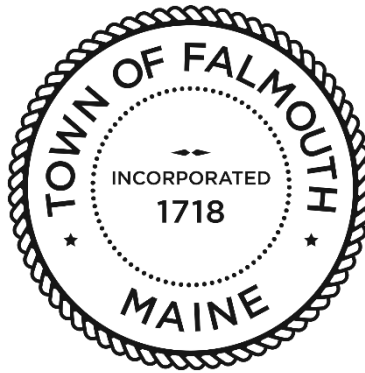


# STORMWATER MANAGEMENT PLAN

FOR

TOWN OF FALMOUTH, MAINE



MS4 General Permit Effective July 1, 2022

Initially Submitted to Maine DEP: March 26, 2021

Updated based on permittee specific DEP order: \_\_\_\_\_

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## 1 INTRODUCTION

### 1.1 Overview of Regulatory Program

The Town of Falmouth is subject to the *“General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4s)”* which was issued by the Maine Department of Environmental Protection (DEP) with an effective date of July 1, 2022. The permit is limited to a duration of five (5) years and is due to expire on June 30, 2027.

Communities are regulated under this program when and if they are identified as having *“Urbanized Areas”* in their municipal boundary. An Urbanized Area is a U.S. Census-defined term, applied to a large area that has a high population density and/or a high percentage of impervious cover (hard scape surfaces like parking lots or buildings). Both criteria (high population density and high percentage of impervious cover) cause an area to be at risk for adverse surface water quality impacts from polluted stormwater discharges.

The U.S. Environmental Protection Agency (USEPA) and Maine DEP began regulating communities for their stormwater discharges using the Urbanized Area criteria in 2003. The Town of Falmouth became regulated in 2003 based on the 2000 census.

Once a community becomes regulated by the MS4 General Permit, only the Urbanized Area portions of the town are regulated. As each U.S. Census is published, if the Urbanized Area changes (based on changes to the population or impervious cover), additional areas can be added to the regulated area only after a new MS4 General Permit is issued. Once an Urbanized Area is regulated by the MS4 General Permit, it cannot be removed from regulation, even if a subsequent census identifies it is no longer classified as an Urbanized Area. Therefore, the area regulated by the MS4 General Permit can either grow larger or stay the same size, but it cannot become smaller. Appendix A shows the Urbanized Area that is regulated by the 2022 MS4 General Permit for the town, which is based on the cumulative 2000 and 2010 U.S. Census Urbanized Area data. The 2022 MS4 General Permit specifically does not include any areas identified by the 2020 U.S. Census.

### 1.2 Cooperation Between Regulated Communities

There are 30 municipalities in the State of Maine that are subject to the 2022 MS4 General Permit. There are also two transportation agencies which are subject to their own MS4 General Permit, and eight state/federal agencies that are subject to a third MS4 General Permit (which are called *“nested”* MS4s).

The Town of Falmouth is a member of the Casco Bay Interlocal Stormwater Working Group (ISWG). ISWG is a coalition of 14 MS4 municipalities in the greater Portland and Saco areas (Biddeford, Cape Elizabeth, Cumberland, Falmouth, Freeport, Gorham, Old Orchard Beach, Portland, Saco, Scarborough, South Portland, Westbrook, Windham, and Yarmouth) as well as

the Southern Maine Community College and University of Southern Maine which are also regulated as MS4s under a separate permit. This coalition is facilitated by the Cumberland County Soil and Water Conservation District (CCSWCD), which also assists in completing some of the permit requirements under contract to the coalition.

Similarly, the Bangor area MS4s have formed the Bangor Area Stormwater Working Group (BASWG), the Lewiston-Auburn area MS4s formed the Androscoggin Valley Stormwater Working Group (AVSWG), and the southern-most regulated MS4s formed the Southern Maine Stormwater Working Group (SMSWG). For some public education requirements, all the stormwater working groups are working cooperatively as identified in this plan.

In implementing the 2022 MS4 General Permit, the Town of Falmouth relies on the ISWG to complete some requirements, hires a third party-consultant to implement some requirements and implements other requirements using municipal staff. This plan describes which elements will be completed individually, regionally or as a state-wide effort.

### **1.3 Stormwater Management Plan**

The MS4 General Permit does not specify *numeric* effluent limitations (concentrations that a stormwater discharge must meet). Instead, the MS4 General Permit specifies *narrative* effluent limitations, in the form of Minimum Control Measures (MCMs).

This Stormwater Management Plan (SWMP) describes how the Town will implement Best Management Practices (BMPs) to meet the six MCMs, set forth in Part IV(C) of the 2022 MS4 General Permit. The six MCMs that are required to be addressed in this Plan are:

- 1 Education/Outreach Program
- 2 Public Involvement and Participation
- 3 Illicit Discharge Detection and Elimination Program
- 4 Construction Site Stormwater Runoff Control
- 5 Post-Construction Stormwater Management in New Development and Redevelopment
- 6 Pollution Prevention/Good Housekeeping for Municipal Operations

The 2022 MS4 General Permit requires that for each MCM, the Town must:

- define specific BMPs;
- designate a person(s) or position(s) responsible for implementing each BMP;
- define a timeline for implementation of each BMP, and
- define measurable goals for each BMP.

The SWMP is a tool that describes how a regulated community establishes its stormwater controls. It is not an enforceable document; flexibility is built into the BMPs to allow communities to engage in an adaptive management approach to mitigating or eliminating the discharge of pollutants to and from its regulated small MS4. This allows the Town to adjust

BMPs throughout the permit cycle if needed based on evaluations of their effectiveness, changing conditions, specific local concerns, or changes in other factors. SWMP modifications that require DEP review and approval, and public notice are described in Section 1.6 Obtaining Coverage to Discharge and Section 1.8 Modifications.

#### **1.4 Water Quality and Discharges to Impaired Waters**

The 2022 MS4 General Permit contains the following requirements for discharges to waters that are not attaining water quality criteria or standards, as determined by Maine DEP (a.k.a. impaired waters):

- (1) If an MS4 has a point source discharge to a waterbody where an EPA-approved Total Maximum Daily Load (TMDL) document exists, the discharge must be consistent with any requirements of the TMDL and the SWMP must address compliance with the TMDL waste load allocation (WLA) and any implementation plan. The 2022 MS4 General Permit does not authorize a direct discharge that is inconsistent with the WLA or an approved TMDL. This requirement applies only to TMDLs approved by EPA as of October 15, 2020.
- (2) If an MS4 has a point source discharge to a waterbody where a TMDL is approved or modified by EPA after October 15, 2020, the Maine DEP will notify the permittee if any changes are needed to the SWMP and may take other actions regarding the approved TMDL as identified in the 2022 MS4 General Permit.
- (3) If an MS4 has a discharge to an Urban Impaired Stream, it must develop and implement three BMPs to address the water's impairment, unless the DEP has determined the MS4 discharge is not causing or contributing to the impairment. The BMPs must address a specific impairment from the MS4 discharge within the Urbanized Area, be clear, specific and measurable. **Note: The Town of Falmouth does not currently have any Urban Impaired Streams.**

Section 1.4.1 describes generally how the state evaluates surface waters and describes TMDL documents and Urban Impaired Streams. Section 1.4.2 describes the status of the waters that receive discharges from the Town's MS4. If applicable, Section 1.4.3 describes recent progress by the Town on addressing any impairments which have MS4 requirements and provides rationale for how the BMPs in this SWMP address these 2022 MS4 General Permit requirements.

##### **1.4.1 State Water Quality Assessments**

The State of Maine is required by the Clean Water Act to identify water quality classifications for each surface water in the State, and then to assess whether each of those waters is meeting its designated classification standards. Maine has four classifications for freshwater rivers, three classes for marine and estuarine waters, and one class for lakes and ponds. Each classification identifies a use and set of water quality standards for the water. The

classifications, uses, and standards are described and assigned to the various waters in the Maine Statutes (Title 38, Sections 464 through 469).

Assessments as to whether each water is achieving its designated classification are based on data that is obtained from several sources depending on the type of water being assessed:

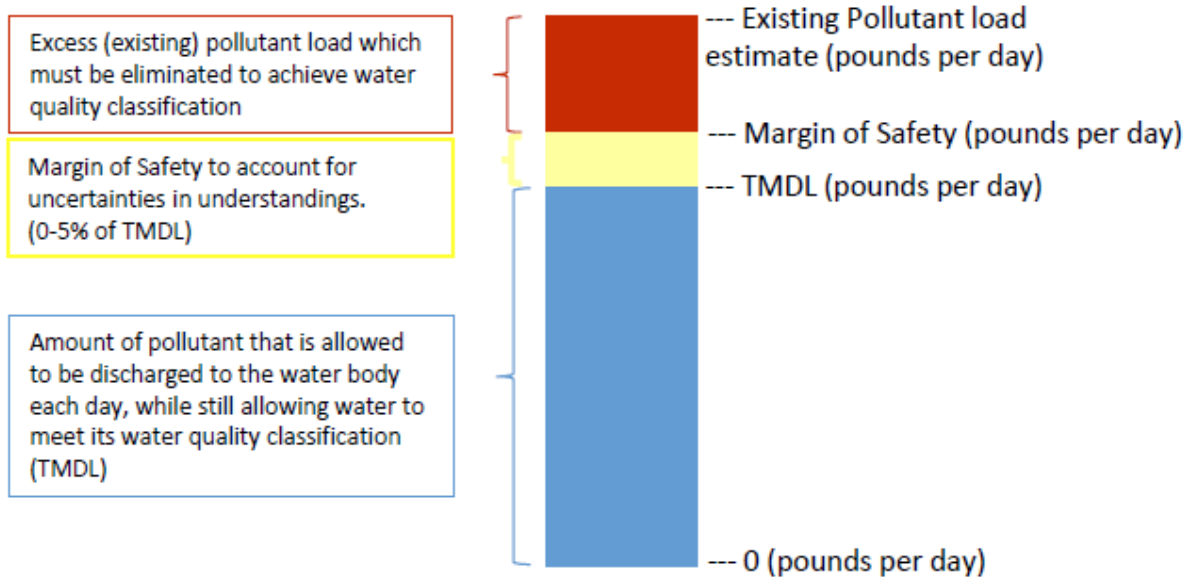
- Lake and ponds are assessed primarily through data obtained by the DEP and regional entities and lake associations. The regional and lake association data is coordinated through the Lake Stewards of Maine (Volunteer Lake Monitoring Program).
- Marine and Estuarine waters are assessed by evaluation of data obtained from the DEP, Maine Healthy Beaches, Department of Marine Resources, Marine Environment's Gulf Watch, Gulf of Maine Council, and several other academic and non-profit organizations.
- Wetlands are assessed primarily using data obtained from the DEP Biomonitoring Program.
- Rivers and Streams are assessed using data from the DEP Biomonitoring Program, Surface Water Ambient Toxics (SWAT) Monitoring Program, the Atlantic Salmon Recovery Plan, Volunteer River Monitoring Program (VRMP) and through many other government agencies such as the Department of Inland Fisheries and Wildlife, EPA, United States Geologic Survey.

Every two years, the DEP publishes a report and list documenting the results of the assessments, and identifying which waters are meeting their designated classifications, and which are considered impaired. The report and list are called the Integrated Water Quality Report and are generally referred to by the Section of the Clean Water Act which requires them: the 305(b) report and/or the 303(d) list, respectively. There are five general status categories available for assignment to each water:

- Category 1: Attaining all designated uses and water quality standards, and no use is threatened.
- Category 2: Attains some of the designated uses; no use is threatened; and insufficient data or no data and information is available to determine if the remaining uses are attained or threatened (with presumption that all uses are attained).
- Category 3: Insufficient data and information to determine if designated uses are attained (with presumption that one or more uses may be impaired).
- Category 4: Impaired or threatened for one or more designated uses, but does not require development of a TMDL (Total Maximum Daily Load) report.
  - 4A means a TMDL has already been completed.
  - 4B means other pollution control measures will address impairment.
  - 4C means the impairment is not caused by a pollutant.
- Category 5: Waters impaired or threatened for one or more designated uses by a pollutant(s), and a TMDL report is required.

In Maine, the most current 303(d) list approved by the EPA is from the 2016 data. The Maine DEP has indicated they will issue a combined 2018/2020/2022 303(d) list sometime in 2022.

A TMDL document identifies the source(s) of the impairments and recommendations to correct the impairments. A TMDL document identifies how much of a pollutant a water body can receive and still meet its water quality classification. Typically, the units are identified as pounds per day, which is the basis for the term “Total Maximum Daily Load”. TMDLs typically include a Margin of Safety between 2 and 5% of the TMDL to account for uncertainties or lack of knowledge about the relationship between the pollutant loading and water quality.



Total Maximum Daily Load (TMDL) Components

In addition to the Maine 305(b) report and 303(d) list, Maine has developed a special rule, Chapter 502, which has restrictions related to Direct Watersheds of Lakes Most at Risk from New Development and Urban Impaired Streams. This rule became effective in 1997 and has been modified several times over the years. The rule defines an Urban Impaired Stream as a stream that fails to meet its water quality standards because of effects of stormwater runoff from developed land. The rule imposes additional stormwater treatment controls on development in the watersheds of Urban Impaired Streams.



### 1.4.2 Falmouth Water Quality Status

The following is a summary of the waters in the Town’s Urbanized Area that receive point source discharges from the Town’s MS4 and each waterbody’s TMDL and impairment status.

Table 1 shows the waters where the Town has regulated small MS4 discharges (within the Urbanized Area) and their impairment status. There are no Urban Impaired Streams in Falmouth, and the only impaired waters are marine/estuarine waters on the 303(d) list for bacteria impairments. It should be noted that Casco Bay was previously listed in the 2009 Statewide Bacteria TMDL; however, it was recategorized in 2016 as Category 5-B-1(a) (needs TMDL) until such time as the Maine DEP reissues the Statewide Bacteria TMDL.

Note: Because DMR updated their designations and naming structure on March 1, 2021, the Figures reflect the new designations and naming structure and Table 1 shows both the new designation and the old DMR designation that was in effect when the 2022 MS4 General Permit was finalized on October 15, 2020.

**TABLE 1  
WATERBODIES IN FALMOUTH WITH DISCHARGES FROM THE REGULATED SMALL MS4**

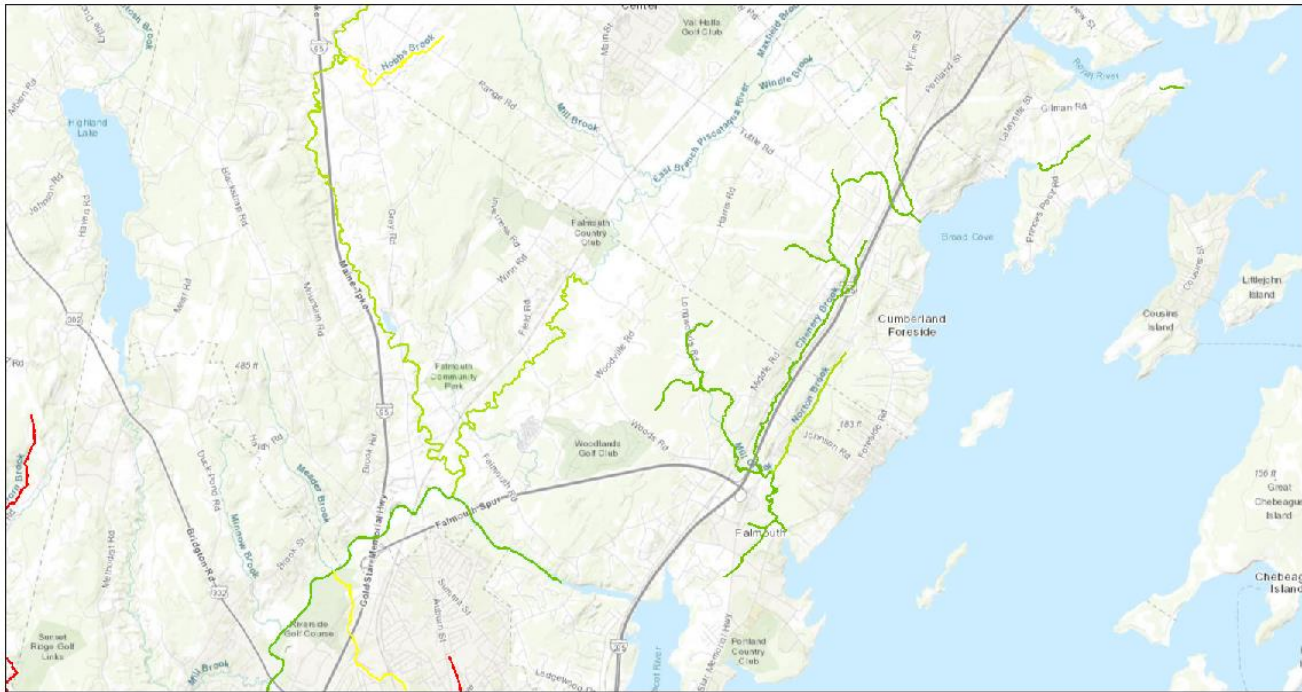
Waterbody Name	Impairment Status	Comments
Casco Bay	Growing Area: WI, Growing Area Sections: R3 and CA5 (formerly DMR Pollution Area 13), Category 5-B-1(a)	Elevated fecal indicators; included in 2009 Statewide Bacteria TMDL; moved from Category 4-A to 5-B-1(a) in 2016 until major Bacteria TMDL update
Presumpscot River	None	
Piscataqua River	None	
Mill Creek	None	
Norton Brook	None	

Figure 1 shows the locations of the freshwaters and their water quality status according to the 2016 303(d) list. As shown in both Table 1, Figure 1 and Appendix A, there are no freshwater waterbodies that are impaired within the Urbanized Area of Falmouth. The 2016 303(d) freshwater data can be viewed using the following map viewer:

<https://maine.maps.arcgis.com/apps/webappviewer/index.html?id=dffb3d2b85904b18978d02fc9d913b5f>

Figure 2 shows the locations of the marine/estuarine waters and their water quality status according to the 2016 303(d) list. As shown in both Table 1 and Figure 2, the Growing Area Sections R3 and CA5 (formerly DMR Pollution Area 13) are located on the coast of Falmouth and receive discharges from the regulated small MS4. Figure 2 shows the status of marine waters according to DMR (<https://www.maine.gov/dmr/shellfish-sanitation-management/closures/index.html>)

Figure 1 - Falmouth Fresh Water Impairment Status



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 Maine\_RIVERS\_IR\_2016

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1:72,224

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Esri, Canada, Esri, HERE, Garmin, INCREMENT P, USGS, METV, NASA, NGA, EPA, USDA

Maine DEP  
 Maine DEP

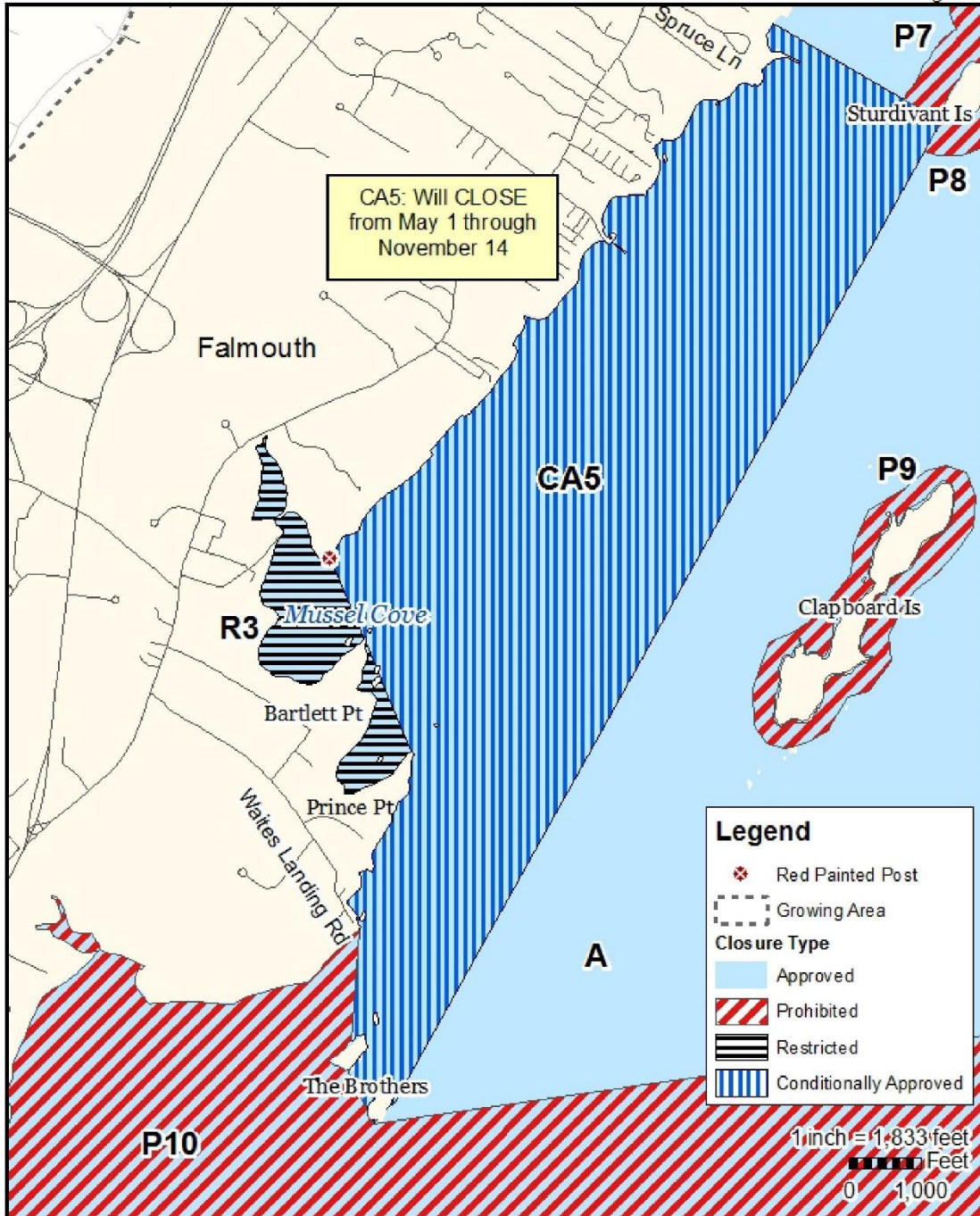


Figure 2 - Falmouth Marine/Estuarine Water Status

# Maine Department of Marine Resources

## Growing Area WI, Inset E

Falmouth



This map is provided as a courtesy. Read the provided legal notice for closure details. Closures are not shown outside of the designated growing area. Maritime navigational aids are for reference only and are not suitable for maritime navigation.

### **1.4.3 Progress on Addressing Impairments and Approach to BMP Development**

The Town of Falmouth does not currently have any TMDL waters or Urban Impaired Streams that are subject to the impaired waters requirements of the 2022 MS4 General Permit.

The Fact Sheet to the 2022 MS4 General Permit recommends the Town consult with Maine DEP to assess actions to be taken to address discharges to impaired waters that do not have an EPA-approved TMDL. In Falmouth's case, these waters include the estuarine/marine waters located in the DMR-13 pollutant area. DMR-13, which includes Casco Bay, was originally listed in the 2009 Statewide Bacteria TMDL; however, in 2016, the Maine DEP moved the estuarine/marine waters to the 303(d) Category 5-B-1(a) (TMDL required) until such time as they can update the Statewide Bacterial TMDL to provide more specific spatial data on which areas are included. Although, the 2022 MS4 General Permit requirements do not apply to 303(d) non-TMDL waters, through regional consultation, the Maine DEP concurs that for bacteria impaired waters that were vacated from the 2009 Statewide Bacteria TMDL (marine/estuarine), implementation of the MS4 IDDE elements of the 2022 MS4 General Permit (i.e. outfall inspections, sampling outfalls during dry weather flow, and completing IDDE investigations to eliminate bacterial sources) is sufficient to address the impairment until such time as the Statewide Bacteria TMDL can be updated.

### **1.5 Priority Watersheds**

The 2022 MS4 General Permit does not contain any specific requirements related to priority watersheds; however, it does require that an MS4 have a procedure in place to prioritize watersheds when addressing illicit discharges. The Town of Falmouth uses this prioritization to identify where illicit discharge inspections are conducted first. The Town's Illicit Discharge Detection and Elimination (IDDE) Standard Operating Procedure (SOP), provided in Appendix E, describes in more detail how the prioritization is applied.

The Maine DEP maintains a list of waters vulnerable to non-point source pollution, which is then available to receive grant funding under Sections 308(b) and 319 of the Clean Water Act, as long as the funding is not used to satisfy the conditions of a Clean Water Act Permit (such as the 2022 MS4 General Permit). MS4s should keep in mind that they may not use 319 grant funding to implement any BMPs required by the MS4 General Permit.

The Town's two highest priority watersheds are: Mill Creek and Casco Bay.

### **1.6 Obtaining Coverage to Discharge**

A Notice of Intent (NOI) to comply with the 2022 MS4 General Permit is required to be submitted to the Maine DEP with this SWMP. A copy of the Town's NOI is provided in Appendix B. Additionally, a 30-day Public Notice period was provided by both the Maine DEP and the Town to allow the public to comment on the SWMP. A copy of the Public Notice provided by the Town is also included in Appendix B.

Following review of the SWMP and NOI, and receipt of any public comments, the Maine DEP will issue a permittee specific DEP Order, establishing additional terms and conditions that are enforceable in addition to the language in the MS4 Permit (which is also enforceable). The permittee specific DEP Order is also subject to a 30-day public comment period, but only the DEP provides this public notice. DEP provides any updated information to the Town at the end of the public comment permit. If no comments are received, DEP provides notice to the Town that they are authorized to discharge under the 2022 MS4 General Permit and the permittee specific DEP Order.

Once the DEP issues authorization to discharge, the Town has 60 days to update the SWMP to reflect any new or changed requirements based on the DEP Order and any comments. At that time, the permittee specific DEP Order will be included in Appendix B. In addition, the permittee will include a summary of the comments received in Appendix C, along with any notes on how the comments were addressed in the SWMP. The SWMP needs to be resubmitted to the DEP after revision along with a narrative indicating how the SWMP has been modified to be consistent with the 2022 MS4 General Permit and permittee specific DEP Order, unless the Department indicates in writing that resubmittal is not required. The new permit conditions do not take effect until July 1, 2022.

### **1.7 SWMP Availability**

The SWMP must be made available to the public by posting it on the Town's website as well as making copy available to the public at Public Works Department.

If any of the following entities request a copy, one must be made immediately available to them:

- a) USEPA or Maine DEP,
- b) an interconnected or adjacent MS4,
- c) an owner or operator of a water supply company where the MS4 discharges to a water supply watershed, or
- d) members of the public.

### **1.8 SWMP Modifications during the Permit Cycle**

The SWMP will be amended if the Maine DEP or the regulated MS4s determine:

- a) The actions required by the BMPs fail to control pollutants to meet the terms and conditions of the 2022 MS4 General Permit and the permittee specific DEP Order;
- b) The BMPs do not prevent the potential for a significant contribution of pollutants to waters of the State other than groundwater, or
- c) New information results in a shift in the SWMP's priorities.

Even though this SWMP is not an enforceable document, if any changes are made, the SWMP will be made available for 30-day public comment by posting the changes on the Town's website. If the changes being made are not explicitly required by the 2022 MS4 General Permit or the permittee specific DEP Order, the opportunity for public comment will be made on the Town's website annually and the DEP will be notified of the changes in the annual report following the permit year the changes were made.

If the changes being made are explicitly required by the 2022 MS4 General Permit or the permittee specific DEP order, one of the following processes will be followed depending on who identified the need for the change:

- If the changes are initiated by the Town, the Maine DEP will be notified prior to changing any elements by filing a permit application with the DEP that includes a justification to formally modify the requirement;
- If the changes are initiated by the Maine DEP, it will notify the Town, and the Town must respond in writing within 30 days of the notice explaining how it will modify the SWMP. The Town must then modify the SWMP within 90 calendar days of the Town's written response, or within 120 calendar days of the DEP notice (whichever is less). Any such modification must be submitted to the DEP for final review.

### **1.9 Annual Compliance Report and Record Keeping**

By September 15 of each year, the Town will electronically submit an Annual Compliance Report for the Maine DEP's review using a standardized form provided by the Maine DEP. The Annual Compliance Report must be sent to:

[Rhonda.poirier@maine.gov](mailto:Rhonda.poirier@maine.gov)

**Municipal/Industrial Stormwater Program Manager  
Department of Environmental Protection  
17 State House Station Augusta,  
Maine 04333-0017**

The Annual Compliance Report must include the following.

- a) The status of compliance with the terms and conditions of the 2022 MS4 General Permit and permittee specific DEP Order based on the implementation of the Town's SWMP for each permit year, an assessment of the effectiveness of the components of its stormwater management program, an assessment of the appropriateness of identified BMPs, progress towards achieving identified measurable goals for each of the MCMs and progress toward achieving the goal of reducing the discharge of pollutants to the maximum extent practicable.
- b) A summary of information collected and analyzed, including monitoring data, if any, during the reporting period.

- c) A summary of the stormwater activities the permittee intends to undertake pursuant to its SWMP to comply with the terms and conditions of the 2022 MS4 General Permit and permittee specific DEP Order during the next reporting cycle.
- d) A change in any identified BMPs or measurable goals that apply to the SWMP.
- e) A description of the activities, progress, and accomplishments for each of the MCMs #1 through #6 including such items as the status of education and outreach efforts, public involvement activities, stormwater mapping efforts, the number of visual dry weather inspections performed, the number of inaccessible and new outfalls, dry weather flow sampling events and laboratory results, detected illicit discharges, detected illicit connections, illicit discharges that were eliminated, construction site inspections, number and nature of enforcement actions, post construction BMP status and inspections, the number of functioning post construction BMPs, the number of post construction sites requiring maintenance or remedial action, the status of the permittee's good housekeeping/pollution prevention program including the percentage of catch basins cleaned, those catch basins cleaned multiple times and the number of catch basins that could not be evaluated for structural condition in a safe manner. Where applicable, the MS4 must quantify steps/measures/activities taken to comply with the 2022 MS4 General Permit and its SWMP including reporting on the types of trainings presented, the number of municipal and contract staff that received training, the length of the training and training content delivered as well as any revisions to the SWPPP procedures and/or changes in municipal operations.

The Maine DEP will review the annual reports and provide comments to the MS4s. Changes to the report based on the Maine DEP's review comment(s) must be submitted to the Department within 60 days of the receipt of the comment(s).

The regulated MS4s must keep records required by the 2022 MS4 General Permit and permittee specific DEP Order for at least three (3) years following its expiration or longer if requested by the Maine DEP Commissioner. The regulated MS4s must make records, including this SWMP, available to the public at reasonable times during regular business hours.

## 2 MINIMUM CONTROL MEASURES

### 2.1 MCM 1 Education/Outreach Program

The 2022 MS4 General Permit requires municipalities to develop and implement two Education/Outreach Campaigns to address stormwater issues of significance:

1. An Outreach to Raise Awareness Campaign targeted at two audiences applying three (3) tools per audience per year. One target audience must be the public and the second audience may be selected from: municipal, commercial, development/construction, or institutions.
2. An Outreach to Change Behavior Campaign to promote one behavior change directed at two audiences using a minimum of three (3) outreach tools per year. This campaign will promote and reinforce desirable behaviors designed to reduce stormwater pollution.

In 2018, the ISWG executed a statewide survey to assess public awareness of a variety of stormwater issues and related behaviors. The survey results report<sup>1</sup> was included in the ISWG Permit Year 5 (2017-2018) annual reports. In addition, the ISWG communities reviewed regional water quality related to stormwater issues, examined the unique conditions within each of their communities, and evaluated the needs for public education around stormwater at five of their regional meetings (9/13/2018, 3/21/2019, 7/18/2019, 3/26/2020, 5/21/2020). Based on the survey results and the discussions at their regional meetings, the ISWG communities agreed on which issues of significance to address and what tools and messages might be effective. Each of the BMPs provides a brief introductory section describing the rationale for the selection of the BMP based on the regional and local issues within the ISWG region. The BMPs are further structured to allow for adaptive education and outreach approaches to create a strong, diverse, and effective campaign over the duration of this permit.

The Town will fulfill the requirements for Public Education/Outreach through participation in the ISWG and the Towns' provision of funding to the Cumberland County Soil & Water Conservation District (CCSWCD) for Public Education/Outreach services, as described in the following BMPs. The BMPs will be implemented according to their individual timelines over the term of the permit.

#### **2.1.1 BMP 1.1 – Outreach to Raise Awareness Campaign**

**Responsible Party - Assistant Public Works Director (with implementation assistance from Cumberland County Soil & Water Conservation District)**

The 2022 MS4 General Permit requires the permittee to raise awareness of the public as well as one of the following groups: municipal, commercial, development/construction, or institutions. This BMP describes the reasoning and measurable goals for the public audience and the selected second audience: development/construction.

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<sup>1</sup> [http://thinkbluemaine.cumberlandswcd.com/wp-content/uploads/2018/07/Survey\\_Summary-FINAL.pdf](http://thinkbluemaine.cumberlandswcd.com/wp-content/uploads/2018/07/Survey_Summary-FINAL.pdf)



*Background for Measurable Goal 1.1a Public Audience:* The Think Blue Maine campaign began in 2003 as a statewide effort to raise awareness of common stormwater pollutants and ways to prevent those pollutants. The Think Blue Maine campaign has been historically successful in increasing awareness of stormwater issues. The ISWG, Androscoggin Valley Stormwater Working Group (AVSWG), and Southern Maine Stormwater Working Group (SMSWG) coordinate their Think Blue Maine messaging and education efforts to provide consistent messaging in Southern Maine. In addition, the Massachusetts and New Hampshire small MS4s are using similar Think Blue campaigns, so there is some regionally consistent messaging in circulation.

In 2018, the ISWG executed a statewide survey around public awareness of stormwater issues and behaviors that impact stormwater. Ninety-four percent of survey respondents in the ISWG region ages 25 to 34 stated it was “very important to have clean water in the lakes and streams in [their] community”, and 86% of ISWG respondents ages 25 to 34 believe that stormwater runoff has a major impact or somewhat impacts water quality, but only 46% of ISWG respondents ages 25 to 34 were able to correctly describe what happens to stormwater at their residence. Because this age group has not been targeted before for education and has the potential to impact stormwater for many years into the future, the ISWG, AVSWG, and SMSWG communities will cooperatively use the Think Blue Maine campaign to raise awareness of the target audience to be more aware of stormwater issues and be more willing to change their behavior in the future.

Measurable Goal 1.1a – The Town, through its participation in the ISWG, will raise 15%<sup>2</sup> of the target audience’s awareness of what happens to stormwater at their residence or place of work. According to the 2019 US Census Bureau, the ISWG region’s population for ages 25 to 34 is approximately 38,000 people: therefore 15% of the target audience is approximately 6,000 people.

**Target Audience:** People 25 to 34 in the ISWG region

**Overarching Message:** “Water that lands on our roads, roofs, and other hard surfaces picks up pollutants and carries them to our local waterbodies without being treated.”

This message will be presented with variations based on target audience interests and outreach tools used.

**Outreach Tools:** A minimum of three outreach tools will be selected from Appendix D each year. Each tool will be assessed and customized based on the target audience’s receptiveness to the method. Any tool used in a given year will be tailored to the message for the relevant target audience subset based on common characteristics and/or demographics.

**Evaluation:** Effectiveness will be evaluated annually by tracking process indicators<sup>3</sup> for each tool implemented that year and by tracking impact indicators<sup>4</sup> where available (see Appendix D).

**Implementation schedule:** A minimum of three of the tools from Appendix D will be

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<sup>2</sup> As recommended in the EPA’s “Getting in Step: A guide for conducting watershed outreach campaigns” (2003), when 15 to 20 percent of an audience adopts a new idea or behavior, it will be able to permeate to the rest of the audience.

<sup>3</sup> Indicators related to the execution of the outreach program.

<sup>4</sup> Indicators related to the achievement of the goals or objectives of the program.

implemented each year for the duration of the permit.

*Background for Measurable Goal 1.1b Development/Construction Audience:* Evaluation of municipal stormwater programs, through annual meetings with municipal staff and officials, has revealed a large amount of effort required to comply with MCM 4 tasks. The ISWG communities identified opportunities to address common MCM 4 goals through coordinated regional and statewide stormwater education to developers and contractors to reduce development and construction-related stormwater pollutants that are not already required by MCM 4. Due to the cyclical nature of the development/construction sector, a baseline evaluation will be conducted in Permit Year 1 to establish contractor and developer awareness and the baseline target audience.

Measurable Goal 1.1b – The Town, through its participation in the ISWG, will raise awareness of developers and contractors by 15% from the Permit Year 1 established baseline audience of developers and contractors about construction-related stormwater pollutants and methods available to reduce discharge of those pollutants.

**Target Audience:** Developers and contractors who are located within the ISWG region.

**Overarching Message:** “Through proper design and site management, erosion and sediment control best management practices can reduce the potential to negatively impact local water bodies.”

This message will be presented with variations based on target audience interests and outreach tools used.

**Outreach Tools:** A minimum of three outreach tools will be selected from Appendix D each year. Each tool will be assessed and customized based on the target audience’s receptiveness to the method. Any tool used in a given year will be tailored to the message for the relevant target audience subset based on common characteristics and/or demographics.

**Evaluation:** Effectiveness will be evaluated annually by tracking process indicators for each tool implemented that year and by tracking impact indicators where available (see Appendix D). Effectiveness will also be measured by the number of DEP certified contractors operating in the ISWG region over the course of the permit term.

**Implementation schedule:** A minimum of three of the tools will be implemented each year for the duration of the permit.

### **2.1.2 BMP 1.2 –Outreach to Change Behavior Campaign**

**Responsible Party - Assistant Public Works Director (with implementation assistance from Cumberland County Soil & Water Conservation District)**

The ISWG communities have focused on changing behavior to reduce nutrients into regional waterbodies in their MS4 permit for the past three permit cycles. The ISWG communities will continue their efforts to reduce sources of nutrients by promoting proper dog waste disposal to two target audiences this permit term for the following reasons:

1. Generally, excess nutrients in our waters are a nationally recognized water quality issue related to stormwater – there are multiple common sources of nutrients including sediments, pet waste, septic systems, and fertilizers.

2. The Statewide survey conducted in Permit Year 5 of the previous cycle identified that survey respondents are aware that nutrient sources (including dog waste) are a common stormwater pollutant and respondents expressed a willingness to take action to help reduce stormwater pollution. Eighty-four percent of 2018 survey respondents in the ISWG region ages 25 to 34 and 67% of 2018 survey respondents in the ISWG region ages 35 to 55 selected “picking up pet waste and putting it in the trash” as a practice they believed could reduce water pollution.
3. Most ISWG communities are part of the Casco Bay watershed. In the June 2019 Casco Bay Nutrient Council report, nutrients were identified as the main pollutant of concern for the health of Casco Bay. While there is discrepancy between nutrient models as to the contribution percentages of the three main sources of nutrients (stormwater, wastewater, and atmospheric deposition), stormwater runoff is believed to contribute between 24% and 64% of the nitrogen entering Casco Bay.
4. Several ISWG communities have encountered problems with dog waste not being picked up<sup>5</sup> or not being properly disposed of in the trash, causing local water quality concerns<sup>6</sup> and unsanitary conditions for the public and municipal staff.
5. Most ISWG communities have taken steps to discourage improper dog waste disposal through ordinances. However, there are currently still barriers to effectively educating and enforcing these types of ordinances.
6. Dog owners ages 25 to 64 are the least likely age group to pick up after their dog<sup>7</sup>. However, dog owners age 25 to 64 receive their information through different outreach methods<sup>8</sup>. In order to provide effective messaging on proper dog waste management, two audiences will be created to allow appropriate outreach tools to be used per age group.

A baseline evaluation will be conducted in Permit Year 1 to establish dog owner behavior of dog waste disposal and the baseline target audience within the ISWG region.

**Measurable Goal 1.2a** – The Town, through its participation in the ISWG, will work towards changing the behavior of 15% of pet owners from the Permit Year 1 established baseline audience of dog owners so more will properly dispose of their pet waste.

**Target audience:** Dog owners ages 25 to 34 within the ISWG region

**Overarching Message:** “Dispose of dog waste as a solid waste, so it does not end up in our stormwater. Once in the stormwater, dog waste contributes nutrients, bacteria, and pathogens to our ponds, lakes, streams, rivers, and bays, which can lower property values, harm our drinking water, and hinder recreational and economic opportunities.”

This message will be presented with variations based on target audience interests and outreach tools used.

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<sup>5</sup><https://www.pressherald.com/2019/03/21/south-portland-raises-a-red-flag-over-dog-waste-problem-at-hinckley-park/>

<sup>6</sup><https://www.pressherald.com/2019/08/30/south-portland-park-tests-positive-for-algae-that-can-harm-dogs/>

<sup>7</sup> Hall, S.L. (2006 June) Survey on Poop: Half don’t scoop; neighborhoods seeking solutions. *The News & Observer*, pp. B1.

<sup>8</sup> <https://umaine.edu/undiscoveredmaine/small-business/resources/marketing-for-small-business/social-media-tools/social-media-statistics-details/>

**Outreach Tools:** A minimum of three outreach tools will be selected from Appendix D each year. Each tool will be assessed and customized based on the target audience’s receptiveness to the method. Any tool used each year will be tailored to the message of the relevant target audience subset based on common characteristics and/or demographics.

**Evaluation:** Effectiveness will be evaluated annually by tracking process indicators for each tool implemented that year and by tracking impact indicators where available (see Appendix D). Effectiveness will also be evaluated by conducting visual (observational) surveys of dog waste disposal at public areas and tracking the presence of dog waste bags in catch basins.

**Implementation schedule:** A minimum of three of the tools will be implemented each year for the duration of the permit.

Measurable Goal 1.2b – The Town, through its participation in the ISWG, will work towards changing the behavior of 15% of pet owners from the Permit Year 1 established baseline audience of dog owners so more will properly dispose of their pet waste.

**Target audience:** Dog owners ages 35 to 55 within the ISWG region

**Overarching Message:** “Dispose of dog waste as a solid waste, so it does not end up in our stormwater. Once in the stormwater, dog waste contributes nutrients, bacteria, and pathogens to our ponds, lakes, streams, rivers, and bays, which can lower property values, harm our drinking water, and hinder recreational and economic opportunities.”

This message will be presented with variations based on target audience interests and outreach tools used.

**Outreach Tools:** A minimum of three outreach tools will be selected from Appendix D each year. Each tool will be assessed and customized based on the target audience’s receptiveness to the method. Any tool used each year will be tailored to the message for the relevant target audience subset based on common characteristics and/or demographics.

**Evaluation:** Effectiveness will be evaluated annually by tracking process indicators for each tool implemented that year and by tracking impact indicators where available (see Appendix D). Effectiveness will also be evaluated by conducting visual (observational) surveys of dog waste disposal at public areas and tracking the presence of dog waste bags in catch basins.

**Implementation schedule:** A minimum of three of the tools will be implemented each year for the duration of the permit.

### **2.1.3 BMP 1.3 – Effectiveness Evaluation**

**Responsible Party - Assistant Public Works Director (with implementation assistance from Cumberland County Soil & Water Conservation District)**

Measurable Goal 1.3a – The Town, through its participation in ISWG, will submit an annual report each year of the 2022 MS4 General Permit term documenting the implementation of each BMP. The annual report will include the message for each audience, the methods of distribution, the outreach tools used, the measures/methods used to determine on-going effectiveness of the campaigns, and any changes planned based on the measures of effectiveness.

Measurable Goal 1.3b – In Permit Year 5 of the 2022 MS4 General Permit the Town, through its

participation in ISWG, will conduct an evaluation of the overall effectiveness of the Awareness and Behavior Change BMPs (BMPs 1.1 and 1.2). The evaluation will be a review of the annually reported benchmark values for the Awareness and Behavior Change BMPs as well as documentation of overall changes during the permit term. The evaluation will identify recommendations for future awareness and behavior change target audiences, messages, tools, and benchmarks. A comprehensive survey will be conducted for the ISWG region to evaluate the impact of the awareness campaigns.

#### **2.1.4 BMP 1.4 – Additional Activities**

**Responsible Party - Assistant Public Works Director (with implementation assistance from Cumberland County Soil & Water Conservation District)**

This BMP describes activities that are not required by the 2022 MS4 General Permit but are being conducted by the Town to supplement the Education/Outreach program.

Measurable Goal 1.4a – The Town will continue to support the Cumberland County Soil & Water Conservation District’s youth education curriculum to community schools as funding allows. Annual reports will include the total number of students reached, which schools were involved, and the lesson topics covered.

Measurable Goal 1.4b – The Town will support the regional YardScaping effort to reduce nutrients from entering regional waterways and increase buffers. Annual reports will include the total number of people reached with workshops, partner point of sale locations, and workshop survey data.

## **2.2 MCM 2 Public Involvement and Participation**

The Town will fulfill the requirements for Public Involvement and Participation through participation in the ISWG and the Town’s provisions of funding to Cumberland County Soil & Water Conservation District for Public Involvement and Participation services, or through directly fulfilling the requirements, as described in this section of the plan.

#### **2.2.1 BMP 2.1 - Public Notice Requirement**

**Responsible Party - Assistant Public Works Director (with implementation assistance from Cumberland County Soil & Water Conservation District)**

Measurable Goal 2.1a – The Town will follow applicable state and local public notice requirements for their Stormwater Management Plans and Notices of Intent (NOIs) to comply with the MS4 General Permit. Copies of the NOIs and plans will be made available on the Town’s website. The Town will document public meetings related to their stormwater program and attendance of those meetings in their annual report.

Measurable Goal 2.1b – The ISWG members meet as a group 6 times per year to review issues

associated with implementation of the Stormwater Management Plan and MS4 General Permit. These meetings will be publicized through the CCSWCD website, on ISWG member websites, and open to the public.

### **2.2.2 BMP 2.2 - Public Event**

**Responsible Party - Assistant Public Works Director (with implementation assistance from Cumberland County Soil & Water Conservation District)**

Measurable Goal 2.2a – The Town will annually host, conduct, and/or participate in a public community event with a pollution prevention and/or water quality theme from the list included in the 2022 MS4 General Permit or another activity approved by the DEP. Stormwater stewardship and educational messages and activities will be incorporated into the event. The event will be advertised on the Town’s website, through the Town’s and CCSWCD’s social media accounts, and other Municipal and CCSWCD communication methods. The annual report will include a description of the event and the estimated attendance/participation.

## **2.3 MCM 3 Illicit Discharge Detection and Elimination**

The Town will continue to implement its Illicit Discharge Detection and Elimination (IDDE) program, which includes:

- A Watershed-based map of the stormwater infrastructure,
- A written IDDE SOP which describes:
  - Inspections of the infrastructure during dry weather (and monitoring of outfalls that flow during dry weather)
  - Investigations of potential illicit discharges,
  - Enforcement of the Non-Stormwater Discharge Ordinance
  - A Quality Assurance Project Plan (QAPP) that describes the procedures used for investigating outfalls that flow during dry weather.
- Development of a list of outfalls that have the potential to cause illicit discharges during wet weather.

The following BMPs will be implemented to meet this Minimum Control Measure.

### **2.3.1 BMP 3.1 – Continue to Implement the Non-Stormwater Discharge Ordinance**

**Responsible Party – Assistant Public Works Director and Code Enforcement Officer**

Measurable Goal 3.1a – The Town adopted a Non-Stormwater Discharge Ordinance on April 25, 2005. The Ordinance is embedded in Part II, Chapter 20 Stormwater and Non-Stormwater Discharge Ordinance, of the Town’s Code of Ordinances. The Code Enforcement Officer enforces this ordinance with the assistance of the Assistant Public Works Director, who is responsible for coordinating and overseeing the IDDE program. This ordinance provides the Code Enforcement Officer with the authority to issue letters of warning, notices of violation and/or fines. The Town will continue to enforce this ordinance throughout the permit cycle. The Ordinance can be viewed online at: <http://online.encodeplus.com/regs/falmouth/doc-viewer.aspx#secid-1877>

Measurable Goal 3.1b – The Town will document the results of enforcement actions taken for illicit discharges in the VUEWorks® work order system.

### **2.3.2 BMP 3.2 – Maintain a Written IDDE SOP**

**Responsible Party – Assistant Public Works Director**

Measurable Goal 3.2a - The Town prepared a written IDDE Standard Operating Procedure (SOP) in 2017 which has been updated to contain the elements required in the 2022 MS4 General Permit (Part IV.C.3.b.i through vi). The updated IDDE SOP is contained in Appendix E of this

SWMP. The IDDE SOP will be reviewed annually and updated as needed to reflect any changes to the program.

Measurable Goal 3.2b - The Town will conduct a wet weather assessment in accordance with the 2022 MS4 General Permit Part IV.C.3.f and will incorporate the wet weather assessment into their IDDE SOP by the end of Permit Year 5 (June 30, 2027).

### **2.3.3 BMP 3.3 - Maintain Storm Sewer System Infrastructure Map**

**Responsible Party – Assistant Public Works Director**

Measurable Goal 3.3a – The Town has created and continually updates a watershed-based map of the MS4 infrastructure. The map shows the locations of stormwater catch basins, drain manholes, connecting surface and subsurface infrastructure showing the direction of pipe flow and the locations of stormwater outfalls. The infrastructure is documented in a Geographic Information System (GIS), which contains unique identifiers for outfalls and catch basins, as well as outfall material, size and receiving water. The Town maintains the storm sewer system map by updating the data when additional information is identified or becomes available. In addition, the Town annually reviews the existing storm sewer system map to determine whether updates are necessary.

### **2.3.4 BMP 3.4 – Conduct Infrastructure Inspections and Monitor Flowing Outfalls**

**Responsible Party – Assistant Public Works Director**

Measurable Goal 3.4a – The Town will conduct infrastructure inspections for pollutants using the following frequency:

- One dry weather inspection will be conducted on each outfall at least once per permit cycle as required by the 2022 MS4 General Permit.
- Catch basins will be inspected for evidence of pollutants during their required sediment inspections (see BMP 6.4 for details).

The Town’s IDDE SOP (contained in Appendix E) describes the information collected electronically during infrastructure inspections. Inspections are documented using GIS.

Measurable Goal 3.4b – If an outfall is observed to be flowing during a dry weather inspection, the flow will be sampled and analyzed once per permit term using the methods described in the IDDE SOP, unless it is exempt from dry weather investigations (as described in Part IV.C.3.e.vi of the 2022 MS4 General Permit). Outfalls sampled during dry weather will be handled as follows:

1. Outfalls where sampling and analysis reveal the potential for an illicit discharge: The Town will investigate the catchment area associated with the outfall for potential illicit discharges as described under Measurable Goal 3.5a.
2. Outfalls where sampling and analysis does not reveal the potential for an illicit discharge:



The Town will document the dry weather flow as either uncontaminated groundwater, water from a natural resource, or an allowable non-stormwater discharge.

The Assistant Public Works Director will summarize the monitoring results, any investigation completed, or the exempt status, as applicable, in a GIS geodatabase by using a data collection application such as Esri's ArcGIS Collector.

### **2.3.5 BMP 3.5 – Conduct Investigations on Suspect Illicit Discharges**

#### **Responsible Party – Assistant Public Works Director**

Measurable Goal 3.5a – Whenever the Public Works Department becomes aware of a potential illicit discharge, during dry weather inspections or otherwise, it will investigate to identify the source using methods described in the written IDDE SOP (Appendix E). The Public Works Department will track the status and outcome of the investigations using its VUEWorks® work order tracking system.

### **2.3.6 BMP 3.6 – Allowable Non-Stormwater Discharges Identified as Significant Contributors of Pollutants**

#### **Responsible Party – Assistant Public Works Director**

Measurable Goal 3.6a – In the previous permit cycle, the Maine DEP identified hydrant flushing as a potential contributor of pollutants to MS4s. The DEP published an issue profile providing water districts and departments guidance on how to meet ambient water quality standards for chlorine during hydrant flushing. The document was specifically designed for discharges to MS4s. In addition, the Maine Rural Water Association and Maine Water Utilities Association prepared a guidance document and training to show water districts and departments how to meet the requirements of the issue profile.

The Town previously made annual requests to the Portland Water District to provide an annual report describing their hydrant flushing dechlorination processes, and the Town will continue to request they provide a report each permit year.

Measurable Goal 3.6b – If any of the allowable non-stormwater discharges listed in the 2022 MS4 General Permit (Part IV.C.3.h) are identified as significant contributors of pollutants to the MS4, the SWMP will be amended to address how the Town will work with the responsible dischargers to control these sources so they are no longer significant contributors of pollutants.

## **2.4 MCM 4 Construction Site Stormwater Runoff Control**

The Town will review, update as necessary, implement, and enforce its Construction Runoff Control Program for construction activities that result in land disturbance greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale that would disturb one acre or more. This program will be implemented through BMPs as described in this section.

The Town's Erosion and Sediment Control Ordinance is specified in Chapter II-19 Zoning and Floodplain Management under Section 19-72. Additional erosion and sediment control requirements are specified in Appendix 7-7 Stormwater Management of Chapter II-7 Land Subdivision.

The Town of Falmouth's Planning Board Site Plan Review is addressed in Div. II-19-1-9 of Chapter II-19 Zoning and Floodplain Management. Site Plan Review procedures are outlined in Section 19-128, General Site Plan Review Standards are outline in Section 19-133, and Performance Standards are outlined in Sections 19-136 through Section 19-156. Site plans covered by this section are also required to meet the design standards and administrative provisions of Chapter II-7 Land Subdivision.

The Town's existing Zoning and Floodplain Management and Land Subdivision Ordinances can be viewed online at:

Ch. II-19 Zoning and Floodplain Management:

<http://online.encodeplus.com/regs/falmouth/doc-viewer.aspx#secid-1814>

Ch. II-7 Land Subdivision:

<http://online.encodeplus.com/regs/falmouth/doc-viewer.aspx#secid-1187>

The following sites are required to submit a sediment and erosion control plan to the Town for review and approval:

- Subdivisions (Appendix 7-7)
- Site Plans (Section 19-157)
- Private Ways (Section 16-60)
- Construction within the Highland Lake Overlay District (Section 19-22)
- Placement and Removal of Fill Material/Building Permits (Section 19-67)
- Work in the Shoreland Zone (Section 19-105)

Overall, the Town's existing ordinances meet most elements of the 2022 MS4 Permit requirements for Construction Site Stormwater Runoff Control; however, some modifications are required to meet the 2022 MS4 General Permit requirements. The following BMPs will be implemented to meet this Minimum Control Measure.

#### **2.4.1 BMP 4.1 – Erosion Sediment Control Ordinance**

##### **Responsible Party - Planner and Assistant Public Works Director**

Measurable Goal 4.1a – The Town will review and update as necessary Section 19-72.5 Erosion and Sediment Control Requirements by July 1, 2023 to reference that the Erosion Control Plan meet a set of standards consistent with the applicable sections of Attachment C to the 2022 MS4 General Permit, (which are the same as the Maine DEP Stormwater Rule Chapter 500 Appendices A Erosion and Sediment Control, B Inspections and Maintenance, and C Housekeeping).

#### **2.4.2 BMP 4.2 – Site Plan Review Procedures**

##### **Responsible Party – Town Planner and Assistant Public Works Director**

Measurable Goal 4.2a – The Town’s Site Plan Review Procedures and Standards will continue to be implemented and will be reviewed and updated as necessary to ensure they contain the required elements listed in the 2022 MS4 General Permit (consideration of potential water quality impacts, erosion control, waste storage, the ability for the public to comment at publicly noticed meetings and procedures to consider information submitted by the public).

#### **2.4.3 BMP 4.3 – Procedures for Notifying Construction Site Developers and Operators**

##### **Responsible Party - Planner and Code Enforcement Officer**

Measurable Goal 4.3a – The Town will continue notifying developers and contractors of requirements to obtain coverage under the MCGP and Chapter 500 for sites that disturb one or more acres of land using the following methods:

- Using check boxes on Community Development forms and applications checklists for Site Plan Review, Private Way, Minor Subdivision, Major Subdivision, Fill Permit and Building Permits. The forms and applications will be updated as necessary to reference Chapter 500.
- In discussions with applicants during the development review process.

#### **2.4.4 BMP 4.4 – Procedures to Control Waste from Construction Sites**

Measurable Goal 4.4a – The Town will develop procedures for construction site operations to control waste such as discarded building materials, concrete truck wash-outs, chemicals, litter and sanitary waste at the construction site that may cause adverse impacts to water quality if passed through the storm drain system.

## 2.4.5 BMP 4.5 –Conduct and Document Construction Site Inspections

### Responsible Party – Assistant Public Works Director

Measurable Goal 4.5a – The Town will continue implementing its procedure for construction site inspections which will be formalized in a written document by July 1, 2022. The written procedure will:

- Identify who is responsible for site inspections.
- Identify who has authority to implement enforcement procedures.
- Require three inspections during active earth-moving phase of construction.
- Require a minimum of one inspection annually until the project reaches substantial completion.
- Require a final inspection at project completion to ensure that permanent stabilization has been achieved and all temporary erosion and sediment controls have been removed.
- Include use of the construction inspection form provided in Appendix F or a form submitted by the applicant and approved by the Assistant Public Works Director.

Measurable Goal 4.5b. The Town will document construction sites using an Excel spreadsheet. The spreadsheet will contain the site's name, location, number of inspections, date of inspections, and any enforcement actions and corrective actions taken.

## **2.5 MCM 5 Post-Construction Stormwater Management in New Development / Redevelopment**

The Town will continue to implement its Post Construction Stormwater Management Program to address stormwater runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the Town's MS4 through implementation of the following BMPs.

The Town's current Ordinance contain provisions to prevent or minimize water quality impacts from development in accordance with the requirements of the MS4 General Permit. The Post-Construction Stormwater Management Ordinance is specified in Chapter II-19 Zoning and Floodplain Management under Section 19-72A, and can be viewed online at:

<http://online.encodeplus.com/regs/falmouth/doc-viewer.aspx#secid-529>

Section 19-72A requires:

- Preparation and implementation of a Post Construction Stormwater Management Plan (PCSWMP) for any site development or redevelopment activity involving once acre or more of disturbed land area that discharges to the Town's MS4 or any project that includes stormwater management facilities requiring private ways, site plan, or subdivision approval within the Highland Lake Conservations Overlay District.
- Conformance of the PCSWMP to applicable requirements of Section 8 of DEP Chapter 500 Rules.
- Approval of the PCSWMP by the Public Works Department.
- Execution and filing of a Maintenance Agreement at the Registry of Deeds for any infrastructure that will remain under private control, and provision of perpetual easements to the Town allowing access for secondary maintenance, repair, replacement and improvement of the Stormwater Management Facilities.
- Submittal of an annual report documenting that all on-site BMPs have been inspected by a qualified third-party inspector and are either adequately maintained and functioning as intended or if they require maintenance and repair, a list of deficiencies, and documentation once they are corrected.

The following BMPs will be implemented to meet this Minimum Control Measure.

### **2.5.1 BMP 5.1 – Promote Strategies to Prevent or Minimize Water Quality Impacts**

#### **Responsible Party - Planner and Code Enforcement Officer**

Measurable Goal 5.1a – The Town will rely on the Maine DEP Chapter 500 Stormwater Rules which provide stormwater treatment standards for sites that disturb one or more acres of land and are either: in the in the watershed of an Urban Impaired Stream or a lake most at risk that

create 20,000 square feet of impervious cover, or in any other watershed that creates 1 acre or more of impervious cover or is in any watershed where 5 or more acres of land will be developed.

Measurable Goal 5.1b – The Town will continue to rely on the current zoning ordinances that contain provisions to promote conservation subdivisions as a means for notifying site developers to consider low impact development. The Resource Conservation Overlay District (RCZO) in Section 19-18 of the Ordinance *“establishes standards for conservation subdivisions that set aside a significant portion of the site as common open space that is permanently protected while allowing the dwellings to be located on the portions of the site that have the least natural, cultural, or historical resource value for conservation purposes. The standards are intended to ensure that those areas of the site that are not developable or that have natural resource value are included in the common open space.”*

## **2.5.2 BMP 5.2 – Maintain Post Construction Ordinance or Similar Measure**

### **Responsible Party - Planner and Code Enforcement Officer**

Measurable Goal 5.2a –The Town’s Post Construction Stormwater Management Ordinance requires certification, from applicable sites, to the town annually by July 1 that the owner has inspected and maintained their stormwater BMPs.

Measurable Goal 5.2b – By July 1, 2023, the Town’s Post Construction Ordinance will be updated to include provisions requiring the following for sites reporting that maintenance is required:

- Deficiencies will be corrected within 60 days of identification and a record of the corrective action taken will be provided to the Town’s Enforcement Authority within the same 60-day period.
- If it is not possible to correct the deficiency within 60 days, the property owner will coordinate with the Public Works Director to establish an expeditious schedule to correct the deficiency and will provide a record of the corrective actions taken.

## **2.6 MCM 6 Pollution Prevention/Good Housekeeping for Municipal Operations**

The objective of this MCM is to mitigate or eliminate pollutant runoff from municipal operations on property that is owned or managed by the permittee and located within the 2000-2010 Urbanized Area through implementation of the following BMPs.

### **2.6.1 BMP 6.1 – Operations at Municipally Owned Grounds and Facilities**

#### **Responsible Party – Public Works Director**

Measurable Goal 6.1a – During previous permit cycles, the Town developed an inventory of municipal operations conducted in, on, or associated with facilities, buildings, golf courses, cemeteries, parks, and open space owned or operated by the Town that have the potential to cause or contribute to stormwater pollution. The Town will review and update its inventory annually.

Measurable Goal 6.1b – During previous permit cycles, the Town developed and implemented Operation and Maintenance (O&M) Procedures for the municipal operations listed in their inventory that had the potential to cause or contribute to stormwater pollution. The Town will continue to implement these O&M Procedures and will review and update the O&M Procedures annually to iteratively improve strategies and practices to eliminate or better control pollutant discharges.

### **2.6.2 BMP 6.2 – Training**

#### **Responsible Party – Public Works Director**

Measurable Goal 6.2a – The Town will receive annual employee training to prevent and reduce stormwater pollution from municipal operations and facilities subject to the 2022 MS4 General Permit, and will provide the following information in the annual report:

- The types of trainings presented.
- The percentage of staff (including occupation) that received the training.
- The length of the training.
- The training content delivered.

### **2.6.3 BMP 6.3 – Continue Street Sweeping Program**

#### **Responsible Party – Public Works Director**

Measurable Goal 6.3a - Each permit year the town will continue to sweep all publicly accepted paved streets and publicly owned paved parking lots at least once a year as soon as possible after snowmelt.

#### **2.6.4 BMP 6.4 – Cleaning of Catch Basins**

##### **Responsible Party – Public Works Director**

Measurable Goal 6.4a – The Town will inspect all catch basins for sediment content at least once every other year and, if necessary, clean catch basins and other stormwater structures that accumulate sediment. Removed sediment will be stored and disposed of according to state law. Catch basins will be cleaned more frequently if inspections indicate excessive accumulation of sediment. Excessive accumulation is considered greater than or equal to 50 percent of the sump filled.

Measurable Goal 6.4b – The Town will track catch basins with excess sediment. If two consecutive inspections show excess sediment, the catch basins will be cleaned every year instead of every other year until it has been documented to exhibit less than 25% sediment in its sump for two consecutive years at which point it will be removed from the excess sediment list and will be inspected again every other year.

#### **2.6.5 BMP 6.5 – Maintenance and Upgrading of Stormwater Conveyances and Outfalls**

##### **Responsible Party – Public Works Director**

Measurable Goal 6.5a – The Town will maintain and upgrade the stormwater conveyance systems based on the results of the catch basin, outfall, and, in accordance with the urgency of any needed repairs or maintenance. The Town continues to perform systematic capital upgrades of the storm drain system in correlation with the road paving program for the Town.

#### **2.6.6 BMP 6.6 – Stormwater Pollution Prevention Plans (SWPPPs)**

##### **Responsible Party – Public Works Director**

Measurable Goal 6.6a – During the previous permit cycle, the Town prepared a SWPPP for the Public Works Facility. However, the Public Works Facility is located outside of the Urbanized Area and therefore is not subject to the requirements of the 2022 MS4 General Permit. It should also be noted that the Public Works Facility does not have an outfall discharge location. Runoff from the facility sheet flows to grass buffer strips and wooded areas to the east and south. The existing Public Works Facility SWPPP will be converted to O&M procedures following requirements in BMP 6.1.



### 3 GENERAL REQUIREMENTS

#### 3.1 Certification

The General Permit requires that this Plan be certified by either a principal executive officer or ranking elected official. This section provides the necessary certification.

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

Signature:   
Nathan Poore

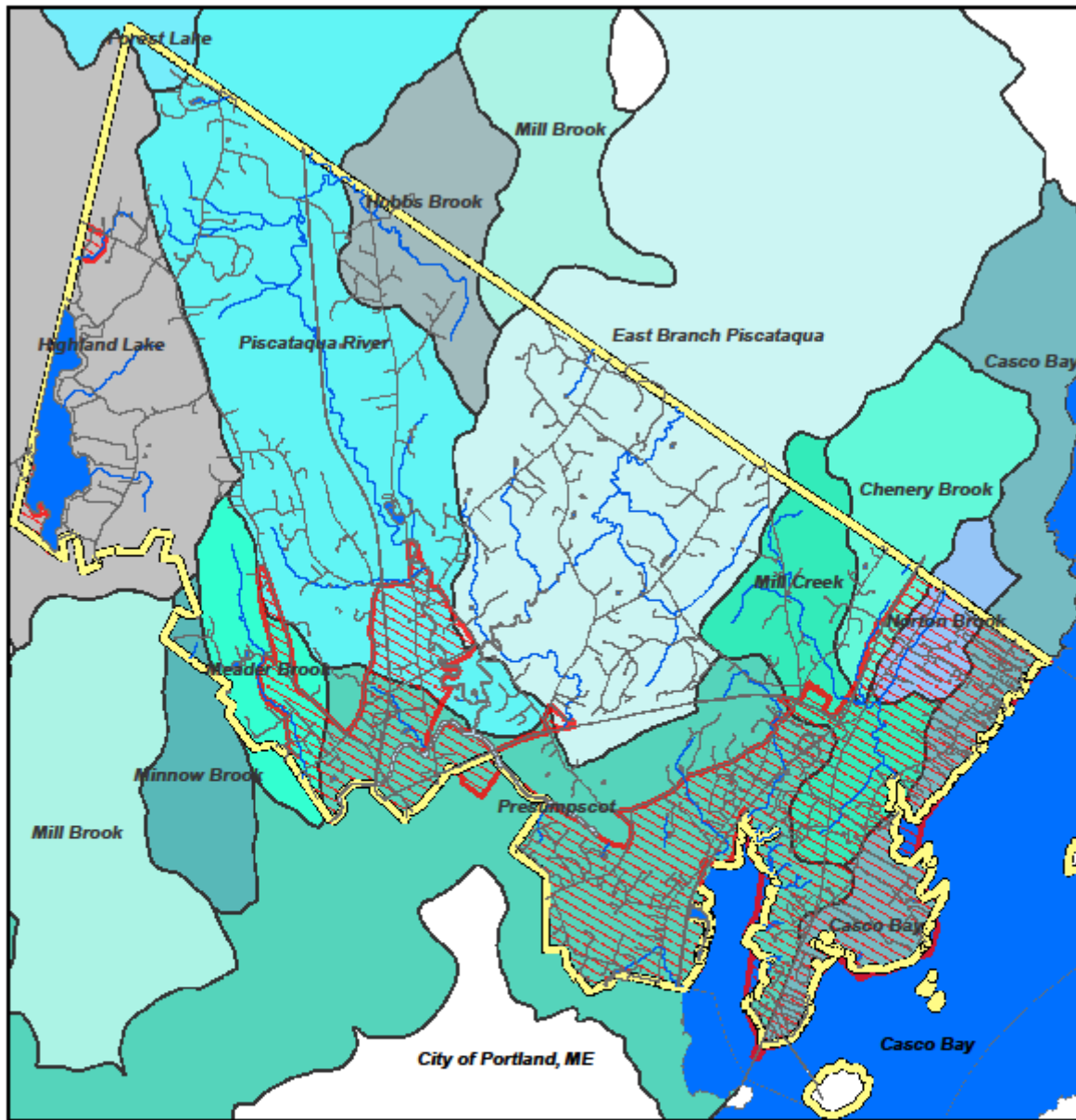
Date: March 24, 2021

Title: Town Manager

# **APPENDIX A**

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## **URBANIZED AREA and WATERSHED MAP**





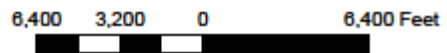
## *Urbanized Area and Watersheds*

Town of Falmouth, Maine

2021

### Legend

-  Town Boundary
-  Urbanized Area (UA)



## **APPENDIX B**

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**NOTICE OF INTENT, DEP ORDER,  
NOTIFICATION LETTERS TO INTERCONNECTED MS4S**



# NOTICE OF INTENT TO COMPLY WITH MAINE GENERAL PERMIT FOR THE DISCHARGE OF STORMWATER FROM MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4)

PLEASE TYPE OR PRINT IN **BLACK INK ONLY**

PERMITTEE INFORMATION					
MS4 Entity		Permittee ID #			
Name and title of chief elected official or principal executive officer					
Mailing Address					
Town/City		State		Zip Code	
Daytime Phone		Email			
PRIMARY CONTACT PERSON FOR OVERALL STORMWATER MANAGEMENT PROGRAM (if different than PEO/CEO)					
Name and Title					
Mailing Address					
Town/City		State		Zip Code	
Daytime Phone		Email			
STORMWATER MANAGEMENT PLAN (SWMP)					
Urbanized Area (sq. mi.)					
I have attached our updated SWMP with ordinances, SOPs, forms. <input type="checkbox"/>					
Name of streams, wetlands, or waterbodies to which the regulated small MS4 discharges ( <i>attach additional sheets as necessary</i> ):					
List of impaired waterbodies that receive stormwater from the regulated small MS4 ( <i>attach additional sheets as necessary</i> ):					
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, 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.					
Signature of Permittee	<i>Nathan Poore</i>			Date	

**This NOI registration form must be filed with the Department at the following address:**

Stormwater Program Manager  
 Maine Department of Environmental Protection  
 Bureau of Water Quality  
 17 State House Station  
 Augusta ME 04333-0017  
[Rhonda.Poirier@maine.gov](mailto:Rhonda.Poirier@maine.gov)

OFFICE USE ONLY							
Date Recieved		Staff		Date Accepted		Date Not Accepted	

## Public Notice

The Town of Falmouth, Maine will file a Notice of Intent (NOI) to comply with the Maine General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems issued 10/15/2020 (MER041000 W009170-5Y-C-R) and an associated Stormwater Management Plan (SWMP) with the Maine Department of Environmental Protection. The NOI and SWMP will be filed on or about March 31<sup>st</sup>, 2021. A copy may also be seen at the Town of Falmouth Public Works office and on the municipal website: <https://www.falmouthme.org/public-works/pages/stormwater>.

The DEP will review the submittal and assess if it is complete for processing within 60 days of submittal. Once it has been deemed complete for processing, it will be made available on the Maine DEP website for 30-day public comment: <https://www.maine.gov/dep/comment/index.html>. A request for public hearing or request that the Board of Environmental Protection assume jurisdiction over this application must be received by the DEP, in writing, no later than 20 days after the application is found acceptable for processing. Requests must indicate the interest of the person filing the request and specify the reasons why a hearing is warranted. Unless otherwise provided by law, a hearing is discretionary and may be held if the Commissioner or the Board finds significant public interest or there is conflicting technical information.

The NOI and SWMP are also available for viewing at the DEP Office in Augusta by scheduled appointment during normal business hours during the pandemic. Written public comments or requests for information may be made to the Division of Water Quality Management, Department of Environmental Protection, State House Station #17, Augusta, ME 04333-0017; telephone (207) 592-6233 and must include the name of the municipality filing the NOI and the Permit number provided above.



March 15, 2021

Laura Neleski, Stormwater Program Coordinator  
Town of Cumberland, ME  
290 Tuttle Road  
Cumberland, ME 04021

RE: Interconnected MS4 Coordination

Dear Ms. Neleski,

As you know, the Town of Falmouth, ME is regulated under the Maine General Permit for the discharge of stormwater from the municipal separate storm sewer system (MS4). Under this permit, we are required to coordinate with interconnected and nested MS4 permittees on spill response efforts.

The Town of Falmouth interconnects with your stormwater system. Therefore, if there are any spills of hazardous or non-hazardous substances that may make their way from your property into the Town of Falmouth, please notify me. In turn, Falmouth will notify you if there is a spill in Falmouth that could affect your municipality/MS4. In the event of an emergency after hours, please contact Falmouth Public Safety at (207) 781-2300.

Please be certain to forward this request to any first responders or other staff that might be able to coordinate spill response efforts. Please contact me if you have any questions.

Also, the Town intends to apply for coverage under the 2022 MS4 General Permit and as such, is preparing their Stormwater Management Plan and Illicit Discharge Detection and Elimination Plan. This letter constitutes notice that we are applying for continued coverage and we will be providing formal public notice in March 2021.

Sincerely,

Justin Early, P.E.  
Assistant Public Works Director/Town Engineer  
Town of Falmouth, ME

**TOWN OF FALMOUTH PUBLIC WORKS DEPARTMENT**  
101 Woods Road ● Falmouth, ME 04105  
[www.falmouthme.org](http://www.falmouthme.org)



March 15, 2021

Kerem Gungor, Stormwater Engineer  
Maine Department of Transportation  
16 State House Station  
Augusta, ME 04333-0016

RE: Interconnected MS4 Coordination

Dear Mr. Gungor,

As you know, the Town of Falmouth, ME is regulated under the Maine General Permit for the discharge of stormwater from the municipal separate storm sewer system (MS4). Under this permit, we are required to coordinate with interconnected and nested MS4 permittees on spill response efforts.

The Town of Falmouth interconnects with your stormwater system. Therefore, if there are any spills of hazardous or non-hazardous substances that may make their way from your property into the Town of Falmouth, please notify me. In turn, Falmouth will notify you if there is a spill in Falmouth that could affect your municipality/MS4. In the event of an emergency after hours, please contact Falmouth Public Safety at (207) 781-2300.

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Sincerely,

Justin Early, P.E.  
Assistant Public Works Director/Town Engineer  
Town of Falmouth, ME

**TOWN OF FALMOUTH PUBLIC WORKS DEPARTMENT**  
101 Woods Road • Falmouth, ME 04105  
[www.falmouthme.org](http://www.falmouthme.org)





March 15, 2021

Sean Donohue, Permitting Coordinator  
Maine Turnpike Association  
2360 Congress Street  
Portland, ME 04102

RE: Interconnected MS4 Coordination

Dear Mr. Donohue,

As you know, the Town of Falmouth, ME is regulated under the Maine General Permit for the discharge of stormwater from the municipal separate storm sewer system (MS4). Under this permit, we are required to coordinate with interconnected and nested MS4 permittees on spill response efforts.

The Town of Falmouth interconnects with your stormwater system. Therefore, if there are any spills of hazardous or non-hazardous substances that may make their way from your property into the Town of Falmouth, please notify me. In turn, Falmouth will notify you if there is a spill in Falmouth that could affect your municipality/MS4. In the event of an emergency after hours, please contact Falmouth Public Safety at (207) 781-2300.

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Justin Early, P.E.  
Assistant Public Works Director/Town Engineer  
Town of Falmouth, ME

**TOWN OF FALMOUTH PUBLIC WORKS DEPARTMENT**  
101 Woods Road • Falmouth, ME 04105  
[www.falmouthme.org](http://www.falmouthme.org)



March 15, 2021

Doug Roncarati, Stormwater Coordinator  
City of Portland, ME  
212 Canco Road Suite B  
Portland, ME 04103

RE: Interconnected MS4 Coordination

Dear Mr. Roncarati,

As you know, the Town of Falmouth, ME is regulated under the Maine General Permit for the discharge of stormwater from the municipal separate storm sewer system (MS4). Under this permit, we are required to coordinate with interconnected and nested MS4 permittees on spill response efforts.

The Town of Falmouth interconnects with your stormwater system. Therefore, if there are any spills of hazardous or non-hazardous substances that may make their way from your property into the Town of Falmouth, please notify me. In turn, Falmouth will notify you if there is a spill in Falmouth that could affect your municipality/MS4. In the event of an emergency after hours, please contact Falmouth Public Safety at (207) 781-2300.

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Sincerely,

Justin Early, P.E.  
Assistant Public Works Director/Town Engineer  
Town of Falmouth, ME

**TOWN OF FALMOUTH PUBLIC WORKS DEPARTMENT**  
101 Woods Road • Falmouth, ME 04105  
[www.falmouthme.org](http://www.falmouthme.org)



March 15, 2021

Lynn Leavitt, Sustainability Coordinator  
City of Westbrook, ME  
371 Saco Street  
Westbrook, ME 04092

RE: Interconnected MS4 Coordination

Dear Ms. Leavitt,

As you know, the Town of Falmouth, ME is regulated under the Maine General Permit for the discharge of stormwater from the municipal separate storm sewer system (MS4). Under this permit, we are required to coordinate with interconnected and nested MS4 permittees on spill response efforts.

The Town of Falmouth interconnects with your stormwater system. Therefore, if there are any spills of hazardous or non-hazardous substances that may make their way from your property into the Town of Falmouth, please notify me. In turn, Falmouth will notify you if there is a spill in Falmouth that could affect your municipality/MS4. In the event of an emergency after hours, please contact Falmouth Public Safety at (207) 781-2300.

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Sincerely,

Justin Early, P.E.  
Assistant Public Works Director/Town Engineer  
Town of Falmouth, ME

**TOWN OF FALMOUTH PUBLIC WORKS DEPARTMENT**  
101 Woods Road • Falmouth, ME 04105  
[www.falmouthme.org](http://www.falmouthme.org)



March 15, 2021

Gretchen Anderson, Environmental & Sustainability Coordinator  
City of Windham, ME  
8 School Road  
Windham, ME 04062

RE: Interconnected MS4 Coordination

Dear Ms. Anderson,

As you know, the Town of Falmouth, ME is regulated under the Maine General Permit for the discharge of stormwater from the municipal separate storm sewer system (MS4). Under this permit, we are required to coordinate with interconnected and nested MS4 permittees on spill response efforts.

The Town of Falmouth interconnects with your stormwater system. Therefore, if there are any spills of hazardous or non-hazardous substances that may make their way from your property into the Town of Falmouth, please notify me. In turn, Falmouth will notify you if there is a spill in Falmouth that could affect your municipality/MS4. In the event of an emergency after hours, please contact Falmouth Public Safety at (207) 781-2300.

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Sincerely,

Justin Early, P.E.  
Assistant Public Works Director/Town Engineer  
Town of Falmouth, ME

**TOWN OF FALMOUTH PUBLIC WORKS DEPARTMENT**  
101 Woods Road • Falmouth, ME 04105  
[www.falmouthme.org](http://www.falmouthme.org)

## **APPENDIX C**

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### **SUMMARY OF PUBLIC COMMENTS RECEIVED**

## **APPENDIX D**

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### **EDUCATION & OUTREACH TOOLS, LEVEL OF EFFORT, AND EFFECTIVENESS BENCHMARKS**

Below is a list of tools with their corresponding minimum level of effort and effectiveness benchmark that will be selected from each year to implement BMP 1.1 and 1.2.

<b>Outreach Tool</b>	<b>Minimum Level of Effort</b>	<b>Effectiveness Benchmark</b>
Poster	10 posters/municipality	Total number of posters distributed
Flyer	1 flyer	Total number of flyers distributed
Brochure	1 brochure	Total number of brochures distributed
Rack Card	1 rack card	Total number of rack cards distributed
Newsletter Article	2 newsletter articles	Total number of newsletters distributed
Post Card	1 post card	Total number of postcards distributed
Factsheet	1 factsheet	Total number of factsheets distributed
Sign	5 signs/municipality	Total number of signs distributed
Story Walk	1 story walk	Number of QR code (or similar technology) scans from signs
Story Map	1 regional story map	Number of visitors to webpage
Stormwater Geocaching	1 regional activity (14 sites)	Number of participants per site
Augmented Reality App	1 regional activity (14 sites)	Number of app downloads Number of engagements within the app
Municipal Electronic Message Board	3 messages	Amount of time message was displayed
Email Newsletter	4 email newsletters	Number of people reached with email Number of interactions with email (e.g., link clicks)
Municipal Website Content	Annual updates to website stormwater content	Number of visitors to stormwater webpage(s)
Think Blue Maine Website Content	Semiannual updates to website content	Number of visitors to website
Social Media Post (each platform counts as separate tool)	12 posts	Amount of post engagement (e.g., reactions, comments, shares, etc.)
Social Media Ad (each platform counts as separate tool)	Ad(s) run 90 days (multiple ads may be run for shorter durations to total 90 days)	Amount of ad engagement (e.g., reactions, comments, shares, link clicks, etc.) Number of people reached with ad
Social Media Video (each platform counts as separate tool)	3 videos	Amount of video engagement (e.g., views, reactions, comments, shares, etc.)
Online ad	Ad(s) run 90 days (multiple ads may be run for shorter durations to total 90 days)	Number of people reached with ad Amount of ad engagement (e.g., link clicks)
Radio Ad	1 radio ad	Number of people reached with ad
Radio Segment	1 radio segment	Number of people reached with segment

<b>Outreach Tool</b>	<b>Minimum Level of Effort</b>	<b>Effectiveness Benchmark</b>
Television Ad (broadcast or streaming)	1 television ad	Number of people reached with ad
Television News Segment (broadcast or streaming)	1 television news segment	Number of people reached with segment
Newspaper Article	1 newspaper article	Number of people reached with article
Newspaper Ad	1 newspaper ad	Number of people reached with ad
Webinar/Workshop	7 hours of training offered (multiple webinars/workshops may be offered to reach 7 hours)	Number of workshop attendees
Social Gathering	3 events	Number of interactions
Tabling	3 events	Number of interactions
Outreach partnership with local retailer	50% of industry retailers in region participating	Number of local retailers participating
Outreach partnership with local organization	3 content shares by partner organization	Number of people reached
Item with branding/messaging	1 item with branding/messaging	Total number of items distributed
A DEP-approved tool	Minimum level of effort will be determined based on the tool	Effectiveness benchmark will be determined based on the tool



# **APPENDIX E**

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**IDDE SOP**

**ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE)  
PROGRAM**

**STANDARD OPERATING PROCEDURE (SOP)**

**DEPARTMENT OF PUBLIC WORKS, FALMOUTH, ME**

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- A. Watershed Map
- B. Inspection Forms
- C. Quality Assurance Protection Plan (QAPP)

## **1 INTRODUCTION**

The following standard operating procedure (SOP) has been developed to identify the Town of Falmouth's policy for illicit discharge detection and elimination (IDDE). The procedure outlined in this document is a requirement under the Maine Department of Environmental Protection (Maine DEP), General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4s). At a minimum, these procedures should be implemented in the Town's Urbanized Area to meet the permit requirements. A map showing the Urbanized Area is provided in **Attachment A**.

The goal of this program is to reduce the number of illicit discharges into the MS4 and to improve water quality in local waterbodies. In this SOP, procedures are identified to:

- Prioritize watersheds,
- Detect illicit discharges,
- Investigate the source of an illicit discharge,
- Remove the source of the illicit discharge, and
- Evaluate and assess the IDDE program.

This SOP fulfills the Minimum Control Measure 3 IDDE requirements specified in Part IV.C.3.b of the MS4 General Permit, and is to be used during the effective 5-year cycle of the MS4 General Permit (2022-2027) and should be updated as needed while the permit is in effect.

## **2 DEFINITION OF ILLICIT DISCHARGE**

An illicit discharge means any discharge to a regulated MS4 system that is not composed entirely of stormwater other than: discharges authorized pursuant to another permit issued pursuant to 38 M.R.S. §413, uncontaminated groundwater, water from a natural resource [such as a wetland], or other allowable non-stormwater discharges identified in Part IV.C.3.h of the MS4 General Permit.

The allowable non-stormwater discharges are:

- landscape irrigation
- diverted stream flows
- rising ground waters
- uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20))

- uncontaminated pumped ground water
- uncontaminated flows from foundation drains
- air conditioning and compressor condensate
- irrigation water
- flows from uncontaminated springs
- uncontaminated water from crawl space pumps
- uncontaminated flows from footing drains
- lawn watering runoff
- flows from riparian habitats and wetlands
- residual street wash water (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material has been removed and detergents are not used), and
- hydrant flushing and firefighting activity runoff
- water line flushing and discharges from potable water sources
- individual residential car washing
- dechlorinated swimming pool discharges

Examples of illicit discharges that are prohibited include:

- Dumping anything that is non-stormwater into storm drains
- Septic tank seepage and illegal wastewater connections to the storm drain
- Improper home improvement waste (e.g. waste oil, concrete, paint, etc.)
- Improper disposal of commercial and industrial hazardous waste
- Pesticides and Fertilizers
- Leaking dumpsters
- Pool/Spa discharge that has not been dechlorinated

### **3 AUTHORITY TO PROHIBIT ILLICIT DISCHARGES**

The Town of Falmouth's authority to prohibit illicit discharges will be accomplished through the reliance on, *Chapter II-20 Stormwater and Non-Stormwater Discharge Ordinance*, of the Town of Falmouth Code of Ordinances, which was adopted on April 25, 2005. Although the MS4 General Permit is only applicable to the Urbanized Area, the Stormwater and Non-Stormwater

Discharge Ordinance applies to the entire storm drainage system. The Ordinance can be viewed online at: <http://online.encodeplus.com/regs/falmouth/doc-viewer.aspx#secid-1877>.

#### **4 POINTS OF CONTACT AND RESPONSIBILITIES**

The Public Works Department is the lead municipal department responsible for implementing, evaluating, and updating the IDDE program. The Code Enforcement Department is the lead municipal department responsible for implementing, administering, and enforcing the Stormwater and Non-Stormwater Discharge Ordinance. The following is a list of contacts and their associated responsibilities in implementing the IDDE program.

1. Justin Early, Assistant Public Works Director/Town Engineer: [jeary@falmouthme.org](mailto:jeary@falmouthme.org) \ (207) 781-3919 – **Primary Contact**

The Primary Contact is responsible for coordinating and overseeing all aspects of the IDDE program. Other responsibilities include scheduling and conducting routine dry weather outfall.

2. Jeff Buxton, Public Works Director: [jbuxton@falmouthme.org](mailto:jbuxton@falmouthme.org) \ (207) 781-3919 – **Secondary Contact**

The Secondary Contact is to cover the responsibilities of the primary contact when the primary contact is unavailable as well as assisting with enforcement and removal procedures.

3. Susie Holt, Public Works Administrative Assistant: [sholt@falmouthme.org](mailto:sholt@falmouthme.org) \ (207) 781-3919 - **Administrative Contact**

(Backup Administrative Contact - Town of Falmouth Dispatch (207) 781-2300)

The Administrative Contact is responsible for documenting phone calls received from the public or personnel and relaying the information to the primary or secondary contact for further action.

4. Justin Brown, Code Enforcement Officer: [jbrown@falmouthme.org](mailto:jbrown@falmouthme.org) \ (207) 699-5306 – **Code Enforcement Contact**

The Code Enforcement contact is responsible for enforcing the Non-Stormwater Discharge Ordinance, including coordinating with property owners and Public Works on the removal of illicit discharges.

## **5 WATERSHED PRIORITIZATION**

Illicit discharge detection and elimination procedures will be conducted in each of the Town's watersheds that contain a discharge to a receiving water within the Urbanized Area. **The Mill Creek and Casco Bay Watersheds will continue to be a priority for IDDE procedures as these are the drainage areas the Town perceives as having the greatest potential threat to water quality.** Available water quality data and reporting will be monitored to confirm this prioritization and will be revised, as necessary. The watersheds are shown on the Watershed Map included in **Attachment A.**

## **6 PROCEDURES TO DETECT POTENTIAL ILLICIT DISCHARGES**

The Town of Falmouth will use dry weather outfall inspections as the primary method to detect illicit discharges. Other methods include opportunistic inspections during regular maintenance activities, including catch basin cleaning, along with citizen reporting. Lastly, a wet weather assessment will be conducted to assess the potential of illicit discharges during wet weather events. A summary of each procedure is summarized below.

### **A. Dry Weather Outfall Inspections**

The following definitions are in accordance with the MS4 General Permit.

**Dry Weather Flow** – *“Means any observable flow from an outfall when there has not been measurable precipitation greater than 1/4 of an inch or ice or snow melt within 72 hours prior to the outfall inspection.”*

**Dry Weather Inspection** – *“Means an inspection of an outfall that includes observations of sheen, discoloration, foaming, evidence of sanitary sewage, excessive algal growth, and similar visual indicators, as well as detection of odor. These inspections must be completed during a dry weather flow condition (when the storm sewer system is not impacted by current*

*or recent precipitation) or when the outfall is not flowing even if it is within the 72 hours of precipitation greater than 1/4 of an inch or ice or snow melt.”*

### **Schedule**

Dry weather outfall inspections will be conducted on all outfalls within the urbanized area at least once during the 5-year term of the MS4 General Permit. Outfalls will be inspected following the prioritized watershed list provide in Section 5 of this SOP.

NOTE: Outfalls that are inaccessible due to safety concerns are not required to be inspected. Instead, a substitute inspection must be conducted of the first or closest accessible point (e.g., catch basin, manhole, pipe, etc.) within the storm collection system that drains to the inaccessible outfall.

### **Method**

Dry weather outfall inspections will be conducted using a standard inspection form on a hand-held electronic device. A copy of the form is provided in **Attachment B**. If the electronic form is unavailable, then a hard copy that mirrors the information from the electronic form will be used. Each inspection will be “attached” to the outfall asset using its unique identifier in GIS allowing the information to be accessed electronically. The inspections will be conducted by qualified personnel from the Town of Falmouth. During the inspection, the immediate area around, upstream, and downstream of the outfall will be observed, and photographs of the outfall and anything noteworthy will be taken and “attached” directly to the related inspection form.

### **Initial Investigation**

If indicators of a potential illicit discharge are observed during an inspection, the following steps will be taken immediately or as soon as practicable:

- Look for a potential source in the general / surrounding area of the discharge.
- Gather as much information on the potential illicit discharge as possible, such as: date, weather (recent rainfall/snowmelt), physical location, description of discharge location,



indicators of illicit discharge (odor, appearance, staining, floatables, residual evidence, etc.).

- Report potential illicit discharge to the **Assistant Public Works Director**.
- Clean up and remove obvious pollution, such as track out, excess sediment, organic debris, sewage or residual products, petroleum/chemical products, or trash/litter as soon as practical to prevent further discharge or exposure of such pollutants.
- Follow up detection with investigation using various inspection techniques, such as visual inspections or dye testing to determine the source of the discharge (see Section 7 Procedures to Investigate Illicit Discharges)
- Once the source is identified, the illicit discharge will be removed through enforcement of Chapter II-20 Stormwater and Non-Stormwater Discharge Ordinance (see Section 8 Procedures to Remove Illicit Discharges).

#### **B. Outfall Sampling and Analysis of Dry Weather Flows**

In the event an outfall exhibits dry weather flow during an inspection or if evidence of an illicit discharge is detected, sampling and analysis will be conducted to include:

- a. *E. coli*, enterococci, total fecal coliform or human Bacteroides;
- b. ammonia, total residual chlorine, temperature and conductivity, and
- c. optical enhancers or surfactants.

All analyses will be performed with field test kits or field instrumentation. Sampling must be able to detect parameters at or below the minimum reporting concentrations as follows:

- a. Ammonia (0.5 mg/L),
- b. Surfactants (0.25 mg/L),
- c. Total Residual Chlorine (0.05 mg/L),
- d. *E. coli* Bacteria (4 cfu/100 ml),
- e. Enterococcus (10 cfu/100 ml).

The electronic field data collection form will be updated accordingly so the collected sampling results can be documented with the dry weather outfall inspections.

**Full sampling and analysis procedures are provided in the Quality Assurance Project Plan (QAPP) in Attachment C.**

The QAPP in **Attachment C** has been developed to provide sampling personnel the information that will assist them in collecting samples and using field equipment, test kits and obtaining analyses. The QAPP describes the sampling procedures that should be used as well as the analytical methods and field equipment that are appropriate for use in investigating potential illicit discharges and flowing outfalls. The QAPP also provides guidance on interpretation of the results obtained so that investigators can make informed decisions about whether to continue investigating a potential source, or whether the results indicate a flowing outfall might be from a natural source.

**C. Opportunistic Inspections**

When in the field performing regular duties, Public Works and other Town staff will be mindful of evidence of illicit discharges, especially during catch basin cleaning. During catch basin cleaning, catch basins will be inspected, at a minimum, for observations of sheen, discoloration, foam, evidence of sanitary sewage, excessive algal growth, other evidence of an illicit discharge, including odor and excess sediment. If evidence of an illicit discharge is present, the evidence will be documented and provided to the **Assistant Public Works Director** for further action. Initial investigation of the illicit or potential illicit discharge will be conducted by Public Works as described under Dry Weather Outfall Inspections.

**D. Citizen Call-ins**

Call-in inspections will be conducted to investigate potential illicit discharges reported by a citizen or other Town departments. Information from call-ins will be collected by the **Public Works Administrative Assistant** or via the Public Works online “*Service Request*” form (<http://www.falmouthme.org/public-works/webforms/service-request-form>). Initial investigation of the potential illicit discharge will be conducted by Public Works as described under Dry Weather Outfall Inspections. All illicit or potential illicit discharges will be logged and documented in the Town’s VUEWorks work order management software.

Citizen call-ins occurring after normal business hours are directed to hang up and dial 911 for emergencies and for non-emergencies to dial the Falmouth Dispatch at (207) 781-2300. (Normal working hours are 7:00 a.m. to 4:30 p.m., Monday through Thursday).

#### **E. Wet Weather Assessment**

Prior to the expiration of the 2022-2027 MS4 General Permit, the Town will conduct a wet weather assessment for the potential for illicit discharges during wet weather events, in accordance with the General Permit Part IV.B.3.f, which requires the assessment to include the following:

1. ***Areas within the MS4 that have combined sewer systems.*** There are no known combined sanitary sewer systems within the MS4. However, this will be reviewed and confirmed as part of the wet weather assessment.
2. ***Sanitary sewer systems located in a common trench with stormwater infrastructure, particularly those with known infiltration.***
3. ***Subsurface wastewater disposal systems that are 20 years old or more, or those in areas known to have experienced recent malfunctions or failure.*** This assessment was completed as part of the previous MS4 General Permit requirements, and will be reviewed as part of the wet weather assessment.
4. ***Municipally-owned dog park.*** Not applicable (there are no municipality owned dog parks in the Town).
5. ***Complaints of sewage odor at a stormwater outfall during wet weather events.***
6. ***Direct discharge from the stormwater system to any of the following:***
  - a. ***A public beach or recreational area.***
  - b. ***A waterbody impaired for bacteria.*** Outfalls that drain to Casco Bay will be assessed.
  - c. ***A shellfish bed.*** Outfalls that drain to Casco Bay will be assessed.
  - d. ***A drinking water supply.*** Not applicable (there are no outfalls that discharge to a drinking water supply in Falmouth)

The outcome of the assessment will be a list of outfalls identified for wet weather monitoring and testing if applicable, by the Town in the next permit cycle along with the rationale for including these outfalls.

This IDDE SOP will be updated prior to the expiration of the MS4 General Permit to include the wet weather outfalls targeted for wet weather monitoring as well as the rationale for including them. The SOP will also be updated to include procedures for wet weather monitoring based on the EPA New England bacterial source tracking protocol or other acceptable protocols or methodologies and will specify the timing and frequency of wet weather monitoring that will be completed during the term of the next permit cycle. If the IDDE SOP is updated to include the results of the wet weather assessment and procedures for wet weather monitoring prior to the expiration date of the 2022-2027 MS4 General Permit and permittee specific DEP Order, the Town will implement the wet weather monitoring upon completion of the IDDE SOP update.

## **7 PROCEDURES TO INVESTIGATE ILLICIT DISCHARGES**

Investigations of illicit discharges will be implemented by Public Works once an illicit discharge has been reported or detected through an inspection. Investigation will involve inspection of the potential source site or systematic inspections starting at the initial detection location and gradually working upstream within the storm drain and/or ditch system looking for indicators of the discharge until a potential source is identified or no further evidence is found. Public Works will rely on visual observation and inspections as the primary means to investigate the source of an illicit discharge; however, various inspection techniques will be used depending on the type of discharge and whether a potential source has been identified. The following is a brief description of suggested techniques for investigating a potential illicit discharge:

- Visual inspection of drain manholes and catch basins (inverts and/or sump) and ditches looking for indicators that would lead to the source of the discharge such as color, clarity, staining or deposits, oil sheen, scum, foam, odors, etc.
- Dye testing and video inspection of the storm drain system and/or sewer system and laterals can be used to isolate, trace, and locate illicit discharges and connections within the storm drain system.

For dry weather flows from outfalls that are identified as being from an allowable non-stormwater discharge, groundwater, or a natural resource, the cause of the steady flow should be evaluated based on considerations, such as: the time of year (i.e. is it related to high groundwater flows), absence or presence of other indicators (i.e. odor, color, stains, sewage/toilet paper, oil sheen, suds), activities in the surrounding areas that could be contributing the flow (i.e. outdoor car wash, someone draining their pool, hydrant flushing), and the presence of contributing flow from a natural resource. The potential cause for the steady flow should be noted during the inspection. If as-builts drawings are available, they should be reviewed to see if they provide information on the potential cause of the steady flow (i.e. underdrain or foundation drain connections, etc.). If evidence of sewage is ever detected in any part of the storm drain system, it will immediately be reported to the **Assistant Public Works Director**.

## **8 PROCEDURES TO REMOVE ILLICIT DISCHARGES**

Once an illicit discharge has been identified, the first step is to determine who is financially responsible to initiate removal or discontinuation of the illicit discharge. The **Code Enforcement Officer** and/or the **Assistant Public Works Director** will determine this. If a private entity is responsible, enforcement procedures will be followed by notifying the Code Enforcement Department. The **Code Enforcement Officer** will be responsible for notifying the responsible party and may issue a citation or Notice of Violation. The **Code Enforcement Officer** will work with the responsible party to determine a schedule for removal. If the discharge is the Town's responsibility, the **Code Enforcement Officer** and/or **Assistant Public Works Director** will notify the appropriate responsible department and work with them to schedule the removal and make the necessary repairs and corrections as soon as possible. The illicit discharge must be removed or eliminated within sixty (60) days of identification of the source of the illicit discharge. If this is not possible, an expeditious schedule for its elimination will be established and summarized in the annual MS4 General Permit report to Maine DEP.

If an illicit discharge results in an emergency situation or one that is beyond the control and capabilities of the Public Works Department, the Fire Department and/or Clean Harbors will be contacted for assistance. If the discharge is an "imminent and substantial danger", access to the storm drain will be suspended.

## 9 COOPERATION WITH OTHER MS4S

Since the Falmouth MS4 infrastructure has interconnections with other MS4s, it may be necessary to conduct cooperative investigations with other MS4s or to inform them of issues associated with Falmouth’s infrastructure, including potential illicit discharges. MS4 contacts for interconnected MS4s include:

Entity	Contact name	Title	Work Phone	Email	Physical address
Town of Cumberland	Laura Neleski	Stormwater Program Coordinator	(207) 829-2220	lneleski@cumberlandmaine.com	290 Tuttle Road Cumberland, ME 04021
MaineDOT	Kerem Gungor	Stormwater Engineer	(207) 592-3489	Kerem.Gungor@maine.gov	16 State House Station Augusta, Maine 04333-0016
Maine Turnpike	Sean Donohue	Permitting Coordinator	(207) 871-7771	sdonohue@maineturnpike.com	2360 Congress Street Portland, ME 04102
City of Portland	Doug Roncarati	Stormwater Coordinator	(207) 874-8848	dar@portlandmaine.gov	212 Canco Road Suite B Portland, ME 04103
City of Westbrook	Lynn Leavitt	Sustainability Coordinator	(207) 591-8135	lleavitt@westbrook.me.us	371 Saco Street Westbrook, ME 04092
Town of Windham	Gretchen Anderson	Environmental & Sustainability Coordinator	(207) 894-5900	gaanderson@windhammaine.us	8 School Road Windham, ME 04062

Notification letters to interconnected MS4s related to obtaining coverage under the 2022 MS4 General Permit are included in Appendix B of the Stormwater Management Plan.

## 10 EVALUATION AND ASSESSMENT

This SOP along with the entire IDDE program will be evaluated annually for updates, corrections and improvements. An evaluation and assessment will also occur after removal of an illicit discharge to determine if techniques implemented were efficient and effective.

## **11 FOLLOW-UP INSPECTIONS**

Follow-up inspections will be conducted and documented based on the following circumstances:

1. If observations during an inspection warrant further investigation or actions, including needed maintenance.
2. If an outfall is flowing during dry weather.
3. If a source of a potential illicit discharge cannot be identified via investigation.
4. Once the removal of an illicit discharge is completed to confirm the illicit discharge has been eliminated.

## **12 PROCEDURES TO DOCUMENT ILLICIT DISCHARGES**

Tracking of illicit discharges will be used to ensure that potential or confirmed illicit discharges are investigated and corrected as well as to identify maintenance issues for the MS4 and to help better understand the origins of illicit discharges. All illicit discharges will be logged into VUEWorks<sup>®</sup> work order system to document the progress of investigating and removing illicit discharges. Illicit discharges will also be mapped in the Town's GIS to help identify patterns of illicit discharges and high-priority areas. The following information will be recorded and tracked:

- ID
- Logged By and Date/Time
- Type/Department/Group
- Activity Description
- Location
- Property Owner Info (if applicable)
- Located/Identified By
- Date Identified
- Date Owner was Notified
- Date of Disconnection
- Notes
- Status
- Begin/End Date and Time
- Closed by
- Date Closed

Additionally, the Town will summarize IDDE information logged in VUEWorks for reporting in the MS4 Annual Report.

### **13 RECORD RETENTION**

The Public Works Department will retain paper or electronic files of inspections and investigations for a minimum of three years following the expiration of the MS4 General Permit or longer if requested by the Maine DEP or the U.S. Environmental Protection Agency.

Documentation of all illicit or potential illicit discharges will include, as applicable:

- initial and follow-up inspection forms,
- related work orders,
- laboratory reports,
- repairs, corrections, and any other actions required, and
- correspondence with exempt party or private property owner, including any Notice of Violations and penalties.

### **14 REFERENCES**

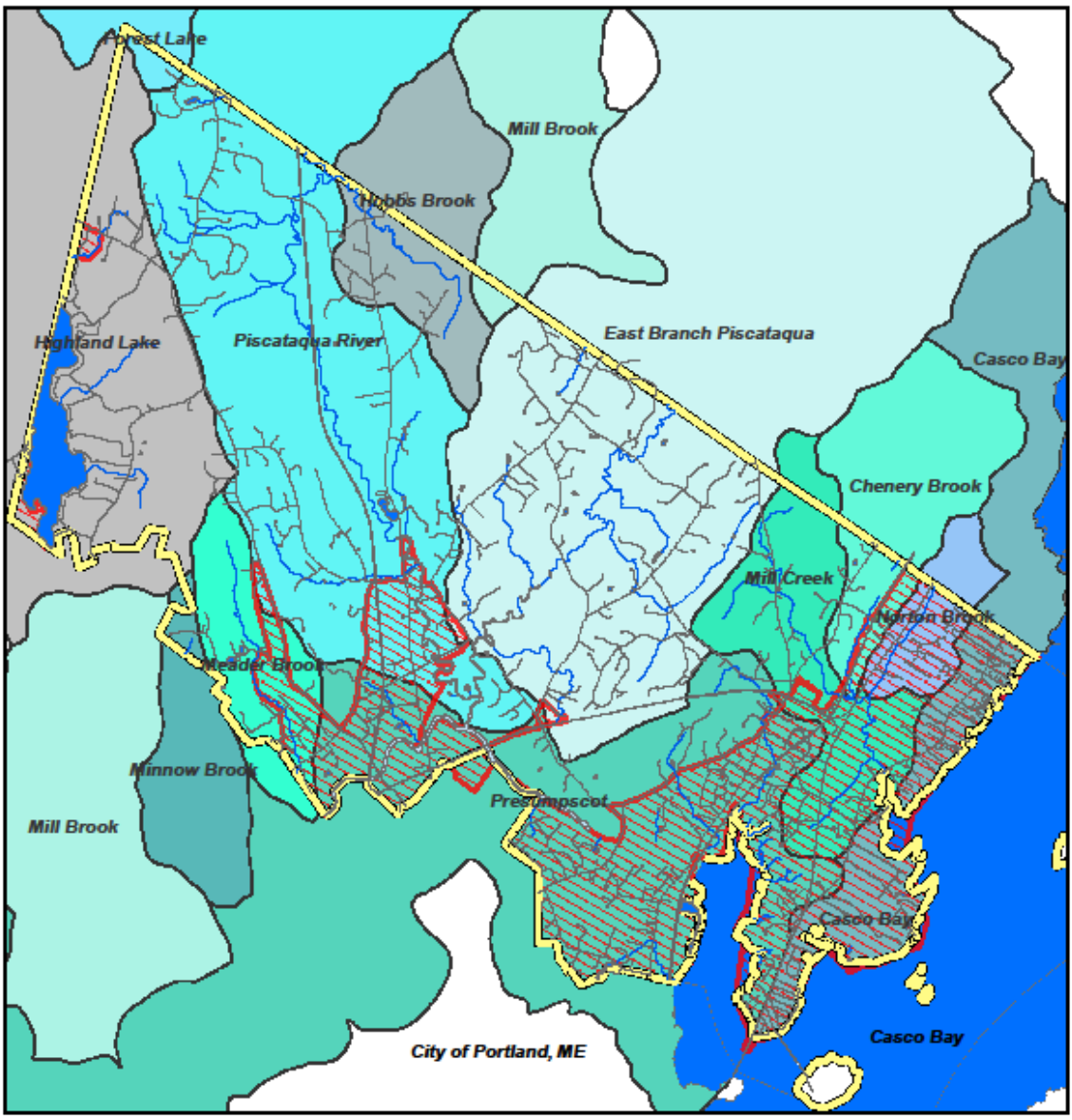
Aquarion Engineering Services, et al., *Guidelines and Standard Operating Procedures for Stormwater Phase II Communities in Maine (SOP Manual), Volume 1 Information for Program Managers and Volume 2 Standard Operating Procedures and Forms*, 2005.

(The SOP Manual can be downloaded at: <http://www.thinkbluemaine.org> under Municipalities – Minimum Control Measure Resources – 3. Illicit Discharge Detection & Elimination.)



**ATTACHMENT A**  
**Watershed Map**

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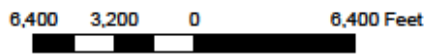
## *Urbanized Area and Watersheds*

Town of Falmouth, Maine

2021

### Legend

-  Town Boundary
-  Urbanized Area (UA)



**ATTACHMENT B**  
**Inspection Forms**

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## Dry Weather Outfall Inspection Form

### Location Information

Date: \_\_\_\_\_ Inspector: \_\_\_\_\_  
 Time: \_\_\_\_\_ Watershed: \_\_\_\_\_  
 Watershed Type:  Urban Impaired  MS4 Priority  MS4 Non-Priority  
 Outfall ID: \_\_\_\_\_  
 Outfall Location: \_\_\_\_\_  
 Receiving Waterbody: \_\_\_\_\_  
 Photo Taken:  Yes  No Photo ID: \_\_\_\_\_  
 Weather:  Clear  Cloudy Approximate Temp: \_\_\_\_\_ Wind Present:  Yes  No  
 Precipitation in the past 2 days (48-hours):  No  Yes \_\_\_\_\_ inches  
 Pipe Flow:  None  Trickle  Steady  1/4 pipe flow or more  
 Seepage Flow:  None  Trickle  Steady  1/4 pipe flow or more  
 Color (if flow is present): \_\_\_\_\_

### Inspection Information

<b>Obvious Debris/Pollution:</b> <input type="checkbox"/> None 0 <input type="checkbox"/> Foam - natural 0 <input type="checkbox"/> Foam - not natural 3 <input type="checkbox"/> Floating Green Scum 8 <input type="checkbox"/> Oil / Film - natural 0 <input type="checkbox"/> Oil / Film - not natural 9 <input type="checkbox"/> Vegetative Mat 9 <input type="checkbox"/> Sewage Solids 10 <b>TOTAL</b> <span style="border: 1px solid black; display: inline-block; width: 40px; height: 20px; vertical-align: middle;"></span>	<b>Odor:</b> <input type="checkbox"/> None/Natural 0 <input type="checkbox"/> Musty 5 <input type="checkbox"/> Sewage/septic 10 <b>TOTAL</b> <span style="border: 1px solid black; display: inline-block; width: 40px; height: 20px; vertical-align: middle;"></span>	<b>Water Clarity:</b> <input type="checkbox"/> Clear 0 <input type="checkbox"/> Cloudy 5 <input type="checkbox"/> Opaque 10 <b>TOTAL</b> <span style="border: 1px solid black; display: inline-block; width: 40px; height: 20px; vertical-align: middle;"></span>
<b>GRAND TOTAL SCORE =</b> _____		

Sediment Condition:  Open  1/4 Full  1/2 Full  3/4 Full  Plugged  
 Outfall Type:  Pipe  Ditch  Swale  
 Structure Condition:  Excellent  Fair  Poor  
 Outlet Stabilization Required:  Yes  No  
 Trash/litter present:  Yes  No Yard waste observed:  Yes  No

General Comments:

Potential Sources / Actions Taken:

Follow up required:  Yes  No

**ATTACHMENT C**  
**Quality Assurance Protection Plan**  
**(QAPP)**

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# Quality Assurance Project Plan (QAPP) Town of Falmouth, Maine

## 1.0 Background and Scope

In Maine, there are 30 municipalities (permittees) regulated by the 2022 Maine General Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4 General Permit). The MS4 General Permit requires that the municipalities conduct dry weather inspections on 100% of their outfalls during the 5-year term of the MS4 General Permit.

Under most conditions, if an outfall is observed to have dry weather flow, monitoring must be conducted to assess whether there is an illicit discharge associated with the flow. (Part IV(C)(3)(e)(vi) of the MS4 General Permit contains a few conditions under which flowing outfalls do not need to be monitored.)

The following monitoring needs to be conducted whether or not the outfall's dry weather flow exhibits evidence of an illicit discharge:

- E. coli, enterococci, total fecal coliform or human bacteroides;
- Ammonia, total residual chlorine, temperature, and conductivity; and
- Optical enhancers or surfactants.

The objective of the monitoring is to collect data that can be used to determine if there is an illicit discharge present in the flow, or if the flow is from uncontaminated groundwater, water from a natural resource, or an allowable non-stormwater discharge.

The purpose of this Quality Assurance Project Plan (QAPP) is to provide sampling personnel information that will assist them in collecting samples and analyzing the samples using field equipment/test kit(s) and/or laboratories in a manner that ensures sufficient accuracy and precision so that sampling personnel and regulators can be confident there is or is not an illicit discharge present in dry weather flow from an outfall. This QAPP provides information on several field equipment/test kit(s) and analytical methods available to permittees that can be used to comply with the requirements for Dry Weather Outfall Monitoring.

Each municipality is required by the MS4 General Permit to prepare a written Illicit Discharge Detection and Elimination (IDDE) Plan. This QAPP has been developed to be an attachment to a municipality's IDDE Plan, and therefore does not contain all of the IDDE requirements associated with the MS4 General Permit.

Illicit Discharge means any discharge to a regulated MS4 system that is not composed entirely of stormwater other than:

- discharges authorized pursuant to another permit issued pursuant to 38 M.R.S. §413;
- uncontaminated groundwater;
- water from a natural resource [such as a wetland]; or
- other Allowable Non-Stormwater Discharges identified in Part IV(C)(3)(h) of the MS4 General Permit.

## 2.0 Sampling Procedures

Samples are required to be collected at outfalls that exhibit dry weather flow (defined as flow after there has been no precipitation greater than ¼ inch for 72 hours, and no melt water from snow or ice).

Personnel should be prepared to collect samples during any outfall inspection, because dry weather flow is sometimes intermittent, and if personnel need to return to the site later in the same day, or several days later, the dry weather flow may no longer be present.

**Table 1** contains a list of equipment that should be prepared and available in order to conduct dry weather monitoring.

Samples will be collected from a flowing source only (not from stagnant water), and where the pipe outlet has at least 1 or 2 inches of free-flowing drop before any standing water or pool below it. Stagnant water should not be sampled unless the municipality deems it necessary for some reason.



*This outfall, though in poor condition because it is cantilevered, provides a good opportunity for a clean catch of its discharge.*



*This outfall is partially submerged, and a clean catch of its discharge is not possible. If tidal influences are strong, wait until low tide to sample. Additional options include: sampling upstream structures or using sand bags around the outfall to prevent contamination from backflow.*

**Table 1** provides a list of equipment that should be gathered and available for use in the event dry weather outfall monitoring needs to be conducted.

### Table 1 Field Equipment for Monitoring

1 Gallon of Distilled or de-ionized water for rinsing
1 Roll Paper towels
3-5 clean plastic 250 ml beakers for water sample collection in Baggie marked “Clean” or disposable “whirl bags”

Garbage bags
1 long sampling pole and or sampling pump and tubing
Equipment to remove and access catch basin covers if needed (pull, hammer, crowbar)
Field equipment/test kits (see Table 1) and bottles with non-expired reagents for 3-5 samples
Non-latex gloves
Box of 1 gallon plastic bags
Cooler with ice
Camera or phone
Safety Vest
Steel toed boots, waterproof
scissors
Sun screen and bug spray
Clip board
3-5 Field Data Sheets (See Attachment 1)
Chain of Custody (Attachment 3)
Sharpies and water-proof pens
Packing tape and Duct tape
Sheet of blank labels for bottles
First aid kit
Camera for photos (or phone)
Small white board with pen to mark outfall ID, date, and time in photo

For each outfall sampled, a Field Data Sheet will be used to document the date, time, and location of sample(s) collected, weather conditions, any general observations related to the tests being performed, and results of any parameters analyzed using field equipment or test kits. Note that the Field Data Sheet has a place to document sample observations including odor, color, turbidity, presence of algae, etc. The observations can be documented in this location instead of, or in addition to the observations made during the normal outfall inspection (which should be conducted in accordance with the MS4's IDDE Plan or SOP).

Sample bottles that will be taken away from the sampling site for analysis will be labelled with the date, time and sample location as well as the name of the sampler. Example labels are provided in Addendum 1 along with an example field data collection sheet.

When using a third-party laboratory for any off-site analysis, sample bottles should be obtained before the sampling event. Coordination with the laboratory is also recommended to ensure that sample hold times and preservation requirements are being met. If samples are being collected on a Friday, some laboratories need prior notice to meet short hold times. Analytical methods hold



times and other pertinent information is described in Section 3 of this QAPP.

After sampling events, any reusable sample collection containers will be cleaned with soap and water or trisodium phosphate and water. Cleaning will be completed in a location where wash water can be discharged to a licensed wastewater treatment plant, sanitary sewer, or septic system.

### **3.0 Analyses and Reporting limits**

The MS4 General Permit does not require samples to be analyzed using Clean Water Act (CWA) Methods published in 40 Code of Federal Regulations Chapter 136. The use of field equipment/ test kit(s) and laboratories are both allowed. The MS4 General Permit does not require samples to be analyzed by a laboratory that is certified by the Maine DEP. However, this QAPP specifies that when a commercial laboratory is used for a CWA method, it will be certified by the Maine DEP for the CWA method specified.

Use of a certified laboratory is specified in this QAPP because the data generated by a certified lab would be more likely to stand up in a court of law than data generated by a non-certified lab.

A list of commercial certified laboratories is available on the Maine DEP website at: <https://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml> . Note also that many Wastewater Treatment Plants conduct bacteria analysis for operational purposes. If there is a Wastewater Treatment Plant in the area, it can also be used for the bacteria screening.

This QAPP does not specify CWA methods or Maine DEP certification for use of field equipment/test kit(s).

**Table 2** provides information related to sampling parameters, analysis methods, and sample preservation and holding times that may be used during dry weather outfall monitoring. Analysis methods specified in **Table 2** include CWA methods, field equipment, and test kits, where applicable. **Table 2** also provides information on when a given CWA Method, Field Equipment, or Test Kit might be preferable if there are multiple options for a given parameter.

Prior to sampling, the sampler and Stormwater Manager or Coordinator will determine what analysis method (CWA Method, Field Equipment, or Test Kit ) will be used.

User manual(s) and safety data sheets (SDS) for field equipment and/or test kit(s) that will be utilized for dry weather monitoring are included as Addendum 4 to this QAPP, or may be kept in a separate electronic or paper location as long as they are easily accessible to the field personnel who will be conducting the monitoring.

**Table 2 Sampling Parameters, Analysis Methods, and Sample Preservation and Holding Times**

<b>Bacteria - select one or more based on discharge environment</b>	<b>CWA Method, Field Equipment, or Test Kit</b>	<b>Preservation</b>	<b>Holding time</b>	<b>Bottle needed</b>	<b>Notes on Use</b>
Bacteria - E. coli	SM 9223 B (IDEXX Colilert Quanti-Tray) EPA 1603 (membrane filtration, MF) Or SM 9221 B (Most probable number, MPN)	Ice	To lab within 6 hours Analyze within 2 hours of receipt	120 ml or 250 ml plastic sterile bottle with lid from lab	Use for discharges to freshwater (with ammonia and either optical enhancers or surfactants)  <b>Town of Falmouth Preferred Method</b>
Bacteria - enterococcus	SM 9230 B, C or D, (MPN including IDEXX Enterolert, or MF) EPA 1600 (MF)	Ice	To lab within 6 hours Analyze within 2 hours of receipt	120 ml or 250 ml plastic sterile bottle with lid from lab	Use for discharges to salt water (with ammonia and either optical enhancers or surfactants)
Bacteria – Fecal Coliform	SM 9222 D (MF CFU/100ml) Or SM 9221 C, E (Multitube MPN/100ml)	Ice	To lab within 6 hours Analyze within 2 hours of receipt	120 ml or 250 ml plastic sterile bottle with lid from lab	Use for discharges to salt or freshwater (with ammonia and either optical enhancers or surfactants)
Bacteria – Human Bacteroides	Labs: EMSL (NJ), Microbial Insights (TN) or Source Molecular (FL) Or Dr. Steve Jones, UNH	Ice	To lab within 24 hours Analyze within 48 hours	1000 ml plastic bottle with sodium thiosulfate from lab (with insulated shipping box)	Use for discharges to salt or freshwater (with ammonia and either optical enhancers or surfactants).  Not a CWA method, so Maine Laboratory certification not required.

<b>Ammonia (select one method)</b>	<b>CWA Method, Field Equipment, or Test Kit</b>	<b>Preservation</b>	<b>Holding time</b>	<b>Bottle needed</b>	<b>Notes on Use</b>
Ammonia	Hach Ammonia Test Strips	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	<b>Town of Falmouth Preferred Method</b>
Ammonia	Laboratory Method EPA 350.1/350.2	H <sub>2</sub> SO <sub>4</sub> (pH <2) + Ice	28 days	250 ml plastic bottle from lab	
Ammonia	Hach DR300 Pocket Colorimeter Ammonia Nitrogen or LaMotte 3680-01 DC1200 Colorimeter test kit	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	Reagent contains Mercury, Generates a Toxic Hazardous Waste (D009)  instructional video (10 minutes): <a href="https://www.youtube.com/watch?v=hFiEEEAaWfo">https://www.youtube.com/watch?v=hFiEEEAaWfo</a>
<b>Total Residual Chlorine (select one method)</b>	<b>CWA Method, Field Equipment, or Test Kit</b>	<b>Preservation</b>	<b>Holding time</b>	<b>Bottle needed</b>	<b>Notes on Use</b>
Chlorine	Field kit – Hach Colorimeter II low range	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	Instructional video available at: <a href="https://www.youtube.com/watch?v=WTTUD0Hq1Vw">https://www.youtube.com/watch?v=WTTUD0Hq1Vw</a> <b>Town of Falmouth Preferred Method</b>
Chlorine	Industrial test Systems Ultra-Low Total Chlorine Test Strips and other mid range chlorine test strips	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	As of 6/2020, USEPA had not used Ultra low chlorine test strips (0.2 to 0.5 mg/L). Informal review shows these should be used simultaneously with a mid range (0.5 to 10 mg/l) test strips to double check range.
<b>Temperature and Conductivity (use both)</b>	<b>CWA Method, Field Equipment, or Test Kit</b>	<b>Preservation</b>	<b>Holding time</b>	<b>Bottle needed</b>	<b>Notes on Use</b>
Temperature	Temperature/ Conductivity probe	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	Use to distinguish between groundwater and surface water. <b>Town of Falmouth Preferred Method</b>
Conductivity	Temperature/ Conductivity probe	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	Use to distinguish between salt water and fresh water. <b>Town of Falmouth Preferred Method</b>

Optical Enhancers or Surfactants (select one)	CWA Method, Field Equipment, or Test Kit	Preservation	Holding time	Bottle needed	Notes on Use
Surfactants	SM5540C	Ice	To lab within 24 hours Analyze within 48 hours	500 ml plastic bottle from lab	Works on most soaps (laundry detergent, personal care products, dish soap)
Surfactants	CheMetrics K-9400 field test kit (see Maine DEP guidance on handling and disposal in <b>Addendum 2</b> )	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	Works on most soaps (laundry detergent, personal care products, dish soap). Contains alcohol and chloroform. Generates a Flammable (D001) and Toxic (D022) Hazardous Waste. Do not use test kit in the field unless licensed to transport hazardous wastes. Instructional Video available at: <a href="https://www.youtube.com/watch?v=6vwiZgWqa04">https://www.youtube.com/watch?v=6vwiZgWqa04</a> <b>Town of Falmouth Preferred Method</b>
Optical brighteners	VWR handheld UV lamp: UV-A: 360-365 nm, model number 89131-488	None	Analyze within 7 days	Unbleached cotton pad wetted with sample placed in sealed baggie	Works only on water with high to moderate laundry detergent. Provides only presence/absence.
Optical brighteners	Maine Healthy Beaches Fluorometer (\$15,000 unit)	None	Keep in a dark container, provide to MHB in 1-2 days, analyze within 7 days	Whirl bag or 100 ml plastic bottle.	Provides semi-quantitative numeric fluorescence of sample. Need to provide sample to MHB in bottle or whirl bag (in a box or cooler). One week hold time. Provide advanced notice to coordinate delivery to office. Organic matter or tannins, or color will interfere.

## 4.0 Quality Control

The following are the reporting limits required by the MS4 General Permit:

Ammonia: 0.5 mg/L  
Surfactants: 0.25 mg/L  
Total Residual Chlorine: 0.05 mg/L  
E. coli bacteria 4 cfu/100 ml  
Enterococcus 10 cfu/100 ml

To ensure the data collected meets the required reporting limits, the MS4 permittee will use either a Maine Certified Laboratory or one of the field equipment/test kit methods listed in **Table 2** to assess dry weather flow.

Each of the test kits listed in **Table 2** has a use range that is appropriate for the work being conducted, and which meets the MS4 required reporting limits.

Test kit reagents that have expired will not be used. Test kit and temperature/conductivity probes that have useful life limits will be replaced when they have reached the end of their useful lives.

Maine Certified Laboratories have standard reporting limits for the parameters that conform to the MS4 General Permit required reporting limits.

## 5.0 Field Data Sheets and Chain of Custody

As described in Sampling Procedures, Field Data Sheets will be used to document sample collection. Field Data sheets will document the type of field equipment or test kit(s) used and results of any in-situ analysis. Example Field Data Sheets are provided in Attachment 1 to this QAPP.

Whenever samples will be sent to a laboratory for analysis, a Chain of Custody will be used to document sample collection dates, times, analytical methods requested, and custody of the sample from the time it was collected, until the time it was analyzed. Example Chains of Custody are provided in **Attachment 3** to this QAPP.

## 6.0 Data Reports

Field data collection sheets shall constitute data reports for analyses using field equipment or test kits.

Whenever samples are sent to a laboratory for analysis, data reports are provided by the laboratory showing the sample location, date and time of collection, results of the analysis, the reporting limit, the person who conducted the analysis, the analytical method used.

## 7.0 Data Review and Follow up

Once all data has been received, it will be reviewed by a Stormwater Manager or Coordinator. Data shall also be stored electronically or in paper format for at least 3 years following the expiration date of the MS4 General Permit, as required by the MS4 General Permit.

If the person collecting the sample is the Stormwater Manager or Coordinator, they may opt to have another municipal staff person review the data, or a Stormwater Manager or Coordinator from another municipality if they deem it necessary to assist in the overall investigation. Data should be reviewed within 2 weeks of receipt and additional investigations should be implemented to identify the source of any potential illicit discharge if any of the thresholds in **Table 3** are exceeded.

Table 3 Thresholds for Additional Investigation

Parameter	Threshold Level for Additional Investigation	Notes/Discussion
E. coli	236 cfu/100 ml – discharges into freshwater rivers or streams	All classifications of flowing fresh surface water in Maine (AA, A, B and C) have a standard that no more than 10% of the samples may exceed this concentration in any 90 day interval. A fresh surface water is at risk of impairment if it is receiving significant discharges from human sources above this concentration.
E. coli	194 cfu/100 ml – discharges into freshwater ponds	Great Ponds and lakes less than 10 acres have a standard that no more than 10% of the samples may exceed this concentration in any 90 day interval. A water of this type is at risk of impairment if it is receiving significant discharges from human sources above this concentration.
Enterococci	54 CFU/100 ml – discharges into saline/estuarine Class SA or SB	These waters have a standard that no more than 10% of the samples may exceed this concentration in any 90 day interval. A water is at risk of impairment if it is receiving significant discharges from human sources above this concentration. (Note Maine Healthy Beaches threshold is 104 MPN/100 ml)
Enterococci	94 CFU/100 ml – discharges into saline/estuarine Class SC	These waters have a standard that no more than 10% of the samples may exceed this concentration in any 90 day interval. A water is at risk of impairment if it is receiving significant discharges from human sources above this concentration. (Note Maine Healthy Beaches threshold is 104 MPN/100 ml)
Fecal Coliform	61 cfu/100 ml (2 times 31 cfu/100 ml for MF) to 100 cfu/100ml	The low end of this threshold is two times the 90 <sup>th</sup> percentile standards that DMR applies for approved (open) shellfish harvesting areas and is very conservative (90% of the samples collected from the area must be above these concentrations for the harvesting area to remain open and completely unrestricted for shellfish harvesting. See Addendum 2 for additional info from DMR)
Human Bacteroides	Any concentration may be indicative of human sewage, but MHB considers 4,200	Any concentration of human source of sewage should be investigated.

Parameter	Threshold Level for Additional Investigation	Notes/Discussion
	col/100ml HB to be equivalent to the level of contamination that exceeds the EPA acceptable risk of gastrointestinal illness to swimmers. (Rothenburger and Jones, 2018 and Boehm, Soller and Shanks 2015)	
Ammonia	≥ 0.50 mg/L	This is the effective reporting limit of the Ammonia test strips and was taken from USEPA Draft 2012 Bacteria Source Tracking Protocol.
Chlorine	≥ 0.05 mg/L	Limit of test kit and was taken from USEPA Draft 2012 Bacteria Source Tracking Protocol.
Surfactants	≥ 0.25 mg/L	Taken from USEPA Draft 2012 Bacteria Source Tracking Protocol.
Optical Brighteners	≥ 100 ug/L ) (≥ 0.10 mg/L)	This is used by Maine Healthy Beaches as an actionable threshold. If using a handheld fluorometer, conduct further investigation if presence of optical brighteners is detected

MS4s should use the thresholds listed above and the following general guidance to make determinations whether an outfall requires additional investigation for illicit discharges:

Outfalls that have some visual evidence of an illicit discharge and exceed at least one of the above thresholds and should be investigated further using techniques described in the MS4s IDDE Plan.

Outfalls that do not have any visual evidence of an illicit discharge but exceed more than one of the above thresholds should be investigated further using techniques described in the MS4s IDDE Plan

As described in Section 1 of this QAPP, if the above thresholds are not exceeded, the MS4 may make the determination that the flow is from uncontaminated groundwater, water from a natural resource, or an allowable non-stormwater discharge.

### **Attachments**

1. Example Field Data Collection Sheet and labels
2. References:
  - a. E-mail on Surfactant field kit handling of residuals from DEP staff
  - b. E-mail on Fecal Coliform thresholds from DMR listed in Table 3
3. Example Chains of Custody

## **References:**

- Rothenheber and Jones 2018. *Enterococci Concentrations in a Coastal Ecosystem are a function of fecal source input*. Published in Applied Environmental Microbiology, July 13, 2018.
- Boehm, Soller and Shanks 2015. *Human-Associated Fecal Quantitative Polymerase Chain reaction Measurements and Simulated Risk of Gastrointestinal Illness in Recreational Waters Contaminated with Raw Sewage*. Published in Environmental Science and Technology Letters 2015, 2, 270-275.
- ISWG and SMSWG February 2021. Stormwater Monitoring Program QAPP Template, February 2021, Revision 1
- USEPA 2012. EPA New England Bacterial Source Tracking Protocol, Draft January 2012. Available at:  
<https://www3.epa.gov/region1/npdes/stormwater/ma/2014AppendixI.pdf>



**Attachment 1**  
**Example Field Data Collection Sheet and labels**

## Field Data Collection Sheet for Dry Weather Outfall Monitoring

Date _____	Project Name _____
Time _____	Project _____
Sampler's Name _____	Location _____
Weather: _____	
Sample Type: _____	
Sample Location/Sketch: _____	

### Field Parameters to Monitor

Parameter	Result (units)	Equipment Used	Threshold triggering additional investigation (see QAPP)
Temperature (all flows)	C/F		No threshold. FYI: Temp. is dependent on season. Groundwater is typically 40-55 F. Surface water can be hotter or colder.
Conductivity (all flows)	µs		No threshold. FYI: Groundwater is typ. Less than 1000 µs. Freshwater can be as high as 2000 µs. Saltwater can be as high as 55,000 µs.
Ammonia (potential bacteria sources)	mg/L	Hach Test Strips	≥ 0.50 mg/L
Surfactants or Optical Brighteners (potential bacteria sources)			Surfactants ≥ 0.25 mg/L Optical Brighteners ≥ 100 ug/L or if present
Chlorine (potential chlorine sources)	mg/l	Hach Colorimeter II low range	≥ 0.05 mg/L (test kit limit)

Observations (unless already documented as part of outfall inspection: odor, color, turbidity, algae, etc): \_\_\_\_\_

### Laboratory Analyses (see QAPP for thresholds)

Parameter	Method/ Lab Code	Comments
E. coli	SM 9223 B, EPA 1603, or SM 9221 B	For freshwaters
Enterococci	SM 9230 or EPA 1600	For marine/estuarine waters
Fecal Coliform	SM 9222 D or SM 9221 D, E	For fresh or marine/estuarine waters
Human Bacteriodes	qPCR	For fresh or marine/estuarine waters

### Comments/Field Notes


This set of labels was designed to be used with Avery 5366 labels, but you can use any labels.

Sampler: \_\_\_\_\_ Date: \_\_\_\_\_

Time: \_\_\_\_\_ Field ID: \_\_\_\_\_

Sampler: \_\_\_\_\_ Date: \_\_\_\_\_

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Time: \_\_\_\_\_ Field ID: \_\_\_\_\_

Sampler: \_\_\_\_\_ Date: \_\_\_\_\_

Time: \_\_\_\_\_ Field ID: \_\_\_\_\_

## **Attachment 2**

**E-mail on Surfactant field kit handling of  
residuals from DEP staff**

**E-mail on Fecal Coliform thresholds from DMR  
listed in Table 3**

## Kristie Rabasca

---

**From:** Hudson, Michael S <Michael.S.Hudson@maine.gov>  
**Sent:** Monday, October 7, 2019 11:51 AM  
**To:** Kristie Rabasca  
**Cc:** Plummer, Cherrie F; Poirier, Rhonda  
**Subject:** FW: Proper handling and disposal of CheMetrics Surfactant field test kit residuals  
**Attachments:** surfactants\_CHEMetrics\_k9400instructs.pdf; surfactants\_CHEMetrics\_k9400\_SDSs.pdf; EIASOP-SWTestKits\_REV1.pdf

**Importance:** High

In response to the questions posed regarding proper handling and disposal of CheMetrics Surfactant field test kit residuals:

1. Can the Towns mix the liquids from a. and b. in a single container for disposal as D001 and D022 waste? Or do they need to keep them separate to dispose of them?  
Answer: Chloroform is miscible in alcohols such as n-propanol and is compatible. The Hazardous Waste Management Rules, 06-096 C.M.R. ch. 850 through 858, do not prohibit the mixing of compatible wastes. If mixed, the waste mixture should be coded as both D001 and D022. The town/generator could check with the licensed hazardous waste transporter it intends to use for the hazardous waste pick-up and disposal to determine if it is advisable or more cost effective to keep the wastes separate.
2. The n-propanol waste is super tough to get out of the vial – we pretty much just dispose of the whole vial. Is that okay? Or can we break the vial? And dispose of the empty glass as solid waste (as long as it is RCRA empty).  
Answer: The whole vials containing n-propanol can be disposed of as hazardous waste. If the generator chooses to break the vial to dispose of the n-propanol as hazardous waste and the glass as a solid waste, then the generator must ensure the broken vials are RCRA-empty. Again, the town/generator could check with the licensed hazardous waste transporter it intends to use for the hazardous waste pick-up and disposal to determine if it is advisable or more cost effective to break and empty the vials to dispose of the glass and n-propanol separately. Of course, care and safety measures should be employed if breaking and handling glass vials.
3. Most of these towns are going to be SQGs (Maine Definition), and are going to be generating this waste while they are out in the field over a period of months. Then after each event, they are going to drive it back to the public works facility and set up a SQG haz waste storage area until they can get rid of it (either at HHWD collection, or have a specific pick up). They have 1 year to dispose of it. Have I missed any exemptions or special conditions for this? Is it okay that they are driving it around? Or should they be bringing the water samples back to public works and running the surfactant analysis on it at public works so they don't have to transport it. (its easier for them to run the sample right there while they are at the site).  
Answer: It is preferable for the town/generator to bring samples back from field sites to its Public Works to do the test so that hazardous waste generated by the tests does not have to be transported from field sites. Under the rules, the town/generator would need hazardous waste licenses to transport or accept the hazardous wastes from off-site. Towns should set up a hazardous waste collection container for the hazardous wastes from the tests, with an appropriate size container, labeled as "Hazardous Waste" with an accumulation start date. If the town's Public Works is a Small Quantity Generator (SQG), i.e. it generates for all its hazardous wastes in aggregate no more than 27 gallons/month and accumulates no more than 55 gallon of all of its hazardous waste in aggregate, then the town/generator could accumulate the waste indefinitely until the container of hazardous waste from tests is full at which point the town/generator would have 180 days to ship

via licensed hazardous waste transporter. Town/ Public Works should not dispose of these waste through the Household HW collection programs because they are not household exempt wastes.

4. We are going to do a training of the use of this kit on 10/17 in Portland. I would really like for attendees to be able to practice use of the kit at that training. Do I need to schedule with NRCC or Clean Harbors to come pick up the waste that day (as a licensed transporter), or could one of the communities transport it back to their public works facility for storage until later disposal (during HHWD)?

Answer: Under the rules, the generator should arrange for waste pick-up at the site of generation. These hazardous wastes are not exempt under the household waste exclusion and are not acceptable at Household Hazardous Waste collections events.

The guidance above is based on the information provided below and the applicable rules, Hazardous Waste Management Rules, 06-096 C.M.R. ch. 850 through 858, without information on the number of test kits expected to be used, frequency of testing and volumes of anticipated waste accumulation. If you have questions or would like to discuss the specifics, please feel free to contact me at [Michael.s.hudson@maine.gov](mailto:Michael.s.hudson@maine.gov) or 207-287-7884, or Cherrie Plummer of the Hazardous Waste Management Unit. Cherrie's contact is [Cherrie.F.Plummer@maine.gov](mailto:Cherrie.F.Plummer@maine.gov) and 207-287-7882.

Michael S. Hudson, Supervisor, Hazardous Waste Management Unit  
Maine Department of Environmental Protection  
17 State House Station, Augusta, ME 04333-0017  
Tel. 207-287-7884  
[www.maine.gov/dep](http://www.maine.gov/dep)

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**From:** Poirier, Rhonda  
**Sent:** Monday, October 07, 2019 9:37 AM  
**To:** Hudson, Michael S <[Michael.S.Hudson@maine.gov](mailto:Michael.S.Hudson@maine.gov)>  
**Subject:** Proper handling and disposal of CheMetrics Surfactant field test kit residuals  
**Importance:** High

Hi Mike,

The sampling she's describing is required by one of the permits in my stormwater program. She is giving a workshop on it on 10/17 and would like to talk to the proper DEP person before that, for planning purposes. Can you help her?

Thank you,  
Rhonda

Rhonda Poirier  
MEPDES Stormwater Program Manager  
Bureau of Water Quality  
Maine Department of Environmental Protection  
207-592-6233  
[www.maine.gov/dep](http://www.maine.gov/dep)

---

**From:** Kristie Rabasca <[krabasca@integratedenv.com](mailto:krabasca@integratedenv.com)>  
**Sent:** Tuesday, October 01, 2019 4:02 PM  
**To:** Poirier, Rhonda <[Rhonda.Poirier@maine.gov](mailto:Rhonda.Poirier@maine.gov)>  
**Cc:** Aimee Mountain ([Aimee.Mountain@gza.com](mailto:Aimee.Mountain@gza.com)) <[Aimee.Mountain@gza.com](mailto:Aimee.Mountain@gza.com)>; Damon Yakovleff <[dyakovleff@cumberlandswcd.org](mailto:dyakovleff@cumberlandswcd.org)>  
**Subject:** Proper handling and disposal of CheMetrics Surfactant field test kit residuals

Hi Rhonda,

Thanks for taking my call.

I am developing a dry weather monitoring training session for the ISWG and SMSWG MS4s, and am developing a QAPP and some checklists.

We will need to use the CheMetrics K-9400 field test kit for surfactants. I have attached the instructions for the kit, and the Safety Data Sheets for the two reagents. Generally for each sample we will do the following:

1. Add 5 ml of water to a small plastic vial
2. Add 4ml of the double tipped reagent (SDS attached and it is flammable and contains 71% chloroform)
3. Shake
4. Use the 0.25 ml sealed glass ampule ( which is 98% N-propanol) to draw the organic phase out of the plastic vial with the water and the first reagent.
5. Use colorimeter to check detergent concentration of sample.

So the two wastes we have when done are:

- a. The mixture of the 5 ml water and the 4 ml 71% chloroform (which is still flammable) in the plastic vial (minus about 1 ml extracted into the n-propanol vial)
- b. About 1 ml of the n-propanol and the chloroform organic phase in a very small glass ampule.

I am requesting the EPA SOP on this – but I do not think it has the detail I want.

When I have used this in the past, I have given it to the municipality where it was generated and told them it was a **Doo1 Flammable and D022 Tox-chloroform waste**, and they hand it to clean harbors during household hazardous waste day.

**We are going to have a lot more people generating this waste – using these kits, and we need to handle it properly. As we provide them with guidance, we want to make sure it is right.**

**My questions are:**

1. Can the Towns mix the liquids from a. and b. in a single container for disposal as Doo1 and Do22 waste? Or do they need to keep them separate to dispose of them?
2. The n-propanol waste is super tough to get out of the vial – we pretty much just dispose of the whole vial. Is that okay? Or can we break the vial? And dispose of the empty glass as solid waste (as long as it is RCRA empty)
3. Most of these towns are going to be SQGs (Maine Definition), and are going to be generating this waste while they are out in the field over a period of months. Then after each event, they are going to drive it back to the public works facility and set up a SQG haz waste storage area until they can get rid of it (either at HHWD collection, or have a specific pick up). They have 1 year to dispose of it. Have I missed any exemptions or special conditions for this? Is it okay that they are driving it around? Or should they be bringing the water samples back to public works and running the surfactant analysis on it at public works so they don't have to transport it. (its easier for them to run the sample right there while they are at the site).
4. We are going to do a training of the use of this kit on 10/17 in Portland. I would really like for attendees to be able to practice use of the kit at that training. Do I need to schedule with NRCC or Clean Harbors to come pick up the waste that day (as a licensed transporter), or could one of the communities transport it back to their public works facility for storage until later disposal (during HHWD)?

So many questions.... Perhaps I could talk with someone at Haz waste.... Thanks for any help you can provide.



Kristie L. Rabasca, P.E

Integrated Environmental Engineering, Inc.

12 Farms Edge Road

Cape Elizabeth, ME 04170

207-415-5830



## Kristie Rabasca

---

**From:** Lewis, Bryant J <Bryant.J.Lewis@maine.gov>  
**Sent:** Thursday, October 31, 2019 4:46 PM  
**To:** Kristie Rabasca; Wahle, Benjamin  
**Subject:** RE: simple summary of Fecal concentrations for open vs seasonal vs restricted vs prohibited?

Kristie,

I did misunderstand the question. Unless there is a specific area of concern where we are collaborating on a special study with a town, we typically provide a yearly update for each station's geomean and P90 incorporating the most recent 30 sample scores. That annual trend is provided to towns so we are not usually contacting a town based on any one score to tell them that there might be a problem.

However- if trying to determine a trigger on a single sample, there is some subjectivity to the answer. I would suggest a value between 50-100 as a high value trigger. There is merit to your suggestion of using twice the 31 value as well since that is within that range. Often, our Scientists would use 100 as the high score value as their own flag to watch a station since an area that is already at risk of exceeding the approved standard based on the last 30 samples would likely go over a P90 of 31 with a 100 added. I think you would likely accomplish your goal by using any of the three values; 50, 62, or 100. I would recommend starting with 62 then re-evaluating after some data is built up to determine if that should be increased or decreased based on program needs.

Bryant Lewis  
ME Department of Marine Resources  
Growing Area West Program Supervisor  
194 McKown Point Road  
West Boothbay Harbor, ME 04575  
Tel: 207-633-9401  
Cell: 207-215-4107

---

**From:** Kristie Rabasca <krabasca@integratedenv.com>  
**Sent:** Thursday, October 31, 2019 2:42 PM  
**To:** Lewis, Bryant J <Bryant.J.Lewis@maine.gov>; Wahle, Benjamin <Benjamin.Wahle@maine.gov>  
**Subject:** RE: simple summary of Fecal concentrations for open vs seasonal vs restricted vs prohibited?

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H Bryant,

I do a lot of illicit discharge investigations with and for the municipalities. Maybe I did not phrase my question properly.

For a single sample, at what concentration would DMR say to a municipality: "we think there might be a problem here". Is that concentration the 90<sup>th</sup> percentile number? 31? Or twice that?

Or do you wait until you see the GM or P90 number get close to its threshold for multiple samples?

Kristie L. Rabasca, P.E.  
207-415-5830 (cell)

---

**From:** Lewis, Bryant J <[Bryant.J.Lewis@maine.gov](mailto:Bryant.J.Lewis@maine.gov)>  
**Sent:** Thursday, October 31, 2019 2:33 PM

**To:** Kristie Rabasca <[krabasca@integratedenv.com](mailto:krabasca@integratedenv.com)>; Wahle, Benjamin <[Benjamin.Wahle@maine.gov](mailto:Benjamin.Wahle@maine.gov)>

**Subject:** RE: simple summary of Fecal concentrations for open vs seasonal vs restricted vs prohibited?

Kristie,

I would suspect DEP and possibly the municipality should be contacted for possible illicit discharges.

We use DMR water quality stations to classify growing area waters. As part of our program, we also conduct surveys of the shoreline where we look for malfunctioning septic systems and other pollution sources and sample the mouths of streams entering growing area waters; however, we do not conduct investigations to determine the sources of contamination. Generally, it is up to the municipality to investigate degrading water quality while sometimes DEP can provide some additional assistance. If there is an area where water quality was degrading we would provide the municipality the information we have if they wished to investigate. The municipality would likely need to do additional work to locate the source of contamination but the information you are describing would likely be valuable in their effort.

Bryant Lewis

ME Department of Marine Resources  
Growing Area West Program Supervisor  
194 McKown Point Road  
West Boothbay Harbor, ME 04575  
Tel: 207-633-9401  
Cell: 207-215-4107

---

**From:** Kristie Rabasca <[krabasca@integratedenv.com](mailto:krabasca@integratedenv.com)>

**Sent:** Wednesday, October 30, 2019 9:00 AM

**To:** Lewis, Bryant J <[Bryant.J.Lewis@maine.gov](mailto:Bryant.J.Lewis@maine.gov)>; Wahle, Benjamin <[Benjamin.Wahle@maine.gov](mailto:Benjamin.Wahle@maine.gov)>

**Subject:** RE: simple summary of Fecal concentrations for open vs seasonal vs restricted vs prohibited?

**EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

Thanks so much for this. We are using it because some communities will be sampling outfalls that are discharging into marine environments for fecal coliform as a screening tool when looking for illicit discharges. The MS4 General Permit requires that the communities regulated for their stormwater discharges do sampling whenever an outfall is flowing after three days of dry weather. We are telling them to notify DMR of the results, and wanted to have some guidelines for when they should be concerned. I know that your scores are very conservative because they are all about the FDA and ingestion of shellfish.

I have attached a QAPP that we are using and you will see the table in the back has a "threshold" for additional investigation if the town is monitoring for fecal coliform. Please note that the samples they are collecting are discharges from outfalls into the water body – not from the water body.

Would you investigate further if the thresholds for 90<sup>th</sup> percentile for open areas were exceeded? Or would you use 2x that? Or some other number.

Hopefully you understand my question....

Kristie L. Rabasca, P.E.  
207-415-5830 (cell)

---

**From:** Lewis, Bryant J <[Bryant.J.Lewis@maine.gov](mailto:Bryant.J.Lewis@maine.gov)>

**Sent:** Monday, October 28, 2019 10:16 AM

**To:** Wahle, Benjamin <[Benjamin.Wahle@maine.gov](mailto:Benjamin.Wahle@maine.gov)>; Kristie Rabasca <[krabasca@integratedenv.com](mailto:krabasca@integratedenv.com)>

**Subject:** RE: simple summary of Fecal concentrations for open vs seasonal vs restricted vs prohibited?

Kristie,

This webpage explains the classifications.

<https://www.maine.gov/dmr/shellfish-sanitation-management/programs/growingareas/howclassified.html>

The NSSP Model Ordinance dictates how we calculate water quality scores. A 90<sup>th</sup> percentile based on the most recent 30 samples providing a score of 31 or less is Approved, 32-163 is Restricted and above 163 is Prohibited. There is a link to the Model Ordinance on our website, if needed. It describes how to calculate scores for systematic random sampling using membrane filtration.

<https://www.maine.gov/dmr/shellfish-sanitation-management/programs/growingareas/index.html>

I have also attached a document summarizing what is in the Model Ordinance for calculating water quality station scores.

Bryant Lewis  
ME Department of Marine Resources  
Growing Area West Program Supervisor  
194 McKown Point Road  
West Boothbay Harbor, ME 04575  
Tel: 207-633-9401  
Cell: 207-215-4107

---

**From:** Wahle, Benjamin  
**Sent:** Monday, October 28, 2019 9:28 AM  
**To:** Kristie Rabasca <[krabasca@integratedenv.com](mailto:krabasca@integratedenv.com)>  
**Cc:** Lewis, Bryant J <[Bryant.J.Lewis@maine.gov](mailto:Bryant.J.Lewis@maine.gov)>  
**Subject:** RE: simple summary of Fecal concentrations for open vs seasonal vs restricted vs prohibited?

Hi Kristie,

I'm actually going to refer you to Bryant Lewis, who is the Western Region Growing Area Supervisor. He'll be better able to explain DMR's classification system.

-Ben

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**From:** Kristie Rabasca <[krabasca@integratedenv.com](mailto:krabasca@integratedenv.com)>  
**Sent:** Monday, October 28, 2019 8:03 AM  
**To:** Wahle, Benjamin <[Benjamin.Wahle@maine.gov](mailto:Benjamin.Wahle@maine.gov)>  
**Subject:** simple summary of Fecal concentrations for open vs seasonal vs restricted vs prohibited?

**EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

Good Morning Ben,

I worked with you in Eliot and Cape – and am looking on your website for a simple summary of the P90 concentrations that trigger the various restrictions on shellfishing.

Does such an animal exist? If so, could you share it?

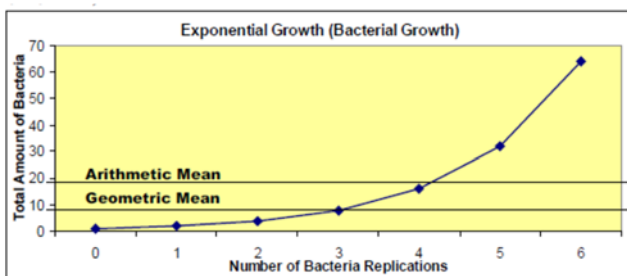
I am working on a QAPP for the stormwater folks and want to provide them with a reference that is accurate and truthed by DMR for when they are sampling outfalls near shellfishing areas.

Thanks for any help you can provide.

DMR uses a membrane filtration (MF) method for fecal coliform analysis using mTEC agar with a two-hour resuscitation step. The geometric mean and the 90<sup>th</sup> percentile are calculated on a minimum of the most recent 30 data points.

### Geometric Mean (Geomean):

The geometric mean, or geomean, is a type of averaging calculation. Unlike a simple average or arithmetic mean, the geomean takes into account the way bacteria grow. During bacterial growth, each bacterium doubles and reproduces itself i.e. one bacterium becomes two, two bacteria become four, four become eight and so on. There are low values at first and the rate of growth increases as the number of colonies increases. This is called exponential growth (Figure 1). This growth pattern means a fecal coliform dataset may have a few high scores and many low scores. The calculation for the geometric mean takes exponential growth into account by transforming the data into logarithms, taking the mean and then converting the number back to a log base 10 number. For example, the arithmetic mean of a fecal coliform score of 300, 150, 23 and 2 CFU/100ml is 119 CFU/100ml. Calculating the geomean, the result is 38 CFU/100ml.

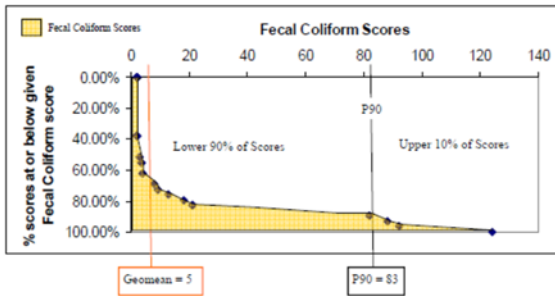
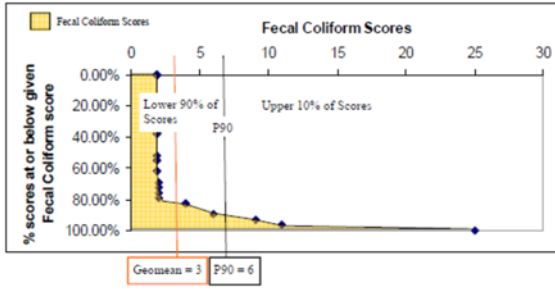


**Figure 1.** The graph illustrates exponential growth. The arithmetic mean for the scores is 18.1 while the geomean is 8.

### 90th Percentile (P90)

The other calculation used for shellfish growing area classification is the 90th percentile (P90). The P90 is the variability standard, meaning this value takes into account the variability of test readings. In any test measurement, successive readings of the same sample would produce slightly different scores each time due to precision of the equipment, human error, etc. This type of variability is a factor of the test method and equipment used and is true of all testing methods.

To account for the variability in the fecal coliform test, a standard has been established. Here again, since bacteria grows exponentially, the calculations are performed on a logarithmic scale. The P90 is based on the distribution of fecal coliform scores and means that 90% of scores are at are below the P90 and 10% scores are above (Figures 2a and 2b). As long as most of the other scores are low, a few high scores will not have a large impact on the P90 value. The P90 standard is the acknowledgment by the NSSP that a few high scores in data set may be due to the variability of the test method. If the area shows high fecal coliform scores intermittently due to pollution events such as rainfall, this may cause water quality to exceed the P90 standards because the shellfish are intermittently subject to polluted waters. For classification determinations, P90s are rounded to the nearest whole number. 0.1-0.49 are rounded down and 0.5-0.9 are rounded up to the next whole number.



**Figures 2a and b.** The lower 90% of the scores fall to the left of the P90 line and 10% of the scores fall to the right. 2a has a low P90 because there are many low scores and a few high scores. 2b has a larger number of high fecal coliform scores, so the P90 is shifted to the right. Although the geomean of 2b passes the approved standard, the area would not be classified as approved because the P90 score is above the threshold.

### Fecal Coliform Standards by Shellfish Growing Area Classification Category

Shellfish Growing Area Classification	Activity Allowed	Geometric mean FC/100ml	90 <sup>th</sup> Percentile (P90) FC/100ml
Approved	Harvesting allowed	≤ 14	≤ 31
Conditionally Approved	Harvesting allowed except during specified conditions	≤ 14 in open status	≤ 31 in open status
Restricted	Depuration harvesting or relay only	≤ 88 and >15	≤ 163 and >31
Conditionally Restricted	Depuration harvesting or relay allowed except during specified conditions	≤ 88 in open status	≤ 163 in open status
Prohibited	Aquaculture seed production only	>88	>163

## **Attachment 3 Example Chain of Custody**



# **APPENDIX F**

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## **CONSTRUCTION INSPECTION FORMS**



Town of Falmouth  
Department of Public Works  
101 Woods Road  
Falmouth, ME 04105  
Ph. - 207-781-3919



### Site Inspection Form

Project: \_\_\_\_\_ Location: \_\_\_\_\_

Time: \_\_\_\_\_ Date: \_\_\_\_\_ Weather: \_\_\_\_\_

Type of Inspection: Pre Construction General Site Final Other: \_\_\_\_\_

Contact: \_\_\_\_\_ Inspector: \_\_\_\_\_

#### Site Conditions:

##### Temporary BMP's

Construction Entrance: Y N N/A Condition: New Good Poor

Types of BMP's In Place (Circle): ECM Silt Fence ECB Check Dams Mulch Silt Sacks

Other: \_\_\_\_\_

Material Stockpiles Stable: Y N N/A Comments: \_\_\_\_\_

Dust Control Adequate: Y N Comments: \_\_\_\_\_

Additional ESC Needed: Y N Comments: \_\_\_\_\_

Maint. Req'd: Y N Follow up Req'd: Y N Return Date: \_\_\_\_\_

Correction Actions Needed: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

##### Permanent BMP's

Is Site Permanently Stabilized? Y N N/A

Have Temporary ESC BMP's Been Removed? Y N N/A

Types of BMP's Installed: \_\_\_\_\_

Shoreland Zone: Y N

Pictures: Y N S:\pubwks\Development\site inspections \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_

#### Current Activities:

Comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_