Town of Carver

MASSACHUSETTS

Stormwater Management Plan

Town of Carver

June 2019

Updated June 2022

Tighe&Bond

Engineers | Environmental Specialists

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Section 1
Introduction

Carver is located in Plymouth County in southeastern Massachusetts, approximately 45 miles southeast of Boston. It is abutted by the Town of Middleborough to the west, the Town of Wareham to the south, the Town of Plymouth to the east, and the Towns of Plympton and Kingston to the north. There are approximately 2.3 square miles of surface water within its 39.7 square mile footprint.

Figure 1-1 Location of Carver, Massachusetts

According to the 2010 United States (U.S.) Census, Carver is home to approximately 11,500 residents in more than 4,290 households.

Protecting the quality of Carver's water resources, including lakes, ponds, rivers, and groundwater supplies is a priority for the Town of Carver. Pollutants from stormwater runoff are a contributing factor to the impairment of Carver's waterbodies, including high concentrations of nitrogen. 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 pollution prevention opportunities for residents and businesses.

1.1 Purpose of this Plan

In an on-going effort to minimize stormwater impacts within Carver, 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 Carver 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 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 Carver 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 new General Permit is intended to be more prescriptive than the 2003 General Permit, and to build upon the regulations already in place. The new 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.

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

The Town of Carver 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 Carver 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. On March 26, 2012, the Census Bureau published the final listing of urbanized areas for the 2010 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 *both*

[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.

the 2000 census and the 2010 census are regulated by EPA under the MS4 program. Therefore, areas in northern and southern Carver are regulated, as seen in Figure 1-2, and the SWMP must be implemented within those portions of the Town.[2]

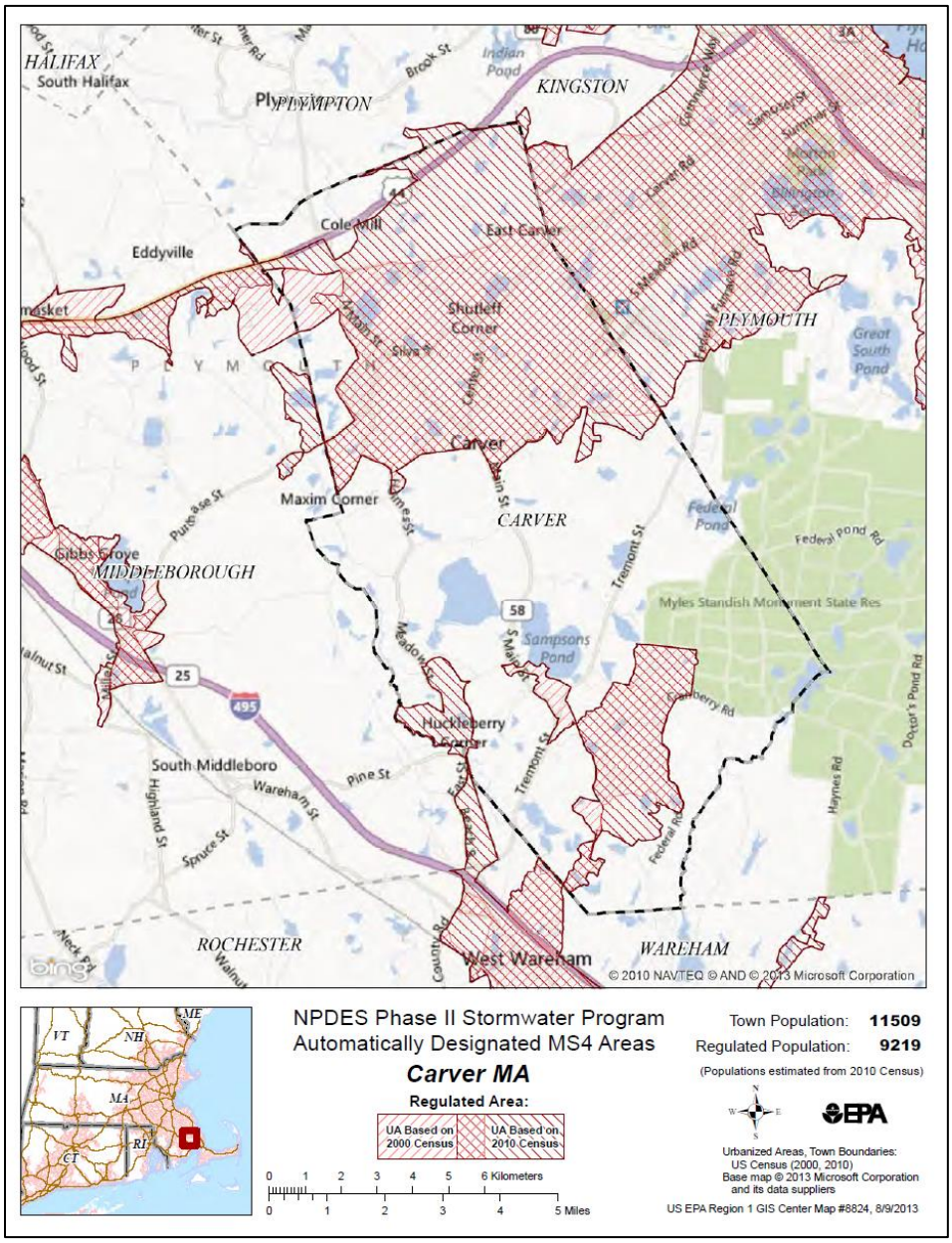


Figure 1-2 Town of Carver's Urbanized Area based on 2000 and 2010 census

[2] U.S. EPA, 2014.

Carver's stormwater management program is managed within the Operation and Maintenance Department. Currently, stormwater management tasks are carried out by various Town departments and volunteer boards, including the Conservation Commission, Board of Health, and the Planning Board.

The Town of Carver has achieved all 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.

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 making educational and outreach materials available at Town Buildings and on social media, sending informational mailings and making public service announcements, installing storm drain markers, and holding community meetings.

1.3.2 MCM 2 – Public Involvement and Participation

Notice of public meetings complies with State and Local public meeting notice requirements and there are opportunities for residents of all ages to participate in Carver's stormwater program and overall environmental stewardship. This includes Hazardous Waste Day, installation of catch basin stenciling, and volunteer monitoring.

1.3.3 MCM 3 – Illicit Discharge and Detection Elimination

Carver has spent considerable effort on their IDDE Program. The Town has satisfied 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. Carver has mostly completed mapping its MS4 system, identified priority areas for additional work, developed procedures for locating illicit discharges, and performed an outfall inventory and dry weather screening (sampled, mapped, and photographed) at many of their outfalls.

In 2012 Carver adopted *Illicit Connections and Discharges to the Municipal Storm Drain System Bylaw*, which regulates illicit discharges and illegal connections to the MS4. The Operations and Maintenance Department serves as the enforcement agency.

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 Department operations activities.

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

Carver adopted its first *Stormwater and Runoff Regulation* in October 2003 under the Board of health to set stormwater design standards for all issuing authorities applicable to subdivisions greater than four lots, multi-family homes and commercial and roadway project. The Town then adopted the *Stormwater Management and Land Disturbance Bylaw* in 2007. The Bylaw requires that all new development and redevelopment projects greater than one acre of land disturbance that drains to the MS4 must obtain a stormwater permit, meet performance standards, and implement a management plan or face penalties. The bylaw includes an issuance of Land Disturbance Permit, requiring stormwater erosion control measures, promoting infiltration and recharge of groundwater

and construction waste control. The Permits are reviewed by the Board of Heath, Public Works, Conservation and Building inspector.

In addition, the Town of Carver Zoning Bylaws address stormwater construction issues through site plan review requirements for steep slopes, flood plain controls and limitations on earth removal. Projects that are subject to Site Plan review must also conform with the Planning Board Subdivision Rules and Regulations including maintenance of any stormwater drainage system until the roadway is accepted by the Town.

Procedures for site plan reviews are established and enforced, and reviews and inspections by the Conservation Commission are conducted. These reviews include regular inspections and communication with the developer to ensure adherence to local requirements during construction, specifically erosion and sediment controls.

1.3.5 MCM 6 – Pollution Prevention and Good Housekeeping

The Town implements Good Housekeeping Standard Operating Procedures and employee training for numerous actions to reduce pollutant runoff from municipal operations, including catch basin cleaning, street sweeping, staff training, storing oil and hazardous materials properly, covering winter deicing materials, vehicle washing and maintenance, park and landscape maintenance and culverts and outfall cleaning.

1.3.6 Additional Permit Requirements

Groundwater Recharge and Infiltration: Through implementation of the *Illicit Connections and Discharges to the Municipal Storm Drain System Bylaw*, Wetlands Bylaw and Regulations, and Zoning Bylaws, the Town evaluates site conditions relative to stormwater infiltration.

Public Drinking Water Supply Requirements: The Town of Carver Zoning Bylaw 4300 Water Resource Protection Bylaw preserves and protects existing or potential water supply tor the Town's residents, cranberry growers, institutions and businesses through land use regulations prohibiting storage and disposal of certain hazardous wastes, periodic monitoring and requires on-site infiltration stormwater runoff from impervious surfaces with adequate pre-treatment. The Town considers water supply sources and protection areas a priority for stormwater management, particularly IDDE activities.

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

Water Quality Impaired Waters and Total Maximum Daily Load (TMDL) Allocations: Carver'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, Carver 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 new 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 Carver is located within Plymouth County, Massachusetts.

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

  The population of Carver is 11,500 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 Carver, based on 2000 and 2010 census listings. Carver is partially urbanized.

1.5 Special Eligibility Determinations

1.5.1 Endangered Species

On behalf of the Town of Carver, 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 Carver meets **Criterion B**, 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 IPaC Trust Resources Report for the project area and the Endangered Species Act Certification.

1.5.2 Historic Properties

On behalf of the Town of Carver, 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 Carver 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 Carver's regulated area downloaded from the Massachusetts Cultural Resource Information System (MACRIS).

1.6 Authorization for Carver 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 Carver'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 Carver is located within the Buzzards Bay and the Taunton River Watershed, as shown in Figure 2-1.

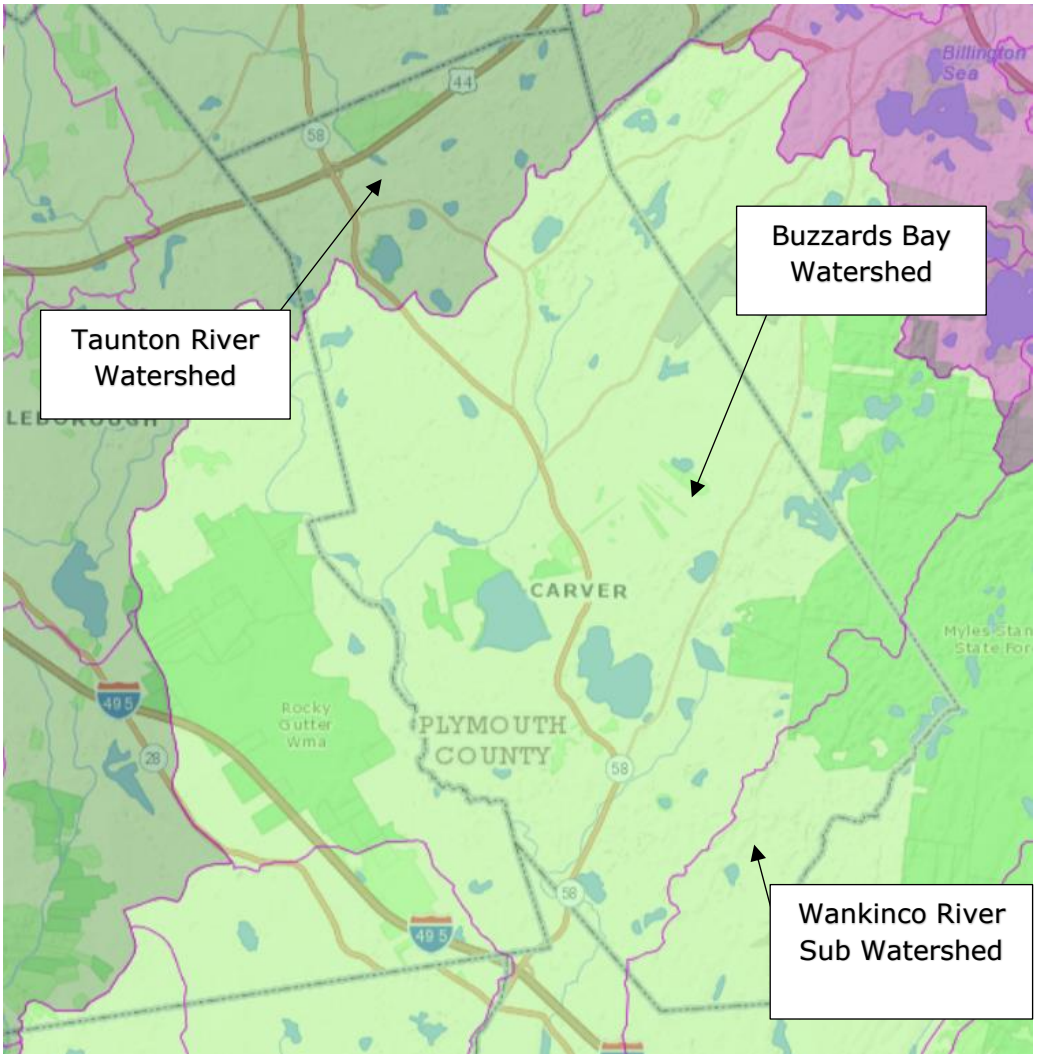


Figure 2-1 Major drainage areas in Buzzards Bay Watershed[1]

[1]https://maps.massgis.state.ma.us/map_ol/oliver.php

The majority of Carver is within Buzzards Bay Watershed is in the southeastern portion of Massachusetts and extends to the Atlantic Ocean. The watershed is bordered by the Cape Cod Watershed to the southeast, the South Coastal Watershed to the northeast, and the Taunton River Watershed to the north. A small portion of northern Carver falls within the Taunton River Watershed, which extends to the southwest to Mount Hope Bay. Table 2-1 identifies the natural drainage basins within the Town of Carver.

Table 2-1
Natural Drainage Basins within the Town of Carver, Massachusetts

Major Basin	Main Stem Basin
Buzzards Bay Watershed	MA95153 – Vaughn Pond
	MA95004 – Barrett Pond
	MA95-04 – Weweantic River
	MA95007 – Bates Pond
	MA95044 – Dunham Pond
	MA95177 – East Head Pond
	MA95118 – Rocky Meadow Brook Pond
	MA95139 – South Meadow Brook Pond
	MA95140 – South Meadow Pond
	MA95141 – Southwest Atwood Bog Pond
	MA95-30 – Wankinco River
	MA95055 – Federal Pond
	MA95174 – Fresh Meadow Pond
	MA95033 – Crane Brook Bog Pond
	MA95125 – Sampson Pond
Taunton River Watershed	MA62046 – Cooper Pond
	MA62096 – Johns Pond
	MA62-24 – Winnetuxet River
	MA62132 – North Center Street Pond
	MA62234 – Fuller Street Pond
	MA62125 – Muddy Pond

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 per General Permit requirements.

Water quality within the Buzzards Bay Watershed and Taunton River Watershed was assessed by the Massachusetts Department of Environmental Protection, Division of Watershed Management in 2000[3] and 2001[4], respectively. These waterbodies are impaired for nitrogen and bacteria downstream of Carver. See the applicable MassDEP reports for further information.

2.2.1 2018-2020 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 2018-2020 Integrated List of Waters.[5] Waterbodies identified on Integrated List within Carver are listed in Table 2-2.

Table 2-2
Summary of 2018-2022 Integrated List of Waters - Status of Carver's Receiving Waters

Category 5 Waters: waters requiring a TMDL				
Indicator contributing to impairment:	Crane Brook Bog Pond MA950335	Sampson Pond MA95125	Weweantic River MA95-04	Wankinko River MA95-30
DDT*		X		
Mercury in Fish Tissue*		X		
Non-Native Aquatic Plants*		X		
Phosphorous	X			X
Nitrogen			X	
Enterococcus			X	

Category 4a Waters: TMDL is completed				
Indicator contributing to impairment:	Federal Pond MA95055	Fresh Meadow Pond MA95174	Fuller Street Pond MA62234	Muddy Pond MA62125
Non-native Aquatic Plants	X	X	X	X

[3] MassDEP, Division of Watershed Management, "Buzzards Bay Watersheds 2000 Water Quality Assessment Report".
[4] MassDEP, Division of Watershed Management, "Taunton River Watersheds 2001 Water Quality Assessment Report".
[5] MassDEP, Bureau of Water Resources "Final Massachusetts Year 2018-2020 Integrated List of Waters". February 2022. Accessed online at: https://www.mass.gov/doc/final-massachusetts-integrated-list-of-waters-for-the-clean-water-act-20182020-reporting-cycle/download.

Table 2-2
Summary of 2018-2022 Integrated List of Waters - Status of Carver's Receiving Waters

Category 2 Waters: attaining some uses; other uses not assessed						
Uses attained:	Barret Pond MA95004	Vaughn Pond MA95153	Weweantic River MA95-04	Cooper Pond MA62046	Johns Pond MA62096	Winnetuxet River MA62-24
Aesthetic			X	X		X
Fish, other Aquatic Life and Wildlife						
Primary Contact Recreation	X	X			X	
Secondary Contact Recreation	X	X		X	X	

*TMDL not required (Non-pollutant)

2.2.2 Pollutants of Concern

Based on the 2018-2020 Integrated List of Waters, the pollutants of concern for Carver's impaired waters related to stormwater include phosphorous, non-native aquatic plants, mercury in fish tissue and DDT. Crane Brook Bog Pond is located outside of the MS4 area and therefore the associated TMDL is not applicable to this plan. More information about these pollutants and their potential sources are included in Appendix E.

2.2.3 Applicable TMDLs

Two waterbodies within the Town of Carver drain to downstream water bodies that are identified as Category 5 waters (impaired and requiring a TMDL), as described in Section 2.2.1.

1. The Weweantic River drains to Buzzards Bay, which is impaired due to nitrogen. Outfalls discharging to the Weweantic River are in the urbanized area in Carver and therefore Carver must meet the requirements of Appendix H.I.
2. The Wankinco River is a tributary of the Wareham River, which is impaired due to nitrogen, and passes though Parkers Mill Pond, which is impaired for phosphorus. However, the Town of Carver has eliminated outfalls within the urbanized area that discharge to the Wankinco River, therefore the associated TMDL for phosphorous is not applicable to this plan.

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

This section includes descriptions of each BMP included in Carver'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 social media and print materials)	Education and outreach on stormwater management topics of significance in Carver, including proper use and disposal of grass clippings, proper use of slow-release, phosphorus-free fertilizers, proper pet waste management and proper disposal of leaf litter. Educational topics will include but are not limited to those in Part 2.3.2.d.i	Residents	Conservation Commission, Board of Health	Distribute a minimum of two (2) educational messages spaced at least a year apart	FY 2019 (PY1)

BMP ID	BMP Media/ Category	BMP Description	Targeted Audience	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation
1B	Multi-media methods (including web and print materials)	Education and outreach on stormwater management topics of significance in Carver, including proper use and disposal of grass clippings, proper use of slow-release, phosphorus-free fertilizers, proper pet waste management and proper disposal of leaf litter. Educational topics will include but are not limited to those in Part 2.3.2.d.ii	Businesses, Institutions, and Commercial Facilities including Landscaping, Marine Services Golf Courses and Cranberry Farming	Conservation Commission, Board of Health	Distribute a minimum of two (2) educational messages spaced at least a year apart	FY 2020 (PY2)
1C	Multi-media methods (including web and print materials)	Education and outreach on stormwater management topics of significance in Carver, including proper use and disposal of grass clippings, proper use of slow-release, phosphorus-free fertilizers, proper pet waste management and proper disposal of leaf litter. Educational topics will include but are not limited to those in Part 2.3.2.d.iii	Developers (Construction)	Conservation Commission, Operations and Maintenance Department, Planning Board, Board of Health	Distribute a minimum of two (2) educational messages spaced at least a year apart	FY 2019(PY1)
1D	Multi-media methods (including web and print materials)	Education and outreach on stormwater management topics of significance in Carver, including proper use and disposal of grass clippings, proper use of slow-release, phosphorus-free fertilizers, proper pet waste management and proper disposal of leaf litter. Educational topics will include but are not limited to those in Part 2.3.2.d.iv	Industrial Facilities	Conservation Commission, Board of Health	Distribute a minimum of two (2) educational messages spaced at least a year apart	FY 2020 (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.

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

- information about Carver'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.

The Town will build upon the existing public education and outreach program to disseminate educational materials to residents via the internet, email, direct mailing, local cable channel, and/or public posting. 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.

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.

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

- information about Carver'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, email, direct mailing, local cable channel, and/or public posting. 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.

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.

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

- information about Carver'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, email, direct mailing, local cable channel, and/or public posting. 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.

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.

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

- information about Carver'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, email, direct mailing, local cable channel, and/or public posting. 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.

3.1.3 MCM 1 Implementation Schedule

Outreach Method	PY1	PY2	PY3	PY4	PY5
Social Media					
Signage and brochures					
Direct mailing					
Direct mailing					
Direct mailing					
Direct mailing					
Survey					

Residents
Businesses, Institutions, and Commercial Facilities
Developers
Industrial Facilities
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 will 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, Permit Year 3, and Permit Year 5 to determine whether there has been a change in knowledge or behavior
- 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 Carver 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

Greenscapes
http://greenscapes.org/services-resources/

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

Buzzards Bay Coalition
http://www.savebuzzardsbay.org/in-your-community/carver/

Buzzards Bay National Estuary Program
http://buzzardsbay.org/buzzards-bay-pollution/stormwater-pollution/

Southeastern Massachusetts Stormwater Collaborative
http://www.sersg.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	Operations and Maintenance Department	Annually provide the public with an opportunity to participate in the review and implementation of the SWMP	FY 2019 (PY1)
2B	Public Participation	Provide opportunities for public involvement and participation in Carver's stormwater program. Specific activities, schedule, and lead departments are included in the SWMP.	All Town Departments, Boards and Committees	Ongoing compliance	FY 2019 (PY1)
2C	Public Review	Stormwater Management Task Force (Town Administrator, Operations and Maintenance Department, Conservation Commission, Planning and Community Development, Health Department)	Operations and Maintenance Department	At a minimum, Stormwater Management Task Force will meet annually.	FY 2019 (PY1)

3.2.2 MCM 2 Implementation Plan

BMP 2A Stormwater Management Plan Public Review

Carver 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 Department of Public Works is the primary responsible party for this BMP, multiple Town Departments can help aid in successful implementation, as public participation in stormwater management initiatives often crosses Departments.

BMP 2B Public Participation in Stormwater Management Program

Public involvement and participation goals for BMP 2B include:

- Increasing public involvement in and knowledge of Carver's stormwater program; and
- Improving water quality through volunteer monitoring and waste collection events.

Carver 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:

- Storm drain stenciling;
- Volunteer monitoring;
- Hazardous waste collection day; and/or
- Community group meetings.

Appendix E includes a document with helpful tips for organizing and conducting volunteer clean-up events that Carver 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 Management Task Force

The Town has implemented a Stormwater Management Task Force, 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 Management Task Force	●	●	●	●	●

● = annual requirement

⟷ = ongoing requirement

3.2.4 MCM 2 Guidelines and Resources

The following links include free or low-cost resources Carver 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 Management Task Force 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.	Operations and Maintenance Department, Conservation Commission and Board of Health	Track illicit discharges identified and removed. Track permits issues with certification of no illicit connections.	FY 2019 (PY1)
3B	Storm Drainage System Map	Continue to update map and refine outfall inventory.	Operations and Maintenance Department	Update map within 2 years of effective date of permit and complete full system map 10 years after effective date of permit	FY 2019 (PY1)
3C	Written IDDE program	Create written IDDE program.	Operations and Maintenance Department	Complete within 1 year of the effective date of permit and update as required	FY 2019 (PY1)
3D	Assessment and Priority Ranking of Outfalls & Interconnections	1. Complete Initial Catchment Delineation and Priority Ranking as part of BMP 3D for outfalls in the urbanized area. Catchments draining to	Operations and Maintenance Department	Complete within 1 year of the effective date of permit and update as necessary	FY 2019 (PY1)

BMP ID	BMP Category	BMP Description	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation
3D	Assessment and Priority Ranking of Outfalls & Interconnections	2. Complete Dry Weather Outfall Screening & Sampling in accordance with IDDE Plan and permit conditions for all outfalls with dry weather flow	Operations and Maintenance Department	Complete 3 years after effective date of permit. Track # illicit discharges identified & volume removed. Summarize screening/sampling results.	FY 2019 (PY1)
3D	Assessment and Priority Ranking of Outfalls & Interconnections	3. Catchment Investigations according to program and permit conditions	Operations and Maintenance Department	Complete 10 years after effective date of permit. Track # and percentage of MS4 catchments evaluated. Track # illicit discharges identified & volume removed. Summarize screening/sampling results.	FY 2020 (PY2)
3E	Employee Training	Train employees on IDDE implementation	Operations and Maintenance Department	Train annually. Track employees trained, training topic, date/time, and materials presented.	FY 2019 (PY1)
3A	IDDE Ordinance/Bylaw	Complete. Continue to enforce and update if necessary.	Operations and Maintenance Department, Conservation Commission and Board of Health	Track illicit discharges identified and removed. Track permits issues with certification of no illicit connections.	FY 2019 (PY1)

3.3.2 MCM 3 Implementation Plan

The Town has no formal Illicit Discharge Detection and Elimination plan at this time.

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. Carver has met this requirement by adopting a bylaw entitled *Illicit Connections and Discharges to the Municipal Storm Drain System* in 2011. The bylaw prohibits illicit discharges, illicit connections, and obstructions of the MS4, except allowable non-stormwater discharges, and allows the Town to take appropriate enforcement action. The Operations and Maintenance Department serves as the enforcement agency for the bylaw.

BMP 3A is complete.

BMP 3B Storm Drainage System Map

A comprehensive map of Carver's drainage system has been developed including outfalls and catch basins. The Town has made significant progress in meeting the requirements of this BMP. Town staff should continue to refine the storm drainage system map and revise the map as necessary to reflect newly discovered information, corrections or modifications, improved connectivity, and progress made.

BMP 3C is ongoing.

BMP 3D Written IDDE Program

Carver will develop and implement a town-wide IDDE Plan, which will include procedures and timelines developed in accordance with the final General Permit. The Town will continue to update and modify the Plan on an as-needed basis.

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

The Town will assess, and priority rank each outfall within the MS4 in terms of their potential to have illicit discharges, and the related public health significance within 3 years of the effective date of the permit.

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.

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 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.

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 Drainage 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 Carver 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

Carver *Illicit Connections and Discharges to the Municipal Storm Drain System* Bylaw
https://www.carverma.gov/sites/carverma/files/uploads/town_by-laws_-_2015.pdf

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. 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	Modify local bylaw and regulations, if necessary, to contain new MS4 provisions per section 2.3.5.	Planning Board	Review current procedures and modify if necessary within 1 year of permit effective date	FY 2019 (PY1)
4B	Construction Policy and Procedures	Develop and implement written procedures for site inspections and enforcement procedures per section 2.3.5.	Planning Board, Conservation Commission	Review current procedures and modify if necessary within 1 year of permit effective date	FY 2019 (PY1)

3.4.2 MCM 4 Implementation Plan

Per the General Permit, Carver must develop and implement the following items, which will be adopted as either Bylaw/regulation modifications or a new policy or procedure:

- 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. Carver has met this requirement by adopting a bylaw entitled *Stormwater Management and Land Disturbance Bylaw* in May 2007. This bylaw provides guidance for site planning and stormwater runoff control during construction to protect local water resources from discharges. The Planning Board 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

Carver 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 Carver 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

Carver *Stormwater Management and Land Disturbance* Bylaw
https://www.carverma.gov/sites/carverma/files/uploads/town_by-laws_-_2015.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 Carver'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	Modify local bylaw and regulations to contain new MS4 provisions per section 2.3.6.a.	Planning Board, Operations and Maintenance Department	Modify existing bylaw and regulations within two (2) years of permit effective date	FY 2019 (PY 1 / 2)
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	Complete report no later than (4) years of permit effective date	FY 2021 (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	Complete report no later than (4) years of permit effective date	FY 2021 (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. Rank Town-owned properties for retrofit potential.	Planning Board	Complete report no later than 4 years of permit effective date, beginning in year 5 keep running list of at least 5 retrofit sites	FY 2021 (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. Carver has met this requirement by adopting a bylaw entitled *Stormwater Management and Land Disturbance Bylaw* on May 2007. This bylaw provides guidance for site planning and stormwater runoff control during construction and post-construction to protect local water resources from discharges. The Planning Board 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 as 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.

BMP 5B Assess Street and Parking Lot Guidelines

In accordance with General Permit Section 2.3.6.b, Carver 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, Carver 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. 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 inventory must be updated annually starting in Permit Year 5.

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

3.5.4 MCM 5 Guidelines and Resources

The following links include free or low-cost resources Carver 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

Carver *Stormwater Management and Land Disturbance* Bylaw
https://www.carverma.gov/sites/carverma/files/uploads/town_by-laws_-_2015.pdf

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/

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 Carver'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	Complete inventory of all permittee-owned **parks and open spaces**, **buildings and facilities** (including their storm drains), and **vehicles and equipment**. Create O&M procedures for all properties in the inventory.	Operations and Maintenance Department	Complete 2 years after permit effective date, implement in following years	FY 2019 (PY1)
6B	Operation & Maintenance Program	Establish and implement program for repair and rehabilitation of **MS4 infrastructure**	Operations and Maintenance Department	Complete 2 years after permit effective date, implement in following years	FY 2019 (PY1)

BMP ID	BMP Category	BMP Description	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation
6C	Stormwater Pollution Prevention Plans (SWPPP)	Develop and Implement SWPPP at Operation and Maintenance Facilities.	Operations and Maintenance Department	Complete SWPPPs within 2 year of permit effective date, implement in following years	FY 2020 (PY2)
6D	Operation & Maintenance Program	1. Implement procedures to optimize catch basin cleaning developed under BMP 6B	Operations and Maintenance Department	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.	FY 2019 (PY1)
6D	Operation & Maintenance Program	2. Implement procedures for street and parking lot sweeping developed under BMP 6B	Operations and Maintenance Department	Annually track number of miles cleaned or the volume or mass of material removed.	FY 2019 (PY1)
6D	Operation & Maintenance Program	3. Implement procedures for use and storage of deicing materials developed under BMP 6B	Operations and Maintenance Department	Implement program for winter road maintenance throughout permit term.	FY 2019 (PY1)
6D	Operation & Maintenance Program	4. Implement procedures to inspect and maintain Town-owned structural stormwater BMPs	Operations and Maintenance Department	Develop an inventory of Town owned-BMPs during PY3. Report on inspection and maintenance conducted annually starting in PY4.	FY 2019 (PY1)

3.6.2 MCM 6 Implementation Plan

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

Carver 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 written program describing MS4 Infrastructure Town-Wide Operation & Maintenance in the plan discussed in BMP 6A. This section of the plan will describe the activities and procedures used to maintain MS4 infrastructure in a timely manner to reduce the discharge of pollutants from the MS4.

BMP 6C Stormwater Pollution Prevention Plans

The Town shall prepare and implement a SWPPP for the Town's Operations and Maintenance facilities and School Garage in accordance with General Permit Section 2.3.7.b. SWPPP requirements include "regular" employee training for all members of the Pollution Prevention Team (annually, 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 based on 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. All town-owned BMPs must be inspected annually at a minimum.

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 Carver 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
http://www.mass.gov/eea/agencies/massdep/recycle/regulations/management-of-catch-basin-cleanings.html

MassDEP Reuse & Disposal of Street Sweepings
http://www.mass.gov/eea/docs/dep/recycle/laws/stsweep.pdf

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

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, Sampson Pond was identified in the 2014 Integrated List of Waters as a Category 5 water needing a TMDL. Although Sampson Pond is impaired for DDT, Mercury in Fish Tissue and Non-Native Aquatic Plants, no additional BMPs are required. The 2016 General Permit does not require BMPs or outreach to be completed for impairments for DDT, Mercury in Fish Tissue or Non-Native Aquatic Plants.

Carver is listed in the 2016 permit as an MS4 that discharges to waters or tributaries of waters that have been identified as being impaired in Section 2.3.2 for Total Nitrogen and Total Phosphorous. As such, Carver must meet the requirements of Appendix H, part I and II with respect to reduction of nitrogen and phosphorous from their MS4, as described below in sections 4.2 and 4.3

4.2 Nitrogen

As described in Section 2.2.3 of the SWMP, outfalls within the urbanized area in Carver discharge to waterbodies upstream of receiving waters impaired for nitrogen and phosphorus. The Weweantic River drains to Buzzards Bay, which is impaired for nitrogen and the Wankinco River is a tributary of the Wareham River, which is also impaired due to nitrogen. Outfalls within the urbanized area discharging to the Wankinco River have been eliminated by the town. However, outfalls discharging to the Weweantic River fall within the urbanized area, therefore Carver must meet the requirements in Appendix H Part I of the General Permit for discharges to water quality limited waterbodies where nitrogen is the cause of impairment. These requirements are summarized below as they apply to Carver's program.

4.2.1 Enhanced BMPs

General Permit Part 2.3.2: Public Education and Outreach

Carver shall supplement the residential and business/commercial public education program with annual timed messages on specific topics relevant to the reduction of nitrogen discharges. Carver shall distribute the following messages:

- Annual message in the spring encouraging the proper use and disposal of grass clippings and proper use of slow-release fertilizer (April/May);
- Annual message in the summer encouraging the proper management of pet waste noting any existing ordinances; and
- Annual message in the fall encouraging the proper disposal of leaf litter.

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

Carver shall review the existing *Stormwater Management and Land Disturbance Bylaw* and modify if needed to require new development and redevelopment stormwater management BMPs be optimized for nitrogen removal, per the requirements of Appendix H of the General Permit. The retrofit inventory and priority rankings under 2.3.6.1b shall also include consideration of BMPs to reduce nitrogen discharges.

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

Carver shall establish requirements for reduction and management of fertilizer use and use of slow release fertilizers on permittee owned property currently using fertilizer. In addition, Carver shall establish procedures to properly manage grass cuttings and leaf litter on permittee property, including blowing organic waste onto adjacent impervious surfaces. Lastly, the Town shall increase street sweeping frequency to a minimum of two times per year for all municipal owned streets and parking lots, once in the spring (following winter activities such as sanding) and at least one in the fall (September 1 – Dec 1, following leaf fall).

Nitrogen Source Identification Report

Within four years of the effective permit date, Carver shall complete a Nitrogen Source Identification Report, including the following elements:

- Calculation of the total MS4 area draining to the Weweantic River, incorporating updated mapping of the MS4 and catchment delineations produced pursuant to the requirements of BMP 3B.
- All screening and monitoring resultants pursuant to BMP 3D, targeting the Weweantic River
- Impervious area and DCIA for the Weweantic catchment area
- Identification, delineation and prioritization of potential catchments with high nitrogen loading
- Identification of potential retrofit opportunities or opportunities for the installation of structural BMPs during redevelopment

The report shall be submitted to EPA as part of the year 4 annual report.

Potential Structural BMPs

Within five years of the effective permit date, Carver shall evaluate all town-owned properties identified as presenting retrofit opportunities or areas for structural BMP installation under BMP 5D or identified in the Nitrogen Source Identification Report that are within the drainage area of the Weweantic River or its tributaries. The evaluation shall include:

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

The permittee shall provide a listing of planned structural BMPs and a plan and schedule for implementation in the year 5 annual report. The permittee shall plan and install a minimum of one structural BMP as a demonstration project within the drainage areas of the water quality limited water or its tributaries within six years of the permit effective date. The demonstration project shall be installed to target a catchment with high nitrogen load potential. The permittee shall install the remainder of the structural BMPs in accordance with the plan and schedule provided in the year 5 annual report.

Any structural BMPs already existing or installed in the regulated area by the Town or its agents shall be tracked, and the Town shall estimate the nitrogen removal by the BMP. The Town shall document the BMP type, total area treated by the BMP, the design storage volume of the BMP and estimated nitrogen removed in mass per year by the BMP in each annual report.

4.3 Total Phosphorous

As described in Section 2.2.3 of the SWMP, the Wankinco River passes through Parkers Mill Pond, which is impaired for phosphorus. However, the Town has eliminated outfalls within the urbanized area that discharge to the Wankinco River. Therefore, the requirements of Appendix H, Part II of the General Permit for discharges to water quality limited waterbodies where nitrogen is the cause of impairment, are not applicable to this plan.

However, Town has retained the Total Phosphorous BMPs to be proactive in protecting Carver's surface waters. Providing public education, optimizing development and redevelopment BMPs for phosphorus removal and good housekeeping BMP's makes sense to include in Carver's Program.

General Permit Part 2.3.2: Public Education and Outreach

Carver shall supplement the residential and business/commercial public education program with annual timed messages on specific topics relevant to the reduction of phosphorous discharges. Carver shall distribute the following messages:

- Annual message in the spring encouraging the proper use and disposal of grass clippings and proper use of slow-release and phosphorous-free fertilizer (April/May);
- Annual message in the summer encouraging the proper management of pet waste noting any existing ordinance (June/July); and
- Annual message in the fall encouraging the proper disposal of leaf litter (August-October).

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

Carver shall review the existing *Stormwater Management and Land Disturbance Bylaw* and modify if needed to require new development and redevelopment stormwater management BMPs be optimized for phosphorous removal, per the requirements of Appendix H of the General Permit. The retrofit inventory and priority rankings under 2.3.6.1b shall also include consideration of BMPs that infiltrate stormwater where feasible.

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

Carver shall establish procedures to properly manage grass cuttings and leaf litter on permittee property, including blowing organic waste onto adjacent impervious surfaces. Lastly, the Town shall increase street sweeping frequency to a minimum of two times per year for all municipal owned streets and parking lots, once in the spring (following winter activities such as sanding) and at least one in the fall (September 1 – Dec 1, following leaf fall).

Phosphorus Source Identification Report

Within four years of the permit effective date the permittee shall complete a Phosphorus Source Identification Report. The report shall include the following elements:

- Calculation of total MS4 area draining to the water quality limited receiving water segments or their tributaries, incorporating updated mapping of the MS4 and catchment delineations produced pursuant to part 2.3.4.6,
- All screening and monitoring results pursuant to part 2.3.4.7.d., targeting the receiving water segment(s)
- Impervious area and DCIA for the target catchment
- Identification, delineation and prioritization of potential catchments with high phosphorus loading
- 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 permittee shall evaluate all permittee-owned properties identified as presenting retrofit opportunities or areas for structural BMP installation under permit part 2.3.6.d.ii or identified 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.

i. The permittee shall provide a listing of planned structural BMPs and a plan and schedule for implementation in the year 5 annual report. The permittee shall plan and install a minimum of one structural BMP as a demonstration project within the drainage area of the water quality limited water or its tributaries within six years of the permit effective date. The demonstration project shall be installed targeting a catchment with high phosphorus load potential. The permittee shall install the remainder of the structural BMPs in accordance with the plan and schedule provided in the year 5 annual report.

ii. Any structural BMPs 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 3 to Appendix F. The permittee shall document the BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated phosphorus removed mass per year by the BMP in each annual report.

4.4 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 of Carver has three public water supplies serving limited areas including the Town Center, North Carver, and the Cranberry Village mobile home park. The Town enforces a Water Resource Protection Bylaw to protect all water in the Town of Carver and participated in preparation of the Plymouth Carver Aquifer Action Plan.

Nearly all of the Town of Carver is within the Buzzards Bay Watershed, with just the northern border being within the Taunton River Watershed. Buzzards Bay Watershed is not a stressed basin; however, the Taunton River Watershed is identified as a medium-stressed basin per the most recent Massachusetts Water Resources Commission Stressed Basins Report. The Town is addressing EPA's recharge and infiltration requirements through existing local code and review processes including:

- Section 9.6, Stormwater Management and Land Disturbance, of the General Bylaws and the Board of Health Stormwater and Runoff Regulations establishes post-development stormwater management standards and design criteria. The Stormwater Management section of the bylaw as well as the Town's Subdivision Rules and Regulations requires projects to maximize recharge of stormwater when feasible and environmentally preferable, consistent with the Massachusetts Stormwater Handbook design criteria. The Stormwater and Runoff Regulations and Subdivision Rules and Regulation require that post-development conditions match pre-development conditions as feasible, which typically requires infiltration practices.
- Section 9.6, Stormwater Management and Land Disturbance, of the General Bylaws, requires projects in wetlands jurisdiction to meet the performance standards set forth in the Commonwealth's Wetland Protection Act and associated Regulations, including the Stormwater Handbook. Therefore, projects must take infiltration measures when proposed work within a wetlands buffer zone will increase impervious surface and decrease groundwater recharge, with some exceptions.
- Design standards included in the Town's Zoning Bylaw and Board of Health Stormwater and Runoff Regulations require projects to prevent pollution of surface or groundwater, minimize erosion and sedimentation, prevent changes in groundwater levels, minimize increased rates of runoff, and minimize potential for flooding. The standards also require that drainage be designed so that groundwater recharge is maximized, and the rate of runoff is not increased at the project boundaries.

MassDEP has completed a Source Water Assessment Plan for the Town Center water supply that includes BMPs to reduce the discharge of pollutants to the drinking water supply. Additionally, Carver should provide pretreatment and spill control measures to any stormwater discharges entering drinking water supply sources or their tributaries, and/or direct discharges should be avoided to the extent feasible.

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 Carver 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, 90 days from the close of the reporting period (i.e., September 28). The reporting period will be a one-year period commencing on the permit effective date, and subsequent anniversaries thereof, except that the first annual report under the 2016 General Permit shall also cover the period from May 1, 2018 to the permit effective date, July 1, 2018.

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 in Appendix G.

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 Carver Department of Operations and Maintenance to sign and certify certain documents prepared under the Small MS4 General Permit is included 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: RONALD E. CLARKE Title: CHAIR - BOARD OF SELECTMEN

Signature: _____ Date: 6-25-2019

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 Carver

State: MA

EPA NPDES Permit Number (if applicable): MAR041099

Primary MS4 Program Manager Contact Information

Name: John Woods

Title: Director of Operations & Maintenance

Street Address Line 1: 108 Main Street

Street Address Line 2:

City: Carver

State: MA

Zip Code: 02330

Email: John.Woods@carverma.org

Phone Number: (508) 866-3425

Fax Number: (508) 866-2393

Other Information

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

Eligibility Determination

Endangered Species Act (ESA) Determination Complete? Yes

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

National Historic Preservation Act (NHPA) Determination Complete? Yes

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

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

MS4 Infrastructure (if covered under the 2003 permit)

Estimated Percent of Outfall Map Complete? *(Part II, III, IV or V, Subpart B.3.(a.) of 2003 permit)*: 100%

If 100% of 2003 requirements not met, enter an estimated date of completion (MM/DD/YY):

Web address where MS4 map is published:

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

See Attached Maps

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): 06/01/12

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

Effective Date or Estimated Date of Adoption (MM/DD/YY): 05/21/07

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): 05/21/07

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
Bates Pond (MA95007)	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Beaver Dam Brook	4	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Cedar Swamp	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Cranberry Bogs (see map for locations)	32	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Doten Brook	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Herring Brook	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Isolated Wetland Jowett Street	8	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Isolated Wetland Pleasant Street	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Muddy Pond Brook	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
North Center Street Pond (MA62132)	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
South Meadow Pond (MA95140)	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Weweantic River (MA95-04)	2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Outside Receiving Waterbody	55	☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	

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

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/organiziations 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, measureable 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 social media and print materials)	Education and outreach on stormwater management topics of significance in Carver, including proper use and disposal of grass clippings, proper use of slow-release, phosphorus-free fertilizers, proper pet waste management and proper disposal of leaf litter. Educational topics will include but are not limited to those in Part 2.3.2.d.i	Residents	Conservation Commission, Board of Health	Distribute a minimum of 2 educational messages spaced at least a year apart	FY 2019 (PY1)

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

BMP ID	BMP Media/Category	BMP Description	Targeted Audience	Responsible Department /Parties	Measurable Goal	Beginning Year of BMP Implementation
1B	Multi-media methods (including web and print materials)	Education and outreach on stormwater management topics of significance in Carver, including proper use and disposal of grass clippings, proper use of slow-release, phosphorus-free fertilizers, proper pet waste management and proper disposal of leaf litter. Educational topics will include but are not limited to those in Part 2.3.2.d.ii	Businesses, Institutions, and Commercial Facilities including Landscaping, Marine Services Golf Courses and Cranberry Farming	Conservation Commission, Board of Health	Distribute a minimum of 2 educational messages spaced at least a year apart	FY 2020 (PY2)

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

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 print materials)	Education and outreach on stormwater management topics of significance in Carver, including proper use and disposal of grass clippings, proper use of slow-release, phosphorus-free fertilizers, proper pet waste management and proper disposal of leaf litter. Educational topics will include but are not limited to those in Part 2.3.2.d.iii	Developers (Construction)	Conservation Commission, Operation and Maintenance Department, Planning Board, Board of Health	Distribute a minimum of 2 educational messages spaced at least a year apart	FY 2019(PY1)

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

BMP ID	BMP Media/Category	BMP Description	Targeted Audience	Responsible Department /Parties	Measurable Goal	Beginning Year of BMP Implementation
1D	Multi-media methods (including web and print materials)	Education and outreach on stormwater management topics of significance in Carver, including proper use and disposal of grass clippings, proper use of slow-release, phosphorus-free fertilizers, proper pet waste management and proper disposal of leaf litter. Educational topics will include but are not limited to those in Part 2.3.2.d.iv	Industrial Facilities	Conservation Commission, Board of Health	Distribute a minimum of 2 educational messages spaced at least a year apart	FY 2020 (PY2)
1E	Public Education Goals and Progress	Educational goals (programmatic and message specific) will be defined in the SWMP.	All	Conservation Commission, Board of Health	Annually report methods/measures to evaluate effectiveness and progress to meet meeting goals.	FY 2019 (PY1)

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

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	Operation and Maintenance Department	Annually provide the public with an opportunity to participate in the review and implementation of the SWMP	FY 2019 (PY1)
2B	Public Participation	Provide opportunities for public involvement and participation in Carver's stormwater program. Specific activities, schedule, and lead departments are included in the SWMP.	All Town Departments, Boards and Committees	Ongoing compliance	FY 2019 (PY1)
2C	Public Review	Stormwater Management Task Force (Town Administrator, Operations and Maintenance Dept, Conservation Commission, Planning and Community Development, Health Department)	Operation and Maintenance Department	At a minimum, the Stormwater Management Task Force will meet annually.	FY 2019 (PY1)

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

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.	Operation and Maintenance Department , Conservation Commission and Board of Health	Track illicit discharges identified and removed. Track permits issues with certification of no illicit connections.	FY 2019 (PY1)
3B	Storm Sewer System Map	Continue to update map and refine outfall inventory.	Operation and Maintenance Department	Update map within 2 years of effective date of permit and complete full system map 10 years after effective date of permit	FY 2019 (PY1)
3C	Written IDDE program	Create written IDDE program.	Operation and Maintenance Department	Complete within 1 year of the effective date of permit and update as required	FY 2019 (PY1)
3D	Assessment and Priority Ranking of Outfalls & Interconnections	1. Complete Initial Catchment Delineation and Priority Ranking as part of BMP 3D for outfalls in the urbanized area.	Operation and Maintenance Department	Complete within 1 year of the effective date of permit and update as necessary	FY 2019 (PY1)

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

BMP ID	BMP Category	BMP Description	Responsible Department / Parties	Measurable Goal	Beginning Year of BMP Implementation
3D	Assessment and Priority Ranking of Outfalls & Interconnections	2. Complete Dry Weather Outfall Screening & Sampling in accordance with IDDE Plan and permit conditions for all outfalls with dry weather flow	Operation and Maintenance Department	Complete 3 years after effective date of permit. Track # illicit discharges identified & volume removed. Summarize screening/sampling results.	FY 2019 (PY1)
3D	Assessment and Priority Ranking of Outfalls & Interconnections	3. Catchment Investigations according to program and permit conditions	Operation and Maintenance Department	Complete 10 years after effective date of permit. Track # and percentage of MS4 catchments evaluated. Track # illicit discharges identified & volume removed. Summarize screening/sampling results.	FY 2020 (PY2)
3E	Employee Training	Train employees on IDDE implementation	Operation and Maintenance Department	Train annually. Track employees trained, training topic, date/time, and materials presented.	FY 2019 (PY1)

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

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	Modify local bylaw and regulations, if necessary, to contain new MS4 provisions per section 2.3.5.	Planning Board	Review current procedures and modify if necessary within 1 year of permit effective date	FY 2019 (PY1)
4B	Construction Policy and Procedures	Develop and implement written procedures for site inspections and enforcement procedures per section 2.3.5.	Planning Board, Conservation Commission	Review current procedures and modify if necessary within 1 year of permit effective date	FY 2019 (PY1)

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

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	Modify local bylaw and regulations to contain new MS4 provisions per section 2.3.6.a.	Planning Board, Operation and Maintenance Department	Modify existing bylaw and regulations within 2 years of permit effective date	FY 2019 (PY1)
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	Complete report no later than 4 years of permit effective date	FY 2021 (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	Complete report no later than 4 years of permit effective date	FY 2021 (PY3)

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

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. Rank Town-owned properties for retrofit potential.	Planning Board	Complete report no later than 4 years of permit effective date, beginning in year 5 keep running list of at least 5 retrofit sites	FY 2021 (PY3)

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

Part III: Stormwater Management Program Summary

MCM 6: Municipal Good Housekeeping and Pollution Prevention

BMP ID	BMP Category	BMP Description	Responsible Department / Parties	Additional Description/Measurable Goal	Beginning Year of BMP Implementation
6A	Operation & Maintenance Program	Complete inventory of all permittee-owned **parks and open spaces**, **buildings and facilities** (including their storm drains), and **vehicles and equipment**. Create O&M procedures for all properties in the inventory.	Operation and Maintenance Department	Complete 2 years after permit effective date, implement in following years	FY 2019 (PY1)
6B	Operation & Maintenance Program	Establish and implement program for repair and rehabilitation of **MS4 infrastructure**	Operation and Maintenance Department	Complete 2 years after permit effective date, implement in following years	FY 2019 (PY1)
6C	Stormwater Pollution Prevention Plans (SWPPP)	Develop and Implement SWPPP at DPW/Highway Facility.	Operation and Maintenance Department	Complete SWPPPs within 2 year of permit effective date, implement in following years	FY 2020 (PY2)

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

BMP ID	BMP Category	BMP Description	Responsible Department / Parties	Additional Description/Measurable Goal	Beginning Year of BMP Implementation
6D	Operation & Maintenance Program	1. Implement procedures to optimize catch basin cleaning developed under BMP 6B	Operation and Maintenance Department	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.	FY 2019 (PY1)
6D	Operation & Maintenance Program	2. Implement procedures for street and parking lot sweeping developed under BMP 6B	Operation and Maintenance Department	Annually track number of miles cleaned or the volume or mass of material removed.	FY 2019 (PY1)
6D	Operation & Maintenance Program	3. Implement procedures for use and storage of deicing materials developed under BMP 6B	Operation and Maintenance Department	Implement program for winter road maintenance throughout permit term.	FY 2019 (PY1)
6D	Operation & Maintenance Program	4. Implement procedures to inspect and maintain Town-owned structural stormwater BMPs	Operation and Maintenance Department	Develop an inventory of Town-owned BMPs by PY3. Report on inspection and maintenance conducted annually.	FY 2019 (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)

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)
Nitrogen	Wankinco MA95-30 is tributary of Wareham River	Adhere to requirements in part I of Appendix H	DPW Operations
Phosphorus	Wankinco MA95-30 flows through Parker Mills Pond	Adhere to requirements in part II of Appendix H	DPW Operations
Nitrogen	Weweantic MNA95-04 drains to Buzzards Bay	Adhere to requirements in part I of Appendix H	DPW Operations

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 Carver meets Criterion B. The Town's stormwater discharges and discharge related activities are not likely to affect 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 Carver 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 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.

5. The Wankinco River is a tributary located along the Plymouth/Carver southern border that drains to Wareham River, which is listed as impaired due to nitrogen. The Wankinco River also flows through Parkers Mill Pond, which is listed as impaired due to phosphorus. The Wewantic River flows through south Carver, through Wareham and eventually discharges to Buzzards Bay which is also listed as impaired from both bacteria and nitrogen. Additionally, Crane Brook Bog Pond (MA95033) within Carver is impaired due to phosphorus. While these waterbodies to not receive direct discharges from the Town's MS4, and therefore Part 2.2.2 and Appendix H Parts I and II of the General Permit do not apply, the Town will keep these requirements in Part III of this NOI to maintain the current proactive approach to reduce nitrogen and phosphorus discharges within the entire MS4.

6. There is no sanitary sewer system in Carver and therefore Part 2.3.4.4 of the General Permit, Sanitary Sewer Overflows, does not apply to the Town.

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

Part V: Certification

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

Name: RONALD E. CLARKE

Title: VICE-CHAIR

Signature:

Date: 9-18-18

[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

PLYMPTON

KINGSTON

PLYMOUTH

MIDDLEBOROUGH

ROCHESTER

WAREHAM

Outfalls - Receiving Waterbody

- Bates Pond (MA95007)
- Beaver Dam Brook
- Cedar Swamp
- Doten Brook
- Herring Brook
- Muddy Pond Brook
- North Center Street Pond (MA62132)
- South Meadow Pond (MA95140)
- Weweantic River (MA95-04)
- Isolated Wetland Jowett Street
- Isolated Wetland Pleasant Street
- Cranberry Bog Center Street
- Cranberry Bog Cranberry Road
- Cranberry Bog Main Street
- Cranberry Bog Meadow Street
- Cranberry Bog Plymouth Road
- Cranberry Bog Pond Street
- Cranberry Bog South Meadow Road
- Cranberry Bog Wareham Street
- Cranberry Bog West Street
- Outside Receiving Waterbody

Legend

- Town Boundary

Water Body Segments - Rivers

- 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

- 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

- Major Drainage Basins
- Subbasins

National Wetlands Inventory

- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Estuarine and Marine Deepwater
- Freshwater Pond
- Lake
- Riverine
- Other
- NWI Rivers and Streams

MassDEP Hydrology

MassDEP

- Public Surface Water Supply (PSWS)
- Water Bodies
- Hydrology

MassDEP Wetlands

- Inland Wetlands

MassDOT Major Roads

Road Type

- Limited Access Highway
- Multi-lane Hwy, not limited access
- Other Numbered Highway
- Major Road, Collector

FEMA

- 100-Year Floodplain
- Urbanized Area 2000
- Urbanized Area 2010

1. Based on USGS Topo Map Plympton, 1977 (10ft), Plymouth, 1977 (10ft), Wareham, 1972 (10ft), Snipatuit, 1977 (10ft)
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), Urban Area (2000 and 2010)
3. Carver: Outfalls

N

0 1,000 2,000 4,000 6,000 Feet

1:22,000

OUTFALLS AND RECEIVING WATERBODIES

Notice of Intent
Carver, Massachusetts

October 2018

Tighe&Bond
Engineers | Environmental Specialists

G:\GIS\MA\Carver\avproj\24x36_NOI_Rec_Waters_CarverUpdated.mxd

C-1150

PLYMPTON

KINGSTON

PLYMOUTH

MIDDLEBOROUGH

ROCHESTER

WAREHAM

MUNICIPAL STORMWATER INFRASTRUCTURE

Town of Carver, Massachusetts

September 2018

Tighe&Bond
Engineers | Environmental Specialists

Legend

TYPE

- Pipe
- Roadcut
- Catch Basins
- Major Basin
- Urban Area (Census 2000 and 2010)
- Buildings
- Parcels
- Town Boundary

Carver Roads

CLASS

- Limited Access Highway
- Multi-Lane Highway, NOT Limited Access
- Other Numbered Highway
- Major Road - Collector
- Minor Street or Road
- Stream, Brook
- Lake, Pond, River or Impoundment
- Inland Wetlands
- Coastal Wetlands

1:24,000

0 2,000 4,000

Feet

Based on MassGIS Data

G:\GIS\MA\Carver\avproj\BaseMap_24x36_Working.mxd

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

VIA EMAIL

May 30, 2019

Ronald E. Clarke
Vice-Chair

And;

John Woods
Director of Operations & Maintenance
108 Main Street
Carver, MA. 02330
John.Woods@carverma.org

Re: National Pollutant Discharge Elimination System Permit ID #: MAR041099, Town of Carver

Dear John Woods:

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.

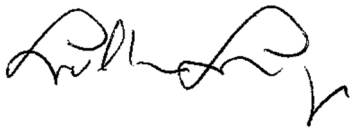
Information about the permit and available resources can be found on our website: https://www.epa.gov/npdes-permits/massachusetts-small-ms4-general-permit. Should you have

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 2017 Annual Report):

PE-1	Flyer Distribution	Now under BMPs 1A-D
PE-2	Informational Mailings	Now under BMPs 1A-D
PE-3	Community Group Meetings	Now under BMPs 1A-D
PE-4	Public Service Announcements	Now under BMPs 1A-D
PE-5	Information Distribution	Now under BMPs 1A-D
PP-1	Storm Drain Stenciling	Now under BMP 2B
PP-2	Hazardous Waste Day	Now under BMP 2B
PP-3	Volunteer Monitoring Efforts	Now under BMP 2A and 2B
PP-4	Stormwater Monitoring Program (SWMP) Volunteer Review	Now under BMP 2A and 2C
ID-1	Visual Inspection	Now under BMP 3D
ID-2	Laboratory Analysis	Now under BMP 3D
ID-3	Identify and Map All Outfalls	Now under BMP 3B
ID-4	Remove Source of Contamination	Now under BMP 3D
ID-5	Develop and Enact Bylaw	Now under BMP 3A
CS-1	Review Current Bylaw and Develop New Bylaw if necessary	Now under BMP 4A
CS-2	Provide Pre-Construction Information	Now under BMPs 4A-4B
CS-3	Site Inspections	Now under BMP 4B
PC-1	Visual Monitoring	Now under BMP 5A
PC-2	Post-Construction Bylaw	Now under BMP 5A
GH-1	Employee Training	Now under BMP 3E
GH-2	Operations and Maintenance Schedule	Now under BMP 6A-6B
GH-3	Operations and Maintenance Implementation	Now under BMP 6A-6B
GH-4	Record Keeping	Now under BMP 6A
GH-5	Proper Storage of Materials	Now under BMP 6A-6D
GH-6	Catch Basin Cleanout	Now under BMP 6B and 6D
GH-7	Storm Sewer Maintenance and Improvements	Now under BMP 6B and 6D

Appendix C

Endangered Species Act Eligibility Criteria Documentation

Endangered Species Act Eligibility Certification

TO: Town of Carver Stormwater Management Program Files

FROM: Tighe & Bond

COPY: John Woods DPW Superintendent

DATE: February 1, 2017

Part 1.9.1 of the U.S. EPA's National Pollutant Discharge Elimination System (NPDES) General Permits from Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) in Massachusetts, effective July 1, 2017, requires communities covered by the Permit to certify eligibility regarding federal Endangered and Threatened Species and Critical Habitat Protection on the Notice of Intent (NOI) due to EPA and MassDEP by September 29, 2017, and to maintain documentation in the Stormwater Management Program records. To certify eligibility, there are three criteria to choose from:

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

- 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).

- 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.

Tighe & Bond has begun the National Endangered Species Eligibility Determination screening process in accordance with Part 1.9.1 and Appendix C (see Attachment A of this memorandum), of the Permit.

Step 1:
Tighe & Bond went to the IPaC website[1] and created an IPaC Trust Resources Report, included in Attachment B to this memorandum. This Report lists the following species that may occur or could potentially be affected by activities in the Town:

- Northern Red-bellied Cooter
- Northern Long-eared Bat.

This report also documents that there are no critical habitats in Carver.

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[1] http://ecos.fws.gov/ipac/

Because the IPaC action area contains the Northern Red-bellied Cooter and Northern Long-eared Bat, Criterion A cannot be met.

Step 2:
Tighe & Bond then went to the U.S. Fish & Wildlife Service 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, in Plymouth County the Northern Red-bellied Cooter is listed in the Town of Carver and the Northern Long-eared Bat is listed statewide.

Step 3:
Per the USFWS endangered species consultation guidance, Tighe & Bond visited the Massachusetts Natural Heritage and Endangered Species Program (NHESP) species information and conservation website about the Northern Red-bellied Cooter[4] and the Northern Long-eared Bat[5]. Attachment D includes two maps showing there are no Northern Red-bellied Cooter critical habitat within Carver and that there are no roost trees or hibernating locations for the Bat within Carver.

Based on the results of the NHESP website review, there is no potential habitat for any listed species within the action area and therefore discharge or discharge related activities are not likely to adversely affect listed species.

Town's Action
To confirm the Town of Carver can meet Criterion B, the Town must submit a letter to the USFWS to initiate consultation and obtain either a "no jeopardy" opinion by the USFWS (for formal consultation) or concurrence by the USFWS that Town activities would be "not likely to adversely affect" listed species or critical habitat (for informal consultation).

If the consultation is conditioned upon measures, the Town must agree to implement those measures.

Finally, if during the course of the permit term, Carver plans to install a structural BMP not identified in the NOI that Carver will re-initiate informal or formal consultation with USFWS as necessary.

J:\C\C1150 Carver MS4 Permitting\NPDES Compliance\Appendix E - EndangeredSpecies\Endangered Species Act Eligibility Certification.docx

[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/docs/dfg/nhesp/species-and-conservation/nhfacts/pseudemys-rubriventris.pdf
[5] http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/species-information-and-conservation/rare-mammals/northern-long-eared-bat.html

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

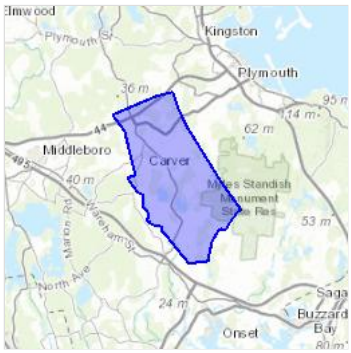
Carver IPaC Trust Resources Report

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

Location

Plymouth County, Massachusetts



Local office

New England Ecological Services Field Office

(603) 223-2541
(603) 223-0104

70 Commercial Street, Suite 300
Concord, NH 03301-5094

http://www.fws.gov/newengland

Endangered species

This resource list is for informational purposes only and should not be used for planning or analyzing project level impacts.

Section 7 of the Endangered Species Act **requires** Federal agencies to *"request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action"* for any project that is conducted, permitted, funded, or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can only be obtained by requesting an official species list either from the Regulatory Review section in IPaC or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by creating a project and making a request from the Regulatory Review section.

Listed species[1] are managed by the Endangered Species Program of the U.S. Fish and Wildlife Service.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* **No critical habitat** has been designated for this species. http://ecos.fws.gov/ecp/species/9045	Threatened

Reptiles

NAME	STATUS
Plymouth Redbelly Turtle Pseudemys rubriventris bangsi There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. http://ecos.fws.gov/ecp/species/451	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any activity that results in the take (to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service[3]. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Conservation measures for birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Year-round bird occurrence data http://www.birdscanada.org/birdmon/default/datasummaries.jsp

The following species of migratory birds are potentially affected by activities in this location:

NAME	SEASON(S)
American Bittern Botaurus lentiginosus http://ecos.fws.gov/ecp/species/6582	On Land: Breeding
American Oystercatcher Haematopus palliatus http://ecos.fws.gov/ecp/species/8935	On Land: Breeding
Bald Eagle Haliaeetus leucocephalus http://ecos.fws.gov/ecp/species/1626	On Land: Year-round
Black Skimmer Rynchops niger http://ecos.fws.gov/ecp/species/5234	On Land: Breeding
Black-billed Cuckoo Coccyzus erythropthalmus http://ecos.fws.gov/ecp/species/9399	On Land: Breeding
Blue-winged Warbler Vermivora pinus	On Land: Breeding
Canada Warbler Wilsonia canadensis	On Land: Breeding

Fox Sparrow Passerella iliaca	On Land: Wintering
Hudsonian Godwit Limosa haemastica	At Sea: Migrating
Least Bittern Ixobrychus exilis http://ecos.fws.gov/ecp/species/6175	On Land: Breeding
Peregrine Falcon Falco peregrinus http://ecos.fws.gov/ecp/species/8831	On Land: Wintering
Pied-billed Grebe Podilymbus podiceps	On Land: Year-round
Prairie Warbler Dendroica discolor	On Land: Breeding
Purple Sandpiper Calidris maritima	On Land: Wintering
Rusty Blackbird Euphagus carolinus	On Land: Wintering
Saltmarsh Sparrow Ammodramus caudacutus	On Land: Breeding
Seaside Sparrow Ammodramus maritimus	On Land: Breeding
Short-eared Owl Asio flammeus http://ecos.fws.gov/ecp/species/9295	On Land: Wintering
Snowy Egret Egretta thula	On Land: Breeding
Upland Sandpiper Bartramia longicauda http://ecos.fws.gov/ecp/species/9294	On Land: Breeding
Willow Flycatcher Empidonax traillii http://ecos.fws.gov/ecp/species/3482	On Land: Breeding
Wood Thrush Hylocichla mustelina	On Land: Breeding
Worm Eating Warbler Helmitheros vermivorum	On Land: Breeding

Facilities

Wildlife refuges

Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGES AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

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

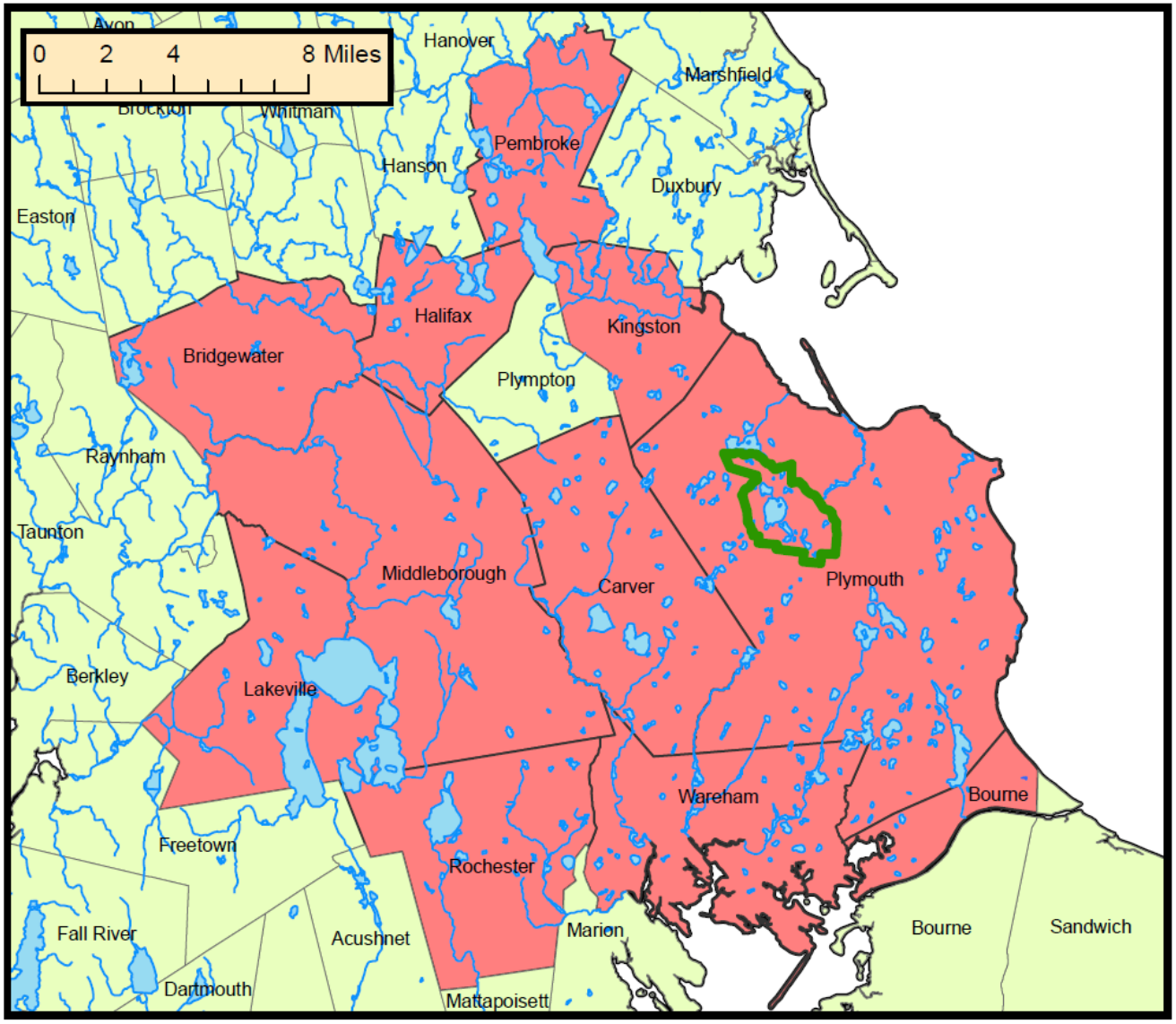
-Eastern cougar and gray wolf are considered extirpated in Massachusetts.
-Endangered gray wolves are not known to be present in Massachusetts, but dispersing individuals from source populations in Canada may occur statewide.
-Critical habitat for the Northern Red-bellied Cooter is present in Plymouth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

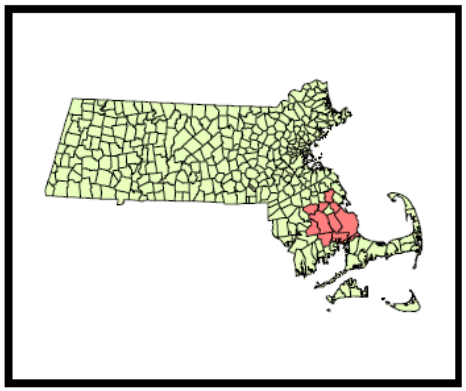
Updated 02/05/2016

Attachment D

Norther Red-bellied Cooter and Northern Long-eared Bat Location Maps

Area with Known and Expected Occurences for the Northern Red-bellied Cooter in Massachusetts



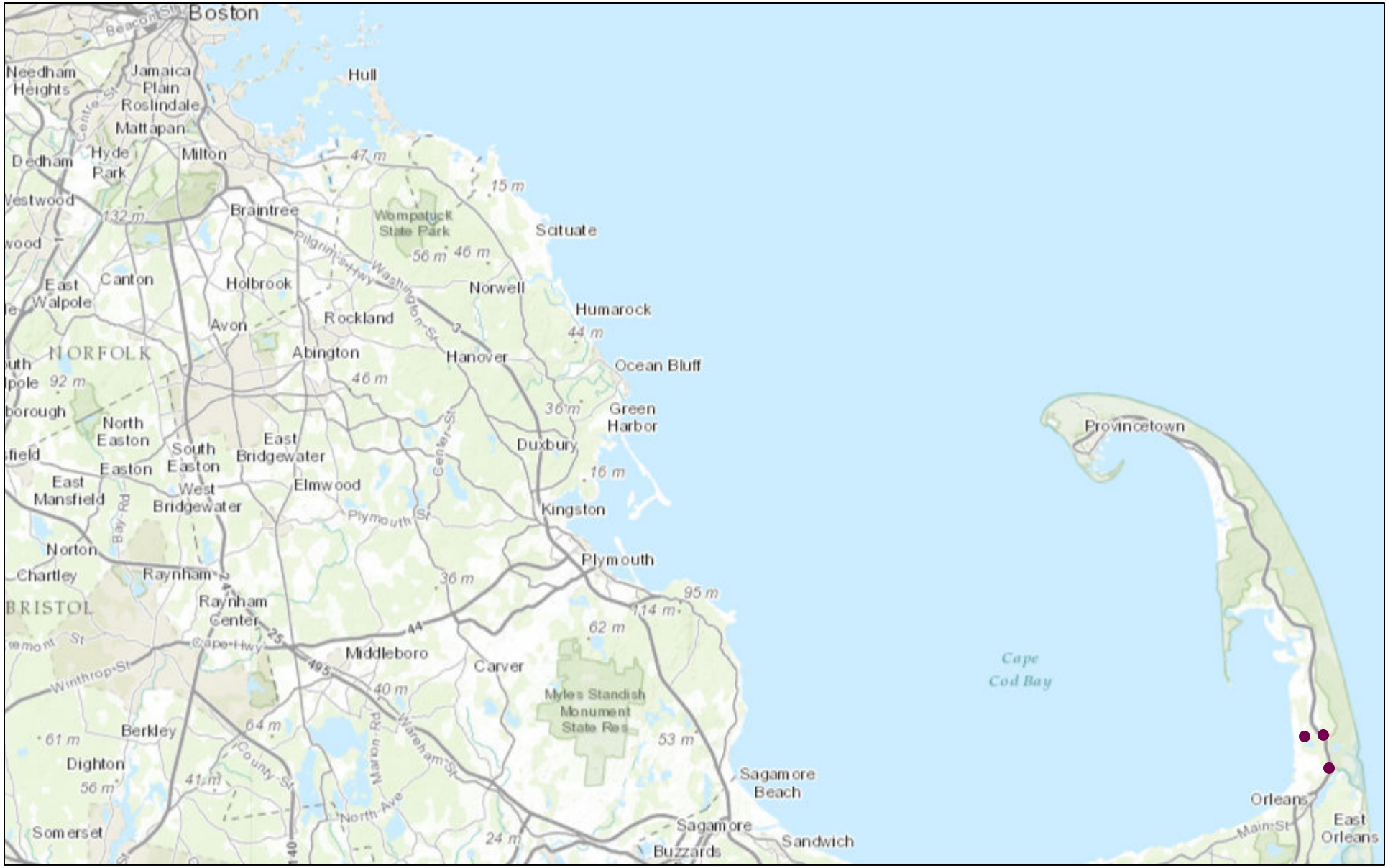


Legend
- Critical Habitat Boundary
- No Known Occurences
- Cooters Present

For a complete description of the Critical Habitat boundary, please visit :
http://ecos.fws.gov/docs/federal_register/fr398.pdf

U.S. Fish & Wildlife Service
New England Field Office
Conserving New England's Natural Resources

NHESP Northern Long-eared Bat Locations



December 29, 2016

Statewide NLEB Symbology

- Maternity Roost Tree

MA_NHESP_NLEB_Maternity_Roost_Tree_Locations

1:577,791

0 4.75 9.5 19 mi

0 5 10 20 km

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

Appendix D

Historic Properties Eligibility Criteria Documentation

National Historic Preservation Act Eligibility Certification

TO: Town of Carver Stormwater Management Program Files

FROM: Tighe & Bond

COPY: John Woods DPW Superintendent

DATE: February 1, 2017

Part 1.9.2 of the U.S. EPA's National Pollutant Discharge Elimination System (NPDES) General Permits from Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) in Massachusetts, effective July 1, 2018, requires communities covered by the Permit to certify elibiligy regarding historic properties on the Notice of Intent (NOI) due to EPA and MassDEP by October 1, 2018, and to maintain documentation in the Stormwater Management Program records.

Tighe & Bond has completed the National Historic Preservation Act Eligibility Determination screening process in accordance with Part 1.9.2 and Appendix D (see Attachment 1) of the Permit and determined that the **Town of Carver** meets **Criterion A: The discharges do not have the potential to cause effects on historic properties** for the following reasons:

- Carver is an existing facility authorized by the previous permit; and
- Carver 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 Carver'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 2 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 December 29, 2016 and Attachment 3 provides a map of the data.

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 1

Appendix D of U.S. EPA's National Pollutant Discharge Elimination System (NPDES) General Permits from 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 2

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

Massachusetts Cultural Resource Information System
MACRIS

MACRIS Search Results

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

Inv. No.	Property Name	Street	Town	Year
CAV.A	Wenham		Carver	
CAV.B	Lakenham Historic District		Carver	
CAV.C	South Meadows		Carver	
CAV.D	Popes Point		Carver	
CAV.E	Huckleberry Corner - Fresh Meadows		Carver	
CAV.F	Savery Historic District		Carver	
CAV.G	Furnace Village		Carver	
CAV.H	Edaville - Atwood, Ellis D. Bog Company		Carver	
CAV.I	Old Dam Bog Company - C.A. and B.E. Kallio Bog Co.		Carver	
CAV.J	Federal Furnace Cranberry Bog Company		Carver	
CAV.K	Slocum - Gibbs Cranberry Company		Carver	
CAV.L	Wankinco Bog Company		Carver	
CAV.M	East Hill Bogs		Carver	
CAV.51	Chandler, Job C. House	2 Arrowhead Ln	Carver	c 1855
CAV.805	Our Lady of Lourdes Parish Cemetery	Center St	Carver	1920
CAV.604	Vaughan, T. T. Cranberry Bog Screenhouse	36 Center St	Carver	c 1900
CAV.101	Lucas, Joseph House	100 Center St	Carver	c 1730
CAV.100	Cole, Joseph House	104 Center St	Carver	c 1750
CAV.602	Our Lady of Lourdes Catholic Church	190 Center St	Carver	1913
CAV.302	South Carver Methodist Episcopal Chapel	17 Church St	Carver	1896
CAV.416	Good Templar's Hall	19 Church St	Carver	c 1890
CAV.417		2 Cranberry Rd	Carver	r 1850
CAV.907	Arponen, George Sauna	2 Cranberry Rd	Carver	c 1925
CAV.141	Center Primary School	4 Crescent Rd	Carver	1850
CAV.142	Shurtleff, Carlton Store	6 Crescent Rd	Carver	c 1910
CAV.143	Ward, Eliab Jr. House	7 Crescent Rd	Carver	c 1750
CAV.906	East Head Cranberry Bog Flume	East Head Rd	Carver	1863
CAV.403	Atwood Ellis D. Cranberry Bog Worker Housing	Eda Ave	Carver	c 1935
CAV.401	Atwood, Ellis D. Cranberry Bog Screenhouse	5 Eda Ave	Carver	1940
CAV.402	Atwood, Ellis D. Cranberry Bog Screenhouse	5 Eda Ave	Carver	c 1930
CAV.801	Lakenham Cemetery	Forest St	Carver	1718

Massachusetts Cultural Resource Information System
MACRIS

MACRIS Search Results

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

Inv. No.	Property Name	Street	Town	Year
CAV.605	Fosdick, Lucian House	28 Fosdick Rd	Carver	c 1890
CAV.205	Popes Point Foundry Boarding House	France St	Carver	r 1735
CAV.909	Peltokorpi Sauna	2 France St	Carver	c 1930
CAV.206	Atwood, Asaph House	13 France St	Carver	c 1770
CAV.64	Stevens, Edward - Shaw, Stillman House	33 Gate St	Carver	r 1830
CAV.912	Coles Mills Dam	High St	Carver	c 1707
CAV.55	Cole, Hezakiah House	2 High St	Carver	1853
CAV.56	Freeman, John House	4 High St	Carver	c 1840
CAV.58	Griffith, Wilson House	10 High St	Carver	c 1840
CAV.59	Eames, Luther House	14 High St	Carver	c 1857
CAV.60	Cole, Frank Harrison House	20 High St	Carver	1913
CAV.61	Cole, John Jr. House	24 High St	Carver	1710
CAV.63	Cole, Harrison Grey House	38 High St	Carver	c 1870
CAV.615	Cole and Weston Cranberry Bog Screenhouse	70 High St	Carver	c 1900
CAV.601	Waterman, John House	95 High St	Carver	r 1765
CAV.226	Bates Pond School House	107 Indian St	Carver	1852
CAV.293	Murdock, Bartlett House - Island Farm	1 Island Farm Rd	Carver	c 1760
CAV.294	O'Brien, Andrew House - Island Farm	5 Island Farm Rd	Carver	1912
CAV.913	Lakeview Street Cranberry Bog	7 Lakeview St	Carver	
CAV.418		8 Lakeview St	Carver	r 1920
CAV.419	Griffith Cranberry Company	9 Lakeview St	Carver	r 1865
CAV.420		11 Lakeview St	Carver	r 1920
CAV.276	Bent, John House	14 Lakeview St	Carver	c 1790
CAV.278	Griffith, Charles House	15 Lakeview St	Carver	1871
CAV.277	Andrews, Robert Warren House	18 Lakeview St	Carver	c 1850
CAV.421		22 Lakeview St	Carver	c 1969
CAV.422		24 Lakeview St	Carver	1933
CAV.279	Griffith, Henry S. House	25 Lakeview St	Carver	c 1899
CAV.280	Griffith, Martha House	27 Lakeview St	Carver	c 1899
CAV.423		29 Lakeview St	Carver	r 1920
CAV.281	Shurtleff, A. House	31 Lakeview St	Carver	1836

Massachusetts Cultural Resource Information System
MACRIS

MACRIS Search Results

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

Inv. No.	Property Name	Street	Town	Year
CAV.424		33 Lakeview St	Carver	r 1920
CAV.425		37 Lakeview St	Carver	r 1920
CAV.282	Atwood, Stephen Dexter House	38 Lakeview St	Carver	c 1915
CAV.426		39 Lakeview St	Carver	r 1850
CAV.427		41 Lakeview St	Carver	r 1880
CAV.283	Atwood, J. House	43 Lakeview St	Carver	c 1775
CAV.284	Manter, Nelson F. House	44 Lakeview St	Carver	c 1850
CAV.285	Threshie, Charles - McFarlin, Peleg House	45 Lakeview St	Carver	c 1860
CAV.286	Murdock, Jesse House	48 Lakeview St	Carver	1845
CAV.803	Carver Central Cemetery	Main St	Carver	1824
CAV.127	Vaughan, T. House	63 Main St	Carver	c 1840
CAV.126	Vaughan, Thomas House	64-66 Main St	Carver	c 1780
CAV.128	Vaughan, Theodore T. House	67 Main St	Carver	c 1878
CAV.129	Vaughan, Isaac House	86 Main St	Carver	c 1770
CAV.130	Carver Town Hall - Public Library	108 Main St	Carver	c 1914
CAV.900	Carver Soldiers and Sailors Monument	109 Main St	Carver	1910
CAV.901	Shurtleff, Dr. George Monument	109 Main St	Carver	1908
CAV.902	West Carver Grist Millstones	109 Main St	Carver	c 1910
CAV.131	First Baptist Church	115 Main St	Carver	1824
CAV.132	Faith Baptist Church Parsonage	116 Main St	Carver	c 1906
CAV.133	Griffith, Maj. Thomas B. Memorial Veterans Hall	119 Main St	Carver	1913
CAV.135	Shurtleff, Benjamin Jr. Homestead	127 Main St	Carver	c 1796
CAV.134	Barrows, Lothrop Jr. House	130 Main St	Carver	c 1838
CAV.136	Hammond, Thomas House	133 Main St	Carver	c 1730
CAV.144	Shaw, Eben D. House	153 Main St	Carver	c 1820
CAV.145	Pratt, Winfield House #2	154 Main St	Carver	c 1905
CAV.146	Pratt, Winfield House #1	156 Main St	Carver	c 1905
CAV.147	Shaw, L. House	158 Main St	Carver	c 1840
CAV.148	Shaw, Capt. Daniel House	181 Main St	Carver	c 1850
CAV.149	Griffith, Aravesta House	186 Main St	Carver	1927
CAV.251	Bump, Myrick House	191 Main St	Carver	c 1890

Massachusetts Cultural Resource Information System
MACRIS

MACRIS Search Results

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

Inv. No.	Property Name	Street	Town	Year
CAV.253	Southworth, Thomas House	238 Main St	Carver	r 1765
CAV.607	Pride of Carver Cranberry Packing Plant	181 Meadow St	Carver	c 1946
CAV.608	Shaw, Atwood House	181 Meadow St	Carver	1841
CAV.609	Shaw, Perez House	191 Meadow St	Carver	c 1830
CAV.53	New England Cranberry Sales Company Packing House	96 North Main St	Carver	c 1920
CAV.52	North Carver Railroad Station	99 North Main St	Carver	c 1891
CAV.600	Eames, Embert H. House	133 North Main St	Carver	c 1730
CAV.201	Murdock, E. H. House	3 Popes Point Rd	Carver	c 1875
CAV.202	Richard, Rufus L. Harness Shop	7 Popes Point Rd	Carver	c 1850
CAV.203	Bent, John House	14 Popes Point Rd	Carver	r 1775
CAV.261	Murdock, William - Thomas, Israel House	43 Ridge Rd	Carver	c 1790
CAV.904	Rochester Road Bridge	Rochester Rd	Carver	1919
CAV.228	Atwood, Nathaniel House	90 Rochester Rd	Carver	1812
CAV.227	Norris, John - Maxim, John Jr. House	91 Rochester Rd	Carver	c 1766
CAV.229	Methodist Episcopal Church	99 Rochester Rd	Carver	1844
CAV.908	Savery Avenue - Savery Lane	Savery Ave	Carver	1861
CAV.804	South Carver Union Cemetery	South Main St	Carver	1777
CAV.903	South Carver Meeting House Marker	4 South Main St	Carver	r 1900
CAV.254	Murdock, Capt. Henry C. House	6 South Main St	Carver	c 1848
CAV.255	Murdock, Martha P. - Waitstill S. House	8 South Main St	Carver	c 1830
CAV.256	Savery, John House	14 South Main St	Carver	c 1830
CAV.257	Leyden Cottage	18 South Main St	Carver	1850
CAV.258	Barrows, Nelson House	19 South Main St	Carver	c 1785
CAV.259	Larches, The	26 South Main St	Carver	c 1852
CAV.260	Union Church	29 South Main St	Carver	1855
CAV.137	Barrows, Lothrop House	6 South Meadow Rd	Carver	c 1800
CAV.138	Hall, Mehitable House	19 South Meadow Rd	Carver	c 1780
CAV.910	Maki, John Sauna	22 South Meadow Rd	Carver	1929
CAV.411	Federal Furnace Cranberry Bog Company Screenhouse	104 Tremont St	Carver	c 1895
CAV.412	Federal Furnace Cranberry Bog Worker Housing	104 Tremont St	Carver	c 1895
CAV.413	Federal Furnace Cranberry Bog Worker Housing	104 Tremont St	Carver	c 1895

Massachusetts Cultural Resource Information System
MACRIS

MACRIS Search Results

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

Inv. No.	Property Name	Street	Town	Year
CAV.414	Federal Furnace Cranberry Bog Worker Housing	104 Tremont St	Carver	c 1895
CAV.415	Federal Furnace Cranberry Bog Worker Housing	104 Tremont St	Carver	c 1895
CAV.428		213 Tremont St	Carver	r 1850
CAV.292	Murdock, Thomas - Atwood, Stephen Dexter House	214 Tremont St	Carver	c 1850
CAV.429		215 Tremont St	Carver	c 1974
CAV.430		216 Tremont St	Carver	c 1930
CAV.431		217 Tremont St	Carver	r 1880
CAV.432		218 Tremont St	Carver	c 1975
CAV.433		219 Tremont St	Carver	r 1880
CAV.434		220 Tremont St	Carver	c 1974
CAV.435	Cornish, Dr. Ellis H. - Winberg, Nelson B. House	221 Tremont St	Carver	c 1880
CAV.436	Arponen House	222 Tremont St	Carver	r 1920
CAV.288	Bailey, Hugh R. Company	225 Tremont St	Carver	c 1900
CAV.289	Murdock Parlor Grate Company Shop	225 Tremont St	Carver	c 1877
CAV.437		228 Tremont St	Carver	c 1993
CAV.287	Charlotte Blast Furnace	229 Tremont St	Carver	c 1870
CAV.916	Furnace Pond	229 Tremont St	Carver	c 1760
CAV.438		230 Tremont St	Carver	c 1993
CAV.439		232 Tremont St	Carver	c 1950
CAV.441		238 Tremont St	Carver	c 1890
CAV.296	Ellis, Benjamin Foundry Company Store	239 Tremont St	Carver	1852
CAV.442		240 Tremont St	Carver	c 1988
CAV.297	Charlotte Furnace Store	241 Tremont St	Carver	1852
CAV.443		242 Tremont St	Carver	r 1950
CAV.298	Bent, Ira Cook - Ellis, Matthias House	243 Tremont St	Carver	c 1855
CAV.299	Shaw, John F. House	245 Tremont St	Carver	1878
CAV.444		246 Tremont St	Carver	r 1950
CAV.445	Ellis, Benjamin School	247 Tremont St	Carver	1932
CAV.446	Ellis, Benjamin School Garage	247A Tremont St	Carver	r 1950
CAV.300	Washburn, Virginia Tinson House	248 Tremont St	Carver	c 1910
CAV.447		249 Tremont St	Carver	c 1970

Massachusetts Cultural Resource Information System
MACRIS

MACRIS Search Results

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

Inv. No.	Property Name	Street	Town	Year
CAV.448		250 Tremont St	Carver	r 1880
CAV.449		251 Tremont St	Carver	r 1880
CAV.301	McFarlin, Peleg House	252 Tremont St	Carver	c 1875
CAV.450		253 Tremont St	Carver	r 1920
CAV.451		256 Tremont St	Carver	r 1920
CAV.452		257 Tremont St	Carver	r 1850
CAV.453		258 Tremont St	Carver	r 1920
CAV.454		260 Tremont St	Carver	r 1865
CAV.455		262 Tremont St	Carver	r 1880
CAV.456		263 Tremont St	Carver	c 1975
CAV.457		264 Tremont St	Carver	c 1967
CAV.458		265 Tremont St	Carver	c 1972
CAV.459		266 Tremont St	Carver	c 1900
CAV.460		267 Tremont St	Carver	r 1880
CAV.461		268 Tremont St	Carver	r 1920
CAV.462		268 Tremont St	Carver	r 1950
CAV.463		270 Tremont St	Carver	r 1950
CAV.464		272 Tremont St	Carver	r 1950
CAV.305		275 Tremont St	Carver	c 1850
CAV.614	Salmi, Otto Cranberry Bog Screenhouse	275 Tremont St	Carver	c 1928
CAV.905	Salmi, Otto Sauna	275 Tremont St	Carver	c 1920
CAV.465		278 Tremont St	Carver	r 1850
CAV.611	Shaw, John Cranberry Bog Screenhouse	340 Tremont St	Carver	c 1908
CAV.612	Shaw, John Cranberry Bog Worker Housing	340 Tremont St	Carver	c 1905
CAV.610	Gibbs, Samuel House	366 Tremont St	Carver	c 1820
CAV.606	Ward, Benjamin House	4 Ward St	Carver	c 1773
CAV.914	Julian Grove	Wareham St	Carver	c 1920
CAV.915	Southworth, J. Memorial Stone	Wareham St	Carver	c 1920
CAV.466		2 Wareham St	Carver	c 1985
CAV.467	Church Of The Vine	3 Wareham St	Carver	r 1950
CAV.468		4 Wareham St	Carver	c 1920

Massachusetts Cultural Resource Information System
MACRIS

MACRIS Search Results

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

Inv. No.	Property Name	Street	Town	Year
CAV.469		6 Wareham St	Carver	r 1880
CAV.303	South Carver Grange Hall	7 Wareham St	Carver	1915
CAV.470		8 Wareham St	Carver	r 1920
CAV.471		10 Wareham St	Carver	r 1920
CAV.472		12 Wareham St	Carver	r 1850
CAV.473		12A Wareham St	Carver	r 1950
CAV.474		13 Wareham St	Carver	r 1880
CAV.475		14 Wareham St	Carver	r 1950
CAV.476		15 Wareham St	Carver	r 1850
CAV.477		16 Wareham St	Carver	r 1950
CAV.478		18 Wareham St	Carver	r 1950
CAV.304	Tillson, Zenas House	30 Wareham St	Carver	c 1840
CAV.802	Wenham Cemetery	Wenham Rd	Carver	c 1770
CAV.102	Sears, Edward House	4 Wenham Rd	Carver	1840
CAV.911	Salmien, Victor Sauna	9 Wenham Rd	Carver	c 1944
CAV.103	Pratt, Louis Jr. House	10 Wenham Rd	Carver	c 1730
CAV.106	Ransom, Levi House	14 Wenham Rd	Carver	c 1850
CAV.104	Pearson, William House	15 Wenham Rd	Carver	c 1730
CAV.108	Doty, John House	92 Wenham Rd	Carver	c 1730

Attachment 3

Map of Historic Resources in Carver

PLYMPTON

KINGSTON

PLYMOUTH

MIDDLEBOROUGH

ROCHESTER

WAREHAM

HISTORICAL RESOURCES

Town of Carver, Massachusetts

February 2017

Tighe&Bond
Engineers | Environmental Specialists

Legend

- Major Basin
- Urban Area (Census 2000 and 2010)

MHC Historic Inventory Points

TYPE

- Building
- Burial Ground
- Object
- Structure
- MHC Historic Inventory Areas

- Buildings
- Parcels
- Town Boundary

Carver Roads

CLASS

- Limited Access Highway
- Multi-Lane Highway, NOT Limited Access
- Other Numbered Highway
- Major Road - Collector
- Minor Street or Road

- Stream, Brook
- Lake, Pond, River or Impoundment
- Inland Wetlands
- Coastal Wetlands

1:24,000

0 2,000 4,000

Feet

Based on MassGIS Data

G:\GIS\MA\Carver\avproj\MHCMap_24x36.mxd

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).

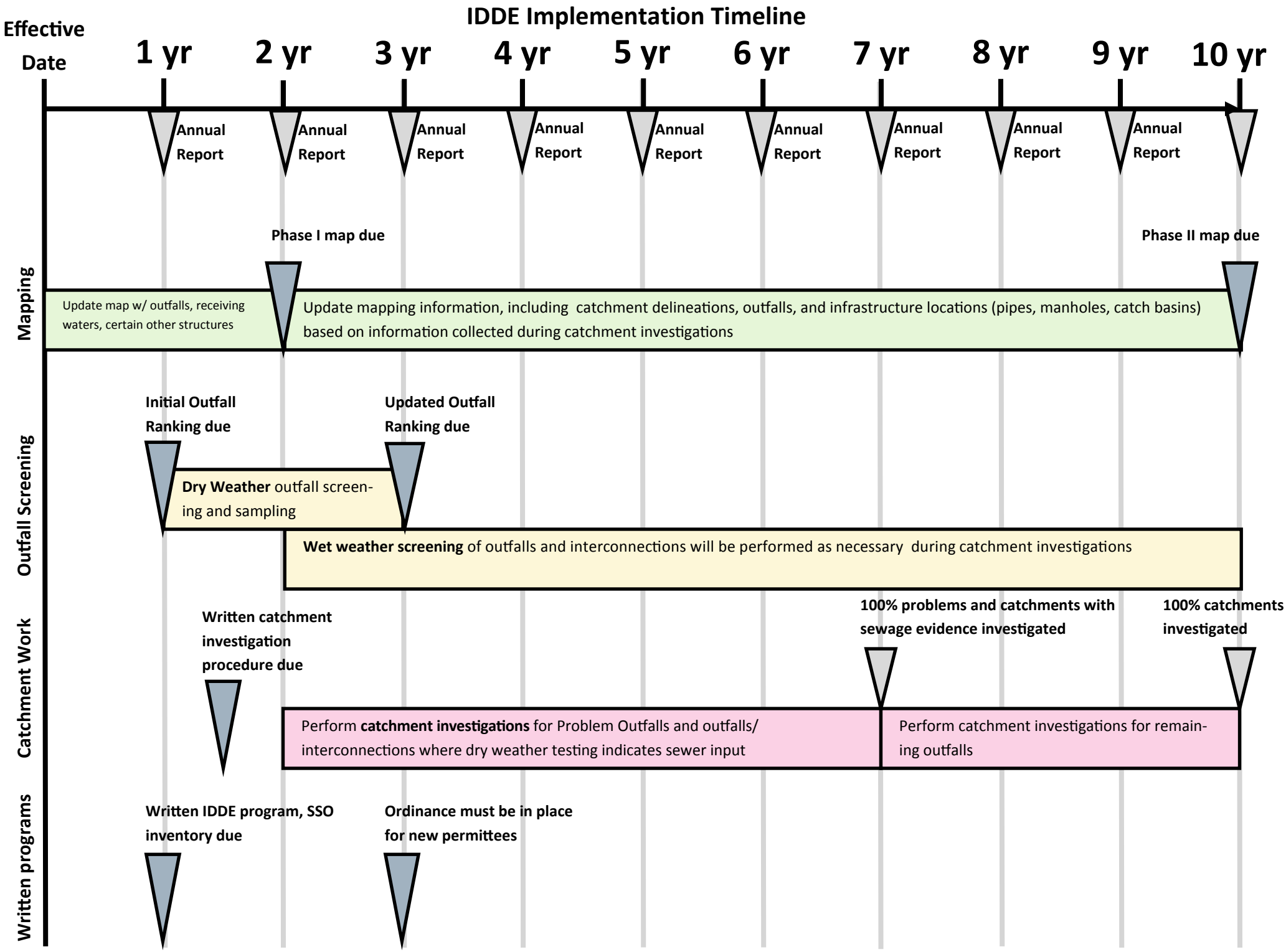
Source: California Stormwater Quality Association, Stormwater BMP Handbook, 2003.

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

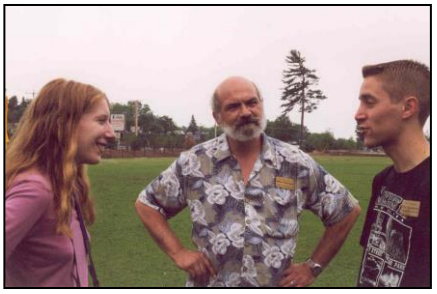
Tips for Organizing and Conducting Volunteer Clean-up Events

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.

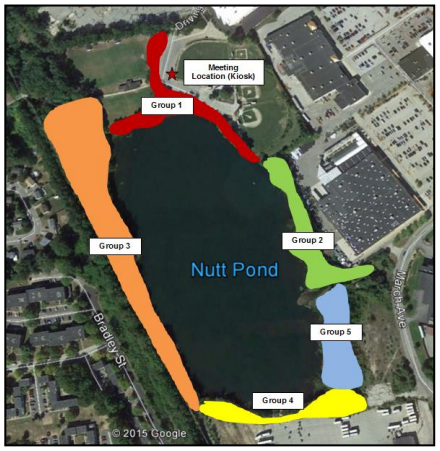
E. Determine the Most Appropriate Age(s) of Your Volunteers: Based upon the task(s) at hand, determine the most appropriate age(s) of your volunteers. Are you seeking adults only? Children? Both? Do you have tasks that all can partake in, or are the tasks age-specific?

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.

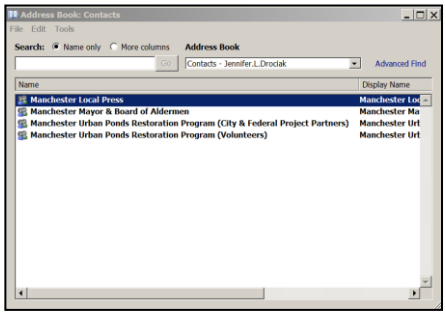
The UPRP has partnered with the Student Conservation Association, local high school ecology clubs, local boy-scout troops, trout-fishing clubs, geo-cashing groups, and others in the past. This has helped garner additional / new volunteers.

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).

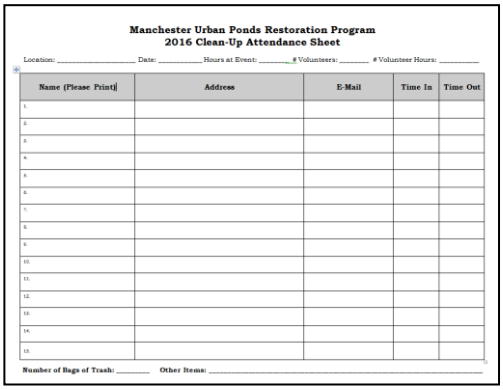
For Example: Seeking volunteers of all ages to assist in an annual trash clean-up at Black Brook and Blodget Park in Manchester on Saturday, April 23, 2016 from 9:00AM – 11:00AM. Volunteers will partner to clean the park and skirt the edges of the brook and wetland complex to remove accumulated trash. 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

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.

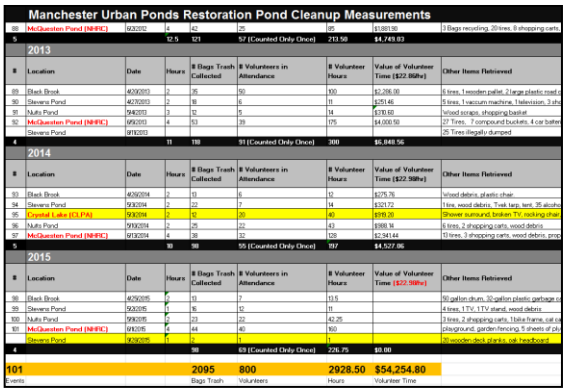
Above Right: Cake served to volunteers at the 100th official cleanup of the Manchester Urban Ponds Restoration Program .

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

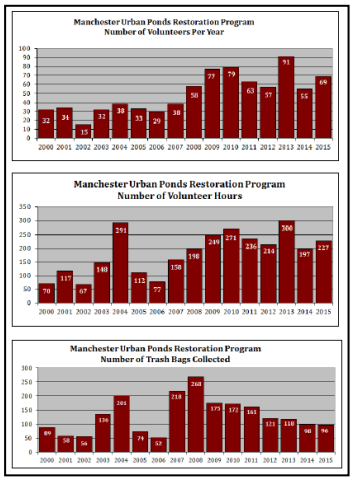
A. Update Your Electronic Records: Now is the time to transpose the information collected on the "Clean-Up Attendance Sheet" into an electronic record-retention system if you have access to one. Perhaps you have access to a database. If not, consider using a Microsoft Excel workbook / spreadsheet system 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.

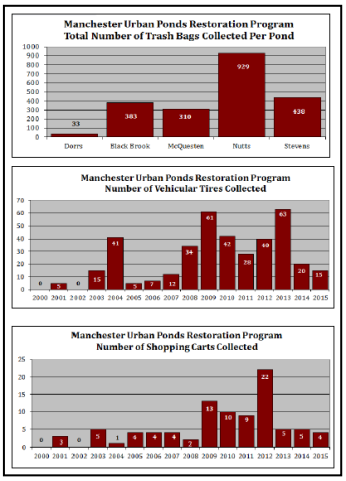
The UPRP has consistently used Microsoft Excel to track clean-up measurements. In the first worksheet of the workbook, we account for the number of our clean-up event, the location, date, hours spent at the event, numbers of bags of trash collected at the event, number of volunteers at the event, number 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 ($22.96hr)	Other Items Retrieved
88	McQuesten Pond (NHFIC)	4/3/2012	4	42	25	85	$1,881.80	3 Bags recycling, 20 tires, 8 shopping carts
5			12.5	121	57 (Counted Only Once)	213.50	$4,749.03	
	2013							
89	Black Brook	4/29/2013	2	35	50	100	$2,296.00	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 ($22.96hr)	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, Tyek tarp, tent, 35 alcohc
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 ($22.96hr)	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 sa
101	McQuesten Pond (NHFIC)	6/1/2015	4	44	40	160		playground, garden fencing, 5 sheets of ply
	Stevens Pond	6/16/2015	1	2	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

Appendix G

Plan Amendment Log

Amend. No.	Description of the Amendment	Date of Amendment	Amendment Prepared by (Name/Signature)
1	Section 2.2.1 and 2.2.2 were updated to reflect changes in the 2018-2020 Final Integrated List of Waters for Massachusetts	June, 20, 2022	Gabrielle Belfit Tighe & Bond
2			
3			
4			
5			
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