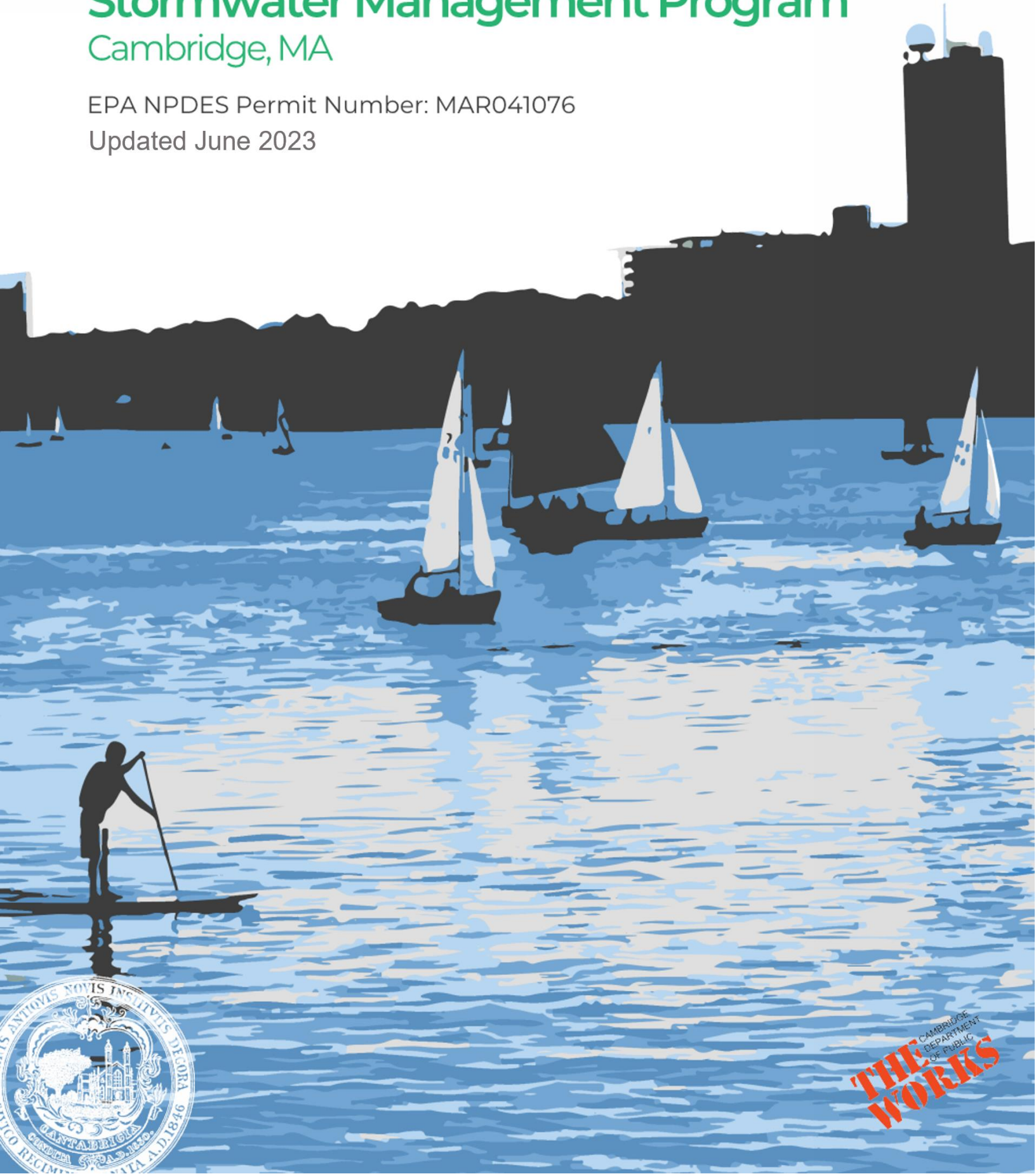


# Stormwater Management Program

## Cambridge, MA

EPA NPDES Permit Number: MAR041076  
Updated June 2023



CAMBRIDGE  
DEPARTMENT  
OF PUBLIC  
**THE  
WORKS**

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## LIST OF ACRONYMS:

BMP – Best Management Practice  
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)  
EPA – U. S. Environmental Protection Agency  
ESA – Endangered Species Act  
GI – Green Infrastructure  
IA – Impervious Area  
IDDE – Illicit Discharge Detection and Elimination  
LA – Load Allocations  
MS4 – Municipal Separate Storm Sewer System  
MSGP – Multi-Sector General Permit  
NHPA – National Historic Preservation Act  
NOI – Notice of Intent  
NPDES – National Pollutant Discharge Elimination System  
NRHP – National Register of Historic Places  
PCP – Phosphorus Control Plan (pertaining to Charles River Watershed phosphorus TMDL requirements only – Appendix F Part A.I)  
RCRA – Resource Conservation and Recovery Act  
SHPO – State Historic Preservation Officer  
SWMP – Stormwater Management Program  
SWPPP – Stormwater Pollution Prevention Plan  
TMDL – Total Maximum Daily Load  
TSS – Total Suspended Solids  
USFWS – U. S. Fish and Wildlife Service  
WLA – Waste load Allocation  
WQBEL – Water Quality Based Effluent Limitations  
WQS – Water Quality Standard



Photo of the Alewife Stormwater Wetland



## 1 CERTIFICATION

Authorized Representative: 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 included as Appendix A.

"I certify under the 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 is submitted, 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:

James Wilcox

Signature:



Date:

June 28, 2023

## 2 BACKGROUND

### 2.1 STORMWATER REGULATION

The Stormwater Phase II Final Rule was promulgated in 1999 and was the next step after the 1987 Phase I Rule in EPA's effort to preserve, protect, and improve the Nation's water resources from polluted stormwater runoff. The Phase II program expands the Phase I program by requiring additional operators of Small Municipal Separate Storm Sewer Systems (MS4s) in urbanized areas and operators of small construction sites, using NPDES permits, to implement programs and practices to control polluted stormwater runoff. Phase II is intended to further reduce adverse impacts to water quality and aquatic habitat by instituting the use of controls on the unregulated sources of stormwater discharges that have the greatest likelihood of causing continued environmental degradation. Under the Phase II rule, all MS4s with stormwater discharges from Census-designated Urbanized Area are required to seek NPDES permit coverage for those stormwater discharges.

### 2.2 PERMIT PROGRAM 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) consistent with the Phase II rule. The 2003 Small MS4 Permit covered "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 until operators were authorized under the 2016 MS4 General Permit, which became effective on July 1, 2018. The 2016 MS4 General Permit is hereinafter referred to simply as the "2016 Permit."

### 2.3 STORMWATER MANAGEMENT PROGRAM (SWMP)

The SWMP describes and details the activities and measures that will be implemented to meet the terms and conditions of the 2016 Permit. The SWMP accurately describes the permittee's plans and activities. The document will be updated and/or modified during the

2016 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 contributing to 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



(6) a good housekeeping program to ensure that stormwater pollution sources on municipal properties and from municipal operations are minimized



## 2.4 CAMBRIDGE MS4 BACKGROUND

The City of Cambridge was permitted under the 2003 Small MS4 Permit. During that Permit term, the City created an initial SWMP, addressed storm system mapping, and submitted Annual Reports. Beyond addressing minimum regulatory requirements, the City made effective stormwater management a priority through proactive approaches to education and engagement with the public, support of third-party groups and special events, publicly available system-wide storm system mapping, and outfall screening and sampling.

The City identified and began to prioritize actions that would help it comply with the 2016 Permit and continue its commitment to enhanced stormwater management. Some of these actions included comprehensive mapping to encompass storm drain, sanitary sewer, catchment areas, and stormwater sampling locations, improvements to maintenance and operations protocols, revisions to existing ordinances to increase the City's ability to implement effective and long-term measures for stormwater control, and identification of resource, staff, and equipment needs to meet the existing and forthcoming regulatory requirements.



*View of the Charles River overlooking the Boston skyline from the Dr. Paul White Bike Path*



*Installation of a rain garden to treat stormwater before it enters the drainage system as part of a sewer separation project.*



*Removal of invasive species to be revegetated with naïve upland and wetland species at the Alewife Wetland.*



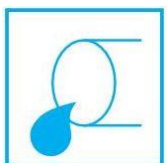
To address education and outreach requirements of the 2003 Permit, the City of Cambridge, through the cooperation of many departments, has distributed brochures, newsletters, flyers, and construction notices and promoted community projects and other local events. In the 2016 Permit term, the City will continue to distribute educational materials and will work to enhance the program to include messaging to all City audiences and for all required permit topics.



*Examples of education and outreach materials developed by the City*



The City demonstrated its commitment to public involvement and participation in the program through an annual public meeting with an in-depth presentation of the previous year's work and successes. The City also maintains close partnerships with the Charles River Watershed Association, the Mystic River Watershed Association, Friends of Fresh Pond and other local organizations and will continue to attend and promote their events in the City.



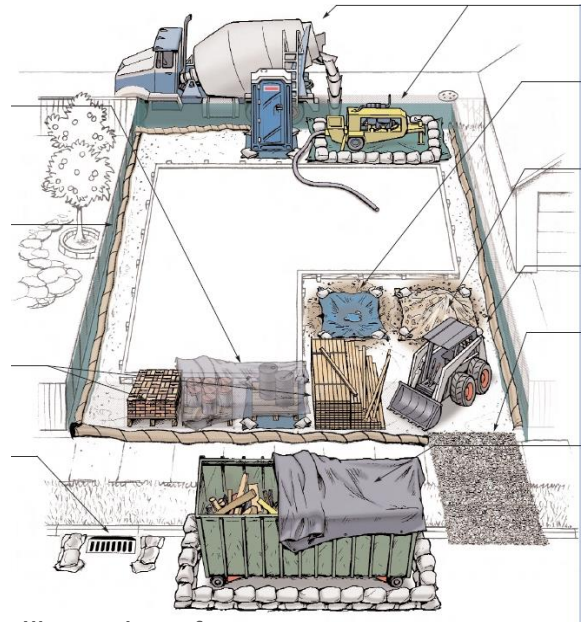
The City developed and administered an IDDE Program as part of the 2003 Permit. Cambridge amended its Wastewater and Stormwater Drainage System Ordinance to support the enforcement of the IDDE Program.



The IDDE Program is one of the most involved aspects of the 2016 Permit, and Cambridge's outfall sampling work from the prior Permit term aligns with these new requirements. The City will continue to advance efforts from the 2003 Permit term. In addition, the City installed five (5) automatic stormwater sampling stations, three (3) in the Alewife watershed and two (2) in the Charles watershed. These sampling stations will help advance the City's information on water quality during wet weather and assist in its understanding TMDL and pollutant of concern loading at those locations.



To properly manage stormwater runoff from new/redevelopment sites, ensure post construction operation and maintenance is performed, and to enforce construction site stormwater runoff the City developed its Land Disturbance Regulation and supporting Wastewater and Stormwater Guidance document. This regulation became effective in 2008 during the initial 2003 Permit term. To fully address new requirements, the City will amend the Land Disturbance Regulation and updates its guidance document, as necessary.



*Illustration of stormwater management techniques on a construction site (Greg High)*



The City is progressive in its plan to manage post construction stormwater runoff. This includes updating regulations and design guidelines to reflect climate change adaptation and allowing the construction of green infrastructure. The City maintains a database of privately owned BMPs, developed a **Five Year Plan For Sidewalk And Street Reconstruction** that includes opportunities for innovative stormwater management, evaluates City-owned properties for retrofits as part of its Climate Change Vulnerability Assessment, and developed a **Ten Year Sewer And Drain Infrastructure Plan** that describes the City's upcoming capital and maintenance programs for these systems.



*Five Year Sidewalk and Street Reconstruction Plan*



*Ten Year Sewer and Drain Infrastructure Plan*





The City has a robust operations and maintenance program that already meets many of the 2016 Permit requirements for catch basin cleaning, street sweeping and management, winter road maintenance, and BMP maintenance. Additionally, the City has been training its employees on stormwater pollution prevention, record keeping, and inspection protocols. Some of these procedures will be updated as necessary to adhere to the 2016 Permit, and the City will be developing and implementing SWPPPs for six permittee-owned or operated facilities during the 2016 Permit term. Previously we anticipated preparing seven SWPPPS but confirmed only six were regulated under the MS4 Permit.



*Inspection of a stormwater BMP (left) and winter road maintenance (right)*

The City of Cambridge demonstrated successful stormwater management through the adherence to the 2003 Permit. The City continued to progress beyond minimum regulatory requirements, and it has proactively worked towards anticipated 2016 Permit requirements. Although some updates and additions are necessary, the City of Cambridge has a substantial stormwater management program ready for the 2016 Permit.

## 2.5 ANNUAL UPDATES AND REPORTING

Each year since 2003, the City has submitted an MS4 Annual Report to the US EPA since the 2003 Permit term. This yearly reporting requirement will continue, and as described in Section 6, the public will have an opportunity to review and comment on the City's



progress every year. In addition, this SWMP is not meant to be a static document, and as the City's efforts progress and evolve, so too will this program. The SWMP will be routinely updated and the most up to date version of this program will be available to the public on the City's website.



*DPW's Stormwater booth at Fresh Pond Day, where staff interacted with attendees, discussed the importance of clean stormwater, and provided educational material for all ages.*

The City provides residents with information about stormwater management and pollution prevention at Fresh Pond Day (June 15, 2019)



*Large format displays provide information about stormwater and water quality, describes the City's stormwater management program, and educates the public on how individuals can keep the City's waters clean.*

### 3

## SMALL MS4 AUTHORIZATION

- The NOI was submitted on September 28, 2018
- The NOI is available on the City's website here: [Notice of Intent \(NOI\) for coverage under Small MS4 General Permit](#) and on the [EPA's website](#)
- Authorization to Discharge was granted by EPA on April 5, 2019
- The Authorization Letter can be found in Appendix B and on the [EPA's website](#)

## 4 STORMWATER MANAGEMENT PROGRAM TEAM

### 4.1 STORMWATER MANAGEMENT PROGRAM TEAM

#### 4.1.1 SWMP Team Responsibilities

The SWMP Team is multidisciplinary and includes members with multiple roles. As a Team, the City is responsible for fully adhering to the 2016 Permit and this SWMP. Team actions include reviewing and updating appropriate ordinances, legal enforcement, and disciplinary actions, maintaining records, city-wide system mapping, and outfall screening and sampling. The SWMP Team is shown in **Table 4-1**.

**Table 4-1: Responsible Parties in Program Team**

Department	Title	Name	Role
DPW	Commissioner	Katherine Watkins	
	City Engineer	James Wilcox	Authorized Representative
	Engineering Senior Project Manager	Catherine Daly Woodbury	
	Stormwater Program Manager	Cambria Ung	Team Coordinator
	Director of Engineering Services	Diane Stokes	
	Engineer	Yilkal Bekele	Inspector
Water Department	Fresh Pond Watershed Manager	David Kaplan	

#### 4.1.2 SWMP Team Coordinator

The SWMP Team Coordinator will be responsible for directing many of the efforts under this program including assembling and maintaining records detailing SWMP progress, coordinating data collection and records gathering with each department, and facilitating employee training.

## 4.2 RECEIVING WATERS

**Table 4-2** includes all receiving waters within the City of Cambridge that receive stormwater flow from separate storm drain systems, associated impairments, and the number of known outfalls discharging to each water body segment. **Figure 4-1** depicts the waterbodies within the City as well as active, City-owned outfalls discharging to those waterbodies. The waterbody impairments are based on the [Massachusetts Year 2018/2020 Integrated List of Waters](#).

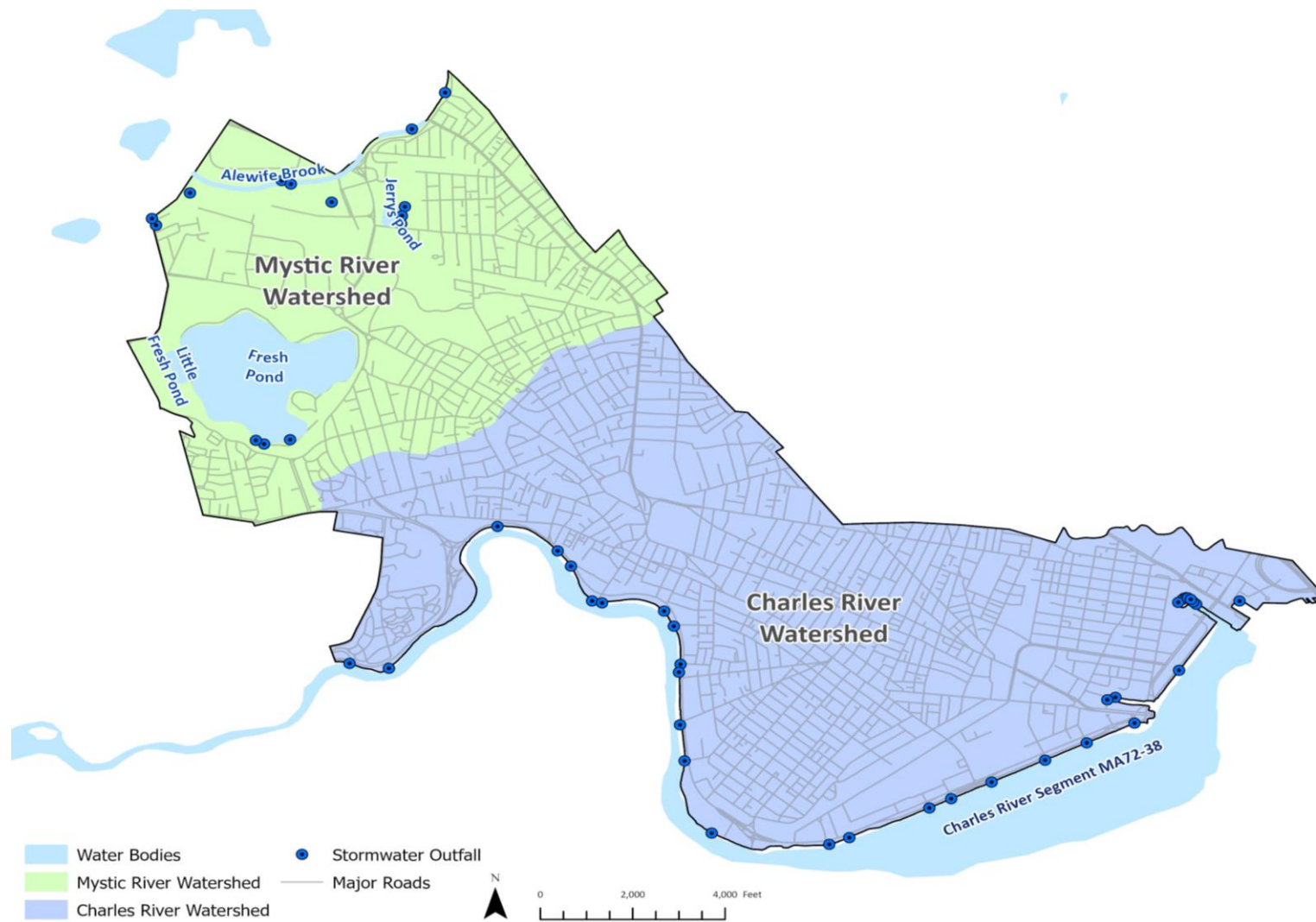
**Table 4-2: Waterbody Segments in Cambridge that Receive Flow from the Municipal Separate Storm Sewer System**

Waterbody	Number of Outfalls into waterbody	Impairment Listed in Massachusetts 2018/2020 Integrated List of Waters						Other Pollutants Causing Impairments
		Chlorophyll -a	Dissolved Oxygen/DO Saturation	Oil & Grease/PAH	Phosphorus	Solids/ TSS /Turbidity	E. coli	
Alewife Brook (MA 71-20)	3		X	X	X	X	X	Chloride, Copper in Sediment, Dissolved Oxygen, Escherichia Coli (E. Coli), Flocculant Masses, Lead in Sediment, Odor, Oil and Grease, PCBs in Fish Tissue, Total Phosphorus, Scum/Foam, Sediment Bioassay [Chronic Toxicity Freshwater], Transparency/Clarity, Trash, Debris
Charles River (MA 72-36)	21	X	X	X	X	X	X	Flow Regime Modification, Non-Native Aquatic Species, Chlorophyll-A, DDT in Fish Tissue, Dissolved Oxygen, Escherichia Coli (E. Coli), Fish Bioassessments, Harmful Algal Blooms, Nutrient/Eutrophication Biological Indicators, Oil and Grease, PCBs in Fish Tissue, High pH, Total Phosphorus, Sediment Bioassay [Acute Toxicity Freshwater], Transparency/Clarity,



Impairment Listed in Massachusetts 2018/2020 Integrated List of Waters								
Waterbody	Number of Outfalls into waterbody	Chlorophyll -a	Dissolved Oxygen/DO Saturation	Oil & Grease/PAH	Phosphorus	Solids/ TSS /Turbidity	E. coli	Other Pollutants Causing Impairments
								Unspecified Metals in Sediment
Charles River (MA 72-38)	14	X	X	X	X	X	X	Harmful Algal Blooms, Nutrient/Eutrophication Biological Indicators, Odor, Oil and Grease, PCBs in Fish Tissue, Total Phosphorus, Salinity, Temperature, Transparency/Clarity
Blacks Nook (MA71005)	None					X		Non-native aquatic plants, Nutrient/Eutrophication Biological Indicators, Transparency / Clarity
Little River (MA71-21)	5		X	X	X	X	X	Debris, Chloride, Copper in Sediment, Non-native Aquatic Plants, Dissolved Oxygen, Escherichia Coli (E. Coli), Flocculant Masses, Lead in Sediment, Odor, Oil and Grease, PCBs in Fish Tissue, Total Phosphorus, Scum/Foam, Transparency/Clarity, Trash
Little River (MA71-22)	None		X	X	X	X	X	Debris, Copper in Sediment, Dissolved

Impairment Listed in Massachusetts 2018/2020 Integrated List of Waters								
Waterbody	Number of Outfalls into waterbody	Chlorophyll -a	Dissolved Oxygen/DO Saturation	Oil & Grease/PAH	Phosphorus	Solids/ TSS /Turbidity	E. coli	Other Pollutants Causing Impairments
								Oxygen, Escherichia Coli (E. Coli), Flocculant Masses Lead in Sediment, Odor, Oil and Grease, PCBs in Fish Tissue, Total Phosphorus, Scum/Foam, Transparency/Clarity
Millers River (MA72-31)	None			X		X		Debris, Flocculant Masses, Odor, Oil and Grease, Petroleum Hydrocarbons, Polychlorinated Biphenyls (PCBs), Polycyclic Aromatic Hydrocarbons (PAHs), Scum/Foam, Sedimentation/Siltation, Trash, Turbidity, Unspecified Metals in Sediment
Jerry's Pond	3							
Fresh Pond	3							



**Figure 4-1: Map of Waterbodies and Active, City-Owned Stormwater Outfalls**

According to the most recent final version of the [Massachusetts Integrated List of Waters](#) (2018/2020), there are two water body segments with an approved Total Maximum Daily Load (TMDL) associated with them in the Charles River Watershed and six water body segments that are considered to be water quality limited within the City of Cambridge. The waterbody segments and the associated cause(s) of the impairments are included in **Table 4-3**. These impairments trigger additional 2016 Permit requirements described in MS4 Permit Appendices F and H.

**Table 4-3: Impaired Waters in the City of Cambridge**

<b>Water Quality Limited Waterbodies (Appendix H)</b>		
<b>River Name</b>	<b>Segment ID</b>	<b>Impairment Cause</b>
Charles River	MA 72-36 & MA 72-38	Oil and Grease, TSS
Alewife Brook	MA 71-20	Chloride, Copper, Lead, Oil and Grease, TSS, E. Coli, Phosphorus
Little River	MA 71-21	Chloride, Phosphorus, E. Coli, Oil and Grease, TSS, Copper
Little River	MA 71-22	Copper, Phosphorus, E. Coli, Oil and Grease
Millers River	MA 72-31	Oil and Grease, TSS, Unspecified Metals
Blacks Nook	MA71005	TSS
<b>Water Bodies with Approved TMDLs (Appendix F)</b>		
Charles River Watershed	MA 72-36 & MA 72-38	Bacteria/Pathogen
Lower Charles	MA 72-36 & MA 72-38	Phosphorus

### 4.3 ELIGIBILITY

The City of Cambridge is in the Commonwealth of Massachusetts and its drainage system is defined as a small municipal storm sewer system (MS4) as defined in 40 CFR §122.26(b)(16). The City is located within an urbanized area as determined by the 2000 census data provided by the Bureau of Census. The Notice of Intent and Stormwater Management Program have been developed to obtain coverage for stormwater discharges to waters of the United States. The following certifications are made as identified by the 2016 Permit limitations on coverage in Section 1.3 of the regulations.



### 4.3.1 Endangered Species

The City of Cambridge understands that the Environmental Protection Agency (EPA) is seeking to ensure the activities regulated by the 2016 Permit do not adversely affect endangered and threatened species or critical habitat. The City has assessed the impacts of stormwater discharges and discharge-related activities on federally listed endangered and threatened species (“listed species”) and designated critical habitat (“critical habitat”).

During the NOI submission process, the City referenced the U.S. Fish and Wildlife Information, Planning, and Conservation (IPaC) system and MA GIS database and determined that the City of Cambridge’s MS4 contains the Northern Long-eared Bat. The [Natural Heritage & Endangered Species Program web-based map](#) shows that there is no roost trees within a 0.25 mile radius of the City’s regulated area as of its update on June 4, 2019. Therefore, the City adheres to the 4(d) rule under the Endangered Species Act (ESA) that prohibits tree removal within a 0.25 mile radius of bat habitat and any activity that cuts or destroys known occupied maternity roost trees or any other trees within a 150 foot radius from the maternity tree from June 1<sup>st</sup> through July 31<sup>st</sup>. Using the ESA Eligibility criteria as referenced in Appendix C of the MA Small MS4 General Permit, the City certified eligibility according to the USFWS **Criterion C**. Under Criterion C, the City has affirmed that there are no discharge-related activities involving the habitat of this species of bat and therefore the City’s MS4 system does not affect any federally threatened or endangered listed species. The results of this screening are including in

Appendix C.



*Photo of a Northern Long-eared Bat (USFWS)*



*MS4 Outfall at Dewolfe Street*

#### **4.3.2 Historic Properties**

Much of the land abutting the Charles River is listed in the National Registry, and the City is planning to create new outfalls in these areas in the coming years. The Cambridge Historical Commission provides an electronic map of listed properties here: [Cambridge - National Register Map](#). While the City was previously covered under the 2003 MS4 Permit, the City's plans for creating new outfalls in this area qualifies for Criterion C, using the eligibility criteria in Appendix D of the 2016 Permit, as follows:

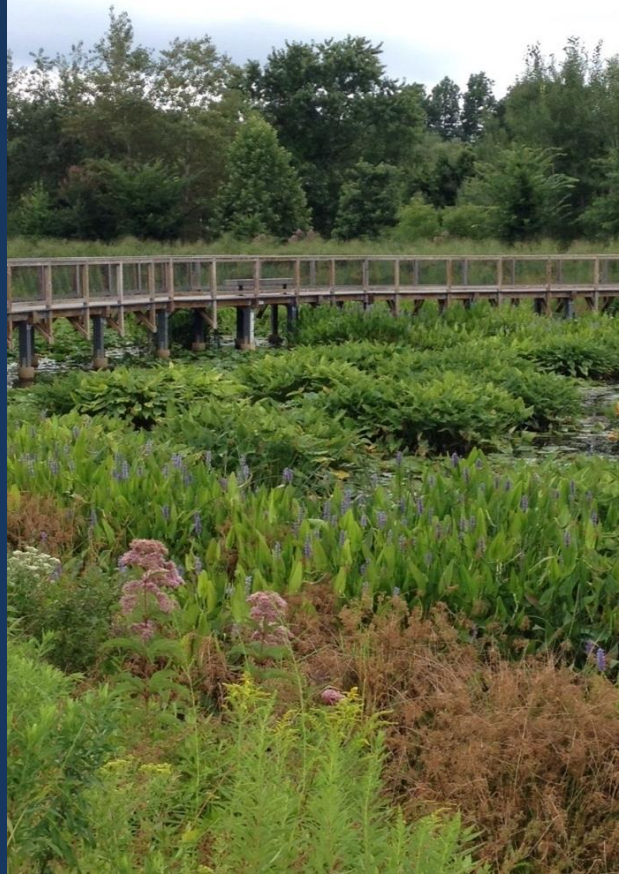
- Stormwater outfalls created since 2003 have undergone the Massachusetts Historical Commission Project Notification process with the State Historic Preservation Officer (SHPO). Based on this process, these projects had no related activities with adverse discharge effects on historic properties.
- The City certifies that during the 2016 Permit term, if new structural BMPs with potential discharge related activities are planned, the City will provide Project Notification to the SHPO and comply with any measures required to prevent or mitigate any adverse discharge effects on historic properties.

## 5 MINIMUM CONTROL MEASURES (MCM)

The City of Cambridge developed a Stormwater Management Program for compliance with the NPDES Stormwater Phase II Rule. The review of the existing conditions and identification of stormwater needs provided the framework for identifying best management practices under the six minimum control measures (MCM). The aim of this stormwater management program is to reduce pollutant loads from stormwater systems to the maximum extent practicable, protect water quality, and meet the requirements under the Clean Water Act. The stormwater management program was developed to manage the City of Cambridge's stormwater systems over the next five-year period. A summary of the MCM objectives and requirements are detailed in the following sections along with specific actions and measurable goals. Some BMPs have specific deadlines that must be met, and those that have been started are designated as in progress, while others are on-going efforts that must be completed or updated on an annual basis.



The aim of this stormwater management program is to reduce pollutant loads from stormwater systems to the maximum extent practicable, protect water quality, educate, and engage the public, and meet the requirements under the Clean Water Act.



## 5.1 MCM 1: PUBLIC EDUCATION AND OUTREACH

### 5.1.1 Objective



The Permit states that: “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 the pollutants in stormwater are reduced.”

### 5.1.2 Permit Summary

Part 2.3.2. of the MS4 Permit requires the City to develop and implement an ongoing Public Education and Outreach Program. The Public Education and Outreach Program must include focused educational messages targeted at four (4) audiences:

- Residents
- Businesses, institutions (churches, hospitals), and commercial facilities
- Developers (construction)
- Industrial facilities

Educational messages can be printed materials, electronic materials, mass media, social media, targeted workshops, events, or public area displays. These messages should consider stormwater pollution and prevention topics that are relevant to the City. The Permit dictates the baseline messaging frequency to each of the above audiences, as well as outreach strategies regarding pollutants of concern. Two messages spaced at least one year apart, must be provided to each of the four audiences during the permit term.

Additional educational messaging is needed to address impairments of water bodies within the City. The 2016 Permit includes requirements in Appendix F and Appendix H regarding pet waste management, to be distributed each summer; grass clipping management, to be distributed each spring; leaf litter management, to distributed in the



Fall; deicing material management, to be distributed each winter (Nov-Dec); and proper septic system maintenance for properties with septic systems.

Additionally, the program will educate the public on the proper management and disposal of pollutants of concern, which are listed in the most recent final version of the [Massachusetts Integrated List of Waters](#) (2018/2020). The City will focus on actions the public can take to reduce these pollutants at the source. **Table 5-1** describes these pollutants, their potential impacts to Cambridge's waterbodies, and the behaviors that can reduce those impacts.

**Table 5-1: Pollutants of Concern**

<b>Pollutants of Concern</b>	<b>Waterbodies of Concern</b>	<b>Impact to Waterbodies</b>	<b>Targeted Sources</b>	<b>Desired Behaviors</b>
Bacteria/ Pathogens	Charles River Alewife Brook Little River	Can cause disease and make waters unfit for recreation.	<ul style="list-style-type: none"> <li>• Pet waste</li> <li>• Illicit Connections</li> </ul>	<ul style="list-style-type: none"> <li>• Properly dispose of pet waste</li> <li>• Prioritized City IDDE Activities</li> <li>• Septic System Maintenance</li> </ul>
Phosphorus	Charles River Alewife Brook Little River	Excessive amounts of phosphorous can cause harmful algae blooms and create low oxygen conditions that harm aquatic life.	<ul style="list-style-type: none"> <li>• Pet waste</li> <li>• Grass clippings</li> <li>• Lawn fertilizer</li> <li>• Leaf litter</li> <li>• Sediment (TSS)</li> </ul>	<ul style="list-style-type: none"> <li>• Properly dispose of pet waste</li> <li>• Use fertilizer sparingly and never storms</li> <li>• Properly dispose of leaves and grass clippings</li> </ul>
Oil and Grease	Charles River Alewife Brook Little River Millers River	Can reduce aquatic organisms' ability to reproduce and survive.	<ul style="list-style-type: none"> <li>• New and Redevelopment</li> <li>• Permittee owned and operated properties and infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Use of stormwater BMPs</li> <li>• Good housekeeping practices</li> </ul>
Metals (Copper and Lead)	Alewife Brook Charles River Little River Millers River	Can be acutely or chronically toxic to aquatic organisms.	<ul style="list-style-type: none"> <li>• New and Redevelopment</li> <li>• Permittee owned and operated properties and infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Use of stormwater BMPs</li> <li>• Good housekeeping practices</li> </ul>
Total Suspended Solids (TSS)	Charles River Alewife Brook Little River Millers River Blacks Nook	Can reduce the penetration of light in the water and limit the growth of aquatic plants.	<ul style="list-style-type: none"> <li>• Leaf litter</li> <li>• Soil and sediment erosion</li> </ul>	<ul style="list-style-type: none"> <li>• Properly dispose of leaves and grass clippings</li> <li>• Adequate soil erosion and sediment controls</li> <li>• Street sweeping</li> <li>• Catch basin cleaning</li> </ul>

Pollutants of Concern	Waterbodies of Concern	Impact to Waterbodies	Targeted Sources	Desired Behaviors
Chloride	Little River Alewife Brook	Can reduce aquatic organisms' ability to reproduce and survive.	<ul style="list-style-type: none"> <li>• Road Salt</li> </ul>	<ul style="list-style-type: none"> <li>• Minimize road salt application</li> </ul>

**5.1.3 Existing and Updated Program**

In the 2003 Permit term the City of Cambridge developed and implemented education and outreach materials as required by the 2003 Permit. Through the development of the NOI for the 2016 Permit, the DPW evaluated and determined multiple types of stormwater messaging that can be added to the City’s current efforts that will be effective for meeting the requirements of this MCM. The City is committed to continue to inform residents about stormwater issues and is focusing on reaching an appropriate audience for each message.

Since there are impaired water bodies in Cambridge, under the 2016 Permit term, the City is responsible for adhering to additional messaging requirements in Appendix F and Appendix H. These requirements include specific messaging for pet waste management distributed annually in the summer, grass clipping management delivered annually in the spring, leaf litter management delivered annually in the fall, and septic system maintenance information delivered annually.

There are multiple education and outreach programs that currently seek to raise the public’s awareness of environmental and stormwater-specific issues. New programs and resources are continuously considered and will be implemented to advance Cambridge’s commitment to the Public Education and Outreach Program for the SWMP. The City uses various strategies to reach the public including:

- Department websites and social media platforms
- Cooperative efforts with local organizations and environmental advocates such as



- *Charles River Watershed Association*
- *Cambridge Public Schools*
- *Mystic River Watershed Association*
- Direct mailings and distributing information door-to-door
- Cambridge-specific newsletters and magazines such as
  - *CityView (City of Cambridge Newsletter)*
  - *The Cambridge Life (City of Cambridge Blog)*
  - *CityLife (City of Cambridge magazine)*
- Environmental stewardship and volunteer events
- Workshops, presentations, and other special events such as
  - *Cambridge Science Festival*
  - *River Festival*
  - *Fresh Pond Day*
  - *PARKing Day*
- Public Service Announcements on local cable TV

**Table 5-2** details Cambridge’s Public Education and Outreach Program and implementation plan under the 2016 Permit term. Each Best Management Practice (BMP) includes the responsible department. During the 2016 Permit term, the success of each BMP will be measured and evaluated against the metrics provided in the “Measurable Goal” category below. Data collected for each BMP will be recorded, and the efficacy of each BMP towards reaching the public education goals and will be presented in each years’ Annual Report.



Cambridge is working with both the Mystic River Watershed Stormwater Collaborative and the Charles River

*Fish plates installed at each catch basin encouraging proper use of the City’s infrastructure to protect water quality*

Stormwater Coalition/Think Blue Massachusetts on stormwater public education and outreach efforts. These collaborative education and outreach campaigns will be incorporated into the City's program.



Table 5-2: Implementation Program for MCM 1, Public Education and Outreach Program

BMP #	BMP	Media/Category	Targeted Audience	Responsible Department	Measurable Goal	Beginning Year of BMP Implementation	Status
1-1	Distribute Brochures/Fact Sheets/Newsletters	Brochures/Pamphlets	Residents	DPW	Number of brochures/fact sheets distributed	2018	Ongoing
1-2	Distribute Brochures/Fact Sheets/Newsletters	Brochures/Pamphlets	Businesses, Institutions, and Commercial Facilities	DPW	Number of brochures/fact sheets distributed	2018	Ongoing
1-3	Include Stormwater Information in permit package	Brochures/Pamphlets	Developers (Construction)	DPW	Include in 100% of applications and permit packages	2018	Ongoing
1-4	Distribute brochures/fact sheets	Brochures/Pamphlets	Industrial Facilities	DPW	Number of brochures/fact sheets distributed	2018	Ongoing
1-5	Distribute Annual messaging on Pet Waste (Summer).	Brochures/Pamphlets	Dog Owners - Residents	DPW	Number of Dog Licenses/materials distributed	2019	Ongoing
1-6	Distribute Annual messaging on proper septic system maintenance	Brochures/Pamphlets/ Letter	Residents with Septic Systems	DPW	Number of residents reached	2018	Ongoing
1-7	Distribute Annual messaging on Leaf Litter (Fall)	Social Media	Residents	DPW	Number of brochures/fact sheets distributed	2018	Ongoing
1-8	Distribute Annual messaging on Leaf Litter (Fall)	Social Media	Businesses, Institutions, and Commercial Facilities	DPW	Number of brochures/fact sheets distributed	2018	Ongoing
1-9	Distribute Annual messaging on grass clippings and fertilizers (Spring)	Social Media	Residents	DPW	Number of brochures/fact sheets distributed	2018	Ongoing
1-10	Distribute Annual messaging on grass clippings and fertilizers (Spring)	Social Media	Businesses, Institutions, and Commercial Facilities	DPW	Number of brochures/fact sheets distributed	2018	Ongoing
1-11	Post stormwater information on webpage	Web Page	Residents	DPW	Number of website views	2020	Ongoing
1-12	Post stormwater information on webpage and on DPW social media accounts	Web Page; Social Media	Businesses, Institutions, and Commercial Facilities	DPW	Number of website views/social media followers	2020	Ongoing
1-13	Post stormwater information on webpage	Web Page	Developers (Construction)	DPW	Number of website views/clicks on link	2020	Ongoing
1-14	Post stormwater information on webpage	Web Page	Industrial Facilities	DPW	Number of website views/clicks on link	2020	Ongoing



BMP #	BMP	Media/Category	Targeted Audience	Responsible Department	Measurable Goal	Beginning Year of BMP Implementation	Status
1-15	Conduct trainings and presentations	Presentations/Trainings	Developers (Construction)	DPW	Number of participants	2020	Ongoing
1-16	Rain Barrel Program	Special Events	Residents	DPW	Number of rain barrels sold	2019	Ongoing
1-17	Post stormwater information on DPW social media accounts	Social Media	Residents	DPW	Number of social media followers	2018	Ongoing
1-18	Post stormwater information at the DPW office	Displays/Posters/Kiosks	General Public	DPW	Number of posters/handouts displayed	2018	Ongoing
1-19	Distribute stormwater fact sheet at events	Special Events	General Public	DPW	Number of events and participants	2019	Ongoing
1-20	Post stormwater videos on either local cable, web site, or social media	Videos	General Public	DPW	Number of videos posted	2018	Ongoing

## 5.2 MCM 2: PUBLIC INVOLVEMENT AND PARTICIPATION

### 5.2.1 Objective



“The permittee shall provide opportunities to engage the public to participate in the review and implementation of the permittee’s SWMP.”

### 5.2.2 Permit Summary

Part 2.3.3 of the Permit requires the City provide an annual opportunity for the public to participate in the review and implementation of the SWMP, including allowing the public to provide comments and feedback. The City will adhere to state public notice requirements (MGL Chapter 30A, Sections 18-25 – effective 07/10/2010), for all public involvement activities and report on activities in the annual report.

### 5.2.3 Existing and Updated Programs

Over the previous permit term, the City made significant progress in engaging the community around stormwater related topics. The City is proactive about involving the community in stormwater management leading up to this 2016 Permit term and supporting volunteer efforts. Instead of sponsoring a public meeting to discuss the SWMP the City will engage a broader audience by participating in public events.



The City made significant progress in engaging the community around stormwater related topics and is proactive about involving the community in stormwater management.

*Photo at neighborhood event with an educational display about stormwater*





The City engages the public on stormwater through a variety of events such as tours of stormwater wetlands (above) and Household Hazardous Waste events (below)





**Table 5-3: Implementation Program for MCM 2**

<b>BMP #</b>	<b>BMP Description</b>	<b>Responsible Department</b>	<b>Measurable Goal</b>	<b>Beginning Year of BMP Implementation</b>
2-1	Public Review of Stormwater Management Program	DPW	Post Stormwater Management Program on City Website and allow for public review annually; track number of comments.	2019
2-2	Public Events to discuss SWMP and program status and provide comments	DPW	Host and participate in public events to foster discussion with residents; track number of event visitors	2019
2-3	Promote participation in Household Hazardous Waste collection program	DPW	Track number of participants	2018
2-4	Continue to hold Stormwater Outreach Activities for children	DPW	Track number of activities and children participating at each event	2019
2-5	Continue to hold tours of the City's Stormwater Wetlands	DPW	Number of tours and participants	2018
2-6	Continue to participate in community/neighborhood events	DPW	Number of events and participants	2019
2-7	Continue promotion of Solid Waste, Recycling, and Compost Program	DPW	Track tonnage of waste collected	2019

**5.2.4 Public Participation in the Stormwater Management Program**

The Stormwater Management Program is posted online at the following location: <https://www.cambridgema.gov/Departments/publicworks/Initiatives/stormwatermanagement>. A hardcopy of the program is also available for public review at the DPW Office located at 147 Hampshire Street, Cambridge, MA. The City will continue its promotion of ways for the public to report activities that negatively impact water quality to provide further opportunities for public participation. The City will include meeting dates, attendance, and public input in the Annual Report.





## 5.3 MCM 3: ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE) PROGRAM

### 5.3.1 Objective



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

### 5.3.2 Permit Summary

The Permit requires the City to maintain an adequate legal authority to prohibit, investigate, and eliminate illicit discharges, and implement appropriate enforcement mechanisms. Illicit discharges have been defined in 40 CFR 122.26(b)(2) as “any discharge to a municipal separate storm sewer that is not composed entirely of stormwater...” with some exceptions. These exceptions include discharges from NPDES-permitted industrial sources and discharges from fire-fighting activities. EPA studies have shown that pollutant levels from illicit discharges have been high enough to significantly degrade receiving water quality and threaten aquatic wildlife and human health. Illicit discharges include sanitary wastewater (sewage), car wash wastewaters, improper oil disposal, laundry wastewater, spills from roadway accidents, and improper disposal of auto and household toxics. The MS4 Permit and the City’s [Wastewater and Stormwater Drainage Use Regulations](#) list the allowable non-stormwater discharges to the MS4.

Under MCM 3, the City is required to implement an IDDE program to systematically find and eliminate sources of non-stormwater discharges to its MS4 and implement procedures to prevent such discharges. **Table 5-4** summarizes major requirements related to MCM 3 and the City’s status with implementing these requirements.

**Table 5-4: IDDE Program Timeline**

IDDE Program Requirement	Estimated Completion Date from July 1, 2018*						Status
	1 Year	1.5 Years	2 Years	3 Years	7 Years	10 Years	
Written IDDE Program	X						Completed
SSO Inventory	X						Completed
Written Catchment Investigation Procedure		X					Completed
Phase I Mapping			X				Completed
Phase II Mapping						X	In progress
IDDE Regulatory Mechanism or By-law				X			Completed
Dry Weather Outfall Screening				X			Completed
Follow-up Ranking of Outfalls and Interconnections				X			Completed
Catchment Investigations – Problem Outfalls					X		Completed
Catchment Investigations – all Problem, High and Low Priority Outfalls						X	In progress

*\*Effective date of 2016 Permit*

### 5.3.3 Existing Program

#### **Written IDDE Program including Written Catchment Investigation Procedures**

The City documented its written IDDE program during Year 1 of the 2016 Permit term and revised it in Permit Year 2 and 3. The City’s written IDDE Program, which is included as Appendix E, includes procedures for dry weather outfall screening and sampling and for catchment investigation. The procedures were adapted from the Central Massachusetts Regional Stormwater Coalition, the Center for Watershed Protection, the New England Interstate Water Pollution Control Commission, and the U.S. EPA.

The City provides annual training to staff involved in the IDDE Program. The training adheres to the requirements specified in the 2016 Permit and includes information on how to identify illicit discharges and SSOs. Additionally, during the training, specific functions of personnel responsible for implementing the IDDE program are reviewed, such as outfall sampling and screening procedures.



*Outfall screening and sampling during IDDE training*

#### **5.3.4 Sanitary Sewer Overflows (SSOs)**

SSOs are discharges of untreated sanitary wastewater from a municipal sanitary sewer that can contaminate surface waters, cause serious water quality problems and property damage, and threaten public health. SSOs can be caused by sanitary sewer blockages, line breaks, sewer defects that allow stormwater and groundwater to overload the system, power failures, improper sewer design, and vandalism.

The City maintains an inventory of SSOs that have discharged to the MS4 within the five (5) years prior to the effective date of the 2016 MS4 Permit. The inventory includes all SSOs that occurred during wet or dry weather resulting from inadequate conveyance capacities, or where interconnectivity of the storm and sanitary sewer infrastructure allows for transfer of flow between systems. The SSO inventory is included as an Appendix C to the [IDDE Program](#).

The SSO inventory will be updated by the City annually and included in each annual report with information on the status of mitigation and corrective measures to address each identified SSO. Additionally, the City will provide oral notice to EPA, MassDEP, and others as applicable within 24 hours, and written notice to EPA and MassDEP within five (5) days of becoming aware of the SSO occurrence. The City will eliminate it as expeditiously as possible and take interim measures to minimize the discharge of pollutants to and from its MS4 until the SSO is eliminated.



**Table 5-5 Contact Information to Report an SSO by Phone within 24 hours (Oral Notice)**

Agency	Contact	Requirements
MassDEP	During Business Hours: (978) 694-3215, or 24-Hour Emergency Line: (888) 304-1133	Report all SSO events
EPA	EPA New England: (617) 918-1510, or Northeast Region, Douglas Koopman (617) 918-1747	Report all SSO events
Local Board of Health	Cambridge Public Health Department: (617) 665-3800	Report all SSO events where impacts may occur
Department of Conservation and Recreation	State House Ranger Base: (617) 722-1188	Where DCR beaches or parks are affected
MA Division of Marine Fisheries	Boston/Northeast: (617) 727-3336 x 165	Where shellfish resources may be affected
Drinking Water Resource Managers	Cambridge Water Department Sam Corda, Managing Director: (617) 349-4770	Where drinking water resources may be affected

**Contact information to submit a written notice of an SSO event within five (5) calendar days:**

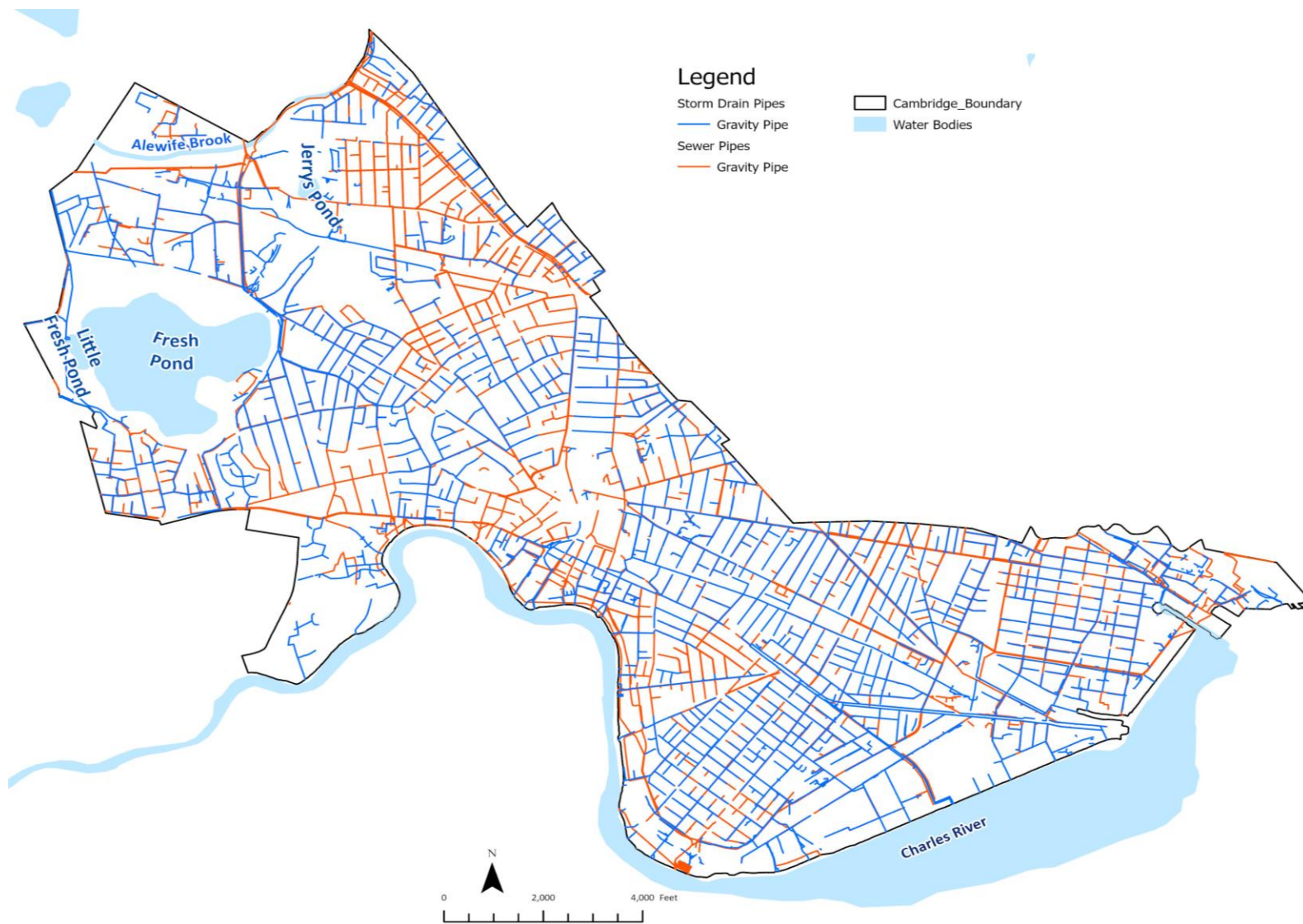
**Complete MassDEP Sanitary Sewer Overflow (SSO)/Bypass notification form (Appendix C of the IDDE Program)**



**Send Notification Form by Fax: Massachusetts Department of Environmental Protection, Northeast Regional Office, 205B Lowell Street, Wilmington, MA 01887. Fax: 978-694-3499**

**AND**

**EPA Water Technical Unit (OES 04-4), 5 Post Office Square, Suite 100, Boston, MA 02109-3912. Attn: Douglas Koopman. Fax: 617-918-0747**



**Figure 5-1: The City's sewer and stormwater pipes**

## **Storm System Mapping (Phase 1 and Phase II)**

The Permit's mapping requirements are divided into two phases. Phase 1 is due by the end of the 2016 Permit Year 2 (July 1, 2020) and Phase II is due by the end of the 2016 Permit Year 10 (July 1, 2028). The City's mapping of the MS4 and combined sewer system is substantially complete from ongoing efforts to update its GIS system. The City continuously revises its map of the municipal infrastructure system through information gathered from targeted and routine operation and maintenance activities and record drawings. The City will continue updating its system map based upon findings from the implementation of catchment investigations and as the City completes major public infrastructure projects impacting stormwater infrastructure. The storm system map is shown in **Appendix B of the [IDDE Program](#)** and on the City's GIS viewer at the following location: [www.cambridgema.gov/GIS](http://www.cambridgema.gov/GIS).

## **IDDE Regulatory Mechanism**

In 2008, the City adopted a revised **[Wastewater and Stormwater System Ordinance \(Chapter 13.16\)](#)** to further regulate, enforce and eliminate illicit discharges and connections to the MS4. This Ordinance, as well as the **[Wastewater and Stormwater Drainage Use Regulations](#)**, provide the legal authority for enforcing the City's IDDE Program, and are included in [Appendix A](#) of the IDDE Plan.

## **Priority Ranking of Outfalls and Screenings**

The City completed an initial outfall inventory and priority ranking for each outfall and interconnection discharging from the MS4. The priority provides an indication of the potential for an outfall to contain an illicit discharge based on components required by the Permit such as past discharge complaints, the receiving water quality, existing stormwater sample results, and other system characteristics. The City also created a framework for tracking inspections, screenings and other IDDE program activities. This information, along with the recommended considerations

listed in the MS4 Permit, were used to priority rank outfalls in Permit Year 1. Based upon completion of outfall screenings in Permit Year 3 outfalls with likely sewer input has been ranked at the top of the list of high priority outfalls for catchment investigations.



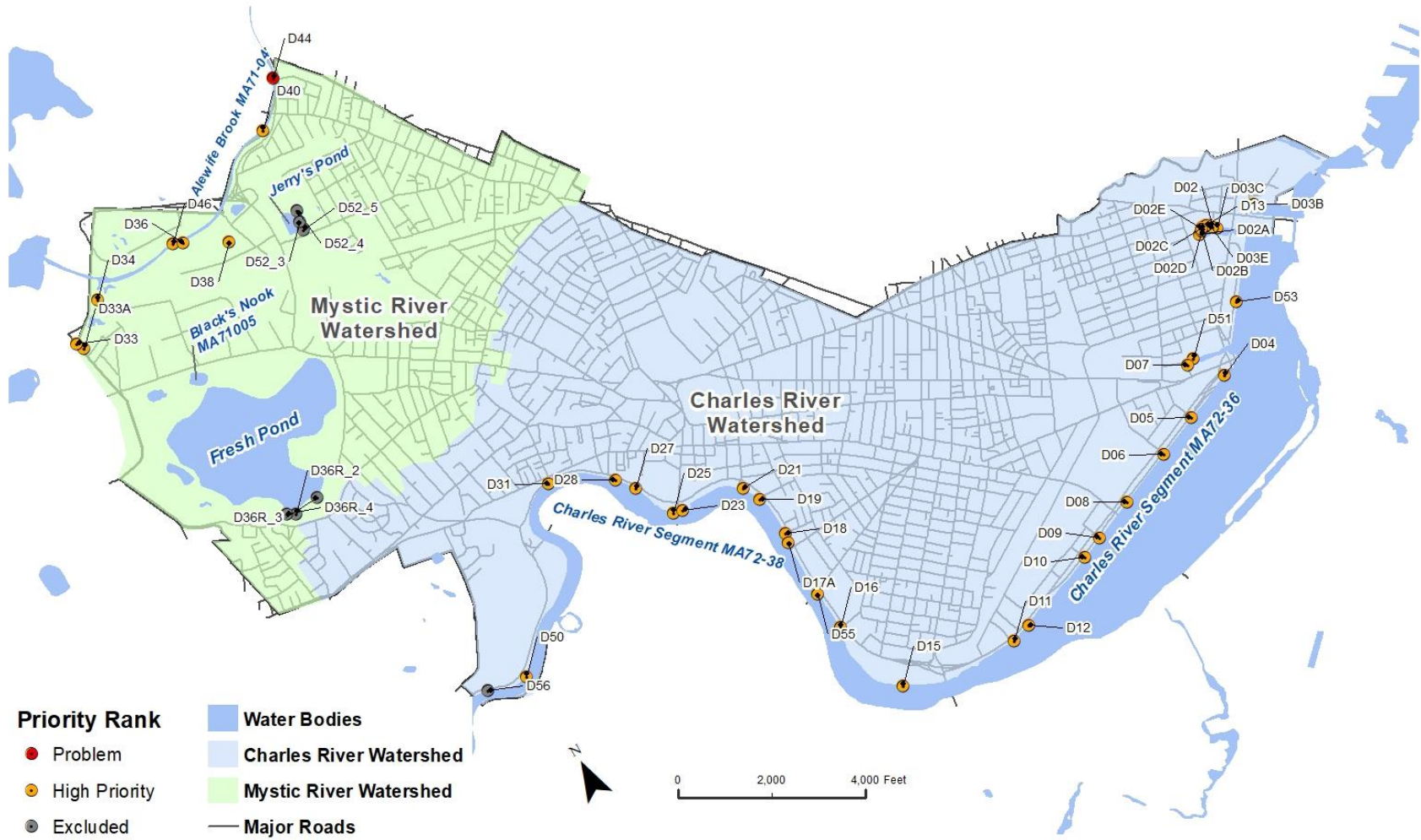


Figure 5-2 : Priority ranking of the City's MS4 outfalls.

## Dry Weather Outfall Screening / Sampling

The DPW conducted water quality sampling during dry weather conditions at multiple locations to satisfy requirements of the Massachusetts Department of Environmental Protection (DEP) Administrative Consent Order ACOP-96-1004 (Common Manhole Separation), DEP Notice of Non-Compliance NON-NE-00-1004 (Alewife 308 Letter), and EPA's MS4 Permit. The City conducted wet weather sampling to supplement its MS4 dry weather sampling efforts as part of the 2003 Permit.



Additional information and water quality sampling data is available on the City's website:

[www.cambridgema.gov/stormwater](http://www.cambridgema.gov/stormwater)

*Sampling station at the Alewife Stormwater Wetland outlet*

### 5.3.5 Updated Program

The 2016 Permit provides prescriptive requirements on the timeline for implementing the IDDE Program. The City completed multiple requirements through prior efforts, as described and documented in the sections above, and **Table 5-6** details these and other requirements that Cambridge will undertake to adhere to the 2016 Permit requirements.

**Table 5-6: Implementation Program for MCM 3**

<b>BMP #</b>	<b>BMP</b>	<b>Description</b>	<b>Measurable Goal and Due Date</b>	<b>Status</b>
3-1	IDDE Legal Authority	Create regulation to provide City with legal authority to detect and eliminate illicit discharges	Completed regulation (due in prior Permit term)	Completed
3-2	SSO Inventory	Complete and document a baseline inventory and maintain annually	Complete baseline by July 1, 2019	Completed, update annually
3-3	Storm System Map	Update and enhance existing system map during the IDDE program	Update map by July 1, 2020 and complete full system map by July 1, 2028	Phase 1: Complete Phase 2: On-going
3-4	Written IDDE Program	Update existing written IDDE program	Complete by July 1, 2019	Completed
3-5	Implement IDDE Program	Implement catchment investigations according to program and permit conditions	Complete by July 1, 2028	On-going
3-6	Employee training	Expand existing employees' training program on IDDE implementation	Train annually	On-going
3-7	Conduct dry weather screening	Conduct in accordance with outfall screening procedure and permit conditions	Complete by July 1, 2021	Completed
3-8	Conduct wet weather screening	Conduct in accordance with outfall screening procedure	Complete by July 1, 2028	On-Going
3-9	Ongoing screening	Conduct dry and wet weather screening (as necessary)	Complete ongoing outfall screening upon completion of IDDE program. Goal based on number of screenings	Not started

### 5.3.6 Responsible Parties

The Cambridge Department of Public Works (DPW) is the lead municipal department responsible for implementing the IDDE program pursuant to the provisions of the Wastewater and Stormwater Drainage System Ordinance. The Engineering Division of the DPW will be responsible for day-to-day supervision of the IDDE program and reporting. Other agencies or departments with responsibility for aspects of the program include:

- Sewer Division (DPW) – Maintenance/repairs to the City’s MS4
- Water Department – potential use of hydrants during dye testing
- DPW – Ordinance and Drainage Use Regulations, Enforcement
- Law Department – Ordinance, Enforcement
- DPW – GIS/Mapping
- Traffic, Parking, and Transportation Department – Permits/no parking manhole inspections.
- Cambridge Police Department – Police Details

### 5.3.7 Implementation Deadlines

Proper adherence to MCM 3 will include an adequate legal authority and enforcement strategy for illicit discharges, an up to date SSO inventory, a robust system wide map, a written IDDE plan, trained field staff, and an enhanced understanding of catchments, interconnections, and water quality in the City. Each aspect of the IDDE program will be reported in the annual report, and the IDDE plan will be updated to reflect reprioritizations, mapping, and other gathered data. As this section of the 2016 Permit is highly prescriptive, the measurable goals consist of completing the requirements by the specified dates shown in **Table 5-6**.



## 5.4 MCM 4: CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

### 5.4.1 Objective



Unmanaged sediment from construction site runoff can also clog waterways at a high rate, causing physical and biological harm to local habitat and exacerbating flooding. “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.”

### 5.4.2 Permit Summary

The City is required to enforce a program that reduces pollutants in any stormwater runoff discharged to the MS4 from all construction activities that result in a land disturbance of greater than or equal to one (1) acre within the MS4 area. Construction activities that disturb less than one (1) acre but are part of a larger common plan are also included. This program must include a regulatory mechanism that requires the use of sediment and erosion control practices at construction sites, written procedures for site inspections and enforcement, and requirements for construction site operators that contribute stormwater discharges to the MS4 implement appropriate BMPs such as those described in the Massachusetts Stormwater Handbook.

### 5.4.3 Existing and Updated Program

Consistent with the requirements of the MS4 Permit, the City is implementing and enforcing a program to reduce pollutants in stormwater runoff discharged from construction activities. The City’s [Land Disturbance Regulations](#), adopted on March 31, 2008 and updated in June 2021, regulates erosion and sedimentation in stormwater from construction sites that receive a Stormwater Control Permit from the DPW. These regulations include site inspection procedures and authorize the City DPW to conduct site inspections, as well as the authority to take enforcement actions.

The City's Land Disturbance Regulations are more stringent than the 2016 Permit's erosion and sediment control requirements, in that they apply to activities that disturb one or more acres of land; exceed fifty thousand square feet of Gross Floor Area; have a project parcels(s) equal to or greater than one acre in size; include outdoor parking for ten (10) cars or more; require a Special Permit from the Planning Board; or in the opinion of the City Engineer may result in an adverse impact of the municipal Sewer, Combined Sewer, Stormwater Drainage Systems or Water Resources. The written site plan review procedures include a pre-construction review of the site design, the planned operations at the construction site, planned BMPs during the construction phase, and the planned BMPs to be used to manage runoff created after development. Construction site operators performing land disturbance activities within the MS4 will be required to use BMPs appropriate for site conditions and likely potential sources of stormwater pollution. The selected BMPs will be evaluated for applicability during the site plan review, and opportunities for Low Impact Development (LID) and green infrastructure (GI) will also be investigated.

Operators are also required to control wastes such as discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes. Additionally, operators must post signage with information on how the public can notify the City of construction-related issues that impact stormwater management requirements.

**The City's program includes a regulatory mechanism requiring the use of sediment and erosion control practices at construction sites, written procedures for site inspections and enforcement, and requirements for construction site operators that contribute stormwater discharges to the MS4 implement appropriate BMPs such as those described in the Massachusetts Stormwater Handbook.**



*Silt sack installed in a catch basin to manage stormwater pollution during construction*

Required actions related to this MCM are described in **Table 5-7**.

**Table 5-7: Implementation Program for MCM 4**

BMP #	BMP	Description	Measurable Goal	Status
4-1	Site Inspection and Enforcement of Erosion and Sediment Control (ESC) Measures	Review and enhance existing written procedures for site inspections and enforcement procedures	Complete by July 1, 2019	Program Completed; On-going implementation
4-2	Site Plan Review	Review and enhance existing procedures for site plan review and begin implementation	Complete by July 1, 2019	Program Completed; On-going implementation
4-3	Sediment and Erosion Control Ordinance	Review and enhance existing construction operations to implement a sediment and erosion control program	Completed by July 1, 2019	Completed
4-4	Waste Control	Enhance existing Land Disturbance Regulation to control wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes	Completed by July 1, 2019	Completed

#### 5.4.4 Responsible Parties

The Department of Public Works is responsible for the enforcement of the Construction Site Stormwater Runoff Control Program. 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.

## 5.5 MCM 5: POST CONSTRUCTION STORMWATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT

### 5.5.1 Objective



“The objective of an effective post construction stormwater management program is to reduce the discharge of pollutants found in stormwater to the MS4 through the retention or treatment of stormwater after construction on new or redeveloped sites and to ensure proper maintenance of installed stormwater controls.”

### 5.5.2 Permit Summary

The City is required to develop, implement, and enforce a program to reduce pollutants in post-construction runoff to their MS4 from new development and redevelopment projects that result in land disturbance of greater than or equal to one acre. Many studies indicate that prior planning and design for the minimization of pollutants in post-construction stormwater discharges is the most cost-effective approach to stormwater quality management. This is best accomplished through good municipal planning thorough project review during the proposal and permitting stages.

### 5.5.3 Existing Program

#### Regulatory Mechanisms

Consistent with the requirements of the 2003 Permit, the City’s existing post construction stormwater management program incorporated in the Land Disturbance Regulations already addresses many of the regulatory requirements for post construction stormwater management in new development and redevelopment projects. These regulations were updated in 2021 to be in compliance with the MS4 Permit requirements.



## Land Disturbance Regulations

DPW's Land Disturbance Regulations and the Wastewater and Stormwater Management Guidance document governs construction, development and redevelopment requirements. This regulation and guidance document will be updated, as needed, to comply with the 2016 Permit per the schedule described in **Table 5-8**. Currently, the City's stormwater management standards include the following:

- Store on site the difference in volume between the 2-year 24-hour preconstruction runoff and the 25-year 24-hour post construction runoff using City of Cambridge Projected rainfall data for 2070
- Peak development discharge rate less than existing conditions
- Manage stormwater runoff to reduce 90% TSS and at least 65% TP from New Development and 80% TSS and at least 65% TP from Redevelopment projects.
- Manage sewer discharge to ensure no increase in CSOs or SSOs
- If feasible, build to the 2070 10-year storm with a recovery plan for the 2070 100-year storm

These standards are primarily intended to improve water quality and to mitigate potential flooding impacts to the project site (and abutters) and ensure that City infrastructure has the capacity to manage flows generated from developed or redeveloped properties. In response to ongoing climate change and resiliency planning efforts the City modified onsite storage requirements to utilize projected 2070 storm events.

As described in the City's existing Land Disturbance Regulation, the DPW reviews site plans for development projects that will:

- disturb one or more acres of land
- exceed fifty thousand square feet of gross floor area
- have project parcels(s) equal to or greater than one acre in size

- includes outdoor parking for ten cars or more
- requires a Special Permit from the Planning Board or
- in the opinion of the City Engineer the project may result in an adverse impact on the municipal sewer, combined sewer, stormwater drainage system or water resources

The submission of plans and details related to development activities [Stormwater Management Plan, Erosion and Sediment Control Plan, Operation and Maintenance Plan (for post construction BMP maintenance)], are required to receive a Stormwater Control Permit (SCP) (formerly called a Land Disturbance Permit). The SCP requires the submittal of as built record drawings of the improvements, a schedule for preventative maintenance measures and allows the City to access the site for periodic inspections.

#### 5.5.4 Updated Program

The 2016 Permit provides prescriptive requirements on the timeline of implementing Post Construction requirements. The City adopted post construction requirements as described above. Additional actions that Cambridge will undertake to adhere to the 2016 Permit are described below and this aspect of the program is summarized in **Table 5-8**.

#### Street and Parking Lot Guideline Report

The City has developed a report assessing current street design, parking lot guidelines, and other applicable local requirements that impact the creation of impervious cover. This report focuses on highlighting current impediments to using low impact design options, and detailing improvements for promoting the use of such options. Where options to improve regulations to allow for LID are available, the report includes recommendations for policies or standards and relevant documents and procedures to minimize impervious cover attributable to parking areas and street design. In 2022, the City updated its Zoning Ordinance (6.30) by removing the minimum parking requirement for new development.



*Rain garden installed at Western Avenue and Pleasant Street*

### **Low Impact Design & Green Infrastructure Report**

In addition to local guidelines regarding the creation of impervious cover, the City developed a report assessing existing local regulations to determine how to promote the implementation of green infrastructure. In particular, the City assessed the feasibility of allowing green roofs, infiltration practices, and water harvesting devices. In 2023, the City updated their Climate Resiliency Zoning to include Flood Resiliency Standards and Green Factor Standards.

### **Municipal Retrofit Opportunities**

The City will also continue to identify permittee-owned properties to retrofit with BMPs designed to reduce frequency, volume, and pollutant loads of stormwater discharges to and from its MS4 area. This list of potential retrofit opportunities will be maintained and updated annually. Additionally, the City intends to retrofit or modify one permittee-owned property per year with BMPs to reduce impervious area. Information about these properties will be tracked and reported on annually.

**Table 5-8: Implementation Program for MCM 5**

BMP #	BMP	Description	Measurable Goal	Status
5-1	As-built plans for on-site stormwater control	The procedures to require submission of as-built drawings and ensure long term operation and maintenance will be a part of the SWMP	Require submission of as-built plans for completed projects. (required under prior Permit term)	Completed
5-2	Target properties to reduce impervious areas	Continue identifying permittee-owned properties that could be modified or retrofitted with BMPs to reduce impervious areas and update annually. Identify at least five (5) properties	Complete July 1, 2022 and report annually on retrofitted properties.	Completed
5-3	Allow green infrastructure	Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist.	Complete by July 1, 2022 and implement recommendations of report.	Completed
5-4	Street Design and Parking Lot Guidelines Report	Develop a report assessing requirements that affect the creation of impervious cover. The assessment will help determine if changes to design standards for streets and parking lots can be modified to support low impact design options.	Complete by July 1, 2022 and implement recommendations of report.	Completed



BMP #	BMP	Description	Measurable Goal	Status
5-5	Ensure any stormwater controls or management practices for new development and redevelopment meet the retention or treatment requirements of the permit and all applicable requirements of the Massachusetts Stormwater Handbook	Amendment or modification of the regulatory mechanism (Land Disturbance Regulations) to meet permit requirements.	Complete by July 1, 2021	Completed
5-6	Implement BMPs on permittee-owned properties	Retrofit or modify one permittee-owned property per year with BMPs to reduce impervious areas	Annually	In progress

**5.5.5 Responsible Parties**

The Department of Public Works is responsible for the enforcement of the post construction stormwater management program. The Department of Public Works will coordinate 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.



## 5.6 MCM 6: POLLUTION PREVENTION / GOOD HOUSEKEEPING

### 5.6.1 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.”

### 5.6.2 Permit Summary

The City is required to develop an operation and maintenance program for all municipal facilities where pollutants are or could be exposed to stormwater runoff, and to optimize inspections, cleaning and maintenance of its infrastructure including catch basins and other stormwater BMPs.

### 5.6.3 Existing and Updated Program

#### Operations and Maintenance Programs

The requirements of MCM 6 are aimed at reducing pollutant runoff from all permittee-owned operations. Within two years of the Permit effective date, the City must have an inventory of City owned parks and open spaces, buildings and facilities where pollutants are exposed to stormwater runoff, as well as vehicle and equipment usage and staging areas.

The City maintains an inventory of all its owned and operated facilities as spreadsheet that includes the following information: site name, facility type, address, contact person name and phone number, and previous inspections dates. Currently the list includes a total of 162 facilities, of which 77 facilities are in the separated storm sewer area and subject to the 2016 Permit requirements. The City is updating the list with additional stormwater related information, including the number of catch basins, floor drains, and oil-water separators available at each facility. The City also maintains an inventory of vehicles, equipment, and parks and open spaces, to adhere to 2016 Permit requirements.

The 2016 Permit requires that within two years of its effective date (July 1, 2020), the City must develop written operations and maintenance procedures for municipal operations at inventoried properties. Beyond operations and maintenance of the facilities, the City is also responsible for keeping all MS4 infrastructure in good working order with timely maintenance. The 2016 Permit requires that the following items are included:

- the optimization of routine catch basin inspections
- the procedures for street sweeping and cleaning of City-owned parking lots
- details for proper storage of street sweepings and catch basin materials
- winter road maintenance policies and procedures
- maintenance and inspection frequency of stormwater treatment structures

In 2006, the City prepared a Draft Good Housekeeping Manual with written procedures relevant to each type of property. This document includes a collection of factsheets for the maintenance and operation of 21 Good Housekeeping BMPs and provides municipal employee with a single reference document for standard operating procedures to properly inspect infrastructure and to minimize stormwater pollution from municipal operations.

There is substantial overlap between the contents of the existing manual and the maintenance procedures required under the 2016 Permit. In 2019, the City updated its comprehensive Draft Manual to comply with the 2016 Permit by adding procedures for waterfowl management, trash management, and mosquito control. In addition, the City is developing catch basin cleaning optimization procedures to ensure that they are not more than 50 percent full.



*The City maintains its stormwater infrastructure through drain cleaning (left) and street sweeping (right)*

### **Stormwater Pollution Prevention Plans**

The 2016 Permit requires the development and implementation of Stormwater Pollution Prevention Plans (SWPPPs) for permittee-owned and operated facilities including maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater. No SWPPP is required for facilities covered under the Multi-Sector General Permit (MSGP) or if the discharge is authorized under another NPDES permit. SWPPPs describe potential pollutant sources, site activities, and stormwater controls.

The City developed individual SWPPPs for each of the following six (6) permittee owned or operated facilities:

- **Alewife Staging Area**
- **Cambridge Rindge and Latin School Garage – Gustave M. Solomons Transportation Career Center**
- **Police Maintenance Garage**
- **Fire Maintenance Garage**
- **Water Department Garage**
- **Cemetery Garage**



The City is developing a set of site-specific good housekeeping procedures for three (3) facilities that the City determined, through site visits and investigations, do not discharge to the MS4:

- **Fresh Pond Golf Course Garage**
- **Department of Public Works Garage**
- **Danehy Park Maintenance Garage**

An overview of the requirements and BMPs for this MCM is included in **Table 5-9**.

**Table 5-9: Implementation Program for MCM 6**

BMP #	BMP	BMP Description	Measurable Goal	Status
6-1	Stormwater Pollution Prevention Plan (SWPPP)	Create SWPPPs for maintenance garages, transfer stations, and other waste-handling facilities.	Complete and implement SWPPPs for six facilities by July 1, 2020 and implement requirements for quarterly inspections and annual employee training	Completed
6-2	Stormwater Treatment Structures Inspection and Maintenance Procedures	Update and enhance existing inspection and maintenance procedures and frequencies.	Update procedures by July 1, 2019 and inspect and maintain treatment structures annually. Report number of structures maintained	Updates Completed; On-going inspection and maintenance
6-3	O&M Procedures	Update existing written O&M procedures including all requirements contained in 2.3.7.a.ii for parks and open spaces, buildings and facilities, and vehicles and equipment. Update Good Housekeeping Manual.	Complete by July 1, 2020 and implement	Completed

BMP #	BMP	BMP Description	Measurable Goal	Status
6-4	Inventory all permittee-owned parks and open spaces, buildings and facilities, and vehicles and equipment	Update existing inventory.	Complete by July 1, 2020 and implement annually	Completed
6-5	Infrastructure O&M	Update and enhance existing program for repair and rehabilitation of MS4 infrastructure (included in Good Housekeeping Manual).	Complete by July 1, 2020	Completed
6-6	Catch Basin Cleaning Program	Update schedule for catch basin cleaning such that each catch basin is no more than 50% full and clean catch basins on that schedule.	Clean catch basins on established schedule and report number of catch basins cleaned and weight of material removed annually	On-going
6-7	Street Sweeping Program	Continue the street sweeping program and update in accordance with permit conditions.	Sweep all streets at least twice per year (spring and fall) and report tonnage of material collected. Sweep permittee-owned parking lots twice per year (spring and fall) and report number of parking lots swept.	On-going
6-8	Road Salt Use Optimization Program	Continue the existing program and update as necessary to minimize the use of road salt.	Document procedures by July 1, 2019 and Implement salt use optimization during deicing season	On-going

## 5.7 ADDITIONAL REQUIREMENTS FOR DISCHARGES TO SURFACE DRINKING WATER SUPPLIES AND THEIR TRIBUTARIES

The City has three (3) outfalls that discharge to Fresh Pond in the northwestern portion of Cambridge. Fresh Pond Reservoir is a crucial part of the drinking water supply system for the City of Cambridge and is regulated under Massachusetts Class A Surface Water Standards and is part of the Massachusetts Source Water Assessment Program (SWAP). Since the contributing area to these outfalls is considered drainage for athletic fields, parks or undeveloped green space and associated parking without services, these three outfalls are excluded from this Stormwater Management Plan and the 2016 Permit.

## 6 TMDLS AND WATER QUALITY LIMITED WATERS

### 6.1 ACTIONS FOR MEETING TOTAL MAXIMUM DAILY LOAD REQUIREMENTS

Due to past and current conditions, specific water bodies have been identified as impaired by MassDEP and by EPA with regards to certain pollutants. The 2016 Permit includes additional requirements for such water bodies with impairments and Total Maximum Daily Loads (TMDLs). The City of Cambridge must abide by two (2) TMDLs approved by the EPA. The portion of the Charles River within Cambridge is designated as the Lower Charles River and is subject to a TMDL for phosphorus. Additionally, as a contributor to the watershed, the City is subject to the Bacteria/Pathogen TMDL for the Charles River Watershed. The applicable TMDLs are summarized in **Table 6-1**.

**Table 6-1: Applicable TMDLs in the City of Cambridge**

Applicable TMDL	Waterbody Segment	Impairment
Pathogen TMDL for the Charles River Watershed	MA72-36,38	Bacteria/Pathogens
Total Maximum Daily Load for Nutrients in the Lower Charles River Basin, Massachusetts	MA72-36,38	Phosphorus

#### 6.1.1 Part A.I of Appendix F – Lower Charles River (Phosphorus)

The EPA approved the Total Maximum Daily Load (TMDL) for Nutrients in the Lower Charles River on October 17, 2007, and a portion of the City of Cambridge is within this watershed. As a result, the City must adhere to Part A.1 of Appendix F of the 2016 Permit for the outfalls discharging to the Charles River (segments MA 72-36 and MA72-38).

The City will develop a Phosphorus Control Plan (PCP) designed to reduce the amount of phosphorus in stormwater discharges. The PCP will be completed in three phases based upon existing data and considering resources from the U.S. EPA Region 1,<sup>1</sup> and

<sup>1</sup> <https://www3.epa.gov/region1/npdes/stormwater/presentations/20110603FranklinPCP.pdf> and



relevant training materials prepared by other organizations. The City will add the PCP as an attachment to this SWMP upon completion.

- Phase I of the plan will be developed in Permit years one through five and implemented in years five through ten. Phase I includes the creation of a regulatory mechanism to enforce the PCP, a funding source assessment, an analysis of the scope of the baseline phosphorus loading, a description of planned Phase I non-structural and structural controls, planned operation and maintenance practices, an implementation schedule, estimated Phase I costs, a written plan, and a plan for performance evaluation.

- Phase 2 will be developed in years five through ten and completed in years ten through fifteen. Phase 2 will extend the content developed through Phase I and includes an update to the regulatory mechanism if required, planned Phase 2 structural and non-structural controls, an update to operation and maintenance protocols, an implementation schedule, estimated Phase 2 costs, a written plan, and a plan for performance evaluation.

- Phase 3 will be developed in years ten through fifteen and be implemented in years fifteen through twenty. While finalizing the PCP Phase 3 will contain the same elements as Phase 2 with updates to the regulatory mechanism, if necessary; planned Phase 3 structural and non-structural controls; an update to operations and maintenance protocols; an implementation schedule; Phase 3 costs; a written plan; and a plan for performance evaluation.

<https://www.epa.gov/tmdl/opti-tool-epa-region-1s-stormwater-management-optimization-tool>

The City will submit a progress report on the PCP with each annual report. In year five, and every year after, Cambridge will report on all implemented structural and non-structural controls and the corresponding phosphorus reduction, any phosphorus load increases due to development, and an estimated yearly phosphorus export rate. The City will include certification that all structural BMPs were inspected and maintained and that all municipally owned turf grass areas are managed in accordance with Massachusetts Regulation 331 CMR 31.

In 2018, a study of BMPs and the development of a BMP Accounting and Tracking Tool (BATT) was undertaken for Cambridge to track its phosphorus loading to the Charles River. The study included calculation comparisons between BATT and regulations, sensitivity analysis of inputs, model validation, and application of the model to BMP design. The goal of the project was to help Cambridge effectively use BATT to analyze site design improvements that will reduce phosphorus loading in the Charles River. BATT emulates the MS4 Permit Appendix F methodology for calculating phosphorus removals. The project also included draft design retrofits for three municipal sites and a developer template that included inputs for BATT, BMP decision flowchart, and list of distinguishing characteristics for BATT BMPs. Initial results indicate that BATT could be useful for Cambridge in their development of their phosphorus control plan. The PCP will be developed and implemented according to the schedule in **Table 6-2**.

**Table 6-2: Phosphorous Control Plan Timeline**

1-5 years after Permit effective date (July 1, 2023)	5-10 years after Permit effective date (July 1, 2028)	10-15 years after Permit effective date (July 1, 2033)	15-20 years after Permit effective date (July 1, 2038)
Create Phase 1 Plan	Implement Phase 1 Plan		
	Create Phase 2 Plan	Implement Phase 2 Plan	
		Create Phase 3 Plan	Implement Phase 3 Plan

### **6.1.2 Part A.III of Appendix F – Charles River Watershed (Bacteria/Pathogen)**

The EPA approved the Final Pathogen TMDL for the Charles River Watershed in January 2007. As a contributing community to the Charles River Watershed, Cambridge must comply with Part A. III of Appendix F of the Permit.

To comply with the permit, the City must include enhanced BMPs as part of their public education program. Cambridge must distribute annual messaging informing the public about the proper management of pet waste and the detrimental impacts of improper management. In addition, the City must provide information to owners of septic systems regarding proper maintenance. The City addressed this requirement in Section 5.1 as part of MCM 1 and it is reiterated below in Section 6.2.1. Additionally, during the development and implementation of the IDDE Plan, catchments draining to the Charles River were designated as High Priority Catchments. The IDDE Plan is included in Appendix C.

## **6.2 ACTIONS FOR MEETING WATER QUALITY LIMITED WATERS REQUIREMENTS**

### **6.2.1 Part II Appendix H Requirements**

Alewife Brook (MA 71-04) is classified as impaired for phosphorus, and therefore the City is required to adhere to Part II of Appendix H of the Permit. The City will include annual messages for proper disposal of grass clippings in March or April, annual messages for the proper management of pet waste in June or July, and an annual message for proper disposal of leaf litter in August, September, or October. These messages were included as part of MCM 1, Section 5.1. In addition, the City will develop and submit a Phosphorous Source Identification Report as part of its Year 4 Annual Report.

In January 2020 EPA and the MassDEP released the [\*Mystic River Watershed Alternative TMDL Development for Phosphorus Management-Final Report\*](#). It is anticipated that future NPDES Permits will include additional measures for management of Total Phosphorous in the Mystic Watershed.

## 6.2.2 Part III Appendix H Requirements

Due to the bacteria impairments (E. coli) in Alewife Brook (MA 71-20) and Little River (MA 71-21; MA 71-22), the City is required to adhere to Part III of Appendix H. Beginning in Year 1, as part of the IDDE program, outfalls discharging to Alewife Brook or Little River will be designated as high priority in the initial outfall ranking. As described in Section 5.1, the City is required to include annual messaging encouraging the proper management of pet waste. In addition to distributing the messaging to pet owners, the City will continue to post signage at dog parks where pet waste is collected. The City of Cambridge has identified properties with septic systems and will provide information regarding proper maintenance to those residences.

## 6.2.3 Part IV Appendix H Requirements

The City of Cambridge has two waterbody segments with impairments that require adherence to Part IV of Appendix H of the Permit. Alewife Brook (MA 71-20) and Little River (MA 71-21) are impaired for chloride. The City already provides guidance regarding reduced salt use for snow removal in their Good Housekeeping Manual and is planning to complete the development of a Salt Reduction Plan within three (3) years (2025) and to be fully implemented by five (5) years (2027). The Salt Reduction Plan requirements are outlined in Part IV.4 of Appendix H of the Permit. Updates on the development of the Salt Reduction Plan will be included in each Annual Report hereafter until it is completed.

## 6.2.4 Part V Appendix H Requirements

The City of Cambridge has six waterbody segments with impairments that require adherence to Part V of Appendix H of the Permit. The Charles River (MA 72-36 & 72-38), the Alewife Brook (MA 71-04), Little River (MA 71-21 & MA 71-22), and Millers River (MA 72-31) are impaired for oil and grease and total suspended solids (TSS); copper, lead, oil and grease, and TSS; oil and grease, TSS, and copper; oil and grease and copper; and oil and grease and TSS, respectively. Due to these impairments, the City will have additional requirements for new and redevelopment projects draining to the waterbody segments listed. Industrial and commercial projects in this area will need to utilize designs that allow for shutdown and containment where appropriate to isolate the system in the event of an emergency or spill or another unexpected event. Although not required, EPA



recommends that the City require any stormwater management system designed to infiltrate stormwater on commercial and industrial sites provide the level of pollutant removal equal to or greater than the level of pollutant removal provided using biofiltration of the same volume of runoff to be infiltrated prior to infiltration. The City does not currently require infiltration to this level but will consider including it as part of MCM 5, Section 5.5.

## 7 ANNUAL EVALUATION

Each annual report will include the City's activities and progress with regards to this SWMP from the previous year. The EPA plans to distribute an annual report template for each year of the Permit. The City plans to utilize the template to provide updates with regards to applicable MCMs and BMPs completed within the prior year.

### 7.1 YEAR ONE ANNUAL REPORT

Report Due Date: September 29, 2019

Document Name and/or Web Address: [Year 1 Annual Report: Massachusetts Small MS4 General Permit \(cambridgema.gov\)](#)

### 7.2 YEAR TWO ANNUAL REPORT

Report Due Date: September 29, 2020

Document Name and/or Web Address: [Year 2 Annual Report: Massachusetts Small MS4 General Permit \(cambridgema.gov\)](#)

### 7.3 YEAR THREE ANNUAL REPORT

Report Due Date: September 29, 2021

Document Name and/or Web Address: [Year 3 Annual Report: Massachusetts Small MS4 General Permit \(cambridgema.gov\)](#)

### 7.4 YEAR FOUR ANNUAL REPORT

Report Due Date: September 29, 2022

Document Name and/or Web Address: [Year 4 Annual Report: Massachusetts Small MS4 General Permit \(cambridgema.gov\)](#)

### 7.5 YEAR FIVE ANNUAL REPORT

Report Due Date: September 29, 2023

Document Name and/or Web Address:

## 8 REFERENCES

- *General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts*. United States Environmental Protection Agency, issued April 4, 2016.
- *General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts*. United States Environmental Protection Agency, issued May 1, 2003.
- *Massachusetts Year 2018/2020 Integrated List of Waters, Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act*. Massachusetts Department of Environmental Protection, November 2021.
- *Stormwater Management Plan Template v1.1*. United States Environmental Protection Agency, Fall, 2018.

# APPENDIX A

## Delegation of Authority Letter





City of Cambridge  
Department of Public Works

147 Hampshire Street  
Cambridge, MA 02139  
theworks@cambridgema.gov

Katherine F. Watkins, Commissioner

Voice: 617 349 4800

TDD: 617 499 9924

MEMO TO FILE

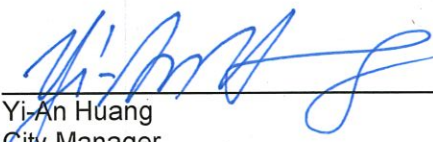
Re: Documentation for delegation of "Authorized Representative" for NPDES 2016 Massachusetts Small Municipal Separate Storm Sewer System (MS4) General Permit

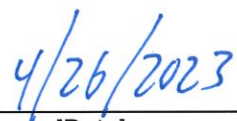
This document serves to affirm that James Wilcox, City Engineer, has responsibility for the operation of the MS4 and is hereby designated as an authorized person for signing all reports including but not limited to the Stormwater Management Plan (SWMP), Stormwater Pollution Prevention Plans (SWPPPs), inspection reports, annual reports, monitoring reports, reports on training, and other information required by the General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts for the City of Cambridge. This authorization cannot be used for signing a NPDES permit application (e.g., Notice of Intent (NOI)) in accordance with 40 CFR 122.22).

By signing this authorization, I confirm that I meet the following requirements to make such a designation as set forth in Part B.11 of Appendix B of the Small MS4 General Permit:

*For a municipality, state, federal, or other public agency: By either a principal executive officer or ranking elected official.*

"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."

  
\_\_\_\_\_  
Yi-An Huang  
City Manager

  
\_\_\_\_\_  
[Date]

# APPENDIX B

## Authorization to Discharge



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

**VIA EMAIL**

April 5, 2019

Louis A. DePasquale  
City Manager

And;

Catherine Daly Woodbury  
Project Manager, Department of Public Works  
147 Hampshire Street  
Cambridge, MA. 02139  
cwoodbury@cambridgema.gov

Re: National Pollutant Discharge Elimination System Permit ID #: MAR041076, City of  
Cambridge

Dear Catherine Daly Woodbury:

The 2016 NPDES General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts (MS4 General Permit) is a jointly issued EPA-MassDEP permit. Your Notice of Intent (NOI) for coverage under this MS4 General Permit has been reviewed by EPA and appears to be complete. You are hereby granted authorization by EPA and MassDEP to discharge stormwater from your MS4 in accordance with the applicable terms and conditions of the MS4 General Permit, including all relevant and applicable Appendices. This authorization to discharge expires at midnight on **June 30, 2022**.

For those permittees that certified Endangered Species Act eligibility under Criterion C in their NOI, this authorization letter also serves as EPA's concurrence with your determination that your discharges will have no effect on the listed species present in your action area, based on the information provided in your NOI.

As a reminder, your first annual report is due by **September 30, 2019** for the reporting period from May 1, 2018 through June 30, 2019.

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


any questions regarding this permit please contact Newton Tedder at [tedder.newton@epa.gov](mailto:tedder.newton@epa.gov) or (617) 918-1038.

Sincerely,



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

and;



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



# APPENDIX C

## Endangered Species Review

## **City of Cambridge, MA M4 Permit Notice of Intent Eligibility Screenings Documentation**

As a part of compliance with the Massachusetts MS4 General Permit, permittees are required to perform screenings to assess discharge impacts on both federally listed endangered species and historic properties. This memorandum is meant to formally document the steps taken by the City of Cambridge in certifying which eligibility criteria can be applied for both the Endangered Species Act (ESA) and National Historic Preservation Act (NHPA) Determinations.

Following MS4 Permit Appendices C and D, respectively, for the ESA and NHPA Determinations, respectively, the City of Cambridge can certify the following:

1. Cambridge certifies under Criterion C for the Endangered Species Act screening;
2. Cambridge certifies under Criterion C for the National Historical Preservation Act screening.

Since previous MS4 Permit became effective in 2003, the City of Cambridge has created or accepted three new stormwater outfalls: Western Avenue, the Alewife Stormwater Wetland, and Binney Street. These outfalls were created as part of larger projects, and therefore each underwent extensive permitting processes involving review under the Massachusetts Endangered Species Act and the MassHistoric Project Notification process with the State Historic Preservation Officer (SHPO). Based on compliance with these permitting processes, it is our determination that these activities did not adversely impact either any federally listed endangered species or any national historic properties, as certified below. The Alewife Stormwater Wetland was covered under the Construction General Permit, while the other two outfalls underwent permit review at the state and local level. Any new structural BMP activity moving forward under the new MS4 General Permit term will follow the same permitting process and be assessed accordingly to comply with the criterion identified. Additional detail is provided below.

### **ENDANGERED SPECIES ACT DETERMINATION**

The ESA determination requires permittees to use the resources provided in the Information, Planning, and Conservation (IPaC) online mapping tool to assess endangered and threatened species within the permit area. Cambridge mapped the city extents to determine which federally listed endangered species are listed in the area. The results from the U.S. Fish and Wildlife IPaC system indicated that Cambridge's MS4 area contains habitat for the Northern Long-eared Bat. See below for IPaC results and a Massachusetts NHESP Habitats map from the MassGIS Oliver map viewer. Using the ESA Eligibility criteria as referenced in Appendix C of the MA Small MS4 General Permit, Cambridge falls under criterion C, as follows:

- Although federally listed endangered species (Northern long eared bat) are present in the permit coverage area, stormwater structures installed since 2003 were created as a part of larger projects, which underwent extensive permitting processes involving review under the Massachusetts Endangered Species Act (MESA). Based on compliance with MESA, these projects had no effect on the listed species.
- Cambridge certifies that during the course of the new Permit term, if new structural BMPs are planned, endangered species review will be conducted to ensure no effect on federally listed species. If any new activity is deemed "may affect" or is "not likely to affect" federally listed species or critical habitat the City of Cambridge will contact the USFWS.

Documentation of ESA eligibility will consist of the following, in accordance with Permit Appendix C:

- A dated copy of EPA concurrence with the above will consist of the issuance of the Permit. This will be included as documentation in the City's written Stormwater Management Program Plan.

The screenshot shows the IPaC (Information for Planning and Consultation) website interface. At the top, it identifies the project as 'Cambridge Endangered Species' in Middlesex and Suffolk counties, Massachusetts. The user is logged in as 'STEPHANIE ALIMENA' under the 'U.S. Fish & Wildlife Service' header.

The main content area is titled 'Endangered species'. It provides information about the 'Ecological Services Program' of the U.S. Fish and Wildlife Service (USFWS) and NOAA Fisheries. It notes that species under NOAA Fisheries jurisdiction are not shown on this list and provides a link to 'NOAA Fisheries' for more information.

Under the heading 'The following species are potentially affected by activities in this location:', there are two view options: 'THUMBNAILS' (selected) and 'LIST'. The 'Mammals' section features a 'Threatened' status label and a photograph of a Northern Long-eared Bat (*Myotis septentrionalis*).

The 'Critical habitats' section states that potential effects to critical habitat(s) must be analyzed along with the endangered species themselves. It also notes that there are no critical habitats at this location and provides a list of four questions for users to consider:

- > What does IPaC use to generate the list of endangered species potentially occurring in my specified location?
- > Do these lists represent all species to be considered at this location?
- > If this resource list is empty, do I still need to coordinate with the USFWS?
- > What is an 'official species list' and why would I need one?

The footer contains navigation links for 'ECOS', 'POLICIES', and 'ABOUT', along with logos for the U.S. Fish & Wildlife Service and the Massachusetts Department of Environmental Protection.

Figure 1. IPaC Screening - Northern Long-eared Bat in Cambridge



OLIVER: MassGIS's Online Mapping Tool [OLIVER Updates](#)

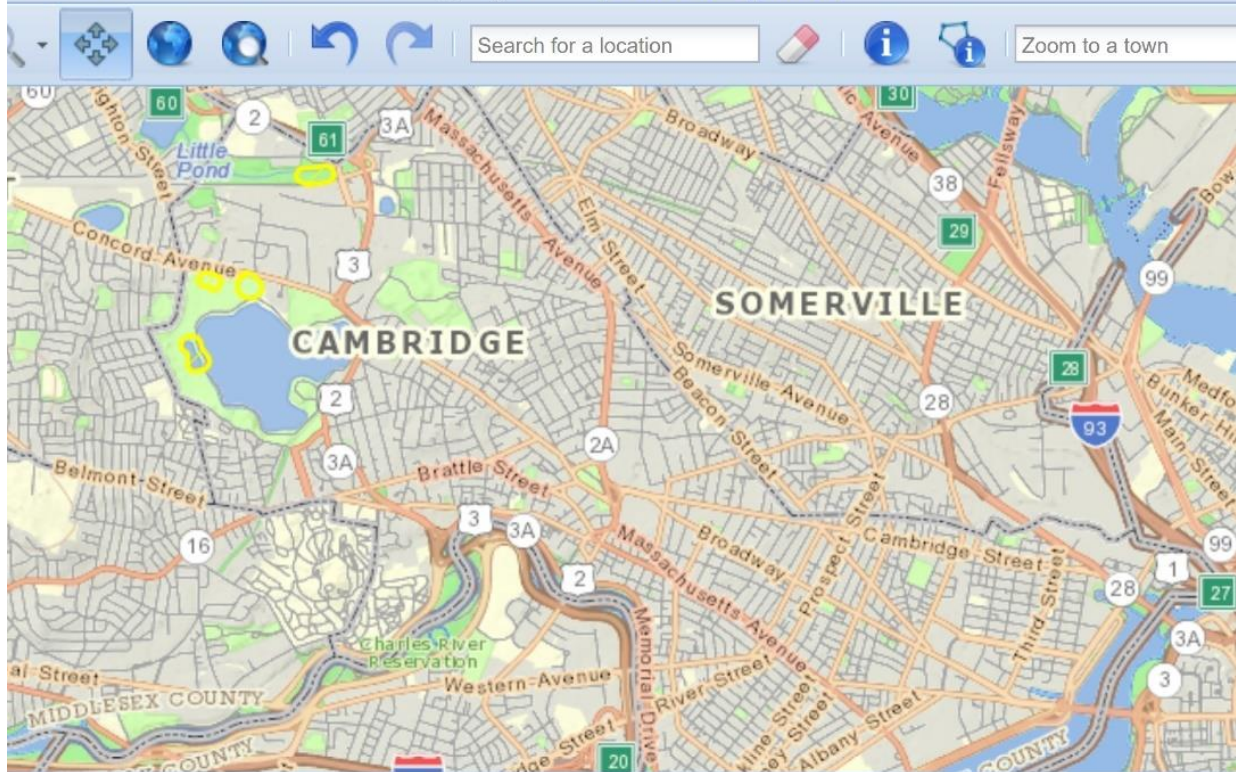


Figure 2. National Heritage & Endangered Species Program (NHESP) priority habitats for rare species (yellow) for Cambridge (Source: MassGIS)

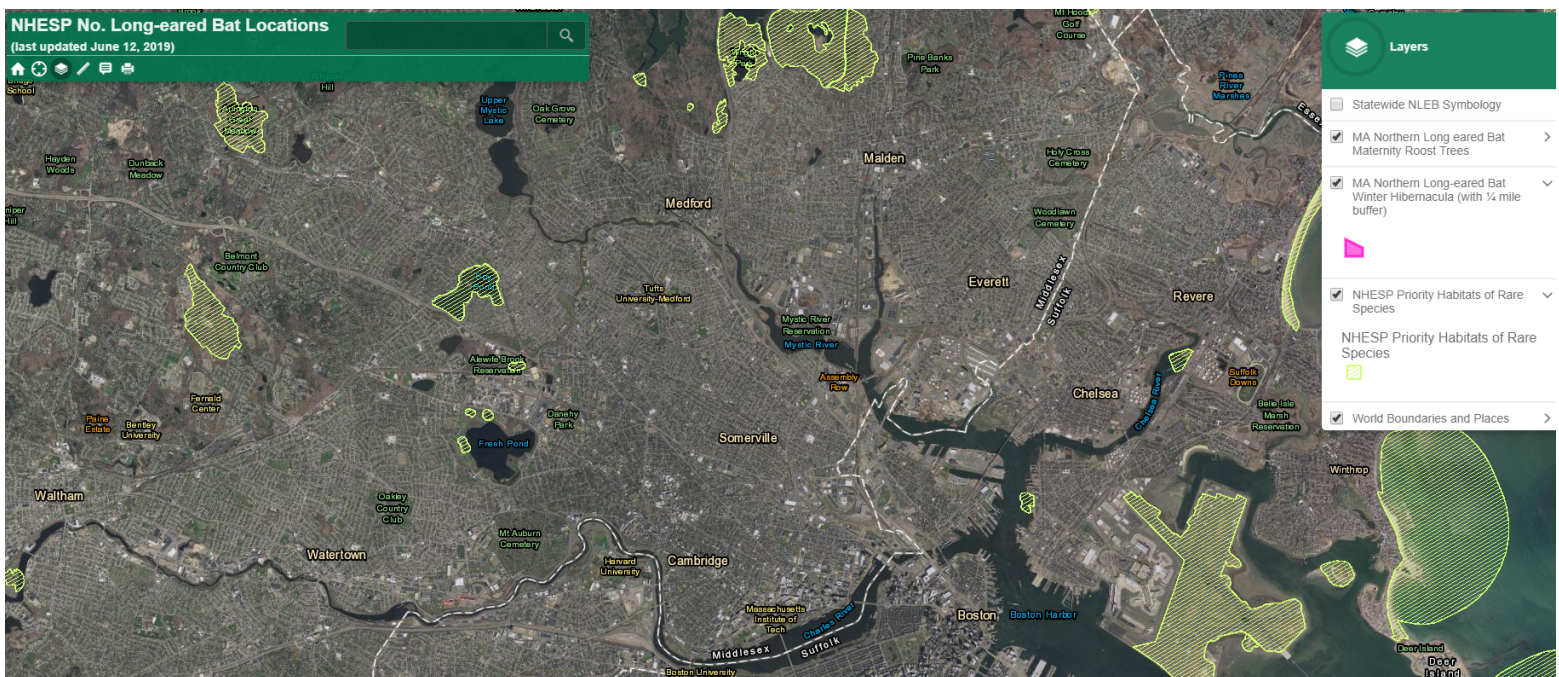


Figure 3: Map indicating that there are no identified habitat areas for the MA Northern Long-eared Bat within a 1/4 mile distance of the City of Cambridge's MS4 regulated area (Updated June 12, 2019)

# APPENDIX D

## Historic Properties Review



## NATIONAL HISTORIC PRESERVATION ACT DETERMINATION

The City of Cambridge also completed an eligibility screening through the National Registry of Historical Places. The map below shows the spatial location of historic properties (shown in brown), which was last updated in 2014. Since the most recent addition to the National Registry for Cambridge was in 2005, this data is current.

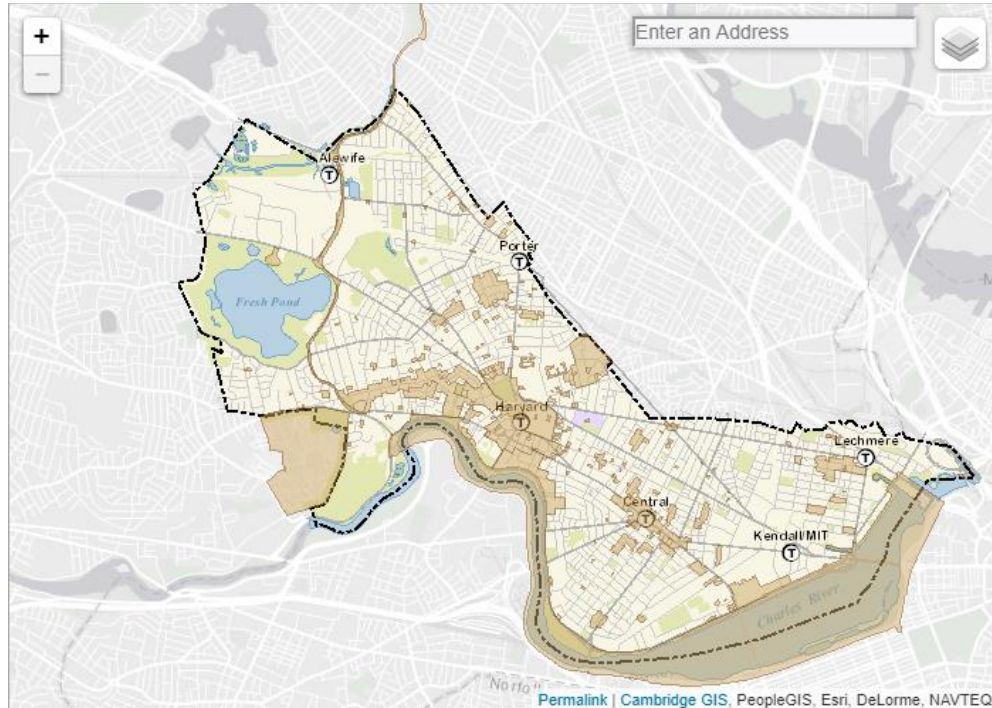


Figure 3. Historical Places in Cambridge (Source: [Cambridge Historical Commission National Register Map](#))

Much of the land abutting the Charles River is listed in the National Registry, and the City of Cambridge is planning to create new outfalls in these areas in the coming years. While Cambridge was previously covered under the 2003 permit, the City's plans for creating new outfalls in this area qualifies it for Criterion C, using the eligibility criteria in Appendix D as follows:

- Stormwater outfalls created since 2003 have undergone the MassHistoric Project Notification process with the SHPO. Based on this process, these projects had no related activities with adverse discharge effects on historic properties.
- Cambridge certifies that during the course of the new Permit term, if new structural BMPs with potential discharge related activities are planned, the City will provide Project Notification to the SHPO and comply with any measures required to prevent or mitigate any adverse discharge effects on historic properties.

Documentation of NHPA eligibility will consist of the following, in accordance with Permit Appendix D:

- A dated copy of EPA concurrence with the above will consist of the issuance of the Permit. This will be included as documentation in the City's written Stormwater Management Program Plan.

# APPENDIX E

## Illicit Discharge Detection and Elimination (IDDE) Program

The IDDE Manual is posted on the City's website:  
[www.cambridgema.gov/stormwater](http://www.cambridgema.gov/stormwater)

# APPENDIX F

## Good Housekeeping Manual

The Good Housekeeping Manual is posted on the City's website:  
[www.cambridgema.gov/stormwater](http://www.cambridgema.gov/stormwater)



# APPENDIX G

## Site Plan Review and Inspection Procedures

**The City of Cambridge  
Department of Public Works**

The City of Cambridge Commissioner of Public Works (“the Commissioner”) hereby adopts these Land Use Regulations pursuant to Cambridge Municipal Code Chapter 13.16 Wastewater and Stormwater Drainage System.

**LAND DISTURBANCE REGULATIONS**

**Article I  
General Provisions And Definitions**

**Section 1 – Reference to Regulations.**

These regulations shall be referred to as the Land Disturbance Regulations.

**Section 2 – Authority.**

Under the authority granted by the Home Rule Amendment of the Massachusetts Constitution, the Home Rule statues and pursuant to the regulations of the federal Clean Water Act found at 40 CFR 122.34 and in furtherance of the goals set forth therein and pursuant to Cambridge Municipal Code, ch. 13.16, the City of Cambridge Commissioner of Public Works has established the following Regulations governing stormwater management standards for land disturbance including but not limited to disturbance from development and redevelopment projects.

**Section 3 – Applicability and Purpose.**

This Regulation shall apply to all activities that:

- (i) disturb one (1) or more acres of land,
- (ii) exceed fifty thousand (50,000) square feet of Gross Floor Area,
- (iii) have a project parcels(s) equal to or greater than one acre in size,
- (iv) include outdoor parking for ten (10) cars or more,
- (v) require a Special Permit from the Planning Board, or
- (vi) in the opinion of the City Engineer may result in an adverse impact of the municipal Sewer, Combined Sewer, Stormwater Drainage Systems or Water Resources.

The purpose of this Regulation is to reduce pollutants in any stormwater runoff from construction activities and to address post construction stormwater runoff from new development and redevelopment projects.

All federal, state and local permit requirements related to implementation of stormwater management facilities must be met by the owner prior to facility use.

**Section 4 – Severability.**

The provisions of these Regulations are severable. If any provision of these Regulations or any specific application to any person or circumstance, is held invalid, such invalidity shall not affect other provisions or applications which can be given effect in the absence of the invalid provision or application.

**Section 5 – Required Applications and Permits.**

- (a) Applications and permits required by these Regulations are in addition to applications and permits that may be required by other federal, state (including MWRA) and local laws or Regulations. The

following applications and permits are required by these Regulations and issued by the DPW as they apply:

- (i) Land Disturbance Permit
- (ii) NPDES General Permit for Discharges from Large and Small Construction Activities as issued by EPA, where applicable

### **Section 6 – Definitions**

All terms used in these Land Disturbance Regulations shall be as defined in the City of Cambridge Wastewater and Stormwater Drainage Use Regulations unless otherwise defined herein:

**Certified Professional In Erosion And Sediment Control (CPESC)** shall mean a certified specialist in soil erosion and sediment control. This certification program, sponsored by the Soil and Water Conservation Society in cooperation with the American Society of Agronomy, provides the public with evidence of professional qualifications.

**Construction and Waste Materials** shall mean excess or discarded building or site materials, including but not limited to concrete truck washout, chemicals, litter and sanitary waste at a construction site that may adversely impact water quality.

**Clearing** shall mean any activity that removes the vegetative surface cover.

**Development** shall mean the modification of land to accommodate a new use or expansion of use, usually involving construction.

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

**Erosion And Sediment Control Plan** shall mean a document containing narrative, drawings and details developed by a Massachusetts registered professional engineer (P.E.), a Certified Professional in Erosion and Sedimentation Control (CPESC) or a Massachusetts Registered landscape architect, which includes best management practices (BMPs), or equivalent measures designed to control surface runoff, erosion and sedimentation during pre-construction and construction related land disturbance activities.

**Grading** shall mean changing the level or shape of the ground surface.

**Impervious Surface** shall mean any material or structure on or above the ground that prevents water infiltrating the underlying soil.

**Land Disturbance** shall mean any action that causes a change in the position, location, or arrangement of soil, sand, rock, gravel or similar earth material.

**Land Disturbance Permit** is a permit required to conduct land disturbing activities.

**Land Disturbing Activity** shall mean any activity that causes a change in the position or location of soil, sand, rock, gravel, or similar earth material.

**Massachusetts Stormwater Management Policy** is the Policy issued by the Department of Environmental Protection, and as amended, that coordinates the requirements prescribed by state regulations promulgated under the authority of the Massachusetts Wetlands Protection Act G.L. c. 131 §. 40 and Massachusetts Clean Waters Act G.L. c. 21, §. 23-56. The Policy addresses stormwater impacts through implementation of performance standards to reduce or prevent pollutants from reaching water bodies and control the quantity of runoff from a site.

**Redevelopment** shall mean the development, rehabilitation, expansion, demolition or phased projects that disturb the ground surface or increase the impervious area on previously developed sites.

**Sediment** shall mean mineral or organic soil material that is transported by wind or water, from its origin to another location; the product of erosion processes.

**Sedimentation** shall mean the process or act of deposition of sediment.

**Slope** shall mean the incline of a ground surface expressed as a ratio of horizontal distance to vertical distance.

**Soil** shall mean any earth, sand, rock, gravel, or similar material.

**Soil Stabilization** shall mean the use, singly or in combination, of mechanical, structural, or vegetative methods, to prevent or retard erosion.

**Water Resources** shall mean lakes, ponds, streams, rivers, wetlands, and groundwater.

## **Article II**

### **Permits and Plan Review Procedures**

#### **Section 1 – Permits.**

- (a) **Filing Application.** A Land Disturbance Permit is required when a project:
- (i) disturbs one (1) or more acres of land,
  - (ii) exceed fifty thousand (50,000) square feet of Gross Floor Area,
  - (iii) has project parcels(s) equal to or greater than one acre in size,
  - (iv) includes outdoor parking for ten (10) cars or more,
  - (v) requires a Special Permit from the Planning Board, or
  - (vi) in the opinion of the City Engineer the project may result in and adverse impact of the municipal Sewer, Combined Sewer, Stormwater Drainage Systems or Water Resources.

The site owner or his/her representative shall file with the DPW, two (2) copies (one paper and one electronic copy on CD) of a completed application package for a Land Disturbance Permit. Permit issuance is required prior to any land disturbing activity. While the applicant can be a representative, the permittee must be the owner of the site. The Land Disturbance Permit Application package shall include:

- (i) completed Application Form with original signatures of all owners;
  - (ii) the Stormwater Management Plan as specified in Article IV, Sections 1 and 2;
  - (iii) the Erosion and Sediment Control Plan as specified in Article V, Sections 1 and 2;
  - (iv) the Operation and Maintenance Plan as specified in Article VI, Section 1;
  - (v) the NPDES General Permit for Discharges from Large and Small Construction Activities, as applicable;
  - (vi) payment of the application and review fees.
- (b) **Entry.** Filing an application for a permit grants the DPW or its agent permission to enter the site to verify the information in the application and to inspect for compliance with the resulting permit

#### **Section 2 – Plan Review Procedures.**

- (a) **Process.** A written application for approval of the Stormwater Management Plan, Erosion and Sediment Control Plan, and Operation and Maintenance Plan shall be filed with the DPW. Plans that

meet the requirements specified in the City of Cambridge Wastewater and Stormwater Management Guidelines will be reviewed in accordance with the standards of Articles IV, V, and VI. The DPW shall approve, approve with conditions, or deny the Stormwater Management Plan, Erosion and Sediment Control Plan, and Operation and Maintenance Plan within sixty (60) days following the date the application for approval is filed.

- (b) **Duration.** Approval of the Stormwater Management Plan, Erosion and Sediment Control Plan, and Operation and Maintenance Plan submitted under the provisions of this Regulation shall expire one year after the date of approval unless land disturbing activities have commenced in accordance with said plans. However, if, not less than forty-five (45) days prior to the expiration of the approval, the applicant makes a written request to the DPW for an extension of time to commence the land disturbing activities setting forth the reasons for the requested extension, the DPW may grant one or more extension, each not to exceed one year, for good cause.
- (c) **Conditions.** Plans may be approved subject to adherence with reasonable and necessary conditions to assure compliance with this Regulation. Such conditions may, by way of example but not limitation, require the construction of structures, drainage facilities, storage basins and other facilities, require replacement of vegetation, establish required monitoring procedures, stage the work over time, require alteration of the site design to insure buffering, and require the conveyance to the City or other public entity of certain lands or interests therein as may be needed to comply with such conditions.
- (d) **Modifications.** The approved plans shall not be changed, modified, or altered without written authorization from the DPW. The applicant shall be required to make any plan modifications needed due to conflicts, omissions or changed conditions that arise in the field and adhere to the standards in Articles IV, V, and VI, subject to written authorization from the DPW. The applicant shall bear all costs to comply with this Section 2 and the City of Cambridge Wastewater and Stormwater Management Guidelines.
- (e) **Performance bond.** Prior to approval of the Stormwater Management Plan, Erosion and Sediment Control Plan, and Operation and Maintenance Plan, the applicant shall be required to post a surety bond, irrevocable letter of credit, cash, or other acceptable security. The form of the bond shall be approved by the City Solicitor, and be in an amount deemed sufficient by the DPW to ensure that the work will be completed in accordance with the Land Disturbance Permit. The bond shall guarantee completion and compliance with conditions within a specific time. The adequacy, conditions and acceptability of any bond shall be determined by the DPW. If the project is phased, the DPW may release part of the bond as each phase is completed and in compliance with the permit but the bond may not be fully released until the DPW has received the final inspection report and the applicant has obtained a Certificate of Occupancy, if applicable.
- (f) **Fee Structure.** An applicant shall pay to the DPW with each submission an Application Fee established by the DPW to cover expenses connected with the application review of the Land Disturbance Permit, a Technical Review Fee sufficient to cover professional review and an inspection fee sufficient to cover DPW costs in ensuring adherence to the applicant's permit conditions. The DPW may retain a registered professional engineer (P.E.) or other professional consultant to advise the DPW on any or all aspects of these plans at applicant's expense. Applicants must pay review fees before the permit shall issue.

### **Section 3 – Issuance of Land Disturbance Permit.**

- (a) No permit shall be issued until the required Stormwater Management Plan, Erosion and Sediment Control Plan, and Operation and Maintenance Plan are approved the DPW.
- (b) As a condition of permit issuance, the applicant shall agree to allow or obtain the necessary authorizations to allow all inspections required by the City.



- (c) Where a bond, letter of credit or other guarantee is required, the permit shall not be issued until the bond or guarantee has been obtained by the Applicant and received and approved by the City.

## **Article III**

### **Non-Exclusivity, Exemptions, and Waivers**

#### **Section 1 – Non-Exclusivity.**

In addition to permits required by these Land Disturbance Regulations, applicants shall be required to obtain all other permits or approvals required by applicable federal, state and local laws, rules, and regulations.

#### **Section 2 – Exemptions.**

The provisions of this Regulation do not apply to:

- (a) Emergency work to protect life, or property.
- (b) Transportation improvements which will not directly increase non-point source pollution or quantity of stormwater runoff once construction has been completed (e.g., pavement overlays).
- (c) Normal maintenance and improvement of land in agricultural use as defined by the Wetlands Protection Act regulation 310 CMR 10.04.

#### **Section 3 – Waivers.**

- (a) The DPW may waive strict compliance with any requirement of this Regulation, where:
  - (i) such action is allowed by applicable federal, state and local laws, rules and/or regulations,
  - (ii) is in the public interest, and
  - (iii) is not inconsistent with the purpose and intent of this Regulation.
- (b) Any applicant may submit a written request to the DPW to be granted such a waiver. Such a request shall be accompanied by an explanation or documentation supporting the waiver request and demonstrating that strict compliance of this Regulation does not further the purposes or objectives of this Regulation.

## **Article IV**

### **Stormwater Management Standards**

#### **Section 1 – Stormwater Management Standards.**

A Stormwater Management Plan shall meet the following requirements and standards (specific plan requirements and guidance are given in the City of Cambridge Wastewater and Stormwater Management Guidelines).

- (a) The quality of stormwater leaving the site after development shall be equivalent to or, to the extent practicable, better than the quality of stormwater leaving the site before development based on the following criteria:
  - (i) Water quality control facilities required for development shall be designed, installed and maintained in accordance with the City of Cambridge Wastewater and Stormwater Management Guidelines.
  - (ii) Land use activities of particular concern as pollution sources shall be required to implement additional pollution controls in accordance with the City of Cambridge

Wastewater and Stormwater Management Guidelines.

- (iii) Development in a watershed that drains to wetlands or Water Resource shall assure that water quality control facilities meet the requirements for pollutants of concern in accordance with the City of Cambridge Wastewater and Stormwater Management Guidelines and all applicable federal, state and local laws, rules and regulations.
  - (iv) No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or Water Resources.
- (b) The peak discharge rate of stormwater leaving the site after development shall be equal to or less than the peak discharge rate of stormwater leaving the site before development based on the following criteria:
- (i) Stormwater discharge leaving the site, during construction and after construction completion, does not have a negative impact on adjacent and abutting properties.
  - (ii) Stormwater discharge from a site, during construction and after construction completion, will be infiltrated, treated or stored in accordance with the quantity and quality control requirements specified in the City of Cambridge Wastewater and Stormwater Management Guidelines.

## **Article V**

### **Erosion and Sediment Standards**

#### **Section 1 – Erosion and Sediment Standards.**

An Erosion and Sediment Control Plan must meet the following objectives applicable to all land disturbance activities:

- (a) The objective of this Article is to minimize to the maximum extent practicable sediments or pollutants exiting the site, entering the public right-of-way or being deposited into any Water Resource or stormwater drainage system.
- (b) In order to meet the objectives set forth in Section 1 (a) above, the owner or applicant shall:
  - (i) Implement measures intended to keep soil on site or out of Water Resources, stormwater drainage systems or the public right-of-way as the first step in any development.
  - (ii) Remove any soil that enters the public right-of-way.
  - (iii) Protect stormwater inlets that are functioning during the course of the development by approved sediment control measures so that sediment-laden water cannot enter the inlets without first being properly treated.
  - (iv) Apply permanent or temporary soil stabilization to denuded development site areas in conformance with the City of Cambridge Wastewater and Stormwater Management Guidelines.
  - (v) Plant replacement vegetative cover in accordance with the City of Cambridge Wastewater and Stormwater Management Guidelines.
  - (vi) Secure or protect soil stockpiles throughout the project with temporary or permanent soil stabilization measures, protect all stockpiles on the site, and those transported from the site. All handling of soils shall be done in accordance with the City of Cambridge

Wastewater and Stormwater Management Guidelines and all applicable federal, state and local laws, rules and regulations.

- (vii) Post signage on the site of the permitted land disturbing activity that identifies the DPW 24-hour Hotline Number (617-349-4800).
- (viii) Sequence activities to minimize simultaneous areas of land disturbance.
- (ix) Maximize groundwater recharge as approved by DPW.
- (x) Properly manage on-site construction and waste materials.
- (xi) Site Dewatering: Water pumped from the site shall be treated by temporary sedimentation basins, grit chambers, sand filters, upflow chambers, hydro-cyclones, swirl concentrators or other appropriate controls. Water shall not be discharged in a manner that causes erosion or flooding of the site or receiving channels or a wetland. In the case where a SWIP is granted for construction site dewatering, the owner shall abide by the City of Cambridge Wastewater and Stormwater Drainage Use Regulations and all applicable federal, state and local laws, rules and regulations.
- (xii) Tracking: construct graveled roads, access drives and parking areas of sufficient width and length with sufficiently sized and maintained wash bays to prevent sediment from being tracked onto public or private roadways. Any sediment reaching a public or private road shall be removed by street cleaning (not flushing) before the end of each workday.

## **Section 2 – Additional Erosion and Sediment Requirements for Special Sites.**

When the DPW determines that special site conditions may prevent compliance with Section 1, the DPW may require additional erosion, sediment and pollutant control measures as set forth in the City of Cambridge Wastewater and Stormwater Management Guidelines.

(a) Special site conditions may include, but are not limited to, the following:

- (i) Slopes before development that are greater than 10 percent (1 Vertical: 10 Horizontal).
- (ii) Land disturbance of a natural vegetative buffer within 50 feet of a wetland and or waterbody.
- (iii) The development site is located entirely or partially within a Flood Plain Overlay District.

(b) Required additional control measures may include but are not limited to:

- (i) Project timing is such that land disturbing activity will take place between October 1 and April 30.
- (ii) Requiring that a Massachusetts registered professional engineer (P.E.), other professional certified by the State of Massachusetts with experience or qualifications in preparing erosion and sediment control plans, a registered CPESC or Massachusetts registered Landscape Architect prepare or implement the Erosion and Sediment Control Plan.
- (iii) Prohibiting land disturbing activities between October 1 and April 30.
- (iv) Limiting the amount of denuded soil at any given time.
- (v) Requiring a bond, letter of credit or other guarantee.

## **Article VI**

### **Operation And Maintenance Standards**

#### **Section 1 – Maintenance and Repair.**

The owner is responsible for maintenance and shall prepare and submit to the DPW for approval an Operation and Maintenance Plan for the stormwater management measures incorporated in the Land Disturbance Permit. The owner shall notify DPW of any changes in ownership or assignment of financial responsibility. Prior to any transfer of ownership of any property subject to an Operation and Maintenance Plan, the owner shall inform the prospective owner of the requirements of the existing Operation and Maintenance Plan, and of the requirement to file a new Operation and Maintenance Plan upon transfer of ownership. The new owner shall be required to submit an Operation and Maintenance Plan to the DPW for approval within 60 days of the transfer of ownership. Until the new plan is approved by the DPW, the new owner shall be bound by the provisions of the existing Operation and Maintenance Plan.

An Operation and Maintenance Plan must meet the following requirements (specific plan requirements and guidance are given in the City of Cambridge Wastewater and Stormwater Management Guidelines):

- (a) If the Operation and Maintenance Plan identifies a person other than the owner (for example, a public agency or homeowners' association) as having the responsibility for maintenance, the plan shall include documentation satisfactory to DPW of such person's obligation or agreement to assume this responsibility.
- (b) Responsibility for maintenance shall not be assigned or transferred to the owner or tenant of an individual property in a residential development or project, unless such owner or tenant owns or leases the entire residential development or project.
- (c) The Operation and Maintenance Plan shall include a schedule for preventative and corrective maintenance to maintain the function of the stormwater management measures, including repairs or replacement to the structure; removal of sediment, debris, or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; and repair or replacement of nonvegetated linings.
- (d) The person responsible for maintenance identified under Section 1 (a) above shall maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance-related work orders.
- (e) The person responsible for maintenance identified under Section 1 (a) above shall evaluate the effectiveness of the operation and maintenance plan at least once per year and shall note certification of its effectiveness in the log referred to in Section (d) above, or in the event that it is no longer effective, applicant shall provide certification to that effect to DPW with a proposed revised plan for DPW's review and approval.
- (f) The person responsible for maintenance identified under Section 1(a) above shall retain and make available, upon request by DPW, the operation and maintenance plan and the documentation required by Sections 1(d) and (e) above.
- (g) The provisions of any Operation and Maintenance Plan for a stormwater management facility that is dedicated to and accepted by the City for the City's ownership, operation or control shall terminate upon the City's acceptance of ownership, operation or control of said facility.

Nothing in this Section 1 shall preclude the DPW from requiring the posting of a performance or maintenance guarantee in accordance with the City of Cambridge Wastewater and Stormwater Management Guidelines.

## **Article VII Inspections and Plan Revisions**

### **Section 1 – Inspections.**

- (a) The DPW or its authorized representative may conduct inspections whenever it is necessary to enforce any provisions of this Regulation, to determine compliance with this Regulation.
- (b) When an inspection is occurring, the DPW or authorized representative shall first present proper credentials to the responsible party and request entry. If such entry is thereupon refused, the DPW shall have recourse to any remedy provided by law to obtain entry, including obtaining an administrative search warrant.

### **Section 2 – Permit-Related Inspections.**

- (a) **Pre-Development Meeting.** Prior to starting clearing, excavation, construction, or land disturbing activity the applicant or designated agent, shall meet with the DPW to review the approved plans and their implementation. The applicant or designated agent shall inspect the project site and provide certification to the DPW of project completeness at the following stages:
  - (i) Initial Site Inspection: prior to approval of any plan.
  - (ii) The applicant or designated agent shall make inspections as hereinafter required and shall either approve that portion of the work completed or shall notify the owner if the work fails to comply with the Land Disturbance Permit. The Land Disturbance Permit and associated plans for grading, stripping, excavating, and filling work, as approved by DPW, shall be maintained at the site during the progress of the work. The owner shall notify the DPW at least two (2) working days before each of the following events; the applicant or designated agent shall be responsible to observe and assure the project progresses appropriately at the following events:
    - a. Erosion and sediment control measures are in place and stabilized;
    - b. Site Clearing has been substantially completed;
    - c. Rough Grading has been substantially completed;
    - d. Final Grading has been substantially completed;
    - e. Close of the Construction Season; and
    - f. Final Landscaping (permanent stabilization) and project final completion.
- (b) **Owner Inspections.** The owner or designated agent shall conduct and document inspections of all control measures no less than weekly or as specified in the Land Disturbance Permit, and prior to and following anticipated storm events. The purpose of such inspections will be to determine the overall effectiveness of the Erosion and Sediment Control Plan and the need for additional control measures. The owner or designated agent shall retain monthly reports in a format approved by the DPW which shall be made available to the DPW upon request.
- (c) **Bury Inspection:** The DPW shall be notified prior to backfilling of any underground drainage or storm water conveyance structures so that inspection, if deemed necessary by the DPW, can take place.
- (d) **Final Inspection.** After the storm water management system has been constructed and before the surety bond has been released, the applicant must submit a stamped record plan signed by a Massachusetts Registered Professional Engineer (P.E.) or Massachusetts Registered Land Surveyor



detailing the actual storm water management system as installed. The record plan will include a statement box on the plan certifying the site review was conducted in accordance with this Regulation and all items were constructed in accordance with the Land Disturbance Permit. The applicant or designated agent shall request a final inspection site meeting with the DPW. The DPW shall visit the site with the applicant or designated agent to confirm its "as-built" features. As-Built drawings of structural BMPs shall be submitted to the DPW. A final report as referenced in Article VIII shall be submitted to the DPW for review and approval prior to the issuance of Certificate of Occupancy, if applicable.

- (e) **Access Permission.** To the extent permitted by law, or if authorized by the owner or other party in control of the property, the DPW, its agents, officers, and employees may enter upon privately owned property for the purpose of performing their duties under this Regulation and may make or cause to be made such examinations, surveys or sampling as the DPW deems reasonably necessary to determine compliance with the Land Disturbance Permit.

If the system is found to be inadequate by virtue of physical evidence of operational failure, it shall be corrected by the owner before the surety bond is released. If the owner fails to act the DPW may use the surety bond to complete the work.

#### **Section 4 – Other Inspections.**

Where the DPW has determined that special site conditions exist, the DPW may designate an inspector to monitor erosion, sediment and pollutant control at that site, or, if deemed necessary by the DPW, the DPW may hire a consultant to serve as the designated inspector, the cost of which shall be borne by the owner.

#### **Section 5 – Refusal of Entry.**

No person shall refuse entry or access to a permitted development project to any authorized representative of the DPW who provides proper credentials and requests entry for the purpose of conducting an inspection. In addition, no person shall obstruct, hamper or interfere with any such representative while in the process of carrying out his or her official duties.

#### **Section 6 – Inspection Fees.**

The owner or applicant shall be solely responsible for the costs associated with any revisions, including but not limited to, any additional or alternate methods, measures, performance criteria or controls. If the DPW deems it necessary to hire a consultant to assist with same, the cost of such consultant shall be borne by the owner.

#### **Section 7 – Revisions to Plans.**

- (a) During development, the DPW or the owner or applicant may request revisions to the Land Disturbance Permit. All revisions shall be reviewed and approved by the DPW.
- (b) The DPW may require revisions to the approved Stormwater Management Plan, Erosion and Sediment Control Plan or Operating and Maintenance Plan when:
- (i) It is determined that measures approved in the Stormwater Management Plan, Erosion, Sediment Control Plan or the Operation and Maintenance Plan do not meet the purposes set forth in Article IV, V or VI.;
  - (ii) An alternate method, measure or control fails to perform as claimed by the owner or applicant;
  - (iii) A change in project timing has occurred due to an adverse change in weather;
  - (iv) During development, relevant new information about soil, site, topography or water conditions is discovered;

- (v) Changes to the area or type of land disturbing activity or equipment used are proposed or implemented;
  - (vi) The project schedule has changed which results in development being conducted at a different time of year than originally accepted or approved; or
  - (vii) Additional or substitute construction or maintenance materials or chemicals will be used during development that require pollutant BMPs as set out in the City of Cambridge Wastewater and Stormwater Management Guidelines.
- (c) Revised plans shall show all actual and proposed changes made on the site, the new locations of the drainage patterns, and the effect that the revisions will have on the site. The new plans shall show how problems associated with the prior plan have been corrected, and indicate all new erosion, sediment and pollutant control measures. The DPW may require that the new plans be prepared by a Massachusetts registered professional engineer (P.E.), a Massachusetts registered landscape architect, or a CPESC, and that the revisions are stamped as such.
- (d) The owner or applicant shall be solely responsible for the costs associated with any revisions, including but not limited to, any additional or alternate methods, measures, performance criteria or controls or costs for any consultants that the DPW deems necessary to assist it with its review and approval of any such revisions.

### **Article VIII Project Completion**

At completion of the project the owner shall submit a final report of all stormwater controls and treatment BMPs. The as-built drawings shall show all deviations from the approved plans, if any, and be certified by a Massachusetts registered professional engineer (P.E.) or a Massachusetts registered land surveyor. Detailed requirements pertaining to the final report and as-built drawings are set forth in the City of Cambridge Wastewater and Stormwater Management Guidelines.

### **Article IX Certificate of Occupancy**

The DPW will issue a letter certifying completion upon receipt and approval of the final reports and/or upon otherwise determining that all work completed pursuant to the Land Disturbance Permit has been satisfactorily completed in conformance with this Regulation, which letter shall be submitted by the owner or applicant to the City of Cambridge Department of Inspectional Services prior to the issuance of a Certificate of Occupancy, if applicable.

### **Article X Compliance and Enforcement**

#### **Section 1 – Investigation and Notice of Violations.**

If the DPW believes that a violation of this Regulation, a rule promulgated pursuant to this Regulation, or a Land Disturbance Permit issued hereunder may have occurred or exists, the City may investigate. If, after this investigation, the DPW determines that a violation has occurred or exists, the DPW shall issue written notice of a violation to the person or persons alleged to have caused or contributed to a violation of this Regulation, a rule promulgated pursuant to this Regulation, and/or a Land Disturbance Permit issued hereunder. A written notice of violation shall include a statement of facts upon which the violation is based.

Within fourteen (14) days of the issuance of a written notice of violation, the alleged violator shall submit

to the DPW a written response to the notice of violation and a plan for correcting the violation. Submission of this plan in no way relieves the alleged violator of liability for any previous violation not addressed by the plan or future violation(s).

Within fourteen (14) days of the receipt of a written response to a notice of violation, the DPW shall determine whether the response resolves and/or corrects the violation. If the DPW determines that the response resolves and/or corrects the violation, then the plan for correcting the violation shall be incorporated into a consent agreement pursuant to Section 2.

### **Section 2 – Consent Agreement.**

A consent agreement may be entered into at any time by and between the DPW and the person or persons alleged to have caused or contributed to the violation. The consent agreement shall be mutually acceptable to both the DPW and the recipient(s) and shall reflect the recipient's agreement to assume responsibility for and correct violations of this Regulation, rules promulgated or permits issued pursuant to this Regulation.

The consent agreement shall contain a short statement of facts, describe the actions necessary to correct the non-compliance, contain a compliance schedule, and be signed by all parties. The agreement may contain a monetary assessment or other relief as agreed to by the parties for the non-compliance, including without limitation, amounts necessary to compensate the City for costs incurred investigating, administering and/or enforcing this Regulation or rules promulgated hereto.

### **Section 3 – Administrative Compliance Orders.**

If the DPW determines that a violation of this Regulation, a rule promulgated or a permit issued pursuant to this Regulation has occurred or exists, the DPW may issue an administrative compliance order ("Administrative Order") pursuant to this Section 3.

Except as provided in Section 4, the DPW may issue an Administrative Order in the following circumstances:

- (a) the DPW determines that a person has violated a consent agreement entered into with the DPW; or
- (b) (i) the DPW determines that a person has violated or continues to violate this Regulation, a rule promulgated or permit issued pursuant to this Regulation, and (ii) the DPW has attempted to resolve the violation pursuant to Sections 1 and 2 but no voluntary consent agreement has been entered into.

The Administrative Order shall contain a statement of facts upon which the Administrative Order is based, a description of the actions that must be taken to correct the non-compliance, a compliance schedule, and other requirements as might be reasonably necessary to address the non-compliance.

Administrative Orders also may contain administrative fines and penalties, and such other monetary relief for the non-compliance, including without limitation amounts necessary to compensate the City for costs incurred investigating, administering, and enforcing this Regulation or rules promulgated hereto.

### **Section 4 – Emergency Orders.**

The DPW may issue an order without attempting to resolve a violation by using the enforcement procedures described in Section 1 and 2 if the City finds that a violation of this Regulation, a rule promulgated or permit issued pursuant to this Regulation, constitutes or causes, or will constitute or cause, a substantial injury to the public health, safety, welfare, or the environment, and it is prejudicial to the interests of the people of the City to delay action ("Emergency Order").

Emergency Orders issued pursuant to this Section 4 shall contain a statement of facts upon which the order is based, and notification to the person that it must immediately take action to discontinue, abate, correct, or otherwise address the imminent and substantial injury caused or likely to be caused by the non-compliance.

Within seven (7) days, the City shall provide the person an opportunity to be heard and to present any

proof that the non compliance does not or will not constitute imminent and substantial injury to the public health, safety, welfare or the environment.

**Section 5 – Civil Penalties.**

A person who violates any provision of this Regulation or rules promulgated hereunder, including without limitation any notice, order, stormwater construction approval, agreement, decision, or determination promulgated, issued, made, or entered by the DPW under this Regulation or rules promulgated hereunder, is responsible for a municipal civil infraction, subject to payment of a civil fine of not less than \$100 per day and not more than \$5,000 per day for each infraction, plus costs and other sanctions.

**Section 6 – Separate Offenses.**

Each act of violation, and each day or portion of a day that a violation of this Regulation, rules or regulations promulgated pursuant to this Regulation, stormwater construction approval, order, notice, or determination issued, made or entered into under this Regulation is permitted to exist or occur, constitutes a separate offense and shall be punishable as provided by this Regulation.

**Section 7 - Cost Recovery.**

- (a) The DPW may recover all reasonable costs incurred by the City which are attributable to or associated with violations of these Regulations, including but not limited to the costs of administration, investigation, sampling and monitoring, legal and enforcement activities, damage to the City's sanitary or combined system or to the City's stormwater drainage systems, contracts and health studies, and any fines and penalties assessed to the City which result from a discharge not in compliance with these Regulations or rules adopted thereunder.
- (b) All such costs shall be documented by the City and shall be served upon the discharger by certified or registered mail, return receipt requested. Such documentation shall itemize the costs the DPW has determined are attributable to the violations.
- (c) Such costs are due and payable to the City upon the receipt of the letter documenting such costs. All such costs shall be paid to the City Treasurer. Nonpayment or dispute regarding the amount shall be referred for appropriate action to the City Solicitor. The City Solicitor may initiate appropriate action against the discharger to recover costs under this Article.
- (d) The DPW may terminate a discharge for nonpayment of costs after 30 days notice to the discharger.

Adopted:

Effective Date: March 31, 2008

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Lisa Peterson  
Commissioner

# APPENDIX H

## Stormwater Pollution Prevention Plans



Stormwater Pollution Prevention Plans (SWPPPs) are on file at each facility  
and at the Department of Public Works