Stormwater Management Plan

Manchester-by-the-Sea, MA

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Section 1: Overview of the Plan

The Town of Manchester-by-the-Sea is located along the Northeastern Shore of Massachusetts. The Town is roughly 30 miles from Boston in an area locally known as Cape Ann. The Town is approximately 8 square miles with about 12.8 miles of tidal shoreline. According to the 2010 United States (U.S.) Census, the Town is home to approximately 5,136 residents in 2,147 households.[1]

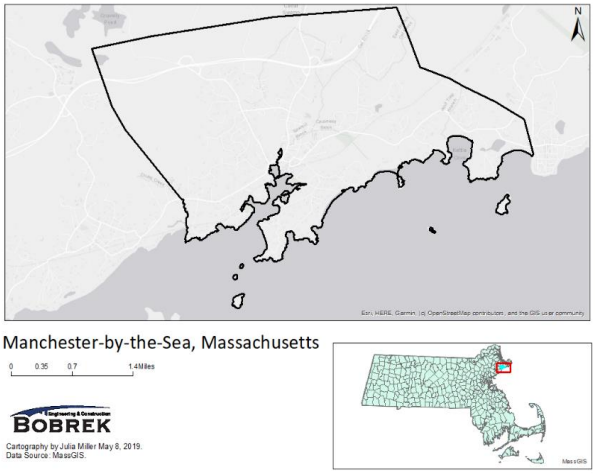

Figure 1. Map of Manchester-by-the-Sea, MA

1.1. Purpose of this Plan

According to the EPA, stormwater is defined as water that is generated from rain and snowmelt events. Stormwater runoff flows over land or impervious surfaces, such as paved streets, parking lots, and building rooftops, and does not infiltrate into the ground. The concern with runoff is that it picks up pollutants like trash, chemicals, oils, and dirt/sediment. These pollutants are harmful to our rivers, streams, lakes, and coastal waters. To protect these resources, communities, construction companies, general industry, and others, use stormwater controls, known as Best Management Practices (BMPs). These BMPs filter out pollutants and/or prevent pollution by controlling it at its source.[2]

This Stormwater Management Plan (SWMP) was developed to reduce the adverse impacts of stormwater within the Town. 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 (MS4) in Massachusetts ("Small MS4 General Permit"). The SWMP defines BMPs that will be implemented by the Town to reduce stormwater pollution. The SWMP will be continuously updated during the permit term as the Town's activities are modified to meet the conditions of the permit.

1.2. Regulatory Requirements

1.2.1. Overview of EPA's NPDES MS4 Program

The EPA is authorized by the Clean Water Act established the NDPES permit program. Through this program, the EPA regulates the stormwater that is discharged into the waters of the U.S. by means of MS4s. An MS4 is defined as 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).

[1] U.S Census Bureau

[2] US EPA

The MS4 program was developed in two phases:

1. Phase 1: Regulation was enacted in 1990 and requires medium and large cities or certain counties with populations of 100,000 or more to obtain NPDES permit coverage for their stormwater discharges.
2. Phase 2: Regulation was enacted 1999 and requires small MS4s in urbanized areas, as well as MS4s designated by the permitting authority, to obtain NPDES permit coverage for their stormwater discharges. Phase II also includes non-traditional MS4s such as public universities, departments of transportation, hospitals, and prisons.

In Massachusetts, the EPA Region 1 and the Massachusetts Department of Environmental Protection (MassDEP) jointly administer the municipal stormwater program. In 2003, the Town was authorized by EPA and MassDEP to discharge stormwater 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 potential of stormwater runoff.

The 2003 General Permit expired in May 2008; however, it remained in effect until the 2016 General Permit. The NPDES 2016 General Permit for Stormwater Discharges from Small MS4s in Massachusetts was issued on April 4, 2016 and became effective on July 1, 2018. It substantially increases stormwater management requirements and mandates specific timelines for compliance. The new 2016 General Permit is intended to be more prescriptive than the 2003 General Permit, and to build upon the regulations already in place. The EPA proposed modifications to the 2016 MS MS4 General Permit on April 23, 2020 which were finalized on December 7, 2020. These modifications include stronger standards for post-construction management and redevelopment sites.

1.3. Summary of MTBS Stormwater Management Program under the 2016 General Permit

The Town meets EPA's regulatory threshold for Phase II of the MS4 program, and therefore, is required to be managed under a NPDES permit for its stormwater discharges from the MS4 in its Urbanized Area. The Town is required 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.

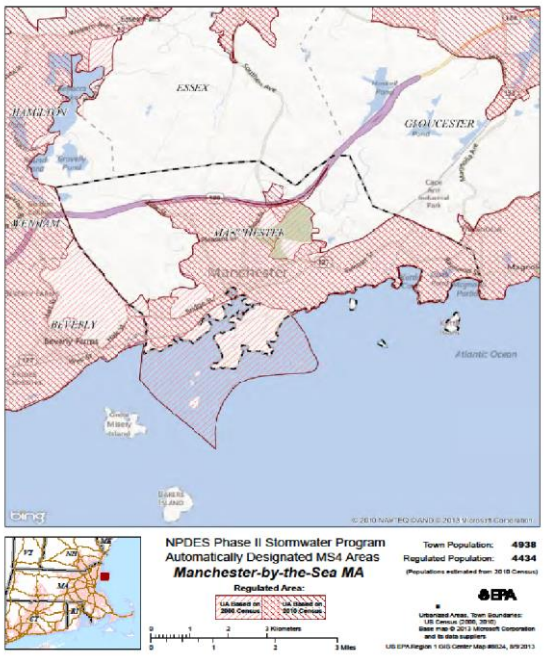

Figure 2. NPDES Phase II stormwater program automatically designated MS4 Areas within Manchester-by-the-Sea

Urbanized Areas (also known as "regulated areas") are defined by the latest U.S. decennial census. On March 26, 2012, the Census Bureau published the final listing of urbanized areas for the 2010 census. An urbanized area represents a densely settled territory that consists of core census block groups or blocks that have a population of at least 425 housing units per square mile and surrounding census blocks that have an overall density of at least 200 housing units per

square mile or are included to link outlying densely settled territory with densely settled urban core.[3] 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. Approximately 75% of the Town is considered regulated area, and 15% is considered rural suburban by the EPA (see Figure 2). Please note that private stormwater from the rural suburban area most likely discharges to the Town's stormwater system and therefore is assumed to be regulated by the MS4 permit.

1.3.1. MCM 1 Public Education and Outreach

Manchester-by-the-Sea provides public education related to stormwater, water conservation and hazardous waste. The Town partners with Greenscapes North Shore Coalition to create opportunities for public education and outreach each year. Informational rack cards and stormwater brochures on topics such as stormwater management for homeowners and proper pet waste disposal are available on the Town's website as well as the Greenscapes website and social media pages. These materials are also available in-person at various locations in town such as Town Hall and the Highway Department buildings. Educational events are also regularly held by the Town and its partners to inform the public about stormwater.

The Town also keeps the public informed and educated about recycling through the Town's website and outreach events. The Health Department provides a question-and-answer webinar on hazardous waste disposal to promote and evaluate household waste recycling programs. Additionally, the Board of Health holds hazardous waste collection days annually. The residents can bring motor oil to the Highway Deparment for recycling with all materials collected and processed regularly by the Recycling Center. The Town participates in an all-Drug Take-Back programs sponsored nationally by the federal government and provides notice of these events locally.

The Animal Control Bylaw prohibits disposal of dog waste on beaches, sidewalks, streets, parks, in Town storm drains, and on public beaches. The Board of Health also promotes compliance with the bylaw and educates residents and visitors about impacts of dog waste as well as septic maintenance. The Town distributes a pamphlet, part of the "Scoop It!" campaign, that informs the public about the health and environmental concerns of improperly disposed animal waste. It also emphasizes the importance of keeping the storm drain system free of waste. The brochure is annually distributed with dog license confirmation letters to residents that registered their dog. The Police also enforce the bylaw by patrolling beaches, parks, recreational areas, and cemeteries. Signage on streets entering the Town alerting visitors of the animal control bylaw is maintained by the Town.

1.3.2. MCM 2 – Public Involvement and Participation

The Town continues to support stream cleaning and other cleanup projects over the permit term. The DPW supports volunteer cleanup events by removing trash and debris picked up at each event. In 2017, the town participated in COASTSWEEP, the statewide coastal cleanup sponsored by the Massachusetts Office of Coastal Zone Management (CZM). This cleanup was held at Black Cove (stinky beach) Beach and organized by the Brookwood School. The High School also has a volunteer organization called the Green Team who have held cleaning events on White and Black beaches. The Conservation Commission continues to meet twice a month on the second and fourth Tuesdays to discuss drainage and stormwater management issues as related to the Wetlands Protection Act and related state and local laws. These meetings are open to the general public. The Town also has the Manchester Coastal Stream Team, a Town Committee that meets

[3] 2020 Urban Areas FAQ (census.gov)

monthly to discuss environmental issues concerning local waterways and to plan corrective measures. The group's work focuses on projects designed to maintain and improve water cleanliness and quality, and to preserve coastal habitats. All projects involve public participation and education. In 2020, Bobrek Engineering and Construction presented the stormwater management program to the Stream Team and continues to keep the Committee involved in the progress.

1.3.3. MCM 3 - Illicit Discharge Detection and Elimination (IDDE)

The Town currently does not have a bylaw pertaining to IDDE, however, is in the process of developing and passing a comprehensive IDDE bylaw. The Street and Sidewalks Bylaw, however, regulates illegal dumping on the town streets and sidewalks, as well as public lands and coastal and inland waters. A map of storm sewer system (outfalls, catch basins, and other drainage structures) in the Urbanized Area exists in the form of a Geographic Information System (GIS) layer on the Town's Mapping website. Connectivity, where known, is included on the map. The Town contracts with Applied Geographics, Inc. (AppGeo) for mapping services which provides an online viewer for GIS, including the drainage system map. Town Staff provide revisions and edits to AppGeo throughout the year. In 2019, the Town contracted Sedaru, a data management Application for Town employees and external contractors to collect town water, sewer and stormwater assets on a tablet and see the information in real time.

1.3.4. MCM 4 and MCM 5 - Construction Site Stormwater Runoff Control

The "Stormwater Management Special Permit" was added to the Town's Zoning Bylaw on April 4, 2007. Regulations have been adopted by the Planning Board. This bylaw requires erosion and sediment controls at construction sites that disturb one or more acres (or less than one acre if part of a common plan of development) and includes sanctions to ensure compliance and requirements for inspections. This bylaw references the Massachusetts Stormwater Management Standards and Handbook as performance standards. Planning Board continued to implement Bylaw and regulations.

The Town of Manchester-by-the-Sea, with the aid of Greenscapes Coalition, also began the process of assessing and planning to implement changes to current regulations pertaining to the creation of impervious surfaces in new developments and redevelopments. The Town plans to integrate Low Impact Development and Green Infrastructure regulations to encourage stormwater BMPs and reduce the amount of impervious land cover required for streets and parking areas. These plans are detailed in Appendices L.

The Town also began prioritizing all permittee-owned parking areas for the potential for retrofit with green infrastructure. The prioritization process and retrofit plan is detailed more in Appendix M.

1.3.5. MCM 6 Pollution Prevention and Good Housekeeping in Municipal Operations

The Department of Public Works (DPW) inspects catch basins and other stormwater system components throughout Town, as needed. According to the Town, all catch basins are cleaned once a year or when they are full. The Board of Health (BOH) implements Title 5 Septic System controls where systems are inspected and failing systems are upgraded as required. The BOH continues to track the number of septic system pump outs. The DPW sweeps arterial roadways, which includes those near beaches and in the downtown areas, as needed throughout the summer season (May through September, or later, depending on weather). Training on stormwater elements is incorporated into trainings for the Conservation Commission,

Fire Department, and DPW. Town staff has been trained previously on how to recognize illicit discharges during the annual IDDE staff training

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 is located within Essex County, Massachusetts. Therefore, the Town meets the general eligibility criteria.
- *Not a large or medium MS4 as defined in 40 CFR 122.26(b)(4) or (7)*
    - The population of the Town is 5,395 according to the 2020 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. Therefore, the Town meets the general eligibility criteria.
- *Located either fully or partially within an urbanized area as determined by the 2020 Census or located in a geographic area designated by EPA as requiring a permit*
    - The Town is partially within an urbanized area as determined by the 2020 Census and located in a geographic area designated by EPA as requiring a permit, see figure 2. Therefore, the Town meets the general eligibility criteria.

1.5. Special Eligibility Determinations

1.5.1. Endangered Species

Bobrek Engineering & Construction 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 NPDES General Permits for MS4s, effective July 1, 2018, and determined that the Town 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. Please refer to Appendix B of the SWMP for supporting information, including the USFWS IPaC Official Species List for the project area and the Endangered Species Act Certification.

1.5.2. Historic Properties

Bobrek Engineering & Construction 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 NPDES General Permits for Stormwater Discharges from MS4s, effective July 1, 2018, and determined that the Town meets Criterion A, where the discharges do not have the potential to cause effects on historic properties. Refer to Appendix C of the SWMP for supporting information, including a list of the federal- and state-listed historic areas, buildings, burial grounds, objects, and structures in downloaded from the Massachusetts Cultural Resource Information System (MACRIS).

1.5.3. Authorization for the Town to Discharge Stormwater

As required by the General Permit, a NOI was submitted by the Town within 90 days of the effective date of the permit on September 28, 2018. A copy of the NOI is included in Appendix A. Along with documentation of the Town Authorization to Discharge by EPA. This written SWMP must be finalized within one year of the effective date of the permit.

2. Section 2: Watershed Resources

2.1. Watershed Inventory

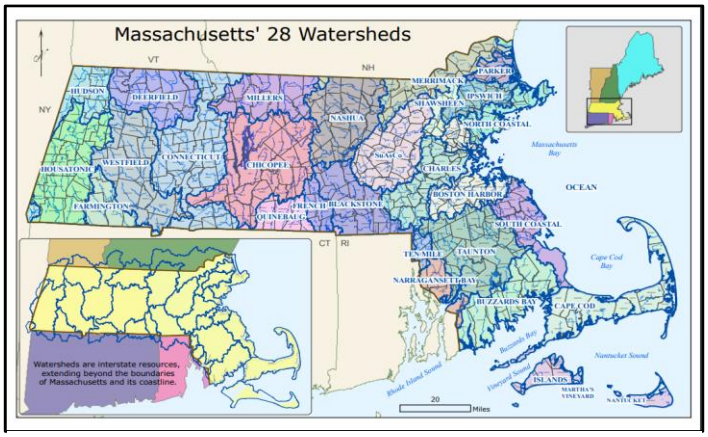

Figure 3. Watersheds in Massachusetts as defined by the Massachusetts Department of Environmental Protection.

The Town is located within the North Coastal Watershed, as defined by MassDEP. This is a watershed that drains approximately 168 square miles of the Massachusetts' Northshore. The watershed extends from Salisbury to Revere including the following communities Amesbury, Everett, Malden, Melrose, Saugus, Stoneham, Reading, Wakefield, Lynnfield, Lynn, Nahant, Swampscott, Marblehead, Salem, Peabody, Danvers, Beverly, Manchester, Wenham, Hamilton, Essex, Ipswich, Gloucester, and Rockport. The watershed area supports a population of approximately 500,000. The North Coastal watershed contains extensive areas of open space, rural towns, and highly urbanized communities. Surface waters in the watershed are commonly used for primary and secondary contact recreation (swimming and boating), viewing wildlife, habitat for aquatic life, lobster fishing, commercial shell fishing, and potable water. Offshore areas are protected against the disposal of treated or untreated sewage from vessels in this watershed. [4]

2.2. Water quality

The Clean Water Act (CWA) Section 303(d) requires Massachusetts to develop a list of impaired water bodies as well as identify surface water bodies that may not meet water quality standards after implementation of controls. These waters are prioritized for creating a Total Maximum Daily Loads (TMDLs) which includes a calculation of the maximum amount of a pollutant that can be present in a waterbody and still meet water quality standards. Massachusetts meets the CWA reporting requirements through the development of an Integrated List of Waters. The Integrated List is comprised of water bodies within the State that are categorized for attainment of designated uses. There are five categories that each waterbody can be assigned:

- 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

The categories that are of most concern is Categories 4a and 5. These categories do not meet CWA designated uses and stormwater pollutants of concern within these waters will need to be addressed per General Permit requirements.

[4] Final Pathogen TMDL for the North Coastal Watershed, 2016. Massachusetts Department of Environmental Protection

2.2.1. 2018/2020 Integrated List of Waters

3. MassDEP's Integrated List of Waters was updated from the 2016 Integrated Report to the Final 2018/2020 Integrated List of Waters (§303(d) list) which was approved by the EPA on February 2, 2022[5]. Compared to the 2016 list, the Integrated List of Waters for the combined reporting periods of 2018 and 2020 includes the following changes:
   - Removed Turbidity and added Temperature as an impairment for Category 5 water Cat Brook (MA93-29)
   - Adds Enterococcus as an impairment for Category 4a Manchester Harbor (MA93-19)

Table 1

Category 5 Water: waters requiring a TMDL[6]			
Indicator contributing to impairment:	Cat Brook (MA93-29)		
Temperature	X		
pH, Low	X		
Category 4a Waters TMDL is completed			
Indicator contributing to impairment:	Manchester Harbor (MA93-19)	Salem Sound (MA93-55)	Causeway Brook (MA93-47)
Fecal Coliform	X	X	X
Enterococcus	X		
Escherichia Coli			X
Category 3 Waters: No uses Assessed			
Clark Pond			
Sawmill Brook			
Millets Swamp to Sawmill Brook			
Bennetts Brook to Manchester Harbor			
Unnamed Stream to Swamps and Sawmill Brook			
Wolftrap Brook			

3.1.1. Pollutants of Concern

Based on the 2018/2020 Integrated List of Waters, the pollutants of concern for the Town's impaired waters related to stormwater include bacteria, pH level, and turbidity. More information about these pollutants and their potential sources are included in Appendix E.

3.1.2. Applicable TMDLs

Currently, only one TMDL is established for the Town. The *Final Pathogen TMDL for the North Coastal Watershed* (2012) includes the following water bodies in the Town: Manchester Harbor (MA93-19), Salem Sound (MA93-55), Causeway Brook (MA93-47), and Cat Brook (MA93-29).

[5] Massachusetts Integrated List of Waters (mass.gov)

[6] MassDEP, Bureau of Water Resources "Final Massachusetts Year 2014 Integrated List of Waters". 2015. Accessed online May 2019 at: http://www.mass.gov/eea/docs/dep/water/resources/07v5/14list2.pdf.

4. Section 3: Best Management Practices to Address Minimum Control Measures (MCMs)

This section includes descriptions of each BMP included in the Town's NOI, who is responsible, and the measurable goal that will be implemented to best address the MCMs in the General Permit.

4.1. MCM 1: Public Education

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. Please refer to Appendix H for the Town's public outreach plan that complies with the public education and outreach requirements in General Permit 2.3.2

4.1.1. MCM 1 Guidelines and Resources

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

- EPA Public Education https://cfpub.epa.gov/npstbx/
- 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-bmpsstormwater#edu
- MassDEP Public Education: https://www.mass.gov/guides/stormwater-outreach-materials-to-help-townscomply-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
- Greenscapes: http://greenscapes.org/services-resources/
- Salem Sound Coastwatch http://www.salemsound.org/researchResources.html
- Northern Middlesex Stormwater Collaborative http://www.nmstormwater.org/resources-stormwater-collaborative
- Urban Waters http://www.nmstormwater.org/for-municipalities
- Merrimack Valley Stormwater Collaborative http://www.merrimackvalleystormwater.org/who-we-are/public-education/

4.2. MCM 2: Public Participation

Objective: The permittee shall provide opportunities to engage the public to participate in the review and implementation of the SWMP. Refer to Appendix VII for the Town's public involvement and participation plan that complies with the public education and outreach requirements in General Permit 2.3.3.

4.2.1. MCM 2 Guidelines and Resources

The following links include free or low-cost resources the Town 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-bmpsstormwater#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-fundingnew-england.pdf
- Salem Sound Coastwatch Volunteer Webpage: https://www.salemsound.org/volunteer.html
- Massachusetts Open Meeting Law Guide: http://www.mass.gov/ago/docs/government/oml/oml-guide.pdf

4.3. MCM 3: Illicit Discharge Detection Elimination Program

Objective: The permittee shall implement an IDDE program to systematically find and eliminate illicit sources of non-stormwater discharges to its municipal separate storm sewer system. Therefore, the Town shall implement the following best management practices (BMPs) to prevent such discharges.

4.3.1. MCM 3 BMPS from NOI

BMP ID	BMP Category	BMP Description	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation
3A	Sanitary Sewer Overflow (SSO) Inventory	Develop SSO inventory in accordance of permit conditions	Department of Public Works	Complete within 1 year of effective date of permit	PY 1 (FY 2019)
3B	Map of Storm Sewer System	Create map and update during IDDE program completion	Department of Public Works	Update map within two (2) years of effective date of permit and complete full system map 10 years after effective date of permit	PY 1 (FY 2019)
3C	Written IDDE Program	Create written IDDE Program Plan	Department of Public Works	Complete within 1 year after effective date of permit and update as required	PY 1 (FY 2019)
3D	Implement IDDE program	Implement catchment investigations according to program and permit conditions	Department of Public Works	Complete 10 years after effective date of permit	PY 2 (2020)
3E	Employee Training	Train employees on IDDE implementation	Department of Public Works	Train annually. Track employees trained, training topic, date/time, and materials presented.	PY 1 (FY 2019)
3F-1	Assessment and priority Ranking of Outfalls & Interconnection	Outfall/Interconnection Inventory and Initial priority ranking	Department of Public Works	Complete within 1 year after effective date of permit.	PY 1 (FY 2019)
3F-2	Assessment and priority Ranking of Outfalls & Interconnection	Conduct dry weather screening & Sampling in accordance with IDDE Plan and Permit Conditions	Department of Public Works	Complete 3 years after effective date of permit. Track number of illicit discharges & volume removed. Summarize screening/ sampling results.	PY 1 (FY 2019)
3F-3	Assessment and priority Ranking of Outfalls & Interconnection	Conduct wet weather screening in accordance with outfall screening procedure	Department of Public Works	Complete 10 years after effective date of permit. Track # and percentage of MS4 catchments evaluated. Track number of illicit discharges & volume removed. Summarize screening/sampling results.	PY 2 (FY 2020)
3F-4	Assessment and priority Ranking of Outfalls & Interconnection	Conduct ongoing dry and wet weather screenings as necessary	Department of Public Works	Complete ongoing outfall screening of catchments upon completion of IDDE Program according to program and permit conditions.	PY 1 (FY 2019)

4.3.2.MCM 3 Guidelines and Resources

The following links include free or low-cost resources that the Town 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 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-bmpsstormwater#ill

4.4. 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. Therefore, the Town shall implement the following best management practices (BMPs) to control such discharge.

4.4.1. MCM 4 BMPS from NOI

BMP ID	BMP Category	BMP Description	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation
4A	Site Inspections and Enforcement of Sediment and Erosion Control Measures	Complete written procedures of site inspections and enforcement procedures	DPW Operations/ Building Department	Complete within 1 year of the effective date of permit	PY 1 (FY 2019)
4B	Site Plan Review Procedures	Complete written procedures of site plan review and begin implementation	DPW Operations/ Building Department	Complete within 1 year of the effective date of permit	PY 1 (FY 2019)
4C	Sediment and Erosion Control	Adoption of requirements for construction operators to implement a sediment and erosion control program	DPW Operations/ Building Department	Complete within 1 year of the effective date of permit	PY 1 (FY 2019)
4D	Waste Control	Adoption of requirements to control wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes	DPW Operations/ Building Department	Complete within 1 year of the effective date of permit	PY 1 (FY 2019)

4.4.2. MCM 4 Guidelines and Resources

The following links include free or low-cost resources the Town an 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-andrelated-Documents
- Massachusetts Stormwater Handbook: https://www.mass.gov/guides/massachusetts-stormwater-handbook-andstormwater-standards
- EPA National Menu of BMPs for Stormwater https://www.epa.gov/npdes/national-menu-best-management-practices-bmpsstormwater#constr
- 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

4.5. 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. Therefore, the Town shall implement the following best management practices (BMPs) to reduce such discharges.

4.5.1.MCM 5 BMPS from NOI

BMP ID	BMP Category	BMP Description	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation
5A	As-built plans for on-site stormwater control	The procedures to require submission of as-built drawings and ensure long term operation and maintenance will be a part of the SWMP	Planning Board	Require submission of as-built plans for completed projects	PY 2 (2020)
5B	Target properties to reduce impervious areas	Identify at least 5 permittee-owned properties that could be modified or retrofitted with BMPs to reduce impervious areas and update annually	Planning Board	Complete 4 years after effective date of permit and report annually on retrofitted properties	PY 2 (2020)
5C	Allow green infrastructure	Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist	Planning Board	Complete 4 years after effective date of permit and implement recommendations of report	PY 2 (2020)
5D	Street design and parking lot guidelines	Develop a report assessing requirements that affect the creation of impervious cover. The assessment will help determine if changes to design standards for streets and parking lots can be modified to support low impact design options.	Planning Board	Complete 4 years after effective date of permit and implement recommendations of report	PY 2 (2020)
5E	Adoption, amendment, or modification of a regulatory mechanism to meet permit requirements	Ensure any stormwater controls or management practices for new development and redevelopment meet the retention or treatment requirements of the permit and all applicable requirements of the Massachusetts Stormwater Handbook	Planning Board	Complete 2 years after effective date of permit	PY 2 (2020)

4.5.2. MCM 5 Guidelines and Resources

- Massachusetts Stormwater Handbook https://www.mass.gov/guides/massachusetts-stormwater-handbook-andstormwater-standards
- EPA National Menu of BMPs for Stormwater: https://www.epa.gov/npdes/national-menu-best-management-practices-bmpsstormwater#post
- *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

4.6. 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. Therefore, the Town shall implement the following best management practices (BMPs) to prevent and reduce such discharges.

4.6.1.MCM 6 BMPS from NOI

BMP ID	BMP Category	BMP Description	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation
6A	O&M procedures	Create written O&M procedures including all requirements contained in 2.3.7.a.ii for parks and open spaces, buildings and facilities, and vehicles and equipment	DPW Operations	Complete and implement 2 years after effective date of permit	PY 2 (2020)
6B	Inventory all permittee-owned parks and open spaces, buildings and facilities, and vehicles and equipment	Create Inventory	DPW Operations	Complete 2 years after effective date of permit and implement annually	PY 2 (2020)
6C	Infrastructure O&M	Establish and implement program for repair and rehabilitation of MS4 infrastructure	DPW Operations	Complete 2 years after effective date of permit	PY 1 (2019)
6D	Stormwater Pollution Prevention Plan (SWPPP)	Create SWPPPs for maintenance garages, transfer stations, and other waste-handling facilities	DPW Operations	Complete and implement 2 years after effective date of permit	PY 2 (2020)
6E	Catch basin cleaning	Establish schedule for catch basin cleaning such that each catch basin is no more than 50% full and clean catch basins on that schedule	DPW Operations	Clean annually catch basins on established schedule and report number of catch basins cleaned and volume of material removed	PY 2 (2020)
6F	Street sweeping program	Sweep all streets and permittee-owned parking lots in accordance with permit conditions	DPW Operations	weep all streets and permittee-owned parking lots once per year in the spring	PY 1 (2019)
6G	Road salt use optimization program	Establish and implement a program to minimize the use of road salt	DPW Operations	Implement salt use optimization during deicing season	PY 1 (2019)
6H	Inspections and maintenance of stormwater treatment structures	Establish and implement inspection and maintenance procedures and frequencies	DPW Operations	Inspect and maintain treatment structures at least annually	PY 1 (2019)

4.6.2.MCM 6 Guidelines and Resources

The following links include free or low-cost resources the Town can use to supplement the Good Housekeeping and Pollution Prevention program. The Town should also refer to the Oil SPCC Plan and Town-Wide Operations and Maintenance Program (O&M) plan, located in the Engineering Department.

- EPA National Menu of BMPs for Stormwater: https://www.epa.gov/npdes/national-menu-best-management-practices-bmpsstormwater#poll
- Center for Watershed Protection Municipal Pollution Prevention/Good Housekeeping Practices: http://cdrpc.org/wpcontent/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

5. Section 4: BMPS to Address Specific Waterbody Requirements

5.1. Impaired Waterbodies

As described in Section 2 of the SWMP, several surface waterbodies within the Town were identified in the 2018/2020 Integrated List of Waters as Category 5 waters requiring a TMDL.

5.2. North Coastal Watershed Pathogen TMDL

As described in Section 2.2.3 of the SWMP, a final TMDL for pathogens has been developed for the North Coastal Watershed. This TMDL requires that Towns discharging to the impaired waterways within the North Coastal Watershed comply with requirements in Appendix F of the 2016 General Permit.

5.3. 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 Town's drinking water is supplied by two sources. The first source, Gravelly Pond (MassDEP Source ID# 3166000– 01S), is a surface water reservoir, which is located off Chebacco Road in Hamilton, MA. The second source is the Lincoln Street Well (MassDEP Source ID# 3166000-01G) located next to the Manchester/Essex Regional Junior/ Senior High School on Lincoln Street in the Town. Therefore, there are no surface drinking water supplies within the Town.

6. Section 5: Program Evaluation, Record Keeping, and Reporting

6.1. 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.

6.2. 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 that the Town 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.

6.3. Annual Reports

The Town will submit annual reports each year of the Small MS4 permit term, 90 days from the close of the reporting period, to the EPA. The reporting period will be a one-year period commencing on the permit effective date, and subsequent anniversaries thereof. As required by the 2016 General Permit, annual

reports will consist of a simple update provided to EPA. Secondly, a more robust documentation included in Appendix F of this SWMP should be completed which will continuously update this SWMP.

Per Section 4.4.b of the 2016 General Permit, the EPA's 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.*

6.4. SWMP Modifications

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

a. *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 in Appendix F.

7. 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:_____