaRochelle, PE
			Project Engineer
			Tighe&Bond

2	The **Stormwater Management Plan** has been amended as follows:
	• Added the following documents to Appendix F, Record Keeping –
	  o MS4 record keeping log
	  o Year 4 Annual Report and associated attachments
	  o Billerica's Local Code Assessment
	• Updated Appendix G, Sanitary Sewer Overflow Inventory
	
	The **IDDE Plan** has been amended as follows:
	• Appendix C - updated SSO Inventory
	• Appendix G - added summary of TMDLs and Impaired Waters based on the 2018/2020 303(d) List. This supersedes information provided in Sections 2.2.1, 2.2.2, and 4.1 of the SWMP and Section 7.1.1 of the IDDE Plan regarding the 2014 and 2016 Integrated List of Waters.
	• Appendix I - added employee training records
		October 2022	Cassandra LaRochelle, PE
			Project Manager
			Tighe&Bond

Amend. No.	Description of the Amendment	Date of Amendment	Amendment Prepared by (Name/Signature)
3	The **Stormwater Management Plan** has been amended as follows: • Added the following documents to Appendix F, Record Keeping – o MS4 Record Keeping log o Year 5 Annual Report and associated attachments o Culvert Standard Operating Procedure • Updated Appendix G, Sanitary Sewer Overflow Inventory The **IDDE Plan** has been amended as follows: • Appendix C: Updated SSO Inventory • Appendix G: added summary of TMDLs and Impaired Waters based on the 2022 303(d) List. This supersedes information provided 2.2.1, 2.2.2, and 4.1 of the SWMP and Section 7.1.1 of the IDDE Plan regarding the 2014, 2016, and 2018/2020 Integrated List of Waters. • Appendix H: added Catchment Investigations Summary • Appendix I: added employee training records.	October 2023	Cassandra LaRochelle, PE Project Manager Tighe&Bond
4	The **Stormwater Management Plan** has been amended as follows: • Added the following documents to Appendix F, Record Keeping – o MS4 Record Keeping log o Year 6 Annual Report and associated attachments • Updated Appendix G, Sanitary Sewer Overflow Inventory The **IDDE Plan** has been amended as follows: • Appendix C: Updated SSO Inventory • Appendix H: added Catchment Investigations Summary and illicit discharge violation correction letter • Appendix I: added employee training records	November 2024	Cassandra LaRochelle, PE Project Manager Tighe&Bond
5			
6			

Section 6
SWMP 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: _____

A letter that authorizes the Town of Billerica Director of Public Works to sign and certify certain documents prepared under the Small MS4 General Permit is included in Appendix I.

Appendix I

Delegation of Authority Documentation

Department of Public Works
Town Hall, 365 Boston Road, Billerica, Massachusetts 01821
PH: (978) 671-1313 FAX: (978) 671-0906

Abdul Alkhatib, Director

September 10, 2018

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

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

Dear Ms. Murphy:

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

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

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

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

Sincerely,

John C. Curran
Billerica Town Manager