

STORMWATER MANAGEMENT PLAN

FOR

TOWN OF BERWICK, MAINE



MS4 General Permit Effective July 1, 2022

Initial Submittal to Maine DEP March 30, 2021

Final Submittal to address Maine DEP Comments August 13, 2021

Updated 6/13/2022 to reflect incorporate Permit Modification and May 18, 2022
Department Order

Table of Contents

1	INTRODUCTION	4
1.1	Overview of Regulatory Program.....	4
1.2	Cooperation Between Regulated Communities	4
1.3	Stormwater Management Plan.....	5
1.4	Water Quality and Discharges to Impaired Waters	6
1.4.1	State Water Quality Assessments.....	7
1.4.2	Berwick Water Quality Status	9
1.4.3	Impaired Waters Addressed in this SWMP	15
1.5	Priority Watersheds	16
1.6	Obtaining Coverage to Discharge.....	18
1.7	SWMP Availability	18
1.8	SWMP Modifications during the Permit Cycle.....	19
1.9	Annual Compliance Report and Record Keeping	19
2	MINIMUM CONTROL MEASURES	21
2.1	MCM 1 Education/Outreach Program	21
2.1.1	BMP 1.1 – Raise Awareness– General Public.....	21
2.1.2	BMP 1.2 – Raise Awareness – Municipal Staff/Boards	23
2.1.3	BMP 1.3 – Behavior Change Campaign – Proper disposal of commonly littered items	24
2.1.4	BMP 1.4 – Overall Effectiveness Evaluation	29
2.2	MCM 2 Public Involvement and Participation	30
2.2.1	BMP 2.1 - Public Notice Requirement	30
2.2.2	BMP 2.2 - Host Public Events.....	30
2.3	MCM 3 Illicit Discharge Detection and Elimination	31
2.3.1	BMP 3.1 – Continue to Implement the Non-Stormwater Discharge Ordinance ...	31
2.3.2	BMP 3.2 – Maintain the Written IDDE Plan	31
2.3.3	BMP 3.3 - Maintain Storm Sewer System Infrastructure Map	32
2.3.4	BMP 3.4 – Conduct Infrastructure Inspections and Monitor Flowing Outfalls.....	32
2.3.5	BMP 3.5 – Conduct Investigations on suspect illicit discharges/ flowing outfalls ..	33
2.3.6	BMP 3.6 – Significant Contributors of Pollutants	33
2.4	MCM 4 Construction Site Stormwater Runoff Control	35
2.4.1	BMP 4.1 – Update Requirements for Erosion Sediment Control	35
2.4.2	BMP 4.2 – Site Plan Review Procedures	36
2.4.3	BMP 4.3 – Procedures for notifying construction site developers and operators .	36
2.4.4	BMP 4.4 –Conduct and Document Construction Site Inspections.....	37
2.5	MCM 5 Post-Construction Stormwater Management in New Development/ Redevelopment.	39
2.5.1	BMP 5.1 – Implement strategies to prevent or minimize water quality impacts...39	
2.5.2	BMP 5.2 – Maintain Post Construction Ordinance or Similar Measure	39
2.6	MCM 6 Pollution Prevention/Good Housekeeping for Municipal Operations	41
2.6.1	BMP 6.1 – Operations at Municipally Owned Grounds and Facilities	41
2.6.2	BMP 6.2 – Training.....	41

2.6.3	BMP 6.3 – Continue Street Sweeping Program	41
2.6.4	BMP 6.4 – Cleaning of Catch Basins.....	42
2.6.5	BMP 6.5 – Maintenance and Upgrading of Storm water Conveyances /Outfalls ..	42
2.6.6	BMP 6.6 – Stormwater Pollution Prevention Plans (SWPPPs).....	42
2.7	Impaired Waters BMPs	44
3	GENERAL REQUIREMENTS.....	45
3.1	Certification.....	45

APPENDICES

- A. Urbanized Area Map**
- B. Notice of Intent and Permittee Specific DEP Order**
- C. Summary of Public Comments Received**
- D. Education & Outreach Tools, Levels of Effort, and Effectiveness Benchmarks**
- E. IDDE Plan**
- F. Construction Inspection Form**

1 INTRODUCTION

1.1 Overview of Regulatory Program

The Town of Berwick 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. Because the permit is a Clean Water Act permit, it is limited to a duration of five (5) years and is due to expire on June 30, 2027. However, if the Maine DEP does not issue another Permit by June 30, 2027, the permit will be administratively continued, and the Town may need to update this Stormwater Management Plan to show what activities it will complete during the continued time period.

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 (50,000 people or more) that has a high population density and/or a high percentage of impervious cover (hard scape surfaces like parking lots or buildings). Both of these 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 Berwick 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. So, 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 combined 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 regulated MS4s (municipal, transportation and state/federal) have a good history of cooperating on a state-wide basis to complete activities required by the General Permit such as public outreach and training as a cost saving measure and to improve the quality of compliance.

When the Town of Berwick became regulated in 2003, it joined the four other regulated communities in York County to implement some elements of the permit cooperatively. The four other communities are South Berwick, Eliot, Kittery and York. The Towns have branded their cooperative stormwater efforts with the name, “Southern Maine Stormwater Working Group” (SMSWG, pronounced SIM-see-wig).

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 Portland Area regulated MS4s formed the Interlocal Stormwater Working Group (ISWG). For some public education requirements, all of the stormwater working groups are working cooperatively as identified in this plan.

In implementing the 2022 MS4 General Permit, the Town of Berwick works with other entities statewide and through SMSWG 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

Though the MS4 General Permit is a Clean Water Act Permit, it 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).

Each of the historically issued MS4 General Permits (in 2003, 2008, 2013, and 2022) have required that the regulated MS4s develop and implement a Stormwater Management Plan (SWMP or Plan) to coincide with the effective dates of the General Permit.

This 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 appropriate BMPs; designate a person(s) responsible for implementing each BMP; define a date or timeline with milestones for implementation of each BMP; and define measurable goals for each BMP.

The prior MS4 General Permits also required that the SWMP address these six MCMs, but the specific requirements related to each MCM have changed with each permit. In many instances, the BMPs in this plan expand upon or continue BMPs that were developed under prior General Permits.

In addition to addressing the six (6) Minimum Control Measures, the Town must address several impaired waters requirements. Sections 1.4 and 1.5 describe the water quality status in the Town, and what watersheds are considered to be priorities. Sections 1.6 through 1.9 describe how permit coverage is obtained, how the SWMP is modified (when needed), when public notice is required and annual reporting requirements.

The Maine DEP will review this Stormwater Management Plan and determine if the Town is controlling pollutants to the “Maximum Extent Practicable”. The term “Maximum Extent Practicable” is defined in the Clean Water Act. The term means available and feasible considering cost, existing technology, and logistics based on the overall purpose of the project. Effectively, the Town is allowed to consider these concepts as they select Best Management Practices (BMPs) to meet permit requirements, but the Maine DEP decides if the Town is meeting the “Maximum Extent Practicable” standard.

The SWMP is not an enforceable document, however, some of its elements are enforceable as identified in The Town’s Department Order contained in Appendix B. Some flexibility is built in to the SWMP 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 the SWMP and BMPs throughout the Permit Cycle if needed based on evaluations of their effectiveness, changing conditions, specific local concerns, or changes in other factors. Some SWMP Modifications require DEP review and approval and public notice. Section 1.6 Obtaining Coverage to Discharge, and Section 1.8 SWMP Modifications describe the requirements associated with modifying a SWMP.

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 meeting their fishable and swimmable standards (a.k.a. impaired waters):

- (1) If the waterbody to which a point source discharge drains is impaired and has an EPA approved total maximum daily load (TMDL), then the SWMP must propose clear, specific, and measurable actions to comply with the TMDL waste load allocation (“WLA”) and any implementation plan. The GP does not authorize a

direct discharge that is inconsistent with the WLA of an approved TMDL. This requirement applies only to TMDLs that were approved by EPA as of 10/15/2020.

- (2) If a TMDL is approved or modified by EPA after 10/13/2020, 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 (3) BMPs to address the water's impairment, unless the DEP has determined the MS4 discharge is not causing or contributing to the impairment.

The Fact Sheet that was issued with the 2022 MS4 General Permit also contained a strongly worded recommendation for MS4s to consult with the Maine DEP Division of Environmental Assessment regarding impaired waters that do not have approved TMDLs. The consult would be focused on identifying the root cause of the impairment and developing a strategy to reduce the discharge of pollutants of concern if the permittee is causing or contributing to the impairment.

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. Section 1.4.3 describes how the Town is addressing any impairments which have MS4 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 a number of sources depending on the type of water being assessed:

- Lakes 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.

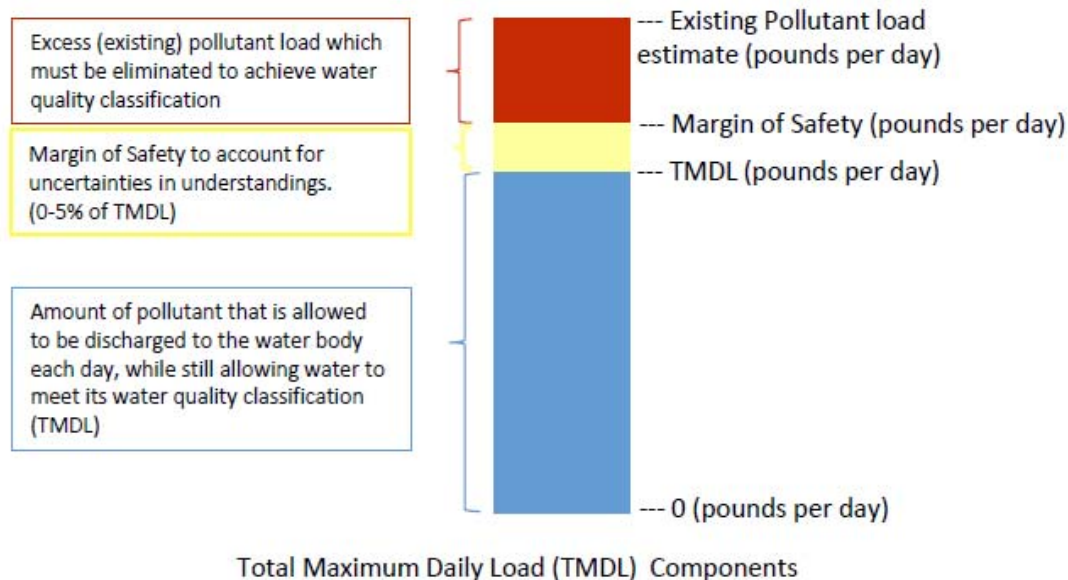
- Wetlands are assessed primarily using data obtained from the DEP Biomonitoring Program.
- Rivers and Streams are assessed using data from the DEP Biomonitoring Program, Surface Water Ambient Toxics (SWAT) Monitoring Program, the Atlantic Salmon Recovery Plan, Volunteer River Monitoring Program (VRMP) 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
 - 4A means a TMDL has already been completed
 - 4B means other pollution control measures will address impairment, so no TMDL is required to be completed
 - 4C means the impairment is not caused by a pollutant and so does not require development of a TMDL (Total Maximum Daily Load) report.
- 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. In particular, 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.



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 Berwick Water Quality Status

This section provides 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 MS4 discharges and their impairment status. The Table shows the number of MS4 outfalls (in parentheses) that discharge to each waterbody as of December 2020.

The following documents were reviewed developing Table 1:

- Salmon Falls/Piscataqua River Estuary TMDL (1999)
- Statewide Bacteria TMDL (September 2009 and 2013 Addendum)
- Impervious Cover TMDL (September 2012)
- Non-Point Source TMDL (2015)
- Final 2016 Maine Integrated Water Quality Report and Appendices (a.k.a. Maine 305(b) Report and 303(d) list). Note that the DEP has indicated they will not issue a 2018

303(d) report, rather they will be issuing a combined 2018/2020/2022 303(d) report.

- USEPA and Maine DEP approved TMDL lists
- Chapter 502 Direct Watersheds of Lakes Most at Risk from New Development and Urban Impaired Streams

Figure 1 shows the locations of the fresh waters and their status according to the 2016 303(d) list (from <https://maine.maps.arcgis.com/apps/webappviewer/index.html?id=dffb3d2b85904b18978d02fc9d913b5f>). Figure 2 shows the locations of the DMR Area 1 (from <https://www.maine.gov/dmr/shellfish-sanitation-management/maps/index.html> and [MaineDMR Public Health - 2019 NSSP Classifications \(arcgis.com\)](https://www.maine.gov/dmr/shellfish-sanitation-management/maps/index.html)). Figures 3a and 3b provide an overview of the Town, its Urbanized Area and MS4 outfall locations.

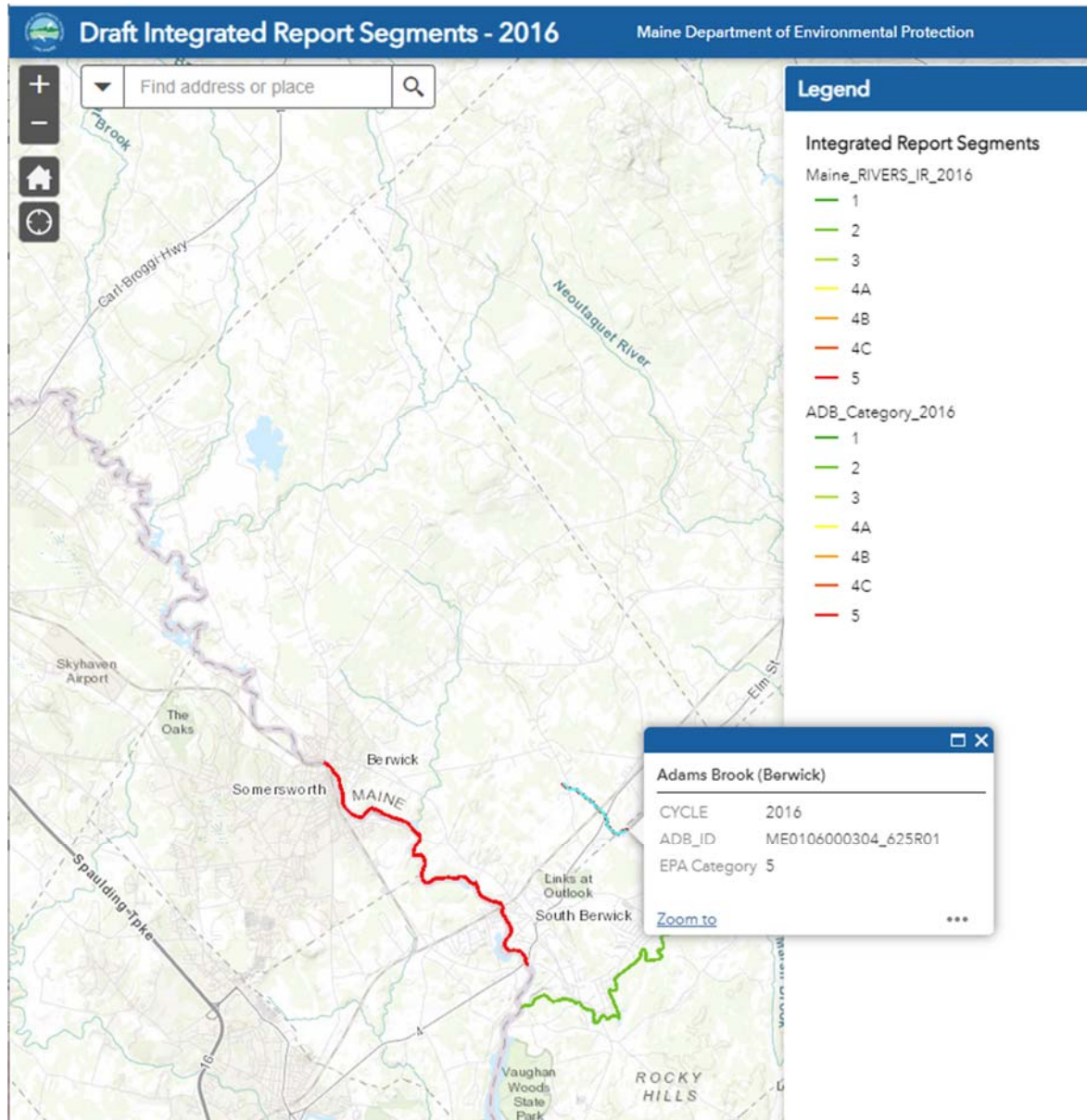


Figure 1 The Salmon Falls River and Adams Brook in Berwick are listed as impaired and need a TMDL, but only a very small portion of Adams Brook is inside the Berwick Urbanized Area

Table 1 Status of Waterbodies Receiving MS4 Discharges – Berwick Maine

Water bodies with MS4 discharges (# outfalls)	Maine DEP classification and numeric designation	DMR Area	Completed TMDLs	Urban Impaired Streams (Chapter 502)	Non-TMDL listing in 2016 303(d) list	Watershed Management Plan / Other Water Quality Document
Adams Brook (No MS4 outfalls to Brook)	ME106000304_625R01 Class B	NA	None	None	Category 5 – A for aquatic life: Benthic-Macroinvertebrate bioassessment	
Salmon Falls River (Main Stem from Rt 9 Bridge in Berwick to the tidewater/ Route 4 Bridge in South Berwick (7 MS4 outfalls discharge directly to the River)	ME106000305_630R01 Class C	NA	Salmon Falls River including Piscataqua River Estuary (1999) Bacteria TMDL (2009)	None	Cat 5-D Impaired by Legacy Pollutants (PCBs and Dioxin)	
Ferguson, Worcester and unnamed Brooks (6 outfalls)	No designation Class B	NA	None	None	None	

Figure 3a – Overview map of Central Urbanized Area (Downtown area of Berwick) and Outfall Locations

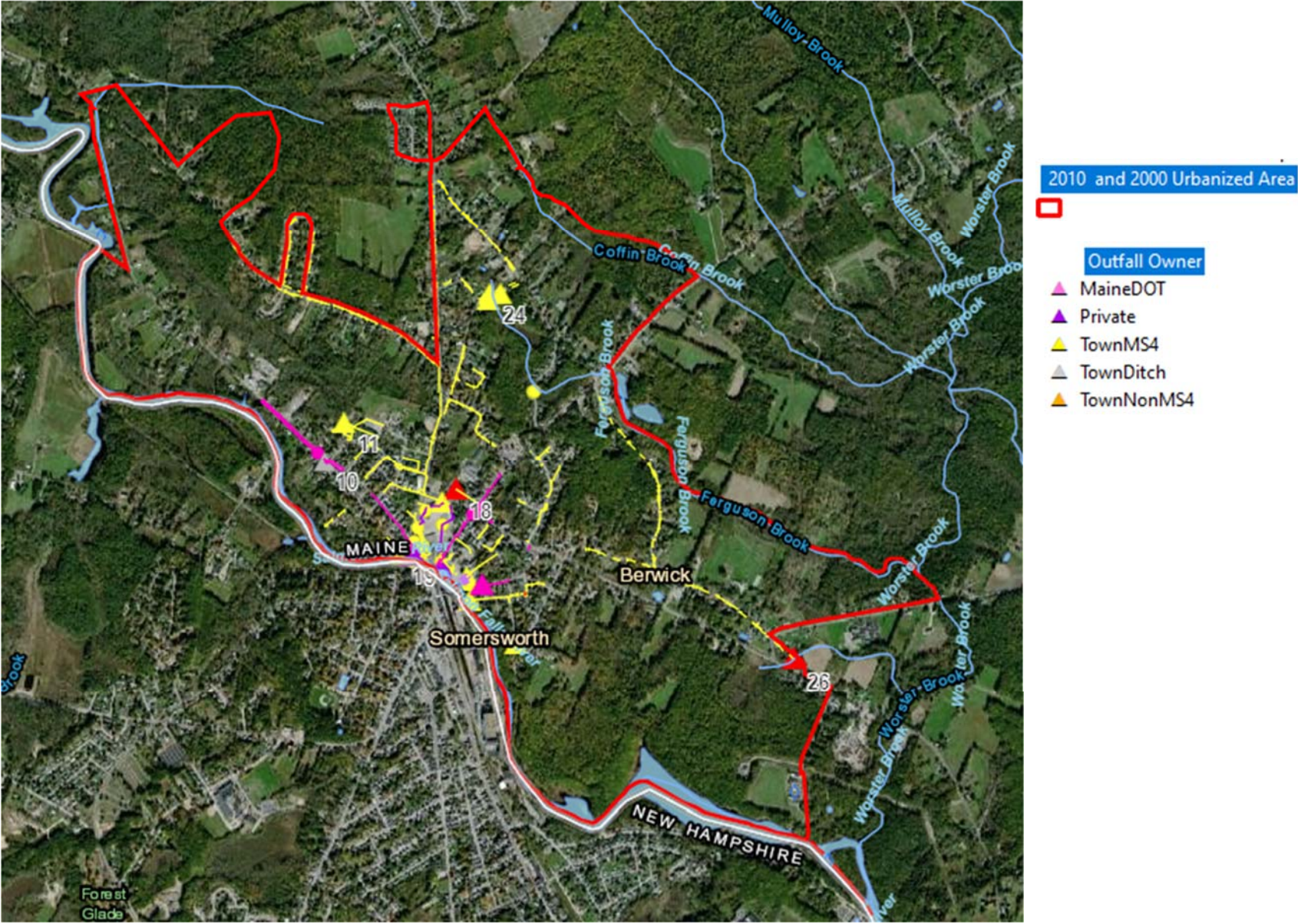


Figure 3b – Overview of infrastructure in southern Urbanized Area, along South Berwick Border, including ditches near Adams Brook.

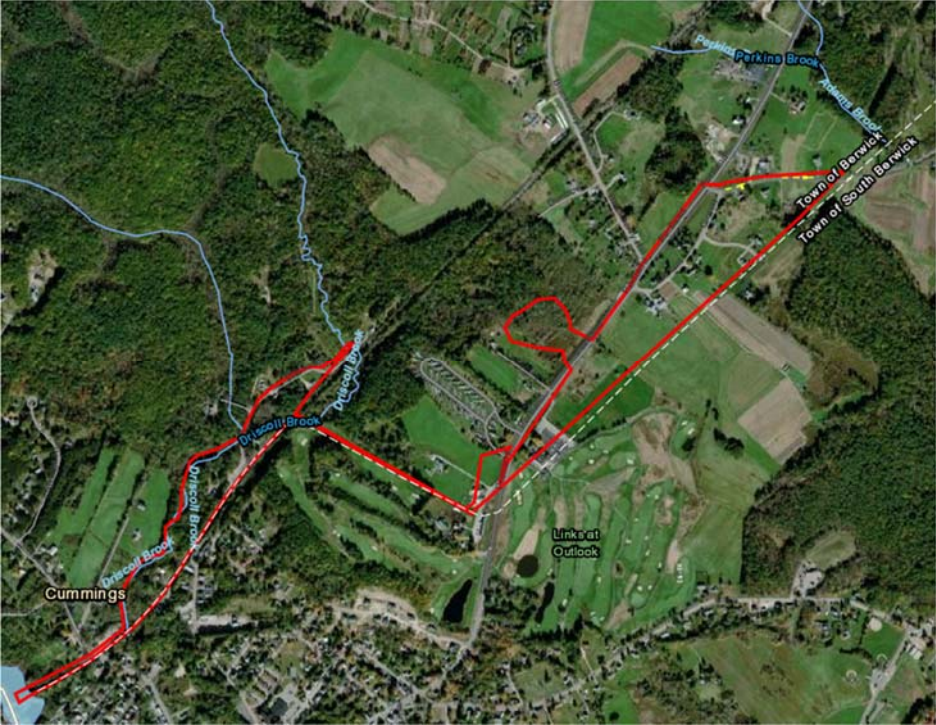


Table 1 shows the Town does not have any Urban Impaired Streams, but that all of its MS4 outfall discharge directly or indirectly to the Salmon Falls River which has a TMDL completed and some listings in the 303(d) list that do not yet have TMDLs completed.

1.4.3 Impaired Waters Addressed in this SWMP

Because the Town does not discharge to any Urban Impaired Streams no BMPs or action need to be implemented regarding these waters.

The 1999 Salmon Falls River/Piscataqua River Estuary TMDL for un-ionized ammonia, nutrients, and dissolved oxygen included a Use Attainability Analysis, which resulted in a change in classification of the River between the Route 9 bridge in Berwick and the head of the tide at the Route 4 Bridge in South Berwick from Class B to Class C. The Use Attainability Analysis completed showed that Class B dissolved oxygen concentrations were not attainable for this section because of impoundments.

The TMDL also recommended new permit limits for five wastewater treatment plants that discharge into the river (Milton, NH; Berwick, ME; Somersworth, NH; Rollinsford, NH; and S. Berwick, ME).

Sampling of discharges into the River in 1995 did not show any widespread significant contribution of non-point source phosphorous loading to the Salmon Falls River when compared to the point source inputs (note that the MS4 outfalls that discharge into the River were considered non-point source contributions at that time). The TMDL document did not identify any WLA or implementation plan regarding stormwater discharges.

The Bacteria TMDL lists the freshwater portion of the Salmon Falls River as impaired for Bacteria but does not provide any description of the source of the bacteria nor any WLA or implementation plan regarding stormwater discharges. The Town will be implementing the IDDE measurable goals, which require outfall inspections and investigations and removal of illicit discharges as well as sampling and analysis of any flowing outfalls for bacteria. The DEP has indicated implementation of the IDDE measurable goals satisfies the TMDL requirement for MS4 General Permit for discharges to the Bacteria TMDL.

The Bacteria TMDL also previously (in 2009) listed the tidal portion of the Salmon Falls River as impaired for bacteria but did not identify any WLA or implementation plan regarding stormwater discharges. The tidal portion of the Salmon Falls River was removed from the Bacteria TMDL until such time as the DEP can update the Bacteria TMDL.

Adams Brook is listed as Category 5-A for aquatic life impairment. It was listed in a draft of the Non-Point Source TMDL but was removed because the intent of the TMDL was to not address the point source discharge. The MS4 portion of this Brook is very small and consists mostly of ditch and open drainage in a rural area.

The freshwater section of the Salmon Falls River is also listed as Category 5-D for an impairment due to PCBs and dioxin, presumably from historic discharges that hold these compounds in sediment, behind impoundments.

As stated in the 2022 MS4 General Permit Fact Sheet, the Town consulted with the Maine DEP Division of Environmental Assessment to understand if any action needed to be taken to address discharges to the either the TMDL waters or the non-TMDL impaired waters through the MS4 Permit.

The consultation with Maine DEP revealed:

1. The DEP has not fully specified the root cause of the impairments, but suspects that stormwater is a contributing factor.
2. That implementation of the IDDE elements of the MS4 General Permit (conducting outfall inspections, sampling outfalls during dry weather flow, and completing IDDE investigations to eliminate any bacterial sources), are sufficient to address the bacteria related non-TMDL impairment until such time as the Bacteria TMDL document can be updated, or any other TMDL can be created (for the Salmon Falls River).
3. No work is required to be completed for the Adams Brook impairment, or the Salmon Falls River legacy pollutant impairment.

1.5 Priority Watersheds

Previous MS4 General Permits required that regulated MS4s identify a Priority Watershed and apply BMPs to that Watershed. 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 Berwick uses this prioritization to identify where illicit discharge inspections are conducted first. The Town may also use the prioritization for illicit discharge investigations in the event there were insufficient resources to address all potential illicit discharges simultaneously. The IDDE Plan describes in more detail how the prioritization is applied.

The Maine DEP maintains a list of waters that are 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). The list includes the MS4's "Priority Watershed".

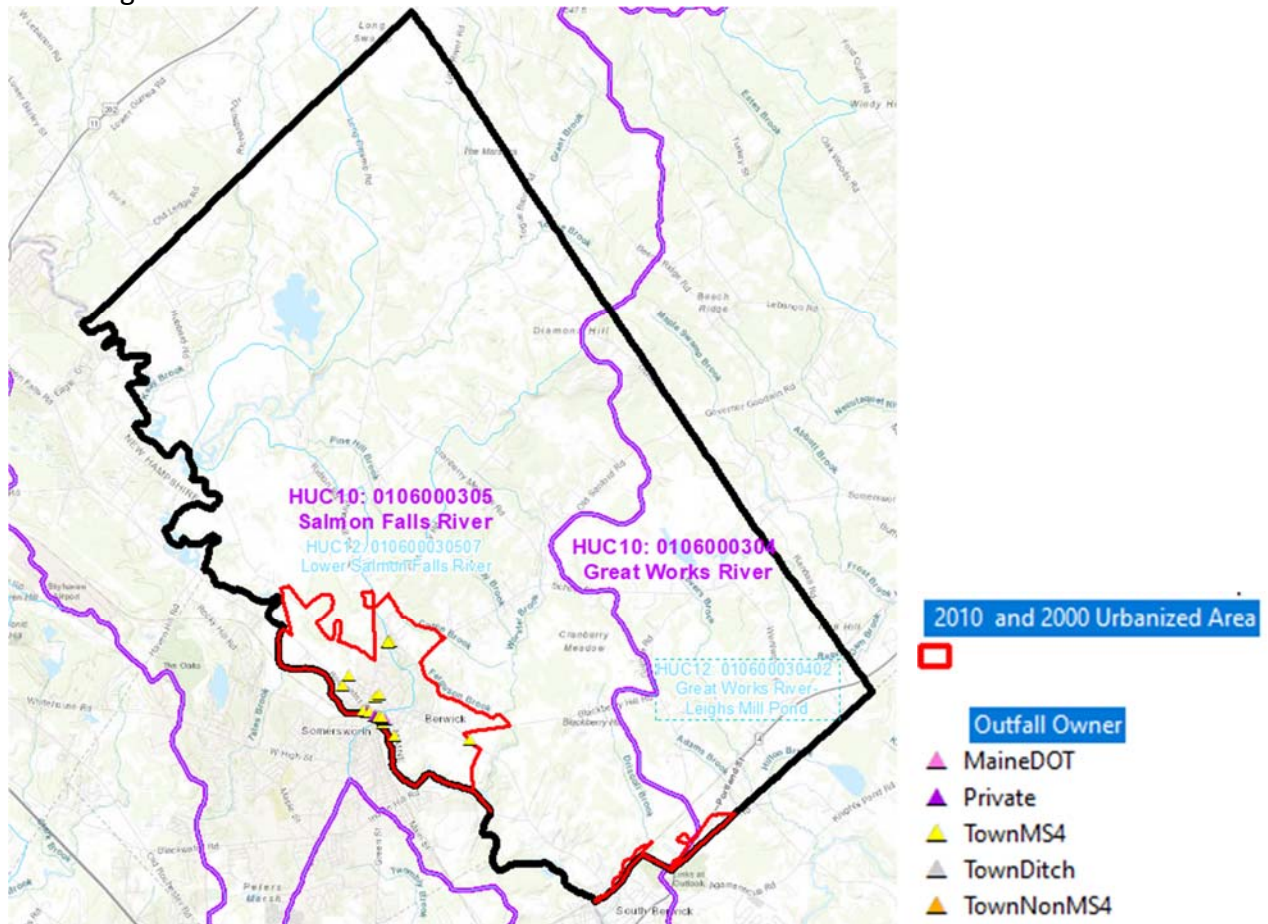
MS4s should keep in mind that they may not use 319 grant funding to implement any BMPs required by the MS4 General Permit.

The majority of the Urbanized Area is completely contained within the Salmon Falls River Watershed (HUC 0106000305), and the Middle Salmon Falls River Subwatershed (HUC 0106000305-06).

The Salmon Falls River is the drinking water source for the Town of Berwick, and the Town participates in the Salmon Falls Watershed Collaborative, hosted by the Piscataqua Region Estuaries Partnership (PREP).

Therefore, the town’s priority watershed and waterbody are the Salmon Falls River. Figure 4 shows the locations of the Town’s watersheds and subwatersheds.

Watersheds, subwatersheds and drainage areas are described using a national naming and numbering system. Watersheds are described using a 10-digit Hydrologic Unit Code (HUC). Watersheds are divided into smaller divisions called subwatersheds and are numbered by retaining the 10-digit HUC from the watershed and adding two additional digits to form a resultant 12-digit HUC. National HUC data sets end with the 12-digit HUC subwatersheds. Municipalities and/or states typically subdivide the subwatersheds into smaller drainage areas, again retaining the 12-digit HUC of the parent subwatershed and adding two more digits.



1.6 Obtaining Coverage to Discharge

As required, a Notice of Intent (NOI) to comply with the 2022 MS4 General Permit was submitted to the Maine DEP with this SWMP. A copy of the Town's NOI is provided in Appendix B.

30-day Public Notice 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 contained in Appendix B.

Following review of the SWMP and NOI, and receipt of any public comments, the Maine DEP issued a permittee specific DEP Order, establishing terms and conditions that are enforceable in addition to the language in the 2022 MS4 General Permit which is also enforceable.

The permittee specific DEP Order was also subject to a 30-day public comment period by DEP. This Town's DEP Order was issued for public comment in November 2021, was modified by DEP based on comments received and was re-issued for public comment in March 2022.

After the public comment period ended, and the DEP finalized the DEP Order based on any comments received, the Town had 60 days to update the SWMP to reflect any new or changed requirements based on the DEP Order and any comments. This SWMP has been updated to reflect any public comments. Maine DEP did request that this SWMP be resubmitted to them.

Appendix B contains the Final permittee specific DEP Order and shows the comments received and the DEP responses to comments. Appendix C contains the comments received from the public along with any notes on how the comments were addressed in the SWMP.

1.7 SWMP Availability

The SWMP must be made available to the public by publishing on the Town Website. A copy must also be made available to the public at Town Hall.

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

- a) USEPA or Maine DEP,
- b) Any interconnected or adjacent MS4,
- c) Any 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

During the permit term (2022 to 2027), the SWMP must be kept current. As required by the 2022 MS4 General Permit, the Town will amend the SWMP if the Maine DEP or the Town determine that:

- a) The actions required by the BMPs fail to control pollutants to the 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.

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.

If the changes are initiated by the Town, the following processes apply (depending on the nature of the change as identified below):

- To modify any schedule identified in the permittee specific DEP Order, the permittee must file an application on a DEP form with the Department that includes a justification to formally modify the original permittee-specific DEP Order.
- The permittee must allow the public the opportunity to comment on changes made to the SWMP a minimum of once per year.
- For BMPs in the SWMP that are not required to comply with the General Permit or the permittee specific DEP Order, the BMPs and/or implementation schedule may be amended as appropriate without the need for public comment. Changes must be submitted to the Department in the Annual Report following the permit year the change(s) were made.

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 via email to the Municipal Stormwater Coordinator. As of April 2022, the Maine DEP Municipal Stormwater Coordinator is:

Holliday.Keen@maine.gov

**Municipal/Industrial Stormwater Coordinator
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 the Town's permittee specific DEP Order, based on the implementation of the Town's Plan 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 MEP
- 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 Town intends to undertake pursuant to its Plan to comply with the terms and conditions of the 2022 MS4 General Permit and the Town's permittee specific DEP Order during the next reporting cycle.
- d. A change in any identified BMPs or measurable goals that apply to the Plan.
- 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 Plan 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 Plan, 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 the Towns develop two Education/Outreach Campaigns to address stormwater issues of significance:

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

In 2018, ISWG executed a statewide survey around public awareness of stormwater issues and behaviors that impact stormwater. The survey results were summarized in the SMSWG Permit Year 5 (2017-2018) annual report. The SMSWG communities discussed the results of the statewide survey, reviewed water quality status related to stormwater issues, considered their first-hand knowledge of their communities, and the needs for public education around stormwater at four of their regional meetings (9/26/2018, 5/29/2019, 7/31/2019, and 9/30/2020) before deciding what 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 SMSWG communities' understanding of their areas.

The SMSWG Towns will cooperate regionally and with the ISWG to complete the requirements of the Education/ Outreach Program. The Towns will fulfill the requirements of this MCM by implementing the following BMPs.

2.1.1 BMP 1.1 – Raise Awareness– General Public.

Responsible Party – Director of Community Development & Planning (with implementation assistance from a cooperative ISWG/SMSWG effort)

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. Measurable Goal 1.1a describes the actions the Town will take to raise awareness of the public, and Measurable Goal 1.1b describes the action the Town will take to raise awareness of municipal staff and board members. Rationale for the selection of the target audiences is provided here also.

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. ISWG, AVSWG, and 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. Only 15 of the survey respondents in the SMSWG region were ages 25 to 34, but all of them stated it was “very important to have clean water in the lakes and streams in [their] community”, and 12 of them believe that stormwater runoff has a major impact or somewhat impacts water quality. As was true of the ISWG demographic in this age group, 47% of SMSWG 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 and has potential to impact stormwater for many years in the future, the ISWG, AVSWG, and SMSWG communities will cooperatively use the Think Blue Maine campaign to raise their awareness of stormwater issues. This will increase their likelihood to implement beneficial behavior change in the future.

Measurable Goal 1.1a – The Town will implement the following program which is designed to raise 15% 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 SMSWG region’s population for ages 25 to 34 is approximately 4,100 people, 15% of the target audience is approximately 600 people.

Target Audience: People 25 to 34 in the SMSWG 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 Table 1 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 of the relevant target audience subset based on common characteristics and/or demographics.

Evaluation: Effectiveness will be evaluated annually by tracking process indicators¹ for each tool implemented that year and by tracking impact indicators² where available (see Appendix D Table 1).

Implementation schedule: A minimum of three of the tools from Appendix D Table 1 will be implemented each year for the duration of the permit.

Adaptive Management: Tools and messaging will be reviewed and evaluated on an

¹ Indicators related to the execution of the outreach program.

² Indicators related to the achievement of the goals or objectives of the program.

annual basis at a minimum for the MS4 Annual Report. To address emerging issues, opportunistic tools and outreach may also be implemented. Seasonal messaging and tool adjustments will be used when applicable. Annual Report findings will be incorporated into ISWG meeting discussions as well as annual workplans and budgets and reported out to SMSWG for inclusion in the SMSWG Town's Annual Reports.

2.1.2 BMP 1.2 – Raise Awareness – Municipal Staff/Boards

Responsible Party – Director of Community Development & Planning

Measurable Goal 1.2a – During the 2013-2022 MS4 Permit Cycle, the Town implemented a permit awareness plan targeting municipal boards and staff. The Town identified in its final assessment (submitted to Maine DEP in PY5) that because of Board and staff turnover, the awareness program is very important. The final assessment for the prior permit cycle is being used as the baseline assessment for this permit cycle.

Target Audience: The Town will continue to raise awareness of the MS4 Program targeting one Board per year (either the Planning Board or the Select Board/Town Council) and any new Town Manager, Director of Community Development and Planning, Director of Water and Public Works or Code Enforcement Officer.

Message: The Staff and/or Board's Role is important in implementing the MS4 Program and protecting waters from stormwater pollution.

Schedule: The following tools will be used each year to implement this BMP.

Tool 1 Fact Sheet: The Responsible Party for this MCM will review a Town-specific MS4 Fact Sheet and update it if needed. The Fact Sheet will be maintained on Town's stormwater web page and used in Tools 2 and/or 3 if deemed appropriate by the Responsible Party.

Tool 2 Meeting or Materials: The Responsible Party for this MCM will either attend or provide written materials to a Planning Board or Town Council/Select Board for their consideration at a meeting. Topics that may be covered include: (a) the MS4 Program in general, or (b) a specific element of the MS4 program pertinent to the Board, or (c) an invitation to a public participation event (BMP 2.2).

Tool 3 New Staff: Whenever a new Town Manager, Director of Community Development and Planning, Director of Water and Public Works or Code Enforcement Officer is hired the Responsible Party for this MCM will meet with or provide written materials to the new staff member to review their responsibilities related to the 2022 MS4 General Permit.

Effectiveness Benchmark (e.g., the target for awareness): Effectiveness will be evaluated annually by tracking the process indicators for each tool that is implemented that year, and by tracking impact indicators where available. The Measurable Goal will be considered effective if

the following occur:

- Tool 1: The Fact sheet is reviewed and updated if needed
- Tool 2: If the engagement by the board members during a presentation (or discussion of written materials) indicates they understand their role is important in implementing the MS4 Program, or by the number of board members that attend the BMP 2.2 Public Participation event (if invited)
- Tool 3: If any new staff are hired: the meeting occurs, or the written materials are provided, and the new staff indicate they understand their MS4 responsibilities.

2.1.3 BMP 1.3 – Behavior Change Campaign – Proper disposal of commonly littered items Responsible Party – Director of Community Development & Planning

The SMSWG communities selected proper disposal of litter as their primary behavior change goal with a focus on proper disposal of cigarette butts and pet waste for the following reasons:

1. **Litter is a nationally recognized issue related to stormwater** – litter carries pollutants with it and many forms of litter are harmful to aquatic life. Cigarette butts contain carcinogenic substances, and non-biodegradable elements that can be ingested by aquatic life. Pet waste carries high concentrations of nutrients including bacteria and nitrogen. And purchased food wrappers and containers are typically plastic or paper which do not biodegrade and contains some excess or residual food item which contains nutrients.
2. **Supported by Maine Statewide Stormwater Survey** - The Maine Statewide Stormwater Survey conducted in Permit Year 5 of the previous cycle identified that 80% of survey respondents are aware that pet waste trash is a common stormwater pollutant, and 92% are aware that trash is a common stormwater pollutant, and they believe that picking these items up and putting them in the trash can reduce water pollution. Their awareness of these issues makes behavior changes more likely to be implemented (people must be aware of a problem before they are likely to take steps to help correct the problem).
3. **National Study Data for cigarette butts** - Keep America Beautiful prepared a detailed study called Littering in America (2009) with a companion document, National Visible Litter Survey and Cost Study (2009). This was the first national study of littering since 1969, and while overall littering had decreased significantly, there is still a lot of littering going on. The SMSWG communities reviewed the studies to identify sources of pollutants and target audiences that could benefit from public education activities. In particular, the following findings lead the SMSWG communities to identify the target audiences and messaging shown in Measurable Goals 1.3a and 1.3b:
 - Cigarette butts are the number one littered item on roadways and in storm drains and the number one or two littered items in non-roadway areas (such as recreational areas, retail areas, construction sites, and transition points like building or park entrances).
 - 81% of littering behavior occurs with notable intent (primarily cigarette butts and confectionary/candy wrappers), and an individual’s awareness attitudes, and feelings of personal responsibility are most of the driving factors that lead people to litter (85%) and

these items should be addressed through targeted messaging:

- Most intentional litterers believe someone else will pick it up or believe someone else should pick it up as part of their job description, and do not understand the cost of their littering behavior.
 - Most intentional litterers also believe that cigarette butts are “natural” or “organic” and will decompose naturally. But the filters contain cellulose acetate, a form of plastic that does not biodegrade and can persist in the environment, adversely affecting marine and freshwater creatures when it reaches waterways.
- Even though the individual awareness and attitudes are 85% of the driving factors for littering, the following contextual issues also contribute to littering, and so any good reduction program should address these also:
 - the availability of receptacles is an important factor in littering behavior (where trash receptacles are more than 10 feet away from a transition point such as a building entrance, more littering is conducted).
 - The presence of existing litter makes individuals more likely to litter.
 - Age is a significant factor in intentional littering (individuals age 30 and below are more likely to litter than older people).
 - The number of adult smokers in Maine according to the CDC [Map of Cigarette Use Among Adults | STATE System | CDC](#) is 15.4 to 18.6%. The CDC reports that 7-9% of high school students smoke in Maine.
 - Recommendations from the study included making proper disposable convenient and accessible, ensuring consistent and ongoing clean-up efforts, and using messaging that highlights social disapproval for littering and a preference for clean, litter-free communities, focusing on individual responsibility.

4. **National Study on Pet Waste Issues** - The Journal of Applied Psychology published a study (July 2006 issue, study by Paul Webley and Claire Siviter) where dog owners were observed along 8 popular dog walking paths in Lancashire, U.K. This study confirmed that although 60% of dog owners pick up after their dog, the 40% of dog owners who do not pick up after their dog do so because they believe that the feces are natural and biodegradable, and they do not understand the health and environmental impacts of leaving the feces on the ground. The study identified that the dog owners who did not pick up after themselves were more likely to believe that laws and regulations requiring them to pick up the waste were not legitimate. The study concluded that positive messaging that most dog owners pick up after their dogs would likely be effective in changing the behavior of the minority. Additionally, more current studies confirm that the belief that the feces are natural, and biodegradable is a significant contributor to individuals’ justifications for not picking it up. Other barriers include belief that someone else should pick it up (it’s their job, that is what I pay taxes for), or it’s like fertilizer (good for the ground), or there is no access to bags or disposal sites.

5. **Pet Waste and Trash are local issues, and existing removal efforts need support** - Local efforts are in place to remove litter from beaches, ditches, roadsides and parks in the communities.

These efforts occur annually and provide a good anecdotal and baseline information about the cigarette butt and pet waste problems in each community, but more work needs to be done to educate individuals in these communities. The following is a brief summary of the local issues identified:

- The Kittery, York, Eliot and South Berwick Conservations Commissions were contacted in 2020 and confirmed that littering was an issue in each community, though not specifically, cigarette butts and pet waste, they identified local fast-food waste (South Berwick) and roadside beverage containers (Eliot).
- Kittery, York, Eliot and South Berwick Conservations Commissions organize local clean up events: roadside cleanups (South Berwick) and Beach and park areas (Eliot, Kittery and York). (Berwick does not have a conservation commission).
- The Conservation Commissions expressed an interest in partnering on public education and clean-up efforts.
- The Litterati Ap was used as a pilot to assess its usefulness and create some baseline data regarding cigarette butt issues. Though not a statistically significant data set, the following supports the national studies that show that cigarette butt littering is widespread. In addition, the Litterati Ap was easy to use and has an administrator's interface that provides summary data which will facilitate documentation of litter found and removed from the environment:
 - Berwick Town Hall: In the summer of 2020, 59 pieces of litter were collected in a walk around Sullivan Square – 20 of the pieces collected were cigarette butts.
 - Berwick Town-wide: In April 2021, the Town of Berwick promoted an earth day cleanup week in which 3,869 pieces of trash were collected. Of the 686 pieces of litter that were categorized, 25% were smoking related (cigarette butts, cigar butts, or packaging).
 - Two areas of Eliot were walked in the summer of 2020 (~ 200-foot segments of two rural roads) and the areas at stop signs were identified with multiple cigarette butts.
 - For Kittery in the summer of 2020, the busy intersection of State Street and Walker Street was walked and 36 of 44 items observed were cigarette butts or packages.
 - In York in the summer of 2020, a walk along a 100-foot segment of York Street in front of Town hall identified 7 cigarette butts of 13 litter items.
- The Litterati Ap can also be used to collect and code data on pet waste and will be used to collect baseline data during Permit Year 9 of the 2013-2022 permit cycle. The following baseline data has already been collected:
 - For Kittery, in the summer of 2021, Rogers Park was walked using the Litterati Ap to document waste. Of the 61 pieces of litter collected, 4 were unbagged dog waste, 2 were bagged dog waste, one was an unused dog waste bag.

Measurable Goal 1.3a – The Town will work toward changing the behavior of residents who smoke and intentionally litter cigarette butts using the messaging, and tools described below:

Overarching Messages: Cigarette butts do not decompose and are harmful to the environment and aquatic organisms. Cigarette butts should be disposed of as regular waste.

The specific messages used for each tool will address various barriers to understanding these concepts depending on any specific subsegment of the audience being targeted.

Schedule: Three of the following tools will be used each year to implement this BMP in each community. More than three tools are included in this Plan to allow for flexibility in implementation from year to year.

Optional Tool 1 Stencil 30 storm drains in town center, neighborhood and/or park areas.

Optional Tool 2 The SMSWG regional collaborative will create, and issue four seasonal social media or website posts related to cigarette litter.

Optional Tool 3 The Town will install and ensure maintenance is conducted on at least two Sidewalk Buttlers, or similar products with messaging at targeted areas, and will create and issue informational flyers, posters or stickers. Town may work with a retail facility and ask that they conduct maintenance on the Buttler.

Optional Tool 4 Offer 30 free automobile cigarette cup holders at Town Hall if recipients provide an email address for info on follow up to their use/effectiveness (because cars do not have ash trays).

Optional Tool 5 Create and use 3 truck magnets or bumper stickers with message for public works vehicles or other town vehicles or shrink wrap one town vehicle with message.

Optional Tool 6 Offer one local or regional workshop and training for use of Litterati Ap to the Conservation Commission or other local interested group. The workshop may be conducted in cooperation with other SMSWG communities as long as two workshops are offered to the region each year this tool is used.

Effectiveness Benchmarks Each year the following process indicators will be documented for whichever corresponding tool was used (note that not all tools will be used each year):

1. The number of basins stenciled,
2. The number of social media posts made, how many people they reached, and how many engagements there were on each post.
3. Number of Sidewalk Buttlers placed and maintained, and total quantity of cigarette butts collected in Sidewalk Buttlers that are maintained by municipalities, or information on use from retailers on use (which may be qualitative),
4. Number of cigarette cup holders distributed
5. Number of magnets or bumper stickers applied and used.
6. Number of workshops held and number of attendees.

In addition to the process indicators, the Town will use the location and quantity of cigarette butts identified during the following activities to guide messaging, tool selection and use, and to

assess impact:

- during catch basin cleaning
- during outfall inspections
- from the Litterati Ap use
- from MCM2 cleanup data

Based on the literature reviewed and local data collected using the Litterati Ap, it is estimated as a baseline that cigarette butts constitute approximately 25-50% of the littered items in transitional and high traffic areas. The following are examples of conditions under which tools will be deemed effective:

- if the total quantity of cigarette butts collected each year in the Sidewalk Buttlers increases
- if the total quantity of cigarette butts observed in and around stenciled catch basins or catch basins that are near any Sidewalk Buttlers decreases
- if the total quantity of cigarette butts collected during roadside and beach cleanups decreases from prior years, or decreases relative to other litter sources (e.g., if cigarette butts begin constituting a smaller relative portion of littered items).

Measurable Goal 1.3b – The Town will work toward changing the behavior of pet owners who walk their dogs in public spaces using the messaging and tools below.

Overarching Message: Collect your pet waste and dispose of it properly (solid waste). Pet waste does not decompose quickly, it is not a natural fertilizer, and can adversely impact water quality.

Schedule: Three of the following tools will be used each year to implement this BMP. More than three tools are included in this Plan to allow for flexibility in implementation.

Optional Tool 1 Stencil 15 storm drains in in town center, neighborhood and/or park areas.

Optional Tool 2 The SMSWG regional collaborative will create, and issue four seasonal social media or website posts related to pet waste

Optional Tool 3 Install/Maintain signs at a minimum of one area identified as having pet waste issues.

Optional Tool 4 Include a handout/postcard provided when dog license is issued, or at shelters or doggie day cares or vets as reminders

Optional Tool 5 Create and use 3 truck magnets or bumper stickers with message for public works vehicles or other town vehicles or shrink wrap one town vehicle with message.

Optional Tool 6 Offer one workshop and training for use of Litterati Ap to the Conservation Commission or other local interested group. The workshop may be conducted in cooperation with other SMSWG communities as long as two workshops are offered to the region each year this tool is used.

Optional Tool 7 Install/Maintain pet waste bag and disposal posts at two high traffic locations for dog walkers.

Effectiveness Benchmark (e.g., the target for pet waste behavior change): Each year the following process indicators will be documented for whichever corresponding tool was used (note that not all tools will be used each year):

1. The number of basins stenciled,
2. The number of social media posts made, how many people they reached, and how many engagements there were on each post.
3. Number of signs applied
4. Number of handouts provided with pet licenses
5. Number of magnets or bumper stickers applied and used.
6. Number of workshops provided and number of attendees at each workshop.
7. Number of pet waste bag and disposal posts installed and maintained.

In addition to the process indicators, the Town will use the location and quantity of pet waste and/or pet waste baggies identified during the following activities to guide messaging, tool selection and use, and to assess impact:

- during catch basin cleaning
- during outfall inspections
- from the Litterati Ap use
- from MCM2 cleanup data

Based on the literature review and local data collected it is estimated that pet waste is prevalent in most public spaces where dogs are walked, though a specific metric identifying the baseline quantity of pet waste present is not currently available. Each of the Towns will be using the Litterati Ap to collect baseline data before the 2022 MS4 General Permit becomes effective by assessing pet waste in one or two popular dog walking areas with reports of or suspected pet waste issues.

Once the baseline is established (to be reported in the Permit Year 9 Annual Report), the following are examples of conditions under which tools will be deemed effective:

- if the total quantity of pet waste observed in and around stenciled catch basins or catch basins that are near any posted signs or pet waste bag and disposal posts decreases
- if the total quantity of pet waste collected during roadside and beach cleanups decreases from the baseline.

2.1.4 BMP 1.4 – Overall Effectiveness Evaluation

Responsible Party: Director of Community Development & Planning

Measurable Goal 1.4a – In addition to the annual effectiveness evaluations, in Permit Year 5 of the 2022 MS4 General Permit, the Town will work with the other SMSWG communities to conduct an evaluation of the overall effectiveness of the Awareness and Behavior Change BMPs (BMPs 1.1 through 1.3) to assess progress toward each benchmark listed. The evaluation will be a review of trends in the annually reported benchmark values for the Behavior Change and Awareness BMPs as well as documentation overall of changes made each year. The evaluation will identify recommendations for future awareness and behavior change target audiences, messages, tools and benchmarks.

2.2 MCM 2 Public Involvement and Participation

The SMSWG Towns will cooperate on Public Involvement and Participation activities on a regional basis, as described in this section of the plan.

2.2.1 BMP 2.1 - Public Notice Requirement

Responsible Party: Director of Community Development & Planning

Measurable Goal 2.1a – The Town will follow state and local Public Notice requirements for its Stormwater Management Plan and Notice of Intent (NOI) to comply with the Permit. Copies of the NOI and SWMP will be made available on the Towns’ web site. If changes are made to the SWMP, the website posting will include a notice that comments can be provided to the Responsible Party to this BMP.

2.2.2 BMP 2.2 - Host Public Events

Responsible Party: Director of Community Development & Planning

Measurable Goal 2.2a – The Town will either individually or regionally host or participate in an annual roadside, stream, park or beach clean up to emphasize the importance of the behavior change BMPs 1.3 (Proper Cigarette Butt Disposal) and 1.4 (Proper Pet Waste Disposal). The event will be advertised:

- a. On the Town’s website, and
- b. On the SMSWG or Town Facebook page, and
- c. In a local weekly or daily paper, or
- d. One other method to be identified by Town Responsible Party which would replace methods a, b, or c.

During the cleanup, a sampling of waste will be conducted using either the Hydro International Trash Study Methodology (modified to include the counting of cigarette butts collected), or the Keep America Beautiful methodology, or the Litterati App to document the quantity of material collected.

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 Plan 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
- 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.

The Town’s Code of Ordinances are referenced in this MCM and can be found here: [Welcome to Berwick, ME \(berwickmaine.org\)](http://berwickmaine.org)

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

Responsible Party: Code Enforcement Officer and Director of Community Development & Planning

Measurable Goal 3.1a – The Town implemented a Non-Stormwater Discharge Ordinance in May 2006. The Ordinance is contained in the Town’s Land Use Ordinance, Article VII Performance Standards General Requirements, Section 7.21. The Town’s Code Enforcement Officer enforces this ordinance in consultation with the Director of Community Development & Planning. This ordinance provides the Code Enforcement Officer with the authority to issue notices of violation, penalties and/or fines, and to enter into consent agreements. The Town will continue to enforce this ordinance throughout the permit cycle.

Measurable Goal 3.1b – The Town will document the results of enforcement actions taken for illicit discharges on an excel spreadsheet.

2.3.2 BMP 3.2 – Maintain the Written IDDE Plan

Responsible Party – Director of Community Development & Planning

Measurable Goal 3.2a - The Town prepared a written IDDE Plan in 2015 which has been updated to contain the elements required in the 2022 MS4 General Permit (Part IV.C.3.b.i through vi) except that the wet weather assessment element (Part IV.C.3.f) will be incorporated by 6/30/2027. The updated IDDE Plan is contained in Appendix E of this SWMP. The plan will be

reviewed annually and updated if 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 Plan by the end of Permit Year 5 (6/30/2027).

2.3.3 BMP 3.3 - Maintain Storm Sewer System Infrastructure Map

Responsible Party - Director of Community Development & Planning and Director of Water and Public Works

Measurable Goal 3.3a – The Town created a watershed-based map of the MS4 infrastructure and has been updating it throughout the three previous permit cycles (2003-2022). 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 map is updated annually as follows:

- The GIS geodatabase is updated to reflect changes to infrastructure based on inspections by Public Work Staff by June 30 each year,
- The GIS geodatabase is updated when as-built drawings become available for municipal infrastructure, and
- Paper maps are printed only on an as-needed basis.

2.3.4 BMP 3.4 – Conduct Infrastructure Inspections and Monitor Flowing Outfalls

Responsible Party – Director of Community Development & Planning and Director of Water and Public Works

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.
- Dry weather ditch inspections will be conducted whenever ditch maintenance work is anticipated
- Catch basins will be inspected for evidence of pollutants during their required sediment inspections (see BMP 6.4 for details).

The Town’s IDDE Plan (contained in Appendix E) describes the information collected electronically during infrastructure inspections. The Town documents the inspections electronically in the 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 Plan 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 reveals 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 Director of Water and Public Works will summarize either the monitoring results or the exempt status on the excel spreadsheet used for Measurable Goal 3.5a or in a GIS geodatabase. If the monitoring reveals the outfall has a potential illicit discharge, as described in the IDDE Plan, the outfall will be investigated as required under Measurable goal 3.5a.

2.3.5 BMP 3.5 – Conduct Investigations on suspect illicit discharges and flowing outfalls

Responsible Party – Director of Water and Public Works

Measurable Goal 3.5a – Whenever the Director of Water and Public Works becomes aware of a potential illicit discharge, they will investigate to identify the source using methods described in the written IDDE Plan (Appendix E). The Director of Water and Public Works will track the status and outcome of the investigations using an excel spreadsheet or the GIS database.

2.3.6 BMP 3.6 – Significant Contributors of Pollutants

Responsible Party - Director of Water and Public Works

Measurable Goal 3.6a - During the 2013-2022 Permit Cycle the Maine DEP identified that hydrant flushing was 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 departments and districts how to meet the requirements of the issue profile.

The Berwick Water Department prepares an annual summary describing their hydrant flushing dechlorination processes, and provides it to the Responsible Party for this Measurable Goal for documentation in the MS4 Annual Report.

Measurable Goal 3.6b – If any of the following allowed non-stormwater discharges (in addition to hydrant flushing) are identified as significant contributors of pollutants to the MS4, the Town will work with the responsible discharges to control these sources, so they are no longer

significant contributors of pollutants.

- 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
- firefighting activity runoff (hydrant flushing is addressed in MG 3.6a)
- water line flushing and discharges from potable water sources
- individual residential car washing
- dechlorinated swimming pool discharges

2.4 MCM 4 Construction Site Stormwater Runoff Control

The Town will update, implement and enforce its Construction Runoff Control Program for construction activities that disturb greater than or equal to one acre of land including projects less than one acre that are part of a larger common plan of development or sale as required by the 2022 MS4 General Permit through implementation of BMPs as described in this section. Because the Town has regulatory mechanisms that already meet most of the requirements of this MCM, each BMP provides a short background section describing the related ordinances and/or regulations.

The Town's Code of Ordinances are referenced in this MCM and can be found here: [Welcome to Berwick, ME \(berwickmaine.org\)](http://berwickmaine.org)

Thresholds for Review: The Town's Site Plan Review process (documented in the Land Use Ordinance Article 9.8) is applicable under a number of conditions including any construction which will result in 1,500 square feet or 25% of existing floor space (whichever is less), an increase in 2,500 square feet or more of impervious surface, the construction or addition of 3,000 square feet or more of gross non-residential floor area, all multi-family dwellings, and several other conditions identified in the Land Use Ordinance.

Generally, the Subdivision Regulations also require a Soil Erosion Plan to be prepared and submitted for site plan review as well as the Campground and Tenting Grounds Article (8.1, Cluster Developments (Article 8.8), and Mineral Industry (Article 8.10) .

Generally, these thresholds for Site Plan review by Planning Board include all projects that disturb greater than or equal to one acre of land, even though this threshold is not explicitly listed in the land use ordinance.

Performance Standards Referenced: The Town's Site Plan Review Process (Land Use Ordinance Article 9.8) contains a requirement for construction sites to submit an erosion and sedimentation control plan to Planning Board for review as part of their Site Plan submittal. Performance Standards for the plan are contained in the Land Use Ordinance Article 7.15, which references the Maine DEP's Erosion and Sediment Control BMPs manual dated 2003.

Appendix A to the Subdivision Regulations contains technical standards for this Erosion and Sediment Control Plan

2.4.1 BMP 4.1 – Update Requirements for Erosion Sediment Control

Responsible Party - Director of Community Development & Planning

Measurable Goal 4.1a – The Town will create redline strikeout updates of the Land Use Ordinance (Articles 9.8 Site Plan Review, 7.15 Erosion and Sediment Control Performance, any

portions of Article 8 that require soil erosion plans), and the Subdivision Regulations to reference that sediment and erosion control plans provided to the Planning Board 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).

In addition, the standards will include a requirement to control waste such as discarded building materials, concrete truck washouts, chemicals, litter and sanitary waste at the construction site that may cause adverse impacts to water quality if passed through the storm drain system.

The redline strikeout updates will be offered to the Berwick Planning Board in time for the Town Warrant vote in the November 2022 or May 2023 election. The MS4 General Permit states the ordinance changes are required to be completed by 7/1/2023.

Measurable Goal 4.1b – If needed to simplify the redline strikeout documents, the Town will develop either on its own, or regionally, a set of standards consistent with the construction site requirements contained in 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 - Director of Community Development & Planning

Measurable Goal 4.2a – The Towns Site Plan review procedures (Land use Ordinance Article 9.8) incorporate consideration of potential water quality impacts, erosion control, waste storage, the ability for the public to comment on such reviews at publicly-noticed meetings, and procedures to consider information submitted by the public. Generally, the current thresholds for site plan review by Planning Board (Article 9.8) capture all projects that disturb greater than or equal to one acre of land, even though this threshold is not explicitly listed in the Land Use Ordinance.

In tandem with Measurable Goal 4.1a, the Town will update the threshold for site plan review to identify explicitly that any site disturbing one or more acres of land will require Site Plan Approval. The redline strikeout updates will be offered to the Berwick Planning Board concurrent with the schedule for BMP 4.1.

2.4.3 BMP 4.3 – Procedures for notifying construction site developers and operators

Responsible Party - Director of Community Development & Planning 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:

- Providing notices in the Planning Department and Code Enforcement Department documents
- Requiring check box on building permit for sites that disturb one or more acres of land, and
- In general discussions with applicants.
- Through continued reference to Chapter 500 Stormwater Management for all development sites in Land Use Zoning Article 7.17 Storm Water Management Performance Standards.

2.4.4 BMP 4.4 –Conduct and Document Construction Site Inspections

Responsible Party – Director of Community Development and Planning and Code Enforcement Officer

Measurable Goal 4.4a – The Town will continue implementing its procedure for construction site inspections which will be formalized in a written document by 7/1/2022. The written procedure will:

- Identify that a preconstruction meeting will be held, and that discussion of inspections for sediment and erosion control will be conducted during construction by either a third-party contractor or a Town Code Enforcement Officer.
- Identify that the inspector will review any inspection deficiencies with the contractor during or at the conclusion of the inspection to allow for BMP repairs to be done no later than the next workday, additional BMPs to be added within 7 calendar days, and significant repairs to be completed within 7 calendar days and prior to any storm event (rainfall) and
 - Any third-party inspection reports are provided to the Director of Community Development and Planning within 3 days of the inspection for any sites that require corrective measures, and within one week for any sites that do not require corrective measures.
- 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, and
- Include use of the construction inspection form (or a similar form) provided in Appendix F of this SWMP.

Measurable Goal 4.4b. The Town will document construction sites that trigger the ordinance

using an excel spreadsheet each year. The spreadsheet will contain the site's name, map and lot number, dates 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 as described in this section.

The Town's Code of Ordinances are referenced in this MCM and can be found here [Welcome to Berwick, ME \(berwickmaine.org\)](http://berwickmaine.org)

2.5.1 BMP 5.1 – Implement strategies to prevent or minimize water quality impacts

Responsible Party - Director of Community Development and Planning and Director of Water and Public Works

Measurable Goal 5.1a –The Town, either on its own or in partnership with other MS4s, will develop a Model LID Ordinance for stormwater management on new and redevelopment sites which establishes performance standards for each of the LID Measures listed in Table 1 of Appendix F of the 2022 MS4 General Permit.

The Model LID Ordinance will be submitted to the Maine DEP for review by September 1, 2022. The 2022 MS4 General Permit identified that the Maine DEP will post the Model LID Ordinance for public comment and will approve it, with or without modifications by November 1, 2022.

Measurable Goal 5.1b – Assuming the Model LID Ordinance and its required elements are approved by November 1, 2022, the Town will either adopt the Model LID Ordinance, or incorporate its required elements into the Town Ordinances on or before July 1, 2024.

2.5.2 BMP 5.2 – Maintain Post Construction Ordinance or Similar Measure

Responsible Party - Director of Community Development and Planning and Director of Water and Public Works

Measurable Goal 5.2a – On 5/12/2009, the Town enacted Land Use Ordinance Article VII Performance Standards - General Requirement 7.23 Post-Construction Stormwater Management Article which requires that any site that disturbs one or more acres of land certify to the town annually by July 1 that they have inspected and maintained their stormwater BMPS. The town will continue to use an excel spreadsheet to track:

- The cumulative number of sites that have post construction BMPs discharging into the permittee' s MS4;

- The number of sites that have post construction BMPs discharging into the permittee's MS4 that were reported to the municipality;
- The number of sites with documented functioning post construction BMPs; and
- The number of sites that required routine maintenance or remedial action to ensure that the post construction BMP is functioning as intended.

Measurable Goal 5.2b – By 7/1/2023, the Town's Post Construction Stormwater Management Article (Section 7.22) will be updated to state that for any 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 that same 60-day period.
- If it is not possible to correct the deficiency and notify the Town within 60 days, the property owner will coordinate with the Director of Water and Public Works to establish an expeditious schedule to correct the deficiency and will provide a record of the corrective actions taken.

In conjunction with this ordinance change, the definition of Urbanized Area will also be updated in the Land Use Ordinance to reflect the area covered by the 2022 MS4 General Permit.

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 combined 2000 and 2010 Urbanized Areas through implementation of the following BMPs.

2.6.1 BMP 6.1 – Operations at Municipally Owned Grounds and Facilities

Responsible Party – Director of Water and Public Works

Measurable Goal 6.1a – During the previous MS4 permit cycle, the Town developed an inventory of municipal operations conducted in, on, or associated with facilities, buildings, golf courses, cemeteries, or 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 the previous MS4 permit cycle, 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 – Director of Water and Public Works, Fire Chief and Police Chief

Measurable Goal 6.2a – The Town will conduct annual training as follows:

- a. train the Public Works employees who work in areas where industrial materials or activities are exposed to stormwater at the Public Works Garage, or who are responsible for implementing activities necessary to implement the Stormwater Pollution Prevention Plan for the Public Works Garage (e.g., inspectors, maintenance personnel, and the pollution prevention team identified in the SWPPP)
- b. train at least 80% of the Public Works, Police and Fire personnel who may impact stormwater at the sites on the O&M Procedures Inventory.

Training will either be in person, via remote learning (such as Teams or Zoom), or via requirements to read and acknowledge the Stormwater O&M Procedures.

2.6.3 BMP 6.3 – Continue Street Sweeping Program

Responsible Party – Director of Water and Public Works

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 soon after snowmelt. The Town keeps a sweeping log of roads in Town and what date they were swept as documentation.

2.6.4 BMP 6.4 – Cleaning of Catch Basins

Responsible Party – Director of Water and Public Works

Measurable Goal 6.4a – The Town will inspect its catch basins for sediment content at least once every two years, and will clean catch basins that accumulate more than three inches of sediment.

Measurable Goal 6.4b – The Town will track which catch basins accumulate excess sediment (i.e., 50% or more of the sump contains sediment) to ensure those basins are inspected again the following year and cleaned if necessary. If a catch basin exhibits less than 25% sediment in its sump for two consecutive years, it is removed from the excess sediment list, and can be inspected again every two years.

Measurable Goal 6.4c – The Town will continue to beneficially re-use any catch basin grit that does not exhibit evidence of sewage, oil/grease, litter, or other pollutants in accordance with Maine DEP Solid Waste Management Rule 418 Beneficial Use of Solid Waste. Grit that exhibits evidence of pollutants will be profiled to assess its waste classification and disposed of at an appropriately licensed solid waste facility.

2.6.5 BMP 6.5 – Maintenance and Upgrading of Storm water Conveyances and Outfalls

Responsible Party – Director of Water and Public Works

Measurable Goal 6.5a – The Town will maintain and upgrade the stormwater conveyance systems based on the results of the catch basin, outfall, and ditch inspections, 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 capital plan, and the road paving program for the town.

2.6.6 BMP 6.6 – Stormwater Pollution Prevention Plans (SWPPPs)

Responsible Party – Director of Water and Public Works

Measurable Goal 6.6a – During the last Permit Cycle, the Town prepared one SWPPP for the Public Works Garage. The Town does not have any other public works facilities, transfer stations, or school bus maintenance facilities in the Urbanized Area and therefore does not need to maintain any other SWPPPs.

The Town will amend its SWPPP to comply with the requirements specified in Part IV.C.6.d by 6/30/2022. In addition, the Town will amend its the SWPPP within 30 calendar days of completion of any of the following:

- A change in design, construction, operation or maintenance that may have a significant effect on the discharge or potential for discharge of pollutants including the addition or reduction of industrial activity,
- Monitoring, inspections, or investigations by the Town, local, state or federal officials which determine the SWPPP is ineffective in eliminating or significantly minimizing the intended pollutants,
- A discharge occurs that is determined by the Maine DEP to cause or have the reasonable potential to cause or contribute to the violation of an applicable water quality standard.

Measurable Goal 6.6b - The Town will implement the plan throughout each Permit Year including conducting quarterly facility inspections using the Town's own form and visual monitoring using forms containing the inspection criteria identified in Appendix E of the 2022 MS4 General Permit.

2.7 Impaired Waters BMPs

As shown in Table 1, of Section 1.4 of this Plan, the Town does not discharge to any Urban Impaired Stream, and the Maine DEP confirmed that no additional actions need to be taken for any other impaired water as part of this Plan. Therefore, no BMPs or Measurable Goals are required to be implemented under this section.

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: _____

Name: James Bellissimo

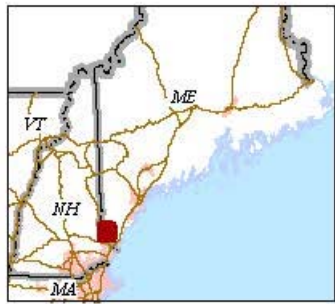
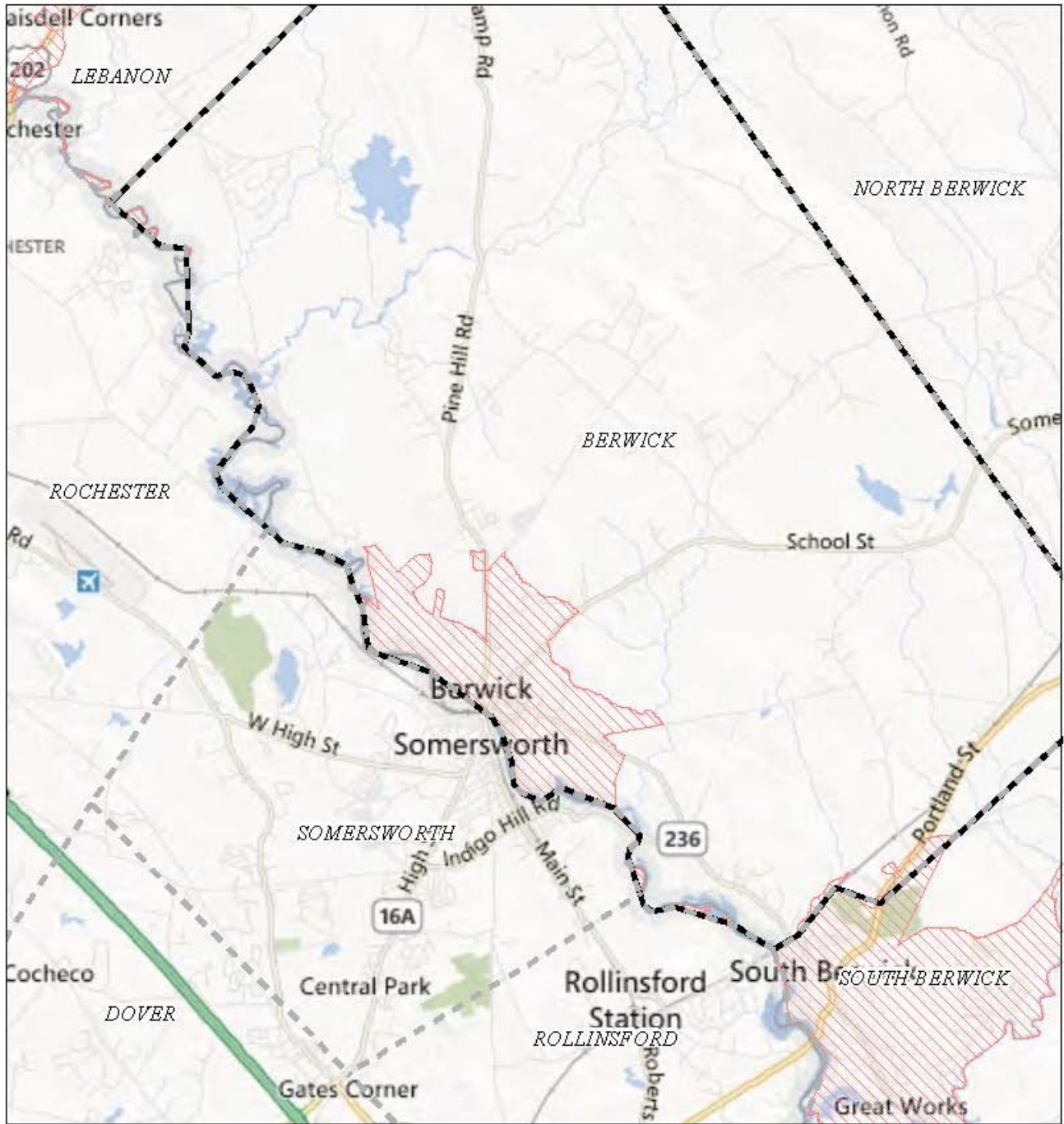
Date: _____

6/13/22

Title: Town Manager

APPENDIX A

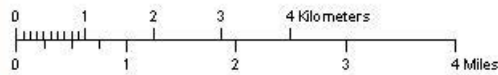
URBANIZED AREA MAP



**NPDES Phase II Stormwater Program
Automatically Designated MS4 Areas**

Berwick ME

 Regulated Area (2000 + 2010 Urbanized Area)



Town Population: **7146**
Regulated Population: **2430**
(Populations estimated from 2010 Census)



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

US EPA Region 1 GIS Center Map #8824, 11/19/2012

APPENDIX B

NOTICE OF INTENT and PERMITTEE SPECIFIC DEP ORDER



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	Town of Berwick, Maine			Permittee ID #	MER41003
Name and title of chief elected official or principal executive officer	Stephen G. Eldridge, MPA, Town Manager				
Mailing Address	11 Sullivan Street				
Town/City	Berwick	State	ME	Zip Code	03901
Daytime Phone	207-698-1101	Email	townmanager@berwickmaine.org		
PRIMARY CONTACT PERSON FOR OVERALL STORMWATER MANAGEMENT PROGRAM (if different than PEO/GEO)					
Name and Title	James Bellissimo, Director of Community Development and Planning				
Mailing Address	11 Sullivan Street				
Town/City	Berwick	State	ME	Zip Code	03901
Daytime Phone	207-698-1101	Email	jbellissimo@berwickmaine.org		
STORMWATER MANAGEMENT PLAN (SWMP)					
Urbanized Area (sq. mi.)	2.1				
I have attached our updated SWMP with ordinances, SOPs, forms. <input checked="" type="checkbox"/>					
Name of streams, wetlands, or waterbodies to which the regulated small MS4 discharges (<i>attach additional sheets as necessary</i>):					
Salmon Falls River and tributaries including Ferguson Brook and Worcester Brook					
List of impaired waterbodies that receive stormwater from the regulated small MS4 (<i>attach additional sheets as necessary</i>):					
Salmon Falls River					
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				Date	2/23/2021

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

OFFICE USE ONLY					
Date Received		Staff		Date Accepted	
				Date Not Accepted	



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION



JANET T. MILLS
GOVERNOR

MELANIE LOYZIM
COMMISSIONER

May 18, 2022

Mr. James Bellissimo
Town Manager
11 Sullivan Street
Berwick, Maine 03901
e-mail: townmanager@berwickmaine.org

**RE: Municipal Separate Storm Sewer System (MS4) General Permit #MER041000
Final - MER041003**

Dear Mr. Bellissimo:

Enclosed please find a copy of your **final** MEPDES permit and Maine WDL which was approved by the Department of Environmental Protection. Please read this permit/license and its attached conditions carefully. Compliance with this permit/license will protect water quality.

Any interested person aggrieved by a Department determination made pursuant to applicable regulations, may appeal the decision following the procedures described in the attached DEP FACT SHEET entitled "*Appealing a Commissioner's Licensing Decision.*"

If you have any questions regarding the matter, please feel free to call me at 287-7693. Your Department compliance inspector copied below is also a resource that can assist you with compliance. Please do not hesitate to contact them with any questions.

Thank you for your efforts to protect and improve the waters of the great state of Maine!

Sincerely,

Gregg Wood
Division of Water Quality Management
Bureau of Water Quality

Enc.

cc: Alison Moody, DEP/SMRO Lori Mitchell, DEP/CMRO Holliday Keen, DEP/CMRO
Irene Saumur, DEP/CMRO Damien Houlihan, USEPA Nathan Chien, USEPA
Richard Carvalho, USEPA Newton Tedder, USEPA

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826

BANGOR
106 HOGAN ROAD, SUITE 6
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769
(207) 764-0477 FAX: (207) 760-3143



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION
AUGUSTA, ME 04333

**DEPARTMENT ORDER
IN THE MATTER OF**

TOWN OF BERWICK)	MUNICIPAL SEPARATE STORM
BERWICK, YORK COUNTY, MAINE)	SEWER SYSTEM
MER041003)	MER041000
)	GENERAL PERMIT COVERAGE
APPROVAL)	RENEWAL

The Department of Environmental Protection (Department/DEP) has considered the Notice of Intent submitted by the TOWN OF BERWICK (Town/permittee), with supportive data, agency review comments and other related materials on file for coverage under the Municipal Separate Storm Sewer System (MS4) General Permit, #MER041000, issued by the Department on October 15, 2020 and revised on November 23, 2021, and FINDS THE FOLLOWING FACTS.

The permittee submitted a Notice of Intent (NOI) with an initial Stormwater Management Plan (SWMP) to the Department on March 30, 2021 that were made available for a 30-day public comment period on the Department's website at <https://www.maine.gov/dep/comment/comment.html?id=4463193>. No public comments were received on the NOI or the initial SWMP. The Department has reviewed the initial SWMP document and made the determination that the document is consistent with and fully articulates what is required to meet the MS4 GP standard. Pursuant to Part IV(B) of MS4 GP issued by the Department on October 15, 2020 and revised on November 23, 2021, the permittee must update the initial SWMP within 60 days of the effective date of this DEP permittee specific order or within 60 days of the final resolution to an appeal of this DEP permittee specific order. The final plan must be submitted to the Department and will be posted on the Department's website.

The permittee must fully implement the following Best Management Practices in accordance with their associated schedules of compliance, as established in the Modified Stormwater Management Plan that is in effect at the time any schedule for compliance is due.

MCM 1 Education/Outreach Program: BMPs 1.1, 1.2, 1.3; and 1.4;
MCM 2 Public Involvement and Participation: BMP 2.1 and 2.2;
MCM 3 Illicit Discharge Detection and Elimination: BMPs 3.1, 3.2, 3.3, 3.4, 3.5, and 3.6;
MCM 4 Construction Site Stormwater Runoff Control: BMPs 4.1, 4.2, 4.3, and 4.4;
MCM 5 Post-Construction Stormwater Management in New Development/Redevelopment: 5.1, and 5.2;
MCM 6 Pollution Prevention and Good Housekeeping for Municipal Operations: BMPs 6.1, 6.2, 6.3, 6.4, 6.5, and 6.6.

Modifications to the Initial Stormwater Management Plan required as a result of this Order, if any, must be provided to the Department in accordance with Part IV.B of the MS4 GP, and the Department will notify the permittee if further changes are required in accordance with Part IV.B.2.


The permittee has agreed to comply with all terms and conditions of the Municipal Separate Storm Sewer System (MS4) General Permit, #MER041000, dated October 15, 2020 and revised on November 23, 2021. Operated in accordance with the Municipal Separate Storm Sewer System (MS4) General Permit, #MER041000, the discharges identified by the permittee will not have a significant adverse effect on water quality or cause or contribute to the violation of the water quality standards of the receiving water.

THEREFORE, the Department GRANTS the TOWN OF BERWICK, coverage under the Municipal Separate Storm Sewer System (MS4) General Permit, #MER041000, issued by the Department on October 15, 2020 and revised on November 23, 2021, subject to the terms and conditions therein.

This DEP permittee specific order becomes effective on July 1, 2022 and expires at midnight five (5) years after that date. If the GP is to be renewed, this DEP permittee specific order will remain in effect and enforceable until the Department takes final action on the renewal.

DONE AND DATED AT AUGUSTA, MAINE, THIS 18 DAY OF May, 2022.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: 
_____ *for* Melanie Loyzim, Commissioner

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

The Notice of Intent was received by the Department on March 30, 2021.

The Notice of Intent was accepted by the Department on April 2, 2021.

FILED
MAY 18, 2022
State of Maine
Board of Environmental Protection

Date filed with Board of Environmental Protection: _____

This Order prepared by GREGG WOOD, BUREAU OF WATER QUALITY

RESPONSE TO COMMENTS

During the period of March 16, 2022 through the date of signature of this final agency action, the Department solicited comments on the draft MEPDES DEP permittee specific order. The Department did receive timely written comments from the permittee. Responses to substantive comments are as follows:

Comment #1: The language in the draft order (italicized below) is potentially vague, which may lead to confusion about what steps are required for compliance.

“The permittee must fully implement all actions, schedules and milestones established in the March 31, 2021 initial SWMP and any revisions to the initial SWMP reflected in the final plan.”

Specifically, the permittee is concerned that in the SWMPs it may not always be clear what qualifies as mandatory “actions, schedules and milestones” and what does not. This is because the SWMPs were written broadly to, in addition to setting out specific and measurable actions, provide helpful context, educate officials and citizens about the Plan, and establish process, among other things. There is, therefore, significant text in the SWMPs that does not appear to be an action, schedule, or milestone, and thus would not be enforceable. The permittee is concerned that it will not always be clear exactly what is mandatory and what is not. Additionally, the permittee believes that the language about enforcing any additional revisions to the SWMP also may be somewhat unclear, given that SWMPs are living documents that are expected under the new MS4 general permit to evolve over time.

Response #1: The Department concurs with the permittee’s position on the purpose and enforceability of the SWMP as a stand-alone document. Part VI(E), *Relationship Between the SWMP and Permit Required Terms and Conditions* of the December 9, 2016 Federal Register states in relevant part “...under EPA small MS4 regulations, the details included the permittee’s SWMP document are not directly enforceable as effluent limitations of the permit. The SWMP document is intended to be a tool that describes the means by which the MS4 establishes its stormwater controls and engages in the adaptive management process during the term of the permit. While the requirement to develop a SWMP document is an enforceable condition of the permit (see §122.34(b) of the final rule) the contents of the stormwater management document itself are not enforceable as effluent limitations of the permit, unless the document or specific details within the SWMP are specifically incorporated by the permitting authority into the permit.”

Part VI(E), also states in relevant part “... the details of any part of the permittee's program that are described in the SWMP, unless specifically incorporated into the permit, are not enforceable under the permit, and because they are not terms of the permit, the MS4 may revise those parts of the SWMP if necessary to meet any permit requirements or to make improvements to stormwater controls during the permit term. As discussed in more detail below, the permitting authority has discretion to determine what elements, if any, of the SWMP are to be made enforceable, but in order to do so it must follow the procedural requirements for the second step under Sec. 122.28(d)(2).

The regulations envision that the MS4 permittee will develop a written SWMP document that provides a road map for how the permittee will comply with the permit. The SWMP document(s) can be changed based on adaptations made during the course of the permit, which enable the permittee to react to circumstances and experiences on the ground and to make adjustments to its program to better comply with the permit. The fact that the SWMP is an external tool and not required to be part of the permit is intended to enable the MS4 permittee to be able to modify and retool its approach during the course of the permit term in order to continually improve how it complies with the permit and to do this without requiring the permitting authority to review and approve each change as a permit modification.”

Comment #2: The General Permit does require that the SWMPs be updated and sent out for public comment annually and lays out a process for any other needed revisions. Multiple versions of the SWMPs should not be enforceable. The only version that should be enforceable is the version that is in force at the time a Best Management Practice or Measurable Goal is due. Accordingly, we recommend clarifying this provision to eliminate any potential confusion.

This will, in turn, promote compliance and lead to better water quality. To accomplish that, we note that our SWMPs have Best Management Practices (BMPs) with Measurable Goals and believe the second step order would be more clear if it references that we will fully implement those BMPs. This approach is consistent with Part III.A.8 of the GP which provides: “Following the public comment period on the NOI, the Department will issue a permittee specific DEP Order that establishes additional terms and conditions, including but not limited to, a list of required actions and corresponding schedules of compliance for a limited number BMPs associated with the implementation of this GP.” Thus, we suggest the following italicized text be incorporated into the final Order:

The permittee must fully implement the following Best Management Practices in accordance with their associated schedules of compliance, as established in the Modified Stormwater Management Plan that is in effect at the time any schedule for compliance is due:

MCM 1 Education/Outreach Program: BMPs 1.1, 1.2, 1.3; and 1.4;

MCM 2 Public Involvement and Participation: BMP 2.1 and 2.2;

MCM 3 Illicit Discharge Detection and Elimination: BMPs 3.1, 3.2, 3.3, 3.4, 3.5, and 3.6;

MCM 4 Construction Site Stormwater Runoff Control: BMPs 4.1, 4.2, 4.3, and 4.4;

MCM 5 Post-Construction Stormwater Management in New Development/Redevelopment: 5.1, and 5.2;

MCM 6 Pollution Prevention and Good Housekeeping for Municipal Operations: BMPs 6.1, 6.2, 6.3, 6.4, 6.5, and 6.6.

Modifications to the Initial Stormwater Management Plan required as a result of this Order, if any, must be provided to the Department in accordance with Part IV.B of the MS4 GP, and the Department will notify the permittee if further changes are required in accordance with Part IV.B.2.

Response #2: The revisions cited above are acceptable to the Department and are consistent with Remand Rule in that “the permitting authority has discretion to determine what elements, if any, of the SWMP are to be made enforceable, but in order to do so it must follow the procedural requirements for the second step under Sec. 122.28(d)(2).”

Part IV.B of the GP states in relevant part “Modified Stormwater Management Plan (SWMP). The permittee must implement and enforce a written (hardcopy or electronic) SWMP. The initial SWMP must be updated within 60 days of permit authorization to include how the permittee will meet all requirements of the DEP Order. The modified SWMP must include a summary of the comments received during the MS4s public comment period and any corresponding changes to the SWMP made in response to the comments received. The permittee must perform all actions required by the permittee specific DEP Order in accordance with the timelines in the permittee specific DEP Order. Unless otherwise specified by the Department in writing, the permittee must submit the updated SWMP to the Department indicating how the permittee has modified their SWMP to be consistent with the GP and permittee specific DEP Order. To modify the schedule established in the permittee specific DEP Order, the permittee must file an application on a DEP form with the Department that includes a justification to formally modify the original permittee specific DEP Order.”

The final DEP permittee specific order has been modified accordingly.



DEP INFORMATION SHEET

Appealing a Department Licensing Decision

Dated: August 2021

Contact: (207) 314-1458

SUMMARY

This document provides information regarding a person's rights and obligations in filing an administrative or judicial appeal of a licensing decision made by the Department of Environmental Protection's (DEP) Commissioner.

Except as provided below, there are two methods available to an aggrieved person seeking to appeal a licensing decision made by the DEP Commissioner: (1) an administrative process before the Board of Environmental Protection (Board); or (2) a judicial process before Maine's Superior Court. An aggrieved person seeking review of a licensing decision over which the Board had original jurisdiction may seek judicial review in Maine's Superior Court.

A judicial appeal of final action by the Commissioner or the Board regarding an application for an expedited wind energy development ([35-A M.R.S. § 3451\(4\)](#)) or a general permit for an offshore wind energy demonstration project ([38 M.R.S. § 480-HH\(1\)](#)) or a general permit for a tidal energy demonstration project ([38 M.R.S. § 636-A](#)) must be taken to the Supreme Judicial Court sitting as the Law Court.

I. ADMINISTRATIVE APPEALS TO THE BOARD

LEGAL REFERENCES

A person filing an appeal with the Board should review Organization and Powers, [38 M.R.S. §§ 341-D\(4\)](#) and [346](#); the Maine Administrative Procedure Act, 5 M.R.S. § [11001](#); and the DEP's [Rule Concerning the Processing of Applications and Other Administrative Matters \(Chapter 2\)](#), [06-096 C.M.R. ch. 2](#).

DEADLINE TO SUBMIT AN APPEAL TO THE BOARD

Not more than 30 days following the filing of a license decision by the Commissioner with the Board, an aggrieved person may appeal to the Board for review of the Commissioner's decision. The filing of an appeal with the Board, in care of the Board Clerk, is complete when the Board receives the submission by the close of business on the due date (5:00 p.m. on the 30th calendar day from which the Commissioner's decision was filed with the Board, as determined by the received time stamp on the document or electronic mail). Appeals filed after 5:00 p.m. on the 30th calendar day from which the Commissioner's decision was filed with the Board will be dismissed as untimely, absent a showing of good cause.

HOW TO SUBMIT AN APPEAL TO THE BOARD

An appeal to the Board may be submitted via postal mail or electronic mail and must contain all signatures and required appeal contents. An electronic filing must contain the scanned original signature of the appellant(s). The appeal documents must be sent to the following address.

Chair, Board of Environmental Protection
c/o Board Clerk
17 State House Station
Augusta, ME 04333-0017
ruth.a.burke@maine.gov

The DEP may also request the submittal of the original signed paper appeal documents when the appeal is filed electronically. The risk of material not being received in a timely manner is on the sender, regardless of the method used.

At the time an appeal is filed with the Board, the appellant must send a copy of the appeal to: (1) the Commissioner of the DEP (Maine Department of Environmental Protection, 17 State House Station, Augusta, Maine 04333-0017); (2) the licensee; and if a hearing was held on the application, (3) any intervenors in that hearing proceeding. **Please contact the DEP at 207-287-7688 with questions or for contact information regarding a specific licensing decision.**

REQUIRED APPEAL CONTENTS

A complete appeal must contain the following information at the time the appeal is submitted.

1. *Aggrieved status.* The appeal must explain how the appellant has standing to bring the appeal. This requires an explanation of how the appellant may suffer a particularized injury as a result of the Commissioner's decision.
2. *The findings, conclusions, or conditions objected to or believed to be in error.* The appeal must identify the specific findings of fact, conclusions of law, license conditions, or other aspects of the written license decision or of the license review process that the appellant objects to or believes to be in error.
3. *The basis of the objections or challenge.* For the objections identified in Item #2, the appeal must state why the appellant believes that the license decision is incorrect and should be modified or reversed. If possible, the appeal should cite specific evidence in the record or specific licensing criteria that the appellant believes were not properly considered or fully addressed.
4. *The remedy sought.* This can range from reversal of the Commissioner's decision on the license to changes in specific license conditions.
5. *All the matters to be contested.* The Board will limit its consideration to those matters specifically raised in the written notice of appeal.
6. *Request for hearing.* If the appellant wishes the Board to hold a public hearing on the appeal, a request for hearing must be filed as part of the notice of appeal, and it must include an offer of proof regarding the testimony and other evidence that would be presented at the hearing. The offer of proof must consist of a statement of the substance of the evidence, its relevance to the issues on appeal, and whether any witnesses would testify. The Board will hear the arguments in favor of and in opposition to a hearing on the appeal and the presentations on the merits of an appeal at a regularly scheduled meeting. If the Board decides to hold a public hearing on an appeal, that hearing will then be scheduled for a later date.
7. *New or additional evidence to be offered.* If an appellant wants to provide evidence not previously provided to DEP staff during the DEP's review of the application, the request and the proposed supplemental evidence must be submitted with the appeal. The Board may allow new or additional evidence to be considered in an appeal only under limited circumstances. The proposed supplemental evidence must be relevant and material, and (a) the person seeking to add information to the record must show due diligence in bringing the evidence to the DEP's attention at the earliest possible time in the licensing process; or (b) the evidence itself must be newly discovered and therefore unable to have been presented earlier in the process. Requirements for supplemental evidence are set forth in [Chapter 2 § 24](#).

OTHER CONSIDERATIONS IN APPEALING A DECISION TO THE BOARD

1. *Be familiar with all relevant material in the DEP record.* A license application file is public information, subject to any applicable statutory exceptions, and is made accessible by the DEP. Upon request, the DEP will make application materials available to review and photocopy during normal working hours. There may be a charge for copies or copying services.

2. *Be familiar with the regulations and laws under which the application was processed, and the procedural rules governing the appeal.* DEP staff will provide this information upon request and answer general questions regarding the appeal process.
3. *The filing of an appeal does not operate as a stay to any decision.* If a license has been granted and it has been appealed, the license normally remains in effect pending the processing of the appeal. Unless a stay of the decision is requested and granted, a licensee may proceed with a project pending the outcome of an appeal, but the licensee runs the risk of the decision being reversed or modified as a result of the appeal.

WHAT TO EXPECT ONCE YOU FILE A TIMELY APPEAL WITH THE BOARD

The Board will acknowledge receipt of an appeal, and it will provide the name of the DEP project manager assigned to the specific appeal. The notice of appeal, any materials admitted by the Board as supplementary evidence, any materials admitted in response to the appeal, relevant excerpts from the DEP's administrative record for the application, and the DEP staff's recommendation, in the form of a proposed Board Order, will be provided to Board members. The appellant, the licensee, and parties of record are notified in advance of the date set for the Board's consideration of an appeal or request for a hearing. The appellant and the licensee will have an opportunity to address the Board at the Board meeting. The Board will decide whether to hold a hearing on appeal when one is requested before deciding the merits of the appeal. The Board's decision on appeal may be to affirm all or part, affirm with conditions, order a hearing to be held as expeditiously as possible, reverse all or part of the decision of the Commissioner, or remand the matter to the Commissioner for further proceedings. The Board will notify the appellant, the licensee, and parties of record of its decision on appeal.

II. JUDICIAL APPEALS

Maine law generally allows aggrieved persons to appeal final Commissioner or Board licensing decisions to Maine's Superior Court (see [38 M.R.S. § 346\(1\)](#); 06-096 C.M.R. ch. 2; [5 M.R.S. § 11001](#); and M.R. Civ. P. 80C). A party's appeal must be filed with the Superior Court within 30 days of receipt of notice of the Board's or the Commissioner's decision. For any other person, an appeal must be filed within 40 days of the date the decision was rendered. An appeal to court of a license decision regarding an expedited wind energy development, a general permit for an offshore wind energy demonstration project, or a general permit for a tidal energy demonstration project may only be taken directly to the Maine Supreme Judicial Court. See 38 M.R.S. § 346(4).

Maine's Administrative Procedure Act, DEP statutes governing a particular matter, and the Maine Rules of Civil Procedure must be consulted for the substantive and procedural details applicable to judicial appeals.

ADDITIONAL INFORMATION

If you have questions or need additional information on the appeal process, for administrative appeals contact the Board Clerk at 207-287-2811 or the Board Executive Analyst at 207-314-1458 bill.hinkel@maine.gov, or for judicial appeals contact the court clerk's office in which the appeal will be filed.

Note: This information sheet, in conjunction with a review of the statutory and regulatory provisions referred to herein, is provided to help a person to understand their rights and obligations in filing an administrative or judicial appeal. The DEP provides this information sheet for general guidance only; it is not intended for use as a legal reference. Maine law governs an appellant's rights.

APPENDIX C

SUMMARY OF PUBLIC COMMENTS RECEIVED

The public comment period for the Initial SWMP (offered by Maine DEP) lasted from 4/13/2021 to 5/12/2021. No public comments were received.



[Municipal applications for permit coverage under the 2022 General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems \(MS4\).](#)

04/12/2021 12:08 PM EDT

The Department is posting for public comment Municipal applications, including Notice of Intent to Comply (NOI) and Stormwater Management Plans (SWMP), for municipalities seeking coverage under the 2022 General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4).

Submit written comments to Rhonda Poirier rhonda.poirier@maine.gov by 5:00 p.m. May 12, 2021.

[Municipal NOI and SWMP files for comment.](#)

A request for public hearing 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 permittee specific DEP Orders were issued for public comment in November 2021 on the Maine DEP website. Comments received were as follows (attachments not included, but available from DEP):

From: Ivy Frignoca <ifrignoca@cascobay.org>
Sent: Monday, December 20, 2021 10:51 AM
To: Wood, Gregg <Gregg.Wood@maine.gov>
Subject: Friends of Casco Bay Comment on second step orders

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.

Dear Gregg,

I just reviewed the proposed second step orders for the municipalities that discharge into the Casco Bay watershed, including Yarmouth, Cumberland, Falmouth and Gorham. None of these second step orders contain the necessary additional terms. It appears that all of the clear, specific and measurable terms necessary to carry forth the requirements in the first step general permit remain in the stormwater management plans (SWMPs) or are completely missing. The SWMPs are not enforceable. Without additional terms being incorporated into the second step permits (as is required by the general permit and the Remand Rule which has been codified into the code of federal regulations), these second step permits are wholly illegal.

Friends of Casco Bay respectfully requests that you rewrite the second step permits to incorporate the required terms contemplated by the MS4 permit (scheduled to take effect in July 2022) and the Remand Rule. To reiterate, without this action, the second step permits are inadequate and unlawful.

Ivy

Ivy L. Frignoca, Casco Baykeeper
Friends of Casco Bay
43 Slocum Drive
South Portland, ME 04106
Cell: (207) 831-3067
ifrignoca@cascobay.org

From: Tedder, Newton <Tedder.Newton@epa.gov>
Sent: Wednesday, December 01, 2021 10:52 AM
To: Wood, Gregg <Gregg.Wood@maine.gov>
Subject: RE: Second Step Permit

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.

Hi Gregg

You need to add a reference to all the other things that were required in the 2step. I provided an example of what needs to be included (on top of the additional things you added for impaired waters)

Sincerely,
Newton W. Tedder

P.S. Have a nice day

Based on comments received from the EPA and Friends of Casco Bay, the DEP issued the permittee specific DEP Orders again on 3/16/2022 to address their comments. The comments received and how they were addressed are attached to the Final Department Order contained in Appendix B of this SWMP.

APPENDIX D

EDUCATION AND OUTREACH TOOLS FOR AWARENESS

Appendix D: Education & Outreach Tools, Levels of Effort, and Effectiveness Benchmarks

Table 1 provides 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 for the Statewide Awareness Program.

Table 1. Tools for Measurable Goal 1.1a. (People 25 to 34 in the SMSWG region)

Outreach Tool	Minimum Level of Effort	Effectiveness Benchmark
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)
Outreach Tabling	3 events	Number of interactions
Outreach partnership with local organization	3 content shares by partner organization	Number of people reached
Other DEP-approved tools	Minimum level of effort will be determined based on the tool	Effectiveness benchmark will be determined based on the tool

APPENDIX E

IDDE PLAN AND QAPP

Illicit Discharge Detection and Elimination Program

For the

Town of Berwick, Maine

For the

General Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems

Last Updated June 2022



12 Farms Edge Road
Cape Elizabeth, Maine 04107
Ph: 207-415-5830

www.IntegratedEnv.com

Table of Contents

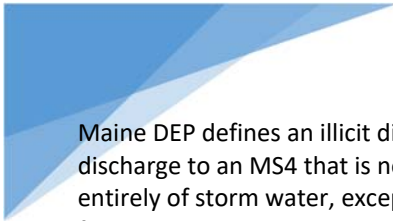
1.0	INTRODUCTION	1
1.1	IDDE Responsibilities in the Town	1
1.2	Amendments and updates to the IDDE Program.....	2
1.3	Typical Illicit Discharges	3
1.4	Overview of IDDE Program Components.....	4
2.0	STORMWATER INFRASTRUCTURE MAP.....	7
2.1	Infrastructure Naming Protocols	7
2.2	Procedures to Update Map of Infrastructure	7
3.0	AUTHORITY TO PROHIBIT ILLICIT DISCHARGES.....	8
4.0	IDENTIFICATION OF PRIORITY AREAS	11
5.0	PROCEDURES TO LOCATE POTENTIAL ILLICIT DISCHARGES	12
5.1	Catch Basin Cleaning Inspections	12
5.2	Citizen Reports of Illicit Discharges.....	13
5.3	Dry Weather Outfall Inspections	13
5.4	Outfall Sampling and Analysis.....	14
5.5	Ditch Inspections	15
5.6	Septic System Inspections	15
5.7	Interconnections and Coordination with Other Entities	16
6.0	PROCEDURES TO INVESTIGATE	16
7.0	PROCEDURES TO REMOVE ILLICIT DISCHARGES.....	17
8.0	PROCEDURES TO DOCUMENT ILLICIT DISCHARGES.....	18
9.0	NOTIFICATIONS DURING WORKING AND NON-WORKING HOURS.....	18
10.0	RECORDS RETENTION	19
11.0	REFERENCES	19

List of Attachments

- A. BERWICK WATERSHED MAP
- B. INSPECTION FIELDS AND DOMAINS IN GIS
- C. QUALITY ASSURANCE PROJECT PLAN
- D. COORDINATION LETTERS WITH INTERCONNECTED MS4S

1.0 INTRODUCTION

The Town of Berwick is subject to the requirements of the Maine Department of Environmental Protection (Maine DEP) General Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems (hereafter referred to as the MS4 General Permit).



Maine DEP defines an illicit discharge as any discharge to an MS4 that is not composed entirely of storm water, except that the following are not considered illicit discharges:

- Discharges authorized under a Maine DEP permit (38 M.R.S §413.)
- Uncontaminated groundwater,
- Water from a natural resource (such as a wetland), or
- an allowable non-storm water discharge.

See Section 3.0 of this Plan for a list of the allowed non-storm water discharges.

The MS4 General Permit requires permittees to address six Minimum Control Measures throughout the Town’s Urbanized Area:

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

This document describes the IDDE Program for the Town of Berwick, Maine. The IDDE Program described in this document fulfills the Minimum Control Measure 3 IDDE requirements specified in Part IV.C.3.b of the 2022 MS4 General Permit.

1.1 IDDE Responsibilities in the Town

The Town’s Director of Community Development and Planning is responsible for overall permit compliance, and for implementation of this IDDE Plan. The following other Town personnel support implementation of this Plan:

Director of Community Development and Planning: Responsible for overall permit compliance, conducts outfall inspections, and facilitates any required ordinance changes related to non-stormwater discharges through Planning Board.

Director of Water and Public Works: Responsible for assisting in illicit discharge investigations as needed.

Public Works staff: conduct ditch and catch basin inspections and monitoring, and conduct illicit discharge investigations, supported by third party contractors where necessary.

Code Enforcement Officer and Health Inspector: assists Public Works staff in illicit discharge investigations when needed (e.g., if plumbing inspections are needed).

1.2 Amendments and updates to the IDDE Program

The MS4 General Permits are designed to provide coverage for five-year periods. The first MS4 General Permit applicable to the Town of Berwick became effective in 2003 and expired in 2008. Subsequent General Permits were issued in 2008 and 2013, providing the Town with continuous coverage for their stormwater discharges. The 2013 MS4 General Permit was administratively continued until a new permit becomes effective 7/1/2022.

This IDDE Program has been developed to meet the requirements of the 2013 and 2022 General Permits. This Plan will be updated if any of the following occur:

- requirements change because a new permit is issued,
- the Town of Berwick identifies that the Program is not effective;
- municipal operations change which need to be reflected in this Program.

The Director of Water and Public Works will either modify this IDDE program, or engage a third party to update the document.

The following table briefly summarizes the origin and amendments to this document.

Date of Document	Description of changes
2014	Original development of IDDE Plan
March 2021	Updated content to reflect 2022 MS4 General Permit requirements.
June 2022	Updated content to removal of optional and other items not required by MS4 General Permit and to update contact information

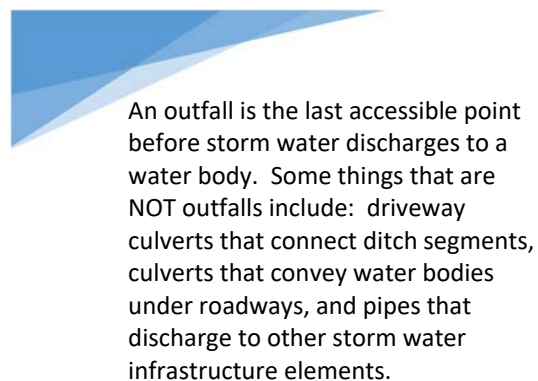
1.3 Typical Illicit Discharges

The Center for Watershed Protection (CWP) developed a comprehensive IDDE Manual in 2004, updated in 2011, which classifies illicit discharges into three categories related to frequency of discharge.

This categorization allows communities to develop a comprehensive IDDE program that will address all kinds of illicit discharges. The three categories of illicit discharges identified in the CWP manual are described below:

1. Transitory illicit discharges are typically one-time events resulting from spills, breaks, dumping, or accidents. Examples of transitory illicit discharges include:
 - a. paint equipment rinse water
 - b. carpet cleaning water
 - c. sediment from construction sites
 - d. wash water from vehicles other than individual residential car washing by an owner
 - e. oil or gasoline spill from a vehicle crash or other source
 - f. yard waste
 - g. litter or pet waste

Transitory illicit discharges are often reported to an authority through a citizen complaint line or following observation by a municipal employee during regular duties. Because they are not recurring, they are the most difficult to investigate, trace, and remove. The best method to reduce transitory discharges is through general public education, education of municipal



personnel to minimize spills and accidents, tracking of discharge locations (to identify potential patterns associated with spills), and enforcement of an illicit discharge ordinance.

2. Intermittent illicit discharges occur occasionally over a period of time (several hours per day, or a few days per year). Intermittent discharges can result from legal connections to the storm drain system, such as a legal sump pump connection that is illegally discharging washing machine water, a single home sanitary connection, or from illegal connections such as floor drains from industrial or commercial operations. Intermittent discharges can also result from activities such as excessive irrigation or wash down water from exterior areas. The 2022 General Permit requires that MS4s consider illicit discharges that might result from dumping. One example of this would be trash or litter dumped in/near stormwater structures might leak leachate into the system intermittently. Because intermittent discharges are longer lasting than transient, they are more likely to be discovered during an opportunistic or regularly scheduled inspection. They are less difficult to trace and remove than transitory discharges but can still present significant challenges. These discharges can have large or small impacts on water bodies depending on pollutant content.
3. Continuous illicit discharges are typically the result of a direct connection from a sanitary sewer, overflow from a malfunctioning septic system, or inflow from a nearby subsurface sanitary sewer that is malfunctioning. Continuous illicit discharges are usually easiest to trace and can have the greatest pollutant load but are typically the most costly and time consuming to correct because they likely involve construction and alteration of subsurface connections. (CWP and Robert Pitt 2004)



An outfall is the last accessible point before stormwater discharges to a waterbody. Some things that are NOT outfalls include: driveway culverts that connect ditch segments, culverts that convey water bodies under roadways, and pipes that discharge to other stormwater infrastructure elements.

1.4 Overview of IDDE Program Components

The MS4 General Permit requires an IDDE program be developed and implemented which contains six components. An overview of each component is provided in this subsection, and the remaining sections of this document describe how the Town of Berwick is implementing

each component.

- Development of a watershed-based map: The Town is required to develop a map of the storm sewer system infrastructure including: watersheds, catch basins, connecting surface and subsurface piping, outfalls, and ditches. The catch basins and outfalls must have unique identifiers. The following information must be included in the map system for outfalls: the type of outfall (a connected pipe, a culvert, or a ditch), the material, its size, the name and location of the nearest named water body to which it discharges. Section 2.0 of this document describes the Town's watershed-based map.
- Authority to Prohibit Illicit Discharges: To the extent allowable under state or local law, the Town must effectively prohibit, through an ordinance or other regulatory mechanism, non-storm water discharges into the system and implement appropriate enforcement procedures and actions. Section 3.0 of this document describes how the Town's Non-Stormwater Discharge Ordinance is implemented.
- Identification of High Priority Areas for Inspections: Prior MS4 General Permits required that the Town identify priority areas that need to be protected from illicit discharges. The 2022 MS4 General Permit does not have this requirement, but it does require that the Town have "Procedures for prioritizing watersheds". The Town uses the prioritization for illicit discharge inspections as described in Section 4.0 of this document, including a discussion of the basis for determining the high priority areas.
- Procedures to Locate Illicit Discharges: The Town must develop procedures for locating illicit discharges (i.e. visual screening of outfalls for dry weather discharges, dye or smoke testing). The Town addresses this by conducting dry weather outfall inspections and assessing catch basins for evidence of pollutants, and by conducting opportunistic ditch inspections. The 2022 MS4 General Permit also requires monitoring be conducted on outfalls that are flowing during dry weather. Section 5.0 of this document describes the Town's inspection program.
- Procedures to Investigate and Remove Illicit Discharges: The Town must develop procedures for locating the source of the discharge and procedures for the removal of the source. Sections 6.0 and 7.0 of this document describe how the Town investigates and removes illicit discharges.
- Procedures to Document Illicit Discharges: The Town must develop procedures for documenting actions and evaluating impacts on the storm sewer system

subsequent to the removal. Section 8.0 describes how the Town tracks illicit discharges.

- Emergency Notifications: Section 9.0 describes procedures for emergency notifications of illicit discharges outside of the hours when Public Works is open.

Section 10.0 of this document describes the record retention requirements of the MS4 General Permit and Section 11.0 of this document provides references.

2.0 STORMWATER INFRASTRUCTURE MAP

Berwick's stormwater structures were initially surveyed using Global Positioning System (GPS) data collection and field observations in 2005 and initial maps were created using a Geographic Information System (GIS) program. The Town has the ability to update the maps using ARCGIS Online for Town use. The Town does not allow public to their electronic storm drain system maps but can provide information upon request.

The Town's Director of Community Development and Planning has overall responsibility for data integrity, and GIS licensing. The following sections describe the Town's naming protocol for the infrastructure, specifics on how updates to the system are completed, and information on how the Town coordinates with other MS4s that have interconnected stormwater infrastructure.

2.1 Infrastructure Naming Protocols

The naming protocol for the Town's stormwater infrastructure is as follows:

- Drain manholes are named dmhXXX where the X's are numbers between 001 and 999.
- Catch basins named as cbXXX where the X's are numbers between 001 and 999.
- Outfalls are named as ofXXX where the X's are numbers between 001 and 999.
- Ditches are referenced according to the street on which they are located. Town staff use these designations when referring to structures for inspection, maintenance or illicit discharge purposes.

2.2 Procedures to Update Map of Infrastructure

The Town makes changes to the storm drain infrastructure in several ways. The following describes the scenarios under which the infrastructure might change, requiring a mapping update:

1. Generally, the Public Works Department constructs minor changes to the system based on immediate or planned need without formal design drawings. When these types of changes are made, the Town staff can update the online GIS directly using an iPad, or can request that a third-party contractor update the online GIS. New or replaced outfalls and structures are given a new number and the material of construction, size, and other pertinent information is recorded.
2. More significant changes are typically constructed after preparation of formal design drawings, whereupon either the Public Works Department or a private contractor constructs the changes. Where a private contractor constructs the changes, the Public Works Department conducts a formal site review of the as-built conditions. The Public Works Department would provide the as-built drawings to the third-party contractor for incorporation into the GIS.

The GIS data is not survey quality, but it does provide crews with real-time information on infrastructure.

3.0 AUTHORITY TO PROHIBIT ILLICIT DISCHARGES

The Town of Berwick authority to prohibit illicit discharges became effective in May 16, 2006, it is a component of the Land Use Ordinance (Article VII Performance Standards - General Requirement 7.21 Non-Stormwater Discharges). The ordinance was modified to be Town-specific from a model ordinance created by the Maine Municipal Association for other Towns that are regulated by the MS4 General Permit. Though the MS4 General Permit is only applicable to the Urbanized Area of Town, the Town implements the Non-Stormwater Discharge Ordinance in all areas of Town.

The Ordinance allows the following non-stormwater discharges to the storm drain system as long as the discharges do not cause or contribute a violation of the state's water quality criteria:

- 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);
- hydrant flushing and firefighting activity runoff;
- water line flushing and discharges from potable water sources;
- individual residential car washing; dechlorinated swimming pool discharges.

The Code Enforcement Officer enforces the ordinance.

It should be noted that discharges associated with dye testing are also allowed with verbal notice to the Code Enforcement Officer.

In addition, discharges of hydrant and water line flushing are required to be dechlorinated if they are to be discharged to a portion of the MS4 system which discharges to a small stream. In accordance with the Maine DEP 11/18/2016 Issue Profile for Drinking Water System Discharges to Regulated Small MS4s, the Berwick Water Department either aerates or dechlorinates during flushing to meet Total Residual Chlorine (TRC) acute water quality criteria

as follows:

- Fresh water 19 ug/L (adjusted to 50 ug/L, per the Maine DEP as the reporting limit for available reliable and consistent test methods)
- Marine water 13 ug/L (adjusted to 50 ug/L, per the Maine DEP as the reporting limit for available reliable and consistent test methods)

The Berwick Water Department flushes the system annually, typically in the spring, and provides a report to the Director of Community Development and Planning describing water dechlorination methods in use and testing results for any flushing conducted.

4.0 IDENTIFICATION OF PRIORITY AREAS

The Town of Berwick recognizes the Natural Resources Conservation Service (NRCS) national hydrologic unit code (HUC) numbering system. The NRCS national HUC system identifies watersheds down to the sub-watershed level, which have 12-digit HUC numbers.

The Urbanized Area is almost completely contained within the Salmon Falls River Watershed (HUC 0106000305), and the Middle Salmon Falls River Subwatershed (HUC 0106000305-06).

The Salmon Falls River is the drinking water source for the Town of Berwick, and the Town participates in the Salmon Falls Watershed Collaborative, hosted by the Piscataqua Region Estuaries Partnership (PREP). Over 99% of the Town's Urbanized Area is inside these areas.

Therefore, the Town's priority watershed and waterbody are the Salmon Falls River. Attachment A contains a graphic showing the watershed in Town in relationship to the Urbanized area, and outfall locations.

The Town does not prioritize inspections or illicit discharge investigations because the vast majority of the infrastructure is in this one watershed/subwatershed.

5.0 PROCEDURES TO LOCATE POTENTIAL ILLICIT DISCHARGES

The Town of Berwick uses the following methods to locate illicit discharges:

1. Observations during catch basin cleaning
2. Citizen reports of illicit discharge issues
3. Dry weather outfall inspections
4. Outfall Sampling and Analysis
5. Opportunistic Ditch inspections
6. Other opportunistic Inspections

Each of these methods is described in the following subsections. The inspections are conducted using an iPad, and stored with the GIS spatial data. Attachment B contains a table showing the fields that are completed during outfall, ditch and catch basin inspections using the GIS.

5.1 Catch Basin Cleaning Inspections

Each year, the Town inspects approximately 50% of the Town's catch basins to assess which need cleaning. During this inspection process, the employee is also inspecting to assess if any oil, litter, sewage, pet waste, cigarette butts or other evidence of illicit discharges is present. If the employee sees any evidence of illicit discharges, the evidence is documented using the IPAD in the ArcGIS on-line files. The Public Works Department has direct access to the data on the iPad as the inspections are being completed.

The Town's third-party contractor downloads the inspection information and provides the Town with a summary spreadsheet after the inspections are completed. This spreadsheet provides the Director of Community Develop and Planning, and the Public Works Department with information on illicit discharges that need follow up as well as maintenance.

5.2 Citizen Reports of Illicit Discharges

Citizen reports of illicit discharge issues are typically routed to and investigated by the Director of Water and Public Works or the Code Enforcement Officer. The report is investigated typically within one week. The reports are documented in an excel spreadsheet as described in Section 8 of this IDDE Plan.

5.3 Dry Weather Outfall Inspections

The Town will inspect outfalls at least once per permit cycle as required by the MS4 General Permit. Inspections are completed in accordance with the following:

- Inspections will be performed during periods of dry weather whenever possible.
- Inspections will be performed where field inspections may be performed in a safe and efficient manner;
- Inspections will be performed during periods of no or minimal snow cover and prior to the growth of vegetation (or after leaves have fallen) such that outfalls may be easily spotted;
- Observations will include the follow at a minimum: observations of sheen, discoloration, foaming, evidence of sanitary sewage, excessive algal growth and similar visual indicators, and detection of odor;
- Photographs may be taken at the time of inspection for either maintenance or illicit discharge documentation.
- MS4 outfalls will be inspected where the Town has safe and legal access to the structure to be inspected.
- When maintenance or potential illicit discharge issues are identified, the Director of Water and Public Works will be informed so that he may prioritize the work with other required work for the Town.

Town staff with ArcGIS Online user IDs are able to view the data online for the current permit

year. Copies of the inspections conducted for the current permit cycle are downloaded from the online system and summarized for the annual report.

5.4 Outfall Sampling and Analysis

Outfall sampling and analysis is required under the 2022 MS4 General permit when an outfall is observed to be flowing during dry weather conditions whether or not it has exhibited evidence of an illicit discharge.

Outfalls and/or other structures may also be sampled if other evidence of illicit discharges is observed during inspection. The Director of Water and Public Works may solicit the assistance of a third-party contractor to collect a sample for field screening depending on the conditions encountered.

A Quality Assurance Project Plan (QAPP) 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. The QAPP is provided in Attachment C to this IDDE Plan.

Wet weather sampling is not required by the MS4 General Permit at this time, but the Public Works Department may choose to conduct wet weather sampling if they suspect a discharge occurs only during wet weather (such as may be the case for failed septic systems).

5.5 Ditch Inspections

The 2022 MS4 General Permit does not require ditch inspections be completed. Ditch inspections were completed by the Public Works Department on all ditches during the previous permit cycle. The ditch inspections were previously completed using paper forms.

Moving forward, the Town will generally inspect ditches for potential illicit discharges whenever maintenance work on ditches is being completed and will use the iPad for the inspections. The Town follows these guidelines in conducting inspections:

- Field inspection will be performed during periods of dry weather when possible.
- Inspections will be performed during periods low flow where field inspections may be performed in a safe and efficient manner;
- Inspections will be performed during periods of no snow cover and prior to the growth of ditch vegetation such that potential outfalls may be easily spotted;
- Evidence of potential illicit discharges will be summarized in the IDDE Tracking Sheet (See section 8.0).
- If maintenance issues are identified, the Director of Water and Public Works will be informed so that he may prioritize the work with other required work for the Town.

5.6 Septic System Inspections

During the previous permit cycle, the Town conducted an assessment and drive by inspections of septic systems in the Urbanized Area. None of the systems were observed to have evidence of leakage or failure. Because this Plan did not yield useful information on septic system failures, it is no longer being conducted.

However, as part of that effort the Town does have septic tank access ports and leachfields as of 2016 in their GIS and can use this information in illicit discharge investigations.

5.7 Interconnections and Coordination with Other Entities

The Town's MS4 area borders the town of South Berwick, Maine, which is also regulated by the MS4 General Permit. Some of the roadways in Town (Route 236, School Street and Rochester Street) are maintained by the Maine Department of Transportation (DOT), and are therefore not part of the Town's MS4 system. The roads in the Town's Urbanized Area that are DOT-maintained fall under the Maine DOT's MS4 General Permit. The Town's maps are color coded to show which infrastructure is Town vs. Maine DOT. There are also some outfalls shown where Town infrastructure discharges to either the Maine DOT, or to another Town or private entity (such as a railroad or school).

Because of these MS4 interconnections, it may be necessary to conduct cooperative investigations with other MS4s or to inform them of issues associated with the Town's infrastructure.

The Town has notified its interconnected MS4s of the interconnections, and has provided notification of who to contact in the event of an emergency as documented in Attachment D.

6.0 PROCEDURES TO INVESTIGATE

Investigations of illicit discharge issues are conducted by the Code Enforcement Officer with assistance from the Public Works Department or a third-party contractor when necessary. The Town relies on visual observations of the location where the illicit discharge was reported as a first step in identifying the source of the illicit discharge. If the evidence of the illicit discharge is still present in the initial structure or location where it was reported, the Town uses their knowledge of the infrastructure routing to systematically inspect other structures upstream of the initial location until either the evidence of the illicit discharge is no longer present, or until they locate a potential source of the illicit discharge.

For example if evidence of gray water was observed during catch basin cleaning of a separated storm drain system, the Town would inspect drain manholes and/or catch basins upstream of the initial observation until they could isolate one or more locations from which the gray water was likely emanating.

In the event visual observations of the structures cannot identify the source of an illicit discharge, the Town may employ televising, systematic dye testing, or smoke testing to identify the source.

7.0 PROCEDURES TO REMOVE ILLICIT DISCHARGES

Once the potential source of the illicit discharge is identified, the Code Enforcement Officer would identify and contact the responsible party in order to initiate removal or discontinuation of the illicit discharge.

If the illicit discharge is caused by a private entity, the Code Enforcement Officer may invoke the authority granted him/her under the Non-Storm Water Discharge Ordinance (See section 3.0 of this IDDE Plan). The Code Enforcement Officer typically provides initial verbal or email notice to any responsible party, then follows up with a Notice of Violation. The Notice of Violation specifies the illicit discharge be removed within 60 days of its source identification but allows that if removal within 60 days is not possible, the responsible party must work with the Code Enforcement Officer to establish a schedule to remove the illicit discharge as expeditiously as possible.

If the illicit discharge is caused by the Town, the Code Enforcement Officer would contact the department most responsible and work with them to remove or discontinue the illicit discharge within 60 calendar days of identification of the source or would develop a schedule to expedite elimination.

8.0 PROCEDURES TO DOCUMENT ILLICIT DISCHARGES

The Town will track the progress of investigating and removing illicit discharges using an IDDE Tracking Sheet. Each year, the town is required to complete an annual report summarizing the activities completed under the MS4 Program. The Director of Water and Public Works will print or retain an electronic copy of the IDDE Tracking Sheet for the year as back-up documentation of investigative and removal work completed.

9.0 NOTIFICATIONS DURING WORKING AND NON-WORKING HOURS

The following describes the notifications completed during working and non-working hours to ensure that those who need to know about illicit discharges are notified:

- During working hours, if an illicit discharge is detected by a public works employee (either during a routine inspection or opportunistic inspection), the employee reports the information to the Director of Water and Public Works. The Director of Water and Public Works then calls or sends an email to both the Code Enforcement Officer and the Third-Party Contractor to document the finding and ensure proper follow-up.
- Typically, illicit discharges identified by the public during non-working hours are routed to the public works, police or fire department. For example, if a spill of petroleum or hazardous material were to occur, or a discovery of a sewage discharging from a pipe, the police and/or fire department would be notified and would respond to the incident using their emergency response procedures (which include proper notifications to Maine DEP if warranted). Police and Fire would contact the Director of Water and Public Works in the event of an illicit discharge to the separated sewer system during non-working hours. The Director of Water and Public Works would ensure future follow up.

- As described previously, the Director of Water and Public Works may need to coordinate with the Maine DOT or the town of South Berwick to resolve any illicit discharges that have interconnections with those entities. Attachment D contains contact information for other MS4 coordinators, and copies of the notices that have been provided to these entities in the event of a potential illicit discharge.

10.0 RECORDS RETENTION

The Director of Water and Public Works will retain paper or electronic files of inspections and investigations including laboratory reports, for a minimum of three years after expiration of the MS4 General Permit Term. For the 2013 – 2022 General Permit, reports may be discarded June 30, 2025.

Generally, documentation of inspection, investigation and tracking summaries are retained electronically by the Director of Water and Public Works in the Annual Report Backup for whatever year the inspections or investigation was conducted. If an illicit discharge investigation takes more than one year, the Director of Water and Public Works may maintain a separate paper or electronic file for that discharge until it is resolved.

11.0 REFERENCES

CWP and Robert Pitt 2004. *Illicit Discharge Detection and Elimination Manual – A Guidance Manual for Program Development and Technical Assessments*. October 2004 Available: <http://cfpub1.epa.gov/npdes/stormwater/idde.cfm>

Aquarion Engineering Services and Casco Bay Estuary Partnership. *Guidelines and Standard Operating Procedures for Stormwater Phase II Communities in Maine*. Available: <http://www.thinkbluemaine.org/docs/index.htm>

CWP and Robert Pitt 2011 Illicit Discharge Detection and Tracking Guide Available:

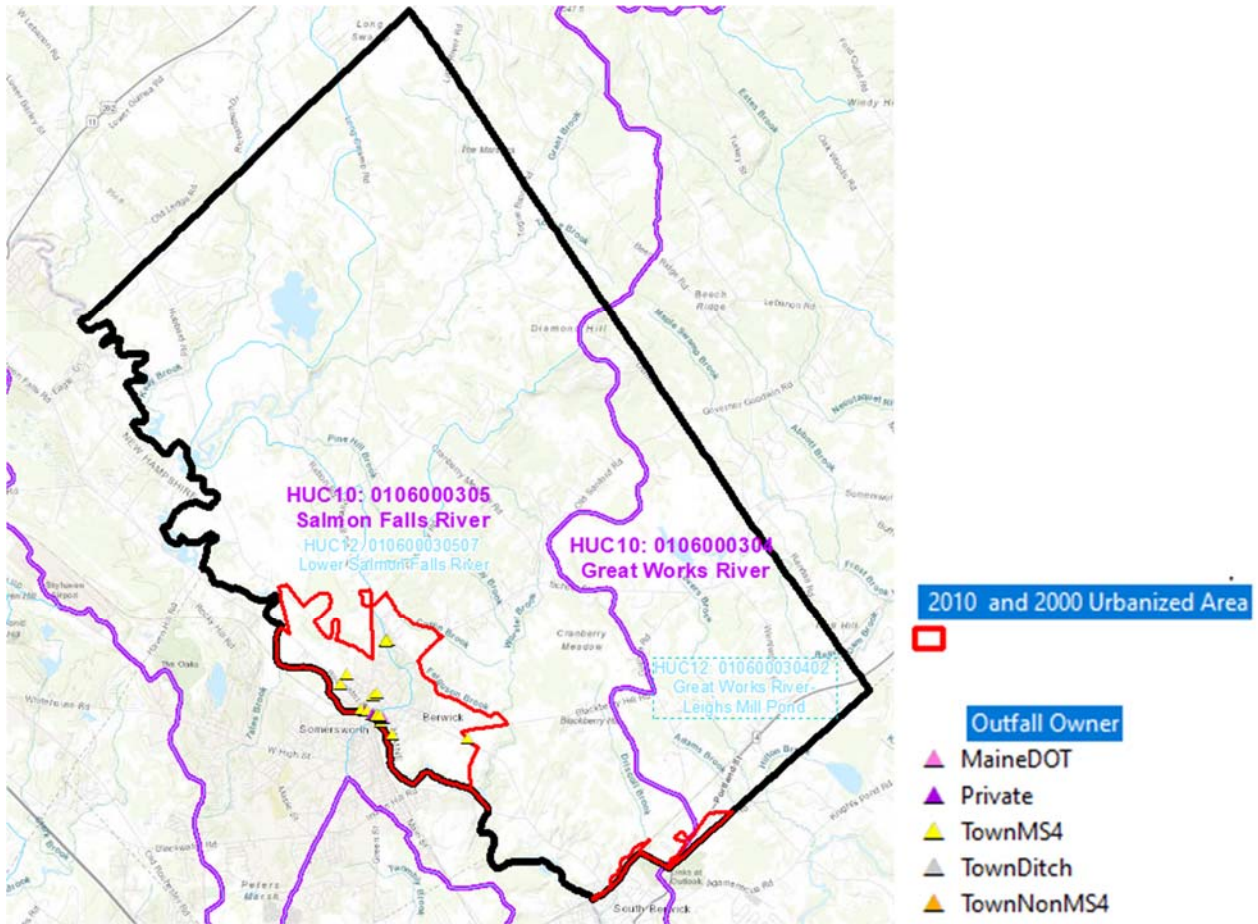
<http://www.cwp.org/2013-04-05-16-15-03/idde>

USEPA New England Bacterial Source Tracking Protocol 2012. Provided by USEPA to Integrated Environmental Engineering. Available at:

<https://www3.epa.gov/region1/npdes/stormwater/ma/2014AppendixI.pdf>

ATTACHMENT A

WATERSHED MAP



Berwick Watershed and Subwatershed

ATTACHMENT B

INSPECTION FIELDS AND DOMAINS FOR GIS

As an inspector is using the iPad in the field, they tap on the structure or element they are inspecting and record inspection data in the available fields. The Town has a basic Arc GIS license so related tables are not used. Rather each year, a third party contractor saves a copy of the inspections in an excel table, then clears out any comments or identification of pollution or maintenance issues from the GIS, and sets up the system to accept a new year of inspection records. The following is a summary of the available fields and associated drop down domain menus associated with each type of inspection. Those items in BOLD are required as part of the MS4 General Permit.

MS4 INSPECTION	GIS FIELDS AND DOMAINS COMPLETED AS PART OF INSPECTION
Catch Basins	<p>Cb_id – Auto populated (e.g., 99) CBOwnInsp – Identifies inspection status as NeedsInsp, DoNot_DOT, ,DoNot_Private, NonMS4, Needs+Clean, InspectedNoClean, Cleaned, InspDateXX – manually selected (XX defines year of inspection – spring of the permit year) PYxInspStatus – Needs_Inspect, MDOT_DoNotInsp, Priv_DoNotInsp, NonMS4, Insp_Cleaned, Insp_NotCleaned sumpdepth – manual entry of depth of sump if not already present in inches ExcessSedXX – Yes or No (XX is replaced each year) InchSedXX – Inches of sediment in basin manually entered (XX defines year of inspection – spring of the permit year) Pollution – None, Foam, ExcessAlgae, Oil_Film, Sewage_Solids, Yard Waste, Pet Waste, Cig. Butts, Odor, DiscoloredFlow, Multiple_Types, Follow-up – Yes or No Notes – open text field Photos cannot be attached to the inspection but are taken if needed for IDDE documentation.</p>
Outfalls Piped and Ditch	<p>Outfall_ID – Auto populated (e.g., 01) Inspection Date and time - Manually selected OwnInsp – MS4Needs, MS4Dry, MS4Wet, MaineDOT, Private, NonMS4, Obsolete, Unknown, MS4Ditch Receiving Water – selected from drop down list PYxInspDate – manually selected (a new field is added for each permit year to replace the “x”, date and time are recorded) Composit – PVC, Corrugated_Metal, Concrete, Steel, Transite_Asbestos_Concrete, None, Cast_Iron, Vitrified_Clay HDPE_Smooth, HDPE_CorregPerf Size_inches – manually entered if not already present and correct Flow – None, Tricky, Steady, or ¼ pipe or More Seepage Flow – None, Tricky, Steady, or ¼ pipe or More Pollution – None, Foam, ExcessAlgae, Oil_Film, Sewage_Solids, Multiple_Types, Odor – None_Natural, Musty, Rancid_Sour, or Sewage_Septic Water Clarity – Not_Applicable, Clear, Cloudy, or Opaque Color_flow – Brown, Tan, Gray, Other, Not-Applicable, None Sed_Condition – ¼ full, ½ full, ¾ full, or plugged</p>

MS4 INSPECTION	GIS FIELDS AND DOMAINS COMPLETED AS PART OF INSPECTION
	<p>Structure Condition – Excellent, Good, Fair, Poor, or Needs Attention Trash_litter – Yes or No Cig_Butts – Yes or No Pet_Waste – Yes or No Yard_waste – Yes or No FlowSample Date - Yes or No (appears only if Pipe or Seepage Flow is present) Follow-up – Yes or No Notes – open text field Photos cannot be attached to the inspection but are taken if needed for IDDE documentation.</p>
Ditches	<p>Ditch ID – Auto populated Owner – MS4_Active, MS4_Obsolete, NonMS4, Private, MaineDOT, Ditch, Unknown InspDate – manually selected Condition – Excellent, Fair or Poor Trash/Litter Present – Yes or No Yard Waste Present – Yes or No Pollution – Yes or No Odor – None_Natural, Musty, Rancid_Sour, or Sewage_Septic Standing Water – Yes or No BaseFlow – Yes or No Water Clarity – Not_Applicable, Clear, Cloudy, Opaque Excess_Sediment – Yes or No Excess Vegetation – Yes or No Invasive_poison_Vegetation – Yes or No Erosion/Scouring - Yes or No WoodyVegetation – Yes or No Notes – open text field Follow-up – Yes or No</p>

ATTACHMENT C

QUALITY ASSURANCE PROJECT PLAN

Stormwater Monitoring Quality Assurance Project Plan Template

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.

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.

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.

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.

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 is generally required for dry weather outfall monitoring.

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 2) and bottles for any laboratory samples or off-site field test kits. Ensure field test kits reagents have not expired typically keep bottles for 3-5 samples available
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 Addendum 1 for examples)
Chain of Custody (obtained from laboratory or see Addendum 3 for examples)
Sharpies and water-proof pens
Packing tape and Duct tape
Sheet of blank labels for bottles
First aid kit
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.

The comments in Table 2 show some of the methods and vendors the Town of Berwick prefers to use, but others may be used if deemed needed for a given situation.

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

Bacteria - select one or more based on discharge environment	CWA Method, Field Equipment, or Test Kit	Preservation	Holding time	Bottle needed	Notes on Use
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) Town Prefers this method and uses either Nelson Analytical, Katahdin Labs or Absolute Resources.
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) Town Prefers this method and uses either Nelson Analytical, Katahdin Labs or Absolute Resources.
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. Town prefers this method and uses EMSL. 843-628-3132 (Jay Rucker is contact as of 2/2021)

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

Ammonia (select one method)	CWA Method, Field Equipment, or Test Kit	Preservation	Holding time	Bottle needed	Notes on Use
Ammonia	Hach Ammonia Test Strips	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	Town prefers this method.
Ammonia	Laboratory Method EPA 350.1/350.2	H ₂ SO ₄ (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): https://www.youtube.com/watch?v=hFiEEEA_mWfo_
Total Residual Chlorine (select one method)	CWA Method, Field Equipment, or Test Kit	Preservation	Holding time	Bottle needed	Notes on Use
Chlorine	Field kit – Hach Colorimeter II low range	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	Instructional video available at: https://www.youtube.com/watch?v=WTTUD0Hq1Vw
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. Town prefers this method.
Temperature and Conductivity (use both)	CWA Method, Field Equipment, or Test Kit	Preservation	Holding time	Bottle needed	Notes on Use
Temperature	Temperature/ Conductivity probe	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	Use to distinguish between groundwater and surface water.
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.

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

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) Town prefers this method and uses either Katahdin, EMSL or Absolute Resources.
Surfactants	CheMetrics K-9400 field test kit (see Maine DEP guidance on handling and disposal in Addendum 2)	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: https://www.youtube.com/watch?v=6vwiZgWqa04
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.

4.1 Equipment or Rinsate Blanks. For most instances, dedicated equipment and containers are used to collect samples, so that equipment and rinsate blanks are not required to be collected and analyzed. However, if equipment or collection containers are being used multiple times in the field for different sample locations, they should be cleaned in between samples, wash water should be collected in the field and disposed of when returning to office or lab spaces, and equipment or rinsate blanks should be collected and assessed. The USEPA Volunteer Monitor's Guide to Quality Assurance Project Plans has additional guidance on how to complete these tasks (EPA Document 841-B-96-003).

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 Addendum 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 **Addendum 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 scheduled or 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 th 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 col/100ml HB to be equivalent to the level of contamination that exceeds the EPA acceptable risk of gastrointestinal illness to swimmers. (Rothenheber and Jones, 2018 and Boehm, Soller and Shanks 2015)	Any concentration of human source of sewage should be investigated.
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.

Parameter	Threshold Level for Additional Investigation	Notes/Discussion
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.

Revisions:

1. Original document prepared for 2022 MS4 General Permit Submission to Maine DEP
2. Updated to remove voluntary items

Addenda

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
4. User Manual(s) and Safety Data Sheets (SDS) for Field Equipment and/or Test Kit(s) (This is an optional addendum. The information must be located where field personnel can access electronically or in paper form, so this Addendum can be used as a place to describe where field personnel will find equipment, manuals and SDSs).

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.

Addendum 1

Example Field Data Collection Sheet and labels

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: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Sampler: _____ Date: _____
Time: _____ Field ID: _____

Field Data Collection Sheet for Dry Weather Outfall Monitoring

Date _____	Project Name _____
Time _____	_____
Sampler's Name _____	Project 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

Addendum 2

-Reference E-mails

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 or 207-287-7884, or Cherrie Plummer of the Hazardous Waste Management Unit. Cherrie's contact is 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

From: Poirier, Rhonda
Sent: Monday, October 07, 2019 9:37 AM
To: Hudson, Michael S <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

From: Kristie Rabasca <krabasca@integratedenv.com>
Sent: Tuesday, October 01, 2019 4:02 PM
To: Poirier, Rhonda <Rhonda.Poirier@maine.gov>
Cc: Aimee Mountain (Aimee.Mountain@gza.com) <Aimee.Mountain@gza.com>; Damon Yakovleff <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?

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.

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 90th 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>
Sent: Thursday, October 31, 2019 2:33 PM

To: Kristie Rabasca <krabasca@integratedenv.com>; Wahle, Benjamin <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>

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

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?

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 90th 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>

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

To: Wahle, Benjamin <Benjamin.Wahle@maine.gov>; Kristie Rabasca <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 90th 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>
Cc: Lewis, Bryant J <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

From: Kristie Rabasca <krabasca@integratedenv.com>
Sent: Monday, October 28, 2019 8:03 AM
To: Wahle, Benjamin <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 90th 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.

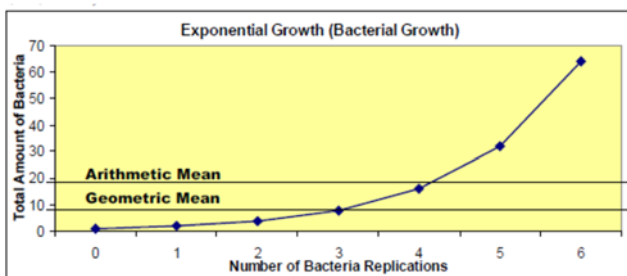
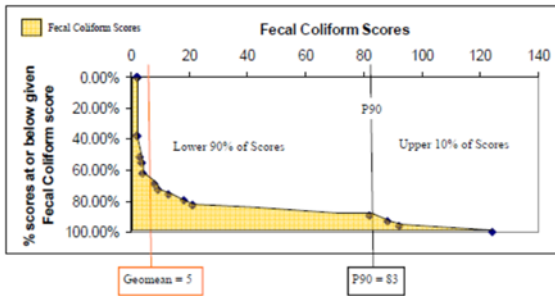
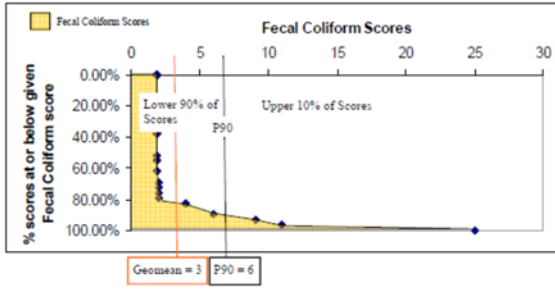


Figure 1. The graph illustrates exponential growth. The arithmetic mean for the scores is 18.1 while the geomean is 8.

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 th 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

Addendum 3

Example Chains of Custody



EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

EMSL Order Number (Lab Use Only):

EMSL ANALYTICAL, INC.
200 ROUTE 130 NORTH
CINNAMINSON, NJ 08077

PHONE: (800) 220-3675

FAX: (856) 786-0262

Company :		EMSL-Bill to: <input type="checkbox"/> Same <input type="checkbox"/> Different If Bill to is Different please note in Comments**					
Street:		Third Party Billing requires written authorization from third party					
City:	State/Province:	Zip/Postal Code:	Country:				
Report To (Name):		Fax #:					
Telephone #:		E-mail Address:					
Project Name/ Number:							
Please Provide Results: <input type="checkbox"/> Fax <input type="checkbox"/> E-mail		PO#	State Samples Taken:				
Turnaround Time (TAT) Options* - Please Check							
<input type="checkbox"/> 3 Hour	<input type="checkbox"/> 6 Hour	<input type="checkbox"/> 24 Hour	<input type="checkbox"/> 48 Hour	<input type="checkbox"/> 72 Hour	<input type="checkbox"/> 96 Hour	<input type="checkbox"/> 1 Week	<input type="checkbox"/> 2 Week
<small>*Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide. TATs are subject to methodology requirements.</small>							
Fungi		Bacteria		Insects			
<input type="checkbox"/> ERMI Panel (M180) Dust Only		<input type="checkbox"/> Human <i>Bacteroides</i> (M199)		<input type="checkbox"/> Bed Bug (<i>Cimex lectularius</i>) (M146)			
<input type="checkbox"/> EPA 36 Panel (M233) Air, Swab		<input type="checkbox"/> Total <i>Bacteroides</i> (M095)		<input type="checkbox"/> Tick - <i>Anaplasma phagocytophilum</i> Anaplasmosis (M261)			
<input type="checkbox"/> Water Damage 20 Panel (M181)		<input type="checkbox"/> <i>E. coli</i> O157:H7 (M140)		<input type="checkbox"/> Tick - <i>Babesia microti</i> Babesiosis (M260)			
<input type="checkbox"/> Wood Rot Fungi 10 Panel (M232)		<input type="checkbox"/> <i>E. coli</i> (M200)		<input type="checkbox"/> Tick - <i>Borrelia burgdorferi</i> Lyme disease (M196)			
<input type="checkbox"/> <i>Aspergillus</i> 15 Panel (M186)		<input type="checkbox"/> Total <i>Enterococcus</i> (M096)		Other			
<input type="checkbox"/> <i>Aspergillus</i> 6 Panel (M188)		<input type="checkbox"/> <i>Helicobacter pylori</i> (M207)		<input type="checkbox"/> <i>Acanthamoeba</i> spp. (M147)			
<input type="checkbox"/> <i>Penicillium</i> 13 Panel (M189)		<input type="checkbox"/> <i>Legionella pneumophila</i> (M103)		<input type="checkbox"/> <i>Cryptosporidium</i> spp. (M237)			
<input type="checkbox"/> Customized Fungi Panel (M100)		<input type="checkbox"/> <i>Legionella</i> 4 species-EPA (M162)		<input type="checkbox"/> <i>Giardia</i> spp. (M149)			
<input type="checkbox"/> <i>Penicillium</i> Mycotoxin 9 Panel (M190)		<input type="checkbox"/> <i>Legionella</i> Broad Screen (M163)		<input type="checkbox"/> Enterovirus RT-PCR (M142)			
Birds, Animal Droppings		<input type="checkbox"/> MRSA (M203)		<input type="checkbox"/> Food Authentication (F130)			
<input type="checkbox"/> <i>Chlamydomyphila psittaci</i> (M234)		<input type="checkbox"/> <i>Mycobacterium avium</i> (M144)		<input type="checkbox"/> GMO Analysis (F131)			
<input type="checkbox"/> <i>Cryptococcus neoformans</i> (M143)		<input type="checkbox"/> <i>Mycobacterium tuberculosis</i> (M159)		<input type="checkbox"/> DNA Barcode Analysis (M195)			
<input type="checkbox"/> <i>Histoplasma capsulatum</i> (M208)		<input type="checkbox"/> <i>Pseudomonas aeruginosa</i>		<input type="checkbox"/> DNA Sequencing Fungi/Bacteria Isolates (M192)			
<input type="checkbox"/> Raccoon Roundworm (M236)		<input type="checkbox"/> <i>Salmonella</i> spp. (M141)		<input type="checkbox"/> Special Request:			
<input type="checkbox"/> Rodent (Mouse, Rat) Dropping (M271)		<input type="checkbox"/> <i>Shigella</i> spp. (F122)					
Sample #	Sample Location	Sample Type	Test Code	Volume/Area	Date/Time Collected		
Client Sample # (s): -				Total # of Samples:			
Relinquished (Client):				Date:	Time:		
Received (Lab):				Date:	Time:		
Comments:							

Addendum 4
User Manual(s) and Safety Data Sheets (SDS) for
Field Equipment and/or Test Kit(s)
(This is an optional addendum. The information
must be located where field personnel can access
electronically or in paper form, so this
Addendum can be used as a place to describe
where field personnel will find equipment,
manuals and SDSs).

ATTACHMENT D

COORDINATION LETTERS WITH INTERCONNECTED MS4S

Interconnected MS4	Date of update	Contact	Phone	E-mail
Maine DOT	6/12/2022	Peter Newkirk	207-877-5081	Peter.newkirk@maine.gov
Town of South Berwick	3/11/2021	Amy Aiguier	207-384-3012	aaiguier@sbmaine.us

APPENDIX F

CONSTRUCTION INSPECTION FORMS

Construction Inspection Form for Sediment and Erosion Control

Site Name: Map/Lot:	Date of Inspection:
Inspector:	Inspection Time: AM/PM
Pictures Taken:	Weather:
Type of Inspection: Initial / Return / Winter Stabilization / Final Stabilization / Complaint / Other _____	

Inspection Parameters		Comments/Follow up Date
Description and estimate of construction area that is disturbed:		
Does contractor have Erosion and Sediment Control Plan, drawings, and inspection log on site?	Yes / No / NA	
Is the contractor or a third-party inspector conducting inspections after rain events and weekly as required by the Erosion and Sediment Control Plan for the site?	Yes / No / NA	
Is the construction entrance clean with no track out of sediment?	Yes / No	
Is waste properly managed (concrete washout disposed of properly, no liquids in waste container, waste containers closed)?	Yes / No	
Are there any petroleum or hazardous materials on site, and if so, are there spill controls in place?	Yes / No	

Review the site plan for sediment and erosion control requirements. Select "Pass" if structures are properly installed and functioning as required. Select "Fail" if contractor needs to make corrections or repairs and describe briefly repairs needed. Select "N/A" for "Not Applicable" if they do not apply at the site.

Catch Basin Protection	Pass / Fail / NA	
Silt Fence /Hay bales	Pass / Fail / NA	
Erosion Control Berm or Sock	Pass / Fail / NA	
Dust Control	Pass / Fail / NA	
Dewatering	Pass / Fail / NA	
Other: _____	Pass / Fail / NA	
Any Areas of Repeated Non-compliance that require MDEP Notification?	Yes / No	
Any other comments?		