



## **Stormwater Management Program Millis, Massachusetts**

**EPA NPDES Permit Number: MAR041100**

**Updated: June 2023**

**PREPARED BY:**



A Report Prepared for:

**TOWN OF MILLIS, MASSACHUSETTS**

900 Main Street

Millis, Massachusetts 02054

**STORMWATER MANAGEMENT PROGRAM (SWMP)**

**Prepared by:**

Sadia Khan, PhD, EIT, Staff Professional

**Reviewed by:**

Kirsten Ryan, PG, Senior Project Manager

Peter Varga, Project Manager

**KLEINFELDER**

One Beacon Street, Suite 8100

Boston, Massachusetts 02108

June 2023

Kleinfelder Project No: 20232136.001A

## TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
<b>1 CERTIFICATION .....</b>	<b>1</b>
<b>2 BACKGROUND .....</b>	<b>2</b>
2.1 Stormwater Regulation.....	2
2.2 Permit Program Background.....	2
2.3 Stormwater Management Program (SWMP) .....	3
2.4 Millis MS4 Background .....	3
2.5 Annual Updates and Reporting.....	4
<b>3 STORMWATER MANAGEMENT PROGRAM TEAM.....</b>	<b>5</b>
3.1 Stormwater Management Program Team.....	5
3.1.1 SWMP Team Responsibilities .....	5
3.1.2 SWMP Team Coordinator .....	5
3.2 Receiving Waters .....	5
3.3 Eligibility.....	7
3.3.1 Endangered Species .....	7
3.3.2 Historic Properties .....	7
<b>4 MINIMUM CONTROL MEASURES.....</b>	<b>8</b>
4.1 MCM 1: Public Education and Outreach.....	8
4.1.1 Permit Summary.....	8
4.1.2 Existing and Updated Program .....	11
4.1.3 Implementation Deadlines and Program Assessment .....	14
4.2 MCM 2: Public Involvement and Participation .....	16
4.2.1 Permit Summary.....	16
4.2.2 Existing and Updated Program .....	16
4.2.3 Implementation Deadlines and Program Assessment .....	18
4.3 MCM 3: Illicit Discharge Detection and Elimination (IDDE) Program .....	19
4.3.1 Permit Summary.....	19
4.3.2 Sanitary Sewer Overflow (SSO) Inventory .....	19
4.3.3 Existing and Updated Program .....	20
4.3.4 Implementation Deadlines and Program Assessment .....	25
4.4 MCM 4: Construction Site Stormwater Runoff Control.....	26
4.4.1 Permit Summary.....	26
4.4.2 Existing and Updated Programs .....	26
4.4.3 Implementation Deadlines and Program Assessment .....	28
4.5 MCM 5: Post Construction Stormwater Management in New Development and Redevelopment.....	29
4.5.1 Permit Summary.....	29
4.5.2 Existing and Updated Program .....	29
4.5.3 Implementation Deadlines and Program Assessment .....	33
4.6 MCM 6: Pollution Prevention / Good housekeeping.....	34
4.6.1 Permit Summary.....	34

## TABLE OF CONTENTS

<b><u>Section</u></b>	<b><u>Page</u></b>
4.6.2 Existing and Updated Program .....	34
4.6.3 Implementation Deadlines and Program Assessment .....	38
<b>5 ANNUAL EVALUATION .....</b>	<b>39</b>
<b>6 TMDLS AND WATER QUALITY LIMITED WATERS.....</b>	<b>40</b>
6.1 Actions for Meeting Total Maximum Daily Load Requirements.....	40
6.1.1 Part A.I of Appendix F – Upper/Middle Charles River (Phosphorus).....	40
6.1.2 Part A.III of Appendix F – Pathogens (Charles River and Bogastow Brook).....	41
6.2 Actions for Meeting Water Quality Limited WATERS Requirements.....	41
<b>7 REFERENCES .....</b>	<b>42</b>

### TABLES

Table 3-1: Responsible Parties in Program Team .....	5
Table 3-2: Waterbodies in the Town of Millis.....	6
Table 3-3: Impaired Waters in the Town of Millis .....	7
Table 4-1. Pollutants of Concern.....	10
Table 4-2: Implementation Program for MCM 1 .....	12
Table 4-3: Summary of BMPs and Implementation Plan for MCM 1 .....	14
Table 4-4: Implementation Program for MCM 2 .....	17
Table 4-5: MCM 2 Measurable Goals and Tracking .....	18
Table 4-6: Implementation Program for MCM 3 .....	22
Table 4-7: MCM 3 Summary .....	25
Table 4-8: Implementation Program for MCM 4 .....	27
Table 4-9: MCM 4 Summary .....	28
Table 4-10: Implementation Program for MCM 5 .....	31
Table 4-11: MCM 5 Summary .....	33
Table 4-12: Implementation Program for MCM 6 .....	36
Table 4-13: MCM 6 Summary .....	38
Table 5-1: Annual Reports.....	39



## APPENDICES

- A Notice of Intent
- B Illicit Discharge Detection & Elimination Program
- C Millis Stormwater Bylaws and Regulations
- D Stormwater System Map
- E Delegation of Authority Letter
- F Parking Lot Design Guidelines Analysis Memorandum
- G List of 5 Retrofit Opportunities
- H Phosphorus Control Plan (PCP)
- I Public Education and Outreach Memorandum

## LIST OF ACRONYMS

---

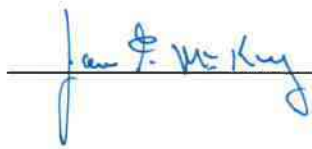
BMP	Best Management Practice
CGP	Construction General Permit
CWA	Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
ESA	Endangered Species Act
IDDE	Illicit Discharge Detection and Elimination
MassDEP	Massachusetts Department of Environmental Protection
MCM	Minimum Control Measure
MGL	Massachusetts General Laws
MS4	Municipal Separate Storm Sewer System
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
SWMP	Stormwater Management Program
SWPPP	Stormwater Pollution Prevention Plan
USEPA	U. S. Environmental Protection Agency
USFWS	U. S. Fish & Wildlife Service

## 1 CERTIFICATION

"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:

Signature:



Date:

6/27/2023

## **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 MS4s in urbanized areas and operators of small construction sites, through the use of 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 (2016 Permit), which became effective on July 1, 2018.

The Town of Millis submitted their Notice of Intent (NOI) for compliance with the 2016 Permit on September 12, 2018, and it can be found at the following link:

<https://www3.epa.gov/region1/npdes/stormwater/ma/tms4noi/millis.pdf>

Authorization to Discharge was granted by the EPA on December 14, 2018, and the Authorization Letter can be found here: <https://www3.epa.gov/region1/npdes/stormwater/ma/tms4noi/millis-auth.pdf>

## **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 permit. The SWMP accurately describes the permittees plans and activities. The document should be updated and/or modified during the permit term as the permittee's activities are modified, changed, or updated to meet permit conditions during the permit term. The main elements of the stormwater management program include the six Minimum Control Measures (MCM) and then additional requirements to waterbodies that are either impaired or contain a TMDL.

The six MCM requirements are:

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

The water quality limited waters and TMDL requirements include:

- 1) enhanced BMPs to address impairments of bacteria/pathogens, chloride, nitrogen, phosphorus, and solids/oil/grease/metals;
- 2) enhanced BMPs and programs for both in state and out of state TMDLs, mainly for phosphorus, bacteria/pathogens, or nitrogen.

## **2.4 MILLIS MS4 BACKGROUND**

The Town of Millis was permitted under the 2003 Small MS4 Permit. During that permit term, the Town created an initial SWMP Plan, initiated storm system mapping, and submitted Annual Reports to the EPA. The Town identified the Department of Public Works Director as the point of coordination for Millis's stormwater management. There has been active coordination between the Department of Public Works (DPW), the Conservation Commission, the Board of Health (BOH), the Building

Department, and the Town Administrator, to fulfill permit requirements. This coordination continues under the 2016 Permit term.

The Town initially identified and began to prioritize actions that would help them comply with the new Permit. Some of these actions included a more comprehensive mapping effort, improvements to maintenance and operations protocols, development of new ordinances and regulations to allow for better management of existing systems, revisions to existing ordinances to increase the Town'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. While first steps at system mapping were undertaken as a part of the 2003 Permit, Millis recently revised its GIS mapping inventory of the stormwater system in 2018 for improved spatial accuracy and inventory completeness. This effort included the consolidation of mapping elements from multiple sources, field verifications, and desktop analysis. Millis developed a Stormwater Utility in 2018, which is used to fund their stormwater management program.

## **2.5 ANNUAL UPDATES AND REPORTING**

The Town of Millis submitted Annual Reports to the US EPA beginning in the 2003 Permit term. This yearly reporting requirement continues, and as described in Section 6, the public will have an opportunity to review and comment on the Town's progress every year. In addition, this SWMP is not meant to be a static document, and as the Town's efforts progress and evolve, so too will this plan. The SWMP will be updated periodically and the most up to date version of this plan will be available to the public on the Town's website.

### 3 STORMWATER MANAGEMENT PROGRAM TEAM

#### 3.1 STORMWATER MANAGEMENT PROGRAM TEAM

##### 3.1.1 SWMP Team Responsibilities

The SWMP Team is multidisciplinary and includes members with a multitude of roles. As a team, the Town is responsible for fully adhering to the 2016 MS4 permit and this SWMP. Team actions include reviewing and updating appropriate bylaws, legal enforcement, and disciplinary actions, maintaining records, town wide system mapping, and outfall screening and sampling. The DPW is responsible for many of the Permit requirements, and a full overview of the team is included in Table 3-1.

**Table 3-1: Responsible Parties in Program Team**

Department / Agency	Title	Person
DPW	DPW Director	James McKay
Conservation Commission	Chairman	Dr. James Lederer
Planning Board	Chairman	Richard Nichols
Building Inspection	Building Commissioner	Michael Giampietro
Board of Health	Director of Public Health	John McVeigh
Town Administrator	Administrator	Michael Guzinski
Town Clerk	Town Clerk	Lisa Jane Hardin

##### 3.1.2 SWMP Team Coordinator

The individual with overall responsibility for implementation of the Town's MS4 program is James McKay, Department of Public Works Director.

#### 3.2 RECEIVING WATERS

Table 3-2: Waterbodies in the Town of includes all receiving waters within the Town, associated impairments, and the number of known outfalls discharging to each water body segment. The waterbody impairments are based on the [Massachusetts Year 2018/2020 Integrated List of Waters](#).

**Table 3-2: Waterbodies in the Town of Millis**

<b>Waterbody Segment that receives flow from the MS4</b>	<b>Number of MS4 Outfalls discharging to receiving water segment</b>	<b>DO/ DO Saturation</b>	<b>Phosphorus</b>	<b>Solids/TSS/ Turbidity</b>	<b>Other Pollutants Causing Impairments</b>
Bogastow Brook (MA72-16)	65				Fecal Coliform / E. Coli
Charles River (MA72-05)	29	X	X	X	Non-Native Aquatic Plants, Algae, Benthic Macroinvertebrate, Chlordane in Fish Tissue, DDT in Fish Tissue, Mercury in Fish Tissue, Nutrient/ Eutrophication Biological Indicators
Great Black Swamp	23				
Maple Swamp	24				
Mccarthy Pond	9				
Richardsons Pond	5				
Walker Pond (MA72-126)	5				

\* [MassGIS Data: MassDEP 2018/2020 Integrated List of Waters \(305\(b\)/303\(d\)\) | Mass.gov](#)

According to the Massachusetts Year 2018/2020 Integrated List of Waters, which was approved by the EPA in 2020, there are two (2) waterbodies in Millis that have an approved Total Maximum Daily Load (TMDL) associated with them. These waterbodies and the causes of the impairments are included in Table 3-3.

**Table 3-3: Impaired Waters in the Town of Millis**

<b>Water Bodies with Approved TMDLs (Appendix F of MS4 Permit)</b>	
<b>River Name</b>	<b>Impairment Cause</b>
Charles River <sup>1</sup>	Phosphorus
Bogastow Brook	Pathogens
<sup>1</sup> Charles River also water quality limited for DO and Turbidity, but associated BMPs covered under Phosphorus and Pathogens TMDL requirements	

### 3.3 ELIGIBILITY

The results of both the Endangered Species and Historic Properties screenings are summarized below. The Town of Millis also recognizes that construction projects not under the Construction General Permit require separate screenings and are not covered by the certifications here.

#### 3.3.1 Endangered Species

During the NOI submission process, the Town referenced the U.S. Fish and Wildlife IPaC system and MA GIS database and determined that the Town of Millis's MS4 operational area contains the Northern Long-eared Bat. Using the ESA Eligibility criteria as referenced in Appendix C of the MA Small MS4 General Permit, the Town ultimately certified eligibility according to the USFWS Criterion C. Under Criterion C, the Town affirmed that there are no discharge-related activities involving the habitat of this species of bat and therefore the Town's MS4 system does not affect any federally threatened or endangered listed species. The results of this screening are included in the NOI in Appendix A.

#### 3.3.2 Historic Properties

The Town of Millis was covered under the 2003 Permit and completed a consultation with the State Historic Preservation Officer at that time. Therefore, the Town meets Criterion A of Appendix D of the Small MS4 General Permit. The Town is not aware of planned projects which would impact historic properties. The results of this screening are included in the NOI in Appendix A.



## 4 MINIMUM CONTROL MEASURES

This section reviews the requirements for each of the six MCMs outlined in the 2016 Permit. Each MCM is organized into the following sections:

- 1) Permit Summary
- 2) Existing and Updated Programs
- 3) Implementation Deadlines and Program Assessment

The main objective of this section is to outline all the required BMPs that the Town of Millis is responsible for under the 2016 Permit, and outline responsible parties, measurable goals, implementation years, and implementation deadlines to maintain compliance.

### 4.1 MCM 1: PUBLIC EDUCATION AND OUTREACH

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

#### 4.1.1 Permit Summary

Part 2.3.2. of the MS4 Permit requires the Town to develop and implement an ongoing Public Education and Outreach Program, with the main goals to increase the public's knowledge about stormwater related issues and to alter public behavior. The Public Education and Outreach Program includes 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 will consider stormwater pollution and prevention topics that are relevant to the Town. The Permit dictates the baseline messaging frequency

to each of the above audiences, as well as outreach strategies regarding pollutants of concern. Additionally, the program will educate the public on the proper management and disposal of pollutants of concern, which are listed in the [Massachusetts Year 2018/2020 Integrated List of Waters](#). The Town will focus on actions the public can take to reduce these pollutants at the source. Table 4-1 describes these pollutants, their potential impacts to Millis' waterbodies, and the behaviors that can reduce those impacts.

**Table 4-1. 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	Bogastow Brook	Can cause disease and make waters unfit for recreation.	<ul style="list-style-type: none"> <li>• Pet waste</li> <li>• Septic</li> </ul>	<ul style="list-style-type: none"> <li>• Properly dispose of pet waste</li> <li>• Properly operate and maintain septic systems</li> <li>• Properly dispose of septic waste</li> </ul>
Phosphorous	Charles 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> </ul>	<ul style="list-style-type: none"> <li>• Properly dispose of pet waste</li> <li>• Use fertilizer sparingly and never before storms</li> <li>• Properly dispose of leaves and grass clippings</li> </ul>
Turbidity	Charles River	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> </ul>
Dissolved Oxygen	Charles River	Insufficient amounts of dissolved oxygen for fish and other aquatic life	<ul style="list-style-type: none"> <li>• Pet waste</li> <li>• Grass clippings</li> <li>• Lawn fertilizer</li> <li>• Leaf litter</li> </ul>	<ul style="list-style-type: none"> <li>• Properly dispose of pet waste</li> <li>• Use fertilizer sparingly (and not before storms)</li> <li>• Properly dispose of leaves and grass clippings</li> </ul>

#### **4.1.2 Existing and Updated Program**

In the 2003 Permit Term, the Town of Millis developed and implemented education and outreach requirements required by the Permit. Through the development of the NOI for the 2016 Permit, the DPW evaluated and determined multiple types of stormwater messaging that will be effective for meeting the requirements of this MCM. The Town is determined to continue to better inform residents on stormwater issues through engagement with public interest groups, leveraging existing educational materials, and maintaining a focus on reaching a diverse audience.

There are multiple education and outreach programs that currently seek to raise the public's awareness to environmental and stormwater-specific issues. New programs and resources are continuously considered and implemented to lay the foundation for the Public Education and Outreach Program for the SWMP. The Town uses various strategies and outreach media, including:

- Department websites, social media, and special programming
- Cooperative efforts with local organizations and environmental advocates, including the Charles River Watershed Association, Scouts, and elementary schools
- Informational materials (on leaf litter, grass clippings, pet waste management, etc.)
- Stewardship and volunteerism
- Signage
- Workshops, trainings, presentations, and other events

Table 4-2 details Millis's Public Education and Outreach Program and implementation plan under the current Permit term. Each Best Management Practice (BMP) includes a lead responsible department. The individuals responsible for implementation are presented in Table 3-1.

During the current Permit term, the success of each BMP will be measured and evaluated against the metrics provided in the "Measurable Goal" category in Table 4-3 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.

**Table 4-2: Implementation Program for MCM 1**

<b>BMP #</b>	<b>BMP Description</b>	<b>Outreach Media Category</b>	<b>Purpose of message</b>	<b>Targeted Audience</b>	<b>Responsible Department/Parties</b>	<b>Beginning Year of BMP Implementation</b>	<b>Status<sup>1</sup></b>
1-1	Post stormwater information for residents on Stormwater Web Page	Web Page	General	Residents	DPW Operations	2018	Complete
1-2	Post stormwater information for business on Stormwater Web Page	Web Page	General	Businesses, Institutions and Commercial Facilities	DPW Operations	2018	Complete
1-3	Add stormwater brochure / flyer to developer packet through Plan review	Brochures/ Pamphlets	General	Developers (Construction)	DPW Operations	2018	Complete
1-4	Distribute mailers to targeted audience	Brochures/ Pamphlets	General	Industrial Facilities	DPW Operations	2018	Complete
1-5	Mail stormwater information with Annual Water Quality Report	Brochures/ Pamphlets	General	Residents	DPW Operations	2021	Complete
1-6	Distribute mailers to targeted audience	Brochures/ Pamphlets	General	Businesses, Institutions and Commercial Facilities	DPW Operations	2021	Complete
1-7	Distribute mailers to targeted audience	Brochures/ Pamphlets	General	Developers (Construction)	Building Inspection / Conservation Commission / Planning	2021	Complete

BMP #	BMP Description	Outreach Media Category	Purpose of message	Targeted Audience	Responsible Department/Parties	Beginning Year of BMP Implementation	Status <sup>1</sup>
1-8	Distribute mailers to targeted audience	Brochures/Pamphlets	General	Industrial Facilities	DPW Operations	2021	Complete
1-9	Distribute messaging on Leaf litter (Sept-Oct)	Brochures/Pamphlets	Bacteria & Phosphorus TMDL	Businesses, Institutions and Commercial Facilities	DPW Operations	2018	Ongoing
1-10	Distribute messaging on Leaf Litter (Sept-Oct)	Brochures/Pamphlets	Bacteria & Phosphorus TMDL	Residents	DPW Operations	2018	Ongoing
1-11	Distribute messaging on Grass clippings and fertilizers (March-April)	Brochures/Pamphlets	Phosphorus TMDL	Businesses, Institutions and Commercial Facilities	DPW Operations	2018	Ongoing
1-12	Distribute messaging on Grass clippings and fertilizers (March-April)	Brochures/Pamphlets	Phosphorus TMDL	Residents	DPW Operations	2018	Ongoing
1-13	Distribute messaging on pet waste - via rabies clinic (Dec-April)	Brochures/Pamphlets	Bacteria / Pathogens TMDL	Dog Owners	Board of Health	2018	Ongoing
1-14	Distribute Septic system maintenance information	Brochures/Pamphlets	Bacteria / Pathogens TMDL	Residents	Board of Health	2018	Ongoing
Notes: (1) To be updated following the submission of each annual report							

#### 4.1.3 Implementation Deadlines and Program Assessment

In line with this MCMs objective to convey information and change behavior surrounding stormwater initiatives, the BMPs described above all have target frequencies and measurable goals to determine the efficacy of the program. A public education and outreach memorandum was developed as a part of the Year 4 Permit Requirements. This memorandum is provided in Appendix I. These are summarized for each BMP in Table 4-3.

**Table 4-3: Summary of BMPs and Implementation Plan for MCM 1**

BMP #	BMP	Required Frequency/Due Date	Measurable Goals	Status <sup>1</sup>
1-1	Post stormwater information for residents on Stormwater Web Page	Once, due 2019	Number of page views	Complete
1-2	Post stormwater information for business on Stormwater Web Page	Once, due 2019	Number of page views	Complete
1-3	Add stormwater brochure / flyer to developer packet through Plan review (Developers)	Once, due 2019	Number of brochures distributed	Complete
1-4	Distribute mailers to targeted audience (Industrial Facilities)	Once, due 2019	Number of brochures distributed	Complete

BMP #	BMP	Required Frequency/Due Date	Measurable Goals	Status <sup>1</sup>
1-5	Mail stormwater information with Annual Water Quality Report (Residents)	Once, due 2022	Number of brochures distributed	Complete
1-6	Distribute mailers to targeted audience (Businesses)	Once, due 2022	Number of brochures distributed	Complete
1-7	Distribute mailers to targeted audience (Developers)	Once, due 2022	Number of brochures distributed	Complete
1-8	Distribute mailers to targeted audience (Industrial Facilities)	Once, due 2022	Number of brochures distributed	Complete
1-9	Distribute messaging on Leaf litter (Businesses)	Annual (Sept-Oct)	Number of brochures distributed	Ongoing
1-10	Distribute messaging on Leaf litter (Residents)	Annual (Sept-Oct)	Number of brochures distributed	Ongoing
1-11	Distribute messaging on Grass clippings and fertilizers (Businesses)	Annual (March-April)	Number of brochures distributed	Ongoing
1-12	Distribute messaging on Grass clippings and fertilizers (Residents)	Annual (March-April)	Number of brochures distributed	Ongoing
1-13	Distribute messaging on pet waste - via rabies clinic (Dog Owners)	Annual (Dec-April)	Number of brochures distributed	Ongoing
1-14	Distribute Septic system maintenance information (Residents with Septic System)	Annual	% of Septic systems reached (Number of brochures distributed/number of properties with septic systems)	Ongoing
Notes: (1) To be updated following the submission of each annual report				



## **4.2 MCM 2. PUBLIC INVOLVEMENT AND PARTICIPATION**

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

### **4.2.1 Permit Summary**

Part 2.3.3 of the permit requires the Town to provide an annual opportunity for the public to participate in the review and implementation of the SWMP, and other opportunities for public participation. The Town will adhere to state public notice requirements (MGL Chapter 30A, Sections 18-25 – effective 07/10/2010), and report on all public participation activities in the Annual Report.

### **4.2.2 Existing and Updated Program**

Over the previous permit term, the Town made significant progress in engaging the community around stormwater related topics. The Town was proactive about involving the community in stormwater management leading up to this Permit Term, and since 2017, the Town made a significant effort to implement a Stormwater Utility, which involved educating the public on stormwater management and soliciting input from the public through Public Meetings, Workshops, printed materials, and other avenues of communication. The Town has implemented the Stormwater Utility and has had an annual billing cycle since October 2018.

The MS4 Permit requires the Town to engage as much of the community as possible. Actions required as part of MCM 1 include specific messages for different target audiences. Although not as prescriptive as MCM 1, MCM 2 is designed to reach the entire community through adherence to state public notice requirements. Table 4-4 details the requirements that Millis has undertaken to adhere to these requirements.

**Table 4-4: Implementation Program for MCM 2**

<b>BMP #</b>	<b>BMP</b>	<b>Description</b>	<b>Responsible Department/ Parties</b>	<b>Measurable Goal</b>	<b>Beginning Year of BMP Implementation</b>	<b>Status</b>
2-1	Public Review of Stormwater Management Program	Allow annual review of stormwater management plan and posting of stormwater management plan on website	DPW Operations	Stormwater Management Program is publicly available every year	2019	Complete
2-2	Public Participation in Stormwater Management Program Development	Public Meeting - allow public to comment on stormwater management plan annually	DPW Operations	Annual public input is provided.	2019	Ongoing

### 4.2.3 Implementation Deadlines and Program Assessment

The Town will include meeting dates, attendance, and public input in the Annual Report. A summary of the implementation goals and due dates is included in Table 4-5.

**Table 4-5: MCM 2 Measurable Goals and Tracking**

BMP #	BMP	Date Due	Status
2-1	SWMP Posted on website	July 1, 2019	Complete
2-2	Program Update at Public Meeting	Annual	Ongoing

## **4.3 MCM 3. ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE) PROGRAM**

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

### **4.3.1 Permit Summary**

The Permit requires the Town to maintain an adequate legal authority to prohibit, investigate, and eliminate illicit discharges, and implement appropriate enforcement mechanisms. An illicit discharge is defined as any discharge to a municipal separate storm sewer system that is not composed entirely of stormwater, except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from firefighting activities. The IDDE program is a systematic plan for identifying and eliminating such discharges. As part of the 2003 Permit, the Town created an IDDE program, and has updated the program annually since 2018 to ensure the requirements of the current Permit are being met (Appendix B).

In 2004, the Town of Millis adopted stormwater regulations to regulate and eliminate discharges and connections to the MS4. This regulation provides the legal authority for enforcing its IDDE program, and it is attached in Appendix C with other applicable regulations.

Major components of the IDDE program include an SSO inventory, system wide storm water mapping, outfall inventory and ranking, outfall screening and sampling, catchment investigations, and employee training. The IDDE program is meant to be an iterative document with continued mapping, ranking, and investigations in the first years of the permit term.

### **4.3.2 Sanitary Sewer Overflow (SSO) Inventory**

The Town will identify all SSOs that have occurred within the MS4 in the previous five (5) years. This includes specific information surrounding the circumstances leading to the SSO, and known or potential infrastructure causes. This inventory will be updated and reported annually in the IDDE Program (Appendix B) and Annual Report. In the event of an SSO, the Town will work diligently to eliminate it as quickly as possible and in conformance with applicable regulations, take interim measures to minimize the discharge of pollutants, and report it to MassDEP. As part of the preparation of the IDDE Program, the Town did not identify any SSOs within the past five years.

#### **4.3.2.1 SSO Reporting**

As required by the Permit, in the event of an overflow or bypass, a notification must be reported within 24 hours by phone to MassDEP, EPA, and other relevant parties. The Town will follow up the verbal notification with a written report following MassDEP's SSO/Bypass notification form within five (5) calendar days of becoming aware of the overflow, bypass, or backup.

The MassDEP contacts are:

*Central Region*

(508) 792-7650

8 New Bond Street

Worcester, MA 01606

*24-hour Emergency Line*

1-888-304-1133

The EPA contacts are:

*EPA New England*

(617) 918-1510

5 Post Office Square

Boston, MA 02109

#### **4.3.3 Existing and Updated Program**

A bylaw prohibiting non-stormwater discharges into the storm sewer system, including appropriate enforcement procedures and actions was required by the 2003 small MS4 Permit. The stormwater regulations passed in 2004 satisfied this requirement, and give the Town the legal authority to:

- Prevent pollutants from entering the Town's MS4;
- Prohibit illicit connections and unauthorized discharges to the MS4;
- Require the removal of all such illicit connections;
- Comply with state and federal statutes and regulations relating to stormwater discharges;
- Establish the legal authority to ensure compliance with the provisions of this regulation through inspection, monitoring, and enforcement.

The IDDE program is also required to create a stormwater system map of the Town. Through a comprehensive GIS and mapping effort in Millis, the Town has completed its Phase 1 stormwater system map. The current map (Appendix D) contains all known MS4 outfalls in the town, preliminary catchment delineations, receiving waters with impairment levels, and municipally owned treatment structures and open channel conveyances. The Phase II map must be completed by July 1, 2028, and requires refined outfall spatial locations, pipes, manholes, catch basins, outfall catchment delineations, municipal sanitary sewer system (if available), and municipal combined sewer system (if available).

Beyond maintaining an SSO inventory and developing a comprehensive map, the IDDE program includes desktop analysis for priority ranking of the Town's outfalls. The IDDE methodology in the 2016 MS4 Permit describes the procedures required for categorizing and further prioritizing outfalls for investigation and elimination of any illicit discharges. First, the outfalls must be designated as either Problem, High Priority, Low Priority, or Excluded outfalls. This determines the level of effort and timeframe for screening each outfall. Once complete, the Town is required to conduct outfall screening on all High and Low Priority Outfalls within three (3) years of the Permit's effective date and reconduct this screening every five years. The Town has completed its initial outfall screening in 2021. The Town initiated catchment investigations as a part of Year 4 of the permit and completed investigating 29 catchments as a part of their training effort in 2023.

Next the Town must complete catchment investigations for the one Problem Outfall finishing by Permit Year 7. Similarly, the Town will complete all catchment investigations within 10 years of the Permit's effective date. The IDDE program is attached in Appendix B. An overview of all the requirements for MCM 3 is included in Table 4-6.

**Table 4-6: Implementation Program for MCM 3**

<b>BMP #</b>	<b>BMP</b>	<b>Description</b>	<b>Responsible Department/ Parties</b>	<b>Measurable Goal</b>	<b>Beginning Year of BMP Implementation</b>	<b>Status</b>
3-1	IDDE Legal Authority	Create regulation to provide Town with legal authority to detect and eliminate illicit discharges.	DPW Operations	Completed regulation	2004	Complete
3-2	SSO Inventory	Annually track and report SSOs following IDDE Program methodology.	DPW Operations	Complete within 1 year of effective date of permit	2018	Ongoing <sup>1</sup>
3-3	Storm System Map	Create map and update during IDDE program completion	DPW Operations	Update map within 2 years of effective date of permit and complete full system map 10 years after effective date of permit	2018	Phase I Complete

BMP #	BMP	Description	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation	Status
3-4	Written IDDE Program	Create written IDDE Program	DPW Operations	Completed IDDE Program	2018	Complete
3-5	Employee training	Train employees on IDDE implementation	DPW Operations	Train annually	2018	Ongoing
3-6	Implement IDDE Program	Implement catchment investigations according to program and permit conditions	DPW Operations	Complete within 10 years of effective date of permit	2019	Ongoing
3-6	Conduct dry weather screening	Conduct in accordance with outfall screening procedure and permit condition	DPW Operations	Complete within 3 years of effective date of permit	2019	Complete
3-7	Conduct wet weather screening	Conduct in accordance with outfall screening procedure	DPW Operations	Complete within 10 years of effective date of permit	2023	Ongoing
3-8	Ongoing screening	Conduct dry and wet weather screening as necessary (at	DPW Operations	Complete ongoing outfall screening	2023	Ongoing



BMP #	BMP	Description	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation	Status
		least once every five years)		upon completion of IDDE program		

Notes: (1) To be updated following the submission of each annual report

#### 4.3.4 Implementation Deadlines and Program Assessment

Proper adherence to MCM 3 includes an adequate legal authority and enforcement strategy for illicit discharges, an up to date SSO inventory, a robust system wide map, a written IDDE program, trained field staff, and an enhanced understanding of catchments, interconnections, and water quality in the Town. Each aspect of the IDDE program will be reported in the Annual Report, and the IDDE program will be updated to reflect reprioritizations, mapping, and other gathered data. The following summarizes requirements for MCM 3. As this section of the Permit is highly prescriptive, the measurable goals consist of completing the requirements by the specified dates shown below.

**Table 4-7: MCM 3 Summary**

BMP	Date Due	Status
IDDE Legal Authority	May 1, 2008	Completed June 8, 2004
SSO Inventory	Annually	Ongoing <sup>1</sup>
Phase I System Mapping	July 1, 2020	Complete, will be updated as needed
Phase II System Mapping	July 1, 2028	In progress
Written IDDE Program	July 1, 2019	Completed June 2019
Assessment and Initial Priority Ranking of Outfalls/Interconnections	July 1, 2019	Complete
Dry Weather Screening and Sampling	July 1, 2021	Complete June 2021
Follow-up Ranking	July 1, 2021	Complete June 2021
Written Catchment Investigation Procedure	January 1, 2020	Completed
Wet Weather Sampling	Complete during Catchment Investigations	
Catchment Investigations for Problem Outfalls	Begin by July 2020/ Finish by July 2025	Ongoing
Catchment Investigations for High and Low Priority Outfalls	Begin after Problem Outfall Investigations/Finish by July 2028	Ongoing
Catchment Investigations with Potential Sewer Input	Begin after Problem Outfall Investigations/Finish by July 2025	
Training	Annually	Ongoing
Notes: (1) To be updated following the submission of each annual report		

## 4.4 MCM 4. CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

**Objective:** *“The objective of an effective construction stormwater runoff control program is to minimize or eliminate erosion and maintain sediment on site so that it is not transported in stormwater and allowed to discharge to a water of the U.S. through the permittee’s MS4.”*

### 4.4.1 Permit Summary

The Town 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.

### 4.4.2 Existing and Updated Programs

Under this MCM, the Permit requires the Town to maintain regulations to address construction site stormwater runoff. This includes erosion and sediment controls, as well as waste management during construction. The Town of Millis’ Stormwater Management Regulations, adopted in June 2004 and updated in February 2007, include these required regulations and ordinances. These Regulations can be found here:

[http://www.millis.org/pages/MillisMA DPW/StrmWtr/StormAdditional/Article%20I.pdf](http://www.millis.org/pages/MillisMA%20DPW/StrmWtr/StormAdditional/Article%20I.pdf)

The Town’s current stormwater regulations address the primary requirements of the Permit. The regulation establishes the necessary legal authority to inspect and enforce the erosion and sediment controls required under the MS4 permit; however, they will require slight modification to comply with all the Permit requirements, which will be incorporated in the next year.

**Table 4-8: Implementation Program for MCM 4**

<b>BMP #</b>	<b>BMP</b>	<b>BMP Description</b>	<b>Responsible Department/ Parties</b>	<b>Measurable Goal</b>	<b>Beginning Year of BMP Implementation</b>	<b>Status</b>
4-1	Sediment and Erosion Control Ordinance	Adoption of requirements for construction operators to implement a sediment and erosion control program	Board of Health / Conservation Commission	Complete within 1 year of permit effective date	2004	Complete
4-2	Site Plan Review Procedures	Complete written procedures of site plan review and begin implementation	Building	Conduct site plan review of 100% of projects according to the procedures.	2018	Complete
4-3	Site Inspection and Enforcement of Erosion and Sediment Control (ESC) Measures	Complete written procedures of site inspections and enforcement procedures	Board of Selectmen / Board of Health / Conservation Commission	Inspect 100% of construction sites as outlined in ordinance and take enforcement action as needed.	2018	Complete
4-4	Waste Control	Adoption of requirements to control wastes, including but not limited to discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes	Board of Health / Conservation Commission	Complete within 1 year of permit effective date	2018	Complete

#### 4.4.3 Implementation Deadlines and Program Assessment

The Town will conduct a site plan review of 100% of applicable projects according to the guidelines developed as part of this plan and inspect 100% of construction sites for appropriate sediment and erosion control measures. These reviews and inspections will be recorded as they are completed and submitted as part of the Annual Report. The following table summarizes requirements for MCM 4. As this section of the Permit is highly prescriptive, the measurable goals consist of completing the requirements by the specified dates shown below.

**Table 4-9: MCM 4 Summary**

<b>BMP #</b>	<b>BMP</b>	<b>Date Due</b>	<b>Date Completed</b>	<b>Updated</b>
4-1	Sediment and Erosion Control Ordinance	May 1, 2008	June 28, 2004	February 12, 2007
4-2	Site Plan Review Procedures	July 1, 2019	June 28, 2004	February 12, 2007
4-3	Written Procedures for Site Inspections	July 1, 2019	June 28, 2004	February 12, 2007
4-4	Requirements for operators to control wastes	July 1, 2019	June 28, 2004	February 12, 2007

## **4.5 MCM 5. POST CONSTRUCTION STORMWATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT**

**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.”*

### **4.5.1 Permit Summary**

The Town is required by the Permit 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 combined good municipal planning with thorough project review during the proposal and permitting stages.

### **4.5.2 Existing and Updated Program**

The Town of Millis adopted Article 1 - Land Disturbance and Post-Construction Stormwater Management on June 28, 2004 and amended it June 5, 2006 and again February 12, 2007. Article 1 was created to control the flow of stormwater from new and redeveloped sites in order to prevent flooding and erosion and sedimentation. Article 1 adheres to 2016 Permit requirements including design references to the Massachusetts Stormwater Management Standards/Handbook (Handbook) as the basis for system design and 2016 Permit.

In Year 4 of the Permit, the Town developed a report assessing current street design, parking lot guidelines, and other applicable local requirements that impact the creation of impervious cover. This report focused on highlighting current impediments to using low impact design options, and detailing improvements for promoting the use of such options. If options to improve regulations to allow for low impact development (LID) were available, the report included recommendations for policies or standards and relevant documents and procedures to minimize impervious cover attributable to parking areas and street design. In Year 5 of the Permit, the Town drafted appropriate changes to the

appropriate bylaws. The Planning Board and other departments have reviewed the proposed updates and will present this in the next Town Hall Meeting.

In addition to local guidelines regarding the creation of impervious cover, the Town developed a report assessing existing local regulations to determine how to promote the implementation of green infrastructure as a part of the Year 4 requirements of the Permit. In particular, the Town needs to assess the feasibility of allowing green roofs, infiltration practices, and water harvesting devices. During this investigation, the Town may decide to include other types of green infrastructure as well. The parking lot guidelines report and the green infrastructure report are provided in Appendix F.

Prepared in 2016 as a supplement to the Kleinfelder-developed *Water Supply & Demand Assessment in Relation to Exelon Power 'West Medway II' Project, Prepared for the Town of Millis, the Minimization & Mitigation Implementation Analysis*<sup>1</sup> included a stormwater BMP assessment. The Town identified at least five (5) permittee-owned properties to retrofit with BMPs designed to reduce frequency, volume, and pollutant loads of stormwater discharges to and from its MS4 area. If during the permit term, any of these properties identified are retrofitted, the list will be updated to always include five (5) properties. In Year 5 of the Permit, the Town updated the list of five (5) properties. This list is provided in Appendix G. Following the construction of the new Clyde F. Brown Elementary School and associated green infrastructure to manage runoff from the site, two of the parcels included on the Year-4 retrofit opportunity inventory were removed from the list. In Year 5 – Millis Housing Authority and Millis Fire Department are added to the list of five (5) properties to substitute the two parcels from Year 4.

---

<sup>1</sup> Available from Kleinfelder upon request.

**Table 4-10: Implementation Program for MCM 5**

<b>BMP #</b>	<b>BMP</b>	<b>BMP Description</b>	<b>Responsible Department/ Parties</b>	<b>Measurable Goal</b>	<b>Beginning Year of BMP Implementation</b>	<b>Status</b>
5-1	Post-Construction Ordinance	Adoption, amendment, or modification of a regulatory mechanism to meet permit requirements	Planning Board / Zoning Board of Appeals	Complete 2 years after effective date of permit	2019	Complete
5-2	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.	Planning Board, Zoning Board of Appeals	Complete 4 years after effective date of permit and implement recommendations of report	2022	Completed
5-3	Green Infrastructure Report	Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist	Planning Board / Building Inspection Department	Complete 4 years after effective date of permit and implement recommendations of report	2022	Completed
5-4	List of Municipal Retrofit Opportunities	Target properties to reduce impervious areas: Identify at least 5 permittee-owned properties that could be modified or retrofitted with BMPs to reduce impervious areas and update annually	DPW	Complete 4 years after effective date of permit and report annually on retrofitted properties	2022	On-going



BMP #	BMP	BMP Description	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation	Status
5-5	As-built plans for on-site stormwater control	The procedures to require submission of as-built drawings and ensure long term operation and maintenance will be a part of the SWMP	Planning Board / Zoning Board of Appeals	Require submission of as-built plans for completed projects	2018	Completed

### 4.5.3 Implementation Deadlines and Program Assessment

Analysis of Bylaws and regulations pertaining to the development of streets, parking lots, and other impervious cover as well as green infrastructure and LID was completed in Permit Year 4. Improvements to bylaws and regulations are currently being drafted and planned to be brought town meeting in the next calendar year. Updates from these programs will be reported annually. The list of potential retrofits for the Town will be included in the Annual Report and updated as needed. As this section of the Permit is highly prescriptive, the measurable goals consist of completing the requirements by the specified dates shown below.

**Table 4-11: MCM 5 Summary**

BMP #	BMP	Date Due	Date Completed	Updated
5-1	Post Construction Ordinance	July 1, 2020	June 28, 2004	February 12, 2007
5-2	Street Design Assessment Report	July 1, 2022; annually report progress	July 1, 2022	
5-3	Green Infrastructure Design Opportunities Report	July 1, 2022; annually report progress	July 1, 2022	
5-4	Inventory of Retrofit Property Opportunities	June 30, 2023; update as needed	March 11, 2016	June 30, 2023

## 4.6 MCM 6. POLLUTION PREVENTION / GOOD HOUSEKEEPING

**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.”*

### 4.6.1 Permit Summary

Compliance with this MCM results in reductions in pollution that falls on streets, parking lots, open spaces, and storage and vehicle maintenance areas and is carried by stormwater into local waterways, and improvement of management approaches to avoid environmentally destructive development and stormwater management practices or poor maintenance of storm sewer systems.

### 4.6.2 Existing and Updated Program

In Year 2 of the Permit, the Town developed a Good Housekeeping Manual that includes an inventory of Town 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, and written operations and maintenance procedures for municipal operations at these properties. Beyond maintaining these properties, the Town is responsible for keeping all MS4 infrastructure in good working order.

The Town has established winter road maintenance procedures for the use and storage of salt and sand, while minimizing the use of sodium chloride and other salts. Currently, the Town stores the majority of its salt in the DPW Garage. The procedures include options for using other materials and prohibit the disposal of snow into surface waters. These procedures are distributed to all employees that complete roadway maintenance and plowing.

All stormwater treatment structures such as water quality swales, retention and detention basins, infiltration structures, and proprietary treatment devices are inspected annually. The Town established inspection and maintenance procedures and frequencies to be included in the Good Housekeeping Manual.

The Town created and began implementing Stormwater Pollution Prevention Plans (SWPPPs) for two of its publicly owned facilities, the DPW Transfer Station and DPW Garage, both on Water Street, during Permit Year 2. SWPPPs are required 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. An overview of these requirements for MCM 6 is included in Table 4-12.

**Table 4-12: Implementation Program for MCM 6**

<b>BMP #</b>	<b>BMP</b>	<b>BMP Description</b>	<b>Responsible Department/ Parties</b>	<b>Measurable Goal</b>	<b>Beginning Year of BMP Implementation</b>	<b>Status</b>
6-1	O&M Procedures	Create written O&M procedures including all requirements contained in 2.3.7.a.ii for parks and open spaces, buildings and facilities, and vehicles and equipment	DPW Operations	Complete and implement 2 years after effective date of permit	2019	Complete
6-2	Inventory all permittee-owned parks and open spaces, buildings and facilities, and vehicles and equipment	Create inventory	DPW Operations	Complete 2 years after effective date of permit and implement annually	2019	Complete
6-3	Infrastructure O&M	Establish and implement program for repair and rehabilitation of MS4 infrastructure	DPW Operations	Complete 2 years after effective date of permit	2019	Complete
6-4	Catch Basin Cleaning Program	Establish schedule for catch basin cleaning such that each catch basin is no more than 50% full and clean catch basins on that schedule	DPW Operations	Clean catch basins on established schedule so no catch basin is more than 50% full at any time.	2018	Ongoing
6-5	Street Sweeping Program	Sweep all streets and permittee-owned parking lots in accordance with permit conditions	DPW Operations	Sweep all streets and permittee-owned parking lots once per year in the spring	2018	Ongoing

BMP #	BMP	BMP Description	Responsible Department/ Parties	Measurable Goal	Beginning Year of BMP Implementation	Status
6-6	Winter Road Maintenance Program	Establish and implement a program to minimize the use of road salt	DPW Operations	Implement salt use optimization during deicing season	2018	Ongoing
6-7	Stormwater Treatment Structures Inspection and Maintenance Procedures	Establish and implement inspection and maintenance procedures and frequencies	DPW Operations	Inspect and maintain treatment structures at least annually	2018	Ongoing
6-8	Stormwater Pollution Prevention Plan (SWPPP)	Create SWPPPs for maintenance garages, transfer stations, and other waste-handling facilities	DPW Operations	Complete and implement 2 years after effective date of permit	2019	Complete

### 4.6.3 Implementation Deadlines and Program Assessment

Through the development and use the Good Housekeeping Manual, the Town will abide by operations and maintenance procedures for all the parks and open spaces, buildings and facilities, and vehicle and equipment areas identified by the Town. All Town-owned stormwater infrastructure will be maintained, all catch basins will be cleaned at the appropriate frequency, and 100% of streets and 50% of municipal parking lots will be swept. The Town will evaluate at least one salt or chloride alternative for road application and inspect and maintain 100% of stormwater treatment structures. The Town has developed and is implementing SWPPPs for its two required facilities. As this section of the Permit is highly prescriptive, the measurable goals consist of completing the requirements by the specified dates shown below.

**Table 4-13: MCM 6 Summary**

<b>BMP #</b>	<b>BMP</b>	<b>Date Due</b>	<b>Date Completed</b>
6-1	Written O&M Procedures	July 1, 2020	June 2020
6-2	Written Property Inventory	July 1, 2020	June 2020
6-3	Infrastructure O&M Procedures	July 1, 2020	June 2020
6-4	Catch Basin Cleaning Program	July 1, 2019	June 2019
6-5	Street Sweeping Program	July 1, 2019	June 2019
6-6	Winter Road Maintenance Program	July 1, 2019	June 2019
6-7	Stormwater Treatment Structures Inspection and Maintenance Procedures	July 1, 2019	June 2019
6-8	SWPPPs	July 1, 2020	June 2020

## 5 ANNUAL EVALUATION

Each Annual Report will include the Town’s activities and progress with regards to this SWMP from the previous year. The Town will report on public education materials distributed and audiences reached, public participation opportunities and success, IDDE progress, system mapping, outfall ranking, dry weather screening and sampling, SSOs, site plan reviews, construction site inspections, and post construction plans and opportunities, operations and maintenance procedures, properties and infrastructure maintained, and upcoming plans for the Town. Table 5-1 will be updated each year with links to each year’s Annual Reports.

**Table 5-1: Annual Reports**

Report Year	Due Date	Report Link
Year 1 (2019)	September 29, 2019	<a href="https://www3.epa.gov/region1/npdes/stormwater/ma/reports/2019/millis-ma-ar19.pdf">https://www3.epa.gov/region1/npdes/stormwater/ma/reports/2019/millis-ma-ar19.pdf</a>
Year 2 (2020)	September 29, 2020	<a href="https://www3.epa.gov/region1/npdes/stormwater/ma/reports/2020/millis-ma-ar20.pdf">https://www3.epa.gov/region1/npdes/stormwater/ma/reports/2020/millis-ma-ar20.pdf</a>
Year 3 (2021)	September 29, 2021	<a href="https://www3.epa.gov/region1/npdes/stormwater/ma/reports/2021/MILLIS_MA_AR21.pdf">https://www3.epa.gov/region1/npdes/stormwater/ma/reports/2021/MILLIS_MA_AR21.pdf</a>
Year 4 (2022)	September 29, 2022	<a href="https://www.millisma.gov/sites/g/files/vyhli901/f/uploads/ms4_general_permit_-_july_1_2021_-_june_30_2022.pdf">https://www.millisma.gov/sites/g/files/vyhli901/f/uploads/ms4_general_permit_-_july_1_2021_-_june_30_2022.pdf</a> (millisma.gov)
Year 5 (2023)	September 29, 2023	



## **6 TMDLS AND WATER QUALITY LIMITED WATERS**

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

#### **6.1.1 Part A.I of Appendix F – Upper/Middle Charles River (Phosphorus)**

The EPA approved the TMDL for Nutrients in the Upper/Middle Charles River on June 10, 2011, and the Town of Millis is a part of this watershed. Therefore, the Town must adhere to Part A.1 of Appendix F of the Permit. In order to do this the Town 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. Phase I of the plan was created during Permit years one through five and will be 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 II will be created in years five through ten and completed in years ten through fifteen. Phase II will build off of Phase I and includes an update to the regulatory mechanism if required, planned Phase II structural and non-structural controls, an update to operation and maintenance protocols, an implementation schedule, estimated Phase II costs, a written plan, and a plan for performance evaluation.

Phase III will be created in years ten through fifteen and be completed in years fifteen through twenty, while finalizing the PCP. Phase III will work from Phase II and contain the same elements, an update to the regulatory mechanism, if necessary, planned Phase III structural and non-structural controls, an update to operations and maintenance protocols, an implementation schedule, Phase III costs, a written plan, and a plan for performance evaluation.

Scope of PCP and Baseline Assessment Memorandum was created as a part of Permit Year 4. The Town will submit a progress report on the PCP with each Annual Report. In year five, and every year after, Millis 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 Town 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.

The Phase I PCP was completed during Permit Year 5. This is provided in Appendix H. In this plan, the Town estimated the phosphorus load reduction for current and planned structural and non- structural BMPs along with the associated cost for implementing the planned BMPs to achieve the target phosphorus load reduction.

### **6.1.2 Part A.III of Appendix F – Pathogens (Charles River and Bogastow Brook)**

Both the Charles River and Bogastow Brook in Millis are impaired for pathogens (specifically, E. coli and fecal coliform), and therefore the Town is required to adhere to Part A.III of Appendix F of the Permit.

The enhanced BMPs required to satisfy this requirement include:

- 1) Pet waste management messaging to residents (BMP 1-13)
- 2) Septic system maintenance messaging for residents with septic in catchment areas draining to either the Charles River or Bogastow Brook (BMP 1-14)

Descriptions of these actions are included in MCM 1, Section 4-1. Additionally, outfalls in the IDDE program that contain catchment areas draining to either of these impaired waters were designated as Problem or High priority in the IDDE program.

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

The only water quality limited waterbody in the Town of Millis is the Charles River, which is impaired for Dissolved Oxygen (DO) and Turbidity. Millis does not have any additional enhanced BMPs to implement to address these impairments. Although no additional BMPs are required, additional sampling parameters are required as part of the IDDE. These specific requirements are described in the IDDE Program (Appendix B).

## 7 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, January 2020.

*Modification of Authorization to Discharge Under the National Pollutant Discharge Elimination System, Town of Wayland Wastewater Management District Commission.* United States Environmental Protection Agency, signed October 9, 2009.

*NPDES PII Small MS4 General Permit Annual Report.* Town of Wayland, May 1, 2018.

*Stormwater Management Plan Template v1.1.* United States Environmental Protection Agency, Fall, 2018.

**APPENDIX A**  
**Notice of Intent**

---

## Part I: General Conditions

### General Information

Name of Municipality or Organization:  State:

EPA NPDES Permit Number (if applicable):

### Primary MS4 Program Manager Contact Information

Name:  Title:

Street Address Line 1:

Street Address Line 2:

City:  State:  Zip Code:

Email:  Phone Number:

Fax Number:

### Other Information

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

### Eligibility Determination

Endangered Species Act (ESA) Determination Complete?  Eligibility Criteria (check all that apply): ☐ A ☐ B ☒ C

National Historic Preservation Act (NHPA) Determination Complete?  Eligibility Criteria (check all that apply): ☒ A ☐ B ☐ C

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

### MS4 Infrastructure (if covered under the 2003 permit)

Estimated Percent of Outfall Map Complete?  If 100% of 2003 requirements not met, enter an estimated date of completion (MM/DD/YY):

Web address where MS4 map is published:

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

### Regulatory Authorities (if covered under the 2003 permit)

<b>Illicit Discharge Detection and Elimination (IDDE) Authority Adopted?</b> <i>(Part II, III, IV or V, Subpart B.3.(b.) of 2003 permit)</i>	<input type="text" value="Yes"/>	Effective Date or Estimated Date of Adoption (MM/DD/YY): <input type="text" value="06/28/04"/>
<b>Construction/Erosion and Sediment Control (ESC) Authority Adopted?</b> <i>(Part II, III, IV or V, Subpart B.4.(a.) of 2003 permit)</i>	<input type="text" value="Yes"/>	Effective Date or Estimated Date of Adoption (MM/DD/YY): <input type="text" value="06/28/04"/>
<b>Post- Construction Stormwater Management Adopted?</b> <i>(Part II, III, IV or V, Subpart B.5.(a.) of 2003 permit)</i>	<input type="text" value="Yes"/>	Effective Date or Estimated Date of Adoption (MM/DD/YY): <input type="text" value="06/28/04"/>

## Part II: Summary of Receiving Waters

*Massachusetts list of impaired waters: Massachusetts 2014 List of Impaired Waters- <http://www.mass.gov/eea/docs/dep/water/resources/07v5/14list2.pdf>*

Check off relevant pollutants for discharges to impaired waterbodies (see above 303(d) lists) without an approved TMDL in accordance with part 2.2.2.a of the permit. List any other pollutants in the last column, if applicable.

[illegible]

Click to lengthen table

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

### Part III: Stormwater Management Program Summary

Identify the Best Management Practices (BMPs) that will be employed to address each of the six Minimum Control Measures (MCMs). For municipalities/organizations whose MS4 discharges into a receiving water with an approved Total Maximum Daily Load (TMDL) and an applicable waste load allocation (WLA), identify any additional BMPs employed to specifically support the achievement of the WLA in the TMDL section at the end of part III.

For each MCM, list each existing or proposed BMP by category and provide a brief description, responsible parties/departments, measurable goals, and the year the BMP will be employed (public education and outreach BMPs also requires a target audience). **Use the drop-down menus in each table or enter your own text to override the drop down menu.**

#### MCM 1: Public Education and Outreach

<b>BMP Media/Category</b> (enter your own text to override the drop down menu)	<b>BMP Description</b>	<b>Targeted Audience</b>	<b>Responsible Department/Parties</b> (enter your own text to override the drop down menu)	<b>Measurable Goal</b>	<b>Beginning Year of BMP Implementation</b>
Web Page	Post stormwater information for residents on Stormwater Web Page	Residents	DPW Operations	Number of page views	2018
Web Page	Post stormwater information for business on Stormwater Web Page	Businesses, Institutions and Commercial Facilities	DPW Operations	Number of page views	2018
Brochures/Pamphlets	Add stormwater brochure / flyer to developer packet through Plan review	Developers (construction)	Building Inspection / Conservation Commission / Planning	Number of brochures distributed	2018
Brochures/Pamphlets	Distribute mailers to targeted audience	Industrial Facilities	DPW Operations	Number of brochures distributed	2018
Brochures/Pamphlets	Mail stormwater information with Annual Water Quality Report	Residents	DPW Operations	Number of brochures distributed	2021
Brochures/Pamphlets	Distribute mailers to targeted audience	Businesses, Institutions and Commercial Facilities	DPW Operations	Number of brochures distributed	2021
Brochures/Pamphlets	Distribute mailers to targeted audience	Developers (construction)	Building Inspection / Conservation Commission / Planning	Number of brochures distributed	2021



[illegible]

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

### Part III: Stormwater Management Program Summary (continued)

## MCM 2: Public Involvement and Participation

[illegible]



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

### Part III: Stormwater Management Program Summary *(continued)*

#### MCM 3: Illicit Discharge Detection and Elimination (IDDE)

<b>BMP Categorization</b> (enter your own text to override the drop down menu)	<b>BMP Description</b>	<b>Responsible Department/Parties</b> (enter your own text to override the drop down menu)	<b>Measurable Goal</b> (all text can be overwritten)	<b>Beginning Year of BMP Implementation</b>
SSO inventory	Develop SSO inventory in accordance of permit conditions	DPW Operations	Complete within 1 year of effective date of permit	2018
Storm sewer system map	Create map and update during IDDE program completion	DPW Operations	Update map within 2 years of effective date of permit and complete full system map 10 years after effective date of permit	2018
Written IDDE program	Create written IDDE program	DPW Operations	Complete within 1 year of the effective date of permit and update as required	2018
Implement IDDE program	Implement catchment investigations according to program and permit conditions	DPW Operations	Complete 10 years after effective date of permit	2019
Employee training	Train employees on IDDE implementation	DPW Operations	Train annually	2018
Conduct dry weather screening	Conduct in accordance with outfall screening procedure and permit conditions	DPW Operations	Complete 3 years after effective date of permit	2019
Conduct wet weather screening	Conduct in accordance with outfall screening procedure	DPW Operations	Complete 10 years after effective date of permit	2023
Ongoing screening	Conduct dry weather and wet weather screening (as necessary)	DPW Operations	Complete ongoing outfall screening upon completion of IDDE program	2023

[illegible]

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

### Part III: Stormwater Management Program Summary *(continued)*

#### MCM 4: Construction Site Stormwater Runoff Control

<b>BMP Categorization</b> (enter your own text to override the drop down menu or entered text)	<b>BMP Description</b>	<b>Responsible Department/Parties</b> (enter your own text to override the drop down menu)	<b>Measurable Goal</b> (all text can be overwritten)	<b>Beginning Year of BMP Implementation</b>
Site inspection and enforcement of Erosion and Sediment Control (ESC) measures	Complete written procedures of site inspections and enforcement procedures	Board of Selectmen, Board of Health / Conservation Commission	Complete within 1 year of the effective date of permit	2018
Site plan review	Complete written procedures of site plan review and begin implementation	Building	Complete within 1 year of the effective date of permit	2018
Erosion and Sediment Control	Adoption of requirements for construction operators to implement a sediment and erosion control program	Board of Health / Conservation Commission	Complete within 1 year of the effective date of permit	2018
Waste Control	Adoption of requirements to control wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes	Board of Health / Conservation Commission	Complete within 1 year of the effective date of permit	2018

[illegible]

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

### Part III: Stormwater Management Program Summary (continued)

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

<b>BMP Categorization</b> (enter your own text to override the drop down menu or entered text)	<b>BMP Description</b>	<b>Responsible Department/Parties</b> (enter your own text to override the drop down menu)	<b>Measurable Goal</b> (all text can be overwritten)	<b>Beginning Year of BMP Implementation</b>
As-built plans for on-site stormwater control	The procedures to require submission of as-built drawings and ensure long term operation and maintenance will be a part of the SWMP	Planning Board, Zoning Board of Appeals	Require submission of as-built plans for completed projects	2018
Target properties to reduce impervious areas	Identify at least 5 permittee-owned properties that could be modified or retrofitted with BMPs to reduce impervious areas and update annually	DPW	Complete 4 years after effective date of permit and report annually on retrofitted properties	2022
Allow green infrastructure	Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist	Planning Board, Building Inspection Department	Complete 4 years after effective date of permit and implement recommendations of report	2022
Street design and parking lot guidelines	Develop a report assessing requirements that affect the creation of impervious cover. The assessment will help determine if changes to design standards for streets and parking lots can be modified to support low impact design options.	Planning Board, Zoning Board of Appeals	Complete 4 years after effective date of permit and implement recommendations of report	2022



[illegible]

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

### Part III: Stormwater Management Program Summary (continued)

#### MCM 6: Municipal Good Housekeeping and Pollution Prevention

<b>BMP Categorization</b> (enter your own text to override the drop down menu or entered text)	<b>BMP Description</b>	<b>Responsible Department/Parties</b> (enter your own text to override the drop down menu)	<b>Measurable Goal</b> (all text can be overwritten)	<b>Beginning Year of BMP Implementation</b>
O&M procedures	Create written O&M procedures including all requirements contained in 2.3.7.a.ii for parks and open spaces, buildings and facilities, and vehicles and equipment	DPW Operations	Complete and implement 2 years after effective date of permit	2019
Inventory all permittee-owned parks and open spaces, buildings and facilities, and vehicles and equipment	Create inventory	DPW Operations	Complete 2 years after effective date of permit and implement annually	2019
Infrastructure O&M	Establish and implement program for repair and rehabilitation of MS4 infrastructure	DPW Operations	Complete 2 years after effective date of permit	2019
Stormwater Pollution Prevention Plan (SWPPP)	Create SWPPPs for maintenance garages, transfer stations, and other waste-handling facilities	DPW Operations	Complete and implement 2 years after effective date of permit	2019
Catch basin cleaning	Establish schedule for catch basin cleaning such that each catch basin is no more than 50% full and clean catch basins on that schedule	DPW Operations	Clean catch basins on established schedule and report number of catch basins cleaned and volume of material moved annually	2018
Street sweeping program	Sweep all streets and permittee-owned parking lots in accordance with permit conditions	DPW Operations	Sweep all streets and permittee-owned parking lots once per year in the spring	2018
Road salt use optimization program	Establish and implement a program to minimize the use of road salt	DPW Operations	Implement salt use optimization during deicing season	2018

[illegible]

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

### Part III: Stormwater Management Program Summary (continued)

## Actions for Meeting Total Maximum Daily Load (TMDL) Requirements

Use the drop-down menus to select the applicable TMDL, action description to meet the TMDL requirements, and the responsible department/parties. If no options are applicable, or more than one, **enter your own text to override drop-down menus.**

[illegible]

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

### Part III: Stormwater Management Program Summary (continued)

## Actions for Meeting Requirements Related to Water Quality Limited Waters

Use the drop-down menus to select the pollutant causing the water quality limitation and enter the waterbody ID(s) experiencing excursions above water quality standards for that pollutant. Choose the action description from the dropdown menu and indicate the responsible party. If no options are applicable, or more than one, **enter your own text to override drop-down menus.**

[illegible]

**Part IV: Notes and additional information**

Use the space below to indicate the part(s) of 2.2.1 and 2.2.2 that you have identified as not applicable to your MS4 because you do not discharge to the impaired water body or a tributary to an impaired water body due to nitrogen or phosphorus. Provide all supporting documentation below or attach additional documents if necessary. Also, provide any additional information about your MS4 program below.

The results from the U.S. Fish and Wildlife IPaC system determined that the Town of Millis' MS4 area contains the Northern Long-eared Bat. See attached resource list as a reference for IPaC results and a NHESP Habitats map from the MA GIS database. Using the ESA Eligibility criteria as referenced in Appendix C of the MA Small MS4 General Permit, the Town falls under criterion C. Based on our review, there is no discharge related activities involving the habitat of this species of bat therefore the Town's MS4 system does not affect any federally threatened or endangered listed species.

The Town of Millis was a permittee under the 2003 MS4 Permit; therefore the Town meets criteria A of Appendix D to the small MS4 General Permit and completed a consultation with the State Historic Preservation Officer at that time. The Town is not aware of planned projects which would impact historic properties.

An attachment of the Town of Millis's MS4 system map and reference materials related to these screenings are attached.

Additional information:

ESA and NHPA Documentation

Stormwater System Map

## Part V: Certification

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

Name:

Catherine C. MacInnes

Title:

Chair, Board of Selectmen

Signature:

Date:

[To be signed according to Appendix B, Subparagraph B.11, Standard Conditions]

Note: When prompted during signing, save the document under a new file name

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

Page 18 of 18

### Part V: Certification

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

Name:

Catherine C. MacInnes

Title:

Chair, Board of Selectmen

Signature:

Catherine C MacInnes

[To be signed according to Appendix B, Subparagraph B.11, Standard Conditions]

Date:

9/10/18

Note: When prompted during signing, save the document under a new file name



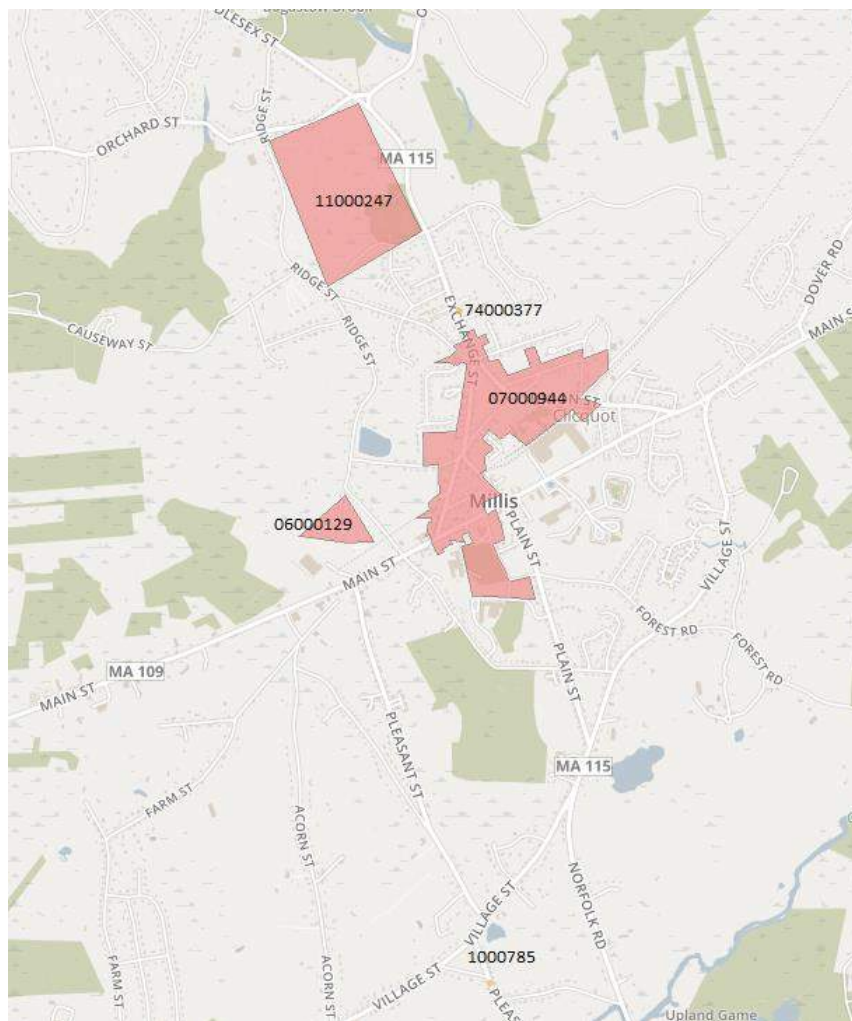
## Town of Millis, MA

### NOI Screenings

#### Historic Properties:

- A map of Federally Listed Historic Properties was accessed from the following web location:  
<https://www.nps.gov/maps/full.html?mapId=7ad17cc9-b808-4ff8-a2f9-a99909164466>
- The following is a list of Federally Listed Historic Properties in Millis, MA
  - o Oak Grove Farm (#11000247)
  - o Prospect Hill Cemetery (#06000129)
  - o Millis Center Historic District (#07000944)
  - o John Partridge House (#74000377)
  - o Ellice School (#10000785)

The Town's MS4 is an existing system covered under the 2003 permit; therefore, the Town meets Criteria A of Appendix D to the MS4 General Permit and went through consultation with the State Historic Preservation Officer at that time. No discharge related activities are planned which will have an affect on these properties.



## Endangered Species:

- Based on Appendix C, eligible under Criterion C: area containing Northern Long-eared Bat


The results from the U.S. Fish and Wildlife IPaC system determined that Millis' MS4 area contains the Northern Long-eared Bat. See attached resource list as a reference for IPac results and A NHESP Habitats map from the MA GIS database. Using the ESA Eligibility criteria as referenced in Appendix C of the MA Small MS4 General Permit, Millis falls under criterion C. Based on our review, there is no planned discharge related activities that will negatively impact the habitat of the Northern Long-eared Bat, and therefore the Town's MS4 system will not affect any federally threatened or endangered listed species.

**IPaC** Information for Planning and Consultation  
MY PROJECTS

PROJECT HOMEREGULATORY REVIEW

## Millis Endangered Species

No description provided.



LOCATION Middlesex and Norfolk counties, Massachusetts

CREATED June 12, 2018

1 MEMBER 1 DOCUMENT

### Resources

This project potentially impacts 11 resources managed or regulated by the U.S. Fish and Wildlife Service.

- 1 endangered species
- 9 migratory birds
- Known wetlands

SEE RESOURCES

## Endangered species

Listed species <sup>1</sup> and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries <sup>2</sup>).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

Additional information on endangered species data is provided [below](#).

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

THUMBNAILS LIST

## Mammals



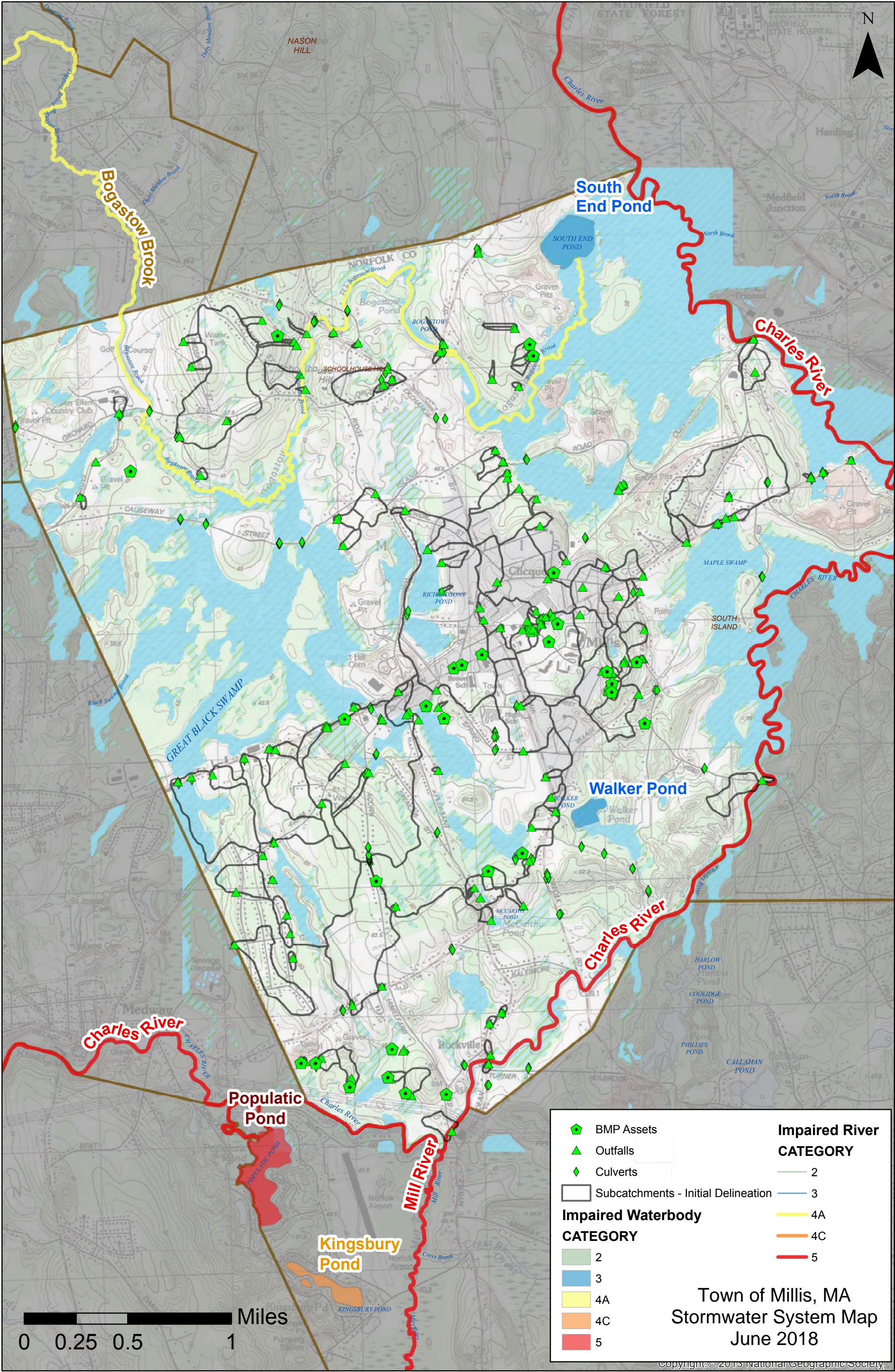
## Critical habitats

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

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

- > 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?







**APPENDIX B**  
**IDDE PLAN**

---

[https://www.millisma.gov/sites/g/files/vyhlf901/f/uploads/idde\\_plan\\_-\\_year\\_5.pdf](https://www.millisma.gov/sites/g/files/vyhlf901/f/uploads/idde_plan_-_year_5.pdf)

**APPENDIX C**  
**Millis Stormwater Bylaws and Regulations**

---

**TOWN OF MILLIS**  
**STORMWATER MANAGEMENT REGULATIONS**  
**Adopted June 28, 2004, Amended June 5, 2006, Amended February 12, 2007**  
**ARTICLE I**  
**LAND DISTURBANCE AND POST-CONSTRUCTION STORMWATER**  
**MANAGEMENT**

**SECTION 1.                   PURPOSE**

A. Regulation of discharges to the municipal separate storm sewer system (MS4) is necessary for the protection of water bodies and groundwater, and to safeguard the public health, safety, welfare and the environment. Increased and contaminated stormwater runoff associated with developed land uses and the accompanying increase in impervious surface are major causes of impairment of water quality and flow in lakes, ponds, streams, rivers, wetlands and groundwater. Increased and contaminated runoff is a major cause of:

1. Impairment of water quality and flow in lakes, ponds, streams, rivers, wetlands and groundwater,
2. Contamination of drinking water supplies,
3. Erosion of stream channels;
4. Alteration or destruction of aquatic and wildlife habitat; and
5. Flooding.

B. The harmful impacts of soil erosion and sedimentation are:

1. Impairment of water quality and flow in lakes, ponds, streams, rivers, wetlands and groundwater;
2. Contamination of drinking water supplies;
3. Alteration or destruction of aquatic and wildlife habitat;
4. Flooding; and,
5. Overloading or clogging of municipal catch basins and storm drainage systems.

Therefore, this Regulation establishes stormwater management standards for the final conditions that result from development and redevelopment projects to minimize adverse impacts offsite and downstream which may affect abutters, townspeople and the general public.

C. The objectives of this regulation are:

1. To require practices to control the flow of stormwater from new and redeveloped sites into the town storm drainage system in order to prevent flooding and erosion and sedimentation;

2. To protect groundwater and surface water from degradation;
3. To promote groundwater recharge;
4. To prevent pollutants from entering the town's municipal separate storm sewer system (MS4) and to minimize discharge of pollutants from the MS4;
5. To ensure adequate long-term operation and maintenance of structural stormwater best management practices so that they work as designed;
6. To comply with state and federal statutes and regulations relating to stormwater discharges; and
7. To protect water resources ensure that soil erosion and sedimentation control measures and stormwater runoff control practices are incorporated into the site planning and design process and are implemented and maintained; require practices to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality.
8. To establish the legal authority to ensure compliance with the provisions of this regulation through inspection, monitoring, and enforcement.

## **SECTION 2. DEFINITIONS**

**ABUTTER:** The owner(s) of land directly abutting and across the street from the parcel on which the activity takes place.

**AGRICULTURE:** The normal maintenance or improvement of land in agricultural or aquacultural use, as defined by the Massachusetts Wetlands Protection Act and its implementing regulations.

**ALTERATION OF DRAINAGE CHARACTERISTICS:** Any activity on an area of land that changes the water quality, force, direction, timing or location of runoff flowing from the area. Such changes include: change from distributed runoff to confined, discrete discharge, change in the volume of runoff from the area; change in the peak rate of runoff from the area; and change in the recharge to groundwater on the area.

**APPLICANT:** Any person, individual, partnership, association, firm, company, corporation, trust, authority, agency, department, or political subdivision, of the Commonwealth or the Federal government to the extent permitted by law requesting a soil erosion and sediment control permit for proposed land-disturbance activity.

**AUTHORIZED ENFORCEMENT AGENCY:** The Department of Public Works and the Building Inspector and its employees or agents designated to enforce this regulation.

**BEST MANAGEMENT PRACTICE (BMP):** An activity, procedure, restraint, or structural improvement that helps to reduce the quantity or improve the quality of stormwater runoff.

**BOARD:** The Board of Selectmen of the Town of Millis or its authorized agents.



**CLEARING:** Any activity that removes the vegetative surface cover.

**DEVELOPMENT:** The modification of land to accommodate a new use or expansion of use, usually involving construction.

**DISTURBANCE OF LAND:** Any action that causes a change in the position, location, or arrangement of soil, sand rock, gravel of similar earth material.

**EROSION:** 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 SEDIMENTATION CONTROL PLAN:** A document containing narrative, drawings and details developed by a qualified professional engineer (PE) or a Certified Professional in Erosion and Sedimentation Control (CPESC), which includes best management practices, or equivalent measures designed to control surface runoff, erosion and sedimentation during pre-construction and construction related land disturbance activities.

**ESTIMATED HABITAT OF RARE WILDLIFE AND CERTIFIED VERNAL POOLS:** Habitats delineated for state-protected rare wildlife and certified vernal pools for use with the Wetlands Protection Act Regulations (310 CMR 10.00) and the Forest Cutting Practices Act Regulations (304 CMR 11.00).

**GRADING:** Changing the level or shape of the ground surface.

**GRUBBING:** The act of clearing land surface by digging up roots and stumps.

**IMPERVIOUS SURFACE:** Any material or structure on or above the ground that prevents water infiltrating the underlying soil. Impervious surface includes without limitation roads, paved parking lots, sidewalks, and rooftops.

**LAND-DISTURBING ACTIVITY:** Any activity that causes a change in the position or location of soil, sand, rock, gravel, or similar earth material.

**MASSACHUSETTS ENDANGERED SPECIES ACT:** (G.L. c. 131A) and its implementing regulations at (321 CMR 10.00) which prohibit the “taking” of any rare plant or animal species listed as Endangered, Threatened, or of Special Concern.

**MASSACHUSETTS STORM WATER MANAGEMENT POLICY:** 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.

**MUNICIPAL SEPARATE STORM SEWER SYSTEM (M54) or MUNICIPAL STORM DRAIN SYSTEM:** The system of conveyances designed or used for collecting or conveying stormwater, including any road with a drainage system, street, gutter, curb, inlet, piped storm drain, pumping facility, retention or detention basin, natural or manmade or altered drainage channel, reservoir, and other drainage structure that together comprise the storm drainage system owned or operated by the town.

**OPERATION AND MAINTENANCE PLAN:** A plan setting up the functional, financial and

organizational mechanisms for the ongoing operation and maintenance of a stormwater management system to insure that it continues to function as designed.

**OUTFALL:** The point at which stormwater flows out from a point source discernible, confined and discrete conveyance into waters of the Commonwealth.

**OUTSTANDING RESOURCE WATERS (ORWs):** Waters designated by Massachusetts Department of Environmental Protection as ORWs. These waters have exceptional sociologic, recreational, ecological and/or aesthetic values and are subject to more stringent requirements under both the Massachusetts Water Quality Standards (314 CMR 4.00) and the Massachusetts Stormwater Management Standards. ORWs include vernal pools certified by the Natural Heritage Program of the Massachusetts Department of Fisheries and Wildlife and Environmental Law Enforcement, all Class A designated public water supplies with their bordering vegetated wetlands, and other waters specifically designated.

**OWNER:** A person with a legal or equitable interest in property.

**PERSON:** An individual, partnership, association, firm, company, trust, corporation, agency, authority, department or political subdivision of the Commonwealth or the federal government, to the extent permitted by law, and any officer, employee, or agent of such person.

**POINT SOURCE:** Any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, or container from which pollutants are or may be discharged.

**PRE-CONSTRUCTION:** All activity in preparation for construction.

**POST CONSTRUCTION:** The time after a final report issued under section 10.

**PRIORITY HABITAT OF RARE SPECIES:** Habitats delineated for rare plant and animal populations protected pursuant to the Massachusetts Endangered Species Act and its regulations.

**REDEVELOPMENT:** Development, rehabilitation, expansion, demolition or phased projects that disturb the ground surface or increase the impervious area on previously developed sites.

**RUNOFF:** Rainfall, snowmelt, or irrigation water flowing over the ground surface.

**SEDIMENT:** Mineral or organic soil material that is transported by wind or water, from its origin to another location; the product of erosion processes.

**SEDIMENTATION:** The process or act of deposition of sediment.

**SITE:** Any lot or parcel of land or area of property where land-disturbing activities are, were, or will be performed.

**SLOPE:** The incline of a ground surface expressed as a ratio of horizontal distance to vertical distance.

**SOIL:** Any earth, sand, rock, gravel, or similar material.

**STABILIZATION:** The use, singly or in combination, of mechanical, structural, or vegetative methods, to prevent or retard erosion.

**STORM WATER MANAGEMENT PLAN:** A plan required as part of the application for a Stormwater Management Permit. See Section 7.

**STORM WATER:** Storm water runoff, snow melt runoff, and surface water runoff and drainage.

**STRIP:** Any activity which removes the vegetative ground surface cover, including tree removal, clearing, grubbing, and storage or removal of topsoil.

**TOWN:** Town of Millis

**TSS:** Total Suspended Solids.

**VERNAL POOLS:** Temporary bodies of freshwater which provide critical habitat for a number of vertebrate and invertebrate wildlife species.

**WATERCOURSE:** A natural or man-made channel through which water flows or a stream of water, including a river, brook, or underground stream.

**WETLAND RESOURCE AREA:** Areas specified in the Massachusetts Wetlands Protection Act G.L. c. 131, § 40 and in the (city or town's) wetland regulation/ordinance.

**WETLANDS:** Tidal and non-tidal areas characterized by saturated or nearly saturated soils most of the year that are located between terrestrial (land-based) and aquatic (water based) environments, including freshwater marshes around ponds and channels (rivers and streams), brackish and salt marshes; common names include marshes, swamps and bogs; also wet meadows, marshes, swamps, bogs, areas where groundwater, flowing or standing surface water or ice provide a significant part of the supporting substrate for a plant community for at least five months of the year; emergent and submergent communities in inland waters; that portion of any bank which touches any inland water. (MGL c.131 s.40)

### **SECTION 3. AUTHORITY**

This Regulation is adopted under authority granted by the Home Rule Amendment of the Massachusetts Constitution, the Home Rule statutes and pursuant to the regulations of the Federal Clean Water Act found at 40 CFR 122.34, and the Home Rule Charter of the Town of Millis

### **SECTION 4. APPLICABILITY**

**A.** No person may, by development or redevelopment activity, alter the drainage characteristics of one or more acres of land without a permit from the Board. The regulated projects shall include without limitation:

1. Land disturbance associated with construction or reconstruction of structures;
2. Development or redevelopment involving multiple separate activities in discontinuous locations or on different schedules if the activities are part of a larger common plan of

development that all together disturbs one or more acres.

3. Paving or other change in surface material causing a significant reduction of permeability or increase in runoff;
4. Construction of a new drainage system or alteration of an existing drainage system or conveyance serving a drainage area of one or more acres
5. Any activity that will, or may, result in increased rate or volume of stormwater runoff flowing from the property into a public way or the MS4.

**B.** This regulation shall apply to all activities that result in disturbance of one or more acres of land. Except as authorized by the Board of Selectmen or its agent, [hereafter known as Selectmen] in a Land Disturbance Permit or as otherwise provided in this regulation, no person shall perform any activity that results in disturbance of an acre or more of land. Normal maintenance and improvement of land in agricultural or aquacultural use, as defined by the Wetlands Protection Act regulation 310 CMR 10.4, are exempt.

**C. Other Exemptions**

1. Normal maintenance and improvement of land in agricultural use as defined by the Wetlands Protection Act regulation 310 CMR 10.04;
2. Maintenance of existing landscaping, gardens or lawn areas associated with a single family dwelling provided such maintenance does not include the addition of soil material, construction of any walls or alteration of existing grades;
3. The construction of fencing that will not alter existing terrain or drainage patterns;
4. Construction of utilities other than drainage (gas, water, electric, telephone, etc.) which will not alter terrain, ground cover, or drainage patterns;

**SECTION 5. ADMINISTRATION**

**A.** The Board shall administer, implement and enforce this Regulation. Any powers granted to or duties imposed upon the Board may be delegated in writing by the Board to its employees or agents.

**B. Rules and Regulations.** The Board may adopt, and periodically amend, rules and regulations relating to the procedures and administration of this Stormwater Management Regulation, by majority vote of the Board, after conducting a public hearing to receive comments on any proposed revisions. Such hearing dates shall be advertised in a newspaper of general local circulation, at least seven (7) days prior to the hearing date.

**C. Waiver.** The Selectmen may waive strict compliance with any requirement of this regulation or the rules and regulations promulgated hereunder, where:

- (1) Such action is allowed by federal, state and local statutes and/or regulations,

(2) Is in the public interest, and

(3) Is not inconsistent with the purpose and intent of this regulation.

## **SECTION 6. PERMITS and PROCEDURE**

**A. Filing Application.** The site owner or his agent shall file with the Board of Selectmen six (6) copies and Town Clerk one (1) original of a completed application package for a Stormwater Management Permit (SMP) or Land Disturbance Permit (LDP), or both. Permit issuance is required prior to any site activity. While the applicant can be a representative, the permit tee must be the owner of the site. The SMP Application package shall include:

1. a completed Application Form with original signatures of all owners;
2. a list of abutters, certified by the Assessor's Office;
3. the Stormwater Management Plan and project description as specified below;
4. the Operation and Maintenance Plan as required by this Regulation;
5. the Erosion and Sedimentation Control Plan
6. payment of the application and review fees.
7. a certification from the Building Inspector that the application is complete.

**B. Entry.** Filing an application for a permit grants the Board, or its agent, permission to enter the site to verify the information in the application and to inspect for compliance with the resulting permit

**C. Other Boards.** The Selectmen shall give one copy of the application package to the Planning Board, the Conservation Commission, Department of Public Works, and Board of Health along with a request for comment.

**D. Fee Structure.** The Board shall obtain with each submission an Application Fee established by the Board to cover expenses connected with the public hearing and application review of the Stormwater Management Permit and a technical Review Fee sufficient to cover professional review. The Board is authorized to retain a Registered Professional Engineer or other professional consultant to advise the Board on any or all aspects of these plans. Applicants must pay review fees before the review process may begin.

**E. Public Hearing.** The Board shall hold a public hearing within twenty-one (21) days of the receipt of a complete application from the Building Inspector and shall take final action within forty-five (45) days from the close of the hearing unless such time is extended by agreement between the applicant and the Board. Notice of the public hearing shall be given by the applicant by publication in a local paper of general circulation, by posting and by first-class mailings to abutters, certified return receipt requested, at least seven (7) days prior to the hearing. Failure of the applicant to supply return receipt notices to the Selectmen prior to the hearing shall be cause for the rejection of the application without prejudice.

**F. Actions.** The Board's action, rendered in writing, shall consist of either:

1. Approval of the Stormwater Management Permit Application or Land Disturbance Permit based upon determination that the proposed plan meets the Standards in Section 7 and will adequately protect the water resources of the community and is in compliance with the requirements set forth in this regulation;

2. Approval of the Stormwater Management Permit or Land Disturbance Permit Application subject to any conditions, modifications or restrictions required by the Board which will ensure that the project meets the Standards in Section 7 and adequately protect water resources, set forth in this regulation;
3. Disapproval of the Stormwater Management Permit or Land Disturbance Permit Application based upon a determination that the proposed plan, as submitted, does not meet the Standards in Section 7 or adequately protect water resources, as set forth in this regulation.

**G. Failure of the Board** to take final action upon an Application within the time specified above shall be deemed to be approval of said Application. Upon certification by the Town Clerk that the allowed time has passed without Board action, the Board must issue a Stormwater Management Permit or Land Disturbance Permit.

**H. Plan Changes.** The permittee must notify the Board in writing of any drainage change or alteration in the system authorized in a **Stormwater Management Permit or Land Disturbance Permit** before any change or alteration is made. If the Board determines that the change or alteration is significant, based on the Stormwater Management Standards in Section 7.B. and accepted construction practices, the Board may require that an amended application be filed and a public hearing held.

**I. Project Completion.** At completion of the project the permittee shall submit as-built record drawings of all structural stormwater controls and treatment best management practices required for the site. The as-built drawing shall show deviations from the approved plans, if any, and be certified by a Registered Professional Engineer.

## **SECTION 7. PLANS**

### **7.1 STORMWATER MANAGEMENT PLAN**

**A.** The application for a stormwater management permit shall consist of submittal of a Stormwater Management Plan to the Board. This Stormwater Management Plan shall contain sufficient information for the Board to evaluate the environmental impact, effectiveness, and acceptability of the measures proposed by the applicant for reducing adverse impacts from stormwater. The Plan shall be designed to meet the Massachusetts Stormwater Management Standards as set forth in Part B of this section and DEP Stormwater Management Handbook Volumes I and II. The Stormwater Management Plan shall fully describe the project in drawings, and narrative. It shall include

1. A locus map,
2. The existing zoning, and land use at the site,
3. The proposed land use,
4. The location(s) of existing and proposed easements,
5. The location of existing and proposed utilities,
6. The site's existing & proposed topography with contours at 2 foot intervals,
7. The existing site hydrology,
8. A description & delineation of existing stormwater conveyances, impoundments, and wetlands on or adjacent to the site or into which stormwater flows.
9. A delineation of 100-year flood plains, if applicable
10. Estimated seasonal high groundwater elevation (November to April) in areas to be used

for stormwater retention, detention, or infiltration.

11. The existing and proposed vegetation and ground surfaces with runoff coefficient for each,
12. A drainage area map showing pre and post construction watershed boundaries, drainage area and stormwater flow paths,
13. A description and drawings of all components of the proposed drainage system including:
  - a. locations, cross sections, and profiles of all brooks, streams, drainage swales and their method of stabilization,
  - b. all measures for the detention, retention or infiltration of water,
  - c. all measures for the protection of water quality,
  - d. the structural details for all components of the proposed drainage systems and stormwater management facilities,
  - e. notes on drawings specifying materials to be used, construction specifications, and typicals, and
  - f. expected hydrology with supporting calculations.
14. Proposed improvements including location of buildings or other structures, impervious surfaces, and drainage facilities, if applicable,
15. Timing, schedules, and sequence of development including clearing, stripping, rough grading, construction, final grading, and vegetative stabilization,
16. A maintenance schedule for the period of construction, and
17. Any other information requested by the Board.
18. Scale, minimum 40 scale.

## **B. Standards**

Projects shall meet the Standards of the Massachusetts Stormwater Management Policy, which are as follows:

1. No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or water of the Commonwealth.
2. Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.
3. Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to the maximum extent practicable. The annual recharge from the post-development site should approximate the annual recharge rate from the predevelopment or existing site conditions, based on soil types.
4. For new development, stormwater management systems must be designed to remove 80% of the average annual load (post development conditions) of Total Suspended Solids (TSS). It is presumed that this standard is met when:
  - a. Suitable nonstructural practices for source control and pollution prevention and implemented;
  - b. Stormwater management best management practices (BMPs) are sized to capture the prescribed runoff volume; and
  - c. Stormwater management BMPs are maintained as designed.
5. Stormwater discharges from areas with higher potential pollutant loads require the use of specific stormwater management BMPs (see Stormwater Management Volume I: Stormwater Policy Handbook). The use of infiltration practices without pretreatment is prohibited.

6. Stormwater discharges to critical areas must utilize certain stormwater management BMPs approved for critical areas (see Stormwater Management Volume I: Stormwater Policy Handbook). Critical areas are Outstanding Resource Waters (ORWs), shellfish beds, swimming beaches, cold water fisheries and recharge areas for public water supplies.
7. Redevelopment of previously developed sites must meet the Stormwater Management Standards to the maximum extent practicable. However, if it is not practicable to meet all the Standards, new (retrofitted or expanded) stormwater management systems must be designed to improve existing conditions.
8. Erosion and sediment controls must be implemented to prevent impacts during disturbance and construction activities.
9. All stormwater management systems must have an operation and maintenance plan to ensure that systems function as designed.

## **7.2 EROSION AND SEDIMENT CONTROL PLAN**

- A.** The Erosion and Sediment Control Plan shall contain sufficient information to describe the nature and purpose of the proposed development, pertinent conditions of the site and the adjacent areas, and proposed erosion and sedimentation controls. The applicant shall submit such material as is necessary to show that the proposed development will comply with the design requirements listed in Section 7.B. below.
- B.** The **design requirements** of the Erosion and Sediment Control Plan are:
  1. Minimize total area of disturbance;
  2. Sequence activities to minimize simultaneous areas of disturbance;
  3. Minimize peak rate of runoff in accordance with the Massachusetts Stormwater Policy;
  4. Minimize soil erosion and control sedimentation during construction, provided that prevention of erosion is preferred over sedimentation control;
  5. Divert uncontaminated water around disturbed areas;



6. Maximize groundwater recharge;
7. Install, and maintain all Erosion and Sediment Control measures in accordance with the manufacturer's specifications and good engineering practices;
8. Prevent off-site transport of sediment;
9. Protect and manage on and off-site material storage areas (overburden and stockpiles of dirt, borrow areas, or other areas used solely by the permitted project are considered a part of the project);
10. Comply with applicable Federal, State and local laws and regulations including waste disposal, sanitary sewer or septic system regulations, and air quality requirements, including dust control;
11. Prevent adverse impact from the proposed activities to habitats mapped by the Massachusetts Natural Heritage & Endangered Species Program as Endangered, Threatened or Of Special Concern, Estimated Habitats of Rare Wildlife and Certified Vernal Pools, and Priority Habitats of Rare Species;
12. Institute interim and permanent stabilization measures, which shall be instituted on a disturbed area as soon as practicable but no more than 14 days after construction activity has temporarily or permanently ceased on that portion of the site;
13. Properly manage on-site construction and waste materials; and
14. Prevent off-site vehicle tracking of sediments.

**C. Erosion and Sedimentation Control Plan Content.** The Plan shall contain the following information:

1. Names, addresses, and telephone numbers of the owner, applicant, and person(s) or firm(s) preparing the plan;
2. Title, date, north arrow, names of abutters, scale (40 scale minimum), legend, and locus map, Assessor's map and parcel number.
3. Location and description of natural features including:
  - (a) Watercourses and water bodies, wetland resource areas and all floodplain information, including the 100-year flood elevation based upon the most recent Flood Insurance Rate Map, or as calculated by a professional engineer for areas not assessed on these maps;
  - (b) Existing vegetation of various kinds including tree lines, shrub layer, ground cover and herbaceous vegetation, and trees with a caliper twelve (12) inches or larger, noting specimen trees and forest communities;
  - (c) Habitats mapped by the Massachusetts Natural Heritage & Endangered Species Program as Endangered, Threatened or of Special Concern, Estimated Habitats of Rare Wildlife and Certified Vernal Pools, and Priority Habitats of

Rare Species within five hundred (500) feet of any construction activity.

3. Lines of existing abutting streets showing drainage and driveway locations and curb cuts;
4. Existing soils, volume and nature of imported soil materials
6. Topographical features including existing and proposed contours at intervals no greater than two (2) feet with spot elevations provided when needed;
7. Surveyed property lines showing distances and monument locations, all existing and proposed easements, rights-of-way, and other encumbrances, the size of the entire parcel, and the delineation and number of square feet of the land area to be disturbed;
8. Drainage patterns and approximate slopes anticipated after major grading activities (Construction Phase Grading Plans);
9. Location and details of erosion and sediment control measures with a narrative of the construction sequence/phasing of the project, including both operation and maintenance for structural and non-structural measures, interim grading, and material stockpiling areas;
10. Path and mechanism to divert uncontaminated water around disturbed areas, to the maximum extent practicable;
11. Location and description of industrial discharges, including stormwater discharges from dedicated asphalt plants and dedicated concrete plants, which are covered by this permit;
12. Stormwater runoff calculations in accordance with the Department of Environmental Protection's Stormwater Management Policy;
13. Location and description of and implementation schedule for temporary and permanent seeding, vegetative controls, and other stabilization measures;
14. A description of construction and waste materials expected to be stored on-site. The Plan shall include a description of controls to reduce pollutants from these materials, including storage practices to minimize exposure of the materials to stormwater, and spill prevention and response;
15. A description of provisions for phasing the project where one acre of area or greater is to be altered or disturbed;
16. Plans must be stamped and certified by a qualified Professional Engineer registered in Massachusetts or a Certified Professional in Erosion and Sediment Control and
17. Such other information as is required by the Selectmen.

*When one or more of the Standards cannot be met, an applicant may demonstrate that an equivalent level of environmental protection will be provided.*

### **C. Project Changes**

The permittee, or their agent, shall notify the Board in writing of any change or alteration of a land-disturbing activity authorized in a Stormwater Management Permit before any change or alteration occurs. If the Board determines that the change or alteration is significant, based on the design requirements listed in Section 7 and accepted construction practices, the Board may require that an amended Stormwater Management Permit application be filed and a public hearing held. If any change or deviation from the Stormwater Management Permit occurs during a project, the Board may require the installation of interim measures before approving the change.

## **SECTION 8. OPERATION AND MAINTENANCE PLANS**

An Operation and Maintenance plan (O&M Plan) is required at the time of application for all projects. The maintenance plan shall be designed to ensure compliance with the Permit, this Regulation and that the Massachusetts Surface Water Quality Standards, 314, CMR 4.00 are met in all seasons and throughout the life of the system. The Board shall make the final decision of what maintenance option is appropriate in a given situation. The Board will consider natural features, proximity of site to water bodies and wetlands, extent of impervious surfaces, size of the site, the types of stormwater management structures, and potential need for ongoing maintenance activities when making this decision. The Operation and Maintenance Plan shall remain on file with the Board and shall be an ongoing requirement. The O&M Plan shall include:

**A.** The name(s) of the owner(s) for all components of the system

**B.** Maintenance agreements that specify:

1. The names and addresses of the person(s) responsible for operation and maintenance
2. The person(s) responsible for financing maintenance and emergency repairs.
3. A Maintenance Schedule for all drainage structures, including swales and ponds.
4. A list of easements with the purpose and location of each.
5. The signature(s) of the owner(s).

**C. Stormwater Management Easement(s).**

1. Stormwater management easements shall be provided by the property owner(s) to the Town and to the property owner or association responsible for maintenance as necessary for:
  - a. access for facility inspections and maintenance,
  - b. preservation of stormwater runoff conveyance, infiltration, and detention areas and facilities, including flood routes for the 100-year storm event.
  - c. direct maintenance access by heavy equipment to structures requiring regular cleanout.
  - d. The Town shall reserve the right to perform maintenance and recover said costs from the owner or association responsible for maintenance.
2. The purpose of each easement shall be specified in the maintenance agreement signed by the property owner.
3. Stormwater management easements are required for all areas used for off-site

stormwater control, unless a waiver is granted by the Board.

4. Easements shall be recorded with the Norfolk County Registry of Deeds prior to issuance of a Certificate of Completion by the Board.

#### **D. Changes to Operation and Maintenance Plans**

1. The owner(s) of the stormwater management system must notify the Board of changes in ownership or assignment of financial responsibility.
2. The maintenance schedule in the Maintenance Agreement may be amended to achieve the purposes of this regulation by mutual agreement of the Board and the Responsible Parties. Amendments must be in writing and signed by all Responsible Parties. Responsible Parties shall include owner(s), persons with financial responsibility, and persons with operational responsibility.

### **SECTION 9. SURETY**

The Board may require the permittee to post before the start of land disturbance or construction activity, a surety bond, irrevocable letter of credit, cash, or other acceptable security. The form of the bond shall be approved by town counsel, and be in an amount deemed sufficient by the Board to ensure that the work will be completed in accordance with the permit. If the project is phased, the Board may release part of the bond as each phase is completed in compliance with the permit but the bond may not be fully released until the Board has received the final inspection report as required by Section 10 and issued a Certificate of Completion.

### **SECTION 10. INSPECTIONS**

The Board or its designee shall inspect the project site at least at the following stages:

- A. Initial Site Inspection: prior to approval of any plan.
- B. Erosion Control Inspection: to ensure erosion control practices are in accord with the filed plan.
- C. Pre-backfill Inspection: prior to backfilling of any underground drainage or stormwater conveyance structures.
- D. Final Inspection. After the stormwater management system has been constructed and before the surety has been released, the applicant must submit a record plan detailing the actual stormwater management system as installed. The permittee shall submit a report (including certified as-built construction plans) from a Professional Engineer (P.E.), surveyor, or Certified Professional in Erosion and Sediment Control (CPESC), certifying that all erosion and sediment control devices, and approved changes and modifications, have been completed in accordance with the conditions of the approved permit. Any discrepancies should be noted in the cover letter. The Board shall inspect the system to confirm its "as-built" features. This inspector shall also evaluate the effectiveness of the system in an actual storm. If the inspector finds the system to be adequate he shall so report to the Board which will issue a Certificate of Completion.

If the system is found to be inadequate by virtue of physical evidence of operational failure, even though it was built as called for in the Stormwater Management Plan, it shall be

corrected by the permittee before the performance guarantee is released. If the permittee fails to act the Board may use the surety bond to complete the work. Examples of inadequacy shall be limited to: errors in the infiltrative capability, errors in the maximum groundwater elevation, failure to properly define or construct flow paths, or erosive discharges from basins.

Prior to starting clearing, excavation, construction, or land disturbing activity the applicant, the applicant's technical representative, the general contractor or any other person with authority to make changes to the project, shall meet with town staff including the Building Inspector, Department of Public Works staff, and the Health Director, to review the permitted plans and their implementation.

The Selectmen, the Building Inspector, or DPW staff shall make inspections as hereinafter required and shall either approve that portion of the work completed or shall notify the permittee wherein the work fails to comply with the land disturbance permit as approved. The Permit and associated plans for grading, stripping, excavating, and filling work, bearing the signature of approval of the Selectmen, shall be maintained at the site during the progress of the work. In order to obtain inspections, the permittee shall notify the Building Inspector at least two (2) working days before each of the following events:

1. Erosion and sediment control measures are in place and stabilized;
2. Site clearing has been substantially completed;
3. Rough Grading has been substantially completed;
4. Final Grading has been substantially completed;
5. Close of the Construction Season; and
6. Final landscaping (permanent stabilization) and project final completion.

The permittee or his/her agent shall conduct and document inspections of all control measures) no less than weekly or as specified in the permit, and prior to and following anticipated storm events. The purpose of such inspections will be to determine the overall effectiveness of the control plan, and the need for maintenance or additional control measures. The permittee or his/her agent shall submit monthly reports to the Building Inspector in a format approved by the Selectmen. The Building Inspector shall disseminate copies of said reports to the Selectmen, DPW, Board of Health and Conservation Commission.

#### **E. Access Permission**

To the extent permitted by state law, or if authorized by the owner or other party in control of the property, Selectmen, 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 Selectmen deems reasonably necessary to determine compliance with the permit.

## **SECTION 11. WAIVERS**

**A.** The Board may waive strict compliance with any requirement of this regulation or the rules and regulations promulgated hereunder, where:

1. such action is allowed by federal, state and local statutes and/or regulations,
2. is in the public interest, and
3. is not inconsistent with the purpose and intent of this regulation.

**B.** Any applicant may submit a written request 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 application of the regulation does not further the purposes or objectives of this Regulation.

**C.** All waiver requests shall be discussed and voted on at the public hearing for the project.

**D.** If in the Board's opinion, additional time or information is required for review of a waiver request, the Board may continue a hearing to a date certain announced at the meeting. In the event the applicant objects to a continuance, or fails to provide requested information, the waiver request shall be denied.

## **SECTION 12. CERTIFICATE OF COMPLETION**

The Board will issue a letter certifying completion upon receipt and approval of the final inspection reports and/or upon otherwise determining that all work of the permit has been satisfactorily completed in conformance with this Regulation.

## **SECTION 13. ENFORCEMENT**

**A.** The Board or an authorized agent of the Board including but not limited to the Building Inspector, Director of Public Works, or Assistant Director of Public Works shall enforce this regulation, regulations, orders, violation notices, and enforcement orders, and may pursue all civil and criminal remedies for such violations.

**B. Orders**

1. The Board or an authorized agent of the Board may issue a written order to enforce the provisions of this regulation or the regulations thereunder, which may include requirements to:

a. cease and desist from construction or land disturbing activity until there is compliance with the regulation and the stormwater management permit;

b. repair, maintain; or replace the stormwater management system or portions thereof in accordance with the operation and maintenance plan.

c. perform monitoring, analyses, and reporting;

d. remediate adverse impact resulting directly or indirectly from malfunction of the stormwater management system.

2. If the enforcing person determines that abatement or remediation of adverse impacts is required, the order shall set forth a deadline by which such abatement or remediation must be completed. Said order shall further advise that, should the violator or property owner fail to abate or perform remediation within the specified deadline, the town may, at its option, undertake such work, and the property owner shall reimburse the town's expenses.

3. Within thirty (30) days after completing all measures necessary to abate the violation or to perform remediation, the violator and the property owner shall be notified of the costs incurred by the town, including administrative costs. The violator or property owner may file a written protest objecting to the amount or basis of costs with the Board within thirty (30) days of receipt of the notification of the costs incurred. If the amount due is not received by the expiration of the time in which to file a protest or within thirty (30) days following a decision of the Board affirming or reducing the costs, or from a final decision of a court of competent jurisdiction, the costs shall become a special assessment against the property owner and shall constitute a lien on the owner's property for the amount of said costs. Interest shall begin to accrue on any unpaid costs at the statutory rate provided in G.L. Ch. 59, § 57, after the thirty-first day at which the costs first become due.

**C. Penalty.** Any person who violates any provision of this regulation, order or permit issued thereunder, shall be punished by a fine of not more than \$100. Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

#### **D. Appeals**

The decisions or orders of the Board shall be final. Further relief shall be to a court of competent jurisdiction.

#### **E. Remedies Not Exclusive**

The remedies listed in this regulation are not exclusive of any other remedies available under any applicable federal, state or local law.

### **SECTION 14. SEVERABILITY**

If any provision, paragraph, sentence, or clause of this regulation shall be held invalid for any reason, all other provisions shall continue in full force and effect

## STORMWATER MANAGEMENT and LAND DISTURBANCE PLAN REVIEW FEE SCHEDULE

The following fee schedules are minimum fees. *[The Board]* may require higher fees if deemed necessary for proper review of an application or to ensure compliance.

<u>Lot Area</u>	<u>Professional Review Fee</u>	<u>Application Fee</u>
Less Than 3 Acres	\$500.00	\$500.00
3 to 10 Acres	\$1000.00	\$750.00
Greater than 10 Acres	\$1500.00	\$1000.00
Resubmittal/Amendment		
Filing Fee	\$250.00	
Review Fee	\$ at cost determined by the Board	

### GENERAL

1. Any application not accompanied by the appropriate fee shall be deemed incomplete. Payment must be made to the Town of Millis in cash, money order, bank or certified check payable to the Town.
2. An Applicant's failure to pay any additional review or inspection fee within five business days of receipt of the notice that further fees are required shall be grounds for disapproval.
3. The applicant will publish the public notice and send abutter notifications. Abutter notification shall be by certified mail-return receipt requested. The applicant shall pay all costs associated with the publication and notification requirements. The applicant must provide the Board with the return receipt cards.

Professional review fees include engineering review, legal review, and clerical fees associated with the public hearing and permit processing. A fee estimate may be provided by the Board's consulting engineer.



## STORM WATER MANAGEMENT PERMIT APPLICATION

To the Board of Selectmen:

The undersigned wishes to submit a Stormwater Management Permit Application as defined in the Stormwater Management Regulations of the Town of Millis, Article II and requests a review and determination by the Board of the Stormwater Management Plan.

The Stormwater Management Plan involves property where owner's title to the land is

derived under deed from \_\_\_\_\_ Dated \_\_\_\_\_, and

Recorded in the [Insert] County Registry of Deeds, Book \_\_\_\_\_, Page, or Land  
Court Certificate of Title No. \_\_\_\_\_, Registered in \_\_\_\_\_ District,  
Book \_\_\_\_\_, Page \_\_\_\_\_

Give a brief summary of the nature of the project.

The property (building) is described as being located at

it is currently used as

and the changes proposed to be made are

The project is located on the parcel shown on Assessors Map \_\_\_\_\_, Parcel \_\_\_\_\_

Applicant's Signature

Applicant's Name (print)

Applicant's Address

Owners' Signature(s)

Owners' Names(s)

Owners' Address

Date Received by Building Inspector:

Date Filed with Town Clerk:

Signature

Please note: 1) An applicant for a Stormwater Management Plan Review must file with the Building Inspector a completed Stormwater Management Permit Application Form, a list of abutters, six (6) copies of the Stormwater Management Plan Package, six (6) copies of the Operation and Maintenance Plan, and the Application and Review Fees as noted in the Stormwater Management Plan Review Fee Schedule. 2) The applicant shall also file a copy of the Stormwater Management Plan, Operation & Maintenance Plan, and the Application Form with the Town Clerk. The date of receipt by the Town Clerk shall be the official filing date. 3) This application grants the Board and its agents permission to enter the property for inspection and verification of information submitted in the application.

## TOWN OF MILLIS - LAND DISTURBANCE PERMIT APPLICATION

To the Board of Selectmen:

The undersigned wishes to submit a Land Disturbance Permit Application as defined in the Stormwater Management and Land Disturbance Regulation of the Town of Millis, and requests a review and determination by the Selectmen of said Land Disturbance Plan.

The Land Disturbance Plan involves property where owner's title to the land is derived under deed from \_\_\_\_\_ Dated \_\_\_\_\_, and recorded in the \_\_\_\_\_ County Registry of Deeds, Book \_\_\_\_\_, Page \_\_\_\_\_, or Land Court Certificate of Title No. \_\_\_\_\_, Registered in \_\_\_\_\_ District, Book \_\_\_\_\_, Page \_\_\_\_\_

Give a brief summary of the nature of the project.

---

---

---

---

---

The property (building) is described as being located at

---

it is currently used as \_\_\_\_\_, and the

changes proposed to be made are

---

---

---

The project is located on the parcel shown on Assessors Map \_\_\_\_\_, Parcel \_\_\_\_\_

Applicant's Signature

Owners' Signature(s)

Applicant's Name (print)

Owners' Names(s)

Applicant's Address

Owners' Address

Date Received by Town Clerk: \_\_\_\_\_

Signature

---

Please note: 1) An applicant for a Land Disturbance Plan Review must file with the Building Inspector a completed Land Disturbance Permit Application, a list of abutters, three (3) copies of the Land Disturbance Plan Package, and the application and review fees as noted in the Land Disturbance Plan Review Fee Schedule. 2) The applicant shall also file a copy of the Land Disturbance Plan and the application with the Town Clerk. The date of receipt by the Town Clerk shall be the official filing date.

**TOWN OF MILLIS  
STORMWATER MANAGEMENT REGULATIONS  
ARTICLE II**

**Adopted June 28, 2004**

**Regulation Governing Discharges To  
The Municipal Storm Drain System**

**SECTION 1. PURPOSE**

Increased and contaminated stormwater runoff is a major cause of

- (1) impairment of water quality and flow in lakes, ponds, streams, rivers, wetlands and groundwater;
- (2) contamination of drinking water supplies;
- (3) alteration or destruction of aquatic and wildlife habitat; and
- (4) flooding.

Regulation of illicit connections and discharges to the municipal storm drain system is necessary for the protection of the town's water bodies and groundwater, and to safeguard the public health, safety, welfare and the environment.

The objectives of this regulation are:

- (1) to prevent pollutants from entering the town's municipal separate storm sewer system (MS4);
- (2) to prohibit illicit connections and unauthorized discharges to the MS4;
- (3) to require the removal of all such illicit connections;
- (4) to comply with state and federal statutes and regulations relating to stormwater discharges; and
- (5) to establish the legal authority to ensure compliance with the provisions of this regulation through inspection, monitoring, and enforcement.

**SECTION 2. DEFINITIONS**

For the purposes of this regulation, the following shall mean:

**AUTHORIZED ENFORCEMENT AGENCY:** The Board of Selectmen (hereafter the Board), its employees or agents designated to enforce this regulation.

**BEST MANAGEMENT PRACTICE (BMP):** An activity, procedure, restraint, or structural improvement that helps to reduce the quantity or improve the quality of stormwater runoff.

**CLEAN WATER ACT:** The Federal Water Pollution Control Act (33 U.S.C. § 1251 *et seq.*) as hereafter amended.

**DISCHARGE OF POLLUTANTS:** The addition from any source of any pollutant or combination of pollutants into the municipal storm drain system or into the waters of the United States or Commonwealth from any source.

**GROUNDWATER:** Water beneath the surface of the ground.

**ILLCIT CONNECTION:** A surface or subsurface drain or conveyance, which allows an illicit discharge into the municipal storm drain system, including without limitation sewage, process wastewater, or wash water and any connections from indoor drains, sinks, or toilets, regardless of whether said connection was previously allowed, permitted, or approved before the effective date of this regulation. Connections to the municipal storm drain system which constitute illicit discharges as defined below which exist at the time of enactment of this regulation are considered illicit connections.

**ILLCIT DISCHARGE:** Direct or indirect discharge to the municipal storm drain system that is not composed entirely of stormwater, except as exempted in Section 7. The term does not include a discharge in compliance with an NPDES Storm Water Discharge Permit or a Surface Water Discharge Permit, or resulting from fire fighting activities exempted pursuant to Section 7, subsection 4, of this regulation.

**IMPERVIOUS SURFACE:** Any material or structure on or above the ground that prevents water infiltrating the underlying soil. Impervious surface includes without limitation roads, paved parking lots, sidewalks, and rooftops.

**MUNICIPAL SEPARATE STORM SEWER SYSTEM (M54) or MUNICIPAL STORM DRAIN SYSTEM:** The system of conveyances designed or used for collecting or conveying stormwater, including any road with a drainage system, street, gutter, curb, inlet, piped storm drain, pumping facility, retention or detention basin, natural or manmade or altered drainage channel, reservoir, and other drainage structure that together comprise the storm drainage system owned or operated by the town.

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORM WATER DISCHARGE PERMIT:** A permit issued by United States Environmental Protection Agency or jointly with the State that authorizes the discharge of pollutants to waters of the United States.

**NON-STORM WATER DISCHARGE:** Discharge to the municipal storm drain system not composed entirely of stormwater or groundwater.

**PERSON:** An individual, partnership, association, firm, company, trust, corporation, agency, authority, department or political subdivision of the Commonwealth or the federal government, to the extent permitted by law, and any officer, employee, or agent of such person.

**POLLUTANT:** Any element or property of sewage, agricultural, industrial or commercial waste, runoff, leachate, heated effluent, or other matter whether originating at a point or nonpoint source, that is or may be introduced into any sewage treatment works or waters of the Commonwealth. Pollutants shall include without limitation:

- (1) paints, varnishes, and solvents;
- (2) oil and other automotive fluids;
- (3) non-hazardous liquid and solid wastes and yard wastes;
- (4) refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordnances, accumulations and floatables;
- (5) pesticides, herbicides, and fertilizers;
- (6) hazardous materials and wastes; sewage, bacteria, fecal coliform and pathogens;
- (7) dissolved and particulate metals;
- (8) animal wastes;
- (9) rock, sand; salt, soils;
- (10) construction wastes and residues;
- (11) and noxious or offensive matter of any kind.

**PROCESS WASTEWATER:** Water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any material, intermediate product, finished product, or waste product.

**RECHARGE:** The process by which groundwater is replenished by precipitation through the percolation of runoff and surface water through the soil.

**STORMWATER:** Storm water runoff, snow melt runoff, and surface water runoff and drainage.

**SURFACE WATER DISCHARGE PERMIT.** A permit issued by the Department of Environmental Protection (DEP) pursuant to 314 CMR 3.00 that authorizes the discharge of pollutants to waters of the Commonwealth of Massachusetts.

**TOXIC OR HAZARDOUS MATERIAL or WASTE:** Any material, which because of its quantity, concentration, chemical, corrosive, flammable, reactive, toxic, infectious or radioactive characteristics, either separately or in combination with any substance or substances, constitutes a present or potential threat to human health, safety, welfare, or to the environment. Toxic or hazardous materials include any synthetic organic chemical, petroleum product, heavy metal, radioactive or infectious waste, acid and alkali, and any substance defined as Toxic or Hazardous under G.L. Ch.2 1 C and Ch.2 1 E, and the regulations at 310 CMR 30.000 and 310 CMR 40.0000.

**WATERCOURSE:** A natural or man-made channel through which water flows or a stream of water, including a river, brook or underground stream.

**WATERS OF THE COMMONWEALTH:** All waters within the jurisdiction of the Commonwealth, including, without limitation, rivers, streams, lakes, ponds, springs, impoundments, estuaries, wetlands, costal waters, and groundwater.

**WASTE WATER:** Any sanitary waste, sludge, or septic tank or cesspool overflow, and water that during manufacturing, cleaning or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct or waste product.

### **SECTION 3.                   APPLICABILITY**

This regulation shall apply to flows entering the municipally owned storm drainage system.

### **SECTION 4.                   AUTHORITY**

This Regulation is adopted under the authority granted by the Home Rule Amendment of the Massachusetts Constitution and the Home Rule Procedures Act, the Millis Home Rule Charter, and pursuant to the regulations of the federal Clean Water Act found at 40 CFR 122.34.

### **SECTION 5.                   RESPONSIBILITY FOR ADMINISTRATION**

The Board shall administer, implement and enforce this regulation. Any powers granted to or duties imposed upon the Board may be delegated in writing by the Board to employees or agents of the Board.

### **SECTION 6.                   REGULATIONS**

The Board may promulgate rules and regulations to effectuate the purposes of this Regulation. Failure by the Board to promulgate such rules and regulations shall not have the effect of suspending or invalidating this regulation.

### **SECTION 7.                PROHIBITED ACTIVITIES**

- A. Illicit Discharges.** No person shall dump, discharge, cause or allow to be discharged any pollutant or non-stormwater discharge into the municipal separate storm sewer system (MS4), into a watercourse, or into the waters of the Commonwealth.

**B. Illicit Connections.** No person shall construct, use, allow, maintain or continue any illicit connection to the municipal storm drain system, regardless of whether the connection was permissible under applicable law, regulation or custom at the time of connection.

**C. Obstruction of Municipal Storm Drain System.** No person shall obstruct or interfere with the normal flow of stormwater into or out of the municipal storm drain system without prior written approval from the Board .

**D. Exemptions**

1. Discharge or flow resulting from fire fighting activities;
2. The following non-stormwater discharges or flows are exempt from the prohibition of non-stormwaters provided that the source is not a significant contributor of a pollutant to the municipal storm drain system:
  - (a) Waterline flushing;
  - (b) Flow from potable water sources;
  - (c) Springs;
  - (d) Natural flow from riparian habitats and wetlands;
  - (e) Diverted stream flow;
  - (f) Rising groundwater;
  - (g) Uncontaminated groundwater infiltration as defined in 40 CFR 3 5.2005(20), or uncontaminated pumped groundwater;
  - (h) Water from exterior foundation drains, footing drains (not including active groundwater dewatering systems), crawl space pumps, or air conditioning condensation;
  - (i) Discharge from landscape irrigation or lawn watering;
  - (j) Water from individual residential car washing;
  - (k) Discharge from dechlorinated swimming pool water (less than one ppm chlorine) provided the water is allowed to stand for one week prior to draining and the pool is drained in such a way as not to cause a nuisance;
  - (l) Discharge from street sweeping.



- (m) Dye testing, provided verbal notification is given to the Department of Public Works forty-eight hours prior to the time of the test;
- (n) Non-stormwater discharge permitted under an NPDES permit or a Surface Water Discharge Permit, waiver, or waste discharge order administered under the authority of the United States Environmental Protection Agency or the Department of Environmental Protection, provided that the discharge is in full compliance with the requirements of the permit, waiver, or order and applicable laws and regulations; and
- (o) Discharge for which advanced written approval is received from the Board as necessary to protect public health, safety, welfare or the environment.

## **SECTION 8. EMERGENCY SUSPENSION OF STORM DRAINAGE SYSTEM ACCESS**

The Board may suspend municipal storm drain system access to any person or property without prior written notice when such suspension is necessary to stop an actual or threatened discharge of pollutants that presents imminent risk of harm to the public health, safety, welfare or the environment. In the event any person fails to comply with an emergency suspension order, the Authorized Enforcement Agency may take all reasonable steps to prevent or minimize harm to the public health, safety, welfare or the environment.

## **SECTION 9. NOTIFICATION OF SPILLS**

Notwithstanding other requirements of local, state or federal law, as soon as a person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of or suspects a release of materials at that facility or operation resulting in or which may result in discharge of pollutants to the municipal drainage system or waters of the Commonwealth, the person shall take all necessary steps to ensure containment, and cleanup of the release. In the event of a release of oil or hazardous materials, the person shall immediately notify the municipal fire and police departments and the department of public works, Board of health, and Conservation Commission. In the event of a release of non-hazardous material, the reporting person shall notify the Authorized Enforcement Agency no later than the next business day. The reporting person shall provide to the Authorized Enforcement Agency written confirmation of all telephone, facsimile or in-person notifications within three business days thereafter. If the discharge of prohibited materials is from a commercial or industrial facility, the facility owner or operator of the facility shall retain on-site a written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

## **SECTION 10. ENFORCEMENT**

The Board or an authorized agent of the Board including the Building Inspector, Director of Public Works or Assistant Director of Public Works, shall enforce this regulation, regulations, orders, violation notices, and enforcement orders, and may pursue all civil and criminal remedies for such violations.

**A. Civil Relief** If a person violates the provisions of this regulation, regulations, permit, notice, or order issued thereunder, the Board may seek injunctive relief in a court of competent jurisdiction restraining the person from activities which would create further violations or compelling the person to perform abatement or remediation of the violation.

**B. Orders** The Board or an authorized agent of the Board may issue a written order to enforce the provisions of this regulation or the regulations thereunder, which may include: (a) elimination of illicit connections or discharges to the MS4; (b) performance of monitoring, analyses, and reporting; (c) that unlawful discharges, practices, or operations shall cease and desist; and (d) remediation of contamination in connection therewith.

If the enforcing person determines that abatement or remediation of contamination is required, the order shall set forth a deadline by which such abatement or remediation must be completed. Said order shall further advise that, should the violator or property owner fail to abate or perform remediation within the specified deadline, the town may, at its option, undertake such work, and expenses thereof shall be charged to the violator.

Within thirty (30) days after completing all measures necessary to abate the violation or to perform remediation, the violator and the property owner will be notified of the costs incurred by the town, including administrative costs. The violator or property owner may file a written protest objecting to the amount or basis of costs with the Board within thirty (30) days of receipt of the notification of the costs incurred. If the amount due is not received by the expiration of the time in which to file a protest or within thirty (30) days following a decision of the Board affirming or reducing the costs, or from a final decision of a court of competent jurisdiction, the costs shall become a special assessment against the property owner and shall constitute a lien on the owner's property for the amount of said costs. Interest shall begin to accrue on any unpaid costs at the statutory rate provided in G.L. Ch. 59, § 57 after the thirty-first day at which the costs first become due.

**C. Criminal Penalty** Any person who violates any provision of this regulation, regulation, order or permit issued thereunder, shall be punished by a fine of not more than **\$100.00** Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

**D. Entry to Perform Duties Under this Regulation** To the extent permitted by state law, or if authorized by the owner or other party in control of the property, the Board its agents, officers, and employees may enter upon privately owned property for the purpose of performing their duties under this regulation and regulations and may make or cause to be made such examinations, surveys or sampling as the Board deems reasonably necessary.

**E. Appeals** The decisions or orders of the Board shall be final. Further relief shall be to a court of competent jurisdiction.

**G. Remedies Not Exclusive** The remedies listed in this regulation are not exclusive of any other remedies available under any applicable federal, state or local law.

**SECTION 11. SEVERABILITY**

The provisions of this regulation are hereby declared to be severable. If any provision, paragraph, sentence, or clause, of this regulation or the application thereof to any person, establishment, or circumstances shall be held invalid, such invalidity shall not affect the other provisions or application of this regulation.

To the Board of Selectmen:

The undersigned wishes to submit a Municipal Storm Drain Permit Application as defined in the Stormwater Management and Municipal Storm Drain Regulation of the Town of Millis, and requests a review and determination by the Selectmen of said Municipal Storm Drain Plan.

The Municipal Storm Drain Plan involves property where owner's title to the land is derived under deed from

\_\_\_\_\_ dated \_\_\_\_\_, and  
recorded in the

\_\_\_\_\_ County Registry of Deeds, Book \_\_\_\_\_, Page \_\_\_\_\_, or Land Court  
Certificate

of Title No. \_\_\_\_\_, Registered in \_\_\_\_\_ District, Book \_\_\_\_\_, Page  
\_\_\_\_\_

Give a brief summary of the nature of the project.

---

---

---

---

---

---

The property (building) is described as being located at

---

---

it is currently used as \_\_\_\_\_,  
and the

changes proposed to be made are

---

---

---

---

The project is located on the parcel shown on Assessors Map \_\_\_\_\_, Parcel \_\_\_\_\_

Applicant's Signature

Applicant's Name (print)

Applicant's Address

Owners' Signature(s)

Owners' Names(s)

Owners' Address

Date Received by Town Clerk: \_\_\_\_\_

Signature

---

Please note: 1) An applicant for a Municipal Storm Drain Plan Review must file with the Building Inspector a completed Municipal Storm Drain Permit Application, a list of abutters, three (3) copies of the Municipal Storm Drain Plan Package, and the application and review fees as noted in the Municipal Storm Drain Plan Review Fee Schedule. 2) The applicant shall also file a copy of the Municipal Storm Drain Plan and the application with the Town Clerk. The date of receipt by the Town Clerk shall be the official filing date.

## **MUNICIPAL STORM DRAIN PERMIT APPLICATION**

## **FEE SCHEDULE**

The following fee schedules are minimum fees. *[The Board]* may require higher fees if deemed necessary for proper review of an application or to ensure compliance.

<u>Lot Area</u>	<u>Professional Review Fee</u>	<u>Application Fee</u>
Less Than 3 Acres	\$500.00	\$500.00
3 to 10 Acres	\$1000.00	\$750.00
Greater than 10 Acres	\$1500.00	\$1000.00

Resubmittal/Amendment	
Filing Fee	\$250.00
Review Fee	\$ at cost determined by the Board

### **GENERAL**

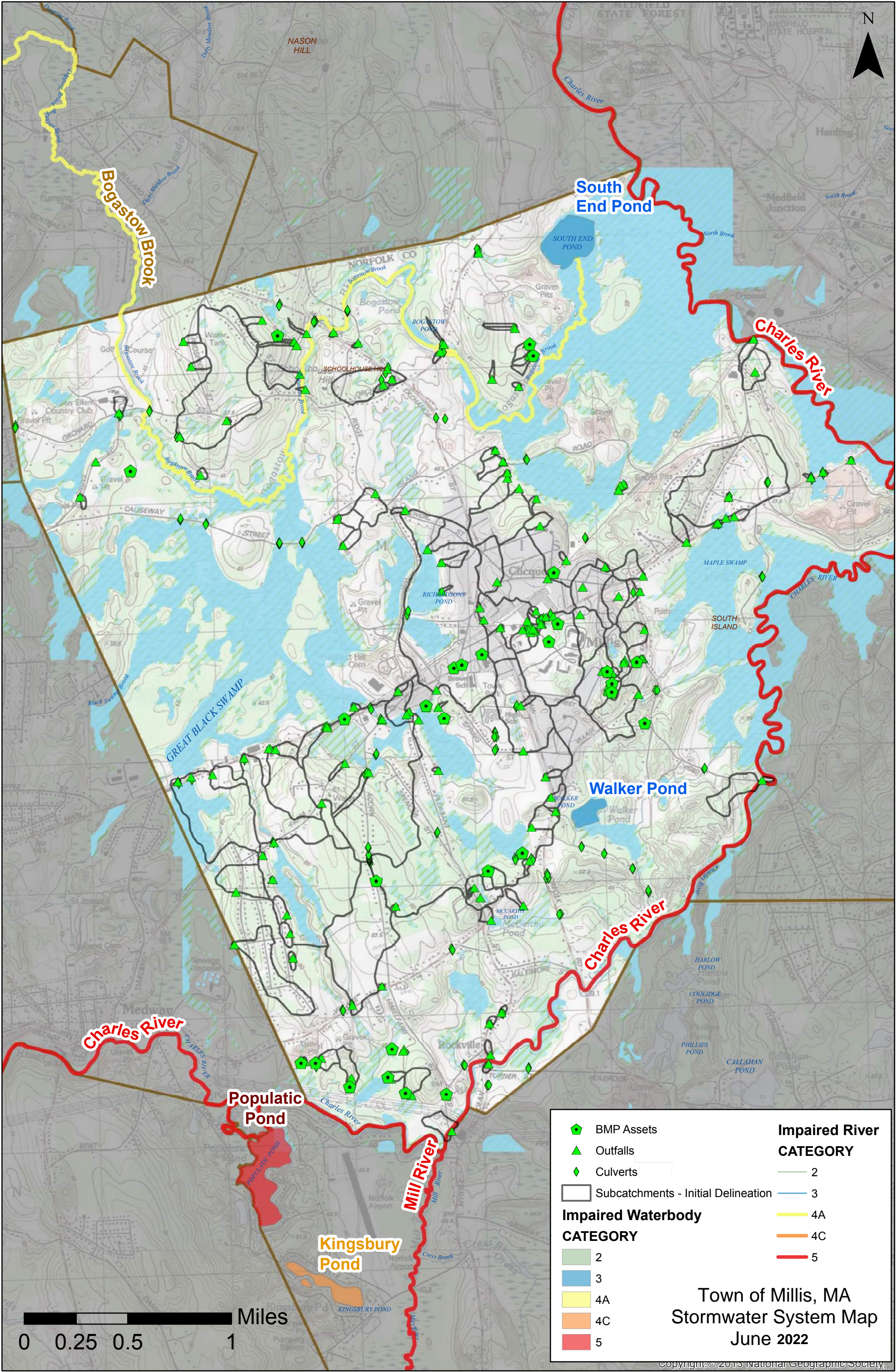
1. Any application not accompanied by the appropriate fee shall be deemed incomplete. Payment must be made to the Town of Millis in cash, money order, bank or certified check payable to the Town.
2. An Applicant's failure to pay any additional review or inspection fee within five business days of receipt of the notice that further fees are required shall be grounds for disapproval.
3. The applicant will publish the public notice and send abutter notifications. Abutter notification shall be by certified mail-return receipt requested. The applicant shall pay all costs associated with the publication and notification requirements. The applicant must provide the Board with the return receipt cards.

Professional review fees include engineering review, legal review, and clerical fees associated with the public hearing and permit processing. A fee estimate may be provided by the Board's consulting engineer.

**APPENDIX D**  
**Stormwater System Map**

---







**APPENDIX E**  
**Delegation of Authority Letter**

---



# TOWN OF MILLIS

Loring Barnes Edmonds, Chair  
James J. McCaffrey, Vice Chair  
Peter C. Jurmain, Clerk

## OFFICE OF THE BOARD OF SELECTMEN

Veterans Memorial Building  
900 Main Street • Millis, MA 02054  
Phone: 508-376-7040  
Fax: 508-376-7053

Michael Guzinski  
Town Administrator  
[mguzinski@millisma.gov](mailto:mguzinski@millisma.gov)

Karen M. Bouret  
Operations Support Manager  
[kbouret@millisma.gov](mailto:kbouret@millisma.gov)

June 26, 2019

### 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 McKay, Director of Public Works, 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 Town of Canton. 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."

Loring Barnes Edmonds  
Board of Selectmen, Chairperson

Date

**APPENDIX F**  
**Street Design & Parking Lot Guidelines Analysis and**  
**Green Infrastructure Feasibility Analysis**

---

# MEMORANDUM

TO: Jim McKay, Town of Millis  
FROM: Peter Varga, Kleinfelder  
DATE : June 20, 2022  
SUBJECT: Street Design and Parking Lot Guidelines Analysis; Green Infrastructure Feasibility Analysis  
CC: Kirsten Ryan, Adria Fichter

---

The Town of Millis administers a Stormwater Management Program in conformance with requirements of the Massachusetts General Permit for stormwater discharges from Small Municipal Separate Storm Sewer Systems (MS4). As an element of that program, the Town is required to evaluate current street design and parking lot guidelines (and other local requirements) that affect the creation of impervious cover. Per the language of the permit (Section 2.3.6(b)):

“This assessment shall be used to provide information to allow the permittee to determine if changes to design standards for streets and parking lots can be made to support low impact design options. If the assessment indicates that changes can be made, the assessment shall include recommendations and proposed schedules to incorporate policies and standards into relevant documents and procedures to minimize impervious cover attributable to parking areas and street designs.”

Upon completion of the evaluation, the Town must implement the recommendations in accordance with the schedules contained in the assessment. The results of the evaluation, therefore, effectively become a condition of the permit. As such, it is critical that all jurisdictional concerns within the Town with responsibility or interest in the design, operation, maintenance or ownership of the assets be in agreement regarding meeting the objectives of the evaluation within the broader context of the Town’s vision and Master Planning goals.

Similarly, under Section 2.3.6( c), the Town is required to assess existing regulations to determine the feasibility of making certain practices allowable when appropriate site conditions exist. These practices specifically include:

- Green roofs

- Infiltration practices such as rain gardens, porous and pervious pavements, and other designs to manage stormwater using landscaping and structured or augmented soils; and
- Water harvesting devices such as rain barrels and cisterns, and the use of stormwater for non-potable uses.

The purpose of the analysis is to determine if the practices are allowed, and if not, what are the circumstances that hinder use of the practices. Thereafter, the Town is to determine what changes in regulations are appropriate to optimize use of such practices, and as with the street/parking analysis, establish recommendations and an implementation schedule to put these practices into common usage.

The Town will be responsible for reporting on the status of both of these assessments including any planned or completed changes to local regulations and guidelines in annual reports which are a required submittal to US EPA and the Massachusetts Department of Environmental Protection. This Technical Memorandum documents the approach, results and recommendations of the required evaluations.

## **Methodology**

To complete the analyses, the following documents were reviewed:

- *The Town of Millis General Bylaws (referred to as ‘General Bylaws’)*
- *Town of Millis Master Plan (referred to as ‘Master Plan’)*
- *The Land Subdivision Rules and Regulations of the Planning Board of the Town of Millis, Massachusetts (referred to as ‘LSRR’)*
- *Town of Millis Zoning By-Law (referred to as ‘Zoning By-Laws’)*
- *Town of Millis Stormwater Management Regulations (including Article I: Land Disturbance and Post-Construction Stormwater Management, and Article II: Regulation Governing Discharges to the Municipal Storm Drain System) (Referred to as ‘Article I’ and ‘Article II’)*
- *Town of Millis Stormwater Utility Credit Manual (referred to as ‘SW Utility Credit Manual’)*

The matrix attached to this Technical Memorandum (Attachment 1) is adapted from the Massachusetts Audubon-created Analysis Tool for Local Land Use Regulations found on the US EPA’s website ([Stormwater Tools in New England | US EPA](https://www.epa.gov/stormwater-tools-in-new-england)). The purpose of such an approach is to allow the Town to compare current policies and regulations to examples of “best practices” that optimize potential for improved stormwater management outcomes (primarily as it relates to water quality, but with respect to water quantity in some instances.) Ultimately, the Town must determine if improved outcomes can be

practically and effectively achieved through modification of existing Town policies and regulations.

The analysis was completed by reviewing relevant sections of the cited reference documents to determine where, or if, pertinent criteria currently exist in the Town's regulations as a basis for comparison to recommended best practices. Existing practices that were determined to be less than optimum based on the matrix tool definitions were flagged for further consideration. If the Town had no current regulation addressing the specific practice or design intent (e.g. allowing use of rain barrels) this was noted. Note that the lack of language specifically allowing a particular best practice was not deemed to constitute a challenge or hindrance to use of such practices, given that the Town requires the use of low impact design practices "unless infeasible" in accordance with MS4 Permit requirements. Consequently, any proposed stormwater best management practice designed to achieve water quality improvement would be evaluated on a case by case basis with respect to constructability and technical considerations regarding site suitability.

## **Analysis and Recommendations**

The analysis is summarized in the tables below and is itemized by design factor. Relevant regulations and guidelines are cited as necessary. Regulations and guidelines are as rated conventional, better, and best practices. Current regulations, hinderances, and recommendations are discussed.

### *Street Design and Parking Lot Guidelines: Summary of Findings*

Street design and parking lot standards and guidelines are detailed mostly in the LSRR, and the Zoning By-law documents. References to relevant by-laws and regulations are made for each design element or practice. Regulations or guidelines that hinder best practices are called out. Refer to Attachment 1 for criteria and detailed matrices. The following summary of findings will discuss relevant street and parking lot design guidelines that are related to decreasing impervious area or incorporating low impact designs (LID).

Current regulations are graded "worse than conventional", "conventional", "better", and "best" to describe the level of which they promote and allow LID features for streets and parking lots. "Worse than conventional" regulations explicitly or implicitly impede or prevent implementation LID practices. "Conventional" regulations follow general historic practices that do not address stormwater LID practices, they typically do not impede the use of LID practices but can hinder LID. "Better" guidelines offer flexibility in guidelines which allow implementation of stormwater LID practices. "Best" guidelines explicitly encourage and promote LID features and go above NPDES minimum requirements. This can include incentivizing with Stormwater Utility credits or development opportunities.



Criteria for design factors were taken from an EPA guidance/sample document on the matter. Full criteria definitions are detailed in Attachment 1.

Factor	Regulation Source	Rating	Discussion
Street Location	LSRR 5.1.1. a.	Conventional	<p><i>Current design standards:</i></p> <ul style="list-style-type: none"> <li>– Focused on safe vehicular travel and maximum livability</li> <li>– Special consideration is given to preservation of natural features</li> </ul> <p><i>Hinderances:</i></p> <ul style="list-style-type: none"> <li>– There are no other requirements or considerations on area of impact, grading, or road lengths to reducing impervious area</li> </ul> <p><i>Recommendations:</i></p> <ul style="list-style-type: none"> <li>– Incorporate limitations on area of impact, grading, road lengths to raise this design guideline from conventional to best practice</li> </ul>
Road Width	LSRR 4.7 Table 1 Geometric Design Standards	Worse than conventional	<p><i>Current design standards:</i></p> <ul style="list-style-type: none"> <li>– Low-density and high-density subdivision secondary streets widths are set at 26' and 32', respectively</li> <li>– Primary street width standard is set at 36'</li> </ul> <p><i>Hinderances:</i></p> <ul style="list-style-type: none"> <li>– Current standards promote high amounts of impervious area</li> <li>– Conventional criteria typically set street width to 24'-30'</li> </ul> <p><i>Recommendations:</i></p> <ul style="list-style-type: none"> <li>– Create wide, medium, narrow, and alley categories where widths are limited to 24' for busy two travel lane roads with 2' shoulders, and 18'-20' for low traffic residential neighborhoods</li> <li>– Allow/encourage permeable paving materials for shoulders and low-traffic, narrow, or secondary streets</li> </ul>
ROW Width	LSRR 4.7 Table 1 Geometric Design Standards; Zoning By-Laws XIII 4.7.d.	Conventional	<p><i>Current design standards:</i></p> <ul style="list-style-type: none"> <li>– ROW widths for Type I, II, and I &amp; II are 50', 60', 60', respectively</li> <li>– Clearing of stumps, brush, roots, and like materials within the ROW is required.</li> <li>– Best practice is to limit ROW to 20-50' depending on road type.</li> </ul> <p><i>Hinderances:</i></p> <ul style="list-style-type: none"> <li>– There are no exceptions or flexibilities on clearing for vegetation part of roadside LID features, or GI</li> </ul> <p><i>Recommendations:</i></p> <ul style="list-style-type: none"> <li>– Limit ROW width to 20-50' depending on road type</li> </ul>



Factor	Regulation Source	Rating	Discussion
Access Option	LSRR 4.7 Table 1 Geometric Design Standards; Zoning By-Laws VIII Table 4, VIII C.2.q.	Better	<p><i>Current design standards:</i></p> <ul style="list-style-type: none"> <li>– Limits length of dead ends to 500'</li> <li>– Allows common drives for multi-family, planned business, and planned industrial developments</li> </ul> <p><i>Hinderances:</i></p> <ul style="list-style-type: none"> <li>– Does not explicitly allow one way loop streets, which would decrease street width necessary</li> </ul> <p><i>Recommendations:</i></p> <ul style="list-style-type: none"> <li>– Explicitly allow one way loop streets</li> </ul>
Dead Ends/Cul-de-sacs	LSRR 4.7 Table 1 Geometric Design Standards	Better	<p><i>Current design standards:</i></p> <ul style="list-style-type: none"> <li>– Minimum turnaround radius is 50'</li> </ul> <p><i>Hinderances:</i></p> <ul style="list-style-type: none"> <li>– Does not explicitly allow hammer head turnarounds, which limit impervious area</li> <li>– Requires full paving standards for cul-de-sacs, which prevents design and implementation of landscaped bioretention islands</li> </ul> <p><i>Improvements:</i></p> <ul style="list-style-type: none"> <li>– Require either a hammerhead turnaround or center landscaped bioretention island</li> </ul>
Curbing	LSRR 5.3.1	Conventional	<p><i>Current design standards:</i></p> <ul style="list-style-type: none"> <li>– Requires sloped granite curbing to be installed on both sides of the road, sans driveway openings</li> <li>– Openings for driveways must be placed 15' from catch basin structures</li> </ul> <p><i>Hinderances:</i></p> <ul style="list-style-type: none"> <li>– Continuous curbing limits curb breaks to enable water to flow to vegetated LID features by the roadside</li> </ul> <p><i>Improvements:</i></p> <ul style="list-style-type: none"> <li>– Allow curb breaks to enable water to flow to vegetation or vegetated LID features</li> <li>– Preference for no curbs and open drainage with roadside swales</li> </ul>

Factor	Regulation Source	Rating	Discussion
Roadside Swales	LSRR 5.12.2.1.g, 5.6.1	Worse than conventional	<p><i>Current design standards:</i></p> <ul style="list-style-type: none"> <li>– Swales in easements shall be provided to redirect flow from 10-year or higher storms</li> </ul> <p><i>Hinderances:</i></p> <ul style="list-style-type: none"> <li>– No distinction for roadside swales and seems to imply that swales are just for redirecting flow from outfalls in easements</li> <li>– Curbing requirement prevents runoff on impervious surfaces to flow off streets to roadside swales</li> <li>– Grass strips between the sidewalk and the curbing are required to be sloped towards the road preventing roadside swales</li> </ul> <p><i>Recommendations:</i></p> <ul style="list-style-type: none"> <li>– Create exceptions in curbing and grass strip grading to allow roadside swales</li> <li>– Prefer roadside swales to closed drainage and adopt technical specifications and design templates for GI</li> </ul>
Utilities	LSRR 5.20 Figure 1-A, 1-B, 1-C	Better	<p><i>Current design standards:</i></p> <ul style="list-style-type: none"> <li>– Current standard widths between drain, sewer, and water does not limit ROW widths</li> <li>– Current standards also show telecom, gas, and electricity in the grassy strip between curbing and sidewalk</li> <li>– No explicit limits to where utilities can go</li> </ul> <p><i>Hinderances:</i></p> <ul style="list-style-type: none"> <li>– May prevent placement of roadside swales</li> </ul> <p><i>Recommendations:</i></p> <ul style="list-style-type: none"> <li>– Explicitly allow under sidewalks to prevent utilities from impeding installation of LID/GI/BMP features on roadside</li> </ul>
Sidewalks	LSRR 5.4.2; 5.4.3., 5.4.5	Conventional	<p><i>Current design standards:</i></p> <ul style="list-style-type: none"> <li>– Requires sidewalks to be constructed on both sides of the street</li> <li>– Require 5' wide bituminous concrete</li> </ul> <p><i>Hinderances:</i></p> <ul style="list-style-type: none"> <li>– Doesn't allow permeable pavement material</li> <li>– Creates unnecessary impervious area on both sides of the road</li> </ul> <p><i>Recommendations:</i></p> <ul style="list-style-type: none"> <li>– Encourage permeable pavement or allow flexibility in material and design</li> <li>– Prefer siting that considers land contours and best pedestrian utility (not necessarily immediately parallel to road) and allow only on one side of the road in low density neighborhoods</li> </ul>

Factor	Regulation Source	Rating	Discussion
Sidewalk Drainage	LSRR 5.20 Figure 1-A, 1-B, 1-C, 5.6.1	Best	<p><i>Current design standards:</i></p> <ul style="list-style-type: none"> <li>– Sidewalks are buffered to the road by a mandatory 6'-8' green strip that can absorb sheet flow</li> </ul> <p><i>Hinderances:</i></p> <ul style="list-style-type: none"> <li>– Green strip vegetation is limited to loam and grass and minimum sloping directs sheet flow to the road</li> </ul> <p><i>Recommendations:</i></p> <ul style="list-style-type: none"> <li>– Add flexibility on vegetation and provide exceptions to the minimum sloping grass strip</li> </ul>
Parking	Zoning By-Laws VIII Table 4	Conventional	<p><i>Current design standards:</i></p> <ul style="list-style-type: none"> <li>– Sets specific minimums on projected use for Off Street parking per unit dwelling</li> </ul> <p><i>Hinderances:</i></p> <ul style="list-style-type: none"> <li>– Does not encourage minimum number of parking spots</li> <li>– Does not establish maximum parking limits</li> </ul> <p><i>Recommendations:</i></p> <ul style="list-style-type: none"> <li>– Set maximum parking limits</li> <li>– Allow tenants separate optional lease agreements for parking</li> </ul>
Commercial Parking	Zoning By-Laws Section VIII Table 4, Section VIII B.3, Section XIX 3.b.9, Section XIII 4.3.3.	Better	<p><i>Current design standards:</i></p> <ul style="list-style-type: none"> <li>– Off-street parking requirements may be fulfilled by use of common off-street parking areas in Commercial districts</li> <li>– Shared parking is encouraged</li> <li>– Transportation Demand Management Program allows density bonus incentives for development size for structured parking, paratransit, pedestrian/bicycle connections or ride sharing programs.</li> </ul> <p><i>Hinderances:</i></p> <ul style="list-style-type: none"> <li>– Does not limit parking space size</li> </ul> <p><i>Recommendations:</i></p> <ul style="list-style-type: none"> <li>– Limit parking stall size to 9' x 18' maximum and 30% smaller for compact cars</li> </ul>

Factor	Regulation Source	Rating	Discussion
LID in Parking Areas	Zoning By-Laws Section VIII C.2.p.	Better	<p><i>Current design standards:</i></p> <ul style="list-style-type: none"> <li>– 1 tree is required per four parking spaces dispersed in lots larger than ¼ acre for visual relief</li> <li>– 5' wide islands/dividers are required for each 20,000 square feet in lots larger than 1 acre, unless it is an automotive/industrial lot</li> </ul> <p><i>Hinderances:</i></p> <ul style="list-style-type: none"> <li>– Vegetative island requirements are for “visual relief”</li> <li>– Unclear if curbing is required</li> </ul> <p><i>Recommendations:</i></p> <ul style="list-style-type: none"> <li>– Modify existing regulations to require islands as LID or bioretention</li> <li>– Require landscape area to be at a minimum of 10% of interior parking lot area</li> </ul>
Easy Siting of LID features (bioretention, swales, etc.)	Zoning By-Laws Section XIII 4.3.3.d.e., Section XVIII E.3; LSRR 5.5	Better	<p><i>Current design standards:</i></p> <ul style="list-style-type: none"> <li>– Reconstruction of existing dwelling units call for the reconstruction and maintenance of existing stormwater drains to more natural state using BMPs</li> <li>– Incentives for incorporating landscape design and construction techniques in accord with LEED standards and LID.</li> <li>– Open spaces draining requirements more focused on closed drains</li> <li>– Green strips in road ROWs required to have 6" loam grass strips and be sloped toward the roadway</li> <li>– Shade trees every 100' in green strip road ROWs where existing trees were not retained</li> </ul> <p><i>Hinderances:</i></p> <ul style="list-style-type: none"> <li>– Open space draining requirements lean more heavily towards higher impact designs</li> <li>– Green strip grass requirements in Road ROW with no exception to native vegetation or other vegetation associated with LID features</li> <li>– Green strip slope requirements are not aligned with reducing stormwater runoff and promoting infiltration</li> </ul> <p><i>Recommendations:</i></p> <ul style="list-style-type: none"> <li>– Explicitly recommend LID on lots, common open space, or Road ROW</li> <li>– Make exceptions for vegetation and slope requirements on road ROWs</li> <li>– Make exceptions for curbing requirements to allow sheet flow from sidewalks and road surfaces to flow to LID features</li> </ul>

Factor	Regulation Source	Rating	Discussion
Permeable Paving	<i>Zoning By-Laws Section VIII C.1. b.; OSRP App. 4</i>	Conventional	<p><i>Current Design Standards:</i></p> <ul style="list-style-type: none"> <li>– Requires bituminous asphalt for commercial parking lots</li> </ul> <p><i>Hinderances:</i></p> <ul style="list-style-type: none"> <li>– <i>OSRP recommends permeable materials for parking lots but contradicts existing Zoning By-law</i></li> </ul> <p><i>Recommendations:</i></p> <ul style="list-style-type: none"> <li>– <i>Allow permeable pavement for all parking lots and driveways</i></li> </ul>
Stormwater Management O&M Plan	<i>LSRR 5.12.2.1.f; Article I Section 8</i>	Better	<p><i>Current Design Standards:</i></p> <ul style="list-style-type: none"> <li>– Requires SWMPs to minimize the long-term operational maintenance of structural BMPs</li> <li>– Requires O&amp;M plans for application of all stormwater BMP projects</li> </ul> <p><i>Hinderances:</i></p> <ul style="list-style-type: none"> <li>– Does not encourage the use of surficial bioretention/LID features</li> </ul> <p><i>Recommendations:</i></p> <ul style="list-style-type: none"> <li>– Encourage surficial bioretention and swales</li> <li>– Discourage closed systems with complicated O&amp;M requirements</li> </ul>



### *Green Infrastructure Analysis: Summary of Findings*

This analysis will focus on whether current design standards and guidelines within Zoning By-Laws and LSRR allow the following types of Green Infrastructure:

- Green roofs,
- Infiltration Practices (rain gardens, curb extensions, planter gardens, porous and pervious pavement, etc.),
- And Water Harvesting Devices (rain barrels, cisterns, use of stormwater for non-potable uses)

Generally, Millis regulations and guidelines do not explicitly ban green roofs, infiltration practices, and water harvesting devices, but building requirements can hinder installation of green infrastructure.

Green Infrastructure	Regulation Source	Currently Allowable? (Y/N)	Discussion
Green Roofs	<i>Zoning By-Laws Section XV 4.c.4.e.; Section VI Table 3.2.a.; Section XIX 3.b.4.; SW Utility Credit Manual</i>	N	<p><i>What Allows Practice?</i></p> <ul style="list-style-type: none"> <li>Commercial parcels in certain groundwater zones require roof runoff to be recharged on-site</li> <li>Does not explicitly ban green roofs</li> </ul> <p><i>What Hinders Practice?</i></p> <ul style="list-style-type: none"> <li>Residential roofs require gabled roofs which may hinder the installation of green roofs</li> <li>Commercial/Business developments in the village district are required to follow a “residential theme”</li> <li>SW Utility Credit Manual does not explicitly list green roofs as an option</li> </ul>
Infiltration (rain gardens, Curb Extensions, Planter Gardens, porous and Pervious Pavement, etc.)	<i>LSRR 5.12.2; SW Utility Manual, Zoning By-Laws Section VIII C.1. b.; OSRP App. 4</i>	Y	<p><i>What Allows Practice?</i></p> <ul style="list-style-type: none"> <li>LSRR allows gutters, inlets, culverts, catch basins, manholes, subsurface piping, surface channels, natural waterways, detention basins, detention basin recharge systems</li> <li>SW Utility Manual requirements are flexible and applied liberally for residents to receive credits towards Stormwater Utility fees</li> <li>OSRP encourages the use of porous paving</li> </ul> <p><i>What Hinders Practice?</i></p> <ul style="list-style-type: none"> <li>Pavement standards in LSRR and Zoning By-Law prohibit porous paving</li> <li>LSRR is mostly focused on conveying flow away as opposed to encouraging infiltration</li> </ul>
Water Harvesting (Rain Barrels, Cisterns, use of Stormwater for non-potable Uses)	<i>LSRR 5.12.2.1; SW Utility Manual</i>	Y	<p><i>What Allows Practice?</i></p> <ul style="list-style-type: none"> <li>SW Utility Manual requirements are flexible and applied liberally for residents to receive credits towards Stormwater Utility fees</li> <li>Nothing explicitly hindering gray water uses in Zoning By-Laws</li> </ul> <p><i>What Hinders Practice?</i></p> <ul style="list-style-type: none"> <li>LSRR focuses on treating SW on-site and flow-based stormwater management strategies rather than collecting or harvesting it</li> </ul>

## Proposed Implementation Schedule

It is recommended that some design guidelines and standards in the Zoning By-Laws and LSSR be modified to limit impervious area, encourage surficial infiltration, and allow green infrastructure. Topics are sorted by high priority, medium priority, and low priority level for each document.

Regulation	Topic	Implementation Date
LSSR	<i>High Priority:</i> <ul style="list-style-type: none"> <li>Decrease Road Width requirements</li> <li>Make exceptions in curbing, landscaping requirements, and ROW slope to allow drainage to Roadside Swales from the road and the</li> <li>Change Paving Standards to allow permeable materials in applications like intersections, shoulders, alleyways, secondary roads, etc.</li> <li>Change Sidewalk requirements to allow the use of permeable materials</li> </ul>	May 2024 per Town meeting
	<i>Medium Priority:</i> <ul style="list-style-type: none"> <li>Decrease Road ROW Width requirements depending on the road type</li> <li>Require hammerhead turnarounds for Dead-Ends/Cul-de-sacs, or bioretention islands</li> <li>Change Sidewalk placement to emphasize</li> <li>Change Street Location standards to minimize length, area of impact, and grading</li> </ul>	May 2024 per Town meeting
	<i>Low Priority:</i> <ul style="list-style-type: none"> <li>Encourage surficial recharge and discourage closed/underground systems that require complicated O&amp;M Plans</li> <li>Change Utilities standards to explicitly allow LID features to be installed between the sidewalk and road</li> <li>Explicitly allow one way loop streets and common driveways for single unit dwellings</li> </ul>	May 2024 per Town meeting
Zoning By-Law	<i>High Priority:</i> <ul style="list-style-type: none"> <li>Allow permeable paving for driveways and parking lots</li> <li>Make exceptions for gabled roofs in residential neighborhoods</li> </ul>	May 2024 per Town meeting



Zoning By-Law	<p><i>Medium Priority:</i></p> <ul style="list-style-type: none"> <li>• Set maximum parking limits</li> <li>• Modify parking lot island requirement to be geared towards bioretention instead of visual relief</li> </ul>	May 2024 per Town meeting
	<p><i>Low Priority:</i></p> <ul style="list-style-type: none"> <li>• Limit commercial parking spot sizes and offer compact car spots</li> <li>• Explicitly require LID area in Parking lots, open spaces, and other commercial districts</li> </ul>	May 2024 per Town meeting
Article I	<ul style="list-style-type: none"> <li>• Encourage surficial recharge and discourage closed/underground systems that require complicated O&amp;M Plans</li> </ul>	May 2024 per Town meeting

# Attachment 1: Street and Parking Lots Design Standards and Guidelines Analysis Tool

Factors	Conventional	Better	Best	Community's Zoning	Community's Subdivision Rules & Regulations	Community's Site Plan Review	Community's Stormwater/ LID Bylaw/ Regulations
<b>GOAL: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS OF STRETS AND PARKING LOTS</b>							
Street location	Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	(Not applicable)		(Not applicable)	(Not applicable)
Road width	Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	(Not applicable)		(Not applicable)	(Not applicable)
Road ROW width	50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50' depending on road type				
Access Options	No common drives allowed, dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	(Not applicable)		(Not applicable)	(Not applicable)
Dead Ends/Cul-de-sacs	120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	(Not applicable)		(Not applicable)	(Not applicable)
Cul-de-sacs	Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	(Not applicable)		(Not applicable)	(Not applicable)
Curbing	Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	(Not applicable)			
Roadside Swales	Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	(Not applicable)			
Utilities	Off sets required contributing to wide road ROWs	Not specified, flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	(Not applicable)			(Not applicable)
Sidewalks	Concrete or bituminous	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	(Not applicable)			(Not applicable)
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	(Not applicable)			(Not applicable)
Sidewalk drainage	Drains to road closed drainage system	Not addressed	Disconnect drainage from road system – e.g. adjacent green strips or within vegetated areas that can absorb sheet flow	(Not applicable)			(Not applicable)
<b>GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS</b>							
Rooftop runoff	Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	(Not applicable)			
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards		LID design standard. Allow surficial ponding of retained runoff for up to 72 hours and credit for green roofs towards stormwater requirements	(Not applicable)			
Site Plan Requirements	LID may not be addressed	Encourage use of LID features in site design	Count bioretention and other vegetated LID features toward site landscaping/open space requirements.	(Not applicable)	(Not applicable)		
Allow easy siting of LID features (bioretention, swales, etc.)	Often not addressed, may require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs				(Not applicable)

Permeable paving	Often not addressed, may require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	(Not applicable)			
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, surficial bioretention and swales preferred. Closed/underground systems requiring specialized inspection and clean out discouraged.	(Not applicable)			
Construction Erosion and Sedimentation Plan required	Basic general requirements	Required, contents specified	Goes beyond minimum NPDES requirements, requires minimization of site disturbance	(Not applicable)			
<b>GOAL 5: ENCOURAGE EFFICIENT PARKING</b>							
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.		(Not applicable)		(Not applicable)
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars		(Not applicable)		(Not applicable)
LID in Parking Areas	Often not addressed, may require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	(Not applicable)			

**APPENDIX G**  
**List of 5 Retrofit Opportunities**

---



# MEMORANDUM

TO: Jim McKay, Town of Millis  
FROM: Seth Bryant, Kleinfelder  
DATE: June 9, 2023  
SUBJECT: Municipal Retrofit Opportunities Analysis – 2023 Update  
CC: Kirsten Ryan & Adria Fichter, Kleinfelder

---

## 1 BACKGROUND

The following analysis was prepared for the Town of Millis to meet the requirements of the United States Environmental Protection Agency's (US EPA's) 2016 National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4) in Massachusetts, hereafter referred to as the 2016 Permit or 'the Permit'. This document meets the Year-4 permit requirement of identifying a minimum of five (5) Town-owned properties that could potentially be modified or retrofitted with structural Best Management Practices (BMP) stormwater mitigation solutions. Additionally, this document meets the ongoing requirement beginning in permit Year-5 that all Town-owned properties on which a retrofit is implemented be catalogued and replaced on the retrofit opportunity list with a new Town-owned candidate parcel.

## 2 BMP SUITABILITY ANALYSIS

Kleinfelder conducted a GIS-based screening analysis to identify Town owned parcels where the potential installation of structural stormwater BMPs could improve stormwater quality and reduce flooding impacts. The goal of this planning analysis is to identify five (5) parcels that have the potential to bring the highest value to the Town (in terms of stormwater volume reduction, community benefit, etc.). Ideal locations will be near areas that have the potential for high infiltration. These are areas with minimal slopes, well-draining soils, and adequate open space to install structural BMPs.



## 2.1 METHODOLOGY

In order to identify parcels with impervious area that have space and favorable site conditions for BMP implementation, the analysis utilized a ranking process that quantitatively evaluated where structural stormwater BMPs are most appropriate, based on these physical site characteristics:

- Hydrologic soil group (HSG)
- Slope
- Impervious area

Each parcel was processed through a workflow that assigned a ranking (good, fair, or poor) based on the physical characteristics derived from the GIS analysis (Figure 1). Highly permeable soils, and low slopes, are optimal (i.e. more cost effective) for structural BMP implementation and managing highly impervious parcels will offer the highest Phosphorus reduction benefit. For HSG<sup>1</sup>, and slope<sup>2</sup>, the dominant category within in each parcel was assigned for a single parcel value. Impervious surface GIS data has been maintained for the town by Kleinfelder since the implementation of the Millis Stormwater Utility, which charges a stormwater fee to landowners based on the amount of impervious surface in a parcel. In order to determine a final, single, ranking per parcel based on these three physical site characteristics the following logic was applied:

- Poor = any parcel where any of the three factors is rated 'poor'
- Fair = any parcel where any two of the three factors are rated 'fair'
- Good = any parcel where any two of the three factors are rated 'good'
- Unknown = any parcel where data were insufficient to make a determination

---

<sup>1</sup> <https://www.mass.gov/info-details/massgis-data-soils-ssurgo-certified-nrcs>

<sup>2</sup> <https://www.mass.gov/info-details/massgis-data-elevation-topographic-data-2005>

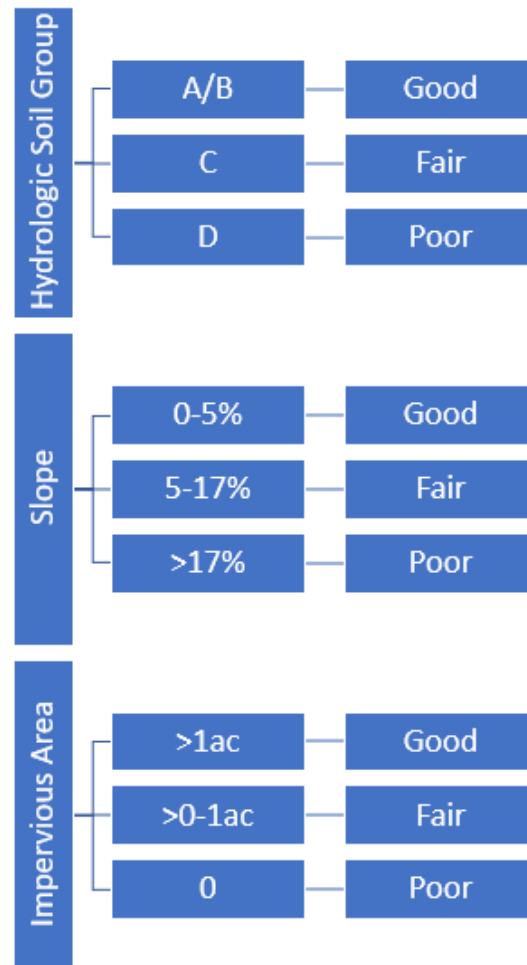


Figure 1. BMP suitability workflow.

To determine if there was sufficient open area for structural BMP implementation (300 sf<sup>3</sup>), the total area of impervious surface, wetlands<sup>4</sup> and priority habitat<sup>5</sup> were subtracted from total parcel area. Parcels that had less than 300 sf of remaining pervious area were removed from the analysis. This

<sup>3</sup> Per the methodology of the Resilient Cambridge Plan  
(<https://www.cambridgema.gov/Departments/CommunityDevelopment/ResilientCambridgePlan>)

<sup>4</sup> <https://www.mass.gov/info-details/massgis-data-massdep-wetlands-2005>

<sup>5</sup> <https://www.mass.gov/info-details/massgis-data-nhsp-priority-habitats-of-rare-species>



produced a suite of private and public parcels with favorable physical site conditions and sufficient available open space that could most readily be retrofitted to manage stormwater<sup>6</sup>.

### 3 RESULTS

Kleinfelder ranked the 2,112 parcels with at least 300 sf of functional pervious area (i.e. not wetland or priority habitat) to determine the most feasible and optimal locations for future structural stormwater BMPs. This analysis represents 98% of non-right-of-way parcels in the Town. Figure 2 depicts all the Town parcels examined with their corresponding rating, while Table 1 includes those parcels deemed as “Good” or “Fair” by the analysis and considered suitable opportunities for BMP retrofits. Additionally, the parcels are ranked to provide a prioritization for the Town in choosing sites viable for BMP retrofits. Within the categorization of “Good” and “Fair” parcels, the amount of impervious area was prioritized in determining the ranking as this factor is the driving factor in terms of potential for mitigation.

In total, 12 sites were determined to be “Good” candidates for retrofit while an additional 14 were found to be “Fair”. The resulting inventory of parcels for retrofit exceeds the minimum five (5) required by the Permit and provides several options for the Town in planning BMP retrofits. Full results of the study, including a list of all parcels examined with their corresponding rating and site characteristics, is included in the attached *Phosphorus Control Plan: Best Management Practice Suitability Analysis (2021)* report.

#### 3.1 INVENTORY OF TOP RETROFIT OPPORTUNITIES

Of the suitable sites determined in the analysis, the top five ranked sites will be used as the Town’s inventory of potential BMP retrofits to meet the Year-4 Permit requirements. These sites were found to have suitable soils for infiltration, slope for capturing runoff, and had the highest impervious area and therefore the highest potential impact for retrofit. The sites are as follows:

---

<sup>6</sup> A full GIS process document is available from Kleinfelder upon request.





**1. Parcel M\_211794\_879129: Millis Middle / High School (245 Plain Street)**

Public school building with large amount of impervious area from the school building, parking lots, and entrance roads (38% impervious, 4.86 acres). A significant amount of pervious area to the east of the parking lot has potential for BMP retrofits.

**2. Parcel M\_211419\_879504: Millis Public Library (961 Main Street)**

Public library and parking lot along main street. The area is largely impervious (76%, 2.04 acres) but does have green space available for retrofit opportunities in the library courtyard and directly surrounding the parking lot.

**3. Parcel M\_211676\_879539: Millis Town Hall (900 Main Street)**

Impervious area made up of the town hall building and surrounding parking areas, totaling 1.73 acres of impervious cover (56% of parcel). The west side of the parcel contains a large impervious area running parallel to the parking lot with high potential for BMP retrofits.

**4. Parcel M\_211448\_880635: Millis Housing Authority (411 Union & Exchange Street)**

A residential property owned by Millis Housing Authority that is comprised of 3.2 acres, 45% of which is impervious. Parking lots border both Union and Exchange Streets, both of which are the bulk of the impervious area and present opportunities to capture runoff in bioretention cells in the existing green spaces abutting the parking lots.

**5. Parcel M\_211673\_879653: Millis Fire Department (885 Main Street)**

Town fire department with a highly impervious parcel (70.5% impervious, 0.51 acres). While the plot is smaller than most prioritized on the list, the parking lot slopes directly towards catch basins on Main Street and offers an opportunity to retrofit with either subsurface BMPs or bioretention directly abutting Main Street.

A map of the five (5) prioritized parcels within the Town center is shown in Figure 2.



While parcel M\_212399\_880521 was ranked as the fifth best option for retrofits by the GIS analysis, the site was taken off the list because site stormwater runoff is already being managed through several structural BMPs. The parcel contains the Town's transfer station which, because it manages solid waste, is subject to a Stormwater Pollution Prevention Plan (SWPPP) under the Permit. The SWPPP was completed in 2020 and includes existing and recommended plans for managing on-site stormwater runoff.

### 3.2 INVENTORY OF COMPLETED REOTROFITS

Starting in Permit Year-5, the Town has the additional requirement to keep an inventory of completed retrofit projects, remove parcels from the opportunity inventory where retrofits have occurred, and update as needed to maintain 5 viable retrofit opportunities for the Town to complete. Following the construction of the new Clyde F. Brown Elementary School and associated green infrastructure to manage runoff from the site, two of the parcels included on the Year-4 retrofit opportunity inventory were removed. Those two completed sites are as follows:

#### **6. Parcel M\_211730\_879317: Clyde F. Brown Elementary School and fields**

Public elementary school building with large amounts of impervious area from school building, tennis courts, playground, and entrance road (25% impervious, 3.50 acres). A series of bioretention basins were installed to capture stormwater runoff.

#### **7. Parcel M\_211547\_879406: Clyde F. Brown Elementary School parking lot**

Parking lot and entrance road adjacent to the Clyde F. Brown Elementary School, largely impervious area (71%, 2.35 acres). An infiltration chamber was installed beneath the parking lot to capture and treat stormwater runoff.

A map of the 2 sites removed from the retrofit opportunity inventory is included in Figure 2.

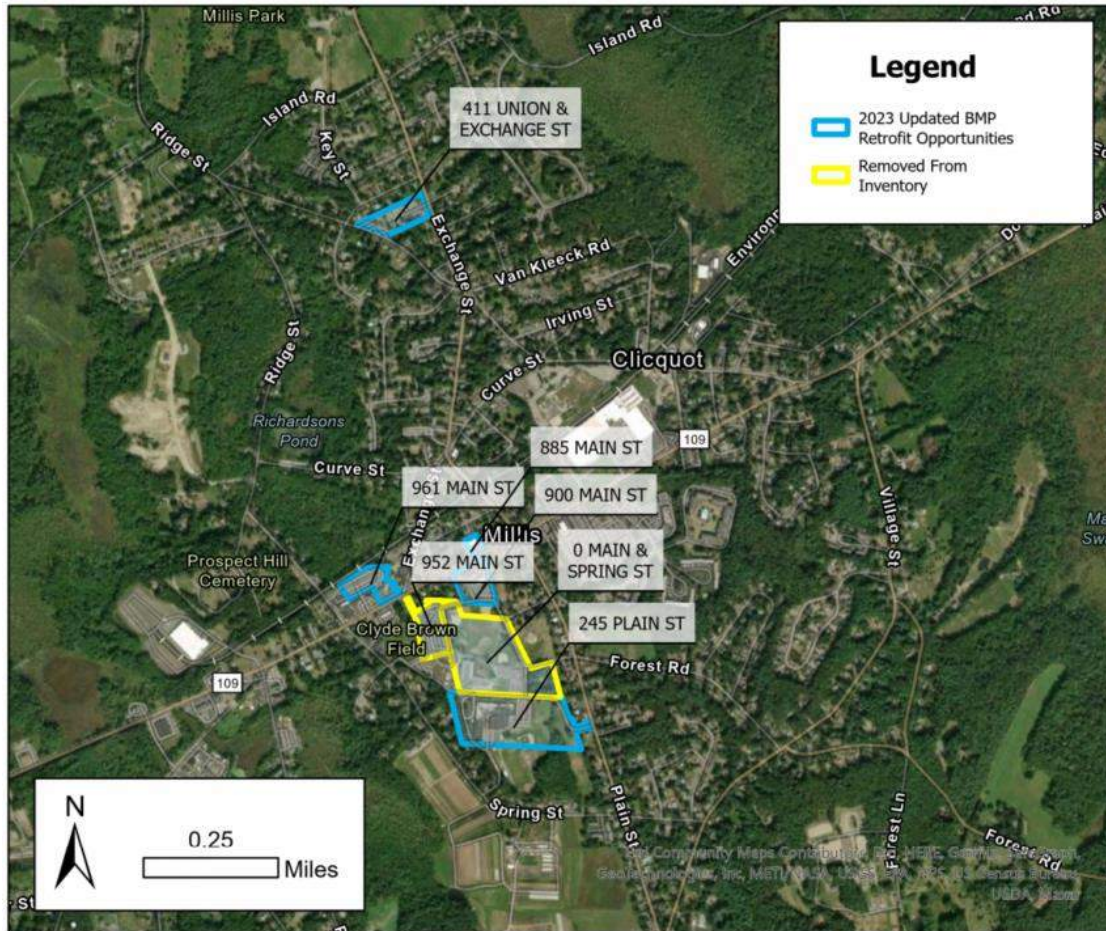


Figure 2: Prioritized Public Parcels for BMP Retrofits



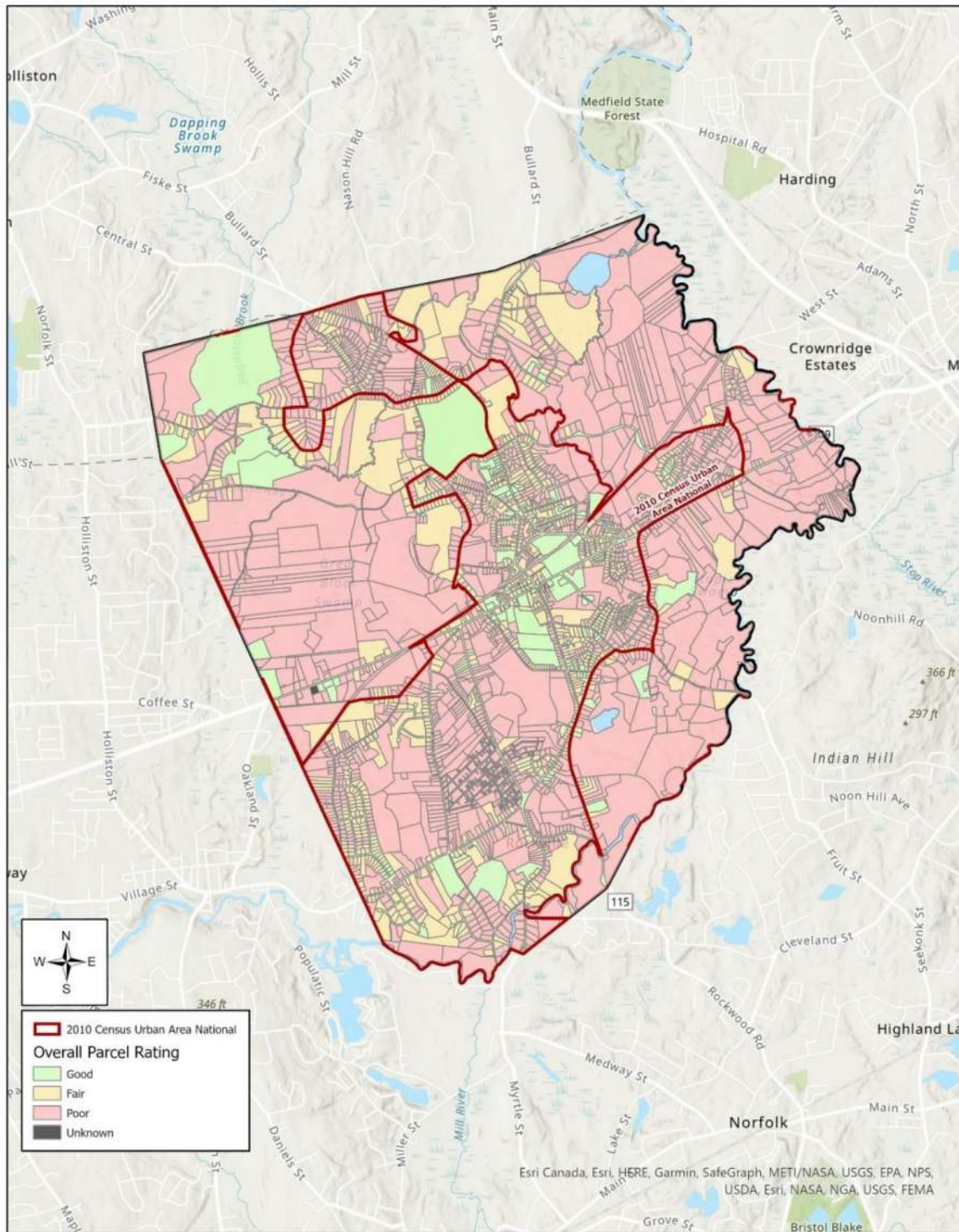


Figure 3: Parcel-Based BMP Suitability Analysis Results



Table 1: Inventory of Public Parcels Suitable for BMP Retrofits

Ranking	Parcel ID	Address	Parcel Size (ac)	Impervious Area (ac)	Overall Rating	BMP Status
1	M_211794_879129	245 PLAIN ST	12.89	4.86	Good	
2	M_211730_879317	MAIN & SPRING ST	14.2	3.5	Good	Retrofit Complete
3	M_211547_879406	7 PARK RD	3.3	2.35	Good	Retrofit Complete
4	M_211419_879504	961 MAIN ST	2.68	2.04	Good	
5	M_212399_880521	7 WATER ST	6.5	2	Good	
6	M_211676_879539	900 MAIN ST	3.1	1.73	Good	
7	M_211448_880635	310 EXCHANGE ST	3.2	1.44	Good	
8	M_210983_881230	410 EXCHANGE ST	118	1.18	Good	
9	M_211866_878976	SPRING ST	11.7	0.48	Good	
10	M_211673_879653	885 MAIN ST	0.51	0.36	Good	
11	M_211464_879386	972R MAIN ST	2.1	0.05	Good	
12	M_210210_877038	INDEPENDENCE LN	0.8	0	Good	
13	M_211274_879482	1003 MAIN ST	1.4	0.73	Fair	
14	M_211487_879306	SPRING ST	1.26	0.53	Fair	
15	M_211694_879460	MAIN ST	1.4	0.28	Fair	
16	M_211654_879694	LAVENDER ST	0.35	0.21	Fair	
17	M_211858_879375	PLAIN ST	3.3	0.12	Fair	
18	M_211436_881490	EXCHANGE ST	36.17	0.08	Fair	
19	M_211712_877223	185 PLEASANT ST	0.75	0.05	Fair	
20	M_210395_876927	VILLAGE ST	5.1	0.04	Fair	
21	M_209599_882044	WALNUT ST	2.41	0.02	Fair	
22	M_211612_879999	MEMORIAL PARK	0.13	0.01	Fair	
23	M_211259_877692	BOYLSTON AVE	0.12	0.01	Fair	
24	M_211500_877542	MILLIS HGHTS	0.24	0.001	Fair	
25	M_211268_877700	MILLIS HGHTS	0.12	0.001	Fair	
26	M_211875_880351	IRVING ST	0.07	0.001	Fair	

**APPENDIX H**  
**Phosphorus Control Plan (PCP)**

---



## **Phosphorus Control Plan Millis, Massachusetts**

**June 2023**

PREPARED BY:



A Report Prepared for:

**TOWN OF MILLIS, MASSACHUSETTS**

900 Main Street

Millis, Massachusetts 02054

**Prepared by:**

Sadia Khan, PhD, EIT, Staff Professional

**Reviewed by:**

Kirsten Ryan, PG, Senior Project Manager

Peter Varga, Project Manager

**KLEINFELDER**

One Beacon Street, Suite 8100

Boston, Massachusetts 02108

June 2023

Kleinfelder Project No: 20232136.001A





## TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
<b>1 PHASE 1.....</b>	<b>4</b>
1.1 Overview of all PCP Phase 1 milestones .....	5
1.2 Watershed and Community Characterization .....	6
1.3 PCP Load Reduction Targets .....	7
1.3.1 PCP Area, Baseline Phosphorus Load, Allowable Phosphorus Load, and Stormwater Phosphorus Reduction Requirement from MS4 Permit.....	9
1.3.2 Increases or Decreases to Baseline Phosphorus Load Since 2005 .....	9
1.4 Legal Analysis .....	11
1.5 Funding Source Assessment .....	11
1.6 Non-Structural Controls.....	11
1.6.1 Current Non-Structural BMPs .....	11
1.6.2 Planned Non-Structural BMPs .....	14
1.7 Structural Controls.....	14
1.7.1 Current and Planned Structural BMPs.....	14
1.8 Description of Operation and Maintenance (O&M) Program for all planned and existing structural BMPs.....	15
1.9 Phase 1 Implementation Schedule .....	15
1.10 Estimated Cost for implementing Phase 1 of the PCP .....	15
1.11 Public Comment.....	16
<b>2 DOCUMENTATION AND REPORTING.....</b>	<b>16</b>
 <b>TABLES</b>	
Table 1-1. General PCP Implementation Timeline for Charles River Watershed Communities .....	4
Table 1-2. Phase 1 Component Deadlines .....	5
Table 1-3. PCP Timeline of Phase 1 Reduction Requirements.....	9
Table 1-4. Phosphorus Loads Reflecting 2016 Conditions.....	10
Table 1-5. Existing Non-Structural BMPs .....	12
Table 1-6: Non-Structural BMP Costs .....	16
 <b>FIGURES</b>	
Figure 1-1: 2005 Land Use Cover for the Town of Millis.....	7
Figure 1-2: Regional Context of the Town of Millis and the Charles River Watershed .....	8
Figure 1-3: 2016 Land Cover/land use for the Town of Millis.....	10
Figure 1-4: Town of Millis Non-Structural Control (Street Sweeping & Catch Basin Cleaning Program) ...	13

## **APPENDICES**

- I. Baseline Load Assessment**
- II. Legal Analysis**
- III. Funding Source Assessment**
- IV. Supporting Calculations for Non-Structural Controls**
- V. Priority Ranking of Structural BMPs (Retrofit BMP List)**

## PHOSPHORUS CONTROL PLAN (PCP)

### 1 PHASE 1

The 2016 National Pollutant Discharge Elimination System General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts (“MS4 Permit” or “the Permit”) took effect on July 1, 2018. The Permit was subsequently modified on December 7, 2020. The MS4 Permit conditions the operation, regulation, and management of MS4s in subject Massachusetts municipalities. Terms and conditions include requirements across six Minimum Control Measures (also referred to as Maximum Extent Practicable or MEP provisions), and water quality-based effluent limitations (WQBEL), including requirements for waterbodies with approved Total Maximum Daily Loads (TMDLs) and other water quality-limited waters.

There are two approved nutrient TMDLs for the Charles River; one for the Lower Charles River Basin, published in 2007<sup>1</sup>, and one for the Upper/Middle Charles River Basin, published in 2011<sup>2</sup>. As an element of the Permit’s WQBEL provisions, communities within the Charles River watershed are obligated to address phosphorus impairments through the development and implementation of a Phosphorus Control Plan (PCP). Appendix F of the MS4 Permit describes specific requirements of the PCP, implementation of which is anticipated to achieve the TMDL-established targeted phosphorus reductions over a 20-year timeframe. PCP implementation includes structural and non-structural best management practices (BMPs) executed through programs, projects, and policies. The PCP must be fully implemented within 20 years of the Permit effective date (i.e., by 2038), as illustrated in Table 1-1. The targeted phosphorus reductions are broken out into interim mandatory milestones, culminating in achievement of the allowable TMDL phosphorus loads for each municipality at the end of the 20-year schedule.

Table 1-1. General PCP Implementation Timeline for Charles River Watershed Communities

1-5 years after permit effective date [2018-2023]	5-10 years after permit effective date [2023-2028]	10-15 years after permit effective date [2028-2033]	15-20 years after permit effective date [2033-2038]
Create Phase 1 Plan	Implement Phase 1 Plan		
	Create Phase 2 Plan	Implement Phase 2 Plan	
		Create Phase 3 Plan	Implement Phase 3 Plan

<sup>1</sup> Massachusetts Department of Environmental Protection. 2007. *Final TMDL for Nutrients in the Lower Charles River Basin*. CN 301.1

<sup>2</sup> Massachusetts Department of Environmental Protection. 2011. *Total Maximum Daily Load for Nutrients in the Upper/Middle Charles River Basin, Massachusetts*. CN 272.0

## 1.1 OVERVIEW OF ALL PCP PHASE 1 MILESTONES

Phase 1 of the PCP must achieve the first 25% of each permittee's phosphorus load reduction requirement within 10 years (i.e., by June 30, 2028), with an interim milestone of achieving the first 20% of phosphorus load reduction by Year 8 (i.e., by June 30, 2026). The detailed components of the PCP due within Phase 1 are outlined in Table 1-2.

Table 1-2. Phase 1 Component Deadlines

Permit Year #	Year-End (June 30th)	PCP Component(s) Due
Year 1	2019	N/A
Year 2	2020	Legal Analysis
Year 3	2021	Funding Source Assessment
Year 4	2022	PCP Scope
Year 5	2023	Descriptions of the following Phase 1 items: <ul style="list-style-type: none"> <li>- Nonstructural controls</li> <li>- Structural controls</li> <li>- O&amp;M program for structural controls</li> <li>- Implementation schedule</li> <li>- Phase 1 cost estimate</li> <li>- Written Phase 1 PCP</li> <li>- Full implementation of nonstructural controls</li> </ul>
Year 6	2024	Performance Evaluation
Year 7	2025	Performance Evaluation
Year 8	2026	Performance Evaluation & Implementation of structural controls to achieve 20% of target phosphorus reduction
Year 9	2027	Performance Evaluation
Year 10	2028	Performance Evaluation & Implementation of structural controls to achieve 25% of target phosphorus reduction

The Town of Millis acknowledges that to meet the phosphorus reduction deadlines set forth in the MS4 Permit, significant preparation is required. In order to plan, allocate funds to, design, and construct structural controls to meet the Year 8 and Year 10 reduction deadlines, there is significant work to be completed during the initial years of PCP implementation. Some controls that rely on local bylaw or regulatory updates, or engaging landowners directly through incentives, may take even longer to implement. This is taken into account in the Phase 1 implementation schedule in Section 1.9.

## 1.2 WATERSHED AND COMMUNITY CHARACTERIZATION

The Charles River collects water from a total land area of 308 square miles. The Charles twists and turns on an 80-mile route from Hopkinton to Boston Harbor. The Charles flows through 23 communities and the total watershed encompasses 35 communities, adding many political complexities to watershed management. Some 80 brooks and streams, and several major aquifers, feed the Charles River. The watershed contains many lakes and ponds, most of them manmade, many through the construction of dams. The river drops about 350 feet in its path to the sea. Lacking speed and force, the slow-moving Charles River is naturally brownish in color, due to tannins from the abundant wetlands along its path.

The Charles River watershed is home to over a million residents. As an urban river, it is impaired by multiple pollutants and has many areas with altered and degraded habitat. Three Total Maximum Daily Loads (TMDLs) have been developed for the watershed: two for nutrients and one for bacteria. The Charles has borne the brunt of much of the development in the greater Boston area through damming, pollution, and disruption from traditional development practices. A nearly five-decade cleanup effort has resulted in water quality improvements, primarily from elimination of industrial discharges and a significant reduction in untreated sewage flowing into the Charles. The primary challenge facing the Charles today is stormwater runoff. Phosphorus loading in stormwater runoff is a particular challenge to the river, leading to summertime cyanobacteria blooms and overgrowth of invasive aquatic plants in many areas of the watershed.

The Town of Millis is located in western Norfolk County, Massachusetts, along the Charles River. Formerly an industrial town, Millis is now primarily a suburban community with rural areas remaining on its outskirts. Millis is bordered by Medway on the west, Holliston and Sherborn on the north, Medfield on the east, and Norfolk on the south. Millis is 26 miles southwest of Boston, 32 miles east of Worcester, and 32 miles north of Providence, RI. Major roadways include Rt. 109 which connects east and west to State Rts. 128 (I-95) and I-495. Route 115 is the major north-south route through town. The center of town is located near the intersection of Rt. 109 (Main St.) and Rt. 115 (Plain St.). The total land area of the Town is 12.16 square miles, and the population, according to the US census, as of April 1, 2020, is 8,460<sup>3</sup>. Fig 1-1 on the following page shows the 2005 land use cover for the Town of Millis.

---

<sup>3</sup> QuickFacts Millis Town, Norfolk County, Massachusetts." U.S. Census Bureau,  
<https://www.census.gov/quickfacts/fact/table/millistownnorfolkcountymassachusetts/DIS010220>.

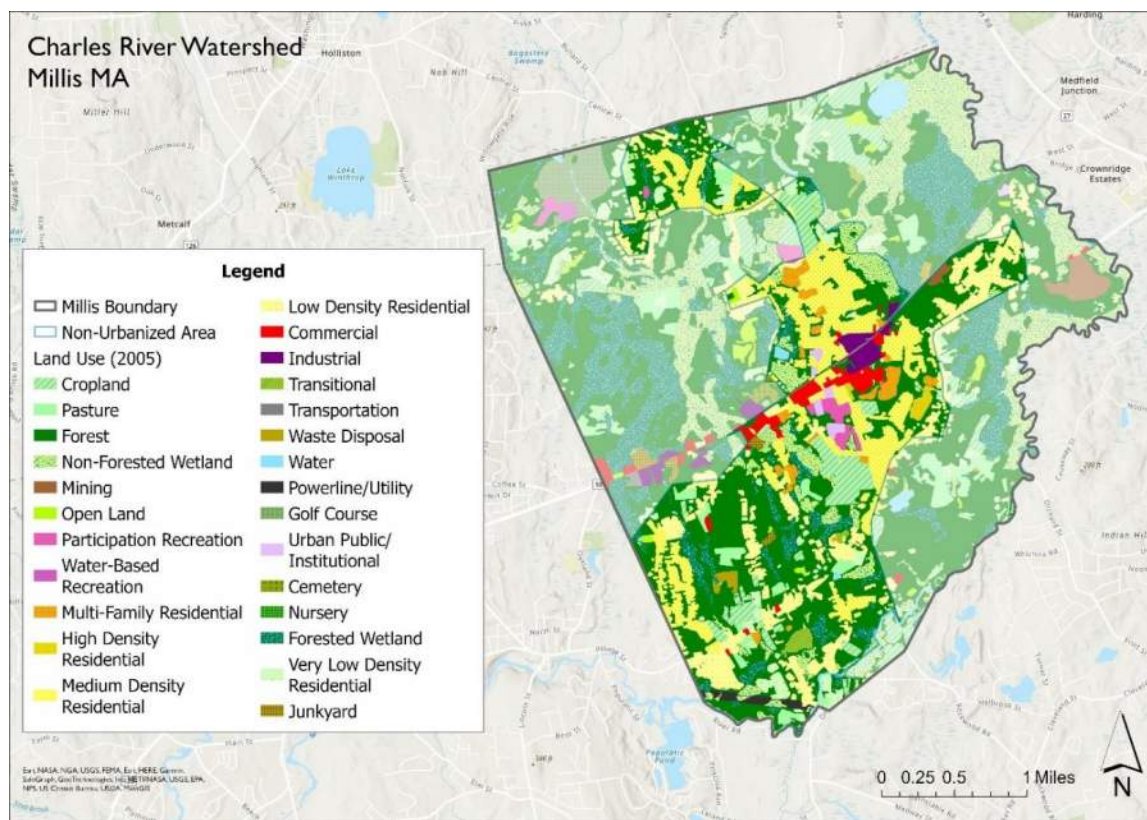


Figure 1-1: 2005 Land Use Cover for the Town of Millis

The Town of Millis is issued a NPDES permit (Permit ID # MAR041137) to discharge stormwater from its MS4 in accordance with the applicable terms and conditions of the MS4 General Permit, including all relevant and applicable Appendices.

### 1.3 PCP LOAD REDUCTION TARGETS

**Permit Requirement:** *The permittee shall indicate the area in which it plans to implement the PCP. The permittee must choose one of the following: (1) to implement its PCP in the entire area within its jurisdiction (for municipalities this would be the municipal boundary) within the Charles River Watershed; or (2) to implement its PCP only in the urbanized area portion of the permittee's jurisdiction within the Charles River Watershed. The implementation area selected by the permittee is known as the "PCP Area" for that permittee. ... The permittee shall select the Baseline Phosphorus Load, Stormwater Phosphorus Reduction Requirement and Allowable Phosphorus Load that corresponds to the PCP Area selected. The selected Stormwater Phosphorus Reduction Requirement and Allowable Phosphorus Load will be used to determine compliance with PCP milestones of this Phase and Phase 2 and Phase 3.*

The Town of Millis is a Charles River Watershed community and as such, is subject to the Massachusetts Department of Environmental Protection's (MassDEP) 2007 Final TMDL for Nutrients in the Lower Charles River Basin. It is additionally subject to specific phosphorus reduction requirements in the 2016 General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts (the MS4 Permit) detailed in Permit Appendix F, Part A.I. The regional context of Millis within the watershed is shown in Figure 1-2 on the following page.



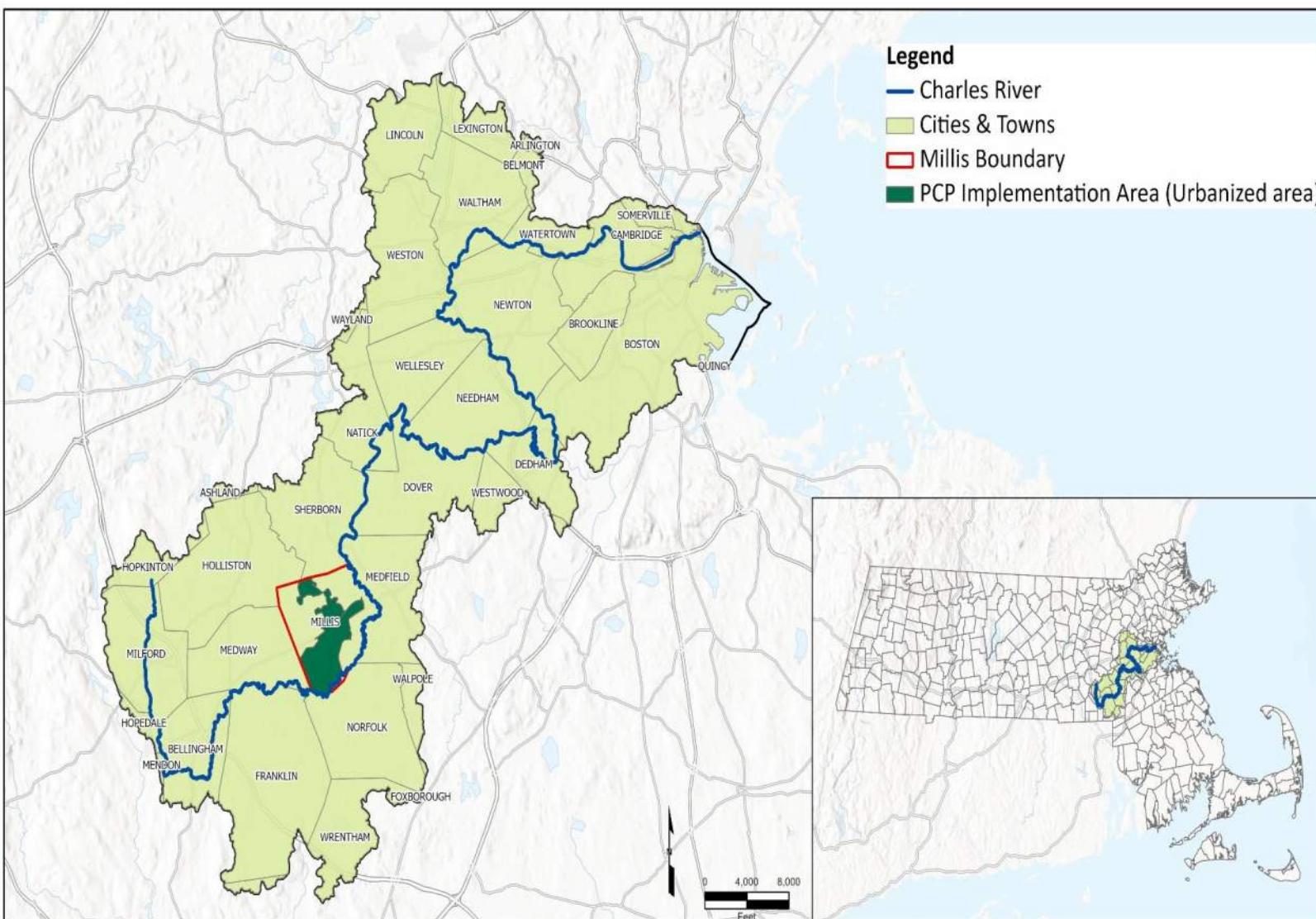


Figure 1-2: Regional Context of the Town of Millis and the Charles River Watershed

### 1.3.1 PCP Area, Baseline Phosphorus Load, Allowable Phosphorus Load, and Stormwater Phosphorus Reduction Requirement from MS4 Permit

The Town of Millis has the option to implement its PCP either within the entirety of the community that falls within the Charles River watershed, or just the MS4-regulated area otherwise called as the Urbanized Area of the community within the Charles River watershed.

Based on an assessment of factors relevant to the selection criteria, Millis will implement the PCP on the urbanized area and therefore be held to the Allowable Phosphorus Load reported in Table F-3 of Appendix F of the MS4 Permit. The Allowable Phosphorus Load reported in Table F-3 of Appendix F of the permit is highlighted in Table 1-3 below specifically for the Town of Millis along with the corresponding Year 8 and Year 10 reduction requirements.

Millis is opting to implement the PCP within the MS4-regulated (urbanized) area because it is a smaller load and a smaller, more manageable area. The Town anticipates having the available space within this area to implement BMPs and to meet its MS4 Permit phosphorus reduction requirements. Improvements to stormwater management practices outside of this designated area are anticipated as well due to the adoption of new stormwater policies and requirements that will be implemented at the municipal scale. Millis understands that improvements outside the designated MS4-regulated area will not count towards its phosphorus reduction requirement.

Table 1-3. PCP Timeline of Phase 1 Reduction Requirements

Condition	From Permit <sup>4</sup>
<b>Baseline (2005) P-Load (lbs/yr)</b>	1104.5
<b>Allowable P-Load (lbs/yr)</b>	661.4
<b>Stormwater P-Load Reduction Requirement (lbs/yr)</b>	440.9
<b>Year 8 Milestone: 20% of Reduction (lbs/yr)</b>	88.2
<b>Year 10 Milestone: 25% of Reduction (lbs/yr)</b>	110.2

### 1.3.2 Increases or Decreases to Baseline Phosphorus Load Since 2005

The Baseline Phosphorus Load displayed in Table 1-3 above was calculated using land use data from 2005. Due to development in the Town of Millis, the current phosphorus load has changed, and a reassessment of the baseline load is warranted; 2016 land uses are illustrated on the following page (Figure 1-3). The Town of Millis completed their baseline load assessment analysis on June 30, 2022, and the detailed methodology for baseline load assessment is described in Appendix I.

<sup>4</sup> Appendix F- of modified MA-MS4 Permit (2020), [Appendix F – Requirements of Approved Total Maximum Daily Loads | 2016 Massachusetts Small MS4 General Permit \(epa.gov\)](#)



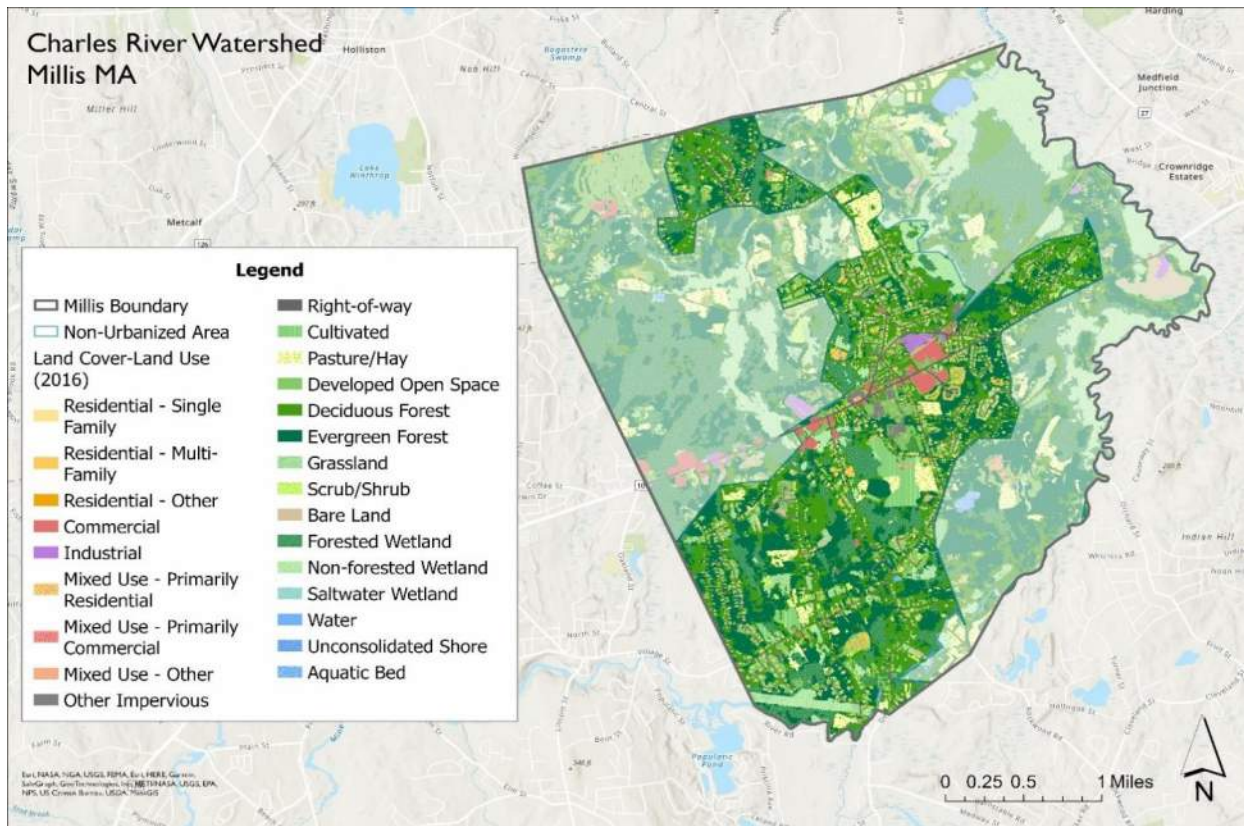


Figure 1-3: 2016 Land Cover/land use for the Town of Millis

Due to the availability of high-resolution Land Use and Land Cover data (2016), the currently calculated annual phosphorus load has decreased since 2005 by 273.05 lbs/year. Therefore, the Current Phosphorus Load has decreased from the Baseline Load of 1104.5 lbs/ yr to 831.5 lbs/ yr. As land use, development, and impervious cover continue to change, this information will be updated, ensuring that Millis is on track to still achieve the required 20% and 25% reduction milestones by Years 8 and 10.

Table 1-4. Phosphorus Loads Reflecting 2016 Conditions

Condition	Value
Baseline (2005) P-Load (lbs/yr)	1104.5
Allowable(2005) P-Load (lbs/yr)	661.4
Stormwater P-Load (2005) Reduction Requirement(lbs/yr)	440.9
Changes in P-Load Since 2005 (P-dec lbs/yr)	-273.1
Current (2016) P-Load (lbs/yr)	831.5
Current (2016) Stormwater P-Load Reduction Requirement (lbs/yr)	170.1
Year 8 Milestone (2016): 20% of Reduction (lbs/yr)	34.0
Year 10 Milestone (2016): 25% of Reduction (lbs/yr)	42.5

To achieve the target of reducing phosphorus loads by 42.5 lbs/yr by 2028, Town of Millis will be planning and implementing a series of structural and non-structural BMPs, updating regulatory mechanisms as necessary to aid with achieving these goals, evaluating funding mechanisms and costs, and developing its O&M and recordkeeping programs to ensure continued compliance and functionality of all installed BMPs.

## 1.4 LEGAL ANALYSIS

**Permit Requirement:** *The permittee shall develop and implement an analysis that identifies existing regulatory mechanisms available to the MS4 such as bylaws and ordinances and describes any changes to regulatory mechanisms that may be necessary to effectively implement the entire PCP. This may include the creation or amendment of financial and regulatory authorities. The permittee shall adopt necessary regulatory changes by the end of the permit term.*

The Town of Millis completed their legal analysis on June 30, 2020, and it is attached as Appendix II. Through this analysis, the Town found that their current regulatory mechanisms give them the Authority to effectively implement this PCP program. The Town will further focus on enhancing regulations such as the zoning by-laws to promote the use of the structural BMPs which will ultimately yield additional phosphorus reduction credits for the Town.

## 1.5 FUNDING SOURCE ASSESSMENT

**Permit Requirement:** *The permittee shall describe known and anticipated funding mechanisms (e.g., general funding, enterprise funding, stormwater utilities) that will be used to fund PCP implementation. The permittee shall describe the steps it will take to implement its funding plan. This may include but is not limited to conceptual development, outreach to affected parties, and development of legal authorities.*

Appendix F of the MS4 Permit requires Town of Millis to describe known and anticipated funding mechanisms (e.g., general funding, enterprise funding, stormwater utilities) that will be used to fund PCP implementation (the “Funding Source Assessment”). Town of Millis’s Funding Source Assessment is attached as Appendix B. The Town has invested significant resources to ensure the implementation of an effective and equitable Stormwater Utility that will meet the MS4 permit requirements while improving the Town’s infrastructure and community assets. As opportunities arise, the Town will also seek out supplemental grant funding to implement innovative water quality improvement projects. The Town will re-evaluate to determine if any of the additional mechanisms detailed in Section 2 (Appendix III) or adjustments to the Stormwater Utility fee must be instituted to maintain appropriate program funding.

## 1.6 NON-STRUCTURAL CONTROLS

**Permit Requirement:** *The permittee shall describe the non-structural stormwater control measures necessary to support achievement of the phosphorus export milestones in Table F-1 [of Appendix F of the MS4 Permit]. The description of non-structural controls shall include the planned measures, the areas where the measures will be implemented, and the annual phosphorus reductions that are expected to result from their implementation in units of mass/yr. Annual phosphorus reduction from non-structural BMPs shall be calculated consistent with Attachment 2 to Appendix F.*

Millis’s approach for non-structural BMP implementation for PCP compliance is detailed in this section.

### 1.6.1 Current Non-Structural BMPs

Millis has already implemented enhanced non-structural BMPs, which can qualify for phosphorus reduction credits. These are presented in Table 1-5. Credits were calculated using the updated phosphorus load export rates reported in Attachment 2 to Appendix F of the MS4 Permit. These credits will count

towards the required phosphorus reduction outlined in Table 1-4. Current non-structural BMPs are those that are anticipated to continue at current resource levels, or 'business as usual'. The information presented in Table 1-5 is further detailed in Appendix IV. Through discussions with regulators, the Town anticipates that the methodology used to calculate street cleaning and catch basin cleaning credits may potentially change during Phase 1 implementation. The Town will re-calculate credits and re-evaluate these programs when new guidance and methodologies are issued by EPA.

**Street Sweeping:** Currently the Town is sweeping 109.8 acres of roadways under Town's jurisdiction twice per year using a mechanical broom. Town receives a 1.61 lbs/yr Phosphorus reduction credit for this effort.

**CB Cleaning:** The Town currently cleans all the catch basins within the PCP implementation area of Millis and maintains 100% of catch basins so that these are at less than 50% capacity. Millis is planning to continue this effort. There are 871 catch basins in the PCP implementation area and 448.6 acres of impervious area (consisting of low to high density residential area, developed open space, industrial, commercial and roadways) drain to these catch basins.

Millis has already implemented enhanced non-structural BMPs, which can qualify for phosphorus reduction credits. These are presented in Table 1-5. Credits were calculated using the updated phosphorus load export rates reported in Attachment 2 to Appendix F of the MS4 Permit. These credits will count towards the required phosphorus reduction outlined in Table 1-4. Current non-structural BMPs are those that are anticipated to continue at current resource levels, or 'business as usual'. The information presented in Table 1-5 is further detailed in Appendix IV. Through discussions with regulators, the Town anticipates that the methodology used to calculate street cleaning and catch basin cleaning credits will change. The Town will re-calculate credits when new guidance and methodologies are issued by EPA.

Table 1-5. Existing Non-Structural BMPs

Planned Non-Structural BMP	Implementation Levels	Average Annual P-Reduction (lbs/yr)
Street Sweeping	Twice per Year- Mechanical Broom for 9 months	1.61
CB Cleaning	871 Catch Basins (cleaned & maintained to be at less than 50% capacity)	17.4
Total Existing Non-Structural Credit		19.01

The existing non-structural controls have already contributed 19.01 lbs/yr of phosphorus removal. Figure 1-4 shows the Town's current non- structural control programs implementation details.

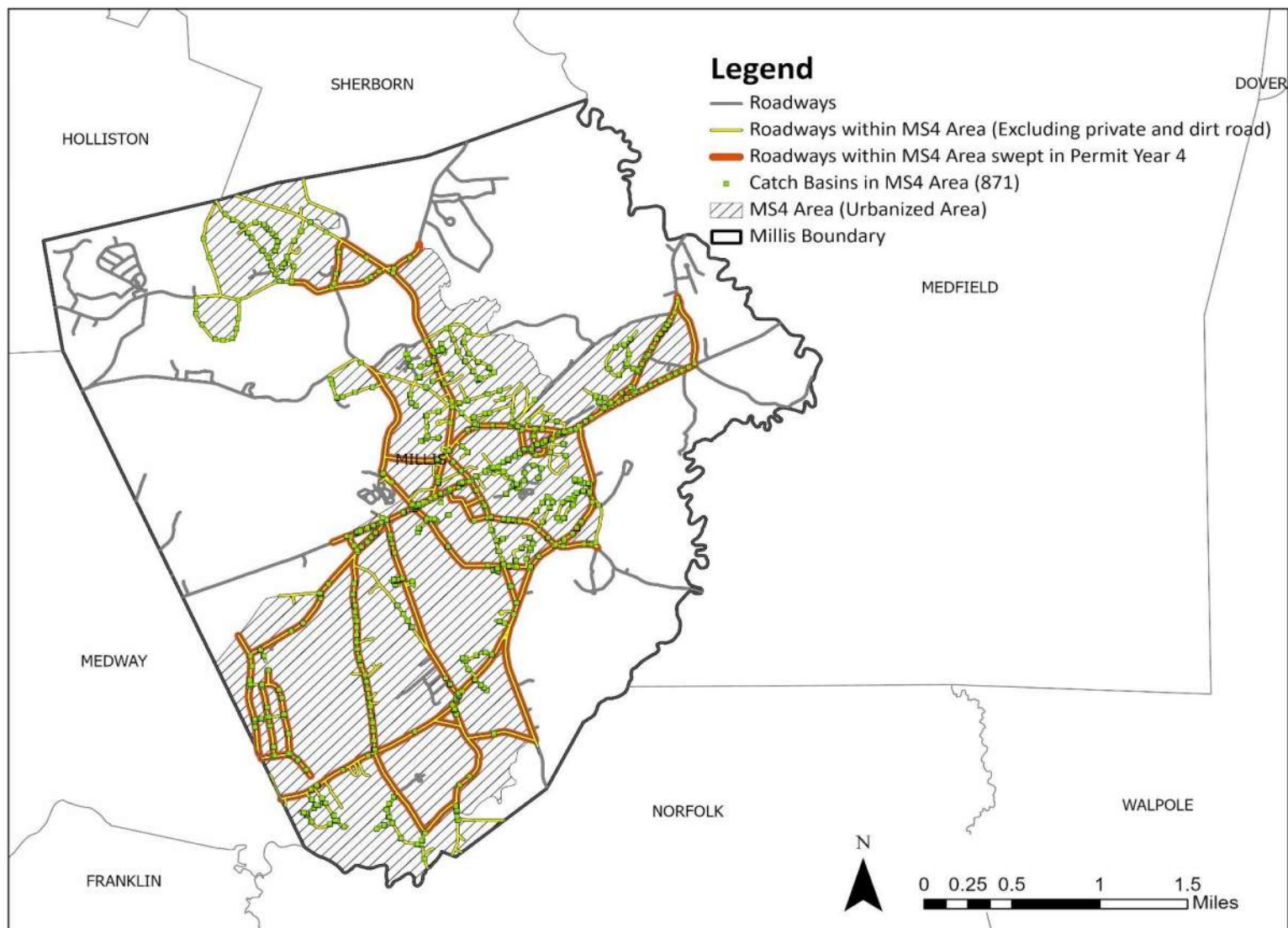


Figure 1-4: Town of Millis Non-Structural Controls (Street Sweeping & Catch Basin Cleaning Program).



## 1.6.2 Planned Non-Structural BMPs

Millis is planning to continue the current non-structural controls as discussed in Section 1.6.1.

## 1.7 STRUCTURAL CONTROLS

**Permit Requirement:** *The permittee shall develop a priority ranking of areas and infrastructure within the municipality for potential implementation of structural phosphorus controls during Phase 1. The ranking shall be developed through the use of available screening and monitoring results collected during the permit term either by the permittee or another entity and the mapping required pursuant to part 2.3.4.6 of the Permit. The permittee shall also include in this priority ranking a detailed assessment of site suitability for potential phosphorus control measures based on soil types and other factors. The permittee shall coordinate this activity with the requirements of part 2.3.6.8.b of the Permit. A description and the results of this priority ranking shall be included in Phase 1 of the PCP. The permittee shall describe the structural stormwater control measures necessary to support achievement of the phosphorus export milestones in Table F-1 [of Appendix F of the MS4 Permit]. The description of structural controls shall include the planned and existing measures, the areas where the measures will be implemented or are currently implemented, and the annual phosphorus reductions in units of mass/yr that are expected to result from their implementation. Structural measures to be implemented by a third party may be included in a municipal PCP. Annual phosphorus reductions from structural BMPs shall be calculated consistent with Attachment 3 to Appendix F.*

The Town of Millis has been employing structural BMPs to detain, treat, and better manage runoff from well-defined areas of impervious surface, such as roads, parking lots, or rooftops. Semi-structural BMPs are more passive stormwater management approaches that can still produce excellent water quality benefits such as rainwater harvesting, impervious area disconnection, conversion of impervious area to pervious, and enhancement of pervious areas. For the purposes of this document, the term structural controls refer to both structural and semi-structural BMPs.

The Town will continue to plan for further phosphorus reduction. Currently the Town is tracking all the existing Structural BMPs (more than 50 counted throughout the Town including privately owned) to determine the phosphorus load reduction credit and will develop an operation and maintenance plan for all these structural BMPs.

### 1.7.1 Current and Planned Structural BMPs

The Town of Millis conducted a GIS-based screening analysis to identify Town owned parcels where the potential installation of structural stormwater BMPs could improve stormwater quality and reduce flooding impacts in Permit Year 4. The goal of this planning analysis is to identify five (5) parcels that have the potential to bring the highest value to the Town (in terms of stormwater volume reduction, community benefit, etc.). Ideal locations will be near areas that have the potential for high infiltration. These are areas with minimal slopes, well-draining soils, and adequate open space to install structural BMPs. The ranking methodology is described in detail in Appendix V. The construction of two of these five sites parcels was completed in the last year. Following the construction of BMPs in the Clyde Brown School

parking lot and field, these two parcels were removed from the retrofit list and updated in Year 5 with two new parcels. However, according to the Permit:

*“The permittee shall establish an Operation and Maintenance Program for all structural BMPs being claimed for phosphorus reduction credit as part of Phase 1 of the PCP.”*

The Town of Millis is currently updating the structural BMP inventory and planning to develop O & M plans to claim phosphorus reduction credit for these already existing structural BMPs. Therefore, the structural BMP inventory along with the phosphorus reduction estimates will be updated and addenda will be issued as necessary.

## **1.8 DESCRIPTION OF OPERATION AND MAINTENANCE (O&M) PROGRAM FOR ALL PLANNED AND EXISTING STRUCTURAL BMPS**

**Permit Requirement:** *The permittee shall establish an Operation and Maintenance Program for all structural BMPs being claimed for phosphorus reduction credit as part of Phase 1 of the PCP. This includes BMPs implemented to date as well as BMPs to be implemented during Phase 1 of the PCP. The Operation and Maintenance Program shall become part of the PCP and include: (1) inspection and maintenance schedule for each BMP according to BMP design or manufacturer specification and (2) program or department responsible for BMP maintenance.*

The Town will develop Operation and Maintenance Program for all the structural BMPs when the BMP inventory list is updated, and this O & M plan will be added as necessary.

## **1.9 PHASE 1 IMPLEMENTATION SCHEDULE**

**Permit Requirement:** *A schedule for implementation of all planned Phase 1 BMPs, including, as appropriate: obtaining funding, training, purchasing, construction, inspections, monitoring, operation and maintenance activities, and other assessment and evaluation components of implementation. Implementation of planned BMPs must begin upon completion of the Phase 1 Plan, and all non-structural BMPs shall be fully implemented within six years of the permit effective date. Structural BMPs shall be designed and constructed to ensure the permittee will comply with the 8 and 10 year phosphorus load milestones established in Table F-1 [of Appendix F of the MS4 Permit]. The Phase 1 plan shall be fully implemented as soon as possible, but no later than 10 years after the effective date of permit.*

The Town is planning to continue its current non-structural controls to achieve the target phosphorus reduction.

By Year 6, non-structural BMPs are anticipated to reduce a total of 19.01 lbs/yr of phosphorus in Phase 1 of the PCP, which is 45% of the Year 10 target phosphorus reduction (42.5 lbs/yr). The Town will update existing structural BMP inventory and develop O & M plans to claim phosphorus reduction credit by year 6.

## **1.10 ESTIMATED COST FOR IMPLEMENTING PHASE 1 OF THE PCP**

**Permit Requirement:** *The permittee shall estimate the cost of implementing the Phase 1 non-structural and structural controls and associated Operation and Maintenance Program. This cost estimate can be*

used to assess the validity of the funding source assessment completed by year 3 after the permit effective date and to update funding sources as necessary to complete Phase 1.

The Town of Millis has developed an estimated cost to implement Phase 1 of the PCP.

Table 1-6: Non-Structural BMP Costs

Non-Structural & Structural BMPs	Annual Cost (Subcontractor, Town Personnel, Hauling, and Disposal)	Removed Phosphorus Load (lb P/year)	Annual Cost per lb of Phosphorus Removed (\$/P lb)
Street Sweeping	\$45,610	1.61	\$28,330
Catch Basin Cleaning	\$19,571	17.4	\$2,250

### 1.11 PUBLIC COMMENT

**Permit Requirement:** *The permittee shall make the Phase 1 Plan available to the public for public comment during Phase 1 Plan development. EPA encourages the permittee to post the Phase 1 Plan online to facilitate public involvement.*

In conformance with the Permit's requirements for each Phase of the PCP, Millis will make the draft written Phase 1 PCP available for public comment. Currently the Town is posting a PCP factsheet on their Town website for public comment.

## 2 DOCUMENTATION AND REPORTING

The most current information for annual updates to Millis's PCP progress can be found in the following appendices:

- For non-structural controls: Appendix IV

This data is also tracked in each year's Annual Reports, which are submitted to EPA after each year.

# **APPENDIX I**

## **BASELINE LOAD ASSESSMENT**







# MEMORANDUM

TO: Jim McKay, Director, DPW, Town of Millis  
FROM: Peter Varga, Kleinfelder  
DATE : 6/22/2022  
SUBJECT: Scope of PCP (PCP Area) and Baseline Assessment Memorandum  
CC: Adria Fichter, Kirsten Ryan, Kleinfelder

---

## 1.1 BACKGROUND

The 2016 National Pollutant Discharge Elimination System General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts (“MS4 Permit” or “the Permit”) approved two nutrient TMDLs for the Charles River; one for the Lower Charles River Basin, published in 2007<sup>1</sup>, and one for the Upper/Middle Charles River Basin, published in 2011<sup>2</sup>. As an element of the Permit’s Water Quality Based Effluent Limits (WQBEL) provisions, communities within the Charles River watershed are obligated to address phosphorus impairments through the development and implementation of a Phosphorus Control Plan (PCP). Appendix F of the MS4 Permit describes specific requirements of the PCP, implementation of which is anticipated to achieve the TMDL-established targeted phosphorus reductions over a 20-year timeframe. PCP implementation includes structural and non-structural best management practices (BMPs) executed through programs, projects, and policies. The PCP must be fully implemented within 20 years of the Permit effective date (i.e., by 2038). The targeted phosphorus reductions are broken out into interim mandatory milestones, culminating in achievement of the allowable TMDL phosphorus loads for each municipality at the end of the 20-year schedule.

## 1.2 OVERVIEW OF PCP PHASE 1 MILESTONES

Permittees are currently in the Phase 1 of the PCP. Phase 1 spans for the first 10 years of the 20-year plan and has two subphases. The first subphase ranging from year one to year five (2018-2023) from the effective date of the permit is called the “Create Phase 1 Plan” which is the ongoing phase. The second subphase for the period from year 5 to year 10 (2023-2028) of the permit is called the “Implement Phase 1 Plan”. Phase 1 of the PCP must achieve the first 25% of each

---

<sup>1</sup> Massachusetts Department of Environmental Protection. 2007. *Final TMDL for Nutrients in the Lower Charles River Basin*. CN 301.1

<sup>2</sup> Massachusetts Department of Environmental Protection. 2011. *Total Maximum Daily Load for Nutrients in the Upper/Middle Charles River Basin, Massachusetts*. CN 272.0



permittee's phosphorus load reduction requirement within 10 years (i.e., by June 30, 2028), with an interim milestone of achieving the first 20% of phosphorus load reduction by Year 8 (i.e., by June 30, 2026). This is accomplished by making sure various components of the PCP as detailed in Table 1-1 below are completed and reported to EPA by the stipulated deadline.

Table **Error! No text of specified style in document.**-1. Phase 1 Component Deadlines

Permit Year #	Year-End (June 30th)	PCP Component(s) Due
Year 1	2019	N/A
Year 2	2020	Legal Analysis
Year 3	2021	Funding Source Assessment
Year 4	2022	PCP Scope
Year 5	2023	Descriptions of the following Phase 1 items: <ul style="list-style-type: none"> <li>- Nonstructural controls</li> <li>- Structural controls</li> <li>- O&amp;M program for structural controls</li> <li>- Implementation schedule</li> <li>- Phase 1 cost estimate</li> <li>- Written Phase 1 PCP</li> <li>- Full implementation of nonstructural controls</li> </ul>
Year 6	2024	Performance Evaluation
Year 7	2025	Performance Evaluation
Year 8	2026	Performance Evaluation & Implementation of structural controls to achieve 20% of target phosphorus reduction
Year 9	2027	Performance Evaluation
Year 10	2028	Performance Evaluation & Implementation of structural controls to achieve 25% of target phosphorus reduction

This memorandum summarizes the completion of a key PCP component by the Town of Millis during Year 4 of the NPDES permit which is to establish the scope of their designated PCP area within the Charles River Watershed Community. Additionally, this document also demonstrates the reassessment of the Baseline Phosphorus Loads and the corresponding Stormwater Phosphorus Reduction Requirement due to development since 2005 until 2016.

### 1.3 COMMUNITY CHARACTERIZATION

The Town of Millis is located in western Norfolk County, Massachusetts, along the Charles River. The town was formerly an industrial town, and is now primarily a suburban community with rural areas remaining on its outskirts. Millis is bordered by Medway on the west, Holliston and Sherborn on the north, Medfield on the east, and Norfolk on the south. Millis is 26 miles southwest of Boston,

32 miles east of Worcester, and 32 miles north of Providence RI. Major roadways include Rt. 109 which connects east and west to state Rt. 128 (I-95) and I-495. Route 115 is the major north-south route through town. The center of town is located near the intersection of Rt. 109 (Main St.) and Rt. 115 (Plain St.). The total land area of the town is 12.16 square miles, and the population, census, as of April 1, 2020, is 8,460<sup>3</sup>. Fig 1-1 below shows the 2005 land use cover for the Town of Millis.

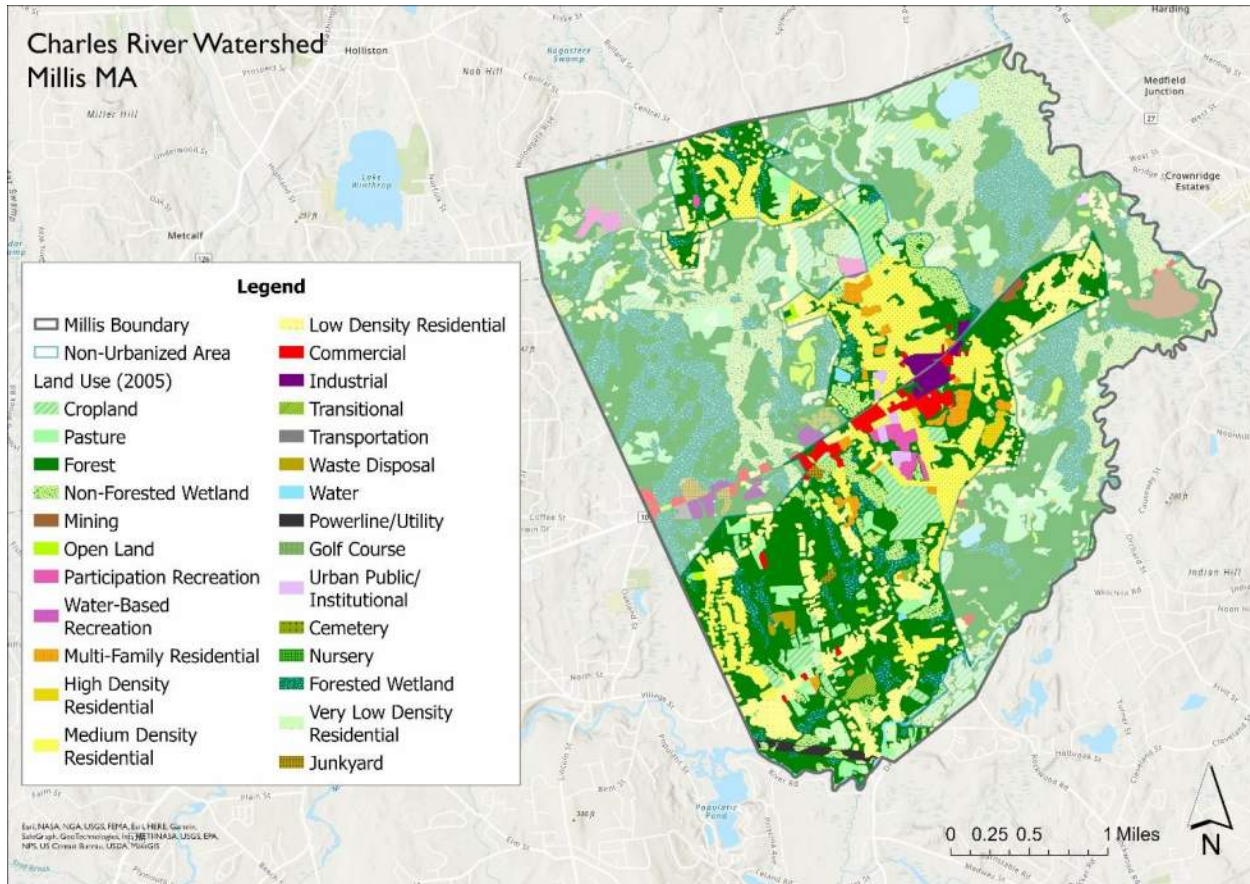


Figure 1-1: 2005 Land Use Cover for the Town of Millis

The Town of Millis is issued an NPDES permit (Permit ID # MAR041137) to discharge stormwater from its MS4 in accordance with the applicable terms and conditions of the MS4 General Permit, including all relevant and applicable Appendices.

The Town of Millis acknowledges that to meet the phosphorus reduction deadlines set forth in the MS4 Permit, significant preparation is required. In order to plan, allocate funds to, design, and construct structural controls to meet the Year 8 and Year 10 reduction deadlines, there is

<sup>3</sup> QuickFacts Millis Town, Norfolk County, Massachusetts." U.S. Census Bureau, <https://www.census.gov/quickfacts/fact/table/millistownnorfolkcountymassachusetts/DIS010220>.



significant work to be completed during the initial years of PCP implementation. Some controls that rely on local bylaw or regulatory updates, or engaging landowners directly through incentives, may take even longer to implement. This is taken into account in the Phase 1 implementation schedule.

#### 1.4 PCP LOAD REDUCTION TARGETS

The Town of Millis has the option to implement its PCP either within the entirety of the community that falls within the Charles River watershed, or just the MS4-regulated area otherwise called as the Urbanized Area of the community within the Charles River watershed.

Based on an assessment of factors relevant to the selection criteria, Millis will implement the PCP on the Urbanized Area and therefore be held to the Allowable Phosphorus Load reported in Table F-3 of Appendix F of the MS4 Permit. The Allowable Phosphorus Load reported in Table F-3 of Appendix F of the permit is highlighted in Table 1-3 below specifically for the Town of Millis along with the corresponding Year 8 and Year 10 reduction requirements.

Millis is opting to implement the PCP within the MS4-regulated (Urbanized) area because it is a smaller load and a smaller, more manageable area. We anticipate having the available space within this area to implement BMPs and to meet our MS4 Permit phosphorus reduction requirements. We do anticipate, however, that there will be improvements to stormwater management practices outside of this designated area as well due to the adoption of new stormwater policies and requirements that will be implemented at the municipal scale. We understand that these improvements will not count towards Millis's phosphorus reduction requirement.



Table 1-3. PCP Phase 1 Reduction Requirements

Condition	From Permit <sup>1</sup>
Baseline (2005) P-Load (lbs/yr)	1104.52
Allowable P-Load (lbs/yr)	661.39
Stormwater P-Load Reduction Requirement (lbs/yr)	440.92
Year 8 Milestone: 20% of Reduction (lbs/yr)	88.19
Year 10 Milestone: 25% of Reduction (lbs/yr)	110.23

## 1.5 INCREASES OR DECREASES TO BASELINE PHOSPHORUS LOAD SINCE 2005

The Baseline Phosphorus Load displayed in Table 1-3 above was calculated using land use data from 2005. Due to development in the Town of Millis, the current phosphorus load has changed, and a reassessment of the baseline load is warranted. An extensive GIS analysis comprising of the following steps was performed to update the Baseline Phosphorus Load with change in phosphorus export due to development from 2005 to 2016. The methodology used in the analysis was illustrated by the Charles River Watershed Association in their Workshop #1: All Abouts the Loads: Baseline Loads<sup>4</sup>.

- Open Source Information Downloads:
  - In order to assess the changes in land use and land cover, the 2016 Land Cover/Land Use ArcGIS layer file was downloaded from MassGIS<sup>5</sup>. Fig 1-2 below shows the 2016 Land Cover/Land Use within the Town of Millis. Phosphorus load exports were estimated for the land area of each landuse type presented in the 2016 Land Cover/Land Use dataset.

---

<sup>4</sup> "Workshop 31: All about the Loads: Baseline Loads, Impact from EPA's RDA." Phosphorus Control Planning Support, Charles River Watershed Association, 10 May 2022, <https://www.crw.org/phosphorus-control-planning-support.html>.

<sup>5</sup> "MassGIS Data: 2016 Land Cover/Land Use." Mass.gov, Commonwealth of Massachusetts, May 2019, <https://www.mass.gov/info-details/massgis-data-2016-land-coverland-use>.



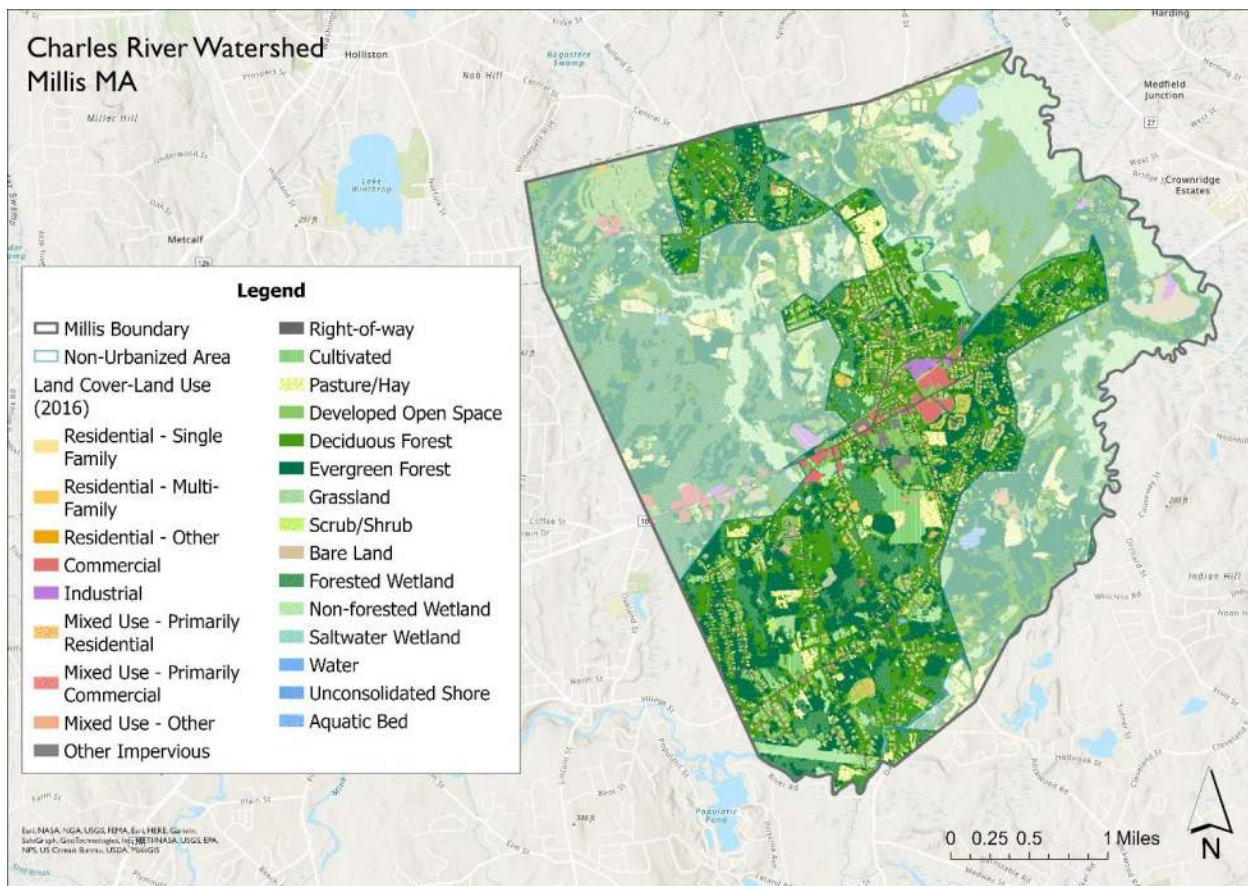


Figure 1-2: 2016 Land Cover/land use for the Town of Millis

- Massachusetts ‘Top-20’ SSURGO Soils Data Layer Created by NRCS in September 2020 was obtained to identify hydrologic soil group classifications for the pervious land areas within the PCP boundary<sup>6</sup>.
- Impervious Surface 2005 layer obtained from MassGIS was used to represent impervious surfaces within the Town of Millis. The impervious surfaces were produced using orthoimagery acquired in April 2005 by MassGIS and was last updated in August 2020<sup>7</sup>.
- The Urbanized Area boundary was used to represent the PCP area and to limit analysis of the land cover, soil groups and impervious surfaces to just the PCP area.

<sup>6</sup> “MassGIS Data: Soils SSURGO-Certified NRCS.” Mass.gov, Commonwealth of Massachusetts, November 2021, <https://www.mass.gov/info-details/massgis-data-soils-ssurgo-certified-nrcs>.

<sup>7</sup> “MassGIS Data: Impervious Surface.” Mass.gov, Commonwealth of Massachusetts, February 2007, <https://www.mass.gov/info-details/massgis-data-impervious-surface-2005>

- MassDOT roads layer file was used for the purposes of identifying and removing roadways owned by MassDOT and that do not fall under the jurisdiction of the MS4 permit from any GIS analysis<sup>8</sup>. It was however identified that all roadways included in the 2016 Land use/Land Cover dataset within the Urbanized Area of the Town of Millis were owned by the Town of Millis and therefore were included in the phosphorus load export calculations.
  - A layer file including Roads and Trails owned by the Department of Conservation and Recreation (DCR) was obtained from MassGIS<sup>9</sup>. DCR owned roads and trails, much similar to MassDOT properties do not fall under the jurisdiction of the EPA and must be eliminated from phosphorus load export calculations. The Roads and Trails layer file confirmed that there are no DCR owned properties within the designated PCP area for Millis.
- The 2016 Land Cover/Land Use data layer was clipped to the Urbanized Area boundary for the Town of Millis.
  - MassGIS Land Use Codes found in the 2016 dataset were reconciled with EPA's Land Use Groups for phosphorus load calculations tabulated in Table 1-3 in Attachment 1 of Appendix F of the MS4 permit. The following is a list of newly added Land Use categories in the 2016 Land Cover/Land Use layer file (as opposed to the categories in the 2005 land use layer). These categories were matched with corresponding Pollutant Loading Export Rate (PLER) categories instead obtained from a guidance document published by MassDEP called the *2016 Massachusetts Small MS4 Permit Pollutant Loading Export Rates applied to the 2016 Massachusetts land Use/Land Cover GIS Dataset*<sup>10</sup>.
    - Mixed use, other
    - Mixed use, primarily commercial
    - Mixed use, primarily residential
    - Residential – multi-family
    - Residential – single-family
    - Tax Exempt

---

<sup>8</sup> "MassGIS Data: Massachusetts Department of Transportation (MassDOT) Roads." Mass.gov, Commonwealth of Massachusetts, May 2022, [MassGIS Data: Massachusetts Department of Transportation \(MassDOT\) Roads | Mass.gov](https://www.mass.gov/info-details/massgis-data-massachusetts-department-of-transportation-massdot-roads)

<sup>9</sup> "MassGIS Data: Department of Conservation and Recreation Roads & Trails" Mass.gov, Commonwealth of Massachusetts, June 2015, <https://www.mass.gov/info-details/massgis-data-department-of-conservation-and-recreation-roads-trails>

<sup>10</sup> 2016 Massachusetts Small MS4 Permit Pollutant Loading Export Rates Applied to the 2016 Massachusetts Land Use/Land Cover GIS Dataset. Mass.gov, <https://www.mass.gov/doc/2016-massachusetts-small-ms4-permit-pollutant-loading-export-rates/download>.

- Unknown

This guidance document was developed by MassDEP and EPA Region 1 to serve as a crossover between MassGIS's 2016 Land Cover/Land Use dataset and EPA's Land Use Groups that were solely developed based on landuse information identified in the 2005 dataset. MassDEP was consulted before utilizing this guidance document to assign corresponding Land Use categories to the above listed categories that are unique to the 2016 dataset. The final selection of EPA's Land Use Groups matched with each identified 2016 Land Use type within the PCP boundary of Millis can be found in Appendix A. These EPA Land Use Groups were appended to the 2016 Land Cover/Land Use layer clipped for the PCP area of Millis.

- The appended 2016 Land Cover/Land Use layer is now joined with the Massachusetts 'Top-20' SSURGO Soils Data Layer through "Union" operation on GIS.
- The resulting layer file is now intersected with the Impervious surface data layer. This intersection procedure generates an output data layer that includes the acreage of impervious surface area for each polygon. Each polygon in this final shapefile now has a designated EPA Land Use Group, a Hydrologic Soil Group (HSG) from the Soils data layer file and the acreage of pervious or impervious surface area within. The resulting master dataset from this shapefile is used for further calculations that is predominantly performed using Excel spreadsheet analysis.
- Two different types of impervious area, namely – Directly Connected Impervious Area (DCIA) and Disconnected Impervious Area (DIA), and pervious area within the PCP area were calculated for each EPA Land Use Group.
- Directly Connected Impervious Area (DCIA) is calculated based on the formula:
  - $\% \text{ Directly Connected Impervious Area} = A \times (\% \text{ Impervious Area}/100)^B$
  - Where A, B are coefficients that vary based on land use and are tabulated in Appendix A.
  - The Phosphorus loading export rate (PLER) that can be assigned to each Land Use Group is retrieved from Table 1-2 in Attachment 1 of Appendix F of the MS4 permit. The *2016 Massachusetts Small MS4 Permit Pollutant Loading Export Rates applied to the 2016 Massachusetts land Use/Land Cover GIS Dataset* provides an updated PLER for the "Highway" Land Use Group. This weighted average loading rate equals 1.95 lbs P/ac/yr and was applied to all Roads, Right of Ways and Highways that are owned by the permittee regardless of whether roadways are residential roads or highways. This is an increase from the 1.32 lbs/yr/ac pollutant loading export rate developed for the 2005 Land Use category for Highways, which only represented highway pollutant loadings. This updated loading rate was used in our estimations after consultation with MassDEP.



- Phosphorus load export from Directly Connected Impervious Area is Directly Connected Impervious Area multiplied by the corresponding Phosphorus Export Rate. The results of this analysis are tabulated in Appendix A.
- Pervious Area Phosphorus Load Export is calculated based on the following approach:
  - The pervious area polygons were filtered within the master dataset. The resulting dataset was categorized based on Land Use Groups and the corresponding acreage of different types of HSG A, B, C, D, A/D, B/D, C/D and Unknown, within each Phosphorus Land Use Group.
  - PLER that corresponds to the primary HSG were applied to all Dual HSG (A/D, B/D, C/D) assigned soils, as dictated by the *2016 Massachusetts Small MS4 Permit Pollutant Loading Export Rates applied to the 2016 Massachusetts land Use/Land Cover GIS Dataset* and confirmed by MassDEP. Therefore, soils classified as A/D, B/D and C/D were applied to the rates corresponding to HSG A, B and C respectively.
  - Any pervious areas that did not have a HSG assigned was applied the PLER corresponding to HSG C . The PLER for HSG C was revised from 0.29 to 0.21 lbs p/ac/yr as detailed in the *2016 Massachusetts Small MS4 Permit Pollutant Loading Export Rates applied to the 2016 Massachusetts land Use/Land Cover GIS Dataset*. The revised rate was used for our calculations.
  - The acreage of each HSG is multiplied by the PLER from Table 1-2 in Attachment 1 of Appendix F of the MS4 Permit in order to obtain phosphorus load export from pervious surfaces within the PCP area for Millis. The results of this analysis are tabulated in Appendix A.
- Disconnected Impervious Area Load Export is calculated based on the following approach:
  - Disconnected Impervious Area (IA) is calculated by subtracting the acreage of DCIA from total Impervious Area acreage for each Land use category.
  - A composite pervious area PLER is calculated for each Land Use category by dividing the sum of their corresponding Phosphorus Load exports by the overall pervious area across all HSGs.
  - Annual Disconnected Area Phosphorus Load is calculated by multiplying the acreage of Disconnected Impervious Area by the composite pervious area PLER for each Land Use category. The results of this analysis are tabulated in Appendix A.
- Now that we have calculated the annual phosphorus export from Directly Connected Impervious Area, Pervious Area and Disconnected Impervious Area, the total updated phosphorus load export from the Urbanized Area of Millis based on the 2016 Land Cover/Land Use dataset is the summation of phosphorus load exports from all three types

of surfaces. The total annual phosphorus load exports per Land Use Group are tabulated in Appendix A. Fig 1-3 below classifies the overall Urbanized Area of Millis by the estimated Phosphorus load export per acre per year.

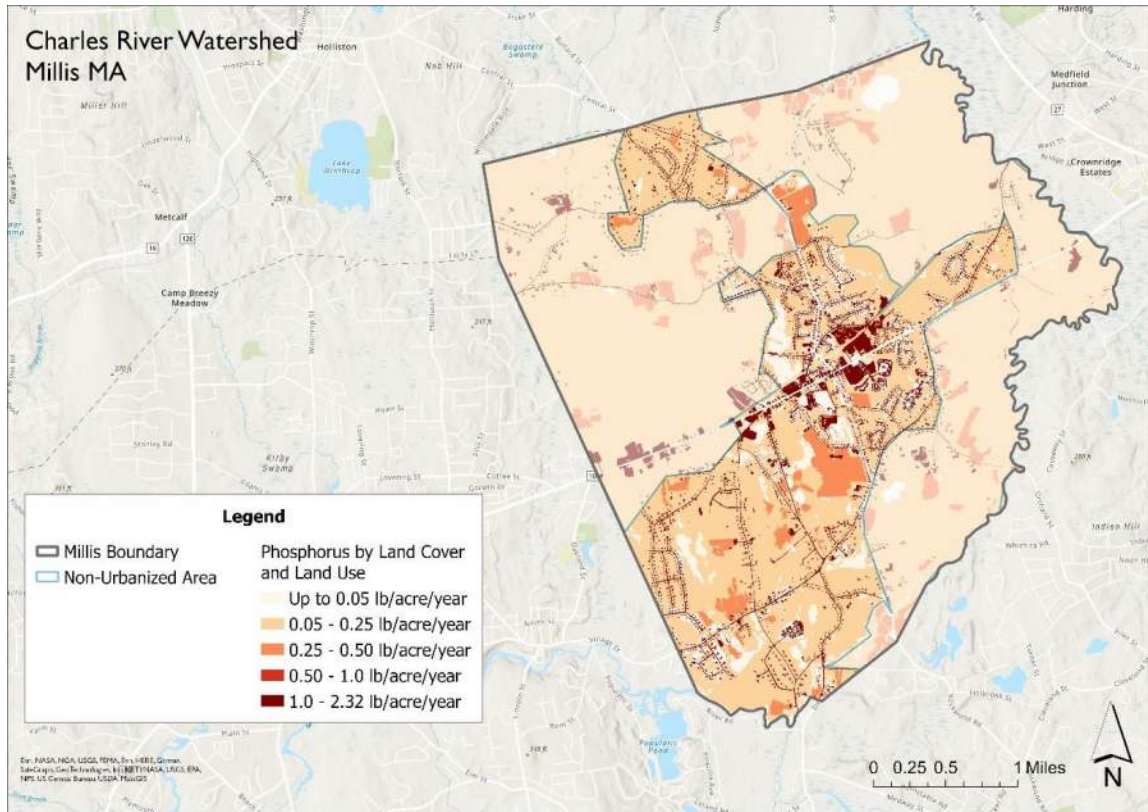


Figure 1-3: Phosphorus load export within the PCP area

- If the updated phosphorus load from the above calculations is calculated to be lesser than the 2005 baseline load, then there is lesser phosphorus exported to the Charles River watershed. This constitutes a reduction in the Stormwater Phosphorus Load Reduction Requirement. If the updated phosphorus load from the above calculations is calculated to be higher than the 2005 baseline load, then this will result in an increase in the Stormwater Phosphorus Load Reduction Requirement.
- Current phosphorus load due to development since 2005 amounted to 831.5 lb/yr. Table 1-4 below shows how the new reduction requirements impacts the Year 8 and Year 10 milestones that the Town should meet.



Table 1-4: Phosphorus Loads Reflecting 2016 Conditions

Condition	Value
<b>Baseline (2005) P-Load (lbs/yr)</b>	1104.52
<b>Allowable P-Load (lbs/yr)</b>	661.39
<b>Stormwater P-Load Reduction Requirement(lbs/yr)</b>	440.92
<b>Changes in P-Load Since 2005 (P-dec lbs/yr)</b>	273.05
<b>Current (2016) P-Load (lbs/yr)</b>	831.5
<b>Current (2016) Stormwater P-Load Reduction Requirement (lbs/yr)</b>	170.1
<b>Year 8 Milestone: 20% of Reduction (lbs/yr)</b>	34.0
<b>Year 10 Milestone: 25% of Reduction (lbs/yr)</b>	42.5

The above analysis indicates a reduction in the annual phosphorus load compared to the existing baseline load as we predict it is due to a large difference in impervious surface data between 2005 and 2016 Land Cover/Land use datasets. To support this theory, a direct comparison of just the impervious area in the 2016 data and the 2005 land use data layers was performed. The 2016 data has a minimum mapping unit of 1/10th acre while the 2005 data has a minimum mapping unit of 1 acre (sometimes less). According to the 2005 documentation of how the separate impervious area class was created, "...*The buffered and labeled impervious and labeled pervious data were combined through a second buffer using ESRI's ArcGIS®. This buffer incorporated natural classes into urban class delineations, e.g., lawns (pervious segment) into residential (buffered and labeled impervious). It allowed impervious features of certain classes to grow into pervious areas of specific classes. This buffer was allowed to grow a specified distance beyond the edge of the first buffer. The buffer distance and class hierarchy were specified in an automated model.*" The coarse resolution and growth of some impervious classes beyond their actual bounds might explain why total P estimated based on 2005 data are so much higher than the estimates based on the 2016 data, where the bounds of impervious area are much more precisely delineated.

The current phosphorus load as calculated using the 2016 Land cover/land Use dataset is reduced by 273.05 lbs/yr from the Baseline Load of 1104.5 lbs/yr. to 831.5 lbs/yr. The Town of Millis will be planning and implementing a series of structural and non-structural BMPs, updating regulatory mechanisms as necessary to aid with achieving these goals, evaluating funding mechanisms and costs, and developing its O&M and recordkeeping programs to ensure functionality of all installed BMPs and enforce continued compliance. Additionally, as land use, development, and impervious cover continue to change, this information will be updated, ensuring that the Town of Millis is on track to still achieve the required 20% and 25% reduction milestones by Years 8 and 10.

Town of Millis PCP Scope and Baseline Assessment Memo - Appendix A

2016 Land Use Categories vs. EPA's Loading Use Groups

Town Survey Land Use	PLUG
Crop Land	Agriculture
Pasture (active)	Agriculture
Forest	Forest
Wetland	Forest
Mining	Industrial
Open Land includes inactive pasture	Open Land
Participation Recreation	Open Land
Spectator Recreation	Open Land
Water Based Recreation	Open Land
Multi-Family Residential	High Density Residential
High Density Residential	High Density Residential
Medium Density Residential	Medium Density Residential
Low Density Residential	Low Density Residential
Saltwater Wetland	Water
Commercial	Commercial
Industrial	Industrial
Urban Open	Open Land
Transportation	Highway
Waste disposal	Industrial
Water	Water
Cranberry Bog	Agriculture
Powerline	Open Land
Saltwater Sandy Beach	Open Land
Golf Course	Agriculture
Marina	Commercial
Urban Public	Commercial
Cemetery	Open Land
Orchard	Forest
Nursery	Agriculture
Forested Wetland	Forest
Very Low Density residential	Low Density Residential
Junkyard	Industrial
Brush Land/Successional	Forest
Right-of-way	Highway
Mixed use, other	Commercial
Mixed use, primarily residential	High Density Residential
Mixed use, primarily commercial	Commercial
Residential - multi-family	High Density Residential
Residential - single family	Medium Density Residential
Tax exempt	Commercial
Unknown	Open Land

Sutherland Coefficients

PLUG	A	B
Commercial	0.4	1.2
Industrial	0.4	1.2
Multi-Family	0.4	1.2
High Density Residential	0.4	1.2
Medium Density Residential	0.1	1.5
Low Density Residential	0.1	1.5
Highway	0.1	1.5
Forest	0.01	2
Open Land	0.1	1.5
Agriculture	0.01	2

Source: Voorhees 2014

Phosphorus Export from Directly Connected Impervious Area (DCIA)

				Sutherland Coefficients					
Phosphorus Land Use Group	Total Area (ac)	Impervious Area (ac)	Percent Impervious	A	B	Percent DCIA (%)	Directly Connected Impervious Area (ac)	P Loading Export Rate (lb/ac/yr)	P Export Load (lb/yr)
Commercial	301.03	79.39	26.37%	0.4	1.2	20.30%	61.10	1.78	108.76
Industrial	15.65	12.33	78.73%	0.4	1.2	75.41%	11.81	1.78	21.01
High Density Residential	300.56	47.16	15.69%	0.4	1.2	10.88%	32.71	2.32	75.90
Medium Density Residential	1586.70	137.18	8.65%	0.1	1.5	2.54%	40.33	1.96	79.06
Low Density Residential	0.00	0.00	0.00%	0.1	1.5	0.00%	0.00	1.52	0.00
Highway	262.30	148.53	56.63%	0.1	1.5	42.61%	111.77	1.95	217.95
Forest	34.94	0.06	0.17%	0.01	2	0.00%	0.00	1.52	0.00
Open Land	652.26	23.74	3.64%	0.1	1.5	0.69%	4.53	1.52	6.89
Agriculture	33.07	0.25	0.77%	0.01	2	0.01%	0.00	1.52	0.00
Total	3186.51	448.63	14.08%			8.23%	262.26		509.57

Phosphorus Export from Pervious Area

Phosphorus Land Use Group	Hydroloigic Soil Group - Total Area (acres)				P Loading Export Rate (lb/ac/yr)				Phosphorus Load (lb/yr)				Total
	A	B	C	D	A	B	C	D	A	B	C	D	
Commercial	142.91	58.50	15.82	4.40	0.03	0.12	0.21	0.37	4.29	7.02	3.32	1.63	16.26
Industrial	0.39	0.00	2.90	0.04	0.03	0.12	0.21	0.37	0.01	0.00	0.61	0.01	0.63
High Density Residential	145.11	69.09	31.79	7.42	0.03	0.12	0.21	0.37	4.35	8.29	6.68	2.74	22.06
Medium Density Residential	605.97	510.58	301.91	31.06	0.03	0.12	0.21	0.37	18.18	61.27	63.40	11.49	154.34
Low Density Residential	0.00	0.00	0.00	0.00	0.03	0.12	0.21	0.37	0.00	0.00	0.00	0.00	0.00
Highway	47.33	29.47	32.36	4.61	0.03	0.12	0.21	0.37	1.42	3.54	6.80	1.71	13.46
Forest	14.02	5.61	15.25	0.00	0.13	0.13	0.13	0.13	1.82	0.73	1.98	0.00	4.53
Open Land	249.99	165.02	189.13	24.38	0.03	0.12	0.21	0.37	7.50	19.80	39.72	9.02	76.04
Agriculture	19.91	9.08	3.83	0.00	0.45	0.45	0.45	0.45	8.96	4.09	1.72	0.00	14.77
Total	1225.64	847.34	592.99	71.90					46.53	104.73	124.23	26.60	302.10

Phosphorus Export from Disconnected Impervious Area (DIA)

					Pervious Area								Composite Pervious Area Phosphorus Export Loading Rate (lb/ac/yr)	Annual Disconnected Area Phosphorus Load (lb/yr)
					Hydrologic Soil Group - Area (ac)				Phosphorus Load (lb/yr)					
									A	B	C	D		
Phosphorus Land Use Group	Total Area (ac)	Impervious Area (ac)	Directly Connected Impervious Area (ac)	Disconnected IA (ac)	A	B	C	D	A	B	C	D		
Commercial	301.03	79.39	61.10	18.29	142.91	58.50	15.82	4.40	4.29	7.02	3.32	1.63	0.07	1.34
Industrial	15.65	12.33	11.81	0.52	0.39	0.00	2.90	0.04	0.01	0.00	0.61	0.01	0.19	0.10
High Density Residential	300.56	47.16	32.71	14.44	145.11	69.09	31.79	7.42	4.35	8.29	6.68	2.74	0.09	1.26
Medium Density Residential	1586.70	137.18	40.33	96.84	605.97	510.58	301.91	31.06	18.18	61.27	63.40	11.49	0.11	10.31
Low Density Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Highway	262.30	148.53	111.77	36.76	47.33	29.47	32.36	4.61	1.42	3.54	6.80	1.71	0.12	4.35
Forest	34.94	0.06	0.00	0.06	14.02	5.61	15.25	0.00	1.82	0.73	1.98	0.00	0.13	0.01
Open Land	652.26	23.74	4.53	19.21	249.99	165.02	189.13	24.38	7.50	19.80	39.72	9.02	0.12	2.32
Agriculture	33.07	0.25	0.00	0.25	19.91	9.08	3.83	0.00	8.96	4.09	1.72	0.00	0.45	0.11
Total	3186.51	448.63	262.26	186.38	1225.64	847.34	592.99	71.90	46.53	104.73	124.23	26.60		19.80

Total Annual Phosphorus Export

Annual Phosphorus Export (lb/yr)				
Phosphorus Land Use Group	Directly Connected Impervious Area	Pervious Area	Disconnected Impervious Area	Total (lb/yr)
Commercial	108.76	16.26	1.34	126.37
Industrial	21.01	0.63	0.10	21.75
High Density Residential	75.90	22.06	1.26	99.22
Medium Density Residential	79.06	154.34	10.31	243.71
Low Density Residential	0.00	0.00	0.00	0.00
Highway	217.95	13.46	4.35	235.75
Forest	0.00	4.53	0.01	4.54
Open Land	6.89	76.04	2.32	85.25
Agriculture	0.00	14.77	0.11	14.88
Total	400.80	285.84	18.46	831.47



## **APPENDIX II**

### **LEGAL ANALYSIS**





# MEMORANDUM

TO: Jim McKay, Town of Millis  
FROM: Adria Fichter and Betsy Frederick, Kleinfelder  
DATE: June 30, 2020  
SUBJECT: DRAFT - Phosphorus Control Plan – Legal Analysis

---

## **1.0 Background**

The Town of Millis is a Charles River Watershed community and as such, is subject to specific phosphorus reduction requirements in the 2016 General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts (the MS4 Permit) detailed in Permit Appendix F, Part A.I. To address phosphorus reduction requirements, the Town must develop a Phosphorus Control Plan (PCP) in three (3) distinct phases, each with multiple milestones and deadlines. The focus of this memorandum is the first requirement of the PCP, a “Legal Analysis” which must be completed by the end of Permit Year 2, June 30, 2020. This memorandum will serve to satisfy that requirement.

## **2.0 Legal Analysis**

The first element of the PCP, the legal analysis (**Item 1-1**), is as follows:

### ***Legal Analysis: A.I.1.a.3 MS4 Permit***

*‘Legal analysis identifies existing regulatory mechanisms available to the MS4 such as by-laws and ordinances, and gaps (changes to regulatory mechanisms) that may be necessary to implement PCP. Adoption of necessary regulatory changes is required prior to the end of the permit term.’*

### **2.1 Applicable Regulatory Mechanisms**

In 2004 the Town adopted Stormwater Management Regulations that relate to the proper management of stormwater. To understand current requirements, the following documents were reviewed:

- Stormwater Management Regulations
  - Article I – Land Disturbance and Post-Construction Stormwater Management (Adopted June 28, 2004, Amended June 5, 2006, Amended February 12, 2007)
  - Article II – Regulation Governing Discharges to the Municipal Storm Drain System (June 28, 2004).
- Millis Zoning By-Laws
  - Section V - Use Regulations
  - Section X - Watershed Protection District





- Section XI – Special Flood Hazard District
- Section XII – Administration and Enforcement
- Section XIII – Special Permit Conditions
  - C: Site Plan Review and Approval for Commercial and Industrial Structures and Developments
- Conservation Commission
  - Article XIX - Wetlands Protection By-Law

To adequately understand if the current regulatory mechanisms are sufficient, the Town must understand the regulatory thresholds specific to Millis and what might have to be implemented in order to meet phosphorus reduction requirements. The Permit set a specific phosphorus reduction target for the Town and included potential best management practices (BMPs) for which phosphorus reduction credits would be obtained upon implementation. Note that the legal analysis must address all aspects of “the entire” PCP implementation, which extends through additional phases over a period of 20 years. Realistically, this analysis can only address the likely approach undertaken by the Town in this initial phase. Phase 2 (beginning 5 – 10 years after the permit’s effective date) includes an obligation to update the legal analysis given then-current conditions and programs.

## 2.2 Potential PCP Components

The Permit describes structural and non-structural BMPs, implementation of which will qualify for phosphorus credits (**Attachments 2 and 3 to Appendix F**). It is important that these BMPs are not legally restricted. Potential BMPs that the Town may select and the current relevant action that the Town is taking, the local regulations that allow for the BMP, and an assessment of the adequacy of the enabling regulations are included in **Table 1**.

**Table 1: Potential Best Management Practices**

Potential Best Management Practices for the City's Phosphorus Control Plan	Applicable Action or Regulation	
Non-Structural BMPs		
Enhanced Sweeping Program; <i>Increasing the frequency and selecting a more effective sweeper technology</i>	Town has established a street sweeping schedule using one mechanical sweeper.	Current mechanism sufficient to allow enhancement if selected
Catch Basin Cleaning; <i>Increasing the frequency of catch basin cleaning when necessary to ensure that no catch basin is ever more than 50% full</i>	Town is developing a catch basin cleaning program.	
Organic Waste and Leaf Litter Collection Program; <i>Removing all landscaping wastes, organic debris, and leaf litter at least weekly from September 1st to December 1st</i>	Yard waste is accepted at the Millis Transfer Station.	
Structural BMPs		
Infiltration Trench	Stormwater Management Regulations <b>Article I - Land Disturbance and Post-Construction Stormwater Management</b> , amended February 12, 2007; <b>Article II - Regulation Governing Discharges to the Municipal Storm Drain System</b> , June 28, 2004; <b>Millis Zoning By-Laws</b> , amended November 5, 2018.	Current mechanism sufficient to allow action if selected
Infiltration Basin or other surface infiltration practice	Stormwater Management Regulations <b>Article I - Land Disturbance and Post-Construction Stormwater Management</b> , amended February 12, 2007; <b>Article II - Regulation Governing Discharges to the Municipal Storm Drain System</b> , June 28, 2004; <b>Millis Zoning By-Laws</b> , amended November 5, 2018.	
Bio-filtration practice	Stormwater Management Regulations <b>Article I - Land Disturbance and Post-Construction Stormwater Management</b> , amended February 12, 2007; <b>Article II - Regulation Governing Discharges to the Municipal Storm Drain System</b> , June 28, 2004; <b>Millis Zoning By-Laws</b> , amended November 5, 2018.	
Gravel Wetland System	Stormwater Management Regulations <b>Article I - Land Disturbance and Post-Construction Stormwater Management</b> , amended February 12, 2007; <b>Article II - Regulation Governing Discharges to the Municipal Storm Drain System</b> , June 28, 2004; <b>Millis Zoning By-Laws</b> , amended November 5, 2018.	
Porous Pavement	Stormwater Management Regulations <b>Article I - Land Disturbance and Post-Construction Stormwater Management</b> , amended February 12, 2007; <b>Article II - Regulation Governing Discharges to the Municipal Storm Drain System</b> , June 28, 2004; <b>Millis Zoning By-Laws</b> , amended November 5, 2018.	
Wet Pond or wet detention basin	Stormwater Management Regulations <b>Article I - Land Disturbance and Post-Construction Stormwater Management</b> , amended February 12, 2007; <b>Article II - Regulation Governing Discharges to the Municipal Storm Drain System</b> , June 28, 2004; <b>Millis Zoning By-Laws</b> , amended November 5, 2018.	
Dry pond or detention basin	Stormwater Management Regulations <b>Article I - Land Disturbance and Post-Construction Stormwater Management</b> , amended February 12, 2007; <b>Article II - Regulation Governing Discharges to the Municipal Storm Drain System</b> , June 28, 2004; <b>Millis Zoning By-Laws</b> , amended November 5, 2018.	
Dry water quality swale/grass swale	Stormwater Management Regulations <b>Article I - Land Disturbance and Post-Construction Stormwater Management</b> , amended February 12, 2007; <b>Article II - Regulation Governing Discharges to the Municipal Storm Drain System</b> , June 28, 2004; <b>Millis Zoning By-Laws</b> , amended November 5, 2018.	
Semi-Structural/Non-structural BMPs		
Impervious area disconnection through storage (e.g., rain barrels, cisterns, etc. )	Stormwater Management Regulations <b>Article I - Land Disturbance and Post-Construction Stormwater Management</b> , amended February 12, 2007; <b>Article II - Regulation Governing Discharges to the Municipal Storm Drain System</b> , June 28, 2004; <b>Millis Zoning By-Laws</b> , amended November 5, 2018.	Current mechanism sufficient to allow action if selected
Impervious area disconnection	Stormwater Management Regulations <b>Article I - Land Disturbance and Post-Construction Stormwater Management</b> , amended February 12, 2007; <b>Article II - Regulation Governing Discharges to the Municipal Storm Drain System</b> , June 28, 2004; <b>Millis Zoning By-Laws</b> , amended November 5, 2018.	
Conversions of Impervious Area to Permeable Pervious Area	Stormwater Management Regulations <b>Article I - Land Disturbance and Post-Construction Stormwater Management</b> , amended February 12, 2007; <b>Article II - Regulation Governing Discharges to the Municipal Storm Drain System</b> , June 28, 2004; <b>Millis Zoning By-Laws</b> , amended November 5, 2018.	
Soil Amendments to Enhance Permeability of Pervious Areas	Stormwater Management Regulations <b>Article I - Land Disturbance and Post-Construction Stormwater Management</b> , amended February 12, 2007; <b>Article II - Regulation Governing Discharges to the Municipal Storm Drain System</b> , June 28, 2004; <b>Millis Zoning By-Laws</b> , amended November 5, 2018.	



As summarized in **Table 1**, many of these BMPs are already included in the Town's management of stormwater and their infrastructure. The Town of Millis operates their own street sweeping, catch basin cleaning, and field operations and maintenance. These operations are currently under the direction of DPW Director, Jim McKay.

The PCP allows the Town to receive credit for phosphorus reduction performed by third parties that install stormwater BMPs, such as private property owners and non-MS4 permit holders. The continued operation and maintenance of these BMPs is imperative to successful phosphorus reduction. Permittees under Article I – Land Disturbance and Post-Construction Stormwater Management of the Town's Stormwater Management Regulations, must develop and include with their application, an Operation and Maintenance (O&M) Plan. The O&M Plan includes a Maintenance Agreement to certify appropriate operation and maintenance and for maintenance of the BMPs. In the event of transfer of ownership, the Board of Selectmen must be notified of changes in ownership or assignment of financial responsibility. Article I also includes access permission for Town staff to conduct inspections and determine regulatory compliance.

Article I (Amended February 12, 2007) of the Town's Stormwater Management Regulations, requires that permittees, and the structural BMPs they propose, meet the Standards of the Massachusetts Stormwater Management Policy. At this time, the Town's regulations do not explicitly inhibit the implementation of any of the BMPs included in Section 2.2. By the end of Permit Year 4, the Town will develop a report assessing current street design, parking lot guidelines, and other applicable local requirements that impact the creation of impervious cover. This report will focus on highlighting current impediments to using low impact design options, and detailing improvements for promoting the use of such options. If opportunities to improve regulations to allow for LID are available, the report will include recommendations for policies or standards and relevant documents and procedures to minimize impervious cover attributable to parking areas and street design.

In addition to local guidelines regarding the creation of impervious cover, the Town will develop a report assessing existing local regulations to determine how to promote the implementation of green infrastructure. In particular, the Town needs to assess the feasibility of allowing green roofs, infiltration practices, and water harvesting devices. During this investigation, the Town may decide to include other types of green infrastructure as well.

The Permit does require that this legal analysis be updated as part of Phase II of the PCP if necessary.

### **3.0 Next Steps**

Based on the types of potential BMPs and the Town's current procedures, the Town does not require additional legal support for their PCP at this time. It is possible that enhancing regulations such as the Zoning By-laws could promote new/redevelopment and increase the use of the structural BMPs and ultimately yield additional phosphorus reduction credits for the Town.

## **APPENDIX III**

### **FUNDING SOURCE ASSESSMENT**





## **Phosphorus Control Plan: Funding Source Assessment**

**Millis, Massachusetts**

**June 2021**



Copyright 2021 Kleinfelder



## 1 BACKGROUND

The General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts requires municipalities in the Charles River watershed to create a Phosphorus Control Plan (PCP) to meet pollutant reduction requirements of the permit. One element of the PCP is a Funding Source Assessment “to describe known and anticipated funding mechanisms...that will be used to fund PCP implementation.”

The Town of Millis currently funds its stormwater management program through a stormwater utility which was established in 2017. Prior to 2017, stormwater management activities were funded through the Town’s General Fund, where money is allocated each year in balance with competing Town departments and programs. More specifically, the Department of Public Works (DPW) was primarily responsible for the Town’s stormwater management with assistance from additional Town departments and agents. The Town funded multiple expenses including wages and salary for DPW staff; activities related to MS4 compliance including street sweeping, catch basin cleaning, and annual reporting; engineering and planning services; and administrative expenses. In the face of increasing stormwater program costs, the Stormwater Utility was established to provide a dedicated funding source to meet permit terms and targeted pollutant reductions for the Town.

This document provides a general overview of typical stormwater program funding sources available to the Town, details the Town’s Stormwater Utility implementation, and recent progress.

## 2 POTENTIAL FUNDING MECHANISMS

The majority of communities in Massachusetts currently fund stormwater management programs through the General Fund. In this manner, projects are funded when appropriations are presented annually, and funds are approved on the basis of a Town Meeting vote. There are a variety of methods available to communities, however, some of which may provide a more sustainable or consistent revenue upon which to plan for implementation of future program elements. Table 1 provides a summary of common funding mechanisms.

<b>Table 1</b>	
<b>Summary of Common Stormwater Funding Mechanisms</b>	
Taxes	Most general purpose local governmental functions are primarily funded through taxes. The purpose is to defray the expenses of general government, as distinguished from the expense of a specific function or services. It is not necessary that a tax have a

<b>Table 1</b> <b>Summary of Common Stormwater Funding Mechanisms</b>	
	demonstrable association with any particular purpose or function.
Bonds and Grants	Bonds involve borrowing money and accruing debt. While they may be useful for major capital projects, they are not a stable source, and subject to annual vote. Grants are competitive and criteria specific, which may limit their availability or applicability to need.
Special Assessment	A special assessment must confer some direct benefit to the property assessed, as the assumption for the assessment is the premise that it improves the value of the property. An assessment may be based on property value or other factors such as street frontage. Assessments typically have a specific purpose and therefore may have some limitation in terms of how the dollars are applied within a program.
Service Fee/Utility	These fees provide the funds to provide services and facilities, or basically to recover the costs associated with provision of services. The utility must adopt a service charge rate methodology that equitably assigns appropriate fees or charges.

### 3 TOWN OF MILLIS STORMWATER UTILITY IMPLEMENTATION

The Town's Stormwater Utility provides a sustainable and transparent funding mechanism for an effective stormwater management program. The Stormwater Utility fee distributes the cost for stormwater services more fairly than funding the management program through a General Fund. In January 2017, the Town was awarded a grant from the Massachusetts Department of Environmental Protection (MassDEP) to conduct a stormwater utility feasibility study. This study provided preliminary information on the Town's stormwater management program goals and funding needs. The study also presented options and recommendations for funding a financially sustainable and environmentally compliant stormwater management program. Throughout the Utility implementation process, shown in Figure 1, the Town provided educational materials to residents and opportunities for public input at multiple public meetings. The Town voted at the November 2017 Town Meeting to move forward with implementing the Utility. Following the Town Meeting, the Town determined the program's funding needs and developed credit policies described in this manual. The Board of Selectmen approved rates at a hearing on June 25, 2018.

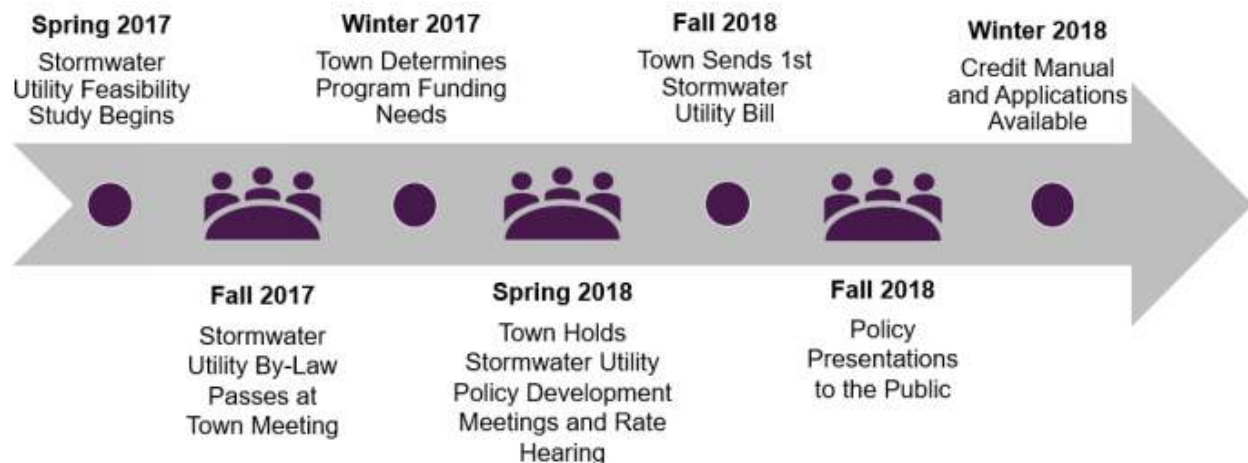


Figure 1. Millis Stormwater Utility Planning & Implementation Process

Throughout this process it was determined that the Stormwater Utility fee should be based on the amount of impervious area on a property. The State captured aerial imagery of Millis in July 2017, which imagery was updated to calculate the amount of impervious area on each property and continues to be updated through a robust abatement and appeals process. Impervious area within the Town-owned roadways and sidewalks was not considered as part of the total impervious area of a parcel. Privately owned roads and sidewalks were included in the impervious area calculations.

A financial analysis was undertaken by Kleinfelder and the Town to understand stormwater program costs that the stormwater utility fees would need to adequately fund. Costs for stormwater program administration, regulation/enforcement, engineering & master planning, capital improvements (including future improvements required to comply with PCP requirements), operation & maintenance, and monitoring were determined using the Town's existing financial and labor information as well as the 2011 EPA study "Sustainable Stormwater Funding Evaluation for the Upper Charles River Communities of Bellingham, Franklin and Milford, MA"

Based off the results of the financial analysis, the billing rate is \$2.75 per billing unit per month. Billing units are generally each increment of 1,000 square feet of impervious area, except for properties with less than 200 square feet of impervious area (which have no fee) and properties with 200-1,499 square feet of impervious area (which have one billing unit). Most single-family homes have 1-3 billing units, while larger residential, commercial, and industrial properties may have greater than 3 billing units. The current fee schedule is shown in Figure 2.



Number of Billing Units <sup>1</sup>	Square Feet of Impervious Area	Annual Fee <sup>2</sup>
0	0 – 199	\$0
1	200 – 1,499	\$33
2	1,500 – 2,499	\$66
3	2,500 – 3,499	\$99
<sup>1</sup> One additional billing unit for each additional 1,000 square feet increment of impervious area greater than 3,499 square feet		
<sup>2</sup> Annual Fee is based on the 2018 Rate of \$2.75 / billing unit / month. This rate is subject to change and will be updated on a periodic basis at Public Rate Hearings		

Figure 2. Stormwater Utility Fee Rate Structure

It is also worth noting that Millis included a stormwater credit program with the Stormwater Utility to recognize stewardship actions and provide an incentive for property owners to operate and maintain stormwater facilities, which help decrease the Town's stormwater management program costs. Property owners can be awarded a credit and reduce their Stormwater Utility bills by implementing and maintaining on-site stormwater improvements such as permeable paving, impervious surface removal, media filters, etc.

This billing rate will change over time as program funding needs change and impervious area calculations are updated. In September 2020 Raftelis was engaged by the Town to perform a stormwater financial planning study and a review of the Town's current stormwater credit policy. After analyzing operating expenses, capital needs, funding options, and growth in revenues from rates, as well as considering customer impacts and maintaining a prudent cash balance Raftelis recommended in February 2021 that the Town consider raising its stormwater rate per billing unit by 4% each year through FY 2025 to meet rising financial needs from operating and capital expenses. Raftelis also confirmed that the Town's stormwater credit policy is robust, sound, reasonable, and within standard practice for stormwater utilities. The Town is now in the process of increasing the Stormwater Utility rate per Raftelis' recommendation.

More information on the Millis Stormwater Utility can be found at the Town's website: <https://www.millisma.gov/stormwater-management/pages/stormwater-billing-information>

#### 4 CONCLUSIONS

The Town of Millis has invested significant resources to ensure the implementation of an effective and equitable Stormwater Utility that will meet the MS4 permit requirements while improving the Town's infrastructure and community assets. As opportunities arise, the Town will also seek out supplemental grant funding to implement innovative water quality improvement projects. At the end of year 5 of the permit term, the Town must estimate the cost for implementing Phase I of the PCP and establish if the Stormwater

Utility will be sufficient to pay for the PCP. That re-evaluation will determine if any of the additional mechanisms detailed in Section 2 or adjustments to the Stormwater Utility fee must be instituted to maintain appropriate program funding.

**APPENDIX IV**  
**SUPPORTING CALCULATIONS FOR NON-  
STRUCTURAL CONTROLS**



## Non-Structural Controls

Non-structural controls are stormwater management best practices performed by the Town to reduce nutrient loading to surface water bodies. There are six (6) non-structural controls listed in the MS4 permit that qualify for nutrient load reduction credits when implemented in accordance with permit requirements: catch basin cleaning, enhanced sweeping programs, impervious area disconnection, impervious area disconnection through storage, no application of fertilizers containing phosphorus, and organic waste/leaf litter collection program. These non-structural controls are detailed in Table 1. The permit includes equations to calculate nutrient load reduction credits for each control.

**Table 1:MS4 Non-Structural Controls**

<b>Non-Structural Controls</b>	<b>Requirements to Receive Phosphorus Reduction Credit</b>	<b>Dependencies</b>
Catch Basin Cleaning	<ul style="list-style-type: none"> <li>• Minimum sump storage capacity of 50% is maintained throughout the year</li> </ul>	<ul style="list-style-type: none"> <li>• Drainage area to the catch basin</li> <li>• Phosphorus load export rate of the drainage area</li> <li>• Cleaning frequency</li> </ul>
Enhanced Street Sweeping	<ul style="list-style-type: none"> <li>• Minimum frequency: Twice per year</li> <li>• Sweeper technology: Mechanical broom, Vacuum Assisted, or High-Efficiency Regenerative Air-Vacuum</li> </ul>	<ul style="list-style-type: none"> <li>• Area of impervious land swept</li> <li>• Phosphorus load export rate of the area swept</li> <li>• Sweeper technology</li> <li>• Sweeping frequency</li> </ul>
Organic Waste/Leaf Litter Collection	<ul style="list-style-type: none"> <li>• Gather and remove all landscaping waste, organic debris, and leaf litter at least weekly, Sept. 1 – Dec. 1</li> <li>• Removal shall occur immediately following any landscaping activities</li> <li>• Ensure that disposal of materials will not contribute pollutants to any surface water discharges</li> </ul>	<ul style="list-style-type: none"> <li>• Impervious area serviced</li> <li>• Phosphorus load export rate for the land use type</li> </ul>
No Application of Fertilizers Containing Phosphorus	<ul style="list-style-type: none"> <li>• Historical and regular use of fertilizer containing phosphorus</li> <li>• End the use of fertilizers that contain phosphorus to managed and landscaped pervious areas (lawn areas) from which runoff discharges to the TMDL waterbody or its tributaries</li> </ul>	<ul style="list-style-type: none"> <li>• Weighted Phosphorus Load Export Rate (lb/ac/yr) for the municipality, based on the distribution of hydrologic soil groups in the municipality</li> <li>• Weighted Phosphorus Load Export Rate (lb/ac/yr) for the municipality, based on the distribution of</li> </ul>

	<ul style="list-style-type: none"> <li>• No application of any fertilizers containing phosphorus at any time during the reporting year within the permittee's regulated area</li> </ul>	<ul style="list-style-type: none"> <li>hydrologic soil groups in the municipality</li> <li>• Lawn area percentage (decimal form) for each of the 10 relevant land uses</li> <li>• Percentage of lawn area currently receiving P fertilizer applications</li> </ul>
Disconnected Impervious Area Using Storage with Delayed Release	<ul style="list-style-type: none"> <li>• Collect runoff volumes from impervious areas such as roof tops, providing temporary storage of runoff volume using rain barrels, cisterns or other storage containers, and discharge stored volume to adjacent vegetated permeable pervious surfaces over an extended period of time.</li> <li>• Permeable area to receive runoff from adjacent impervious areas must be of sufficient size with adequate soils to receive the runoff without causing negative impacts to adjacent downgradient properties.</li> </ul>	<ul style="list-style-type: none"> <li>• Area of contributing impervious land</li> <li>• Phosphorous load export rate of contributing area</li> <li>• Disconnected storage volume</li> <li>• Storage release rate</li> <li>• Soil type of receiving pervious area</li> </ul>
Disconnected Impervious Area	<ul style="list-style-type: none"> <li>• Divert runoff volumes from impervious areas such as roadways, parking lots and roof tops, and discharge it to adjacent vegetated permeable surfaces that are of sufficient size with adequate soils to receive the runoff without causing negative impacts to adjacent down-gradient properties</li> </ul>	<ul style="list-style-type: none"> <li>• Area of contributing impervious land</li> <li>• Area of receiving pervious area</li> <li>• Soil type of receiving pervious area</li> <li>• Phosphorous load export rate of contributing area</li> </ul>

## Existing Non-structural Control Calculation:

Millis currently implements two non-structural controls: street sweeping and catch basin cleaning.

Street sweeping – Millis uses mechanical broom sweepers for twice per year sweeping for nine months to sweep 109.8 acres of roadways under town's jurisdiction (except private and dirt roadways).

CB Cleaning: The Town currently cleans all the catch basins within the urbanized MS4 area of Millis and maintains 100% of catch basins so that these are at less than 50% capacity. Millis is planning to continue this effort. There are 871 catch basins in the Charles River Watershed area and 448.6 acres of impervious area (consisting of low to high density residential area, developed

open space, industrial, commercial and roadways) drain to these catch basins. The Town will recalculate credits and reassess its catch basin cleaning program when updated guidance and methodologies are issued by EPA.

## Planned Non-structural Control Calculation:

Millis is planning to continue the current non-structure structural controls.

## Data Sources

To calculate nutrient load reductions for Millis's non-structural controls, the following data sources are used:

MassGIS – MassGIS provides publicly available GIS data for the Commonwealth of Massachusetts. The following MassGIS map layers were used:

- [Major Watersheds](#)
- [Municipalities](#)
- [Roadways](#)
- [2016 Land cover land use data](#)
- [MS4 Permit](#) – The MS4 permit was used to validate that Millis meets the implementation requirements for each non-structural BMP and to guide BATT input value determinations.
- [Millis DPW](#) – The following information was not included in the above sources and was obtained from Town DPW:
  - Street sweeping technology.
  - Street sweeping efficiency.
  - Catch Basin cleaning schedule

## Calculations

The BMP Accounting and Tracking Tool (BATT) is a spreadsheet-based tool that facilitates watershed based nutrient accounting, tracking, and reporting associated with nutrient load reduction requirements. The BATT tool was developed with funding from EPA and EPA recommends that it is used for MS4 permit reporting.

To use the BATT for non-structural control nutrient load reduction calculations, the user first enters the area of impervious land serviced by each control separated by land use type. For the Enhanced Sweeping Program BMP, the frequency and sweeper technology must also be entered.

For Millis, land use data was calculated in ArcGIS Pro using Millis GIS and Mass GIS map layers. Land use areas were calculated as the intersections of the Millis land use and impervious area layers with the Charles Watershed area from the MassGIS watershed layer. The Roadway areas were calculated by clipping the MassGIS Municipality Roadway layer to the Urbanized area layer for Millis.

The results of these calculations are listed in Table 3. Street sweeping technology (mechanical broom) and frequency (twice per year) was obtained from the Town. A map of the information is shown in Figure 1.

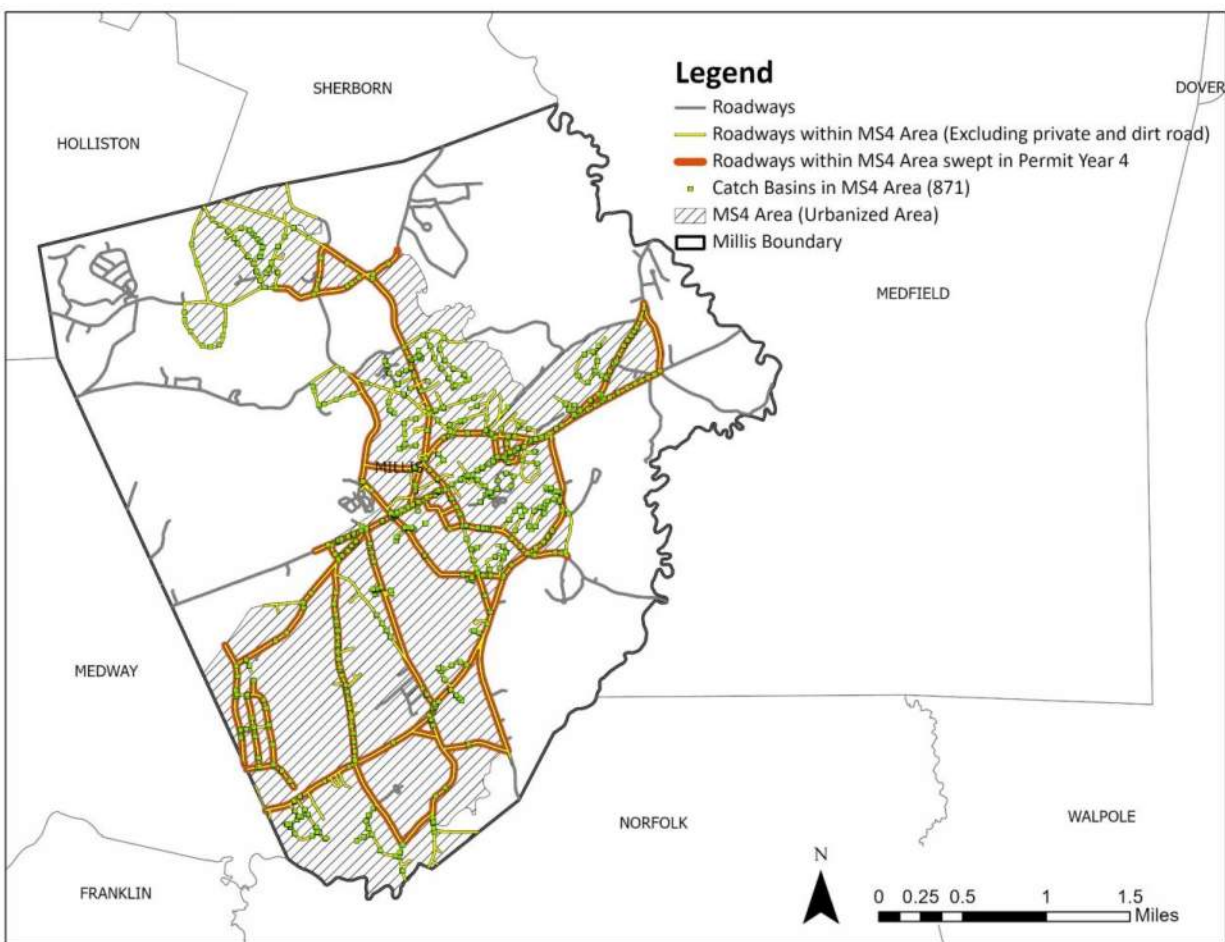


Figure 1: Town of Millis Non-Structural Controls (Street Sweeping & Catch Basin Cleaning Program)

Once non-structural control data is entered, the BATT tool automatically calculates nutrient load reductions for each non-structural BMP using the equations provided in **Table 2**.

**Table 2: Phosphorus Reduction Credit Equations**

Control	Phosphorus Credit Equation
Street Sweeping	$Credit_{sweeping} = IA_{swept} \times PLE_{IC-land\ use} \times PRF_{sweeping} \times AF$
Catch Basin Cleaning	$Credit_{CB} = IA_{CB} \times PLE_{IC-land\ use} \times PRF_{CB}$
No Application of Fertilizers Containing Phosphorus	$Credit_{fertilizer} = WPLER \times 0.5 \sum_{LU} (Area_{LU} \times Lawn \%_{LU} \times FF)$
Enhanced Organic Waste and Leaf Litter Collection Program	$Credit_{leaf\ litter} = Watershed\ Area \times PLE_{IC-land\ use} \times 0.05$
Disconnected Impervious Area	$Credit_{disconn} = IA_{disconn} \times PLE_{IC-land\ use} \times BMP\ Reduction\ Rate_{disconn}$
Disconnected Impervious Area with delayed release	$Credit_{delay} = IA_{delay} \times PLE_{IC-land\ use} \times BMP\ Reduction\ Rate_{delay}$

**Credit** = Phosphorus Reduction Credit (lbs/yr)

**IA** = Impervious Area (Acres)

**PLER** = Phosphorus Load Export Rate (lbs/acre/yr) (See Table 1 in Appendix A)

**PRF** = Phosphorus Reduction Factor for BMP (See Table 2 in Appendix A)

**AF** = Annual Frequency of Sweeping (months swept/12)

**WPLER** = Weighted Phosphorus Load Export Rate (lb/ac  
/yr) Based on hydrologic soil groups

**Area<sub>LU</sub>** = Total Area for Each Land Use

**BMP Reduction Rate**

= Reduction rates provided in MA MS4 Appendix F Attachment 2

· Depends on disconnected area, receiving area, release rate, storage volume.

## BATT Tool Export: Existing Non-structural BMP

The town is achieving 1.61 lbs/yr phosphorus reduction from the existing street sweeping program (mechanical broom twice per year). The existing catch basin cleaning program is contributing to 17.4 lbs/yr phosphorus reduction credits. The Town will continue its street



sweeping and catch basin cleaning program as part of Phase 1 PCP. The phosphorus reduction results for the Town of Millis (BATT tool export), based on the inputs described above are shown in **Table 3**.

**Table 3: Non-Structural Project Summary for Millis, Massachusetts**

State	MASSACHUSETTS									
Municipality	MILLIS									
Permit Type	MS4									
Permit Number	MAR041137									
Major Watershed	CHARLES									
TP Load Reduction Target	N/A									
TN Load Reduction Target	N/A									
TSS Load Reduction Target	N/A									
Existing Non-structural BMP										
Project ID	BMP Type	BMP Storage Capacity	Phosphorus BMP Efficiency (%)	Nitrogen BMP Efficiency (%)	Sediment BMP Efficiency (%)	Removed Phosphorus Load (lb/yr)	Removed Nitrogen Load (lb/yr)	Removed Sediment Load (lb/yr)	Impervious Area Treated (ac)	Run off Depth (in.)
CatchBasin Cleaning	CATCH BASIN CLEANING	N/A	2	6	0	17.4	345.9	0	448.64	N/A
Street Sweeping	ENHANCED SWEEPING PROGRAM	N/A	1	1	0	1.61	8.37	0	109.8	N/A

**APPENDIX V**  
**PRIORITY RANKING OF STRUCTURAL BMPS**  
**(RETROFIT BMP LIST)**





# MEMORANDUM

TO: Jim McKay, Town of Millis  
FROM: Seth Bryant, Kleinfelder  
DATE: June 9, 2023  
SUBJECT: Municipal Retrofit Opportunities Analysis – 2023 Update  
CC: Kirsten Ryan & Adria Fichter, Kleinfelder

---

## 1 BACKGROUND

The following analysis was prepared for the Town of Millis to meet the requirements of the United States Environmental Protection Agency's (US EPA's) 2016 National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4) in Massachusetts, hereafter referred to as the 2016 Permit or 'the Permit'. This document meets the Year-4 permit requirement of identifying a minimum of five (5) Town-owned properties that could potentially be modified or retrofitted with structural Best Management Practices (BMP) stormwater mitigation solutions. Additionally, this document meets the ongoing requirement beginning in permit Year-5 that all Town-owned properties on which a retrofit is implemented be catalogued and replaced on the retrofit opportunity list with a new Town-owned candidate parcel.

## 2 BMP SUITABILITY ANALYSIS

Kleinfelder conducted a GIS-based screening analysis to identify Town owned parcels where the potential installation of structural stormwater BMPs could improve stormwater quality and reduce flooding impacts. The goal of this planning analysis is to identify five (5) parcels that have the potential to bring the highest value to the Town (in terms of stormwater volume reduction, community benefit, etc.). Ideal locations will be near areas that have the potential for high infiltration. These are areas with minimal slopes, well-draining soils, and adequate open space to install structural BMPs.



## 2.1 METHODOLOGY

In order to identify parcels with impervious area that have space and favorable site conditions for BMP implementation, the analysis utilized a ranking process that quantitatively evaluated where structural stormwater BMPs are most appropriate, based on these physical site characteristics:

- Hydrologic soil group (HSG)
- Slope
- Impervious area

Each parcel was processed through a workflow that assigned a ranking (good, fair, or poor) based on the physical characteristics derived from the GIS analysis (Figure 1). Highly permeable soils, and low slopes, are optimal (i.e. more cost effective) for structural BMP implementation and managing highly impervious parcels will offer the highest Phosphorus reduction benefit. For HSG<sup>1</sup>, and slope<sup>2</sup>, the dominant category within in each parcel was assigned for a single parcel value. Impervious surface GIS data has been maintained for the town by Kleinfelder since the implementation of the Millis Stormwater Utility, which charges a stormwater fee to landowners based on the amount of impervious surface in a parcel. In order to determine a final, single, ranking per parcel based on these three physical site characteristics the following logic was applied:

- Poor = any parcel where any of the three factors is rated 'poor'
- Fair = any parcel where any two of the three factors are rated 'fair'
- Good = any parcel where any two of the three factors are rated 'good'
- Unknown = any parcel where data were insufficient to make a determination

---

<sup>1</sup> <https://www.mass.gov/info-details/massgis-data-soils-ssurgo-certified-nrcs>

<sup>2</sup> <https://www.mass.gov/info-details/massgis-data-elevation-topographic-data-2005>

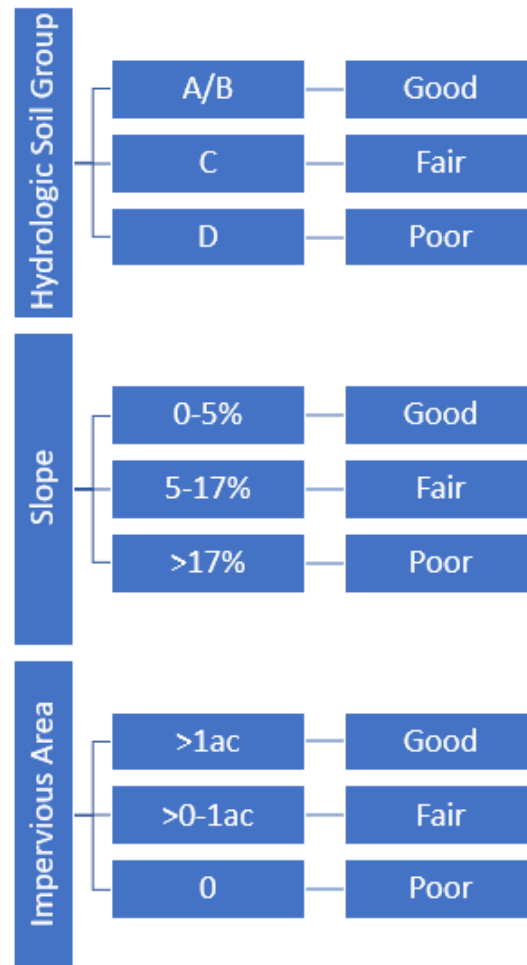


Figure 1. BMP suitability workflow.

To determine if there was sufficient open area for structural BMP implementation (300 sf<sup>3</sup>), the total area of impervious surface, wetlands<sup>4</sup> and priority habitat<sup>5</sup> were subtracted from total parcel area. Parcels that had less than 300 sf of remaining pervious area were removed from the analysis. This

<sup>3</sup> Per the methodology of the Resilient Cambridge Plan  
(<https://www.cambridgema.gov/Departments/CommunityDevelopment/ResilientCambridgePlan>)

<sup>4</sup> <https://www.mass.gov/info-details/massgis-data-massdep-wetlands-2005>

<sup>5</sup> <https://www.mass.gov/info-details/massgis-data-nhsp-priority-habitats-of-rare-species>



produced a suite of private and public parcels with favorable physical site conditions and sufficient available open space that could most readily be retrofitted to manage stormwater<sup>6</sup>.

### 3 RESULTS

Kleinfelder ranked the 2,112 parcels with at least 300 sf of functional pervious area (i.e. not wetland or priority habitat) to determine the most feasible and optimal locations for future structural stormwater BMPs. This analysis represents 98% of non-right-of-way parcels in the Town. Figure 2 depicts all the Town parcels examined with their corresponding rating, while Table 1 includes those parcels deemed as “Good” or “Fair” by the analysis and considered suitable opportunities for BMP retrofits. Additionally, the parcels are ranked to provide a prioritization for the Town in choosing sites viable for BMP retrofits. Within the categorization of “Good” and “Fair” parcels, the amount of impervious area was prioritized in determining the ranking as this factor is the driving factor in terms of potential for mitigation.

In total, 12 sites were determined to be “Good” candidates for retrofit while an additional 14 were found to be “Fair”. The resulting inventory of parcels for retrofit exceeds the minimum five (5) required by the Permit and provides several options for the Town in planning BMP retrofits. Full results of the study, including a list of all parcels examined with their corresponding rating and site characteristics, is included in the attached *Phosphorus Control Plan: Best Management Practice Suitability Analysis (2021)* report.

#### 3.1 INVENTORY OF TOP RETROFIT OPPORTUNITIES

Of the suitable sites determined in the analysis, the top five ranked sites will be used as the Town’s inventory of potential BMP retrofits to meet the Year-4 Permit requirements. These sites were found to have suitable soils for infiltration, slope for capturing runoff, and had the highest impervious area and therefore the highest potential impact for retrofit. The sites are as follows:

---

<sup>6</sup> A full GIS process document is available from Kleinfelder upon request.



**1. Parcel M\_211794\_879129: Millis Middle / High School (245 Plain Street)**

Public school building with large amount of impervious area from the school building, parking lots, and entrance roads (38% impervious, 4.86 acres). A significant amount of pervious area to the east of the parking lot has potential for BMP retrofits.

**2. Parcel M\_211419\_879504: Millis Public Library (961 Main Street)**

Public library and parking lot along main street. The area is largely impervious (76%, 2.04 acres) but does have green space available for retrofit opportunities in the library courtyard and directly surrounding the parking lot.

**3. Parcel M\_211676\_879539: Millis Town Hall (900 Main Street)**

Impervious area made up of the town hall building and surrounding parking areas, totaling 1.73 acres of impervious cover (56% of parcel). The west side of the parcel contains a large impervious area running parallel to the parking lot with high potential for BMP retrofits.

**4. Parcel M\_211448\_880635: Millis Housing Authority (411 Union & Exchange Street)**

A residential property owned by Millis Housing Authority that is comprised of 3.2 acres, 45% of which is impervious. Parking lots border both Union and Exchange Streets, both of which are the bulk of the impervious area and present opportunities to capture runoff in bioretention cells in the existing green spaces abutting the parking lots.

**5. Parcel M\_211673\_879653: Millis Fire Department (885 Main Street)**

Town fire department with a highly impervious parcel (70.5% impervious, 0.51 acres). While the plot is smaller than most prioritized on the list, the parking lot slopes directly towards catch basins on Main Street and offers an opportunity to retrofit with either subsurface BMPs or bioretention directly abutting Main Street.

A map of the five (5) prioritized parcels within the Town center is shown in Figure 2.



While parcel M\_212399\_880521 was ranked as the fifth best option for retrofits by the GIS analysis, the site was taken off the list because site stormwater runoff is already being managed through several structural BMPs. The parcel contains the Town's transfer station which, because it manages solid waste, is subject to a Stormwater Pollution Prevention Plan (SWPPP) under the Permit. The SWPPP was completed in 2020 and includes existing and recommended plans for managing on-site stormwater runoff.

### 3.2 INVENTORY OF COMPLETED REOTROFITS

Starting in Permit Year-5, the Town has the additional requirement to keep an inventory of completed retrofit projects, remove parcels from the opportunity inventory where retrofits have occurred, and update as needed to maintain 5 viable retrofit opportunities for the Town to complete. Following the construction of the new Clyde F. Brown Elementary School and associated green infrastructure to manage runoff from the site, two of the parcels included on the Year-4 retrofit opportunity inventory were removed. Those two completed sites are as follows:

#### **6. Parcel M\_211730\_879317: Clyde F. Brown Elementary School and fields**

Public elementary school building with large amounts of impervious area from school building, tennis courts, playground, and entrance road (25% impervious, 3.50 acres). A series of bioretention basins were installed to capture stormwater runoff.

#### **7. Parcel M\_211547\_879406: Clyde F. Brown Elementary School parking lot**

Parking lot and entrance road adjacent to the Clyde F. Brown Elementary School, largely impervious area (71%, 2.35 acres). An infiltration chamber was installed beneath the parking lot to capture and treat stormwater runoff.

A map of the 2 sites removed from the retrofit opportunity inventory is included in Figure 2.



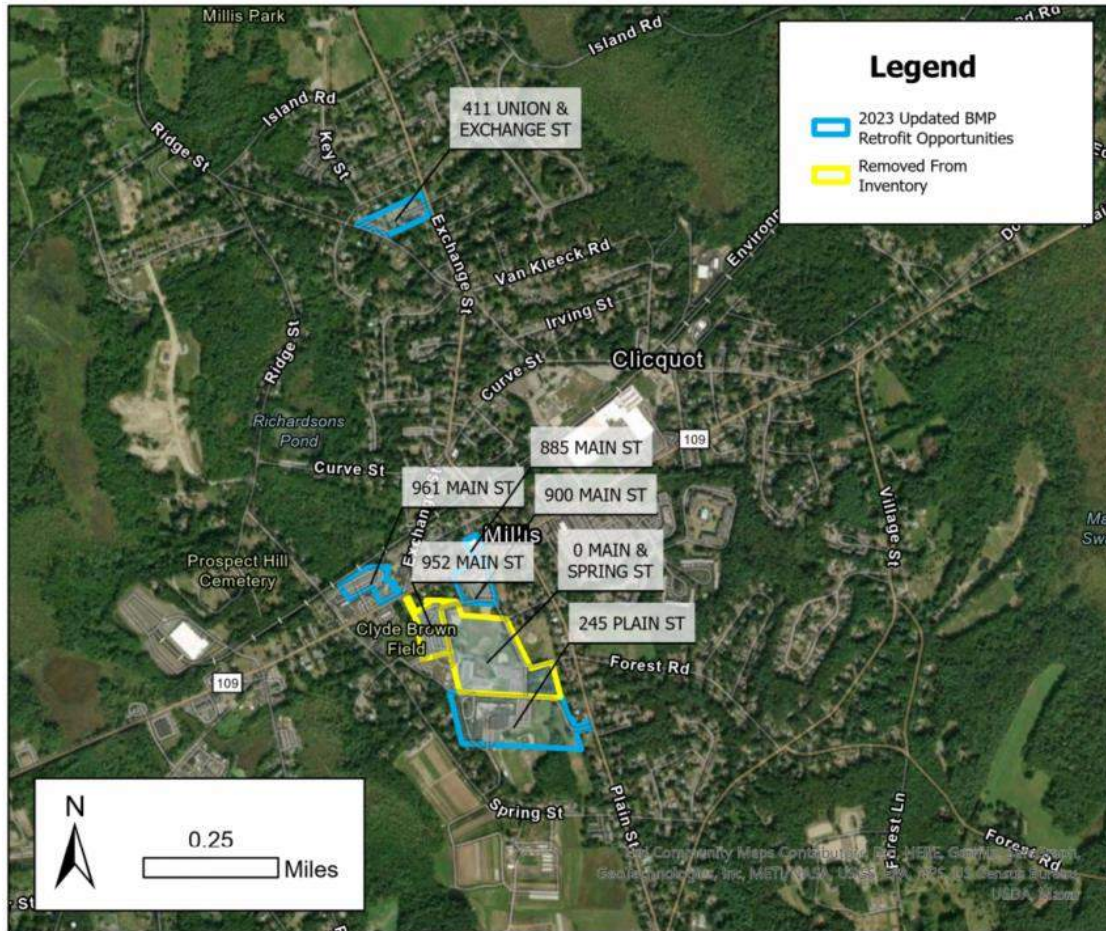


Figure 2: Prioritized Public Parcels for BMP Retrofits

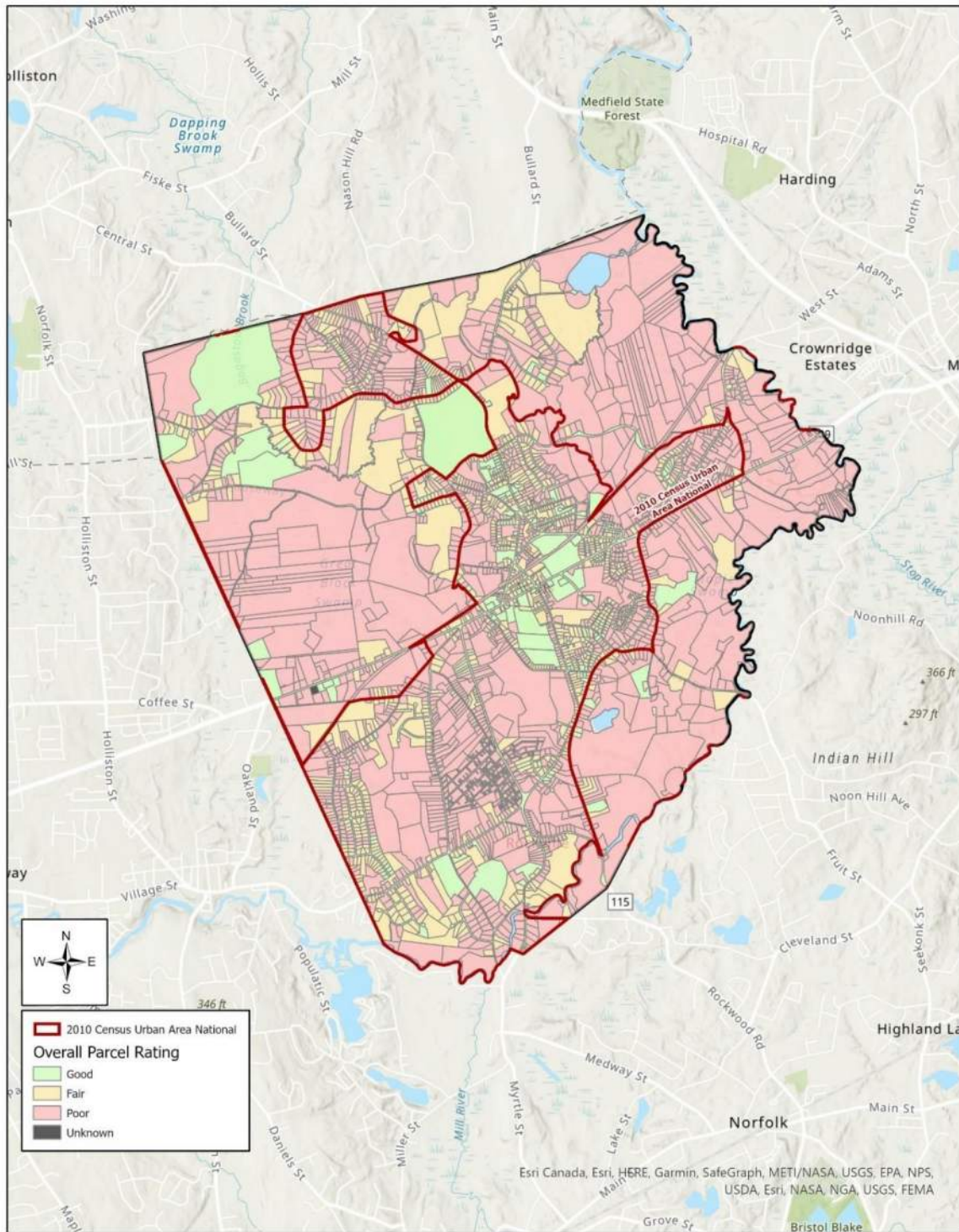


Figure 3: Parcel-Based BMP Suitability Analysis Results





Table 1: Inventory of Public Parcels Suitable for BMP Retrofits

Ranking	Parcel ID	Address	Parcel Size (ac)	Impervious Area (ac)	Overall Rating	BMP Status
1	M_211794_879129	245 PLAIN ST	12.89	4.86	Good	
2	M_211730_879317	MAIN & SPRING ST	14.2	3.5	Good	Retrofit Complete
3	M_211547_879406	7 PARK RD	3.3	2.35	Good	Retrofit Complete
4	M_211419_879504	961 MAIN ST	2.68	2.04	Good	
5	M_212399_880521	7 WATER ST	6.5	2	Good	
6	M_211676_879539	900 MAIN ST	3.1	1.73	Good	
7	M_211448_880635	310 EXCHANGE ST	3.2	1.44	Good	
8	M_210983_881230	410 EXCHANGE ST	118	1.18	Good	
9	M_211866_878976	SPRING ST	11.7	0.48	Good	
10	M_211673_879653	885 MAIN ST	0.51	0.36	Good	
11	M_211464_879386	972R MAIN ST	2.1	0.05	Good	
12	M_210210_877038	INDEPENDENCE LN	0.8	0	Good	
13	M_211274_879482	1003 MAIN ST	1.4	0.73	Fair	
14	M_211487_879306	SPRING ST	1.26	0.53	Fair	
15	M_211694_879460	MAIN ST	1.4	0.28	Fair	
16	M_211654_879694	LAVENDER ST	0.35	0.21	Fair	
17	M_211858_879375	PLAIN ST	3.3	0.12	Fair	
18	M_211436_881490	EXCHANGE ST	36.17	0.08	Fair	
19	M_211712_877223	185 PLEASANT ST	0.75	0.05	Fair	
20	M_210395_876927	VILLAGE ST	5.1	0.04	Fair	
21	M_209599_882044	WALNUT ST	2.41	0.02	Fair	
22	M_211612_879999	MEMORIAL PARK	0.13	0.01	Fair	
23	M_211259_877692	BOYLSTON AVE	0.12	0.01	Fair	
24	M_211500_877542	MILLIS HGHTS	0.24	0.001	Fair	
25	M_211268_877700	MILLIS HGHTS	0.12	0.001	Fair	
26	M_211875_880351	IRVING ST	0.07	0.001	Fair	

**APPENDIX I**  
**Public Education and Outreach Memorandum**

---



# MEMORANDUM

TO: Jim McKay, Town of Millis  
FROM: Peter Varga, Kleinfelder  
DATE : June 21, 2022  
SUBJECT: MS4 - Public Education and Outreach  
CC: Kirsten Ryan, Peter Varga, Adria Fichter

---

The purpose of this memorandum is to deliver the Public Education and Outreach requirements for the Town of Millis to comply with their year-4 General Municipal Separated Sanitary Sewer System (MS4) Permit. Part 2.3.2 of Permit requires MS4 communities to provide an educational program to deliver awareness, change the behavior, and increase knowledge to reduce pollutants from entering the stormwater systems.

Section 2.3.2.d of the permit sets educational/messaging standards and best management practices (BMPs) for each target audience category: residential, business/commercial/Institutions, developers/constructors, and industries. The list of standards is provided in Table 1. To provide educational resources that comply with the permit requirements, this task lists a number of resources to account for the relevant BMPs in their category. The summary table in this memorandum provides a comprehensive list of resource materials with the appropriate messaging given the target audience.

The document list at the end of this memorandum catalogues the specific educational resources that are provided separately as part of this task for compliance with year 4 requirements and the associated BMPs that they address.

Category	BMP Number	Description	Notes
Residents	1	Effects of Outdoor Activities such as lawn care on water quality	Focus to minimize use of pesticides, herbicides, and fertilizers.
	2	Benefits of appropriate on-site infiltration of stormwater	
	3	Effects of automotive work and car washing on water quality	
	4	Proper disposal of swimming pool water	
	5	Proper management of pet waste	
	6	Maintenance of Septic systems	If the small MS4 area has areas serviced by septic systems the permittee shall consider information pertaining to maintenance of septic systems as part of its education program.
Business/ Commercial/ Institutional Program	1	Proper lawn maintenance	
	2	Benefits of appropriate on-site infiltration of stormwater	
	3	Building maintenance	Consider proper disposal: use of detergents.
	4	Use of salt or other de-icing and anti-icing materials	Minimize their use.
	5	Proper storage of salt or other de-icing and anti-icing materials	Cover/prevent runoff to storm system and contamination to ground water.
	6	Proper storage of materials	Emphasizing pollution prevention.
	7	Proper management of waste materials and dumpers	Cover and pollution prevention
	8	Proper management of parking lot surfaces	Importance of Sweeping
	9	Proper car care activities	Washing of vehicles and maintenance
	10	Proper disposal of swimming pool water by entities such as motels, hotels, and health and country clubs.	Discharges must be dechlorinated and otherwise free from pollutants.
Developers and Construction	1	Proper sediment and erosion control management practices	
	2	Information about Low Impact Development(LID) principles and technologies	
	3	Information about EPA's construction general permit(CGP)	
Industrial Program	1	Equipment inspection and maintenance	
	2	Proper storage of industrial materials	Emphasize pollution prevention.
	3	Proper management and disposal of wastes	
	4	Proper management of dumpsters	
	5	Minimization of salt or other de-icing/anti-icing materials	
	6	Proper storage of salt or other deicing/anti-icing materials	Cover/prevent runoff to storm system and ground water contamination.
	7	Benefits of appropriate on-site infiltration of stormwater runoff from areas with low exposure to industrial materials such as roofs or employee parking	
	8	Proper maintenance of parking lot surfaces	Importance of Sweeping
	9	Requirements for coverage under EPA's Multi-Sector General Permit	

Table 1: Best Management Practice List

**Residential:***The Solution to Stormwater Pollution.pdf*

- 1.) Effects of Outdoor Activities such as lawn care on water quality
  - a.) use of pesticides, herbicides, and fertilizers
- 2.) Benefits of appropriate on-site infiltration of stormwater
- 3.) Effects of automotive work and car washing on water quality
- 4.) Proper disposal of swimming pool water
- 5.) Proper management of pet waste

*New Homebuyer's Guide to Septic Systems.pdf*

Brochure addresses maintenance of septic systems

- 1.) If the small MS4 area has areas serviced by septic systems, the permittee shall consider information pertaining to maintenance of septic systems as part of its education program.

**Business/Commercial/Institution Program***Commerical-landscaping-pollution-prevention-fact-sheet.pdf*

- 1.) Proper lawn maintenance
- 2.) Benefits of appropriate on-site infiltration of stormwater

<https://www.keepitcleanpartnership.org/learn/household-waste/>

- 3.) Building maintenance

*Stormwater\_business\_pamphlet.pdf*

- 4.) Use of salt or other de-icing and anti-icing materials
- 5.) Proper storage of salt or other de-icing and anti-icing materials

<https://www.youtube.com/watch?v=UTqYjbq0FZM&t=147s>

- 6.) Proper storage of materials
- 7.) Proper management of waste materials and dumpers

<https://www.youtube.com/watch?v=9o58vSqbwr8>

- 8.) Proper management of parking lot surfaces

*Industrial\_commercial\_businesses.pdf*

7.) Proper management of waste materials and dumpers (already covered)

- 9.) Proper car care activities

*Pool-construction-maint.pdf*

10. Proper disposal of swimming pool water by entities such as motels, hotels, and health and country clubs.



## **Developers and Construction**

[https://www.youtube.com/watch?v=Kdm-Z-\\_AGnU](https://www.youtube.com/watch?v=Kdm-Z-_AGnU)

- 1.) Proper sediment and erosion control management practices

*Builder-lid.pdf*

- 2.) Information about Low Impact Development(LID) principles and technologies

*Sw\_cgp\_brochure.pdf*

- 3.) Information about EPA's construction general permit(CGP)

## **Industrial Program**

*Heavy-Equipment-Yard-BMPs.pdf*

- 1.) Equipment inspection and maintenance
- 2.) Proper storage of industrial materials
- 3.) Proper management and disposal of wastes
- 4.) Proper management of dumpsters

*Ms4-industrial-bmps.doc*

- 5.) Minimization of salt or other de-icing/anti-icing materials
- 6.) Proper storage of salt or other deicing/anti-icing materials

<https://weatherbuild.co/2017/03/27/5-benefits-stormwater-runoff-management-construction/>

- 7.) Benefits of appropriate on-site infiltration of stormwater runoff from areas with low exposure to industrial materials

<https://www.youtube.com/watch?v=9o58vSqbwr8>

- 8.) Proper maintenance of parking lot surfaces

<https://www.epa.gov/npdes/stormwater-discharges-industrial-activities-epas-2021-msgp>

- 9.) Requirements for coverage under EPA's Multi-Sector General Permit