Town of Ipswich

Department of Public Works
25 Green Street
Ipswich, Massachusetts

Stormwater Management Plan

Date: September 11, 2020 (REV 2)

CONECO
Engineers & Scientists

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Appendix 1:	2016 MS4 Notice of Intent
Appendix 2:	EPA Authorization to Discharge Letter
Appendix 3:	Endangered Species Documentation
Appendix 4:	Ipswich Stormwater Management Bylaw and Regulations
Appendix 5	Illicit Discharge Detection and Elimination Plan
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Appendix 7:	O&M Programs for Parks and Open Spaces, Town-Owned Facilities, Vehicles and Equipment and Structural BMPs.

1.0 Certification

1.1 Authorized Representative (Optional)

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

The authorization letter is:

☐ Attached to this document (Document name listed below):

_____

☐ Publicly available at the website below:

_____

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

_____

Printed Name:

_____

Signature: Date:

2.0 Introduction

2.1 Regulatory Background

On May 1, 2003, EPA Region 1 issued its Final General Permit for Stormwater Discharges From Small Municipal Separate Storm Sewer Systems (2003 small MS4 permit) that covers "traditional" (i.e., cities and towns) and "non-traditional" (i.e., Federal and state agencies) MS4 Operators located in the states of Massachusetts and New Hampshire. This permit expired on May 1, 2008 but remained in effect for authorized Operators until operators are authorized under the 2016 MS4 general permit.

During 2008 - 2010 EPA issued three separate draft Small MS4 General permits to replace the 2003 Small MS4 permit. One for eligible Operators located in the state of New Hampshire and two separate Massachusetts permits; one for Operators located in the North Coastal watershed and the other for those located in the Interstate, Merrimack and South Coastal watersheds.

The Notice of Availability of the draft General Permit for Discharges from Small Municipal Separate Storm Sewer Systems (MS4) located in North Coastal Massachusetts was published in the Federal Register on February 4, 2010 (See 75 FR 5788). This draft permit covered the North Coastal region, including but not limited to the watersheds of the Charles River and Neponset River.

The Notice of Availability of the draft General Permit for Discharges from Small Municipal Separate Storm Sewer Systems located in the Interstate, Merrimack and South Coastal watersheds in Massachusetts was published in the Federal Register on November 4, 2010 (See 75 FR 67960). EPA held a public hearing on March 9, 2011 and the public comment period for the draft permit ended March 11, 2011. A Federal Register Notice describing the public hearing and the extension of the public comment period was published in the Federal Register on February 15, 2011 (See 76 FR 8734). A transcript (PDF) (58 pp, 142 K) of the hearing in addition to copies of the written comments are available.

The 2014 Draft Massachusetts Small MS4 General Permit was released for public comment on September 30, 2014 and the comment period ended February 27, 2015. EPA received over 150 unique comment letters. The 2016 final Massachusetts Small MS4 General Permit incorporated changes made in response to the comments received and the 2016 permit became effective on July 1, 2018.

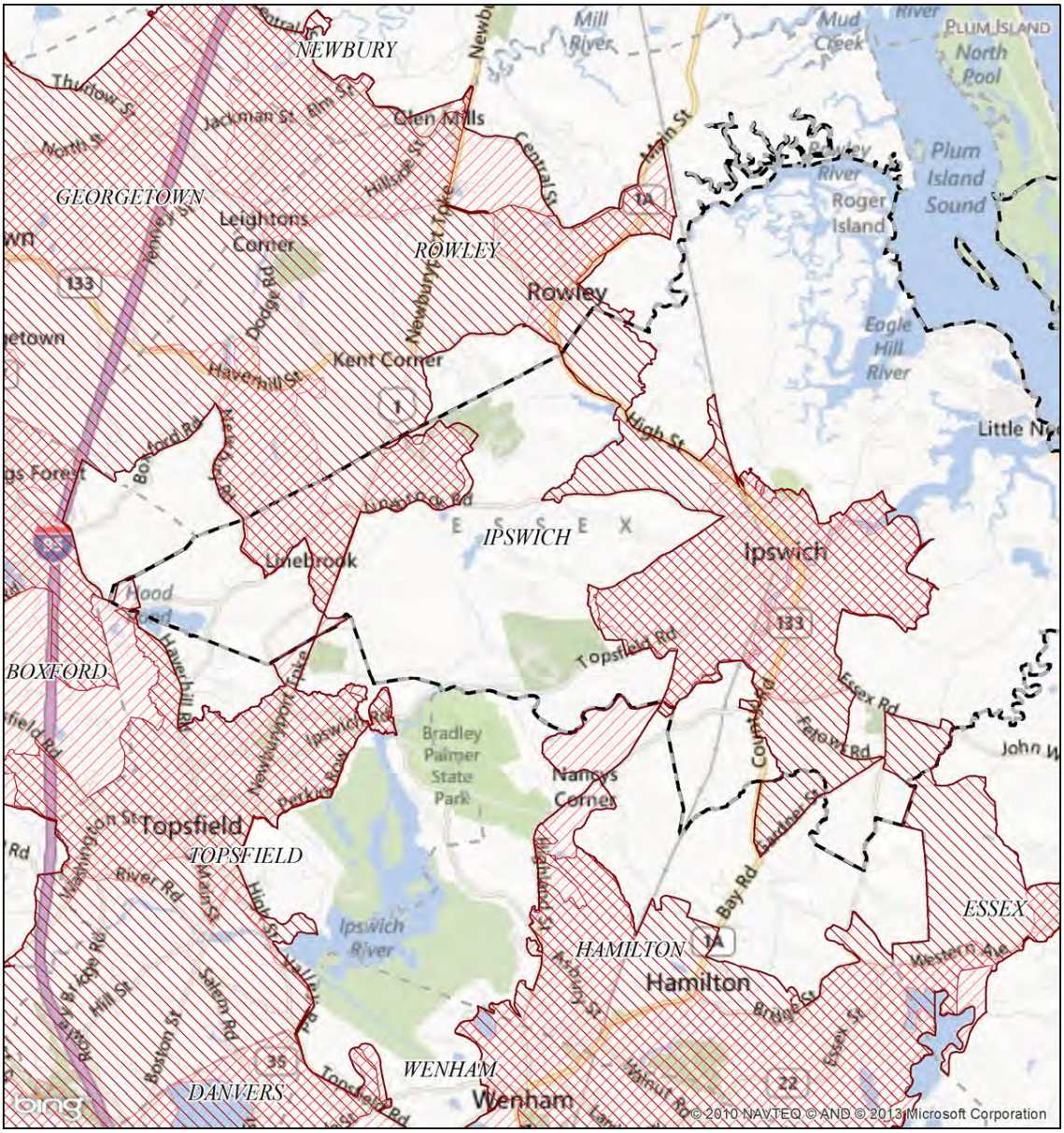
2.2 Small MS4s Covered

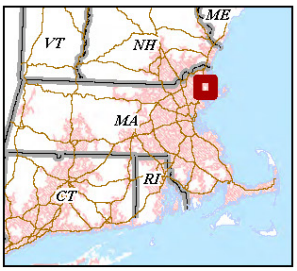
The 2016 permit authorizes the discharge of stormwater from small MS4s. An MS4 is eligible for coverage under this permit if it is:

- A small MS4 within the Commonwealth of Massachusetts;
- Not a large or medium MS4 as defined in 40 CFR §§122.26(b)(4) or (7);
- Located either fully or partially within an urbanized area as determined by the latest Decennial Census by the Bureau of Census as of the effective date of this permit (the 2010 Census); or
- Located in a geographic area designated by EPA as requiring a permit.

If the small MS4 is not located entirely within an urbanized area, only the portion of the MS4 that is located within the urbanized area is regulated under 40 CFR §122.32(a) (1).

The figure on the following page shows the Urbanized Area within the Town of Ipswich:





NPDES Phase II Stormwater Program
Automatically Designated MS4 Areas

Ipswich MA

Regulated Area:

UA Based on 2000 Census	UA Based on 2010 Census

0 1 2 3 4 5 Kilometers

0 1 2 3 4 5 Miles

Town Population: **13175**

Regulated Population: **9247**

(Populations estimated from 2010 Census)

EPA

Urbanized Areas, Town Boundaries:
US Census (2000, 2010)
Base map © 2013 Microsoft Corporation
and its data suppliers

US EPA Region 1 GIS Center Map #8824, 8/9/2013

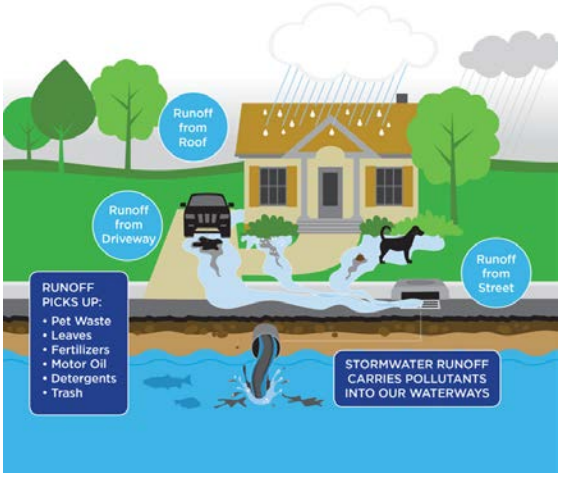
2.3 Why is this Program Important?

Stormwater runoff commonly transports pollutants through municipal separate storm sewer systems (MS4s), where it is discharged, often untreated, into local water bodies. To the public, the MS4 is more commonly known as a stormwater drainage system or simply as the "drain." These stormwater drains have been constructed in developed areas to reduce the risk of flooding and damage to our built infrastructure. Unfortunately, stormwater drainage systems carry pollution during rain events and snow melt – this can include oil, trash, and any other materials found on lawns, streets, and parking lots.

STORMWATER DISCHARGES ARE CAUSING OR CONTRIBUTING TO AT LEAST OF THE 55% IMPAIRMENTS IN ALL MASSACHUSETTS' ASSESSED WATERS (USEPA)

2.4 Why Do We Regulate Stormwater?

The MS4 program requires the MS4 owner/operator to implement a series of programs to reduce the discharge of pollutants from the storm sewer system to the maximum extent practicable in a manner that protects water quality. The MS4 program focuses on managing discharges into the waters of the Commonwealth by educating and implementing proper control measures and best management practices (BMPs). Total maximum daily loads (TMDLs) are in place to reduce pollutants in impaired waterways so that they meet water quality standards. TMDLs focus on identifying sources of impairment and implementing corrective work based on the best available data and information. Additional monitoring and data collection will occur to track progress and better characterize pollutant sources, loadings and the effectiveness of control measures and BMPs.



2.5 Program Importance to the Town of Ipswich

Ipswich is located along the northeastern coast of Massachusetts in Essex County, approximately 25 miles northeast of Boston. The Town occupies a total of approximately 42.5 square miles, and according to the 2010 United States Census, is home to a population of 13,175 residents.

Protecting the quality of the Town's inland and coastal water resources, including the identified impacted waters of the Ipswich River, Kimball Brook, Labor-in-Vane, the Miles River and Essex Bay Essex Bay, has long been a priority for the Town and the Town has implemented measures to protect these resources. These measures have included extensive studies of potential pollutant sources to the Ipswich River, including sources within Farley Brook, and the Town's aggressive pursuit of funding through various grant sources for the construction of Best Management Practices (BMPs) to improve the quality of stormwater discharges to these impacted water bodies.

In addition, the Town has maintained its compliance with the USEPA's Final General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4), which originally became effective on May 1, 2003. This permit, which covered stormwater discharges from both "traditional" (i.e., cities and towns) and "non-traditional" (i.e., Federal and state agencies) MS4 Operators expired on May 1, 2008 but remained in effect for authorized Operators until the Operators received authorization under the new 2016 MS4 general permit.

2.6 Stormwater Management Program (SWMP)

This SWMP describes and details the activities and measures that will be implemented to meet the terms and conditions of the permit. The SWMP accurately describes the permittees plans and activities. The document should be updated and/or modified during the permit term as the permittee's activities are modified, changed or updated to meet permit conditions during the permit

term. The main elements of the stormwater management program are (1) a public education program in order to affect public behavior causing stormwater pollution, (2) an opportunity for the public to participate and provide comments on the stormwater program (3) a program to effectively find and eliminate illicit discharges within the MS4 (4) a program to effectively control construction site stormwater discharges to the MS4 (5) a program to ensure that stormwater from development projects entering the MS4 is adequately controlled by the construction of stormwater controls, and (6) a good housekeeping program to ensure that stormwater pollution sources on municipal properties and from municipal operations are minimized.

3.0 Notice of Intent

3.1 Notice of Intent Requirement

In order for a small MS4 operator to obtain authorization to discharge, it was required to submit a complete and accurate Notice of Intent (NOI) containing the information in Appendix E of the 2016 general permit on or before September 29, 2018 (90 days from the effective date of the final permit). A copy of the Notice of Intent submitted by Ipswich is attached in 1. An electronic copy is available on the EPA's website and can be accessed using the following link:

https://www3.epa.gov/region1/npdes/stormwater/ma/tms4noi/ipswich.pdf

3.2 Authorization

In response to the NOI, EPA issued authorization for the Town of Ipswich to discharge stormwater in accordance with the applicable terms and conditions of the 2016 MS4 General Permit in a letter dated June 4, 2019. This authorization to discharge expires at midnight on June 30, 2022.

A copy of the EPA's authorization to discharge letter is attached in Appendix 2 and an electronic copy can be viewed through the EPA's website via the following link:

https://www3.epa.gov/region1/npdes/stormwater/ma/tms4noi/ipswich-auth.pdf

4.0 Stormwater Management Program Team

4.1 SWMP Team Coordinator

Name: Richard Clarke Title: Director of Public Works

Department: Department of Public Works

Phone: 978-356-6612 Email: rickc@ipswichma.gov

Responsibilities: The program's main contact responsible for the overall coordination and implementation of the program including: budgeting; staff allocation; tracking of measurable goals; and re-allocation of resources to ensure the success of the program.

4.2 SWMP Team Members

Name: Frank Ventimiglia Title: DPW Operations Manager

Department: Department of Public Works

Phone: 978-356-6612 Email: frankv@ipswichma.gov

Responsibilities: Daily program implementation and coordination with in-house, and outside team members. Regular reporting of progress to the Team Coordinator.

Name: _____ Title: _____

Department: _____

Phone: _____ Email: _____

Responsibilities: _____

Name: _____ Title: _____

Department: _____

Phone: _____ Email: _____

Responsibilities: _____

_____

Name: _____ Title: _____

Department: _____

Phone: _____ Email: _____

Responsibilities: _____

_____

5.0 Receiving Waters

The following table lists all receiving waters, impairments and number of outfalls discharging to each waterbody segment.

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
Castle Neck	2										
Labor-in-Vane (MA92-22)	4			X							Fecal Coliform (EPA TMDL #50120)
Ipswich River (MA92-02 & MA92-15)	351			X							Fecal Coliform, Mercury in Fish Tissue
Kimball Brook (MA92-21)	8			X							Oxygen & Fecal Coliform
Farley Brook	18										
Muddy Run	28										Fecal Coliform
Bull Brook (MA91-04)	5										
Eagle Hill River (MA91-06)											Fecal Coliform
Miles River (MA92-03)	3			X							Fecal Coliform, Aquatic Macroinvertebrate Bioassessments
Plum Island Sound (91-12)											Fecal Coliform
Rowley River (MA91-05)											

Unnamed Tributary (92-23)											Fecal Coliform
Egypt River (MA91-13 & 14)											Fecal Coliform
Bull Brook Reservoir (MA91002)											
Dow Brook Reservoir (MA91005)											
Gravelly Brook (MA92-18)											
Howlett Brook (MA92-17)											Fecal Coliform & Fish Bioassessment
Long Causeway Brook (MA92-20)											
Paine Creek (MA91-03)											Fecal Coliform
Hood Pond (MA92025)											Mercury in Fish

6.0 Endangered Species and Historic Properties

6.1 Eligibility: Endangered Species

As required by the 2016 NOI, and part 1.9.1 of the 2016 General Permit, Coneco prepared and submitted a Project Review Request to the U. S. Fish and Wildlife Service on behalf of the Town of Ipswich. The Project Review Request letter (dated September 13, 2018 and attached in Appendix 3) requests a review of the Endangered Species Act as it pertains to activities that will be performed in association with the 2016 General Permit. A copy of the response from the U. S. Fish and Wildlife Service is also attached in Appendix 3.

6.2 Eligibility: Historic Properties

As required by the 2016 NOI, and part 1.9.2 of the 2016 General Permit, Coneco completed the National Historic Preservation Act Eligibility Determination screening process and determined that the Town of Ipswich meets Criterion A, as the discharges do not have the potential to impact historic properties. The result of this assessment is consistent with a similar assessment that was completed as a part of the 2003 NOI for coverage.

7.0 Minimum Control Measures

7.1 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.

7.1.1 Background and Goals

The Town will implement a public outreach and education program that complements and supports other activities planned under its SWMP.

The goals of the Town's public outreach and education program are to:

- Achieve compliance with public outreach and education requirements contained in the MS4 permit, including TMDL and impaired waters requirements for bacteria and nutrients.
- Increase awareness of the impact of stormwater pollution on water bodies in the Town, especially impaired and priority waters.
- Increase public awareness of the work being done by the Town to maintain and improve stormwater infrastructure, and the economic, recreational, water supply, and ecological benefits of that work.
- Increase awareness of how the public can support and assist the Town in implementing an effective stormwater management program.
- Encourage individuals and organizations to adopt habits and engage in voluntary actions that increase groundwater recharge, decrease pollutant loading, and decrease peak discharge rates, thereby reducing the burden placed on public stormwater infrastructure and the environment.
- For sites regulated by the Town under the Wetlands Act and/or the Town's stormwater bylaw, increase the quality of stormwater permit applications and the level of voluntary compliance with permit conditions and ongoing

O&M requirements, while reducing the need for municipal regulators to take enforcement action.

7.1.2 Responsible Parties and Regional Implementation Strategy

The Town has joined with its neighboring communities to implement its public education and outreach program on a regional basis through the Greenscapes Northshore Coalition (Greenscapes). It is assumed that Greenscapes will focus on a number of outreach and education initiatives along with hosting a number of events that will inform the public about the importance of protecting stormwater quality.

The Town's stormwater Outreach and Education Coordinator is:

- Frank Ventimiglia – Operations Manager for the Department of Public Works. Frank will be under the direction of Rick Clarke, the Director of the Department of Public Works.

The above named individuals are responsible for ensuring that the outreach and education program is implemented in accordance with this SWMP.

7.1.3 Targeted Audiences and Key Topics and Messages

The Town's outreach and education program targets four key audiences as specified in the MS4 Permit:

1) Residents
2) Businesses, Institutions and Commercial Facilities
3) The Development and Construction Sector
4) Industrial Facilities

The Town will rely on Greenscapes to determine the appropriate audiences and the final list of topics that are specific to Ipswich. The following is a general list of topics and messages that may be targeted as priorities for dissemination to each of the selected audiences given local conditions. Messages that are ultimately disseminated will be discussed in each annual report.

Residents

This audience includes the general residential population of the community including small residential property owners and renters. Because many of the leaders in the business, industrial and construction industries are also local residents, the residential program will help to provide a base of knowledge for these other audiences as well. The key messages to be conveyed and/or behaviors to be encouraged for this audience include:

- Polluted stormwater is created when rain falls on impervious surfaces or unstabilized soils, collects pollutants, and makes its way directly or indirectly to streams and wetlands.
- Residential stormwater pollution is the result of a wide variety of common activities including pet waste management, lawn care, automotive maintenance, disposal of swimming pool water, and failing septic systems, among others.
- We are all responsible for stormwater pollution.
- Stormwater runoff is the largest source of pollution to local waterways.
- Stormwater pollution negatively impacts drinking water, recreation, wildlife habitats, and flooding in our community or neighboring communities.
- Most storm drains lead to streams or wetlands with minimal treatment.
- Keeping impervious surfaces clean, in addition to the storm drain itself, is essential to preventing the discharge of pollutants and reducing maintenance costs.
- Bacteria and nutrients are particular pollutants of concern in our area.
- Bacterial pollution can be reduced by properly disposing of pet waste, properly using/maintaining septic systems, and properly managing garbage.
- Nutrient pollution can be reduced by properly managing landscaping activities and landscape waste materials, properly disposing of pet waste, properly using/maintaining septic systems, preventing erosion, and properly managing garbage.

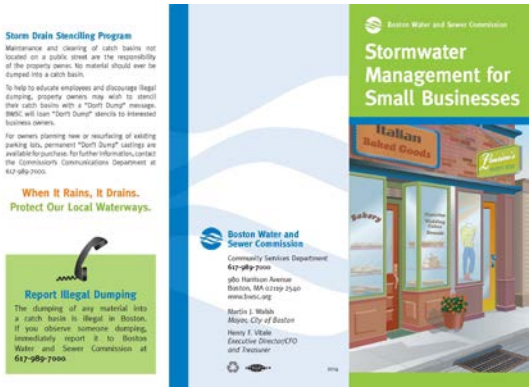
- Other common household pollutants should be stored and used or disposed of properly including but not limited to oil, pharmaceuticals, car washing chemicals, swimming pool chemicals, swimming pool water, and deicing chemicals.
- There are a variety of simple steps homeowners can implement on their own property to help increase groundwater recharge and reduce pollutant loading.
- Naturally vegetated buffers should be maintained along waterways and wetlands.
- Dumping of yard wastes or other debris into waterways and wetlands is illegal and contributes to water pollution.

Businesses, Institutions and Commercial Facilities

This audience includes all non-residential property owners and lessors with the exception of industrial property. In addition, the owners/managers of large residential properties (apartment complexes) are included in this group. This is a very diverse audience category. The key messages to be conveyed and/or behaviors to be encouraged for this audience include:

- Polluted stormwater is created when rain falls on impervious surfaces or unstabilized soils, collects pollutants, and makes its way directly or indirectly to streams and wetlands.
- Commercial stormwater pollution is the result of a wide variety of common activities including lawn care, construction activities, management of liquid and solid wastes and dumpsters, building maintenance, fleet maintenance, parking lot maintenance, de-icing activities, septic system management, disposal of swimming pool water, and pet waste management, among others.
- We are all responsible for stormwater pollution.
- Stormwater runoff is the largest source of pollution to local waterways.
- Stormwater pollution negatively impacts drinking water, recreation, wildlife habitats, and flooding in our community or neighboring communities.

- Most storm drains (both public and private) lead to streams or wetlands with minimal treatment.
- Keeping impervious surfaces clean, in addition to the storm drain itself, is essential to preventing the discharge of pollutants, and reducing maintenance costs.
- Bacteria and nutrients are particular pollutants of concern in our area.
- Bacterial pollution can be reduced by properly disposing of pet waste, properly using/maintaining septic systems, properly managing garbage, and preventing illicit discharges.
- Nutrient pollution can be reduced by properly managing landscaping activities and landscape waste materials, properly disposing of pet waste, properly using/maintaining septic systems, properly managing garbage, and preventing illicit discharges.



- Other common pollutants should be stored and used or disposed of properly including but not limited to oil, vehicle/building/pavement washing chemicals, pool water, and deicing chemicals.
- Proper training of employees and/or customers is essential to preventing pollution.
- Many private properties have stormwater permit requirements through the wetlands act and/or local wetlands/stormwater bylaws which require ongoing operation and maintenance activities and/or reporting.
- New development and redevelopment may trigger the need for a permit and upgrading of stormwater BMPs.
- There are a variety of simple pollution prevention and green infrastructure measures property owners can implement to help increase groundwater recharge and reduce pollutant loading.
- Naturally vegetated buffers should be maintained along waterways and wetlands.
- Dumping of yard wastes, snow or other debris into waterways and wetlands is illegal and contributes to water pollution.

Development and Construction Sectors

The development and construction sector includes private developers, construction contractors, and the engineers, attorneys and others who assist them. The key messages to be conveyed and/or behaviors to be encouraged for this audience include:

- Polluted stormwater is created when rain falls on impervious surfaces or unstabilized soils, collects pollutants, and makes its way directly or indirectly to streams and wetlands.
- Stormwater runoff is the largest source of pollution to local waterways.
- Stormwater pollution negatively impacts drinking water, recreation, wildlife habitats, and flooding in our community or neighboring communities.
- Construction site sedimentation and erosion is a significant water quality problem.
- Construction site sedimentation and erosion controls need to be properly designed, maintained and installed to protect waterways and avoid the cost of enforcement actions by local regulators.
- Local and federal stormwater and/or wetlands permit applications are required for most development and redevelopment projects.
- Construction and post-construction stormwater controls will be required of most permit applicants under the MA Wetlands Protection Act, local bylaws and/or the EPA Construction General Permit.
- TMDLs for bacteria and/or nutrients apply to projects in our area and permit applicants must propose BMPs that are consistent with or optimized for TMDL requirements.
- Permit applicants are encouraged to propose Low Impact Development and/or Green Infrastructure techniques which offer a variety of environmental benefits as well as potential cost savings.
- Sediment management, pollution prevention, and compliance with wetlands act resource area protections is also critical at construction equipment and material storage yards.

- Permitting standards are changing or have changed with the revision of the MS4 permit, MA Stormwater Handbook and the Town's stormwater bylaws, and construction industry representatives need to understand and comply with these changes.

Industrial Facilities

For purposes of the outreach and education SWMP industrial facilities are considered to include all properties which are engaged in the manufacture, processing, and storage of manufactured goods and materials. Some facilities in this category may be regulated by the EPA Multi-Sector General Permit. The key messages to be conveyed and/or behaviors to be encouraged for this audience include:

Tetra Tech

- Polluted stormwater is created when rain falls on impervious surfaces or unstabilized soils, collects pollutants, and makes its way directly or indirectly to streams and wetlands.
- Industrial stormwater pollution is the result of a wide variety of common activities including lawn care, construction activities, management of liquid and solid wastes and dumpsters, storage of raw materials, building maintenance, fleet maintenance, parking lot maintenance, and septic system management, among others.
- We are all responsible for stormwater pollution.
- Stormwater runoff is the largest source of pollution to local waterways.
- Stormwater pollution negatively impacts drinking water, recreation, wildlife habitats, and flooding in our community or neighboring communities.
- Most storm drains (both public and private) lead to streams or wetlands with minimal treatment.
- Keeping impervious surfaces clean, in addition to the storm drain itself, is essential to preventing the discharge of pollutants, and reducing maintenance costs.
- Bacteria and nutrients are particular pollutants of concern in our area.

- Bacterial pollution can be reduced by properly disposing of pet waste, properly using/maintaining septic systems, properly managing garbage, and preventing illicit discharges.
- Nutrient pollution can be reduced by properly managing landscaping activities and landscape waste materials, properly disposing of pet waste, properly using/maintaining septic systems, properly managing garbage, and preventing illicit discharges.
- Other common pollutants should be stored and used or disposed of properly including but not limited to oil, material stockpiles, vehicle/building/pavement washing chemicals, and deicing chemicals.
- Proper training of employees and/or customers is essential to preventing pollution.
- Many properties have stormwater permit requirements through the wetlands act, local wetlands/stormwater bylaws or the MSGP which require ongoing operation and maintenance activities and reporting.
- New development and redevelopment may trigger the need for a permit and upgrading of stormwater BMPs.
- There are a variety of simple green infrastructure measures property owners can implement to help increase groundwater recharge and reduce pollutant loading.
- Naturally vegetated buffers should be maintained along waterways and wetlands and dumping of yard wastes, snow or other debris into waterways and wetlands is illegal.
- Many industrial properties have specific permitting and compliance requirements under the EPA Multi-Sector General Permit.

Message Distribution Requirements

Section 2.3 of the MS4 Permit requires the distribution of two messages to each of the four target audiences over the five year permit period, with each message to the same audience spaced at least one year apart.

In addition these basic requirements, the Town is subject to additional requirements as a result of one or more bacteria TMDLs as described in Appendix F of the permit. These additional requirements include:

- An annual message to residents on proper pet waste management and any local pet waste bylaws.
- Inclusion of pet waste management information with new or renewed dog licenses.
- A message to septic system owners on proper system maintenance.

7.1.4 Delivery Methods and Schedule

A variety of delivery methods will be used to reach each audience over the course of the permit period and that method will be determined with input from Greenscapes. Each year, the Town will rely on Greenscapes to develop an annual work plan that specifies the final mix of activities that will be implemented that year. Each year's work plan will be revised or adjusted in response to the ongoing evaluation activities. The sections below outline potential delivery methods that will be utilized to reach each of the target audiences and the expected timing of each method.

Residential Audiences

- Develop and maintain a comprehensive regional stormwater website that covers key messages for the residential audience and maintain a prominent link to the site on the Town's homepage and or DPW homepage.
- Inclusion of pet waste management information annually when completed dog licenses or renewal confirmations are mailed out by town clerks.
- Three annual messages (spring, summer and fall) covering grass clippings/fertilizer, pet waste, and leaf disposal distributed via a mixture of direct mailings, social media posts, town newsletters, bill stuffers, press releases, email marketing or signage campaigns.

- Distribution of at least two additional messages over the permit term via direct mail, social media, town newsletters, bill stuffers, press releases, email marketing or signage campaigns.
- One targeted mailing to septic system owners during the permit term.
- The Town may use an alternate delivery method for one or more of the messages outlined above where such alternate format is deemed more effective.

Businesses, Institutions and Commercial Facilities

- Develop and maintain a comprehensive regional stormwater website that covers key messages for the residential audience and maintain a prominent link to the site on the Town's homepage and or DPW homepage.
- Establish a regional stormwater telephone hotline and web form through which members of the public can report stormwater problems or ask questions.
- Two annual messages (spring and fall) covering grass clippings/fertilizer and leaf disposal distributed via a mixture of direct mailings, social media posts, town newsletters, bill stuffers, press releases, email marketing or signage campaigns.
- Distribution of at least two additional messages over the permit term via direct mail, social media, town newsletters, bill stuffers, press releases, email marketing, presentations to industry groups or signage campaigns.
- One targeted mailing to septic system owners (if any) during the permit term.
- A pilot project targeting the ten largest private impervious cover owners with a program of direct outreach via phone, personal mail and/or face to face to and based on the status of compliance with O&M requirements in local permits.
- Free technical assistance and property evaluation for green infrastructure retrofits.
- Distribute educational materials and/or signage that businesses can use to educate their employees and/or customers.
- The Town may use an alternate delivery method for one or more of the messages outlined above where such alternate format is deemed more effective.

Development and Construction Sectors

- Develop and maintain a comprehensive regional stormwater website that covers key messages for the Development/Construction audience and a prominent link to the Development/Construction section of the educational website will be placed on the on the town website where stormwater and/or wetland permit application forms can be downloaded.
- Establish a regional stormwater telephone hotline and web form through which members of the public can report stormwater problems or ask questions.
- Two messages distributed to a targeted list of local developers / and construction industry representatives via printed materials, mailings, presentations to industry groups, or personal communication that emphasize sediment and erosion control, changes to the Town's stormwater bylaw, anticipated changes to the MA Stormwater Handbook and/or the EPA Construction General Permit.
- The Town may use an alternate delivery method for one or more of the messages outlined above where such alternate format is deemed more effective.

Industrial Facilities

- Develop and maintain a comprehensive regional stormwater website that covers key messages for the Industrial audience.
- Establish a regional stormwater telephone hotline and web form through which members of the public can report stormwater problems or ask questions.
- Distribution of at least two additional messages over the permit term via direct mail, social media, town newsletters, bill stuffers, press releases, email marketing, presentations to industry groups, or signage campaigns.
- One targeted mailing to septic system owners (if any) during the permit term.
- A pilot project targeting the key large private impervious cover owners with a program of direct outreach via phone, personal mail and/or face to face to and/or based on status of compliance with O&M requirements in local permits or EPA MSGP.
- Free technical assistance and property evaluation for green infrastructure retrofits.

- Distribute educational materials and/or signage that industrial firms can use to educate their employees and/or customers.
- The Town may use an alternate delivery method for one or more of the messages outlined above where such alternate format is deemed more effective.

7.1.5 Evaluation and Adaptive Management

The MS4 Permit requires that the Town conduct an ongoing process of evaluation on its outreach and education program to demonstrate:

- evidence of focused messages for specific audiences
- evidence that progress toward the educational goals has been achieved

The Town and Greenscapes will use the following methods to evaluate the effectiveness of its educational messages and its program overall:

- Track the number of messages delivered (pieces of material mailed, pieces of material handed out, press releases published and circulation, phone contacts where target is reached, classroom programs delivered, etc).
- Track the number of hits on the stormwater web site over time and in the period following distribution of each message.
- Track anecdotal feedback from classroom teachers whose students receive the school outreach program.
- Note any anecdotal feedback or observations of behavior change.

If the evaluation program determines that any messages or distribution methods are ineffective, those messages and/or distribution methods shall be modified when the annual Outreach and Education work plan is finalized for the subsequent year.

7.1.6 Reporting

The Town will include documentation of its outreach and education program in its annual report to EPA in the format specified in the EPA annual report forms.

The Town will receive an annual report on the Outreach and Education program annually from Greenscapes. For each year, this will include at a minimum:

- Copies of the messages (if any) distributed to each audience in the Town during the reporting period.
- The method of distribution for each message.
- The measures and/or methods used to assess the effectiveness of the messages.

- The measures and/or methods used to assess the overall effectiveness of the education program.

The Town may include the Greenscapes annual Outreach and Education Program Progress Report, or applicable excerpts from it, in the Town's annual report to EPA.

7.2 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 permittee's SWMP.

7.2.1 Background and Goals

The Town of Ipswich (the Town) will implement a public participation program to complement and reinforce the Town's MS4 public outreach program and other SWMP implementation activities.

The goals of the Town's public involvement and participation program are to:

- Provide opportunities for the public to participate in the review and implementation of the Town's SWMP.
- Achieve compliance with public involvement and participation requirements contained in section 2.3.3 of the MS4 permit.
- Increase awareness of the impact of stormwater pollution on water bodies in the Town, especially impaired and priority waters.
- Increase public awareness of the work being done by the Town to maintain and improve stormwater infrastructure, and the economic, recreational, water supply, and ecological benefits of that work.
- Increase awareness of how the public can support and assist the Town in implementing an effective stormwater management program.
- Encourage individuals and organizations to adopt habits and engage in voluntary actions that increase groundwater recharge, decrease pollutant loading, and decrease peak discharge rates, thereby reducing the burden placed on public stormwater infrastructure and the environment.

7.2.2 Responsible Parties and Implementation Strategy

The Town's stormwater Public Involvement and Participation Coordinator is:

- Frank Ventimiglia – the Operations Manager for the Department of Public Works. Frank will be under the direction of Rick Clarke, the Director of Public Works.

The above named individuals are responsible for ensuring that the public involvement and participation program is implemented in accordance with this SWMP.

7.2.3 Public Involvement and Participation Requirements

The MS4 Permit requires that the Town:

- Make the SWMP and all annual reports available to the public.
- Annually provide the public an opportunity to participate in the review and implementation of the SWMP.
- Ensure that all public involvement and participation activities be posted in accordance with state public notice requirements (MGL Chapter 30A, Sections 18 – 25 – effective 7/10/2010).

7.2.4 Public Involvement and Participation Activities

The Town's public involvement and participation program shall consist of the following activities:

Activities implemented by the Town's Public Participation and Involvement Coordinator:

- Promptly post the SWMP (and any future revisions to the SWMP) including the Town's annual reports on the Town website.
- Post a legal notice once per year inviting the public to review and submit comments on the SWMP in accordance with state public notice requirements.
- Allow the public to inspect the SWMP in person during regular business hours.
- Annually compile any comments received on the SWMP along with the corresponding response from the Town (if any).

7.2.5 Reporting and Evaluation

The Town will include documentation of its public involvement and participation program in its annual report to EPA in the format specified in the EPA annual report forms. For each year, this will include a listing of public participation activities implemented by the Town during the year.

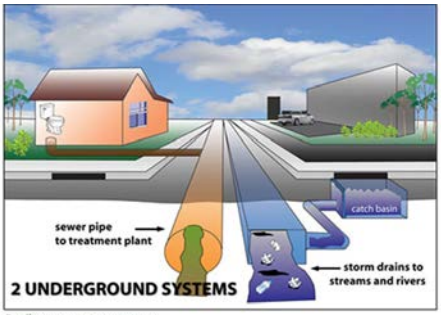
7.3 MCM 3: Illicit Discharge Detection and Elimination

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.

7.3.1 What is an Illicit Discharge?

Any discharge to an MS4 that is not comprised entirely of stormwater is an illicit discharge (ID) (with limited exceptions identified in the permit). IDs can be caused by a variety of sources: leaking sanitary sewers or water mains; illegal sewage connections; illegal floor drain connections; seasonal draining of swimming pools; breakout from failing septic systems; and spills and dumping.

IDs can be continuous (occurring most, or all of the time, such as leaking sewage), intermittent (occurring occasionally, such as flow from a sump pump), or transitory (occurring rarely, such as a spill or illegal dumping). IDs can enter the MS4 directly (e.g., a sanitary sewer pipe connected to a storm drain manhole) or indirectly (e.g. cracked and leaking sanitary sewers where exfiltrating sewage enters nearby storm drain pipes).



Credit: stormwatersmart.org

Storm drains do not lead to wastewater treatment facilities. They lead directly to the nearest stream or water body.

Unless identified as a significant contributor of pollutants, some non-stormwater discharges may not need to be addressed as part of the IDDE program, such as: flows from fire fighting activities; uncontaminated pumped groundwater; flows from footing drains; waterline flushing, and runoff from lawn irrigation (part 1.4)

7.3.2 BMP: Legal Authority

Ordinances Link or Reference: Stormwater Management Bylaw (Appendix 4)

Department Responsible for Enforcement: DPW Operations

7.3.3 BMP: Sanitary Sewer Overflow (SSO) Inventory

Completed ☒
(by year 1)

DPW personnel are not aware of any SSOs discharging to the MS4 within the past five years. If any SSOs are discovered, they will be eliminated and tracked following the below procedure.

Document Name and/or Web Address: No SSOs reported in the past 5 years

Description: Inventory of Known Sanitary Sewer Overflows (SSOs) Discharging to the MS4 (2.3.4.4):

Information Required:

1. Locations of sanitary sewer overflows (SSOs).
2. A clear statement of whether the discharge entered a surface water directly or entered the MS4.
3. Dates and times of known discharges
4. Estimated discharge volume.
5. Description of occurrence noting known or suspected sources.
6. Mitigation and corrective measures implemented.
7. Mitigation and corrective measures planned and implementation schedule.

Responsible Department/Parties: DPW Operations

Measurable Goal(s):
Annually track and report the following SSO information: the location; a clear statement of whether the discharge entered a surface water directly or entered the MS4; date(s) and time(s) of each known SSO occurrence; estimated volume(s) of the occurrence; description of the occurrence indicating known or suspected cause(s); mitigation and corrective measures completed with dates implemented; and

mitigation and corrective measures planned with implementation schedules. Update inventory as needed.

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

The MassDEP contacts are:	The EPA contacts are:
Northeast Region (978) 694-3215 205B Lowell Street Wilmington, MA 01887	EPA New England (617) 918-1510 5 Post Office Square Boston, MA 02109

7.3.4 BMP: Map of Storm Sewer System

Phase I Completed ☒ (by year 2)

Phase II Completed ☐ (by year 10)

Document Name and/or Web Address: TBD Year 2

Description: The permittee shall develop a revised and more detailed map than was required by the MS4-2003 permit. This revised map of the MS4 shall be completed in two phases as outlined below. The mapping shall include a depiction of the permittee's separate storm sewer system in the permit area. The mapping is intended to facilitate the identification of key infrastructure and factors influencing proper system operation, and the potential for illicit sanitary sewer discharges.

Information Required:

1. Outfall locations and receiving waters.
2. Open channel conveyances.
3. Interconnections with other storm sewer systems.
4. Impaired waterbodies.
5. Delineation of catchment area draining to each outfall.
6. Names & locations of receiving waters.
7. Storm drainage infrastructure (catch basins, manholes, pipes, treatment facilities).

8. Water resource areas (beaches, drinking water sources, critical habitats).
9. Municipal sanitary sewers, if available.
10. Municipal combined sewers, if any.

Responsible Department/Parties: DPW Operations

Measurable Goal(s):
Map 100% of outfalls and receiving waters, open channel conveyances, interconnections with other MS4s and other storm sewer systems, municipally-owned stormwater treatment structures, waterbodies identified by name and indication of all use impairments, and initial catchment delineations within 2 years of the permit's effective date. Map 100% of outfall spatial locations, pipes, manholes, catch basins, refined catchment delineations, municipal sanitary sewer system (if available), and municipal combined sewer system (if applicable) within 10 years of the permit's effective date.

7.3.5 BMP: IDDE Program

Written Document Completed ☒
(by year 1)

Document Name and/or Web Address: Ipswich IDDE Plan (Appendix 5)

Description: 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.

Responsible Department/Parties: DPW Operations

Measurable Goal(s):
Conduct 100% of outfall screening on High and Low Priority Outfalls within 3 years of the permit's effective date. Complete catchment investigations for 100% of the Problem Outfalls within 7 years of the permit's effective date. Complete 100% of all catchment investigations within 10 years of the permit's effective date.

The outfall/interconnection inventory and initial ranking and the dry weather outfall and interconnection screening and sampling results can be found: Screening results will initially be made available at the end of Year 3.

7.3.6 BMP: Assessment and Priority Ranking of Outfalls/Interconnections

Description: An initial outfall and interconnection inventory and priority ranking to assess illicit discharge potential based on existing information shall be completed within one (1) year from the effective date of the permit; an updated inventory and ranking will be provided in each annual report thereafter. The inventory shall be updated annually to include data collected in connection with the dry weather screening and other relevant inspections conducted by the permittee.

Responsible Department/Parties: DPW Operations

Measurable Goal(s):
Completion of the initial inventory after year 1 and completed annual updates.

7.3.7 BMP: Catchment Investigations

Description: The permittee shall develop a systematic procedure to investigate each catchment associated with an outfall or interconnection within their MS4 system.

Timelines:

- A written catchment investigation procedure shall be developed within 18 months of the permit effective date in accordance with the requirements of part 2.3.4.8.b.
- Investigations of catchments associated with Problem Outfalls shall begin no later than two (2) years from the permit effective date.
- Investigations of catchments associated with High and Low Priority Outfalls shall follow the ranking of outfalls updated in part 2.3.4.7.c.
- Investigations of catchments associated with Problem Outfalls shall be completed within seven (7) years of the permit effective date
- Investigations of catchments where any information gathered on the outfall/interconnection identifies sewer input7 shall be completed within seven (7) years of the permit effective date.
- Investigations of catchments associated with all High- and Low-Priority Outfalls shall be completed within ten (10) years of the permit effective date.

A written catchment investigation procedure shall be developed that:

- Identifies maps, historic plans and records, and other sources of data,
- Includes a manhole inspection methodology
- Establishes procedures to isolate and confirm sources of illicit discharges

Responsible Department/Parties: DPW Operations

Measurable Goal(s):
Developed written procedure within 18 months of the effective date and successful compliance with the procedures.

7.3.8 BMP: Employee Training

Description: The permittee shall, at a minimum, annually provide training to employees involved in IDDE program about the program, including how to recognize illicit discharges and SSOs. The permittee shall report on the frequency and type of employee training in the annual report.

Responsible Department/Parties: DPW Operations

Measurable Goal(s):
Training occurs annually.

7.4 MCM 4: Construction Site Stormwater Runoff Control Program

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

7.4.1 Introduction

The municipal separate storm sewer system (MS4) permit issued by the Environmental Protection Agency (EPA) to the Town of Ipswich (hereafter "the Town") requires the implementation of a construction site stormwater runoff control program that prevents pollutants from construction site stormwater runoff from entering the Town's MS4. In addition, the MA Wetlands Protection Act and the Town's Wetland Protection Bylaw extend similar protections to discharges directly to wetlands and waterways.

This document references the Town's construction site stormwater runoff control program in detail and specific authority in the Town's Stormwater Bylaw / Town's Erosion and Sediment Control Bylaw. This document was prepared based on a model provided by the Neponset Stormwater Partnership and funded in part through a Community Innovation Challenge Grant and contributions from NSP member communities.

7.4.2 Program Purpose

In the absence of appropriate and well-maintained controls, stormwater runoff from construction sites will discharge very high concentrations of harmful pollutants into MS4s and/or local waterways, and ultimately degrade local water quality. In addition to harmful solid wastes and chemicals that are commonly found on construction sites, sediment in construction site runoff is often the most destructive.

While sedimentation of streams and rivers is a naturally occurring process, un-managed sediment from construction site runoff fills and clogs waterways at a high rate, causing severe physical and biological harm to local habitat and water quality, and exacerbating flooding.
Land disturbing activities and new construction projects including redevelopment are important for economic growth, public access and safety, and overall improvements of daily life.

Establishment of a legal authority to implement construction site stormwater runoff control will help prevent sediment as well as construction site debris and chemicals from entering local water systems while still allowing for construction activity.

7.4.3 Program Schedule

The MS4 permit defines the timeline for implementing the Town's Construction Site Stormwater Runoff Control Program as summarized in Table 1 below.

Table 1. Program Schedule

Construction Site Stormwater Runoff Control Task	**Permit Schedule**
Sediment and Erosion Control Ordinance Adoption	May 01, 2008
Written Site Plan Review Procedures	Year 1 (June 30, 2019)
Written Site Inspection Procedures	Year 1 (June 30, 2019)
Implementation of Sediment and Erosion Control Program	Ongoing

7.4.4 Responsible Parties

The Town's Board of Selectmen empowers the Department of Public Works to enforce the construction site stormwater runoff control provisions of the bylaw. The Board of Selectmen has delegated day to day management, site plan review and inspection, and reporting to the Town's Department of Public Works. The Department of Public Works is responsible for coordinating the efforts of other departments when needed, ensuring that

necessary interdepartmental communication occurs in a timely manner, and following up with other departments as needed regarding the status of their efforts.

Key contacts and roles for each of the other departments are as follows:

Table 2: Responsible Parties

Implementation Role	Responsible Authority
Construction Stormwater Enforcement Authority	Department of Public Works
Overall Supervision of Construction Stormwater Program	SWMP Team Coordinator
Person(s) Responsible for Site Plan Review	Department of Public Works
Authority to Conduct Construction Site Inspection on Behalf of the Town	Planning Board, Conservation Commission or Department of Public Works as appropriate
Enforcement Authority for Construction Stormwater Compliance	Planning Board, Conservation Commission or Department of Public Works as appropriate
Authority Responsible for Construction Stormwater Recordkeeping	Department of Public Works
Additional Implementation Roles if Necessary	TBD

7.4.5 Construction Site Stormwater Runoff Control Program

Consistent with the requirements of the MS4 Permit, the Town is implementing and enforcing a program to reduce pollutants in stormwater runoff discharged from all construction activities. The objective of the construction site stormwater runoff control program is described in Section 2.3.5 of the 2016 MS4 permit. The Town's program includes the following key elements:

1) **Bylaw.** The Town has enacted a bylaw and regulations consistent with 2.3.5.c.i to accomplish the following required elements of the construction site stormwater runoff program. The locations of the Town's Stormwater Bylaw and Regulations are provided in Table 4. The bylaw was adopted on October 20, 2008 and will be

reviewed and potentially amended before 6/30/2020. The stormwater regulations were adopted on February 1, 2010 and are periodically reviewed and updated.

A. Regulates land disturbance of greater than or equal to one acre within the regulated area and including disturbances less than one acre if that disturbance is part of a larger common plan of development or sale that would disturb one or more acres (consistent with MS4 Permit part 2.3.5.a);

B. Establishes authority for conducting site inspections, taking enforcement action and imposing sanctions as described further below and consistent with MS4 Permit part 2.3.5.c.ii.

C. Establishes the following requirements and standards for erosion and sediment control BMPs consistent with MS4 Permit part 2.3.5.c.iii;
    - Compliance with the MA Stormwater Policy and Handbook
    - Minimize the amount of disturbed area and protect natural resources;
    - Stabilize sites when projects are complete or operations have temporarily ceased;
    - Protect slopes on the construction site;
    - Protect all storm drain inlets and armor all newly constructed outlets;
    - Use perimeter controls at the site;
    - Stabilize construction site entrances and exits to prevent off-site tracking;
    - Inspect stormwater controls at consistent intervals

D. Establishes requirements for construction site operators to control wastes such as concrete washout, discarded building materials, chemicals, litter, and sanitary waste consistent with MS4 Permit part 2.3.5.c.iv;

E. Establishes the written procedures for pre-construction site plan review consistent with MS4 Permit part 2.3.5.c.v. including requirements for review of:

- Site design
- Planned operations at the construction site
- Planned sediment and erosion control BMPs to be use during the construction phase
- Planned BMPs to manage runoff after construction (See the section on "Post Construction Runoff Controls" in this SWMP)
- Consideration of potential water quality impacts
- Receipt and consideration of information received from the public
- Required evaluation of opportunities for the use of low impact development and green infrastructure, and encouragement for the utilization of these methods were feasible

2) **Written Procedures for Site Inspection.** The Town has established written site inspection procedures, site inspector qualifications, and site inspection tracking protocols that are consistent with MS4 Permit part 2.3.5.c.v. These policies and procedures supplement the authority to conduct site inspections established by the Town's Stormwater Management Regulations. The Town's Stormwater Management Regulations, including the site inspection procedures were adopted on February 1, 2010 and can be found in Table 4 below.

   The Town's procedures require that inspections shall occur at set periods during construction to verify that BMPs are working as described in the approved plans.

   As a potential supplement to the existing inspection procedures, the Town will review and consider whether components of the site inspection standard operating procedures (SOPs) provided in Appendix 6 should be added to the existing inspection procedures. The SOPs will be reviewed during Year 2 and the existing procedures will be amended as appropriate

7.4.6 Measurable Goals

Table 3: Construction Site Stormwater Runoff Control Measurable Goals

BMP #	BMP Description	Measurable Goals	Date Adopted / Reviewed / Amended
1	Sediment and Erosion Control Ordinance	Stormwater Management Regulations adopted 2/1/2010. Review and update as needed.	6/30/2021
2	Site Plan Review Procedures	Conduct site plan review of 100% of jurisdictional project sites according to the procedures outlined above	6/30/2021
3	Site Inspection Procedures	Inspect 100% of construction sites as outlined in the above document and take enforcement actions as needed	6/30/2021

7.4.7 Annual Reporting

The Town submits annual reports each year consistent with MS4 Permit part 2.3.5.c.v. The following indicators are tracked and included with the annual report:

- Number of project plans reviewed
- Number of construction site inspections performed, and percentage of sites inspected, and
- Number of enforcement actions undertaken.

The responsibility for supervising the reporting process is as indicated in Table 2 above.

7.4.8 Key Program Documents

Table 4 provides an overview of key program reference documents and where they can be found. Note that forms in Table 4 may be used as either paper forms or electronic equivalents.

Table 4: Summary of Key Protocols, SOPs and Forms

Category	Included Documents	Document Location
Bylaw	Stormwater Management Bylaw	https://www.ipswichma.gov/DocumentCenter/View/513/Ipswich-Stormwater-Management-Bylaw-PDF
Regulations	Stormwater Management Regulations	https://www.ipswichma.gov/DocumentCenter/View/521/Stormwater-Management-Permit-Regulations-PDF
Design Standards	> Massachusetts Stormwater Handbook and Stormwater Standards (Link) > Massachusetts Erosion and Sediment Control Guidelines, MassDEP (Link)	https://www.mass.gov/guides/ massachusetts-stormwater-handbook-and-stormwater-standards
Site Plan Review Procedures	Town of Ipswich Bylaws	TBD
Construction Site Inspection and Enforcement Procedures	Central MA SOP 5 – Construction Site Inspection (Link) Central MA SOP 5 – Construction Site Inspection Form (Link) Central MA SOP 6 – Erosion and Sediment Control (Link) Central MA SOP 6 – Erosion and Sediment Control Inspection Form (Link)]	https://www.centralmastormwater.org/ toolbox/pages/standard-operating-procedures

7.4.9 References

Central Massachusetts Regional Stormwater Coalition. Standard Operating Procedures # 5, 6, and 9. Retrieved February 11 2018, from https://www.centralmastormwater.org/toolbox/pages/standard-operating-procedures

Commonwealth of Massachusetts. Massachusetts Wetland Protection Act. Massachusetts General Laws Chapter 131 § 40. Accessed online at: https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXIX/Chapter131/Section40

USEPA, July 2018. General Permits For Stormwater Discharges From Small Municipal Separate Storm Sewer Systems In Massachusetts. USEPA. Accessed online at: https://www3.epa.gov/region1/npdes/stormwater/ma/2016fpd/final-2016-ma-sms4-gp.pdf

USEPA, 2017. National Pollutant Discharge and Elimination System (NDPES) Construction General Permit (CGP). USEPA. Accessed online at: https://www.epa.gov/npdes/epas-2017-construction-general-permit-cgp-and-related-documents

Massachusetts Department of Environmental Protection (MassDEP). Wetlands Protection Act Regulations. Code of Massachusetts Regulations Title 310 10.00. Accessed online at: https://www.mass.gov/files/documents/2016/08/vy/310cmr10a.pdf

Envirocert International CPESC Program Information, Requirements, and Fees https://www.envirocertintl.org/cpesc/cpesc-requirements-fees-processes/

7.4.10 Construction Site Stormwater Runoff Program Attachments

Copies of program attachments referenced in Table 4, if any, are included below.

7.5 MCM 5: Post Construction Stormwater Management

Objective: The objective of this control measure is to reduce the discharge of pollutants found in stormwater through the retention or treatment of stormwater after construction on new or redeveloped sites.

7.5.1 Introduction

The municipal separate storm sewer system (MS4) permit issued by the Environmental Protection Agency (EPA) to the Town of Ipswich (hereafter "the Town") requires the implementation of a post construction stormwater management plan to reduce the discharge of pollutants found in stormwater through the retention or treatment of stormwater after construction on new or redeveloped sites. This document describes the Town's post construction stormwater management program in detail. This document was prepared based on a model provided by the Neponset Stormwater Partnership and funded in part through a Community Innovation Challenge Grant and contributions from NSP member communities.

7.5.2 Program Purpose

The Town is required by the MS4 Permit to develop, implement, and enforce a program to address stormwater runoff in post construction to reduce the discharge of pollutants found in stormwater from all new development and redevelopment sites. In other words, the MS4 Permit demands that the Town create a Town-run stormwater permitting program to require most public and private parties who are developing or redeveloping land, to obtain a permit that requires the use of various techniques to capture and clean up stormwater runoff before it reaches streams or wetlands. The program is designed to lead the Town, over time, to develop stormwater management regulations that require targeted low impact design (LID) and green infrastructure (GI) stormwater systems to reduce impervious area, better simulate the natural hydrologic condition, and reduce impacts to local water quality.

7.5.3 Program Schedule

The MS4 permit defines the required timeline for implementing the Town's Post Construction Stormwater Management Program as summarized in Table 1 below.

Table 1: Program Schedule

Post-Construction Stormwater Management Task	**Permit Schedule**
Adoption of 2003 MS4 Program for Post Construction Stormwater Management	2008 (completed)
Operation of 2003 MS4 Post Construction Program	Until Expanded Program Adopted
Expanded Post Construction Stormwater Bylaw and/or Regulation Adoption	Year 2 (June 30, 2020)
Street Design and Parking Lot Guidelines Evaluation Report	Year 4 (June 30, 2022)
Green Infrastructure Report	Year 4 (June 30, 2022)
List of Five Municipal Retrofit Opportunities	Year 4 (June 30, 2022)
Identification of Additional Municipal Retrofit Opportunities to Maintain Minimum Inventory of Five Sites	Year 5 (June 30, 2023) and annually thereafter
Implementation of Post Construction Stormwater Program	Ongoing

7.5.4 Responsible Parties

The Town's Board of Selectmen have empowered the Department of Public Works to enforce the post construction stormwater runoff control provisions of the Stormwater Management Bylaw. The Board of Selectmen have delegated day to day management, record keeping, and reporting to the Town's Department of Public Works. The Department of Public Works is responsible for coordinating the efforts of other departments when needed, ensuring that necessary interdepartmental communication occurs in a timely

manner, and following up with other departments as needed regarding the status of their efforts.

Key contacts and roles for each of the other departments are as follows:

Table 2: Responsible Parties

Implementation Role	Responsible Authority/Individual
Post Construction Stormwater Permitting Authority	Department of Public Works
Overall Supervision of Post Construction Stormwater Program	Department of Public Works
Site Plan Review	Planning Board, Conservation Commission or Department of Public Works as appropriate
Site Inspection and Enforcement	Planning Board, Conservation Commission or Department of Public Works as appropriate
Preparation of Street and Parking Lot Design Report	Department of Public Works
Preparation of Green Infrastructure Report	Department of Public Works
Preparation and maintenance of Potential BMP Retrofit Inventory	Department of Public Works
Recordkeeping	Department of Public Works

7.5.5 Massachusetts Stormwater Policy

The Massachusetts Stormwater Policy, issued by the Department of Environmental Protection defines performance and design standards under the authority of the Massachusetts Wetlands Protection Act and Massachusetts Clean Waters Act to prevent or reduce pollutants from reaching water bodies and control the quantity of runoff from a site.

Many of these performance standards are incorporated by reference in the MS4 permit part 2.3.6 a.ii.3 and 2.3.6.a.ii.4. However, the MS4 Permit includes some performance

standards that go beyond and/or differ from what is required by the MA Stormwater Policy.

In addition, the geographic applicability of the MA Stormwater Policy differs somewhat from the geographic applicability of the MS4 Permit's Post Construction stormwater requirements. The state rules apply to activity near wetlands, whereas the MS4 Permit applies to projects of a certain size wherever they are.

In order to streamline the permitting process for all property owners applying to the Town for a permit, as well as to simplify the administration of the Town's Post Construction Stormwater Program and ensure a fair and consistent treatment of all properties in town, the Town will establish an integrated stormwater permitting program that provides a single set of standards and a single application process for all applicants who need a stormwater or wetlands permit from the Town, as described further below.

Table 3 below provides a brief description to serve as a quick reference of the Massachusetts Stormwater Standards. A link to the complete MA Stormwater Policy and Handbook can be found below in the "Key Program Documents" section of this SWMP.

Table 3: Massachusetts Stormwater Policy Design Standards Overview

MA Stormwater Handbook Standard	MA Stormwater Handbook Design Standard Description
Standard 1	No new stormwater conveyances allowed to discharge untreated stormwater
Standard 2*	Peak runoff rate control requirements
Standard 3*	Groundwater recharge requirements
Standard 5	Eliminate or reduce polluted discharge from higher pollutant loading land uses
Standard 6*	Protect Zone II or Interim Wellhead Protection Areas of public water supply
Standard 9	Implement long term operation maintenance practices
*Indicates standard is necessary and required for Section 401 water quality certification by MA.	

7.5.6 Post Construction Stormwater Management Program

Consistent with the requirements of the MS4 permit, the Town is implementing and enforcing a program to reduce pollutants in stormwater runoff discharged after construction on new or redeveloped sites. The Town's program includes the following key elements:

1) **1) Bylaw.** The Town has enacted a bylaw and regulations consistent with all requirements of section 2.3.6.a of the MS4 permit to accomplish the following required elements of the post construction site stormwater runoff program. The locations of the Town's Stormwater Management Bylaw and Regulations are provided in Table 5. The bylaw was adopted on October 20, 2008 and will be reviewed and potentially amended before 6/30/2020. The stormwater regulations were adopted on February 1, 2010 and are periodically reviewed and updated.

2) Street Design and Parking Lot Guidelines Report. Consistent with the requirements of part 2.3.6.b of the MS4 permit, the Town is required to develop a report assessing current street design and parking lot guidelines and other local requirements that affect the creation of impervious cover within four (4) years of the effective date of the permit (June 30, 2022). The Town's street design and parking lot guidelines report will be developed before 6/30/2022.

2) **Green Infrastructure Report.** Consistent with the requirements of part 2.3.6.c of the MS4 permit, the Town is required to develop a green infrastructure report assessing existing local regulations within four (4) years of the effective date of the permit (June 30, 2022). The Town's green infrastructure report will be developed before 6/30/2022.

4) List of Municipal Retrofit Opportunities. Consistent with the requirements of 2.3.6.d of the MS4 permit, the Town is required to develop a list of municipal retrofit opportunities within four (4) years of the effective date of the permit (June 30, 2022). The Town's list of Municipal Retrofit Opportunities will be developed before 6/30/2022.

7.5.7 Measurable Goals

Table 4: Post Construction Stormwater Management Measurable Goals

BMP Number	BMP Description	Measurable Goals	Date Adopted / Amended
1	Bylaw	Review existing bylaw to ensure compliance with new MS4 requirements	6/30/2020
2	Street Design and Parking Lot Guidance	Recommendations are implemented by 6/30/2023 with progress reported annually	6/30/2022
3	Green Infrastructure Report	Recommendations are implemented by 6/30/2023 with progress reported annually	6/30/2022
4	List of Municipal Retrofit Opportunities	Recommendations are implemented by 6/30/2023 with progress reported annually	6/30/2022

7.5.8 Annual Reporting

The Town is required to submit annual reports each year of the permit term. Evaluation of stormwater management for new development and redevelopment including status of ordinance development, review and status of the street design assessment, assessments to barriers to green infrastructure, and retrofit inventory status. The responsibility for supervising the reporting process is as indicated in Table 2 above. Yearly annual reporting includes the following:

Bylaw. The Town is required to report annually on its progress in amending its post construction stormwater bylaw.

As-Built Plans and Ensuring Long Term O&M. The Town is required to report annually on measures it has implemented to require as-built plans and ensure proper long-term operations and maintenance on properties where the Town has issued post construction stormwater permits.

Street Design and Parking Lot Guidelines Annual Reporting Requirements. The Town is required to report in each annual report on the status of this assessment including any planned or completed changes to local regulations and guidelines.

Green Infrastructure Report Annual Reporting Requirements. The Town is required to report in each annual report on its findings and progress towards making the practices allowable.

List of Municipal Retrofit Opportunities Annual Reporting Requirements. Beginning with the fifth year annual report (June 30, 2023) and in each subsequent annual report, the Town is required to identify additional permittee owned sites and infrastructure that could be retrofitted such that the permittee maintains a minimum of 5 sites in their inventory, until such a time as the permittee has less than five sites remaining. In addition, the Town will report on all properties that have been modified or retrofitted with BMPs to mitigate IA that were inventoried in accordance with this part. The permittee may also include in its annual report non-MS4 owned property that has been modified or retrofitted with BMPs to mitigate IA.

7.5.9 Key Program Documents and Deliverables

Table 5 provides a listing of key program documents and required deliverables for Post Construction Stormwater Management and where copies of these documents may be found.

Table 5: Resources for Post Construction Stormwater Management SWMP

Category	Included Documents	Document Location
Post Construction Stormwater Bylaw and/or Regulations	• Stormwater Management Bylaw and Regulations	https://www.ipswichma.gov/DocumentCenter/View/513/Ipswich-Stormwater-Management-Bylaw-PDF https://www.ipswichma.gov/DocumentCenter/View/521/Stormwater-Management-Permit-Regulations-PDF
Additional Design Standards or Guidance Documents Used in Administering Post Construction Program	• MA Stormwater Standards (link) • MA Stormwater Handbook (link)	https://www.mass.gov/guides/massachusetts-stormwater-handbook-and-stormwater-standards
Street Design and Parking Lot Report	TBD (by 6/30/2022)	"See link" or "See attachments"
Green Infrastructure Report	TBD (by 6/30/2022)	"See link" or "See attachments"
Inventory of Municipal BMP Retrofit Opportunities	TBD (by 6/30/2022)	"See link" or "See attachments"

7.5.10 References

USEPA, July 2018. General Permits For Stormwater Discharges From Small Municipal Separate Storm Sewer Systems In Massachusetts. USEPA. Accessed online at: https://www3.epa.gov/region1/npdes/stormwater/ma/2016fpd/final-2016-ma-sms4-gp.pdf

Massachusetts Department of Environmental Protection, 2008. Massachusetts Stormwater Handbook and Stormwater Standards. MassDEP. Accessed online at: https://www.mass.gov/guides/massachusetts-stormwater-handbook-and-stormwater-standards#stormwater-handbook-volume-1

7.5.11 Resources

Resources for Post Construction Bylaw

EPA Model Ordinances for Post Construction Controls (Link)

Resources For Street Design and Parking Lot Guidelines Report

EPA Checklist for Assessing Street and Parking Design Standards in NH and MA (Link)
https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/ImperviousAssessment.pdf

EPA Sustainable Design and Green Building Toolkit for Local Governments (Link)
https://www.epa.gov/smartgrowth/sustainable-design-and-green-building-toolkit-local-governments

Mass.Gov Smart Growth Smart Energy Toolkit Low Impact Development Module (Link)
https://www.mass.gov/files/documents/2017/11/03/Low%20Impact%20Development%20%28LID%29%20for%20developers.pdf

Center for Watershed Protection BMP Design Supplement for Cold Climates (Link)
https://www.in.gov/indot/files/BMP_Design_Cold_Climates.pdf

Massachusetts Institute of Technology (MIT) Design Guidelines for Urban Stormwater Wetlands (Link)
http://lcau.mit.edu/project/strategies-urban-stormwater-wetlands

Permeable Pavers Design Webinars and Specification ICPI (Link)
https://www.aecdaily.com/sc.php?node_id=1561135&tabidx=media&company=Interlocking+Concrete+Pavement+Institute

Center for Watershed Protection Better Site Design Code and Ordinance (COW) Worksheet (Link)
https://owl.cwp.org/mdocs-posts/better-site-design-code-and-ordinance-cow-worksheet-2017-update/

Center for Watershed Protection Better Site Design Code and Ordinance (COW) Scoring Spreadsheet (Link)
https://owl.cwp.org/mdocs-posts/cow-scoring-spreadsheet/

7.5.12 Resources for Green Infrastructure Report

MAPC Low Impact Regulatory Review Checklist (Link)
https://www.mapc.org/resource-library/do-your-local-codes-allow-lid/

MAPC Low Impact Development Toolkit and Factsheets (Link)
https://www.mapc.org/resource-library/low-impact-development-toolkit/

Green Neighborhoods Open Space Residential Design in Massachusetts (Link)
https://www.greenneighborhoods.org/
Massachusetts Institute of Technology (MIT) Design Guidelines for Urban Stormwater Wetlands (Link)
http://lcau.mit.edu/project/strategies-urban-stormwater-wetlands

NHDES Innovative Land Use Planning Techniques (Link)
https://www.nh.gov/osi/resource-library/planning/documents/innovative-land-use-planning-techniques-2008.pdf

Center for Watershed Protection Developing Off-site Stormwater Compliance (Link)
https://www3.epa.gov/region1/npdes/stormwater/ma/ma-off-site-mitigation-guidance-manual.pdf

Rain Garden Alliance Raingarden Design Guide (Link)
http://raingardenalliance.org/planting/prepping

Green Neighborhoods Open Space Residential Design in Massachusetts (Link)
https://www.greenneighborhoods.org/

7.5.13 Post Construction Stormwater Management Attachments

Copies of program attachments referenced in Table 5, if any, are included below.

7.5.14 Construction Site Stormwater Runoff Program Attachments

Copies of program attachments referenced in Table 4, if any, are included below.

7.6 MCM 6: Good Housekeeping and Pollution Prevention Program

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.

7.6.1 Introduction

The municipal separate storm sewer system (MS4) permit issued by the Environmental Protection Agency (EPA) to the Town of Ipswich (hereafter "the Town") requires the implementation of an operations and maintenance program that prevents pollutants from Town-owned facilities and operations from entering the Town's MS4.

This document describes the Town's good housekeeping program in detail and in conjunction with the attachments listed in Table 4 below, constitutes the "Written Program Document" required by the permit. This document was prepared based on a model provided by the Neponset Stormwater Partnership and funded in part through a Community Innovation Challenge Grant and contributions from NSP member communities.

7.6.2 Program Purpose

The purpose of the Town's good housekeeping program is to implement an operations and maintenance program for Town-owned facilities and operations with a goal of preventing or reducing pollutant runoff and protecting water quality from all Town-owned operations. This program is meant to address pollutants that collect on roadways, parking areas, storage yards (including waste and salt storage areas), vehicle maintenance areas, and parks or open spaces to prevent discharge to the Town's MS4 and local waterways.

7.6.3 Program Schedule

The MS4 permit defines the required timeline for tasks in implementing the Town's good housekeeping program as summarized in Table 1 below.

In addition to the items below, the Town is required to address several additional good housekeeping activities due to the presence of one or more water quality limited waters within or downstream of the Town, and/or one or more TMDLs which apply to the Town. These additional requirements are described further below in the section on "Water Quality Limited Waters and Appendix H Compliance" and/or the section on "TMDL and Appendix G" Requirements."

Table 1: Program Schedule

Good Housekeeping and Pollution Prevention Task	**Permit Schedule**
Facilities: Parks and Open Spaces Operations and Maintenance Procedures	Year 2 (June 30, 2020)
Facilities: Buildings and Facilities Operations and Maintenance Procedures	Year 2 (June 30, 2020)
Facilities: Vehicles and Equipment Operations and Maintenance Procedures	Year 2 (June 30, 2020)
Infrastructure: Written Catch basin Cleaning Program Procedures	Year 2 (June 30, 2020)
Infrastructure: Written Street Sweeping Program Procedures	Year 2 (June 30, 2020)
Infrastructure: Written Winter Road Maintenance Program Procedures	Year 2 (June 30, 2020)
Infrastructure: Stormwater Treatment Structures Inspection and Maintenance	Year 2 (June 30, 2020)
Infrastructure: Other Infrastructure Operations and Maintenance Procedures (if any)	Year 2 (June 30, 2020)
Implementation of Good Housekeeping Program	Ongoing

7.6.4 Responsible Parties

The SWMP Team Coordinator will be responsible for the day to day management, record keeping, and reporting. The Town is required to keep extensive written (hardcopy or electronic) records of all good housekeeping activities including but not limited to maintenance, inspections, and training records. The Town will maintain the records associated with the good housekeeping program as well as development and implementation of the SWPPP(s).

Table 2: Responsible Parties

Implementation Role	Responsible Authority/Individual
Overall Supervision and Coordination of Good Housekeeping Program	SWMP Team Coordinator
Facilities: Parks and Open Spaces Operations and Maintenance Program	Superintendent of Cemeteries & Parks
Facilities: Buildings and Facilities Operations and Maintenance Program	Facilities Director
Facilities: Vehicles and Equipment Operations and Maintenance Program	DPW Operations Manager
Infrastructure: Catch Basin Cleaning Program	DPW Director/Operations Manager
Infrastructure: Street Sweeping Program	DPW Director/Operations Manager
Infrastructure: Winter Road Maintenance Program	DPW Director/Operations Manager
Infrastructure: Stormwater Treatment Structures Inspection and Maintenance	DPW Director/Operations Manager
Infrastructure: Other Infrastructure Operations and Maintenance Program	DPW Director/Operations Manager
Stormwater Pollution Prevention Plan (SWPPP)	DPW Director/Operations Manager
Good Housekeeping Recordkeeping	DPW Director/Operations Manager

7.6.5 Town-Owned Facilities Operations and Maintenance Programs

An operation and maintenance program ("O&M Program") is a formulated plan of careful work practices, routine cleaning, training, and surveillance to minimize exposure to stormwater. The plans and strategies will vary depending on the nature of the Town-owned facility. Establishing written plans and procedures will ensure proper long-term maintenance and continuity and consistency as staff members in various departments change over time. The O&M programs are a critical component of the Town's efforts to control pollutants.

The Town has developed an inventory of all Town-owned facilities in the following program categories. The inventory of facilities will be reviewed annually and updated as needed.

The Town's O&M Program for Town-owned facilities includes the following key programs:

1) Parks and Open Space Program. Consistent with the requirements of part 2.3.7.a.ii.1 of the MS4 permit, the Town will inventory all Town-owned parks and open space areas and develop and implement an operations and maintenance program for these areas. A copy of the O&M Program is provided in Appendix 7.

2) Buildings and Facilities Program. Consistent with the requirements of part 2.3.7.a.ii.2 of the MS4 permit, the Town will inventory all Town-owned schools, town offices, police and fire stations, municipal pools, parking garages and other town-owned or operated buildings or facilities and will develop and implement an operation and maintenance program for these areas. A copy of the O&M Program is provided in Appendix 7

3) Vehicles and Equipment Program. Consistent with the requirements of Part 2.3.7.a.ii.3 of the MS4 permit, the Town will inventory all vehicle and equipment areas and develop and implement an operation and maintenance program that establishes procedures for the storage of Town-owned or operated vehicles, evaluates fueling areas, and ensures vehicle wash waters are not discharged to the MS4. A copy of the O&M Program is provided in Appendix 7

The location of the documents detailing each of the above programs can be found in Table 4 below.

7.6.6 Town-Owned Infrastructure Operations and Maintenance Programs

Proper, consistent and timely operation and maintenance of town-owned MS4 infrastructure—including roadways, catch basins, stormwater treatment structures and other components of the system—is equally critical to prevention of pollution. Within two years of the effective date of the MS4 Permit (6/30/2020), the Town will establish a written program detailing the activities and procedures the Town will implement to timely maintenance and pollution reduction.

The Town's O&M Program for Town-owned infrastructure includes the following key programs:

1) Catch Basin Cleaning Program. Consistent with the requirements of Part 2.3.7.a.iii.2 of the MS4 permit, the Town will establish a schedule of routine catch basin inspection and cleaning to ensure that no catch basin will be more than 50 percent full at anytime. In addition, consistent with the requirements of Part 2.3.7.a.iii.4 of the MS4 permit, the Town is required by the MS4 permit to ensure proper storage of the debris removed from catch basins prior to disposal or reuse. Materials removed from catch basins shall be managed in compliance with current MassDEP policies for catch basin cleanings which are referenced in the catch basin cleaning section in Table 4. A copy of the O&M Program is provided in Appendix 7

2) Street Sweeping Program. Consistent with the requirements of Part 2.3.7.a.iii.3 of the MS4 permit, the Town is required to establish and implement procedures for sweeping and cleaning streets as well as Town-owned parking lots at least once per year in the spring. A copy of the O&M Program is provided in Appendix 7

In addition, consistent with the requirements of Part 2.3.7.a.iii.4 of the MS4 permit, the Town is required by the MS4 permit to ensure proper storage of the debris removed from streets prior to disposal or reuse. Materials swept from the streets shall be managed in compliance with current MassDEP policies for street sweeping which are referenced in the street sweeping section in Table 4.

3) Winter Road Maintenance Program. Consistent with the requirements of Part 2.3.7.a.iii.5 of the MS4 permit, the Town will establish and implement procedures for winter road maintenance including the use and storage of salt and sand, minimization of the use of sodium chloride and other chloride salts, evaluation of opportunities for use of alternative (non-chloride) materials, and ensuring that snow disposal activities do not result in disposal of snow into waters of the United States. A copy of the O&M Program is provided in Appendix 7

4) Stormwater Treatment Structures Program. Consistent with the requirements of Part 2.3.7.a.iii.6 of the MS4 permit, the Town will establish inspection procedures and maintenance frequencies for stormwater treatment structures such as water quality swales, retention/detention basins, infiltration structures, proprietary treatment devices or other similar structures. Such structures (excluding catch basins) shall be inspected at least annually. The stormwater treatment structures program is a separate and distinct program from the catch basin cleaning program. A copy of the O&M Program is provided in Appendix 7

5) Other Infrastructure Program. Consistent with the requirements of Part 2.3.7.iii.1 of the MS4 permit, the Town will develop a program detailing the activities and procedures it will implement so that any other MS4 infrastructure not included above (if any) is maintained in a timely manner to reduce the discharge of pollutants to the MS4.

The location of the documents detailing each of the above programs can be found in Table 4 below.

7.6.7 Stormwater Pollution Prevention Plan (SWPPP)

Consistent with Part 2.3.7.b of the MS4 permit, the Town will create a Stormwater Pollution Prevention Plan (SWPPP) for each of the following Town owned or operated facilities where pollutants are exposed to stormwater. SWPPPs are required for facilities such as:

- Maintenance garages;
- Public works yards;

- Transfer stations; and
- Other waste handling facilities

The SWPPP is a separate and different document from the Stormwater Management Plan (SWMP). Because of the potential for higher pollution loading from these types of facilities, the SWPPP(s) are also separate from, and generally more detailed than, the O&M Plans required for parks and other town owned facilities.

If facilities are located at the same property, only one SWPPP is required. Furthermore, a SWPPP does not need to be developed for a facility if the Town has either previously developed a SWPPP or received a "no exposure" certification for the discharge under the Multi-Sector General Permit, or if the discharge is authorized under another NPDES permit.

The Town is required by the MS4 permit to develop and implement a written (hardcopy or electronic) SWPPP for the facilities described in Section 7.6.7 of this document within two (2) years from the effective date of the permit (June 30, 2020). Each SWPPP will be signed by a duly authorized representative in accordance with MS4 signatory requirements.

The location of the Town's SWPP(s) can be found in Table 4 below.

7.6.8 SWPPP Site Inspections

Consistent with Part 2.3.7.b.iii of the MS4 permit, facilities that require a SWPPP are inspected at least once each calendar quarter for all areas exposed to stormwater and all stormwater control measures. If during the inspections, or any other time, the Town identifies control measures that need repair or are not operating effectively, the Town will repair or replace them before the next anticipated storm event if possible, or as soon as practicable following that storm event. In the interim, the Town will have back-up measures in place.

Measurable Goals

Table 3: Good Housekeeping Measurable Goals

BMP Number	BMP Description	Measurable Goals	Date Adopted / Amended
1	Parks and Open Space O&M Procedures	Implement the SOP listed above on 100% of the parks and open spaces by 6/30/2020	TBD
2	Buildings and Facilities O&M Procedures	Implement the SOP listed above on 100% of buildings and facilities by 6/30/2020	TBD
3	Vehicles and Equipment O&M Procedures	Implement the SOP listed above for 100% of vehicles and equipment by 6/30/2020	TBD
4	Catch Basin Cleaning Program	All catch basins are cleaned in accordance with the program document such that no catch basin is more than 50% full at any given time	TBD
5	Street Sweeping Program	Annually sweep 100% of all streets and 50% of all municipal parking lots in accordance with the schedule by 6/30/2020	TBD
6	Winter Road Maintenance Program	Evaluate at least one salt/chloride alternative for use in the municipality by 6/30/2020	TBD
7	Stormwater Treatment Structures O&M Procedures	Inspect and maintain 100% of treatment structures to ensure proper function by 6/30/2020	TBD
8	Other Infrastructure O&M Procedures	100% of infrastructure is maintained to ensure proper function in accordance with the procedures by 6/30/2020	TBD
9	SWPPP	Develop and implement SWPPPs for 100% of facilities by 6/30/2020	TBD

7.6.9 Recordkeeping, Annual Review and Reporting

The Town is required by the MS4 permit to maintain detailed written (hard copy or electronic) records and documentation of its various good housekeeping activities, including but not limited to maintenance activities, inspections, employee training, and key metrics.

The Town reports on the progress of program implementation in the annual report. Records not required to be submitted with the annual report are maintained for at least five years, unless the retention period is extended by EPA.

The responsibility for supervising the recordkeeping and reporting is as indicated in Table 2 above. Key recordkeeping and reporting requirements for various sections of the Good Housekeeping program are summarized below.

7.6.10 Municipally-Owned Facilities Recordkeeping and Reporting

Reporting and recordkeeping requirements for the Municipally-Owned Facilities Programs (Parks and Open Spaces, Buildings and Facilities, and Vehicles and Equipment) are all similar. As detailed in Part 2.3.7.a.iv of the MS4 Permit, the Town will include the following in its annual report on Municipally-Owned Facilities:

- The status of the required inventory of Town-owned facilities and any subsequent updates;
- The status of the O&M programs for the Town-owned facilities and activities; and
- The maintenance activities associated with each.

Furthermore, the Town will keep the following additional written records of all required activities under the town-owned facilities programs which are not submitted with the annual report as detailed in Part 2.3.7.a.v of the MS4 Permit. These include but are not limited to:

- Maintenance activities,
- Inspections, and
- Training

7.6.11 Municipally-Owned Infrastructure Recordkeeping and Reporting

Reporting and recordkeeping requirements for the Municipally-Owned Infrastructure Programs have some common reporting elements with each other and the Municipally Owned Facilities Programs, but also have more detailed reporting requirements which are specific to some programs.

The common annual reporting elements for all the Municipally Owned Infrastructure Programs are as follows (as detailed in Part 2.3.7.a.iv of the MS4 Permit):

- The status of the required inventory of Town-owned infrastructure and any subsequent updates;
- The status of the O&M programs for the Town-owned infrastructure and activities; and
- The maintenance activities associated with each.

Furthermore, the Town will keep the following additional written records of all required activities under the town-owned facilities programs which are not submitted with the annual report as detailed in Part 2.3.7.a.v of the MS4 Permit. These include but are not limited to:

- Maintenance activities,
- Inspections, and
- Training

Additional program specific annual reporting requirements for specific Municipally Owned Infrastructure Programs include:

<u>Catch Basin Cleaning Program Additional Annual Reporting:</u>

- The Town's plan for optimizing catch basin cleaning, inspection plans, and its schedule for gathering information to develop the optimization plan required to document the optimization plan, including any metrics or other information used to reach the determination that the plan is optimal (first annual report only).
- The total number of catch basins,
- Number of catch basins inspected,
- Number of catch basins cleaned, and

- The total volume or mass of material removed from all catch basins.

Catch Basin Cleaning Program Additional Recordkeeping (Not Included with Annual Report)

- Logs of catch basin cleaning
- Logs of catch basin inspections
- Documentation of finding that a catch basin in >50% full in two consecutive cleanings, along with required tributary area inspection and resulting mitigation activities if any.

Street Sweeping Program Additional Annual Reporting:

- Number of miles cleaned or the volume or mass of material removed.
- For rural uncurbed roadways with no catch basins and limited access highways, the Town will either meet the required minimum inspection frequencies or develop and implement an inspection, documentation and targeted sweeping plan within two (2) years of the effective date of the permit (June 30, 2020), and submit such plan with its year one annual report (June 30, 2019).
- The same information as it applies to any sweeping implemented under the requirements of Appendix H of the MS4 Permit as described in the applicable section below.

Winter Road Maintenance Program Additional Annual Reporting:

- The Town is required to submit written plan and procedures for the winter road maintenance program with its year one annual report.

Stormwater Treatment Structures Program

- See basic requirements above.

7.6.12 SWPPP Recordkeeping and Reporting

A variety of specific reporting and record keeping requirements apply to each SWPPP including

SWPPP Annual Reporting Requirements

- Documentation of each quarterly facility inspection consistent with Part 2.3.7.b.iii of the MS4 permit

SWPPP Recordkeeping Requirements (Not Included in Annual Report)

- Written (hardcopy or electronic) record of all required activities consistent with Part 2.3.7.b.v of the MS4 permit including but not limited to
- maintenance,
- inspections, and
- training

7.6.13 Key Program Documents and Deliverables

Table 4 provides an overview of key reference documents and where they can be found. Note that forms in Table 4 may be used as either paper forms, or electronic equivalents.

Table 4: Summary of Key Protocols, SOPs and Forms (ALL DUE BY YEAR 2)

Category	Included Documents	Document Location
Facilities: Parks and Open Spaces	Parks and Open Space SOP	SWMP, Appendix 7
Facilities: Buildings and Facilities	Town-Owned Facilities SOP	SWMP, Appendix 7
Facilities: Vehicles and Equipment	Town -Owned Vehicles and Equipment SOP	SWMP, Appendix 7
Infrastructure: Catch Basin Cleaning and Cleanings Storage		
	Municipal Stormwater Infrastructure O&M Plan	DPW Office
Infrastructure: Winter Road Maintenance	Municipal Stormwater Infrastructure O&M Plan	DPW Office
Infrastructure: Stormwater Structure Inspection	Municipal Stormwater Infrastructure O&M Plan	DPW Office
SWPPP	DPW Garage and Town Transfer Station SWPPP	DPW Office

Note: Information will be added to the above table as the documents are completed.

7.6.14 References

Central Massachusetts Regional Stormwater Coalition. Standard Operating Procedures # 3, 4, 7, and 14. Retrieved February 11 2018, from https://www.centralmastormwater.org/toolbox/pages/standard-operating-procedures

USEPA, July 2018. General Permits For Stormwater Discharges From Small Municipal Separate Storm Sewer Systems In Massachusetts. USEPA. Accessed online at: https://www3.epa.gov/region1/npdes/stormwater/ma/2016fpd/final-2016-ma-sms4-gp.pdf

7.6.15 Resources for Operation and Maintenance

EPA Considerations for Green Infrastructure Maintenance (Link)
https://www.epa.gov/G3/operation-and-maintenance-considerations-green-infrastructure#Maintenance-Resources

EPA Long-Term Operation and Maintenance for Green Infrastructure Success (Link)
https://www.epa.gov/sites/production/files/2015-04/documents/green_infrastructure-om_report.pdf

Yale Survey of Green Infrastructure Maintenance Programs in the U.S. (Link)
http://hixon.yale.edu/sites/default/files/files/fellows/paper/feehan_hixonpaper20131.pdf

University of New Hampshire Green Infrastructure Maintenance Checklist (Link)
https://www.unh.edu/unhsc/maintenance

7.6.16 Resources for Winter Road Maintenance

Clear Roads Road Salt Winter Maintenance BMP Manual (Link)
http://clearroads.org/wp-content/uploads/dlm_uploads/0537_2015-Clear-Roads-Best-Practice-Guide-WEB.pdf

7.6.17 Good Housekeeping Program Attachments

Copies of program attachments referenced in Table 4, if any, are included below.

APPENDIX 1

2016 MS4 Notice of Intent

APPENDIX 2

EPA Authorization to Discharge Letter

APPENDIX 3

Endangered Species Documentation

APPENDIX 4

Ipswich Stormwater Management Bylaw and Regulations

APPENDIX 5

Illicit Discharge Detection and Elimination Plan

APPENDIX 6

Construction Site Inspection Standard Operating Procedures (SOP)
(to be adopted)

APPENDIX 7

Parks and Open Spaces, Town-Owned Facilities, Vehicles and Equipment and Structural BMPs

Standard Operating Procedures (SOP)

PARKS AND OPEN SPACE OPERATION AND MAINTENANCE PLAN

SECTION 1 – Introduction

Parks and open space operations and maintenance activities commonly involve the operation of equipment such as mowers and tractors; disposal of waste from mowing, planting, weeding, raking, pruning, and trash collection; application of pesticides, herbicides, and fertilizers; cleaning and maintenance of park amenities such as play equipment, restrooms, and structures; and snow removal. These activities have the potential to generate contaminants such as sediments and toxic chemicals that may be picked up by rainwater, thereby entering the storm drainage system and receiving waters. The goal of this written Standard Operating Procedure (SOP) is to provide guidance to municipal employees to reduce the discharge of pollutants from the MS4 and to receiving waters as a result of parks and open space operations and maintenance. If services are contracted, this SOP should be provided to the contractor. The contract should specify that the contractor is responsible for compliance with all applicable laws.

The Town of Ipswich performs a variety of operations and maintenance activities at its municipal parks and open spaces. These include: mowing, pet waste collection, equipment maintenance, and general site cleanup.

Within two years of the effective date of the MS4 Permit, the Town of Ipswich will create an inventory of all municipal parks and open spaces and update this inventory annually (refer to the attached inventory).

Procedures

The Town of Ipswich will implement the following procedures at municipal parks and open spaces to reduce the discharge of pollutants from the MS4:

General

- Repair damage to landscaped or mulch or vegetated bare areas as soon as possible to prevent erosion. If there are areas of erosion or poor

This O&M Plan was developed using a template provided by the Central Massachusetts Regional Stormwater Coalition

vegetation, repair them as soon as possible, especially if they are within 50 feet of a surface water (e.g., pond, lake, or river).

- Remove (sweep or shovel) materials such as soil, mulch, and grass clippings from parking lots, streets, curbs, gutters, sidewalks, and drainage-ways.
- Do not clean up any unidentified or possibly hazardous materials found during maintenance; notify a supervisor immediately.

Maintenance

- Wastewater from power washing signs, structures, or bleachers cannot be discharged into the stormwater system.
- When painting park equipment, use a drop cloth and clean up any spills immediately.
- Do not leave open containers on the ground where they may accidentally tip over.
- Sweep parking lots with a street sweeper and dispose of street sweepings in designated areas (see SOP 16: Streets and Parking Lots).
- Never wash debris from parking lots into the storm drain.

Mowing

- Remove debris and trash from landscaped areas prior to mowing.
- Collect grass clippings and leaves after mowing. Do not blow or wash them into the street, gutter, or storm drains.
- Properly recycle or dispose of organic waste after mowing, weeding, and trimming.
- Reduce mowing frequencies wherever possible by establishing low/no-mow areas in lesser-used spaces.
- Brush off mowers (reels and decks) and tractors over grassy areas or in contained washout areas.
- Leave clippings on grassy areas or dispose of them in the trash or by composting.
- Do not hose off mowers over paved areas that drain into the MS4 or directly to surface waters.
- Follow proper vehicle and equipment maintenance procedures to prevent leaks (see SOP 21: Operations and Maintenance of Municipal Vehicles and Equipment)

- Do not allow grease from mowers to fall onto areas where they can be washed into the stormwater system.

Irrigation

- Repair broken sprinkler heads as soon as possible.
- Only irrigate at a rate that can infiltrate into the soil to limit run-off.
- Avoid irrigating close to impervious surfaces such as parking lots and sidewalks.

Landscaping

- When establishing new plantings, use alternative landscaping materials, such as drought resistant or native plants to reduce the need for irrigation and extensive application of fertilizers and pesticides.
- Follow proper fueling procedures for all equipment to ensure that petroleum products do not enter the stormwater system (see SOP 7: Fuel and Oil Handling Procedures).
- Fertilizers, herbicides, and pesticides should be properly used, stored, and handled (see SOP 12: Storage and Use of Pesticides and Fertilizer).
- Under MS4 Permit requirements, the Town of Ipswich acknowledges that blowing organic waste material (grass cuttings, leaf litter) is strictly prohibited.

Snow Removal

- Store salt or sand for snow removal indoors under a roof or in a covered container and on impervious surfaces.
- See SOP 18: Winter Road Maintenance for more information on proper snow disposal and storage procedures.
- Any damage done to vegetated areas caused by plows or deicing materials should be repaired as early as possible in the spring.

Trash Management

- All waste and recycling containers must be leak-tight with tight-fitting lids or covers.

- Place waste and recycling containers indoors or under a roof or overhang whenever possible.
- Clean and sweep up around outdoor waste containers regularly.
- Arrange for waste and recyclables to be picked up regularly and disposed of at approved disposal facilities.
- Do not wash out waste or recycling containers outdoors or in a parking lot.
- Conduct periodic inspections of waste areas to check for leaks and spills.
- Ensure there are enough trash and recycling containers at appropriate areas.
- Monitor waste and recycling containers at heavily-used sites and on holidays to ensure that there is no overflow.

Other Activities

- Provide pet waste stations with bags and trash receptacles where pets are permitted. Post signs describing the proper disposal of pet waste.
- All portable toilets should be staked down in flat, secure locations where they are less likely to be knocked down or blown over. They should be placed in a location that would retain any spillage from washing into the MS4 or receiving waters. Ensure routine maintenance and cleaning of portable toilets.
- Identify undesirable waterfowl congregation areas and take steps to prevent waterfowl droppings from entering the stormwater system or surrounding waterbodies.
    - Take measures to discourage congregation near waterbodies and the storm system (e.g., use strobe lights or reflective tape, establish no-mow zones to reduce available feeding areas, or plant thick vegetation along waterlines). If waterfowl congregation cannot be managed, then isolate the drainage from congregation areas away from the storm system and waterbodies.

Install signage to educate the public on the negative effects of waterfowl feces entering the stormwater system or nearby waterbodies in order to discourage public feeding. Alternatively, enact feeding bans.

Employee Training

- Employees who perform maintenance or other applicable work at

municipal parks and open spaces are trained annually on these procedures and the proper operation of related equipment.

- Employees are also trained on stormwater pollution prevention, illicit discharge detection and elimination (IDDE) procedures, and spill and response procedures.
- If services are contracted, the contractor should be given a copy of this and any applicable SOPs to ensure compliance with MS4 regulations.

Attachments

1. Inventory of Municipal Parks and Open Spaces

Operations and Maintenance of Municipal Buildings and Facilities

Introduction

Municipal buildings and facilities (schools, municipal offices, police and fire stations, municipal pools, parking garages, etc.) often house various chemicals, such as petroleum products and hazardous materials. As a result, these buildings and facilities are potential sources of pollutant discharges to the storm drainage system. The goal of this written Standard Operating Procedure (SOP) is to provide guidance to municipal employees on the use, storage, and disposal of chemicals and other stormwater pollutants to reduce the discharge of pollutants from the MS4. If services are contracted, this SOP should be provided to the contractor. The contract should specify that the contractor is responsible for compliance with all applicable laws.

The Town of Ipswich performs a variety of operations and maintenance activities at its municipally owned and operated buildings. These activities include: dumpster and waste management and parking lot sweeping and maintenance.

As required by the Permit, the Town has created an inventory of all municipal buildings and facilities and this inventory will be updated annually (refer to the attached buildings and facilities inventory sheet).

Procedures

The Town of Ipswich will implement the following procedures for municipally owned or operated buildings and facilities to reduce the discharge of pollutants from the MS4:

Handling, Storage, Transfer, and Disposal of Trash and Recyclables

All liquid and solid waste must be disposed of properly. Some of the most common sources of pollution at municipal facilities are a result of littering, improper collection of debris, and improper disposal of solid or liquid waste.

- All waste and recycling receptacles must be leak-tight with tight-fitting lids or covers.
- Keep lids on dumpsters and containers closed at all times unless adding or removing material. If using an open-top roll-off dumpster, cover it and tie it down with a tarp unless adding materials.
- Place waste or recycling receptacles indoors or under a roof or overhang whenever possible.
- Locate dumpsters on a flat, paved surface and install berms or curbs around the storage area to prevent run-on and run-off.
- Do not locate dumpsters over or adjacent to catch basins.
- Prior to transporting waste, trash, or recycling, ensure that containers are not leaking (double bag if needed) and properly secure containers to the vehicle.
- Clean and sweep up around outdoor waste containers regularly.
- Clean up any liquid leaks or spills with dry cleanup methods.
- Arrange for waste or recycling to be picked up regularly and disposed of at approved disposal facilities.

- Never place hazardous materials, liquids, or liquid-containing wastes in a dumpster or recycling or trash container.
- Do not wash trash or recycling containers outdoors or in parking lots.
- Conduct periodic inspections of solid and liquid waste storage areas to check for leaks and spills.
- Conduct periodic inspections of work areas to ensure that all wastes are being disposed of properly.
- In dumpster areas, regularly pick up surrounding trash and debris and regularly sweep the area.
- In compactor areas, regularly check the hydraulic fluid hoses and reservoir to ensure that there are no cracks or leaks. Regularly sweep the area.

Building Maintenance

- When power washing buildings and facilities, ensure that the washwater does not flow into the storm system. Containment or filtering systems should be provided.
- Paint and other chemicals should not be applied on the outside of buildings when it is raining or prior to expected rain.
- When sanding, painting, power washing, etc., ensure that sites are properly prepared (e.g., use tarps) and cleaned (e.g., use dry cleaning methods) especially if they are near storm drains. Protect catch basins when maintenance work is conducted upgradient of them.
- When painting, use a drop cloth and clean up any spills immediately.
- Do not leave open containers on the ground where they may accidentally tip over.
- Buildings should be routinely inspected for areas of potential leaks.
- Do not discharge chlorinated pool water into the stormwater system. Water must be properly dechlorinated and tested before it is discharged.
- Streets and parking lots surrounding municipal buildings and facilities should be swept and kept clean to reduce runoff of pollutants and debris to the stormwater system.
- Streets and parking lots around buildings and facilities will be swept in accordance with the procedures in SOP 16: Streets and Parking Lots.

Storage of Petroleum Products and Potential Pollutants

- Floor drains in storage areas should be disconnected from the stormwater system.
- Routinely inspect buildings and facilities for areas of potential leaks.
- For storage and handling procedures of petroleum products and potential pollutants, refer to SOP 17: Hazardous Materials Storage and Handling and SOP 7: Fuel and Oil Handling Procedures.
- All municipal buildings and facilities should be periodically inspected to address potential pollutant sources (e.g., leaks).

Spill Prevention Plan

- Spill prevention plans such as Spill Prevention Control and Countermeaure (SPCC) Plans should be in place where applicable, based on inventories of material storage and potential pollutants. Coordinate with the local fire department if necessary.

Employee Training

- Employees who perform maintenance or other applicable work at municipal buildings and facilities

should be trained annually on these procedures and the proper operation of related equipment.

- Employees are also trained on stormwater pollution prevention, illicit discharge detection and elimination (IDDE) procedures, and spill and response procedures.
- If services are contracted, the contractor should be given a copy of this and any applicable SOPs to ensure compliance with MS4 regulations.

Attachments

1. Inventory of Municipal Buildings and Facilities

Inventory of Municipal Buildings and Facilities
Ipswich, Massachusetts

Name of Building/Facility	Location	Manager/Contact – Name, Position, Department, Phone Number	Potential Stormwater Pollutant Sources (e.g., trash containers, fertilizers, fuel)
Town Hall	25 Green Street	Chris Rais Facilities Director 978-356-2935	Leaks from vehicles in parking lot
Central Fire Station	59 Central Street	Chris Rais Facilities Director 978-356-2935	Leaks from vehicles & equipment
Police & Annex	15 Elm Street	Chris Rais Facilities Director 978-356-2935	Leaks from vehicles & equipment
Haskell House	36 South Main Street	Chris Rais Facilities Director 978-356-2935	N/A
Linebrook Fire Station	216 Linebrook Road	Chris Rais Facilities Director 978-356-2935	Leaks from vehicles & equipment
Library	25 North Main Street	Chris Rais Facilities Director 978-356-2935	N/A
DPW Garage and Salt Shed	100 County Road	Chris Rais Facilities Director 978-356-2935	Leaks from vehicles & equipment Fueling Salt carry-out from salt shed Sediment from stockpiles Stored equipment and materials/solid waste

This O&M Plan was developed using a template provided by the Central Massachusetts Regional Stormwater Coalition

Doyon School	216 Linebrook Road	Chris Rais Facilities Director 978-356-2935	Leaks from vehicles & equipment Trash containers/dumpsters
Junior/Senior High School	134 High Street	Chris Rais Facilities Director 978-356-2935	Leaks from vehicles & equipment Trash containers/dumpsters
Winthrop School	65 Central Street	Chris Rais Facilities Director 978-356-2935	Leaks from vehicles & equipment Trash containers/dumpsters
School Administration	1 Lord Square	Chris Rais Facilities Director 978-356-2935	Leaks from vehicles & equipment
Ipswich Power Co.	276 High Street	Chris Rais Facilities Director 978-356-2935	Leaks from vehicles & equipment
Pump Stations	Various Addresses	Chris Rais Facilities Director 978-356-2935	Small quantity of maintenance fluids
Utility Administration and Garage	272 High Street	Chris Rais Facilities Director 978-356-2935	Leaks from vehicles & equipment
Wastewater Treatment Plant	18 Fowlers Lane	Chris Rais Facilities Director 978-356-2935	Leaks from vehicles & equipment Chemical transport/delivery
Water Treatment Plant	274 High Street	Chris Rais Facilities Director 978-356-2935	Leaks from vehicles & equipment Chemical transport/delivery

Well Buildings	Various Addresses	Chris Rais Facilities Director 978-356-2935	N/A

Operations and Maintenance of Municipal Vehicles and Equipment

Introduction

Regular maintenance of both municipal and contracted vehicles and heavy equipment not only prolongs the life of municipal assets but also helps reduce the potential for leaking of fluids associated with normal wear and tear. Potential pollutants include fuels, oil, antifreeze, brake fluid, solvents, and battery acid. The goal of this written Standard Operating Procedure (SOP) is to provide guidance to municipal employees to help reduce the discharge of pollutants from the MS4 as a result of leaks from vehicles and equipment. If services are contracted with respect to vehicles and equipment, this SOP should be provided to the contractor. The contract should also specify that the contractor is responsible for compliance with all applicable laws.

The Town of Ipswich undertakes various procedures in regards to its municipal vehicles and equipment. These include: general servicing (e.g.; oil changes, coolant replacement) and minor repairs. Major servicing and repairs are performed by outside contractors.

An inventory of municipal-owned vehicles and equipment is attached to the SOP. This inventory should be updated annually.

Procedures

The Town of Ipswich will implement the following procedures for municipally owned and operated vehicles and equipment to reduce the discharge of pollutants from the MS4:

Vehicle and Equipment Maintenance

Vehicle Storage

- Monitor vehicles and equipment for leaks and use drip pans as needed until repairs can be performed.
- When drip pans are used, avoid overtopping.
- Drain fluids from leaking or wrecked vehicles and parts as soon as possible. Dispose of fluids properly.
- Store and park vehicles on impervious surfaces and/or under cover or indoors whenever possible.

Vehicle Maintenance

- Conduct routine inspections of heavy equipment and vehicles to proactively identify maintenance needs or potential leaks.
- Perform routine preventive maintenance to ensure heavy equipment and vehicles are operating optimally.
- Recycle or dispose of waste properly and promptly.
- Sweep and pick up trash and debris as needed.
- Do not dump any liquids or other materials outside, especially near or in storm drains or ditches.

Body Repair and Painting

- If the Town elects to perform painting, conduct all body repair and painting work indoors.
- Minimize waste from paints and thinners. Calculate paint needs based on surface area.
- Use dry cleanup methods (vacuum, sweep) to clean up metal filings and dust and paint chips from grinding, shaving and sanding. Sweep debris from wet sanding after allowing it to dry overnight on the shop floor. Dispose of waste properly; never dump waste into storm or sanitary sewers.
- Use sanding tools equipped with vacuum capability to pick up debris and dust.

Fueling

- Fueling areas should be evaluated to ensure that pollutants (e.g., gasoline or oil) do not enter the MS4.

Material Management

- Store materials and waste in labeled containers under cover and in secondary containment.
- Chemicals should not be combined in containers.
- Hazardous waste must be labeled and stored according to hazardous waste regulations.
- Carefully transfer collected fluids from containers into designated storage areas as soon as possible.
- Store new and used batteries securely to avoid breakage. Store indoors or in secondary containment to contain potential acid leaks. Recycle used batteries.
- Conduct periodic inspections of storage areas to detect possible leaks.
- Do not wash or hose down storage areas unless there is prior approval to collect and discharge the water into the sanitary sewer. Use dry cleanup methods whenever possible.
- Keep lids on containers. Store them indoors or under cover to reduce exposure to rain.
- Inspect and maintain all pretreatment equipment, including interceptors, according to the manufacturer's maintenance schedule and at least once per year.
- Proper spill protocol should be followed to prevent chemicals from entering the stormwater system.

Parts Cleaning

- Use designated areas for engine, parts, or radiator cleaning. Do not wash or rinse parts outdoors. If parts cleaning equipment is not available then capture parts cleaning fluids.
- Recycle cleaning solution. Never discharge waste to the sanitary sewer or storm sewer.
- Use steam cleaning or pressure washing of parts instead of solvent cleaning. Cleaning equipment must be connected to an oil/water interceptor prior entering the sanitary sewer.
- When using solvents for cleaning, drain parts over the solvent tank to avoid drips to the floor. Catch excess solutions and divert them back to tank. Allow parts to dry over the hot tank.

Vehicle and Equipment Washing

Vehicle washing can result in the discharge of nutrients, sediment, petroleum products, and other contaminants to a surface water body or to a stormwater system. The MS4 Permit does not authorize the discharge of municipal vehicle washing byproducts into the MS4.

Outdoor Vehicle Washing Procedures

Outdoor washing of municipal vehicles should be avoided unless wash water is contained in a tight tank or similar structure. Where no alternative wash system is available, and full containment of wash water cannot be achieved, adhere to the following procedures:

- Avoid discharge of any wash water directly to the storm drainage system or surface water (e.g., stream, pond, or drainage swale)
- Minimize the use of water to the extent practicable.
- Where the use of detergent cannot be avoided, use products that do not contain regulated contaminants. The use of a biodegradable, phosphate-free detergent is preferred.
- Do not use solvents except in dedicated solvent parts washer systems or in areas not connected to a sanitary sewer.
- Do not power wash, steam clean, or perform engine or undercarriage cleaning.
- Grassy and pervious (porous) surfaces may be used to promote direct infiltration of wash water, providing treatment before recharging groundwater and minimizing runoff to an adjacent stormwater system. Pervious surfaces or other infiltration-based systems should not be used within wellhead protection areas or within other protected resources.
- Impervious surfaces discharging to the storm drainage system should not discharge directly to a surface water unless treatment is provided. The treatment device should be positioned such that all drainage must flow through the device, preventing bypassing or short-circuiting.
- Periodic sweeping and/or cleaning should be completed to prevent accumulation from forming on the washing area.
- Maintain absorbent pads and drip pans to capture and collect spills or noticeable leaks observed during washing activities.
- Heavily soiled vehicles or vehicles dirtied from salting or snow removal efforts should follow the SOPs in the "Heavy Equipment Washing Procedures" below.

Indoor Vehicle Washing Procedures

- Vehicles and equipment should be washed inside whenever possible to reduce runoff to the stormwater system.
- Where the use of detergent cannot be avoided, use products that do not contain regulated contaminants. The use of biodegradable, phosphate-free detergent is preferred.
- Detergents should not be used in areas where oil/water separators provide pre-treatment of drainage.
- Floor drains should be connected to a sanitary sewer or tight tank. Floor drains discharging to adjacent surface water bodies or engineered storm drain systems should be permanently plugged or otherwise abandoned before any vehicle wash activities are completed.
- Designate separate areas for routine maintenance and vehicle cleaning. This helps prevent contamination of wash water by motor oils, hydraulic lubricants, greases, or other chemicals.
- Dry cleanup methods are recommended within garage facilities. Do not wash down floors and work areas with water.
- Bring smaller vehicles to commercial washing stations.

- Maintain absorbent pads and drip pans to capture and collect spills or noticeable leaks observed during washing activities.

Heavy Equipment Washing Procedures

- Mud and heavy debris removal should occur on impervious surfaces or within a retention area.
- Maintain these areas with frequent mechanical removal and proper disposal of waste.
- Impervious surfaces with engineered storm drain systems should not discharge directly to a surface water.
- Floor drains should be connected to a sanitary sewer or tight tank. Floor drains discharging to adjacent surface waterbodies or engineered storm drain systems should be permanently plugged or otherwise abandoned before any vehicle wash activities are completed.
- Where the use of detergent cannot be avoided, use products that do not contain regulated contaminants. The use of biodegradable, phosphate-free detergent is preferred.
- Detergents should not be used in areas where oil/water separators provide pre-treatment of drainage.
- Maintain absorbent pads and drip pans to capture and collect spills or noticeable leaks observed during washing activities.

Engine and Steam Washing Procedures

- Do not wash parts outdoors.
- Maintain drip pans and smaller containers to contain motor oils, hydraulic lubricants, greases, etc. and to capture and collect spills or noticeable leaks observed during washing activities, to the extent practicable.
- Where use of detergent cannot be avoided, use products that do not contain regulated contaminants. The use of a biodegradable, phosphate-free detergent is preferred.
- Avoid cleaning with solvents except in dedicated solvent parts washer systems. Make use of pressure washing and steam cleaning.
- Recycle clean solutions and rinse water to the extent practicable.
- Wash water should discharge to a tight tank or a sanitary sewer via an oil/water separator. Detergents should not be used in areas where oil/water separators provide pre-treatment of drainage.

Employee Training

- Employees who perform work on/with municipal vehicles or equipment are trained annually on these procedures and the proper operation of related equipment.
- Employees are also trained on stormwater pollution prevention, illicit discharge detection and elimination (IDDE) procedures, and spill and response procedures.
- If services are contracted, the contractor should be given a copy of this and any applicable SOPs to ensure compliance with MS4 regulations.

Attachments

1. Inventory of Municipal Vehicles and Equipment

Make	Model	Model Year	Month/Year Purchased	Drive System: 2WD, 4 WD, or AWD	> 8500 pounds? (Y or N or NA)	COMBINED MPG Rating	Vehicle Function
Ford	Explorer	2013			N		Building Department Staff Vehicle
Ford	F250 1/2 ton	2011	1/1/2011	4WD	N	22	Cemetery Hauling/Plowing
Ford	F550	2009	1/1/2009	4WD	Y		Cemetery Hauling/Plowing
Chevy	250 3/4 ton	2005	1/1/2005	4WD	N		Cemetery Hauling/Plowing
Ford	F350	2016	1/1/2016	4WD	Y		Cemetery Hauling/Plowing
Ford	F250	2017	1/1/2017	4WD	N		Cemetery Hauling/Plowing
Ford	E250 Pass. Van	2006			Y		Council on Aging passenger vehicle
Ford	E350 Pass.Van	2010			Y		Council on Aging passenger vehicle
Chevy	Bolt	2019	9/1/2019	2WD	N	119	Conservation Agent
Ford	Escape Hybrid	2009		AWD	N	28	Electric Manager
International DuraStar 4300	Lift Truck	2010		2WD	Y		Electric Distribution
International DuraStar 4300	Lift Truck	2006		2WD	Y		Electric Distribution
Chevy	Silverado 2500	2017		4WD	N		Electric Plowing and Operations
Ford	F350	2011		4WD	N		Electric Distribution
International DuraStar 4300	Lift Truck	2015		2WD	Y		Electric Distribution
Ford	F250	2014		2WD	N		Electric Power Plant and Substations
Chevy	Bolt	2019	9/1/2019	2WD	N	119	commuting, training, public relations, courier
Ford	Interceptor	2013		AWD		18	Facilities Department Staff Vehicle
Ford	Expedition	2017	1/1/2017	4WD	N	17	Staff
Ford	Explorer	2015	9/1/2014	4WD	N	18	Staff
Sutphen	Fire Truck	2003	11/1/2003	2WD	Y		Pumper
E-One (E4)	Fire Truck	2018	1/1/2018	2WD	Y		Pumper
KME	Fire Truck	2014	5/1/2013	2WD	Y		Pumper
E-One (E2)	Fire Truck	2018	1/1/2018	2WD	Y		Pumper
Ford	Fire Truck	2007	10/1/2006	4WD	Y		Forestry Mini Pumper
KME	Fire Truck	1998	11/1/1997	2WD	Y		Aerial - Ladder Truck
Ford	F250	2006		4WD	N	15	Pick Up
Ford	Interceptor	2017		AWD	N	18	Staff
Ford	F550	2008	10/1/2000	4WD	Y		Forestry brush chipping & Plowing
Chevy	Bolt	2019	9/1/2019	2WD	N	119	Health Agent
Ford	F350	2016	9/1/2017	4WD	Y		DPW Foreman
Ford	F150	2008	8/1/2008	2WD	N	21	Highway/Mechanic running parts
Ford	F450	2012	10/1/2012	4WD	Y		Highway Maintenance & Plowing
Ford	F750	2011	9/1/2019	4WD	Y		Highway Hauling/Plowing
Ford	F450	2012	10/1/2012	4WD	Y		Highway Maintenance & Plowing
Mack	GU432	2016	10/1/2016	4WD	Y		Highway Hauling/Plowing
Mack	GU712	2015	10/1/2019	4WD	Y		Highway Hauling/Plowing
Mack	GU712	2014	10/1/2019	4WD	Y		Highway Hauling/Plowing
Ford	F750	2009	10/1/2019	4WD	Y		Highway Hauling/Plowing
Ford	F750	2011	2/1/2012	4WD	Y		Permenant Mount Sander
Ford	F250	2019	8/1/2019	4WD	Y		Highway Maintenance & Plowing
Ford	F750	2009	9/1/2019	4WD	Y		Highway Hauling/Plowing
Peterbuilt	Snow Fighter	2007	10/1/2007	4WD	Y		Highway Hauling/Plowing
Ford	F150	2010	8/1/2010	2WD	N	21	DPW Director
Starcraft	E450 Superduty	2000	8/1/2018	4WD	Y		Transport Vehicle
Ford	Taurus	2006	8/1/2006	2WD	N	22	Mechanic Running Parts & Transport Vehicle
Ford	Interceptor	2017		AWD	N	17.49	Patrolman Vehicle
Ford	F250	2017		4WD	N		Harbor's Division
Ford	Taurus	2011		FWD	N	20.79	Police Lieutenant Vehicle
Ford	Explorer	2015		AWD	N	18.95	Detectives Vehicle
Ford	Explorer	2019		AWD	N	18.95	Police Chief New Vehicle
Dodge	Avenger	2008		FWD	N	25.33	Undercover and out of town trainings
Ford	F150	2017		4WD	N	22.44	Animal Control Officer Vehcile
Ford	Interceptor	2017		AWD	N	17.49	Patrolman Vehicle
Ford	Interceptor	2018		AWD	N	17.49	Patrolman Vehicle
Ford	Interceptor	2016		AWD	N	17.49	Patrolman Vehicle
Ford	Interceptor	2017		AWD	N	17.49	Patrolman Vehicle
Ford	Interceptor	2018		AWD	N	17.49	Patrolman Vehicle
Ford	Taurus	2011			N	20.79	Police Chief Old Vehicle
Hummer	M998 military HMMWV	2005		4WD	Y		High Water/Deep Snow Response and Off road Seach & Rescue
Ford	Interceptor	2016		AWD		17.49	Emergency Management Director Vehicle
Vovlo	XC60	2015		AWD		27.55	Police Undercover Vehicle
Starcraft	E450 Superduy	2000	8/1/2018	4WD	Y		Recreation Department / Transport Vehicle
Ford	Transit Van	2017	6/1/2017	FWD	N	23	Pupil Transport
Ford	Econoline 7D Van	2012	6/1/2012	RWD	Y		Pupil Transport
Ford	Econo Van	2008	1/1/2008	RWD	Y		Passenger
Ford	Transit Van	2014	10/1/2014	FWD	Y		Pupil Transport
Ford	Connect XL Wagon	2014			N	25	EDP Transport
Ford	Transit Van	2018	4/1/2018	Ltd Slip Rear axle	Y		Pupil Wheelchair Transport
Chevy	Silverado 2500	2019	9/27/2019	4WD	Y		Wastewater Department Operations/Plowing
Chevy	Silverado 1500	2018	5/21/2018	4WD	N	15	Wastewater Department Operations
Chevy	Silverado 3500	2018		4WD	Y		Utilities Metering
Ford	Escape Hybrid	2008	9/19/2007	4WD	N	27	Water/Wastewater Operations
International	Durastar 4400	2017	3/13/2017		Y		Wastewater Department Dump Truck
Ford	E450 Van	2002	12/11/2001		Y		Water Department Utility Van
Ford	F550 Utility	2012	12/22/2011		Y		Water Department Utility Truck
International	Dump 4400	2017	3/16/2017		Y		Water Department Dump Truck
Ford	F350	2016	11/17/2015	4WD	Y		Water Distribution Foreman Pickup
Ford	F350	2015	8/28/2014	4WD	Y		Water Treatment Operations/Plowing
Ford	F250	2009	5/13/2009	4WD	Y		Water Treatment Operations

Standard Operation Procedure (SOP) - Inspection and Maintenance of Structural Stormwater Best Management Practices (BMPs)

Introduction

Best Management Practices (BMPs) are policies, procedures and structures designed to reduce stormwater pollution, prevent contaminant discharges to natural water bodies, and reduce stormwater facility maintenance costs. Structural BMPs are permanent site features designed to treat stormwater before infiltrating it to the subsurface or discharging it to a surface water body. Regular inspection and maintenance of structural stormwater BMPs is critical for these engineered systems to function as designed (e.g., provide benefits to water quality, groundwater recharge, and peak flow attenuation).

This Standard Operating Procedure (SOP) provides general inspection and maintenance frequencies and procedures for eight common structural stormwater BMPs, including:

1. Bioretention Areas and Rain Gardens
2. Constructed Stormwater Wetlands
3. Extended Dry Detention Basins
4. Proprietary Media Filters
5. Sand and Organic Filters
6. Wet Basins
7. Dry Wells
8. Infiltration Basins

This SOP is based on the Massachusetts Stormwater Handbook and is not intended to replace the stormwater BMP Operation and Maintenance guidance contained in the Handbook. This SOP is also not intended to replace the Stormwater BMP Operation and Maintenance (O&M) Plan required by the Massachusetts Wetlands Protection Act, Order of Conditions.

The DPW is responsible for inspection and maintenance of structural stormwater BMPs and other stormwater infrastructure in Town of Ipswich. A list of existing structural stormwater BMPs is included in the attachments, along with inspection and maintenance checklists for each type of BMP.

Structural stormwater BMPs will be inspected annually at a minimum. Inspection checklists for each type of structural BMP are provided in the attachments.

Procedures

Bioretention Areas and Rain Gardens

Bioretention areas and rain gardens are shallow depressions filled with sandy soil, topped with a thick layer of mulch, and planted with dense native vegetation. There are two types of bioretention cells:

1. Filtering bioretention area: Areas that are designed solely as an organic filter.
2. Exfiltration bioretention area: Areas that are configured to recharge groundwater in addition to acting

as a filter.

Inspection and Maintenance

Regular inspection and maintenance are important to prevent against premature failure of bioretention areas or rain gardens. Regular inspection and maintenance of pretreatment devices and bioretention cells for sediment buildup, structural damage and standing water can extend the life of the soil media.

Maintenance Schedule: Bioretention Areas and Rain Gardens

Activity	Time of Year	Frequency
Inspect for soil erosion and repair	Year round	Monthly
Inspect for invasive species and remove if present	Year round	Monthly
Remove trash	Year round	Monthly
Mulch Void Areas	Spring	Annually
Remove dead vegetation	Fall and spring	Bi-annually
Replace dead vegetation	Spring	Annually
Prune	Spring or fall	Annually
Replace all media and vegetation	Late spring/early summer	As needed

When failure is discovered, excavate the bioretention area, scarify the bottom and sides, replace the filter fabric and soil, replant vegetation, and mulch the surface.

Never store snow within a bioretention area or rain garden. This would prevent the recharge and water quality treatment of ground water.

Constructed Stormwater Wetlands

Constructed stormwater wetlands maximize pollutant removal from stormwater through the use of wetland vegetation uptake, retention, and settling. Constructed storm water wetlands must be used in conjunction with other BMPs, such as sediment forebays.

Inspection and Maintenance

Regular inspection and maintenance are important for the health of constructed stormwater wetlands. They help identify the need for replacement of vegetation and media, detect potentially harmful invasive species, and ensure the overall health of the wetland.

Maintenance Schedule, Constructed Stormwater Wetlands: Years 0-3

Activity	Time of Year	Frequency
Inspect for invasive species and remove if present	Year round	Monthly
Record and Map:	Year round	Annually
Types and distribution of dominant wetland plants	Year round	Bi-annually

Presence and distribution of planted wetland species	Spring	Annually
Presence and distribution of invasive species	Fall and spring	Bi-annually
Indications other species are replacing planted wetland species	Spring	Annually
Percent of standing water that is not vegetated	Spring or fall	Annually
Replace all media and vegetation	Late spring/early summer	As needed
Stability of original depth zones and micro-topographic features		
Accumulation of sediment in the forebay and micropool and survival rate of plants		

Maintenance Schedule, Constructed Stormwater Wetlands: Years 4-Lifetime

Activity	Time of Year	Frequency
Inspect for invasive species and remove if present	Year round	Monthly
Clean forebays	Year round	Annually
Clean sediment in basin/wetland system	Year round	Once every 10 years
Mulch Void Areas	Spring	Annually
Remove dead vegetation	Fall and spring	Bi-annually
Replace dead vegetation	Spring	Annually
Prune	Spring or fall	Annually
Replace all media and vegetation	Late spring/early Summer	As needed

Never store snow within a constructed stormwater wetland. This would prevent required water quality treatment and the recharge of groundwater.

Extended Dry Detention Basins

Extended dry detention basins are designed to control both stormwater quantity and quality. These BMPs are designed to hold stormwater for at least 24 hours, allowing solids to settle and reducing local and downstream flooding. Pretreatment is required to reduce the potential for overflow clogging. The outflow may be designed as either fixed or adjustable. Additional nutrient removal may be achieved by a micropool or shallow marsh.

Inspection and Maintenance

Annual inspection of extended dry detention basins is required to ensure that the basins are operating properly. Potential problems include: erosion within the basin and banks, tree growth on the embankment, damage to the emergency spillway, and sediment accumulation around the outlet. Should any of these problems be encountered, necessary repairs should be made immediately.

Maintenance Schedule: Extended Dry Detention Basins

Activity	Time of Year	Frequency
Inspect basins	Spring and fall	Bi-annually and during and after major storms
Examine outlet structure for clogging or high outflow release velocities	Spring and fall	Bi-annually
Mow upper stage, side slopes, embankment and emergency spillway	Spring through fall	Bi-annually
Remove trash and debris	Spring	Bi-annually
Remove sediment from basin	Year round	At least once every 5 years

Proprietary Media Filters

Media Filters are designed to reduce total suspended solids and other target pollutants, such as organics, heavy metals, or nutrients – these materials are sorbed onto the filter media, which is contained in a concrete structure. The substrate used as filter media depends on the target pollutants, and may consist of leaf compost, pleated fabric, activated charcoal, perlite, amended sand in combination with perlite, and zeolite. Two types of Media Filters are manufactured: Dry media filters, which are designed to dewater within 72 hours, and wet media filters, which maintain a permanent pool of water as part of the treatment system.

Inspection and Maintenance

Maintenance in accordance with the manufacturer's requirements is necessary to ensure stormwater treatment. Inspection or maintenance of the concrete structure may require OSHA confined space training. Dry media filters are required to dewater in 72 hours, thus preventing mosquito and other insect breeding. Proper maintenance is essential to prevent clogging. Wet media filters require tight fitting seals to keep mosquitoes and other insects from entering and breeding in the permanent pools. Required maintenance includes routine inspection and treatment.

Maintenance Schedule: Proprietary Media Filters

Activity	Time of Year	Frequency
Inspect for standing water, trash, sediment and clogging	Per manufacturer's schedule	Bi-annually (minimum)
Remove trash and debris	N/A	Each inspection
Examine to determine if system drains in 72 hours	Spring, after large storm	Annually
Inspect filtering media for clogging	Per manufacturer's schedule	Per manufacturer's schedule

Sand and Organic Filters

Sand and organic filters, also known as filtration basins, are intended for stormwater quality control rather than quantity control. These filters improve water quality by removing pollutants through a filtering media and settling pollutants on top of the sand bed and/or in a pretreatment basin. Pretreatment is required to prevent

filter media from clogging. Runoff from the filters is typically discharged to another BMP for additional treatment.

Inspection and Maintenance

If properly maintained, sand and organic filters have a long life. Maintenance requirements of the filters include raking the sand and removing sediment, trash, and debris from the surface of the BMP. Over time, fine sediments will penetrate deep into the sand requiring replacement of several inches or the entire sand layer. Discolored sand is an indicator of the presence of fine sediments, suggesting that the sand should be replaced.

Maintenance Schedule: Sand and Organic Filters

Activity	Frequency
Inspect filters and remove debris	After every major storm for the first 3 months after construction completion. Every 6 months thereafter.

Wet Basins

Wet basins are intended to treat stormwater quality through the removal of sediments and soluble pollutants. A permanent pool of water allows sediments to settle and removes the soluble pollutants, including some metals and nutrients. Additional dry storage is required to control peak discharges during large storm events. If properly designed and maintained, wet basins can add fire protection, wildlife habitats, and aesthetic values to a property.

Inspection and Maintenance

To ensure proper operation, wet basin outfalls should be inspected for evidence of clogging or excessive outfall releases. Potential problems to investigate include erosion within the basin and banks, damage to the emergency spillway, tree growth on the embankment, sediment accumulation around the outlet, and the emergence of invasive species. Should any of these problems be encountered, perform repairs immediately. An on-site sediment disposal area will reduce sediment removal costs.

Maintenance Schedule: Wet Basins

Activity	Time of Year	Frequency
Inspect wet basins	Spring and/or fall	Annually (Minimum)
Mow upper stage, side slopes, embankment and emergency spillway	Spring through fall	Bi-annually (Minimum)
Remove sediment, trash and debris	Spring through fall	Bi-annually (Minimum)

Remove sediment from basin	Year round	As required, but at least once every 10 years

Dry Wells

Dry wells are used to infiltrate uncontaminated runoff. These BMPs should never be used to infiltrate stormwater or runoff that has the potential to be contaminated with sediment and other pollutants. Dry wells provide groundwater recharge and can reduce the size and cost required of downstream BMPs or storm drains. However, they are only applicable in drainage areas of less than one acre and may experience high failure rates due to clogging.

Inspection and Maintenance

Proper dry well function depends on regular inspection. Clogging has the potential to cause high failure rates. The water depth in the observation well should be measured at 24 and 48 hour intervals after a storm and the clearance rate calculated. The clearance rate is calculated by dividing the drop in water level (inches) by the time elapsed (hours).

Maintenance Schedule: Dry Wells

Activity	Frequency
Inspect dry wells	After every major storm for the first 3 months after construction completion. Annually thereafter.

Infiltration Basins

Infiltration basins are designed to contain stormwater and provide groundwater recharge. Pollution prevention and pretreatment are required to ensure that contaminated stormwater is not infiltrated. Infiltration basins reduce local flooding and preserve the natural water balance of the site. High failure rates, however, often occur due to improper siting, inadequate pretreatment, poor design, and lack of maintenance.

Inspection and Maintenance

Regular maintenance is required to prevent clogging, which results in infiltration basin failure. Clogging may be due to upland sediment erosion, excessive soil compaction, or low spots. Inspections should include signs of differential settlement, cracking, erosion, leakage in the embankments, tree growth on the embankments, riprap condition, sediment accumulation, and turf health.

Maintenance Schedule: Infiltration Basins

Activity	Time of Year	Frequency
Preventative maintenance	Spring and fall	Bi-annually
Inspection	Spring and fall	After every major storm for the first 3 months after construction completion. Bi-annually thereafter and discharges through the high outlet orifice.
Mow/rake buffer area, side slopes and basin bottom	Spring and fall	Bi-annually

Remove trash, debris and organic matter	Spring and fall	Bi-annually

Employee Training

- Employees who perform inspection or maintenance on structural BMPs are trained ##NUMBER times per year on proper procedures.
- If services are contracted, the contractor should be given a copy of this and any applicable SOPs to ensure compliance with MS4 regulations.

Attachments

1. Structural BMP Inventory Template
2. Structural BMP Inspection and Maintenance Checklists

Inventory of Structural Stormwater Best Management Practices (BMPs)
Ipswich, Massachusetts

BMP ID or Description	Location	BMP Type	Inspection Frequency	Date of Last Inspection	Additional Notes
Vortex Unit and Sand Filter	N. Main St./Meeting House Green	Vortex Unit with Sand Filter	Annual		
StormTreat Units	County Street	StormTreat Units	N/A	N/A	Units have been taken offline
StormTreat Units	Water Street	StormTreat Units	N/A	N/A	Units have been taken offline
Infiltration Swale	County Street (at the rear of the Church Parking Lot)	Infiltration Swale	Annual		Inspections to begin in fall of 2020.

This O&M Plan was developed using a template provided by the Central Massachusetts Regional Stormwater Coalition

INSPECTION OF BIORETENTION AREAS / RAIN GARDENS|

General Information

BMP Description	Bioretention Area / Rain Garden		
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Inspect for soil erosion and repair	Monthly	Yes ☐ No ☐	
Inspect for invasive species and remove if present	Monthly	Yes ☐ No ☐	
Remove trash	Monthly	Yes ☐ No ☐	
Mulch void areas	Annually	Yes ☐ No ☐	
Remove dead vegetation	Bi-Annually	Yes ☐ No ☐	
Replace dead vegetation	Annually	Yes ☐ No ☐	
Prune	Annually	Yes ☐ No ☐	
Replace all media and vegetation	As Needed	Yes ☐ No ☐	

This SOP was developed using a template provided by the Central Massachusetts Regional Stormwater Coalition

INSPECTION OF CONSTRUCTED STORMWATER WETLANDS
Years 0-3 of Operation

General Information

BMP Description	Constructed Stormwater Wetland		
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Inspect for invasive species and remove if present	Monthly	Yes ☐ No ☐	
Replace all media and vegetation	As Needed	Yes ☐ No ☐	

In addition, the following information should be recorded and mapped at least once per year:

- Types and distribution of dominant wetland plants
- Presence and distribution of planted wetland species
- Presence and distribution of invasive species
- Indications other species are replacing planted wetland species
- Percent of standing water that is not vegetated
- Replace all media and vegetation
- Stability of original depth zones and micro-topographic features
- Accumulation of sediment in the forebay and micropool and survival rate of plants

INSPECTION OF CONSTRUCTED STORMWATER WETLANDS
Year 4 - Lifetime of Operation

General Information

BMP Description	Constructed Stormwater Wetland		
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Inspect for invasive species and remove if present	Monthly	Yes ☐ No ☐	
Clean forebays	Annually	Yes ☐ No ☐	
Clean sediment in basin/wetland system	Once every 10 years	Yes ☐ No ☐	
Mulch void areas	Annually	Yes ☐ No ☐	
Remove dead vegetation	Bi-Annually	Yes ☐ No ☐	
Replace dead vegetation	Annually	Yes ☐ No ☐	
Prune	Annually	Yes ☐ No ☐	
Replace all media and vegetation	As Needed	Yes ☐ No ☐	

This SOP was developed using a template provided by the Central Massachusetts Regional Stormwater Coalition

INSPECTION OF EXTENDED DRY DETENTION BASINS

Inspections should be conducted bi-annually, and during and after major storm events.

General Information

BMP Description	Extended Dry Detention Basin		
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Examine outlet structure for clogging or high outflow release velocities	Bi-Annually	Yes ☐ No ☐	
Mow upper stage, side slopes, embankment and emergency spillway	Bi-Annually	Yes ☐ No ☐	
Remove trash and debris	Bi-Annually	Yes ☐ No ☐	
Remove sediment from basin	At least once every 5 years	Yes ☐ No ☐	

This SOP was developed using a template provided by the Central Massachusetts Regional Stormwater Coalition

INSPECTION OF PROPRIETARY MEDIA FILTERS

General Information

BMP Description	Media Filter		
BMP Location			
Media Type			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Inspect for standing water, trash, sediment and clogging	Bi-Annually (minimum)	Yes ☐ No ☐	
Remove trash and debris	Each Inspection	Yes ☐ No ☐	
Examine to determine if system drains in 72 hours	Annually	Yes ☐ No ☐	
Inspect filtering media for clogging	Per manufacturer's schedule	Yes ☐ No ☐	

INSPECTION OF SAND AND ORGANIC FILTERS

Inspections should be conducted after every major storm event for the first 3 months following completion, then every 6 months thereafter.

General Information

BMP Description	Sand/Organic Filter		
BMP Location			
Media Type			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Remove sediment, trash, and debris	Every 6 months	Yes ☐ No ☐	
Rake sand	Every 6 months	Yes ☐ No ☐	

This SOP was developed using a template provided by the Central Massachusetts Regional Stormwater Coalition

INSPECTION OF DRY WELLS

Regular inspections should be conducted after every major storm event for the first 3 months following completion, then annually thereafter.

General Information

BMP Description	Dry Well		
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			
Describe condition of dry well at time of inspection			

After a major storm event, the water depth in the observation well should be measured at 24 and 48 hour intervals and the clearance rate calculated.

INSPECTION OF WET BASINS

Inspections should be conducted after every major storm event for the first 3 months following completion, then biannually thereafter.

General Information

BMP Description	Wet Basin		
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			
Describe condition of wet basin at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
Preventative maintenance	Bi-Annually	Yes ☐ No ☐	
Mow/rake buffer area, side slopes and basin bottom	Bi-Annually	Yes ☐ No ☐	
Remove trash, debris and organic matter	Bi-Annually	Yes ☐ No ☐	
Inspect and clean pretreatment devices	Every other month and after every major storm event	Yes ☐ No ☐	

This SOP was developed using a template provided by the Central Massachusetts Regional Stormwater Coalition

INSPECTION OF OTHER BMP

General Information

BMP Description			
BMP Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection: Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event ☐			
Describe the weather conditions at time of inspection			

Specific Information

Maintenance Activity	Maintenance Frequency	Is Status of BMP Satisfactory?	Corrective Action Needed
		Yes ☐ No ☐	
		Yes ☐ No ☐	
		Yes ☐ No ☐	
		Yes ☐ No ☐	
		Yes ☐ No ☐	
		Yes ☐ No ☐	
		Yes ☐ No ☐	