ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE) PLAN

Town of Rockland

September 2024 Update

ENVIRONMENTAL PARTNERS
— An Apex Company —

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SECTION 1.1 MS4 PROGRAM

This Illicit Discharge Detection and Elimination (IDDE) Plan has been developed for The Town of Rockland to address the requirements of the United States Environmental Protection Agency's (EPA's) 2016 National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts, hereafter referred to as the "2016 Massachusetts MS4 Permit" or "MS4 Permit."

The 2016 Massachusetts MS4 Permit and 2020 Permit Modifications require that each permittee, or regulated community, address six (6) Minimum Control Measures. These measures include the following:

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

Under Minimum Control Measure 3, the permittee is required to implement an IDDE program to systematically find and eliminate sources of non-stormwater discharges to its municipal separate storm sewer system and implement procedures to prevent such discharges. The IDDE program must also be recorded in a written (hardcopy or electronic) document. This IDDE Plan has been prepared to address this requirement. Originally, the Town published this Plan in 2019, and since then, the Town has updated the Plan as needed.

SECTION 1.2 ILLICIT DISCHARGES

An "illicit discharge" is any discharge to a drainage system that is not composed entirely of stormwater, except for discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the MS4) and discharges resulting from fire-fighting activities.

Illicit discharges may take a variety of forms. Illicit discharges may enter the drainage system through direct or indirect connections. Direct connections may be relatively obvious, such as cross-connections of sewer services to the storm drain system. Indirect illicit discharges may be more difficult to detect or address, such as failing septic systems that discharge untreated sewage to a ditch within the MS4, or a sump pump that discharges contaminated water on an intermittent basis.

Some illicit discharges are intentional, such as dumping used oil (or other pollutant) into catch basins, a resident or contractor illegally tapping a new sewer lateral into a storm drainpipe to avoid

the costs of a sewer connection fee and service, and illegal dumping of yard wastes into surface waters.

Some illicit discharges are related to outdated building and construction practices. Examples of illicit discharges in this category include floor drains in old buildings that are connected to the storm drain system, as well as sanitary sewer overflows that enter the drainage system. Sump pumps legally connected to the storm drain system may be used inappropriately, such as for the disposal of floor washwater or old household products, in many cases due to a lack of understanding on the part of the homeowner.

Elimination of some discharges may require substantial costs and efforts, such as reconfiguring a sanitary sewer connection from a municipal storm to a sanitary sewer drain. Other beneficial strategies, such as reducing dog waste, can be accomplished through public outreach in conjunction with installing dog waste bins.

Regardless of the situation, illicit discharges can contribute high levels of pollutants, such as heavy metals, toxins, oil, grease, solvents, nutrients, and pathogens to surface waters.

SECTION 1.3 ALLOWABLE NON-STORMWATER DISCHARGES

The following categories of non-stormwater discharges are allowed under the MS4 Permit unless the permittee, EPA, or Massachusetts Department of Environmental Protection (MassDEP) identifies any category or individual discharge of non-stormwater discharge as a significant contributor of pollutants to the MS4:

- Water line flushing
- Landscape irrigation
- Diverted stream flows
- Rising ground water
- Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20))
- Uncontaminated pumped groundwater
- Discharge from potable water sources
- Foundation drains
- Air conditioning condensation
- Irrigation water, springs
- Water from crawl space pumps
- Footing drains
- Lawn watering
- Individual resident car washing
- De-chlorinated swimming pool discharges
- Street wash waters
- Residential building wash waters without detergents

If these discharges are identified as significant contributors to the MS4, they must be considered an “illicit discharge” and addressed in the IDDE Plan (i.e., control these sources so they are no longer significant contributors of pollutants and/or eliminate the sources entirely).

SECTION 1.4 RECEIVING WATERS AND IMPAIRMENTS

Table 1-1 lists the "impaired waters" within the boundaries of Rockland's MS4 regulated area. Impaired waters are water bodies that do not meet water quality standards for one or more designated use(s), such as recreation or aquatic habitat. The inventory is based on the Massachusetts 2022 Integrated List of Waters published by MassDEP in May 2023 and updated every two (2) years. The first draft of this IDDE Plan, published in 2019, and the Town's Notice of Intent (NOI), published in 2018, used the previous Massachusetts 2014 Integrated List of Waters.

There were some changes between the 2014 and 2022 Integrated Lists of Waters. In this period, MassDEP categorized Old Swamp River and French Stream as being impaired for E. coli, in addition to the impairments listed in the 2014 Integrated List of Waters. Also, Cushing Brook is now categorized as being impaired for E. coli; in the 2014 Integrated List of Waters, Cushing Brook was categorized as having no impairments. As of this year, MassDEP has recategorized Old Swamp River as a category 4a instead of a category 5 due to the additional fish passage barrier impairment.

Table 1-1 Impaired Waters in the Town of Rockland

Waterbody Name	Segment ID	Category	Impairment(s)	Associated Approved TMDL*
Old Swamp River	MA74-03	4a	• (Fish Passage Barrier*) • Escherichia Coli (E. Coli) • Fecal Coliform	
Cushing Brook	MA94-40	5	• Escherichia Coli (E. Coli)	
French Stream	MA94-03	5	• Dissolved Oxygen • Fecal Coliform • Escherichia Coli (E. Coli) • Fishes Bioassessments • Phosphorus, Total	E. Coli and Fecal Coliform TMDL No. 61718
Studleys Pond	MA94151	5	• Fecal Coliform	

Category 4a Waters – impaired water bodies with a completed Total Maximum Daily Load (TMDL).
Category 5 Waters – impaired water bodies that require a TMDL.
"Approved TMDLs" are those that have been approved by USEPA as of the date of issuance of the Massachusetts 2022 List of Integrated Waters (May 2023).

These impairments require additional sampling in accordance with Appendix G of the MS4 Permit. The Town must sample for Escherichia Coli (E. Coli)and fecal coliform at outfalls discharging to the Old Swamp River. Additionally, the Town must sample E. coli at outfalls discharging to Cushing Brook; and E. coli, fecal coliform, dissolved oxygen, total phosphorus, and biological oxygen demand at outfalls discharging French Stream. Due to the South Coastal Watershed and Boston Harbor Weymouth-Weir Watershed's TMDLs for pathogens, all outfalls must be sampled for E. coli and fecal coliform.

To comply with the 2016 MS4 Permit Appendix H Parts II and III, the Town of Rockland implemented the illicit discharge program. Outfalls draining to French Stream (impaired for phosphorus (Part II)) and

outfalls draining to Old Swamp River, Cushing Brook, French Stream, and Studleys Pond (impaired for fecal coliform (Part III)) were designated High Priority Catchments for purposes of implementing the IDDE program.

SECTION 1.5 IDDE PROGRAM GOALS, FRAMEWORK, AND TIMELINE

The goals of the IDDE program are to find and eliminate illicit discharges to the Town's municipal separate storm sewer system and to prevent illicit discharges from happening in the future. The program consists of the following major components as outlined in the MS4 Permit:

- Legal authority and regulatory mechanism to prohibit illicit discharges and enforce this prohibition
- Storm system mapping
- Inventory and ranking of outfalls
- Dry weather outfall screening
- Catchment investigations
- Identification/confirmation of illicit sources
- Illicit discharge removal
- Follow-up screening

The IDDE investigation procedure framework is shown in **Figure 1-1**. The required timeline for implementing the IDDE program is shown in **Table 1-2.**

Figure 1-1 IDDE Investigation Procedure Framework

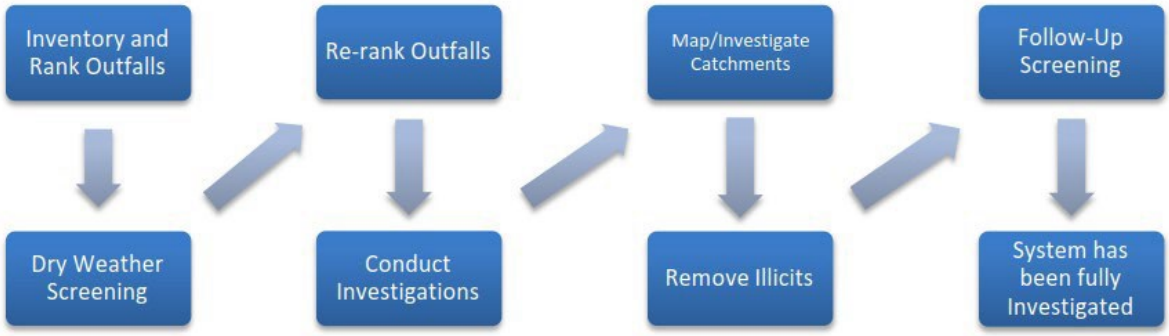

Table 1-2 IDDE Program Implementation Timeline

IDDE Program Requirement	Completion Date from Effective Date of Permit					
	1 Year (June 2019)	1.5 Years (Dec. 2019)	2 Years (June 2020)	3 Years (June 2021)	7 Years (June 2025)	10 Years (June 2028)
Written IDDE Program Plan	X					
Sanitary Sewer Overflow (SSO) Inventory	X					
Written Catchment Investigation Procedure		X				
Phase I Mapping			X			
Phase II Mapping						X
IDDE Regulatory Mechanism or By-law (if not already in place)				X		
Dry Weather Outfall Screening				X		
Follow-up Ranking of Outfalls and Interconnections				X		
Catchment Investigations – Problem Outfalls					X	
Catchment Investigations – all Problem, High and Low Priority Outfalls						X

SECTION 1.6 WORK COMPLETED TO DATE UNDER THE 2003 MS4 PERMIT

The 2003 MS4 Permit required each MS4 community to develop a plan to detect illicit discharges using a combination of mapping of the storm system, adopting a regulatory mechanism to prohibit illicit discharges and enforce this prohibition, and identifying tools and methods to investigate suspected illicit discharges. Each MS4 community was also required to define how confirmed discharges would be eliminated and how their removal would be documented.

The Town of Rockland has completed the following IDDE program activities consistent with the 2003 MS4 Permit requirements:

- Developed a map of outfalls and receiving waters
- Adopted an IDDE by-law or regulatory mechanism
- Developed procedures for locating illicit discharges (e.g., visual screening of outfalls for dry weather discharges, dye or smoke testing)
- Developed procedures for locating the source of the discharge
- Developed procedures for removal of the source of an illicit discharge
- Developed procedures for documenting actions and evaluating impacts on the storm sewer system subsequent to removal

In addition to the 2003 MS4 Permit requirements, the Town completed other IDDE-related activities prior to the 2016 MS4 Permit:

- Outfall sampling
- Additional storm system mapping, including the locations of catch basins, manholes and pipe connectivity

SECTION 2 AUTHORITY AND STATEMENT OF IDDE RESPONSIBILITIES

SECTION 2.1 LEGAL AUTHORITY

The Town of Rockland has adopted a Stormwater Management Bylaw (May 7, 2018), Chapter 338 of the Town Bylaws. A copy of the Stormwater Management Bylaw is provided in **Appendix A**. The Stormwater Management Bylaw provides the Town of Rockland with adequate legal authority to:

- Prohibit illicit discharges,
- Investigate suspected illicit discharges,
- Eliminate illicit discharges, including discharges from properties not owned by or controlled by the MS4 that discharge into the MS4 system, and
- Implement appropriate enforcement procedures and actions.

SECTION 2.2 STATEMENT OF RESPONSIBILITIES

The Highway and Sewer Departments are the lead municipal agencies/departments responsible for implementing the IDDE program pursuant to the provisions of the Illicit Discharges to Storm Drainage System.

Table 2-1: List of Parties Responsible for SWMP Implementation

Name	Title	Department
David Taylor Jr.	Superintendent	Highway Department
Megan Fountaine	Clerk Laborer - Stormwater	Highway Department
Robyn Day	Administrative Assistant	Sewer Department
Delshaune Flipp	Health Agent	Board of Health
Kristel Cameron	Water Superintendent	Water Department
Charlene Judge	Member	Conservation Commission
Michael Corbett	Chairman	Planning Board
Lori Wolfe	Director of Marketing & Communications	North and South Rivers Watershed Association (NSRWA)

SECTION 3 STORMWATER SYSTEM MAPPING

The Town of Rockland originally developed mapping of its stormwater system to meet the mapping requirements of the 2003 MS4 Permit. The 2016 MS4 Permit requires a more detailed storm system map than was required by the 2003 MS4 Permit. The revised mapping is intended to facilitate the identification of key infrastructure, factors influencing proper system operation, and the potential for illicit discharges. The 2016 MS4 Permit requires the storm system map to be updated in two phases as outlined below. The Highway Department is responsible for updating the stormwater system mapping pursuant to the 2016 MS4 Permit. The Town of Rockland reports on the progress towards completion of the storm system map in each annual report. Updates to the stormwater mapping are included in **Appendix B**.

SECTION 3.1 PHASE I MAPPING

Phase I mapping must be completed within two (2) years of the effective date of the permit (July 1, 2020) and include the following information:

- Outfalls and receiving waters (previously required by the MS4-2003 permit)
- Open channel conveyances (swales, ditches, etc.)
- Interconnections with other MS4s and other storm sewer systems
- Municipally owned stormwater treatment structures
- Water bodies identified by name and indication of all use impairments as identified on the most recent USEPA approved Massachusetts Integrated List of Waters report
- Initial catchment delineations. Topographic contours and drainage system information may be used to produce initial catchment delineations

Phase I mapping must be completed within two (2) years of the effective date of the permit (July 1, 2020) and include the following information:

- Outfalls and receiving waters (previously required by the MS4-2003 permit)
- Open channel conveyances (swales, ditches, etc.)
- Interconnections with other MS4s and other storm sewer systems
- Municipally owned stormwater treatment structures
- Water bodies identified by name and indication of all use impairments as identified on the most recent EPA approved Massachusetts Integrated List of Waters report *(taken from USGS/MassDEP Hydrography data updated April 2017)*
- Initial catchment delineations. Topographic contours and drainage system information may be used to produce initial catchment delineations (attached as **Appendix C** and further developed in **Section 5.1**).

The Town of Rockland is in the process of updating its stormwater mapping to include the remaining Phase I information:

- Open channel conveyances (swales, ditches, etc.)
- Interconnections with other MS4s and other storm sewer systems

The following table contains information regarding the total number of drainage structures mapped within the MS4 Urbanized Area in Rockland. It has been compiled using data collected by the Town. A complete stormwater system map book is included in the Rockland Operations and Maintenance (O&M) Plan as **Attachment 1**.

Table 3-1 Summary of Mapped MS4 Structures

Structure Type	Number of Structures
Catch Basins	1,843
Drain Manholes	409
Inlets	7
Outfalls	67
Outlets	20
Scupper	7
Stormwater BMPs	12
Swales	5

SECTION 3.2 PHASE II MAPPING

Phase II mapping must be completed within 10 years of the effective date of the permit (July 1, 2028) and include the following information:

- Outfall spatial location (latitude and longitude with a minimum accuracy of +/-30 feet)
- Pipes
- Manholes
- Catch basins
- Refined catchment delineations. Catchment delineations must be updated to reflect information collected during catchment investigations
- Municipal sanitary sewer system (if available/applicable)
- Municipal combined sewer system (if applicable)

The Town of Rockland has completed the following updates to its stormwater mapping to meet the Phase II requirements:

- Outfall spatial location (*complete*)
- Pipes (*mapping is ongoing*)
- Manholes (*mapping is ongoing*)
- Catch basins (*mapping is ongoing*)
- Refined catchment delineations (*completed as catchment investigations are completed*)
- Municipal Combined Sewer System (*none in Rockland*)
- Municipal Sanitary Sewer System (*mapping is ongoing*)

The Town of Rockland will update its stormwater mapping by July 1, 2028, to include the remaining Phase II information.

SECTION 3.3 ADDITIONAL RECOMMENDED MAPPING ELEMENTS

Although not a requirement of the 2016 MS4 Permit, the Town of Rockland will consider the following recommended elements in its storm system mapping:

- Storm sewer material, size (pipe diameter), age
- Sanitary sewer system material, size (pipe diameter), age (if/when applicable)
- Privately owned stormwater treatment structures
- Area where the permittee's MS4 has received or could receive flow from septic system discharges
- Seasonal high water table elevations impacting sanitary alignments
- Topography
- Orthophotography
- Alignments, dates and representation of work completed of past illicit discharge investigations
- Locations of suspected confirmed and corrected illicit discharges with dates and flow estimates

SECTION 4 SANITARY SEWER OVERFLOWS (SSOS)

The 2016 MS4 Permit requires municipalities to prohibit illicit discharges, including sanitary sewer overflows (SSOs), to the separate storm sewer system. SSOs are discharges of untreated sanitary wastewater from a municipal sanitary sewer that can contaminate surface waters, cause serious water quality problems and property damage, and threaten public health. SSOs can be caused by blockages, line breaks, sewer defects that allow stormwater and groundwater to overload the system, power failures, improper sewer design, and vandalism.

The Town of Rockland has completed an inventory of SSOs that have discharged to the MS4 since five (5) years prior to the effective date of the 2016 MS4 Permit, based on a review of available documentation pertaining to SSOs. The inventory includes all SSOs that occurred during wet or dry weather resulting from inadequate conveyance capacities or where interconnectivity of the storm and sanitary sewer infrastructure allows for transfer of flow between systems. **Table 4-1** is provided below as reference for future use, if necessary.

Upon detection of an SSO, the Town of Rockland will eliminate it as expeditiously as possible and take interim measures to minimize the discharge of pollutants to and from its MS4 until the SSO is eliminated. Upon becoming aware of an SSO to the MS4, the Town of Rockland will provide oral notice to USEPA within 24 hours and written notice to USEPA and MassDEP within five (5) days of becoming aware of the SSO occurrence.

The inventory in **Table 4-1** will be updated by the Highway Department when new SSOs are detected. The SSO inventory will be included in the annual report, including the status of mitigation and corrective measures to address each identified SSO.

Table 4-1 SSO Inventory
Rockland, Massachusetts
Revision Date: September 2024

SSO Location[1]	Discharge Statement[2]	Date[3]	Time Start[3]	Time End[3]	Estimated Volume[4]	Description[5]	Mitigation Completed[6]	Mitigation Planned[7]
French Stream	Discharge through Wastewater Outfall	1/26/2023-1/27/2023	9:00AM	12:00AM	<100,000 gallons	The sanitary sewer discharge or overflow at the Rockland Wastewater Treatment Plant. The discharge or overflow consists or likely consists of untreated or partially treated sewage and waste.	Yes	Yes
French Stream	Discharge through Wastewater Outfall	3/14/2023-3/17/2023	7:30AM	12:00AM	1,812,515 gallons	The sanitary sewer discharge or overflow at the Rockland Wastewater Treatment Plant. The discharge or overflow consists or likely consists of untreated or partially treated sewage and waste.	Yes	Yes
French Stream	Discharge through Wastewater Outfall	1/10/2024-1/18/2024	11:00AM	1:00AM	6,895,845 gallons	The sanitary sewer discharge or overflow at the Rockland Wastewater Treatment Plant. The discharge or overflow consists or likely consists of untreated or partially treated sewage and waste.	Yes	Yes
French Stream	Discharge through Wastewater Outfall	1/29/2024-1/31/2024	12:00PM	9:30PM	1,083,330 gallons	The sanitary sewer discharge or overflow at the Rockland Wastewater Treatment Plant. The discharge or overflow consists or likely consists of untreated or partially treated sewage and waste.	Yes	Yes
French Stream	Discharge through Wastewater Outfall	3/10/2024-3/12/2024	11:00AM	5:30AM	6,500,000 gallons	The sanitary sewer discharge or overflow at the Rockland Wastewater Treatment Plant. The discharge or overflow consists or likely consists of untreated or partially treated sewage and waste.	Yes	Yes

SSO Location[1]	Discharge Statement[2]	Date[3]	Time Start[3]	Time End[3]	Estimated Volume[4]	Description[5]	Mitigation Completed[6]	Mitigation Planned[7]
French's Stream	Discharge through Wastewater Outfall	3/14/2024-3/16/2024	7:30AM	3:00AM	1,812,515 gallons	The sanitary sewer discharge or overflow at the Rockland Wastewater Treatment Plant. The discharge or overflow consists or likely consists of untreated or partially treated sewage and waste.	Yes	Yes
French Stream	Discharge through Wastewater Outfall	3/24/2024	9:00AM		>1,000,000 gallons (not specified)	The sanitary sewer discharge or overflow at the Rockland Wastewater Treatment Plant. The discharge or overflow consists or likely consists of untreated or partially treated sewage and waste.	Yes	Yes
French Stream	Discharge through Wastewater Outfall	3/29/2024-4/7/2024	6:00AM	11:30PM	9,000,000 gallons	The sanitary sewer discharge or overflow at the Rockland Wastewater Treatment Plant. The discharge or overflow consists or likely consists of untreated or partially treated sewage and waste.	Yes	Yes

No SSOs within the MS4 system have been reported

1 Location (approximate street crossing/address and receiving water, if any)

2 A clear statement of whether the discharge entered a surface water directly or entered the MS4

3 Date(s) and time(s) of each known SSO occurrence (i.e., beginning and end of any known discharge)

4 Estimated volume(s) of the occurrence

5 Description of the occurrence indicating known or suspected cause(s)

6 Mitigation and corrective measures completed with dates implemented

7 Mitigation and corrective measures planned with implementation schedules

SECTION 5 ASSESSMENT AND PRIORITY RANKING OF OUTFALLS

The 2016 MS4 Permit requires an assessment and priority ranking of outfalls in terms of their potential to contain illicit discharges and SSOs. The ranking helps determine the priority order for performing IDDE investigations and meeting permit milestones.

SECTION 5.1 OUTFALL CATCHMENT DELINEATIONS

A catchment is the area that drains to an individual outfall or interconnection. The catchments for each of the MS4 outfalls have been delineated to define contributing areas for investigation of potential sources of illicit discharges. Catchments are typically delineated based on topographic contours and mapped drainage infrastructure, where available. As described in **Section 3**, initial catchment delineations were completed as part of Phase I mapping. Catchment delineations will be refined each year as catchment investigations are completed.

SECTION 5.2 OUTFALL AND INTERCONNECTION INVENTORY AND INITIAL RANKING

The Highway Department has completed an initial outfall and interconnection inventory and priority ranking to assess illicit discharge potential based on existing information. The initial inventory and ranking were completed within one (1) year from the effective date of the permit. The inventory is updated annually to include data collected in connection with dry weather screening and other relevant inspections. An updated inventory and ranking are provided in each annual report.

The outfall and interconnection inventory identifies each outfall and interconnection discharging from the MS4, records the structure location and condition, and provides a framework for tracking inspections, screenings, and other IDDE program activities.

The Town has updated the initial outfall priority ranking matrix based on screening and sampling completed since the initial ranking was developed in 2019. The screening results and updates to the ranking table are discussed further in **Section 6.4** and **Section 6.5**. The updated outfall priority ranking matrix and catchment delineation mapping is included in **Appendix C**.

Outfalls and interconnections are classified into one of the following categories:

1. **Problem Outfalls**: Outfalls/interconnections with known or suspected contributions of illicit discharges based on existing information shall be designated as Problem Outfalls. This shall include any outfalls/interconnections where previous screening indicates likely sewer input. Likely sewer input indicators are any of the following:

- Olfactory or visual evidence of sewage,

- Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water, or
- Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and detectable levels of chlorine.

Dry weather screening and sampling, as described in **Section 6** of this IDDE Plan and Part 2.3.4.7.b of the MS4 Permit, is not required for Problem Outfalls.

To date, Rockland has identified zero (0) Problem Outfalls

2. **High Priority Outfalls**: Outfalls/interconnections that have not been classified as Problem Outfalls and that are:
   - Discharging to an area of concern to public health due to proximity of public beaches, recreational areas, drinking water supplies or shellfish beds
   - Determined by the permittee as high priority based on the characteristics listed below or other available information

To date, Rockland has identified *20 High Priority Outfalls*

3. **Low Priority Outfalls**: Outfalls/interconnections determined by the permittee as low priority based on the characteristics listed below or other available information.

To date, Rockland has identified *47 Low Priority Outfalls*

4. **Excluded outfalls**: Outfalls/interconnections with no potential for illicit discharges may be excluded from the IDDE program. This category is limited to roadway drainage in undeveloped areas with no dwellings and no sanitary sewers; drainage for athletic fields, parks, or undeveloped green space and associated parking without services; and cross- country drainage alignments (that neither cross nor are in proximity to sanitary sewer alignments) through undeveloped land.

To date, Rockland has identified *zero (0) Excluded Outfalls*

Outfalls are ranked into the above priority categories (except for excluded outfalls, which are excluded from the IDDE program) based on the following characteristics of the defined initial catchment areas, where information is available. Additional relevant characteristics, including location-specific characteristics, may be considered but must be documented in this IDDE Plan. The initial ranking was based upon response provided by the Town of Rockland in May 2019 and has been updated in 2021. The characteristics include:

- **Previous screening results** – Previous screening/sampling results indicate likely sewer input (see criteria above for Problem Outfalls).
  - 92 outfalls screened in 2018
  - 62 outfalls screened in 2020
  - 74 outfalls screened in 2021
  - The Town has screened all outfalls, and none have exhibited sewer input in 2022

- Past discharge complaints and reports
    - No complaints provided.
- Poor receiving water quality – The following guidelines are recommended to identify waters as having a high illicit discharge potential:
    - Exceeding water quality standards for bacteria,
    - Ammonia levels above 0.5 mg/L, or
    - Surfactants levels greater than or equal to 0.25 mg/L.
- Density of generating sites – Generating sites are those places, including institutional, municipal, commercial, or industrial sites, with a potential to generate pollutants that could contribute to illicit discharges. Examples of these sites include, but are not limited to, car dealers; car washes; gas stations; garden centers; and industrial manufacturing areas.
    - Gas stations, car washes, garden centers, car dealerships, and/or industrial areas were found within catchments: A, B, C, D, J, K, L, M, Q, S, T, V, Y, AB.
- Age of development and infrastructure – Industrial areas greater than 40 years old and areas where the sanitary sewer system is more than 40 years old may have a high illicit discharge potential. Developments 20 years or younger may have a low illicit discharge potential.
    - Non-PVC sewer pipes considered more than 40 years old. Catchments A, B, C, D, E, G, K, L, M, N, P, Q, R, S, T, Y, and Z have non-PVC sewer pipes.
- Sewer conversion – Contributing catchment areas that were once serviced by septic systems but have since been converted to sewer connections may have a high illicit discharge potential.
    - No sewer conversion data available.
- Historic combined sewer systems – Contributing areas that were once serviced by a combined sewer system but have since been separated may have a high illicit discharge potential.
    - No combined sewer systems.
- Surrounding density of aging septic systems – Septic systems 30 years or older in residential land use areas are prone to have failures and may have a high illicit discharge potential.
    - Aging septic systems were identified in catchments with “year built” data older than 30 years ago in the Level 3 parcel data.
- Culverted streams – Any river or stream that is culverted for distances greater than a simple roadway crossing may have a high illicit discharge potential.
    - No culverted stream data available.
- Water quality limited water bodies – Impaired waters and/or waters with approved TMDL(s) that receive discharge from the MS4 have a high illicit discharge potential if the discharges could contain the pollutant identified as the cause of the water quality impairment.
    - Impaired water bodies are listed in Table 1-1.
    - If a receiving waterbody for an outfall is considered impaired, the outfall rank is prioritized as high in the Catchment Ranking Table.

Appendix C contains the initial outfall priority ranking matrix and catchment delineation mapping completed for the Town. Based on this initial ranking, the highest-ranking catchments are associated with Old Swamp River, Cushing Brook, French Stream, and Studleys Pond.

SECTION 6 DRY WEATHER OUTFALL SCREENING AND SAMPLING

Dry weather flow is a common indicator of potential illicit connections. The MS4 Permit requires all outfalls/interconnections (excluding Problem and Excluded Outfalls) to be inspected for the presence of dry weather flow. The Highway Department, or hired representatives, are responsible for conducting dry weather outfall screening, starting with High Priority outfalls, followed by Low Priority outfalls, based on the initial priority rankings described in the previous section.

SECTION 6.1 WEATHER CONDITIONS

Dry weather outfall screening and sampling may occur when no more than 0.1 inches of rainfall has occurred in the previous 24-hour period and no significant snowmelt is occurring. For purposes of determining dry weather conditions, program staff can precipitation data from the Rockland Fire HQ Station (Station ID KMAROCKL6). If the Rockland Fire HQ Station is not available or not reporting current weather data, then the Rockland Station (Station ID KMAROCKL8) can be used as a back-up.

SECTION 6.2 DRY WEATHER SCREENING/SAMPLING PROCEDURE

Section 6.2.1 General Procedure

The dry weather outfall inspection and sampling procedure consists of the following general steps:

1. Identify outfall(s) to be screened/sampled based on initial outfall inventory and priority ranking.
2. Acquire the necessary staff, mapping, and field equipment (see **Table 6-1** for list of potential field equipment).
3. Conduct the outfall inspection during dry weather:
    a. Mark and photograph the outfall.
    b. Record the inspection information and outfall characteristics (using paper forms or digital form using a tablet or similar device) (see form in **Appendix D**).
    c. Look for and record visual/olfactory evidence of pollutants in flowing outfalls including odor, color, turbidity, and floatable matter (suds, bubbles, excrement, toilet paper, or sanitary products). Also, observe outfalls for deposits and stains, vegetation, and damage to outfall structures.
4. If flow is observed, sample and test the flow following the procedures described in the following sections.
5. If no flow is observed, but evidence of illicit flow exists (illicit discharges are often intermittent or transitory), revisit the outfall during dry weather within one (1) week of the initial observation, if practicable, to perform a second dry weather screening and sample any observed flow. Other techniques can be used to detect intermittent or transitory flows including conducting inspections during evenings or weekends and using optical brighteners.

6. Input results from screening and sampling into spreadsheet/database. Include pertinent information in the outfall/interconnection inventory and priority ranking.
7. Include all screening data in the annual report.

Previous outfall screening/sampling conducted under the 2003 MS4 Permit may be used to satisfy the dry weather outfall/screening requirements of the 2016 MS4 Permit only if the previous screening and sampling was substantially equivalent to that required by the 2016 MS4 Permit, including the list of analytes outlined in Section 2.3.4.7.b.iii.4 of the 2016 Permit.

Section 6.2.2 Field Equipment

Table 6-1 lists field equipment commonly used for dry weather outfall screening and sampling.

Table 6-1 Field Equipment – Dry Weather Outfall Screening and Sampling

Equipment	Use/Notes
Clipboard	For organization of field sheets and writing surface
Field Sheets	Field sheets for both dry weather inspection and dry weather sampling should be available with extras
Chain of Custody Forms	To ensure proper handling of all samples
Pens/Pencils/Permanent Markers	For proper labeling
Nitrile Gloves	To protect the sampler as well as the sample from contamination
Flashlight/headlamp with Batteries	For looking in outfalls or manholes, helpful in early mornings as well
Cooler with Ice	For transporting samples to the laboratory
Digital Camera	For documenting field conditions at time of inspection
Personal Protective Equipment (PPE)	Reflective vest, safety glasses, and boots at a minimum
GPS Receiver	For taking spatial location data
Water Quality Sonde	If needed, for sampling conductivity, temperature, pH
Water Quality Meter	Handheld meter, if available, for testing for various water quality parameters such as ammonia, surfactants, and chlorine
Test Kits	Have extra kits on hand to sample more outfalls than are anticipated to be screened in a single day
Label Tape	For labeling sample containers
Sample Containers	Make sure all sample containers are clean. Always keep extra sample containers on hand. Make sure there are proper sample containers for what is being sampled for (i.e., bacteria require sterile containers)
Pry Bar or Pick	For opening catch basins and manholes when necessary

Equipment	Use/Notes
Sandbags	For damming low flows to take samples
Small Mallet or Hammer	Helping to free stuck manhole and catch basin covers
Utility Knife	Multiple uses
Measuring Tape	Measuring distances and depth of flow
Safety Cones	Safety
Hand Sanitizer	Disinfectant/decontaminant
Zip Ties/Duct Tape	For making field repairs
Rubber Boots/Waders	For accessing shallow streams/areas
Sampling Pole/Dipper/Sampling Cage	For accessing hard to reach outfalls and manholes

Section 6.2.3 Sample Collection and Analysis

If flow is present during a dry weather outfall inspection, a sample must be collected and analyzed for the required permit parameters listed in **Table 6-2**. The general procedure for collection of outfall samples is as follows:

1. Fill out all sample information on sample bottles and field sheets (see **Appendix D** for Field Sheets).
2. Put on protective gloves (nitrile/latex/other) before sampling.
3. Collect samples with dipper or directly in sample containers. If possible, collect water from the flow directly in the sample bottle. Be careful not to disturb sediments.
4. If using a dipper or other device, triple rinse the device with distilled water and then in water to be sampled (not for bacteria sampling).
5. Use test strips, test kits, and field meters (rinse similar to dipper) for most parameters (see **Table 6-2**).
6. Place laboratory samples on ice for analysis of bacteria and pollutants of concern.
7. Fill out chain-of-custody form for laboratory samples.
8. Deliver samples to Massachusetts state certified laboratory.
9. Dispose of used test strips and test kit ampules properly.
10. Decontaminate all testing personnel and equipment.

If an outfall is submerged, either partially or completely, or inaccessible, field staff can proceed to the first accessible upstream manhole or structure for the observation and sampling and report the location with the screening results. Field staff must continue to the next upstream structure until there is no longer an influence from the receiving water on the visual inspection or sampling.

Field test kits or field instrumentation are permitted for all parameters except indicator bacteria and any pollutants of concern. Field kits need to have appropriate detection limits and ranges. **Table 6-2** lists various field test kits and field instruments that can be used for outfall sampling associated with the 2016 MS4 Permit parameters, other than indicator bacteria and any pollutants of concern.

Table 6-2 Field Screening Parameters and Analysis Methods

Analyte or Parameter	Instrumentation (Portable Meter)	Field Test Kit
Ammonia	CHEMetrics™ V-2000 Colorimeter Hach™ DR/890 Colorimeter Hach™ Pocket Colorimeter™ II	CHEMetrics™ K-1410 CHEMetrics™ K-1510 (series) Hach™ NI-SA Hach™ Ammonia Test Strips
Surfactants (Detergents)	CHEMetrics™ I-2017	CHEMetrics™ K-9400 and K-9404 Hach™ DE-2
Chlorine	CHEMetrics™ V-2000, K-2513 Hach™ Pocket Colorimeter™ II	NA
Conductivity	CHEMetrics™ I-1200 YSI Pro30 YSI EC300A Oakton 450	NA
Temperature	YSI Pro30 YSI EC300A Oakton 450	NA
Salinity	YSI Pro30 YSI EC300A Oakton 450	NA
Dissolved Oxygen	YSI Pro30 YSI EC300A Oakton 450	NA
Turbidity	Hach™ 2100Q Portable Turbidimeter Oakton CON 150	NA

Testing for indicator bacteria and any pollutants of concern must be conducted using analytical methods and procedures found in 40 CFR § 136. Samples for laboratory analysis must also be stored and preserved in accordance with procedures found in 40 CFR § 136. **Table 6-3** lists analytical methods, detection limits, hold times, and preservatives for laboratory analysis of dry weather sampling parameters.

Table 6-3 Required Analytical Methods, Detection Limits, Hold Times, and Preservatives

Analyte or Parameter	Analytical Method	Detection Limit	Max. Hold Time	Preservative
Ammonia	**EPA**: 350.2 **SM**: 4500-NH3C	0.05 mg/L	28 days	Cool ≤6°C, H_2SO_4 to pH <2, No preservative required if analyzed immediately
Surfactants	**SM**: 5540-C	0.01 mg/L	48 hours	Cool ≤6°C
Chlorine	**SM**: 4500-Cl G	0.02 mg/L	Analyze within 15 minutes	None Required
Temperature	**SM**: 2550B	*NA*	Immediate	None Required
Specific Conductance	**EPA**: 120.1 **SM**: 2510B	0.2 µs/cm	28 days	Cool ≤6°C
Salinity	**SM**: 2520	-	28 days	Cool ≤6°C
Biochemical Oxygen Demand (BOD)	**EPA:** 360.1	**EPA:** 3 mg/L	48 hours	Cool ≤6°C
Dissolved Oxygen	**EPA:** 365.1	**EPA:** 1 mg/L	Immediate	Cool ≤6°C
Turbidity	**EPA:** 160.2	**EPA:** 1 NTU	48 hours	Cool ≤6°C
Indicator Bacteria: *E.coli* *Enterococcus* *Fecal Coliform*	*E.coli* **EPA**: 1603 **SM**: 9221B, 9221F , 9223 B **Other**: Colilert ®, Colilert-18® *Enterococcus* **EPA**: 1600 **SM**: 9230 C **Other**: Enterolert® *Fecal Coliform* **EPA:** 1680	*E.coli* **EPA**: 1 cfu/100mL **SM**: 2 MPN/100mL **Other**: 1 MPN/100mL *Enterococcus* **EPA**: 1 cfu/100mL **SM**: 1 MPN/100mL **Other**: 1 MPN/100mL *Fecal Coliform* **EPA:** 1 ctu	8 hours	Cool ≤10°C, 0.0008% $Na_2S_2O_3$
Total Phosphorus	**EPA**: Manual-365.3, Automated Ascorbic acid digestion-365.1 Rev. 2, ICP/AES4-200.7 Rev. 4.4 **SM**: 4500-P E-F	**EPA**: 0.01 mg/L **SM** : 0.01 mg/L	28 days	Cool ≤6°C, H_2SO_4 to pH <2
Total Nitrogen (Ammonia + Nitrate/Nitrite, methods are for Nitrate-Nitrite and need to be combined with Ammonia listed above.)	**EPA**: Cadmium reduction (automated)-353.2 Rev. 2.0, **SM**: 4500-NO_3 E-F	**EPA**: 0.05 mg/L **SM** : 0.05 mg/L	28 days	Cool ≤6°C, H_2SO_4 to pH <2

40 CFR § 136: http://www.ecfr.gov/cgi-bin/text idx?SID=b3b41fdea0b7b0b8cd6c4304d86271b7&mc=true&node=pt40.25.136&rgn=div5
SM = Standard Methods

SECTION 6.3 INTERPRETING OUTFALL SAMPLING RESULTS

Outfall analytical data from dry weather sampling can be used to help identify the major type or source of discharge. **Table 6-4** shows values identified by the EPA and the Center for Watershed Protection as typical screening values for select parameters. These represent the typical concentration (or value) of each parameter expected to be found in stormwater. Screening values that exceed these benchmarks may be indicative of pollution and/or illicit discharges.

Table 6-4 Benchmark Field Measurements for Select Parameters

Analyte or Parameter	Benchmark
Ammonia	>0.5 mg/L
Conductivity	>2,000 µS/cm
Surfactants	>0.25 mg/L
Chlorine	>0.02 mg/L (detectable levels per the 2016 MS4 Permit)
Indicator Bacteria: *E.coli* *Enterococcus*	*E.coli*: the geometric mean of the five most recent samples taken during the same bathing season shall not exceed 126 colonies per 100 mL and no single sample taken during the bathing season shall exceed 235 colonies per 100 mL *Enterococcus:* the geometric mean of the five most recent samples taken during the same bathing season shall not exceed 33 colonies per 100 mL and no single sample taken during the bathing season shall exceed 61 colonies per 100 mL

SECTION 6.4 DRY WEATHER WORK COMPLETED TO DATE

The Town's outfall inventory contained 130 outfalls when the NOI was submitted in 2018. Town field staff, or hired representatives, screened many outfalls as part of the 2003 MS4 Permit, and since the start of the new 2016 MS4 Permit, the Town has completed dry weather screening of the remaining outfalls. Screenings were completed over the course of two days in May 2020 and two days in March 2021. During screening, field staff observed that 59 outfalls were dry and 11 were flowing during dry weather. Based on field observations, the Town removed an additional 60 previously identified outfall structures from the Town's outfall inventory because the structures were identified as BMP inlet/outlets, culvert inlet/outlets, private outfalls, or removed for a different reason. During the 2023 field investigations, two (2) outfalls were identified as being culverted streams and were removed from the outfall inventory, thus bringing the total to 68 outfalls. Screening and sampling results are attached in **Appendix E**.

SECTION 6.5 FOLLOW-UP RANKING OF OUTFALLS AND INTERCONNECTIONS

The Town of Rockland is responsible for updating the ranking of outfalls and interconnections. Outfalls/interconnections where relevant information is found indicating sewer input to the MS4 or sampling results indicating sewer input are highly likely to contain illicit discharges from sanitary sources. Such outfalls/interconnections are ranked at the top of the High Priority Outfalls category for investigation. Other outfalls and interconnections may be re-ranked based on any new information from the dry weather screening.

The Town updated and re-prioritized the initial outfall and interconnection rankings based on information gathered during dry weather screening over the first three (3) years of the permit term (June 30, 2021). Based on field screening conducted in 2019, 2020, 2021, and 2023 62 outfalls were determined to be structures other than MS4 outfalls and removed from the ranking. 15 outfalls were classified as Problem Outfalls in the original ranking table and have been re-classified as high priority outfalls in the ranking table update. Sampling results that triggered the Problem Outfall status were re-examined and determined to not meet the criteria for problem outfalls as defined in the 2016 MS4 Permit Section 2.3.4.7.a. ii.

Three (3) outfalls were elevated from a Low Priority to a High Priority Outfall. Some of these structures had levels of ammonia or pH outside allowable ranges during dry weather sampling, which triggered the high priority ranking. Also, outfalls were elevated to a high priority if they discharged to Cushing Brook. Cushing Brook was re-classified as Category 5 from Category 3 in the updated 2016 Integrated List of Waters. The updated ranking table is attached as Appendix C.

SECTION 7 CATCHMENT INVESTIGATIONS

Once stormwater outfalls with evidence of illicit discharges have been identified, various methods can be used to trace the source of the potential discharge within the outfall catchment area.

Catchment investigation techniques include, but are not limited to, review of maps, historic plans, and records; manhole observation; dry and wet weather sampling; video inspection; smoke testing; and dye testing. This section outlines a systematic procedure to investigate outfall catchments to trace the source of potential illicit discharges. All data collected as part of the catchment investigations is recorded and reported in each annual report.

SECTION 7.1 SYSTEM VULNERABILITY FACTORS (SVFS)

The Highway Department is in the process of reviewing relevant mapping and historic plans and records to identify areas within the catchments with higher potential for illicit connections. The following information has been collected:

- Plans related to the construction of the drainage network
- Plans related to the construction of the sewer network
- Prior work on storm drains or sewer lines
- Board of Health or other municipal data on septic systems
- Complaint records related to SSOs
- Septic system breakouts.

Based on the review of this information, the presence of any System Vulnerability Factors (SVFs) have been identified for each catchment and will continue to be evaluated. The following are required SVFs to be considered:

- History of SSOs, including, but not limited to, those resulting from wet weather, high water table, or fat/oil/grease blockages
- Common or twin-invert manholes serving storm and sanitary sewer alignments
- Common trench construction serving both storm and sanitary sewer alignments
- Crossings of storm and sanitary sewer alignments where the sanitary system is shallower than the storm drain system
- Sanitary sewer alignments known or suspected to have been constructed with an underdrain system
- Inadequate sanitary sewer level of service (LOS) resulting in regular surcharging, customer back-ups, or frequent customer complaints
- Areas formerly served by combined sewer systems
- Sanitary sewer infrastructure defects such as leaking service laterals, cracked, broken, or offset sanitary infrastructure, directly piped connections between storm drain and sanitary sewer infrastructure, or other vulnerability factors identified through Inflow/Infiltration Analyses, Sanitary Sewer Evaluation Surveys, or other infrastructure investigations.

The following are optional SVFs the EPA recommends considering:

- Any storm drain infrastructure greater than 40 years old
- Widespread code-required septic system upgrades required at property transfers (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance)
- History of multiple Board of Health actions addressing widespread septic system failures (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance)
- Sewer pump/lift stations, siphons, or known sanitary sewer restrictions where power/equipment failures or blockages could readily result in SSOs
- Any sanitary sewer infrastructure greater than 40 years old.

An SVF inventory is in the process of being developed for each catchment and will continue to be filled out for each catchment as SVFs are identified. The SVF inventory will be included in each annual report. An SVF analysis was unable to be conducted for the catchments visited in 2023 investigations, and no SVFs were able to be identified for any catchments due to limited information from the Town of Rockland. For this reason, there is no SVF Assessment attachment.

Catchment investigations are to commence in Fall 2024. An updated SVF Assessment will be included in the Year 7 IDDE Plan and will include the catchment locations from 2023.

SECTION 7.2 DRY WEATHER MANHOLE INSPECTIONS

The Town of Rockland will implement a dry weather storm drain network investigation that involves systematically and progressively observing, sampling, and evaluating key junction manholes in the MS4 to determine the approximate location of suspected illicit discharges or SSOs.

The Highway Department will be responsible for implementing the dry weather manhole inspection program and making updates as necessary. Infrastructure information will be incorporated into the storm system map, and catchment delineations will be refined based on the field investigation, where necessary. The SVF inventory will also be updated based on information obtained during the field investigations, where necessary.

Several important terms related to the dry weather manhole inspection program are defined by the MS4 Permit as follows:

- **Junction Manhole** is a manhole or structure with two or more inlets accepting flow from two or more MS4 alignments. Manholes with inlets solely from private storm drains, individual catch basins, or both are not considered junction manholes for these purposes.
- **Key Junction Manholes** are those junction manholes that can represent one or more junction manholes without compromising adequate implementation of the illicit discharge program. Adequate implementation of the illicit discharge program would not be compromised if the exclusion of a particular junction manhole as a key junction manhole would not affect the permittee's ability to determine the possible presence of an upstream

illicit discharge. A permittee may exclude a junction manhole located upstream from another located in the immediate vicinity or that is serving a drainage alignment with no potential for illicit connections.

For all catchments identified for investigation, during dry weather, field crews systematically inspect key junction manholes for evidence of illicit discharges. This program involves progressive inspection and sampling at manholes in the storm drain network to isolate and eliminate illicit discharges.

The manhole inspection methodology is conducted in one of two ways (or a combination of both):

- By working progressively up from the outfall and inspecting key junction manholes along the way, or
- By working progressively down from the upper parts of the catchment toward the outfall.

For most catchments, manhole inspections proceed from the outfall moving up into the system.

However, the decision to move up or down the system depends on the nature of the drainage system and the surrounding land use and the availability of information on the catchment and drainage system. Moving up the system can begin immediately when an illicit discharge is detected at an outfall, and only a map of the storm drain system is required. Moving down the system requires more advance preparation and reliable drainage system information on the upstream segments of the storm drain system but may be more efficient if the sources of illicit discharges are believed to be located in the upstream portions of the catchment area. Once a manhole inspection methodology has been selected, investigations will continue systematically through the catchment.

Inspection of key junction manholes proceeds as follows:

1. Manholes are opened and inspected for visual and olfactory evidence of illicit connections. A sample field inspection form is provided in Appendix D.
2. If flow is observed, a sample is collected and analyzed at a minimum for ammonia, chlorine, and surfactants. Field kits can be used for these analyses. Sampling and analysis are in accordance with procedures outlined in Section 6. Additional indicator sampling may assist in determining potential sources (e.g., bacteria for sanitary flows, conductivity to detect tidal backwater, etc.).
3. Where sampling results or visual or olfactory evidence indicate potential illicit discharges or SSOs, the area draining to the junction manhole is flagged for further upstream manhole investigation and/or isolation and confirmation of sources.
4. Subsequent key junction manhole inspections proceed until the location of suspected illicit discharges or SSOs can be isolated to a pipe segment between two manholes.
5. If no evidence of an illicit discharge is found, catchment investigations are considered complete upon completion of key junction manhole sampling.

SECTION 7.3 WET WEATHER OUTFALL SAMPLING

Where a minimum of one (1) SVF is identified based on previous information or the catchment investigation, a wet weather investigation must also be conducted at the associated outfall. The Highway Department will be responsible for implementing the wet weather outfall sampling program and making updates as necessary. Outfalls will be inspected and sampled under wet weather conditions, to the extent necessary, to determine whether wet weather-induced high flows in sanitary sewers or high groundwater in areas served by septic systems result in discharges of sanitary flow to the MS4.

Wet weather outfall sampling will proceed as follows:

1. At least one wet weather sample will be collected at the outfall for the same parameters required during dry weather screening.
2. Wet weather sampling will occur during or after a storm event of sufficient depth or intensity to produce a stormwater discharge at the outfall. There is no specific rainfall amount that will trigger sampling, although minimum storm event intensities that are likely to trigger sanitary sewer interconnections are preferred. To the extent feasible, sampling should occur during the spring (March through June) when groundwater levels are relatively high.
3. If wet weather outfall sampling indicates a potential illicit discharge, then additional wet weather source sampling will be performed, as warranted, or source isolation and confirmation procedures will be followed as described in Section 7.5. If wet weather outfall sampling does not identify evidence of illicit discharges, and no evidence of an illicit discharge is found during dry weather manhole inspections, catchment investigations will be considered complete.

SECTION 7.4 SOURCE ISOLATION AND CONFIRMATION

Once the source of an illicit discharge is approximated between two manholes, more detailed investigation techniques will be used to isolate and confirm the source of the illicit discharge. The following methods may be used in isolating and confirming the source of illicit discharges:

- Sandbagging
- Smoke Testing
- Dye Testing
- CCTV/Video Inspections
- Optical Brightener Monitoring
- IDDE Canines

These methods are described in the sections below. Instructions for these and other IDDE methods are provided in Appendix G.

Public notification is an important aspect of a detailed source. The Highway Department will notify property owners in the affected area. Smoke testing notification will include hanging notifications for single family homes and posting notifications in businesses and building lobbies of multi-family dwellings.

Section 7.4.1 Sandbagging

This technique can be particularly useful when attempting to isolate intermittent illicit discharges or those with very little perceptible flow. The technique involves placing sandbags or similar barriers (e.g., caulking, weirs/plates, or other temporary barriers) within outlets to manholes to form a temporary dam that collects any intermittent flows that may occur. Sandbags are typically left in place for 48 hours and should only be installed when dry weather is forecasted. If flow has collected behind the sandbags/barriers after 48 hours, it can be assessed using visual observations or by sampling. If no flow collects behind the sandbags/barriers, the upstream pipe network can be ruled out as a source of the intermittent discharge. Finding appropriate durations of dry weather and the need for multiple trips to each manhole makes this method both time-consuming and somewhat limiting.

Section 7.4.2 Smoke Testing

Smoke testing involves injecting non-toxic smoke into drain lines and noting the emergence of smoke from sanitary sewer vents in illegally connected buildings or from cracks and leaks in the system itself. Typically, a smoke bomb or smoke generator is used to inject the smoke into the system at a catch basin or manhole, and air is then forced through the system. Test personnel are placed in areas where there are suspected illegal connections or cracks/leaks, noting any escape of smoke (indicating an illicit connection or damaged storm drain infrastructure). It is important when using this technique to make proper notifications to area residents and business owners as well as local police and fire departments.

If the initial test of the storm drain system is unsuccessful, then a more thorough smoke test of the sanitary sewer lines can also be performed. Unlike storm drain smoke tests, buildings that do not emit smoke during sanitary sewer smoke tests may have problem connections and may also have sewer gas venting inside, which is hazardous.

It should be noted that smoke may cause minor irritation of respiratory passages. Residents with respiratory conditions may need to be monitored or evacuated from the area of testing altogether to ensure safety during testing.

Section 7.4.3 Dye Testing

Dye testing involves flushing non-toxic dye into plumbing fixtures such as toilets, showers, and sinks and observing nearby storm drains and sewer manholes as well as stormwater outfalls for the presence of the dye. Similar to smoke testing, it is important to inform local residents and business owners. Police, fire, and local public health staff should also be notified prior to testing in preparation of responding to citizen phone calls concerning the dye and their presence in local surface waters.

A team of two or more people is needed to perform dye testing (ideally, all with two-way radios). One person is inside the building, while the others are stationed at the appropriate storm sewer and sanitary sewer manholes (which should be opened) and/or outfalls. The person inside the building

adds dye into a plumbing fixture (e.g., toilet or sink) and runs a sufficient amount of water to move the dye through the plumbing system. The person inside the building then radios to the outside crew that the dye has been dropped, and the outside crew watches for the dye in the storm sewer and sanitary sewer, recording the presence or absence of the dye.

The test can be relatively quick (about 30 minutes per test), effective (results are usually definitive), and inexpensive. Dye testing is best used when the likely source of an illicit discharge has been narrowed down to a few specific houses or businesses.

Section 7.4.4 CCTV/Video Inspection

Another method of source isolation involves the use of mobile video cameras that are guided remotely through stormwater drain lines to observe possible illicit discharges. IDDE program staff can review the videos and note any visible illicit discharges. While this tool is both effective and usually definitive, it can be costly and time-consuming when compared to other source isolation techniques.

Section 7.4.5 Optical Brightener Monitoring

Optical brighteners are fluorescent dyes that are used in detergents and paper products to enhance their appearance. The presence of optical brighteners in surface waters or dry weather discharges suggests there is a possible illicit discharge or insufficient removal through adsorption in nearby septic systems or wastewater treatment. Optical brightener monitoring can be done in two ways.

The most common, and least expensive, methodology involves placing a cotton pad in a wire cage and securing it in a pipe, manhole, catch basin, or inlet to capture intermittent dry weather flows. The pad is retrieved later and placed under UV light to determine the presence/absence of brighteners during the monitoring period. A second methodology uses handheld fluorometers to detect optical brighteners in water samples collected from outfalls or ambient surface waters. Use of a fluorometer, while more quantitative, is typically more costly and is not as effective at isolating intermittent discharges as other source isolation techniques.

Section 7.4.6 IDDE Canines

Dogs specifically trained to smell human-related sewage are becoming a cost-effective way to isolate and identify sources of illicit discharges. While not widespread at the moment, the use of IDDE canines is growing as is the canines' accuracy. The use of IDDE canines is not recommended as a standalone practice for source identification; rather it is recommended as a tool to supplement other conventional methods, such as dye testing, to fully verify sources of illicit discharges.

SECTION 7.5 ILLICIT DISCHARGE REMOVAL

When the specific source of an illicit discharge is identified, the Town of Rockland will exercise its authority as necessary to require its removal. The annual report will include the status of IDDE investigation and removal activities including the following information for each confirmed source:

- The location of the discharge and its source(s)
- A description of the discharge
- The method of discovery
- Date of discovery
- Date of elimination, mitigation, or enforcement action OR planned corrective measures and a schedule for completing the illicit discharge removal
- Estimate of the volume of flow removed.

Section 7.5.1 Confirmatory Outfall Screening

Within one (1) year of removal of all identified illicit discharges within a catchment area, confirmatory outfall or interconnection screening will be conducted. The confirmatory screening will be conducted in dry weather unless SVFs have been identified, in which case both dry weather and wet weather confirmatory screening will be conducted. If confirmatory screening indicates evidence of additional illicit discharges, the catchment will be scheduled for additional investigation.

SECTION 7.6 CATCHMENT INVESTIGTION WORK COMPLETED TO DATE

The Town of Rockland has begun conducting catchment investigations. Catchment investigations were conducted in May and June 2023. Town representatives visited 37 catchments during dry weather conditions. Catchment investigations at 30 catchments were fully completed; initial field investigations were completed at 4 catchments and require additional Town assistance to complete the field work. These catchments were selected based on their high priority ranking in the outfall catchment ranking table. No indicators of likely sewer input were observed. Catchment investigations for 30 out of the 67 catchments visited were considered complete.

Dry weather catchment investigations are scheduled to begin in Fall 2024 and the investigation progress and findings will be incorporated into the Year 7 IDDE Plan

SECTION 7.7 ASSET MANAGEMENT PLAN (AMP)

To assist with the inventory of both the Town's sanitary sewer system and stormwater system, the Town applied for a Clean Water State Revolving Fund (CWSRF) in October 2023. The purpose of the grant was to complete an asset inventory of the Town's existing sanitary sewer and stormwater infrastructure to better understand the utilities existing condition, network connectivity and maintenance needs with the goal of better management of the Town's infrastructure. As part of the implementation of the Asset Management Plan (AMP), fieldwork such as initial condition assessment and utilizing a global positioning system (GPS) to update the location of assets were performed. In conjunction with the AMP and updated mapping, the Town will be able to fully complete catchment investigations. The date of completion of the AMP is December 1, 2024.

SECTION 7.8 ONGOING SCREENING

Upon completion of all catchment investigations and illicit discharge removal and confirmation (if necessary), each outfall or interconnection will be re-prioritized for screening and scheduled for ongoing screening once every five (5) years. Ongoing screening will consist of dry weather screening and sampling consistent with the procedures described in **Section 6** of this plan. Ongoing wet weather screening and sampling will also be conducted at outfalls where wet weather screening was required due to SVFs and will be conducted in accordance with the procedures described in **Section 7.3**. All sampling results will be reported in the annual report.

SECTION 8 TRAINING

Annual IDDE training is made available to all employees involved in the IDDE program. This training includes information on how to identify illicit discharges and SSOs and may also include additional training specific to the functions of personnel and their function within the framework of the IDDE program. Training records are and will continue to be maintained. The frequency and type of training is included in the annual report.

SECTION 9 PROGRESS REPORTING

The progress and success of the IDDE program is evaluated on an annual basis. The evaluation is documented in the annual report and includes the following indicators of program progress:

- Number of SSOs and illicit discharges identified and removed
- Number and percent of total outfall catchments served by the MS4 evaluated using the catchment investigation procedure
- Number of dry weather outfall inspections/screenings
- Number of wet weather outfall inspections/sampling events
- Number of enforcement notices issued
- All dry weather and wet weather screening and sampling results
- Estimate of the volume of sewage removed, as applicable
- Number of employees trained annually.

The success of the IDDE program is measured by the IDDE activities completed within the required permit timelines.

APPENDIX A

Legal Authority (IDDE By-law or Ordinance)

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ARTICLE I – GENERAL PROVISIONS

Section 1. Purpose and Objective

A. The purpose of this bylaw is to protect the health, safety, general welfare, and environment by regulating illicit connections and discharges to the storm drain system or, directly or indirectly, to a watercourse or into the waters of the Commonwealth, as well as to control the adverse effects of construction site stormwater runoff and post-construction runoff. Stormwater runoff is potentially a major cause of:

(1) Impairment of water quality and flow in lakes, ponds, streams, rivers, wetlands, groundwater and drinking water supplies;
(2) Contamination of drinking water supplies;
(3) Contamination of downstream coastal areas;
(4) Alteration or destruction of aquatic and wildlife habitat;
(5) Overloading or clogging of municipal stormwater management systems; and
(6) Flooding.

B. The objectives of this bylaw are:

(1) Protect water resources;
(2) Comply with state and federal statutes and regulations relating to stormwater discharges including total maximum daily load requirements;
(3) To prevent pollutants from entering the Town's municipal separate storm sewer system (MS4) and reduce or eliminate pollutants entering the Towns MS4 from existing uses;
(4) To prohibit illicit connections and unauthorized discharges to the MS4 and require their removal;
(5) To establish minimum construction and post construction stormwater management standards and design criteria for the regulation and control of stormwater runoff quantity and quality;
(6) To establish provisions for the long-term responsibility for, and maintenance of, structural stormwater control facilities and nonstructural stormwater management practices to ensure that they continue to function as designed are maintained, and pose not treat to public safety; and
(7) To establish the Town of Rockland's legal authority to ensure compliance with the provisions of this bylaw through inspection, monitoring, and enforcement.

Section 2. Definitions

Unless a different definition is indicated in other sections of this bylaw, the following definitions and provisions shall apply throughout this bylaw:

ABUTTER: The owner(s) of land abutting the activity.

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

ALTERATION OF DRAINAGE CHARACTERISTICS: Any activity on an area of land that

changes the water quality, force, direction, timing or location of runoff flowing from the area. Such changes include: change from distributed runoff to confined, discrete discharge, change in the volume of runoff from the area; change in the peak rate of runoff from the area; and change in the recharge to groundwater on the area.

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

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

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

CLEARING: Any activity that removes the vegetative surface cover

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

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

EROSION: The wearing away of the land surface by natural or artificial forces such as wind, water, ice, gravity, or vehicle traffic and the subsequent detachment and transportation of soil particles.

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

EROSION CONTROL: The prevention or reduction of the movement of soil particles or rock fragments due to stormwater runoff.

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

FLOODING: A local and temporary inundation or rise in the surface of a body of water, such that it covers land not usually under water.

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

GROUNDWATER: Water beneath the surface of the ground.

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

ILLICIT CONNECTION: A surface or subsurface drain or conveyance which allows an illicit discharge into the municipal storm drain system, including without limitation sewage, process wastewater, or wash water, and any connections from indoor drains, sinks, or toilets, regardless of whether said connection was previously allowed, permitted, or approved before the effective date of this bylaw.

ILLICIT DISCHARGE - Direct or indirect discharge to the municipal storm drain system or into a watercourse or the waters of the Commonwealth that is not composed entirely of

stormwater, except as exempted in s. X. The term does not include a discharge in compliance with an NPDES stormwater discharge permit or resulting from fire-fighting activities exempted pursuant to § X of this bylaw.

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

IMPOUNDMENT: A stormwater pond created by either constructing an embankment or excavating a pit which retains a permanent pool of water.

INFILTRATION: The act of conveying surface water into the ground to permit groundwater recharge and the reduction of stormwater runoff from a project site.

LAND-DISTURBING ACTIVITY: Any activity that causes a change in the position or location of soil, sand, rock, gravel, or similar earth material***;*** results in an increased amount of runoff or pollutants; measurably changes the ability of a ground surface to absorb waters, involves clearing and grading, or results in an alteration of drainage characteristics.

LOAD ALLOCATION – The maximum concentration or mass of a pollutant which can be discharged to a waterway non-point sources without causing a violation of surface water quality standards as established in an applicable TMDL.

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

MASSACHUSETTS STORMWATER MANAGEMENT STANDARDS: The Stormwater Standards as further defined by the Massachusetts Stormwater Handbook both issued by the Department of Environmental Protection, and as amended, that coordinate the requirements prescribed by state regulations promulgated under the authority of the Massachusetts Wetlands Protection Act G.L. c. 131 §. 40 and Massachusetts Clean Waters Act G.L. c. 21, §. 23-56. The Standards address stormwater impacts through implementation of performance standards to reduce or prevent pollutants from reaching water bodies and control the quantity of runoff from a site.

MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) or MUNICIPAL STORM DRAIN SYSTEM - The system of conveyances designed or used for collecting or conveying stormwater, including any road with a drainage system, street, gutter, curb, inlet, piped storm drain, pumping facility, retention or detention basin, natural or man-made or altered drainage channel, reservoir, and other drainage structure that together comprise the storm drainage system owned or operated by the Town of Rockland.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORMWATER DISCHARGE PERMIT - A permit issued by United States Environmental Protection Agency or jointly with the Commonwealth of Massachusetts that authorizes the discharge of pollutants to waters of the United States.

NONSTORMWATER DISCHARGE - Discharge to the municipal storm drain system not composed entirely of stormwater.

OPERATION AND MAINTENANCE PLAN: A plan setting up the functional, financial and organizational mechanisms for the ongoing operation and maintenance of a stormwater management system to insure that it continues to function as designed.

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

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

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

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

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

PRE-CONSTRUCTION: All activity in preparation for construction.

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

A. Paints, varnishes, and solvents;
B. Oil and other automotive fluids;
C. Nonhazardous liquid and solid wastes and yard wastes;
D. Refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordnance, accumulations and floatables;
E. Pesticides, herbicides, and fertilizers;
F. Hazardous materials and wastes; sewage, fecal coliform and pathogens;
G. Dissolved and particulate metals;
H. Animal wastes;
I. Rock; sand; salt; soils;
J. Construction wastes and residues; and
K. Noxious or offensive matter of any kind.

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

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

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

REDEVELOPMENT: Development, rehabilitation, expansion, demolition or phased projects that disturb the ground surface, including impervious surfaces, on previously developed sites. The creation of new areas of impervious surface or new areas of land disturbance on a site constitutes development, not redevelopment, even where such activities are part of a common plan which also involves redevelopment. Redevelopment includes maintenance and improvement of existing roadways including widening less than a single lane, adding shoulders, correcting substandard intersections, improving existing drainage systems and repaving; and remedial projects specifically designed to provide improved stormwater management such as projects to separate storm drains and sanitary sewers and stormwater retrofit projects.

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

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

SEDIMENTATION: The process or act of deposition of sediment.

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

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

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

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

STORMWATER AUTHORITY – Town of Rocklands Board of Selectman or its authorized agent(s).

STORMWATER - Runoff from precipitation or snow melt and surface water runoff and drainage.

STORMWATER MANAGEMENT PLAN: A plan required as part of the application for a Stormwater Management Permit.

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

TOTAL MAXIMIM DAILY LOAD or TMDL – A plan required under the Clean Water Act for a pollutant which causes or contributes to a violation of state surface water quality standards in a specific geographic area, and which establishes the maximum amount of that pollutant (referred to as the load allocation and waste load allocation) which may be discharged to the affected waters of the Commonwealth by one or more categories of users without violating state surface water quality standards.

TOXIC OR HAZARDOUS MATERIAL OR WASTE - Any material which, because of its quantity, concentration, chemical, corrosive, flammable, reactive, toxic, infectious or radioactive characteristics, either separately or in combination with any substance or

substances, constitutes a present or potential threat to human health, safety, welfare, or to the environment. Toxic or hazardous materials include any synthetic organic chemical, petroleum product, heavy metal, radioactive or infectious waste, acid and alkali, and any substance defined as "toxic" or "hazardous" under MGL c. 21C and c. 21E, and the regulations at 310 CMR 30.000 and 310 CMR 40.0000.

TSS: Total Suspended Solids**.**

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

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

WASTE LOAD ALLOCATION – The maximum concentration or mass of a pollutant which can be discharged to a waterway from point sources without causing a violation of surface water quality standards as established in an applicable TMDL.

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

WATERS OF THE COMMONWEALTH - All waters within the jurisdiction of the commonwealth, including, without limitation, rivers, streams, lakes, ponds, springs, impoundments, estuaries, wetlands, coastal waters, and groundwater.

WETLAND RESOURCE AREA: Areas specified in the Massachusetts Wetlands Protection Act G.L. c. 131, § 40 and in the Town of Rockland Wetlands Protection Bylaw.

WETLANDS: Tidal and non-tidal areas characterized by saturated or nearly saturated soils most of the year that are located between terrestrial (land-based) and aquatic (water-based) environments, including freshwater marshes around ponds and channels (rivers and streams), brackish and salt marshes; common names include marshes, swamps and bogs.

Section 3. Authority

This bylaw is adopted under authority granted by the Home Rule Amendment of the Massachusetts Constitution, the home rule statutes, the regulations of the Federal Clean Water Act found at 40 CFR 122.34, Chapter 1, § 1-2 of the General Bylaws of the Town of Rockland.

Section 4. Responsibility for administration

A. Stormwater Authority shall administer, implement and enforce this bylaw. Any powers granted to or duties imposed upon Stormwater Authority may be delegated in writing by Stormwater Authority to its employees or agents.

Section 5. Waivers

A. Following a public hearing on a waiver request, the Stormwater Authority may waive strict compliance with any requirement of this bylaw or the rules and regulations promulgated hereunder, where:

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

(2) is in the public interest; and

(3) is not inconsistent with the purpose and intent of this bylaw.

B. Any applicant must submit a written request to be granted such a waiver. Such a request shall be accompanied by an explanation or documentation supporting the waiver request and demonstrating that strict application of the bylaw does not further the purposes or objectives of this bylaw.

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

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

Section 6. Regulations

The Stormwater Authority may adopt, and periodically amend, regulations, rules and/or written guidance relating to the terms, conditions, definitions, enforcement, fees, procedures and administration of this Stormwater Bylaw by majority vote after conducting a public hearing to receive comments. Such hearing shall be advertised in a newspaper of general local circulation, at least fourteen (14) days prior to the hearing date. Failure of the Stormwater Authority to issue such rules, or regulations, or a legal declaration of their invalidity by a court, shall not act to suspend or invalidate the effect of this Bylaw.

Such regulations, rules or guidance may include without limitation, provisions for the establishment of one or more categories of administrative review approvals for specific types or sizes of projects. Administrative review applications that meet all the standard requirements may be issued by one or more agents designated in writing by the Stormwater Authority, without the requirement for a public hearing as detailed in Article III of this bylaw. Administrative review approval shall comply with all other provisions of this Bylaw.

Section 7. Severability

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

ARTICLE II – DISCHARGES TO THE MUNICIPAL SEPARATE STORM SEWER SYSTEM AND TO WATERCOURSES OR WATERS OF THE COMMONWEALTH

Section 1. Applicability

Article II of this bylaw shall apply to all water entering the municipally owned storm drainage system or going, directly or indirectly, into a watercourse or waters of the Commonwealth, that will be generated on any developed or undeveloped lands except as explicitly exempted in this bylaw or where the Stormwater Authority has issued a waiver in accordance with Article I Section 5.

Section 2. Prohibited activities; exemptions.

A. Illicit discharges. No person shall dump, discharge, spill, cause or allow to be discharged any pollutant or nonstormwater discharge into the municipal separate storm sewer system (MS4), onto an impervious surface directly connected to the MS4, or directly or indirectly, into a watercourse or waters of the Commonwealth.

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

C. Obstruction of municipal storm drain system. No person shall obstruct or interfere with the normal flow of stormwater into or out of the municipal storm drain system without prior consent from the Stormwater Authority.

D. Exemptions.

(1) Discharge or flow resulting from fire-fighting activities;

(2) The following non-stormwater discharges or flows are exempt from the prohibitions of non-stormnwater provided that the source is not a significant contributor of a pollutant to the municipal storm drain system or, directly or indirectly, to a watercourse or waters of the Commonwealth:

(a) Waterline flushing;

(b) Flow from potable water sources, with the exception of landscape irrigation and lawn watering;

(c) Springs;

(d) Natural flow from riparian habitats and wetlands;

(e) Diverted stream flow;

(f) Rising groundwater;

(g) Uncontaminated groundwater infiltration as defined in 40 CFR 35.2005(20), or uncontaminated pumped groundwater (e.g. sump pump), provided that where a pump intake exists inside a structure, the operator seeks a permit from the Stormwater Authority prior to discharge and thereafter discharges in accordance with the requirements of the permit and applicable laws and regulations to be issued by the Commission;

(h) Water from exterior foundation drains, footing drains (not including active groundwater dewatering systems), crawl space pumps, or air-conditioning condensation;

(i) Discharge from dechlorinated swimming pool water (less than one ppm chlorine) provided the water is allowed to stand for one week prior to draining and the pool is drained in such a way as not to cause a nuisance;

(j) Discharge from street sweeping;

(k) Dye testing, provided verbal notification is given to the Stormwater Authority prior to the time of the test;

(l) Nonstormwater discharge permitted under an NPDES permit, waiver, or waste discharge order administered under the authority of the United States Environmental Protection Agency, provided that the discharge is in full compliance with the requirements of the permit, waiver, or order and applicable laws and regulations; and

(m) Discharge for which advanced written approval is received from the Stormwater Authority as necessary to protect public health, safety, welfare or the environment.

Section 3. Additional Prohibited Pollutants

A. Pet Waste: Rockland is subject to a Bacteria TMDL, and because dog feces are a major component of stormwater pollution, it shall be the duty of each person who owns, possesses, or controls a dog to remove and properly dispose of any feces left by the dog on any public or private property neither owned nor occupied by said person. It is prohibited to dispose of dog feces in any public or private storm drain, catch basin, wetland or water body or on any paved or impervious surface. However, this provision shall not be applicable to a person using a helping dog or other helping animal registered as such. Persons walking dogs must carry with them a device designed to dispose of dog feces including, but not limited to, a plastic bag or "pooper scooper." For specific requirements and penalties for violations see General Bylaw Chapter 184 Animals**.**

B. Pavement Sealers: Coal tar based driveway and pavement sealers have been identified as a primary source of poly-aromatic hydrocarbons affecting streams in developed areas. Poly-aromatic hydrocarbons are classified by the US Environmental Protection Agency as a probable human carcinogen and are highly toxic to aquatic life. Asphalt-based driveway and pavement sealers contain low concentrations of poly-aromatic hydrocarbons. Therefore, application of coal tar based driveway and pavement sealers is prohibited for all paved areas directly connected to the MS4.

Section 4. Emergency suspension of storm drainage system access

The Stormwater Authority may suspend municipal storm drain system access to any person or property without prior written notice when such suspension is necessary to stop an actual or threatened discharge of pollutants that presents imminent risk of harm to the public health, safety, welfare or the environment. In the event any person fails to comply with an emergency

suspension order, the Stormwater Authority may take all reasonable steps to prevent or minimize harm to the public health, safety, welfare or the environment.

Section 5. Notification of spills

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

Section 6. Enforcement

The Stormwater Authority or its authorized agent shall enforce this bylaw, and any associated regulations, orders, violation notices, and enforcement orders and may pursue all civil and criminal remedies for such violations.

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

B. Orders.

(1) The Stormwater Authority or its authorized agent may issue a written order to enforce the provisions of this bylaw or any regulations thereunder, which may include:

(a) Elimination of illicit connections or discharges to the MS4;

(b) Elimination of discharges to the MS4 or, directly or indirectly, into a watercourse or into the waters of the Commonwealth.

(c) Performance of monitoring, analyses, and reporting;

(d) That unlawful discharges, practices, or operations shall cease and desist;

(e) That measures shall be taken to minimize the discharge of pollutants until such time as the illicit connection shall be eliminated; and

(f) Remediation of contamination in connection therewith.

(2) If the enforcing person determines that abatement or remediation of contamination is required, the order shall set forth a deadline by which such abatement or remediation must be completed. Said order shall further advise that,

should the violator or property owner fail to abate or perform remediation within the specified deadline, the Town may, at its option, undertake such work, and expenses thereof shall be charged to the violator.

(3) Within 30 days after completing all measures necessary to abate the violation or to perform remediation, the violator and the property owner will be notified of the costs incurred by the Town, including administrative costs. The violator or property owner may file a written protest objecting to the amount or basis of costs with the Stormwater Authority within 30 days of receipt of the notification of the costs incurred. If the amount due is not received by the expiration of the time in which to file a protest or within 30 days following a decision of the Stormwater Authority affirming or reducing the costs, or from a final decision of a court of competent jurisdiction, the costs shall become a special assessment against the property owner and shall constitute a lien on the owner's property for the amount of said costs. Interest shall begin to accrue on any unpaid costs at the statutory rate provided in MGL c. 59, § 57 after the 31st day at which the costs first become due.

C. Criminal penalty. Any person who violates any provision of this bylaw, regulation, order or permit issued thereunder shall be punished by a fine of not more than $300. Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

D. Noncriminal disposition. As an alternative to criminal prosecution or civil action, the Town may elect to utilize the noncriminal disposition procedure set forth in MGL c. 40, § 21D and § 1-6 of the Town of Rockland General Bylaws, in which case the agent of the Stormwater Authority shall be the enforcing person. The penalty for the first violation shall be a warning. The penalty for the second violation shall be $100. The penalty for the third and subsequent violations shall be $300. Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

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

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

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

Section 7. Transitional provisions

Residential property owners shall have 60 days from the effective date of this bylaw to comply with its provisions provided good cause is shown for the failure to comply with the bylaw during that period.

ARTICLE III – STORMWATER MANAGEMENT AND LAND DISTURBANCE

Section 1. Applicability

No person may undertake a construction activity or land disturbance, including clearing, grading, excavation or redevelopment that will disturb equal to or greater than thresholds outlined in the Town of Rockland Stormwater Regulations (Regulations) without a written approval or a permit from the Stormwater Authority or as otherwise provided in this bylaw.

Any person that fails to follow the requirements of a Stormwater Management Permit and the related Erosion and Sedimentation Control Plan, and Operations and Maintenance Plan issued under the Stormwater Management Regulations shall be in violation of the Town of Rockland Bylaws.

Section 2. Approval and/or Permit

An applicant seeking an approval and/or permit shall file an appropriate application with the Stormwater Authority in a form and containing information as specified in this bylaw and in regulations adopted by the Stormwater Authority. Approval or permit must be obtained prior to the commencement of land disturbing or redevelopment activity based on thresholds described in the Stormwater Regulations.

Section 3. Entry

Filing an application for an approval or permit grants the Stormwater Authority and its employees or agent's permission to enter the site to verify the information in the application and to inspect for compliance with approval or permit conditions.

Section 4. Inspection and Site Supervision

The Stormwater Authority or its designated agent shall make inspections as outlined in the Regulations to verify and document compliance the Stormwater Management Permit.

Section 5. Compliance with the provisions of EPAs General Permit for MS4s in Massachusetts

This Bylaw shall be implemented in accordance with the requirements of EPAs most recent General Permit for MS4s in Massachusetts relating to illicit connections and discharges, construction site runoff, and post-construction stormwater management. The Stormwater Authority shall include these requirements in any Regulations that it issues. The Stormwater Authority may establish additional requirements by Regulation to the further the purposes and objectives of this Bylaw so long as they are not less stringent than those in the MS4 General Permit for Massachusetts.

Section 6. Surety

The Stormwater Authority may require the applicant to post before the start of land disturbance or construction activity, a surety bond, irrevocable letter of credit, cash, or other acceptable security. The form of the bond shall be approved by the Stormwater Authority and be in an amount deemed sufficient by the Stormwater Authority to ensure that the work will be completed

in accordance with the permit. If the project is phased, the Stormwater Authority may release part of the bond as each phase is completed in compliance with the permit.

Section 7. Final Reports

Upon completion of the work, the applicant shall submit a report (including certified as-built construction plans) from a Professional Engineer (P.E.), surveyor, or Certified Professional in Erosion and Sedimentation Control (CPESC), certifying that all erosion and sedimentation control devices, and approved changes and modifications, have been completed in accordance with the conditions of the approved Erosion and Sediment Control Plan and Stormwater Management plan. Any discrepancies shall be noted in the cover letter.

Section 8. Enforcement

The Stormwater Authority or its authorized agent shall enforce this bylaw, and any associated regulations, orders, violation notices, and enforcement orders and may pursue all civil and criminal remedies for such violations.

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

B. Orders. If the Stormwater Authority determines that a person's failure to follow the requirements of a Stormwater Management Permit and the related Erosion and Sedimentation Control Plan, or Operations and Maintenance Plan then the Authority may issue a written order to the person to remediate the adverse impact, which may include:

    (1) A requirement to cease and desist from the land-disturbing activity until there is compliance with the bylaw and provisions of the Stormwater Management Permit

    (2) Maintenance, installation or performance of additional erosion and sediment control measures;

    (3) Monitoring, analyses, and reporting

    (4) Remediation of erosion and sedimentation resulting directly or indirectly from the land-disturbing activity.

    (5) A requirement to eliminate discharges, directly or indirectly, into a watercourse or into the waters of the Commonwealth.

C. If the Stormwater Authority determines that abatement or remediation of pollutant is required, the order shall set forth a deadline for completion of the abatement or remediation. Said order shall further advise that, should the violator or property owner fail to abate or perform remediation within the specified deadline, the town may, at its option, undertake such work, and expenses thereof shall be charged to the violator or property owner. Within thirty (30) days after completing all measures necessary to abate the violation or to perform remediation, the violator and the property owner will be

notified of the costs incurred by the town, including administrative costs. The violator or property owner may file a written protest objecting to the amount or basis of costs with the Stormwater Authority within thirty (30) days of receipt of the notification of the costs incurred. If the amount due is not received by the expiration of the time in which to file a protest or within thirty (30) days following a decision of the Stormwater Authority affirming or reducing the costs, or from a final decision of a court of competent jurisdiction, the cost shall become a special assessment against the property owner of said costs. Interest shall begin to accrue on any unpaid costs at the statutory rate provided in G.L. Chapter 59, s 57 after the thirtieth (30) day at which the costs first become due.

D. Criminal and Civil Penalties. Any person who violates any provision of this bylaw, valid regulation, or the terms or conditions in any permit or order prescribed or issued there under, shall be subject to a fine not to exceed three hundred dollars ($300.00) for each day such violation occurs or continues or subject to a civil penalty, which may be assessed in an action brought on behalf of the town in any court of competent jurisdiction.

E. Noncriminal disposition. As an alternative to criminal prosecution or civil action, the Town may elect to utilize the noncriminal disposition procedure set forth in MGL c. 40, § 21D and Chapter 1, § 1-4 of the Town of Rockland General Bylaws, in which case the agent of the Stormwater Authority shall be the enforcing person. The penalty for the first violation shall be a warning. The penalty for the second violation shall be $100. The penalty for the third and subsequent violations shall be $300. Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

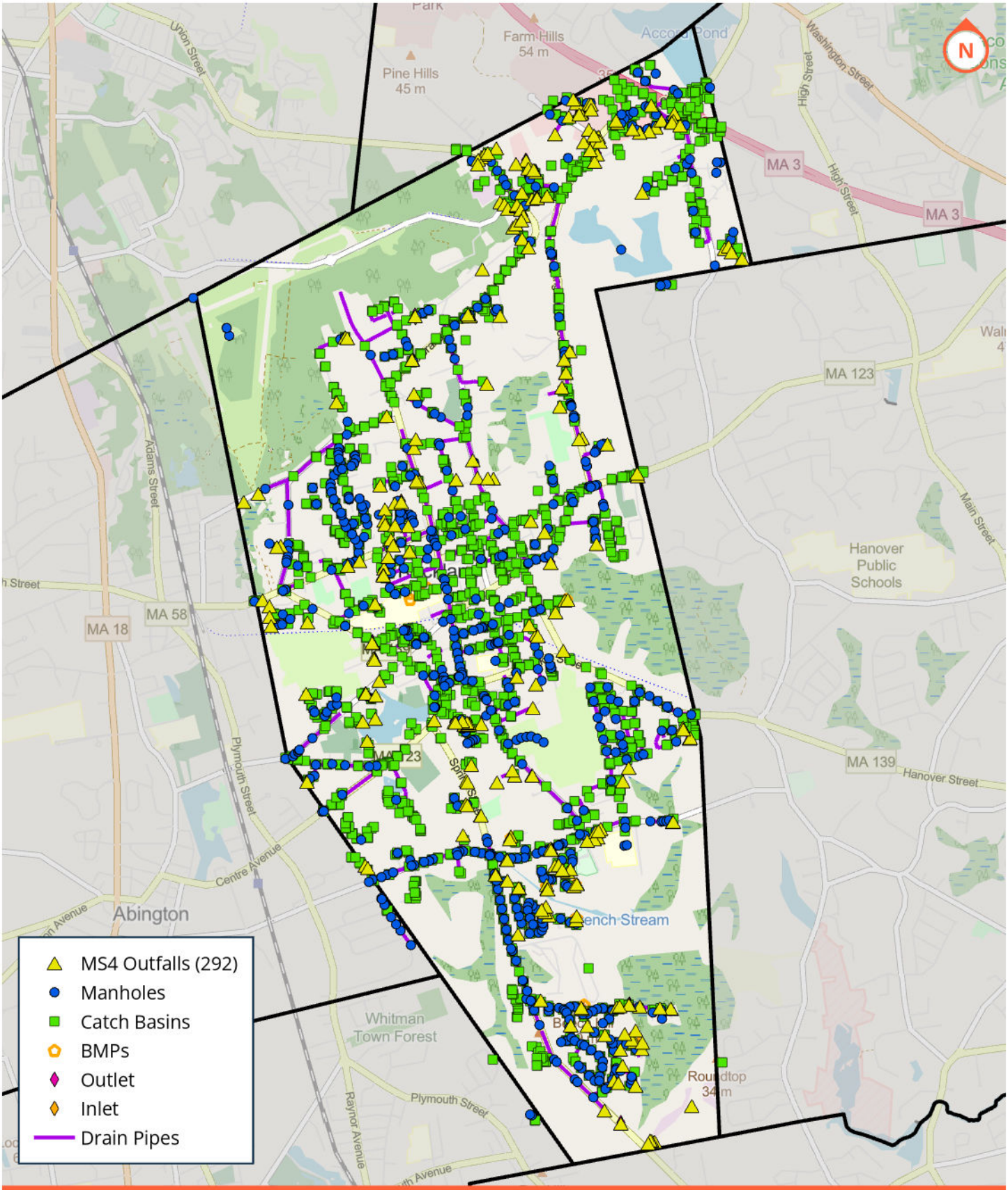
F. Entry to perform duties under this bylaw. To the extent permitted by state law, or if authorized by the owner or other party in control of the property, the Commission, its agents, officers, and employees may enter upon privately owned property for the purpose of performing their duties under this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

G. Appeals. The decisions or orders of the Stormwater Authority shall be final. Further relief shall be to a court of competent jurisdiction.

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

APPENDIX B

Stormwater System Mapping



ENVIRONMENTAL PARTNERS
— An Apex Company —

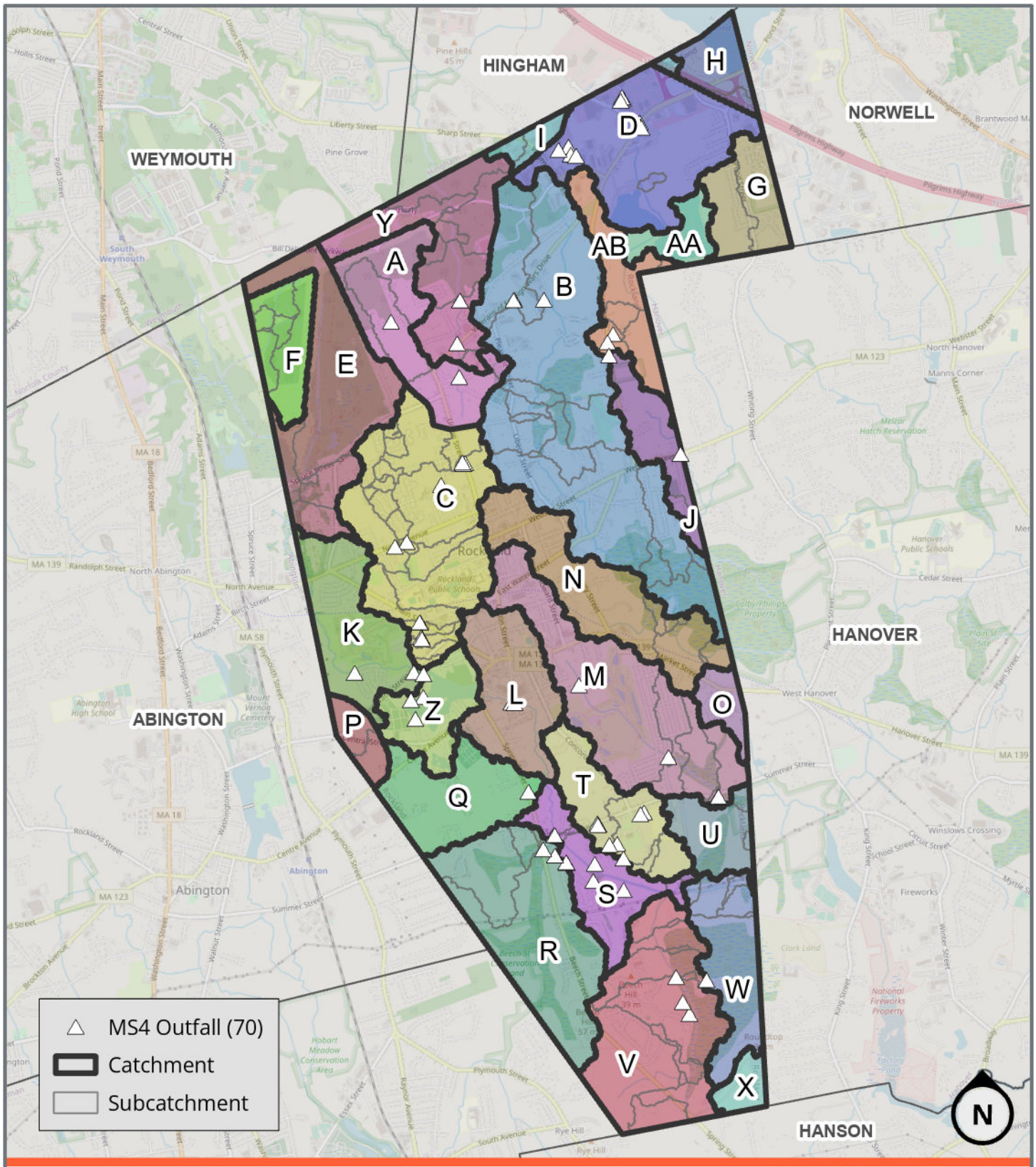
Appendix B

Stormwater System

Rockland, MA

APPENDIX C

Catchment Delineation Ranking Matrix

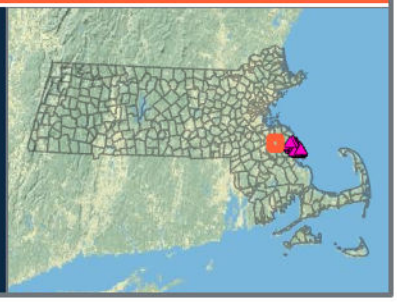


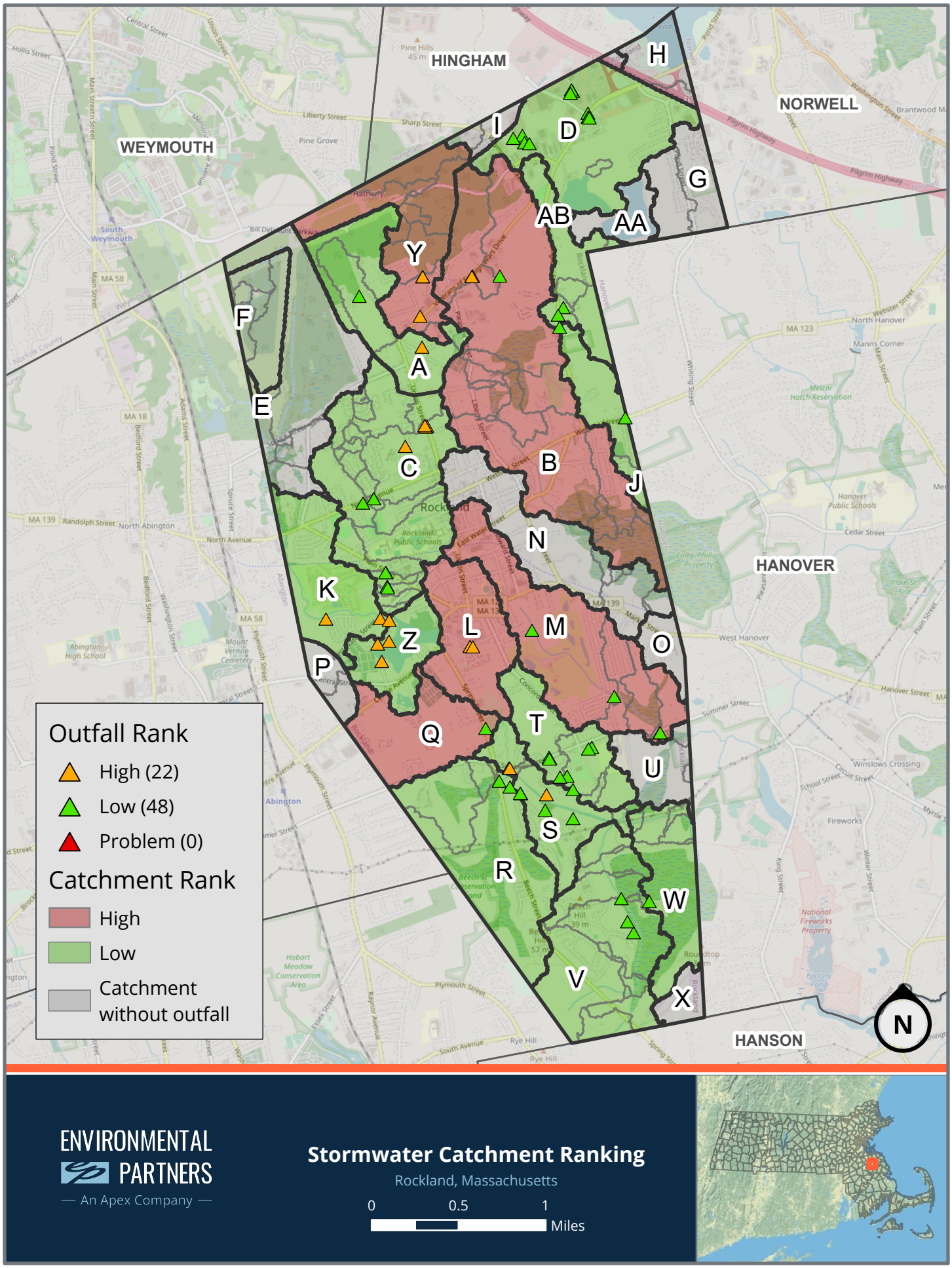
ENVIRONMENTAL PARTNERS
— An Apex Company —

Stormwater Catchment Delineation

Rockland, Massachusetts

0 0.5 1 Miles




HINGHAM
NORWELL
WEYMOUTH
HANOVER
HANSON
Rockland
H
I
D
G
AB
AA
Y
F
A
E
C
B
J
N
K
L
M
O
Z
P
Q
T
U
S
R
W
V
X
Outfall Rank
High (22)
Low (48)
Problem (0)
Catchment Rank
High
Low
Catchment without outfall
N
ENVIRONMENTAL PARTNERS
An Apex Company
Stormwater Catchment Ranking
Rockland, Massachusetts
0
0.5
1
Miles

Stormwater Catchment Delineation
Rockland, Massachusetts

				Catchment Scores						Outfall Scores									
Catchment ID	**Subcatchment ID**	**Receiving Water**	**Outfall ID**	**Density of Generating Sites**	**Age of Development/ Infrastructure**	**Historic Combined Sewers or Septic?**	**Aging Septic?**	**Culverted Streams?**	**Discharging to Area of Concern to Public Health? (Catchment)**	**Receiving Water Quality**	**Previous Screening Results Indicate Likely Sewer Input?**	**Frequency of Past Discharge Complaints**	**Discharging to Area of Concern to Public Health? (Outfall)**	**Outfall Screening Results**	**Outfall Score**	**Catchment Score**	**Outfall Ranking**	**Catchment Ranking**	**FY23 Catchment Status**
Information Source				Land Use/GIS Maps, Aerial Photography, Google Earth	Land Use Information, Town Input	Town Input, GIS Maps	Parcel Age	GIS and Storm System Maps	GIS Maps, Town Input	Impaired Waters List	Outfall inspections and sample results	Town Input	GIS Maps, Town Input						
Scoring Criteria				High = 2 Medium = 1 Low = 0	Older = 2 Medium = 1 Newer = 0	Yes = 2 No Data = 1 No = 0	Older = 2 Medium = 1 Newer = 0	Yes = 2 No Data = 1 No = 0	Yes = 2 No Data = 1 No = 0	Category 4a = 2 Category 5 = 1 Others = 0	Yes = 2 No Data = 1 No = 0	Frequent = 2 Occasional = 1 None = 0	Yes = 2 No Data = 1 No = 0						
L	104	French Stream	73-O	2	2	0	2	1	2	1	0	0	0	Sampled	1	9	High	High	Complete
B	5	Cushing Brook	265-O	2	2	0	2	1	2	1	0	0	0	Dry	1	9	High	High	Complete
B	5	Cushing Brook	266-O	2	2	0	2	1	2	1	0	0	0	Dry	1	9	High	High	Complete
L	104	French Stream	26-O	2	2	0	2	1	2	1	0	0	0	Dry	1	9	High	High	Complete
Y	33	Old Swamp River	237-O	2	2	0	2	1	2	1	0	0	0	Dry	1	9	High	High	Complete
Y	33	Old Swamp River	364-O	2	2	0	2	1	2	1	0	0	0	Dry	1	9	High	High	Complete
M	80	Unnamed Tributary to French Stream	192-O	2	2	0	2	1	2	0	0	0	0	Sampled	0	9	Low	High	To be completed by Year 10
M	70	Unnamed Tributary to French Stream	194-O	2	2	0	2	1	2	0	0	0	0	Sampled	0	9	Low	High	To be completed by Year 10
B	35	Unnamed Wetlands to Cushing Brook	262-O	2	2	0	2	1	2	0	0	0	0	Dry	0	9	Low	High	To be completed by Year 10
M	80	Unnamed Tributary to French Stream	193-O	2	2	0	2	1	2	0	0	0	0	Dry	0	9	Low	High	To be completed by Year 10
M	70	Unnamed Tributary to French Stream	195-O	2	2	0	2	1	2	0	0	0	0	Dry	0	9	Low	High	To be completed by Year 10
Q	91	Unnamed Tributary to French Stream	173-O	1	2	0	2	1	2	0	0	0	0	Dry	0	8	Low	High	To be completed by Year 10
S	89	French Stream	177-O	0	2	0	2	1	0	1	0	0	0	Sampled	1	5	High	Low	Initial investigation and mapping started
K	78	French Stream	203-O	0	2	0	2	1	0	1	0	0	0	Sampled	1	5	High	Low	Complete
A	38	Old Swamp River	267-O	0	2	0	2	1	0	1	0	0	0	Sampled	1	5	High	Low	Complete
C	113	Old Swamp River	21-O	0	2	0	2	1	2	1	0	0	0	Dry	1	7	High	Low	Complete
C	113	Old Swamp River	20-O	0	2	0	2	1	2	1	0	0	0	Dry	1	7	High	Low	Complete
C	113	Old Swamp River	19-O	0	2	0	2	1	2	1	0	0	0	Dry	1	7	High	Low	Initial investigation and mapping started
K	78	Studleys Pond	200-O	0	2	0	2	1	0	1	0	0	0	Dry	1	5	High	Low	Complete
K	78	French Stream	90-O	0	2	0	2	1	0	1	0	0	0	Dry	1	5	High	Low	Complete
S	89	French Stream	176-O	0	2	0	2	1	0	1	0	0	0	Dry	1	5	High	Low	Complete
S	134	French Stream	211-O	0	2	0	2	1	0	1	0	0	0	Dry	1	5	High	Low	Non MS4 outlet
Z	105	Studleys Pond	93-O	0	2	0	2	1	0	1	0	0	0	Dry	1	5	High	Low	Complete
Z	105	Studleys Pond	201-O	0	2	0	2	1	0	1	0	0	0	Dry	1	5	High	Low	Complete
Z	105	Studleys Pond	202-O	0	2	0	2	1	0	1	0	0	0	Dry	1	5	High	Low	Complete
C	113	Old Swamp River	86-O	0	2	0	2	1	2	1	0	0	0	Dry	1	7	High	Low	Initial investigation and mapping started
S	134	Unnamed Wetlands to French Stream	186-O	0	2	0	2	1	0	0	0	0	0	Sampled	0	5	Low	Low	To be completed by Year 10
D	16	Unnamed Tributary to Ben Mann Brook	257-O	2	2	0	2	1	0	0	0	0	0	Sampled	0	7	Low	Low	To be completed by Year 10
C	71	Unnamed Tributary near Studleys Pond	288-O	0	2	0	2	1	2	0	0	0	0	Sampled	0	7	Low	Low	To be completed by Year 10
C	71	Unnamed Tributary near Studleys Pond	289-O	0	2	0	2	1	2	0	0	0	0	Sampled	0	7	Low	Low	To be completed by Year 10
D	16	Unnamed Tributary to Ben Mann Brook	53-O	2	2	0	2	1	0	0	0	0	0	Sampled	0	7	Low	Low	To be completed by Year 10
A	128	Unnamed Tributary to Old Swamp River	4-O	0	2	0	2	1	0	0	0	0	0	Dry	0	5	Low	Low	To be completed by Year 10
T	90	Unnamed Tributary to French Stream	101-O	0	2	0	2	1	2	0	0	0	0	Dry	0	7	Low	Low	Complete

Stormwater Catchment Delineation
Rockland, Massachusetts

				Catchment Scores						Outfall Scores									
Catchment ID	**Subcatchment ID**	**Receiving Water**	**Outfall ID**	**Density of Generating Sites**	**Age of Development/ Infrastructure**	**Historic Combined Sewers or Septic?**	**Aging Septic?**	**Culverted Streams?**	**Discharging to Area of Concern to Public Health? (Catchment)**	**Receiving Water Quality**	**Previous Screening Results Indicate Likely Sewer Input?**	**Frequency of Past Discharge Complaints**	**Discharging to Area of Concern to Public Health? (Outfall)**	**Outfall Screening Results**	**Outfall Score**	**Catchment Score**	**Outfall Ranking**	**Catchment Ranking**	**FY23 Catchment Status**
Information Source				Land Use/GIS Maps, Aerial Photography, Google Earth	Land Use Information, Town Input	Town Input, GIS Maps	Parcel Age	GIS and Storm System Maps	GIS Maps, Town Input	Impaired Waters List	Outfall inspections and sample results	Town Input	GIS Maps, Town Input						
Scoring Criteria				High = 2 Medium = 1 Low = 0	Older = 2 Medium = 1 Newer = 0	Yes = 2 No Data = 1 No = 0	Older = 2 Medium = 1 Newer = 0	Yes = 2 No Data = 1 No = 0	Yes = 2 No Data = 1 No = 0	Category 4a = 2 Category 5 = 1 Others = 0	Yes = 2 No Data = 1 No = 0	Frequent = 2 Occasional = 1 None = 0	Yes = 2 No Data = 1 No = 0						
AB	1	Unnamed Wetlands to Cushing Brook	1-O	0	0	0	2	1	0	0	0	0	0	Dry	0	3	Low	Low	To be completed by Year 10
C	135	Unnamed Tributary near Studleys Pond	166-O	0	2	0	2	1	2	0	0	0	0	Dry	0	7	Low	Low	To be completed by Year 10
C	135	Unnamed Tributary near Studleys Pond	165-O	0	2	0	2	1	2	0	0	0	0	Dry	0	7	Low	Low	To be completed by Year 10
C	135	Unnamed Tributary near Studleys Pond	234-O	0	2	0	2	1	2	0	0	0	0	Dry	0	7	Low	Low	To be completed by Year 10
D	16	Unnamed Tributary to Ben Mann Brook	45-O	2	2	0	2	1	0	0	0	0	0	Dry	0	7	Low	Low	To be completed by Year 10
R	132	Unnamed Wetlands to French Stream	181-O	0	2	0	2	1	0	0	0	0	0	Dry	0	5	Low	Low	Non MS4 outlet
R	119	Unnamed Wetlands to French Stream	179-O	0	2	0	2	1	0	0	0	0	0	Dry	0	5	Low	Low	To be completed by Year 10
S	134	Unnamed Wetlands to French Stream	190-O	0	2	0	2	1	0	0	0	0	0	Dry	0	5	Low	Low	To be completed by Year 10
S	134	Unnamed Wetlands to French Stream	183-O	0	2	0	2	1	0	0	0	0	0	Dry	0	5	Low	Low	To be completed by Year 10
T	85	Unnamed Wetlands to French Stream	217-O	0	2	0	2	1	2	0	0	0	0	Dry	0	7	Low	Low	To be completed by Year 10
T	85	Unnamed Tributary to French Stream	95-O	0	2	0	2	1	2	0	0	0	0	Dry	0	7	Low	Low	To be completed by Year 10
T	90	Unnamed Tributary to French Stream	238-O	0	2	0	2	1	2	0	0	0	0	Dry	0	7	Low	Low	To be completed by Year 10
T	90	Unnamed Tributary to French Stream	103-O	0	2	0	2	1	2	0	0	0	0	Dry	0	7	Low	Low	Complete
V	111	Unnamed Tributary to French Stream	158-O	0	0	0	2	1	2	0	0	0	0	Dry	0	5	Low	Low	To be completed by Year 10
AB	1	Unnamed Wetlands to Cushing Brook	294-O	0	0	0	2	1	0	0	0	0	0	Dry	0	3	Low	Low	To be completed by Year 10
AB	1	Unnamed Wetlands to Cushing Brook	296-O	0	0	0	2	1	0	0	0	0	0	Dry	0	3	Low	Low	To be completed by Year 10
C	64	Unnamed Tributary near French Stream	197-O	0	2	0	2	1	2	0	0	0	0	Dry	0	7	Low	Low	To be completed by Year 10
C	64	Unnamed Tributary near French Stream	198-O	0	2	0	2	1	2	0	0	0	0	Dry	0	7	Low	Low	To be completed by Year 10
C	97	Unnamed Tributary near French Stream	300-O	0	2	0	2	1	2	0	0	0	0	Dry	0	7	Low	Low	To be completed by Year 10
D	16	Unnamed Pond near Ben Mann Brook	64-O	2	2	0	2	1	0	0	0	0	0	Dry	0	7	Low	Low	To be completed by Year 10
D	16	Unnamed Pond near Ben Mann Brook	66-O	2	2	0	2	1	0	0	0	0	0	Dry	0	7	Low	Low	To be completed by Year 10
D	16	Unnamed Tributary to Ben Mann Brook	47-O	2	2	0	2	1	0	0	0	0	0	Dry	0	7	Low	Low	To be completed by Year 10
D	16	Unnamed Tributary to Ben Mann Brook	54-O	2	2	0	2	1	0	0	0	0	0	Dry	0	7	Low	Low	To be completed by Year 10
D	16	Unnamed Tributary to Ben Mann Brook	139-O	2	2	0	2	1	0	0	0	0	0	Dry	0	7	Low	Low	To be completed by Year 10
D	16	Unnamed Tributary to Ben Mann Brook	138-O	2	2	0	2	1	0	0	0	0	0	Dry	0	7	Low	Low	To be completed by Year 10
D	16	Unnamed Tributary to Ben Mann Brook	137-O	2	2	0	2	1	0	0	0	0	0	Dry	0	7	Low	Low	To be completed by Year 10
D	16	Unnamed Pond near Ben Mann Brook	256-O	2	2	0	2	1	0	0	0	0	0	Dry	0	7	Low	Low	To be completed by Year 10
J	6	Unnamed Tributary to Ben Mann Brook	253-O	0	0	0	2	1	0	0	0	0	0	Dry	0	3	Low	Low	To be completed by Year 10
S	134	Unnamed Wetlands to French Stream	184-O	0	2	0	2	1	0	0	0	0	0	Dry	0	5	Low	Low	Complete
T	85	Unnamed Wetlands to French Stream	218-O	0	2	0	2	1	2	0	0	0	0	Dry	0	7	Low	Low	To be completed by Year 10
T	90	Unnamed Tributary to French Stream	102-O	0	2	0	2	1	2	0	0	0	0	Dry	0	7	Low	Low	Complete
V	127	Unnamed Tributary to French Stream	230-O	0	0	0	2	1	2	0	0	0	0	Dry	0	5	Low	Low	Non MS4 outlet
V	127	Unnamed Tributary to French Stream	229-O	0	0	0	2	1	2	0	0	0	0	Dry	0	5	Low	Low	To be completed by Year 10
W	54	Unnamed Wetlands to French Stream	160-O	0	0	0	2	1	0	0	0	0	0	Dry	0	3	Low	Low	To be completed by Year 10
T	85	Unnamed Wetlands to French Stream	219-O	0	2	0	2	1	2	0	0	0	0	Dry	0	7	Low	Low	Initial investigation and mapping started

APPENDIX D

Field Forms and Hyperlinks to Laboratories and Field Services Companies

Date: _____

Weather Observations: _____

Staff Onsite: _____

Photos: _____

Rockland Storm Drain Mapping Form

Structure #:_____

Map #: _____

Street Name: _____

Nearest Structure: _____
(address, bldg, utility pole, etc)

Type of Structure: _____
(outfall, culvert, inlet, etc)

Headwall?: _____
(Y/N; concrete, stone, rip rap, none)

Material: _____
(concrete, concrete FES, corrugated metal, plastic, pvc, clay, cast iron, etc)

Size & Shape of Structure: _____
_____
(diameter, width/height)

Invert (top of headwall to bottom inside of pipe): _____
_____

Pipe Condition/headwall condition: _____
_____

Connectivity: _____
(from MH, CB, culvert, other)

Date: _____

Structure Number: _____

Is Crown (top inside of pipe) Above or Below Surface Water?: _____

Dry Weather Flow Conditions: _____
(weather, ground condition, flowing?)

Description of Visual Characteristics or Odors: _____

_____
(aesthetics, deposits/stains, erosion, vegetation)

<u>Field Screening Data:</u>

pH: _____
Temperature: _____
Sp. Conduct.: _____
Turbidity: _____

Flag as Future Sample Location? (Y/N): _____

Sample collected for lab analysis? ** (Y/N): _____

Lab Sample ID: _____
Analyses: _____
Sampling Date/Time: _____
**** (ensure SOP for stormwater grab sampling has been followed, see Appendix F of IDDE Plan)**

<u>Additional comments/Sketch:</u>

Appendix D – Links to Relevant Laboratories and Field Services Companies

Local Massachusetts State Certified Laboratories:

- ESS Laboratory; Cranston, RI http://www.esslaboratory.com/
- Alpha Analytical Labs; Westborough, MA https://alphalab.com/
- G&L Laboratories; Quincy, MA http://www.gllab.com/
- MassDEP Searchable Laboratory Certification Listing https://eeaonline.eea.state.ma.us/DEP/Labcert/Labcert.aspx

Local Field Equipment Suppliers

- U.S. Environmental; Waltham, MA https://usenvironmental.com/
- Pine Environmental; Woburn, MA http://www.pine-environmental.com/locations/?list
- Hach Company Analytical Instruments https://www.hach.com/

CCTV/Video Inspection Companies

- National Water Main Cleaning Co.; Canton, MA https://nwmcc.com/
- BMC Corp.; Billerica, MA https://pipejetter.com/cctv-inspection.html
- Inland Waters Inc.; Johnston, RI http://www.inlandwatersinc.com/

APPENDIX E

IDDE Investigation Results

ENVIRONMENTAL PARTNERS

MEMORANDUM

Date: June 23, 2020

To David P. Taylor Jr., Highway Superintendent

From Scott D. Turner, PE, AICP, LEED AP ND – Director of Planning, EP

CC Bill Watts – Project Scientist, EP

Natalie Pommersheim – Project Manager, EP

Subject Illicit Discharge Detection & Elimination (IDDE) Investigations

This memorandum summarizes the 2020 Outfall Sampling Program, performed on behalf of the Highway Department of the Town of Rockland.

Environmental Partners, Inc. (EP) conducted outfall sampling over the course of two (2) days in May 2020. A total of 62 outfalls were screened, of which four (4) were found flowing during dry weather. In addition, two (2) outfalls could not be located, four (4) structure locations did not exist, and were 24 structure locations were not outfalls.

OUTFALL SAMPLING

On May 13 and 14, 2020, EP personnel visited 62 outfalls during dry weather, approximately 50% of the 133 total identified MS4 outfalls in the Town of Rockland. The majority of outfalls were selected based on proximity (less than 100 feet) of a Category 5 waterbody, or tributaries to a Category 5 waterbody, as identified in the 2014 List of Integrated Waters. The remaining outfalls were selected based on initial outfall and interconnection inventory and priority ranking based on those that discharge to impaired or sensitive water bodies. The complete list of the 62 outfalls screened, the two (2) outfalls unable to be located, the four (4) structure locations that did not exist, and the 24 structures that were not outfalls is attached as *Table 1: Outfall Sampling Locations*. All outfall screening locations are shown on *Figure 1: Outfall Sampling Locations*.

RESULTS AND RECOMMENDATIONS

A total of four (4) outfalls were sampled under this task: 73-O, 177-O, 186-O, and 192-O. All outfalls were analyzed in the field for pH, temperature, specific conductance, salinity, and dissolved oxygen. All samples must be analyzed for ammonia, chlorine, E.coli, and surfactants. However, some of these outfalls have been previously sampled for one or more of these parameters and were not reanalyzed for those parameters. The samples that were collected were analyzed by a certified laboratory, ESS Laboratory, in Cranston, Rhode Island. Additional sampling parameters were applied to outfalls discharging to waterbodies and/or watersheds with Total Maximum Daily Load (TMDL) requirements, such as phosphorus, BOD, and fecal coliform. A summary of the field and analytical results is presented in *Table 2: Stormwater Field Screening and Analytical Results*.

All outfall sampling results were below reporting limits, except for sampling results at outfall 73-O that discharges into the French Stream (MA94-03) and at outfall 192-O that discharges into an unnamed tributary to French Stream. At 73-O, ammonia was detected above the limit of 0.5 mg/L, and at O-192, pH was detected outside of the 6.5 – 8 range. EP recommends inspecting the remaining MS4 outfalls in FY21 to achieve permit compliance.

Attachments:

Table 1: Outfall Sampling Locations

Table 2: Stormwater Field Screening and Analytical Results

Figure 1: Outfall Sampling Locations

Laboratory Reports

Rockland Outfall Sampling Locations

					Field Parameters					
Waterbody	OF ID	Approx. Street Address	Additional Sampling Parameters	Inspection/ Sample Date	Dissolved Oxygen	Specific Cond.	Salinity	Temp	pH	Sample Time
Cushing Brook	3-O	199 John Smith Ln		5/13/2020						NO
	251-O	279 Webster St		5/13/2020						NO
	264-O	279 Veterans of Foreign Wars Dr		5/13/2020						NF
	265-O	279 Veterans of Foreign Wars Dr		5/13/2020						NF
	266-O	279 Veterans of Foreign Wars Dr		5/13/2020						NF
French Stream	175-O	383 Summer St	Dissolved Oxygen, Fecal Coliform	5/13/2020						NO
	210-O	24 Winter Cir	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	5/13/2020						NO
	212-O	22 Winter Cir	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	5/13/2020						DNE
	213-O	22 Winter Cir	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	5/13/2020						DNE
	211-O	22 Winter Cir	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	5/13/2020						NF
	169-O	27 Market St	Dissolved Oxygen, Fecal Coliform	5/13/2020						NO
	27-O	99 John A Dunn Memorial Dr	Dissolved Oxygen, Fecal Coliform	5/13/2020						NO
	28-O	99 John A Dunn Memorial Dr	Dissolved Oxygen, Fecal Coliform	5/13/2020						NO
	73-O	99 Studley Ct	Dissolved Oxygen, Fecal Coliform	5/14/2020	4.70	351.2	0.17	11.7	7.27	1055
	91-O	304 W Water St	Dissolved Oxygen, Fecal Coliform	5/13/2020						NO
	500-O	99 John A Dunn Memorial Dr	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	5/13/2020						CNL
	501-O	99 John A Dunn Memorial Dr	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	5/13/2020						CNL
	8-O	160 Spruce St	Dissolved Oxygen, Fecal Coliform	5/13/2020						NO
	7-O	76 Spruce St	Dissolved Oxygen, Fecal Coliform	5/13/2020						NO
	11-O	510 North Ave	Dissolved Oxygen, Fecal Coliform	5/13/2020						NO
	90-O	2 Icehouse Woods Ln	Dissolved Oxygen, Fecal Coliform	5/13/2020						NF
	177-O	369 Summer St	Dissolved Oxygen, Fecal Coliform	5/14/2020	5.14	622.9	0.30	11.9	6.57	1145
	176-O	383 Summer St	Dissolved Oxygen, Fecal Coliform	5/13/2020						NF
	25-O	115 John A Dunn Memorial Dr	Dissolved Oxygen, Fecal Coliform	5/13/2020						NO
	24-O	115 John A Dunn Memorial Dr	Dissolved Oxygen, Fecal Coliform	5/13/2020						NO
	26-O	30 Martha Dr	Dissolved Oxygen, Fecal Coliform	5/13/2020						NF
Old Swamp River	151-O	136 Forest St	Fecal Coliform	5/13/2020						NF
	21-O	545 Union St	Fecal Coliform	5/13/2020						NF
	20-O	572 Union St	Fecal Coliform	5/13/2020						NF
	19-O	572 Union St	Fecal Coliform	5/13/2020						NF
Unnamed Tributary near Studleys Pond	166-O	19 Emerson St		5/13/2020						NF
	165-O	19 Emerson St		5/13/2020						NF
	234-O	30 Emerson St		5/13/2020						NF
Unnamed Tributary to French Stream	97-O	406 Summer St		5/13/2020						NO
	195-O	78 Norman St		5/13/2020						NF
	192-O	849 Summer St		5/14/2020	7.36	375.7	0.18	13.4	6.38	1120
	193-O	951 Summer St		5/13/2020						NF
	173-O	280 Spring St		5/13/2020						NF
	172-O	280 Spring St		5/13/2020						NO
	238-O	15 Winter Cir		5/13/2020						NF
	99-O	15 Winter Cir		5/13/2020						DNE
	100-O	507 Summer St		5/13/2020						NO
	103-O	38 Winter Cir		5/13/2020						NF
	98-O	39 Winter Cir		5/13/2020						NO
	159-O	37 Satucket Rd		5/13/2020						NO
	158-O	37 Satucket Rd		5/13/2020						NF
Unnamed Tributary to Old Swamp River	4-O	15 Oregon Ave		5/13/2020						NF
	5-O	15 Oregon Ave		5/13/2020						NO
Unnamed Wetlands to Cushing Brook	1-O	1 Hobart Ln		5/13/2020						NF
	262-O	403 Veterans of Foreign Wars Dr		5/13/2020						NF
Unnamed Wetlands to French Stream	214-O	6 Autumn Ln		5/13/2020						NO
	217-O	6 Autumn Ln		5/13/2020						NF
	216-O	6 Autumn Ln		5/13/2020						DNE
	190-O	46 Bay Path Ln		5/13/2020						NF
	187-O	39 Bay Path Ln		5/13/2020						NO
	186-O	22 Bay Path Ln		5/14/2020	4.68	854	0.42	14.1	6.78	1200
	185-O	22 Bay Path Ln		5/13/2020						NO
	188-O	22 Bay Path Ln		5/13/2020						NO
	182-O	10 Bay Path Ln		5/13/2020						NO
	183-O	10 Bay Path Ln		5/13/2020						NF
	179-O	40 Beech St		5/13/2020						NF
	181-O	2 Bay Path Ln		5/13/2020						NF

All Ofs sampled for: chlorine, ammonia, surfactants, E.coli

DNE = Structure does not exist

NF = No flow at structure

NO = Structure is not an outfall

CNL = Could not locate outfall

Table 2: Stormwater Field Screening and Analytical Results

Rockland, Massachusetts

May 14, 2020

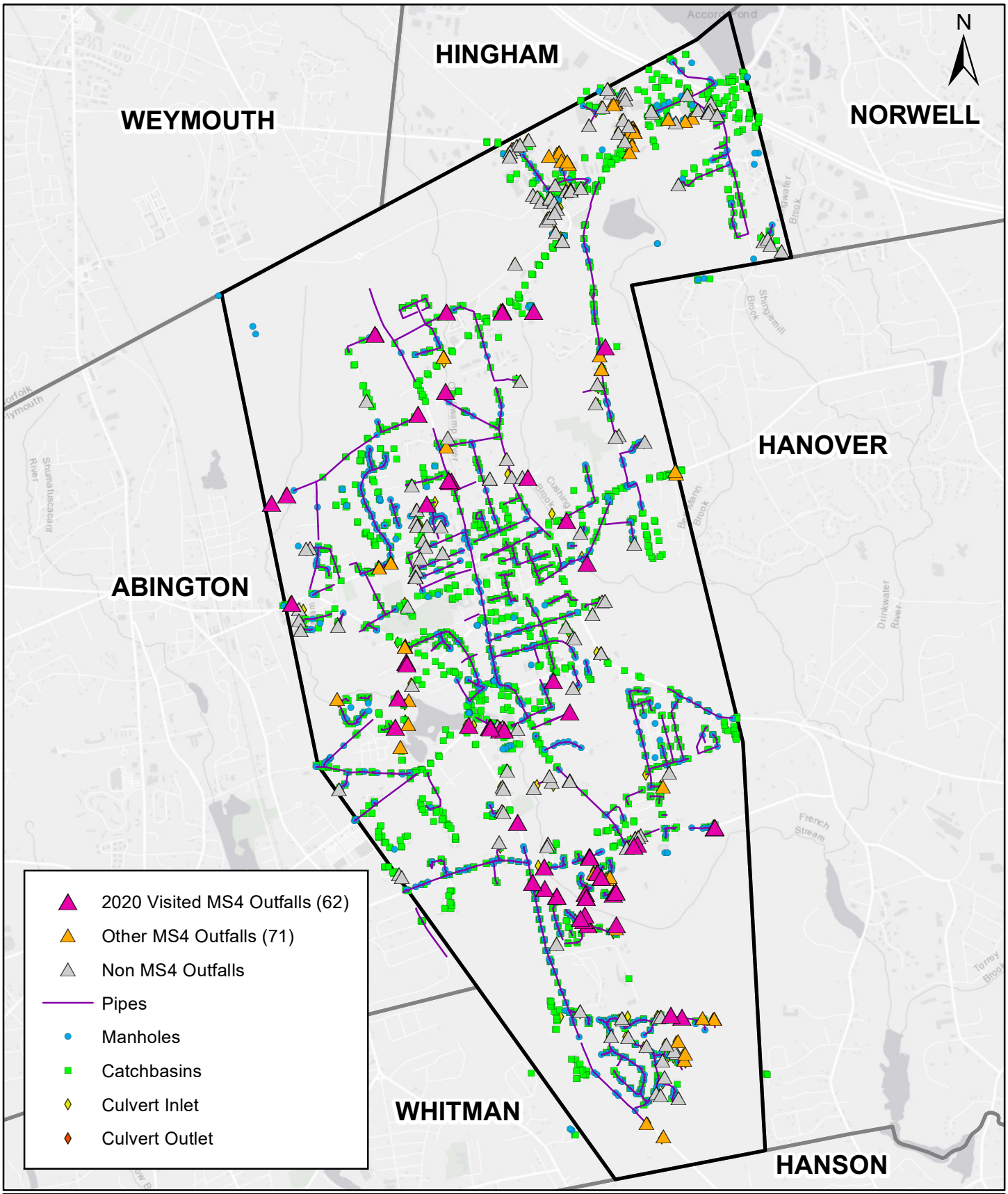
Outfall Identification		73-O	177-0	186-O	192-O
Discharge Waterbody		French Stream	French Stream	Unnamed Wetlands	Unnamed Tributary
Date Sampled		5/14/2020	5/14/2020	5/14/2020	5/14/2020
Sample Time		10:55 AM	11:45 AM	12:00 PM	11:20 AM
Field Test Results	**Threshold**				
Temperature (˚C)	-	11.7	11.9	14.1	13.4
Specific Conductance (µS/cm)	2000 (µS/cm)	351.2	622.9	854	375.7
Salinity (ppt)	-	0.17	0.30	0.42	0.18
pH	6.5-8.0	7.27	6.57	6.78	**6.38**
DO (mg/L)	-	4.70	5.14	4.68	7.36
Analytical Results					
Ammonia as Nitrogen (mg/L)	0.5 mg/L	-	**0.77**	-	0.23
Chlorine (TRC) (mg/L)	-	-	ND	ND	ND
E. coli (MPN/100 mL)	236 MPN/100 mL	-	<1	-	4
Surfactants, MBAS (mg/L)	0.25 mg/L	-	ND	-	ND
Phosphorus, Total (mg/L)	-	ND	ND	-	-
Biochemical Oxygen Demand (mg/L)	-	ND	ND	-	-
Fecal Coliform (CFU/100 mL)	-	<1	1	-	-

Notes:

- : Not Tested

ND: Non-detect

Bold Values exceed contaminant criteria.



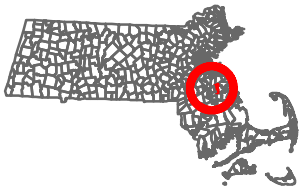


Figure 1. Outfall Sampling Locations
Rockland, Massachusetts

ENVIRONMENTAL PARTNERS

I:\Rockland.183\Stormwater\Stormwater_2020\Outfall Sampling\Outfall Sampling Locations.mxd

CERTIFICATE OF ANALYSIS

William Watts
Environmental Partners Group
1900 Crown Colony Drive, Suite 402
Quincy, MA 02169

RE: Rockland Outfall Sampling (R183-1901)
ESS Laboratory Work Order Number: 20E0332

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 1:19 pm, May 22, 2020

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

Subcontracted Analyses

BAL Laboratory - Cranston, RI	E. Coli, Fecal Coliform

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling

ESS Laboratory Work Order: 20E0332

SAMPLE RECEIPT

The following samples were received on May 14, 2020 for the analyses specified on the enclosed Chain of Custody Record.

The samples and analyses listed below were analyzed in accordance with the Guidelines Establishing Test Procedures for the Analysis of Pollutants, 40 CFR Part 136, as amended.

Lab Number	Sample Name	Matrix	Analysis
20E0332-01	73-0	Stormwater	365.1, 5210 B, 9222D
20E0332-02	177-0	Stormwater	350.1, 365.1, 4500Cl G, 5210 B, 5540C, 9222D, EPA 1603
20E0332-03	186-0	Stormwater	4500Cl G
20E0332-04	192-0	Stormwater	350.1, 4500Cl G, 5540C, EPA 1603

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling

ESS Laboratory Work Order: 20E0332

PROJECT NARRATIVE

Classical Chemistry

20E0332-02	**The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.**
20E0332-03	**The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.**
20E0332-04	**The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.**

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling

ESS Laboratory Work Order: 20E0332

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH
MADEP 18-2.1 - VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling
Client Sample ID: 73-0
Date Sampled: 05/14/20 10:55
Percent Solids: N/A

ESS Laboratory Work Order: 20E0332
ESS Laboratory Sample ID: 20E0332-01
Sample Matrix: Stormwater

All methods used are in accordance with 40 CFR 136.

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Biochemical Oxygen Demand	ND (3)		5210 B		1	LAB	05/15/20 14:54	mg/L	DE01506
Total Phosphate as P	ND (0.10)		365.1		1	JLK	05/18/20 17:58	mg/L	DE01831

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling
Client Sample ID: 73-0
Date Sampled: 05/14/20 10:55
Percent Solids: N/A

ESS Laboratory Work Order: 20E0332
ESS Laboratory Sample ID: 20E0332-01
Sample Matrix: Stormwater

All methods used are in accordance with 40 CFR 136.

Microbiology

Analyte	Results (MRL)	MDL	Method	Limit	Analyst	Analyzed	Units
Fecal Coliform	**< 1** (1)		9222D		ARG	05/14/20 16:20	CFU/100mL

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling
Client Sample ID: 177-0
Date Sampled: 05/14/20 11:45
Percent Solids: N/A

ESS Laboratory Work Order: 20E0332
ESS Laboratory Sample ID: 20E0332-02
Sample Matrix: Stormwater

All methods used are in accordance with 40 CFR 136.

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	**0.77** (0.10)		350.1		1	JLK	05/20/20 17:20	mg/L	DE01912
Biochemical Oxygen Demand	ND (3)		5210 B		1	LAB	05/15/20 14:54	mg/L	DE01506
MBAS as LAS	ND (0.02)		5540C		1	CCP	05/15/20 15:00	mg/L	DE01535
Total Phosphate as P	ND (0.10)		365.1		1	JLK	05/18/20 17:59	mg/L	DE01831
Total Residual Chlorine	ND (0.06)		4500Cl G		1	CCP	05/14/20 18:36	mg/L	DE01432

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling
Client Sample ID: 177-0
Date Sampled: 05/14/20 11:45
Percent Solids: N/A

ESS Laboratory Work Order: 20E0332
ESS Laboratory Sample ID: 20E0332-02
Sample Matrix: Stormwater

All methods used are in accordance with 40 CFR 136.

Microbiology

Analyte	Results (MRL)	MDL	Method	Limit	Analyst	Analyzed	Units
E.coli	**< 1** (N/A)		EPA 1603		ARG	05/14/20 16:20	CFU/100mL
Fecal Coliform	**1** (1)		9222D		ARG	05/14/20 16:20	CFU/100mL

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling
Client Sample ID: 186-0
Date Sampled: 05/14/20 12:00
Percent Solids: N/A

ESS Laboratory Work Order: 20E0332
ESS Laboratory Sample ID: 20E0332-03
Sample Matrix: Stormwater

All methods used are in accordance with 40 CFR 136.

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Total Residual Chlorine	ND (0.06)		4500Cl G		1	CCP	05/14/20 18:36	mg/L	DE01432

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling
Client Sample ID: 192-0
Date Sampled: 05/14/20 11:20
Percent Solids: N/A

ESS Laboratory Work Order: 20E0332
ESS Laboratory Sample ID: 20E0332-04
Sample Matrix: Stormwater

All methods used are in accordance with 40 CFR 136.

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	**0.23** (0.10)		350.1		1	JLK	05/20/20 16:56	mg/L	DE01912
MBAS as LAS	ND (0.02)		5540C		1	CCP	05/15/20 15:00	mg/L	DE01535
Total Residual Chlorine	ND (0.06)		4500Cl G		1	CCP	05/14/20 18:36	mg/L	DE01432

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling
Client Sample ID: 192-0
Date Sampled: 05/14/20 11:20
Percent Solids: N/A

ESS Laboratory Work Order: 20E0332
ESS Laboratory Sample ID: 20E0332-04
Sample Matrix: Stormwater

All methods used are in accordance with 40 CFR 136.

Microbiology

Analyte	Results (MRL)	MDL	Method	Limit	Analyst	Analyzed	Units
E.coli	**4** (N/A)		EPA 1603		ARG	05/14/20 16:20	CFU/100mL

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling

ESS Laboratory Work Order: 20E0332

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Classical Chemistry										
Batch DE01432 - General Preparation										
Blank										
Total Residual Chlorine	ND	0.06	mg/L							
LCS										
Total Residual Chlorine	0.40		mg/L	0.3999		101	80-120			
Batch DE01506 - BOD Prep										
LCS										
Biochemical Oxygen Demand	187		mg/L	200.0		94	84.6-115.4			
Batch DE01535 - General Preparation										
Blank										
MBAS as LAS	ND	0.1	mg/L							
LCS										
MBAS as LAS	1.0	0.1	mg/L	1.000		101	85-115			
Batch DE01831 - General Preparation										
Blank										
Total Phosphate as P	ND	0.10	mg/L							
LCS										
Total Phosphate as P	0.50	0.10	mg/L	0.5000		99	90-110			
Batch DE01912 - NH4 Prep										
Blank										
Ammonia as N	ND	0.10	mg/L							
LCS										
Ammonia as N	0.97	0.10	mg/L	0.9994		97	80-120			

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling

ESS Laboratory Work Order: 20E0332

Notes and Definitions

U	Analyte included in the analysis, but not detected
HT	The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.
<	Less than the Method Detection Limit.
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit
MF	Membrane Filtration
MPN	Most Probably Number
TNTC	Too numerous to Count
CFU	Colony Forming Units

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling

ESS Laboratory Work Order: 20E0332

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

D05124

ESS Laboratory

Division of Thielsch Engineering, Inc.

185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

ESS Lab # 20E0332

Turn Time X Standard Other_____

Regulatory State: MA RI CT NH NJ NY ME Other_____

Is this project for any of the following:(please circle)
MA-MCP Navy USACE CT DEP Other_____

Reporting Limits - _____

Electonic Deliverables (Excel) Access (PDF)

Co. Name: Environmental Partners
Contact Person: William Watts
Project #: R183-1901
Project Name: Rockland Outfall Sampling
Address: [redacted] 1900 Crown Colony Drive
City: Quincy
State: MA
Zip: 02169
PO #:
Tel. 617 657-0200
Fax.
email: wmw@envpartners.com

ESS Lab ID	Date	Collection Time	Grab -G Composite-C	Matrix	Sample ID	Pres Code	# of Containers	Type of Container	Vol of Container	Analysis: Ammonia	Phosphorus	Chlorine	BOD	Surfactants	E. coli	Fecal Coliform			
	5/14/20	1055	G	Storm Water	73-0	1,3	3	P, S	1-L, 100-mL		X	X	X			X			
	5/14/20	1145	G	↓	177-0	1,3	5	P, AG, S	1-L, 100-mL	X	X	X	X	X	X	X			
	5/14/20	1200	G		186-0	1	1	P	1-L			X							
	5/14/20	1120	G	↓	192-0	1,3	4	P, AG, S	1-L, 100-mL	X		X		X	X				

Container Type: P-Poly G-Glass AG-Amber Glass S-Sterile V-VOA

Matrix S-Soil SD-Solid D-Sludge WW-Wastewater GW-Groundwater SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filter

Cooler Present _____Yes _____No

Seals Intact ____Yes _____No NA:___

Cooler Temperature: 3.8

Internal Use Only

☑ Pickup

[ ] Technician___

Preservation Code: 1-NP, 2-HCl, 3-H2SO4, 4-HNO3, 5-NaOH, 6-MeOH, 7-Asorbic Acid, 8-ZnAct, 9-_____

Sampled by: Bill Watts and Steve Gabriel

Comments:

Relinquished by: (Signature, Date & Time)	Received by: (Signature, Date & Time)	Relinquished by: (Signature, Date & Time)	Received by: (Signature, Date & Time)
5/14/20 1300	5/14/20 1300	5/14/20 1600	5/14/20 16:55
5/14/20 1401	5/14/20 1601		

By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VIIA

Please fax to the laboratory all changes to Chain of Custody

1 (White) Lab Copy
2 (Yellow) Client Receipt

ESS Laboratory

Division of Thielsch Engineering, Inc.

185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

ESS Lab # 20E0332

Turn Time X Standard Other_____

Regulatory State: MA RI CT NH NJ NY ME Other_____

Is this project for any of the following:(please circle)
MA-MCP Navy USACE CT DEP Other_____

Reporting Limits - _____

Electonic Deliverables Excel Access PDF

Co. Name: Environmental Partners
Contact Person: William Watts
Project #: R183-1901
Project Name: Rockland Outfall Sampling
Address: [redacted] 1900 Crown Colony Drive
City: Quincy
State: MA
Zip: 02169
PO #:
Tel. 617 657-0200
Fax.
email: wmw@envpartners.com

ESS Lab ID	Date	Collection Time	Grab -G Composite-C	Matrix	Sample ID	Pres Code	# of Containers	Type of Container	Vol of Container	Analysis: Ammonia	Phosphorus	Chlorine	BOD	Surfactants	E. coli	Fecal Coliform			
1	5/14/20	1055	G	Storm Water	73-0	1,3	3	P, S	1-L 100-mL		X	X	X			X			
2	5/14/20	1145	G		177-0	1,3	5	P, AG, S	1-L, 100-mL	X	X	X	X	X	X	X			
3	5/14/20	1200	G		186-0	1	1	P	1-L			X							
4	5/14/20	1120	G		192-0	1,3	4	P, AG, S	1-L 100-mL	X		X		X	X				

Container Type: P-Poly G-Glass AG-Amber Glass S-Sterile V-VOA

Matrix: S-Soil SD-Solid D-Sludge WW-Wastewater GW-Groundwater SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filter

Cooler Present _____Yes _____No

Seals Intact ____ Yes _____No NA:___

Cooler Temperature: 3.8

Internal Use Only

[✓] Pickup

[ ] Technician___

Preservation Code: 1-NP, 2-HCl, 3-H2SO4, 4-HNO3, 5-NaOH, 6-MeOH, 7-Asorbic Acid, 8-ZnAct, 9-_____

Sampled by : Bill Watts and Steve Gabriel

Comments:

Relinquished by: (Signature, Date & Time)	Received by: (Signature, Date & Time)	Relinquished by: (Signature, Date & Time)	Received by: (Signature, Date & Time)
5/14/20 1300	5/14/20 1300	5/14/20 1600	5/14/20 16:55
Relinquished by: (Signature, Date & Time)	Received by: (Signature, Date & Time)	Relinquished by: (Signature, Date & Time)	Received by: (Signature, Date & Time)

circling MA-MCP, client acknowledges samples were in accordance with MADEP CAM VIIA

Please fax to the laboratory all changes to Chain of Custody

1 (White) Lab Copy
2 (Yellow) Client Receipt

ENVIRONMENTAL PARTNERS

MEMORANDUM

Date: April 26, 2021

To David P. Taylor Jr., Highway Superintendent

From Scott D. Turner, PE, AICP, LEED AP ND – Director of Planning, EP

CC Bill Watts – Project Scientist, EP

Natalie Pommersheim – Project Manager, EP

Subject Illicit Discharge Detection & Elimination (IDDE) Investigations

This memorandum summarizes the 2021 Outfall Sampling Program, performed on behalf of the Highway Department of the Town of Rockland.

Environmental Partners, Inc. (EP) conducted outfall sampling over the course of three (3) days in March 2021. During the time of the outfall screening, the weather was clear and there was 0.0 inches of precipitation in the previous 48 hours. A total of 74 outfalls were screened, of which seven (7) were found flowing during dry weather. In addition, four (4) structure locations did not exist and 31 structure locations were not outfalls. The 31 structure locations that were not outfalls are described further in the table below.

Structures Incorrectly Categorized As Outfalls

Actual Structure Categorization	Outfall IDs
BMP Inlet	48-O, 50-O, 136-O
Catch Basin	295-O
Culvert Outlet	23-O, 96-O, 140-O, 157-O, 164-O, 178-O, 191-O, 199-O, 243-O, 252-O, 258-O, 259-O, 263-O, 270-O, 271-O, 287-O, 299-O
Drain Manhole	49-O, 65-O
Inlet	22-O
Outlet into BMP	161-O, 162-O, 189-O, 231-O
Private Outfall	32-O, 34-O, 35-O

OUTFALL SAMPLING

On March 16 and 18, 2021, EP personnel visited 74 outfalls during dry weather, approximately 50% of the 134 total identified MS4 outfalls in the Town of Rockland. In 2020, EP personnel visited 60 outfalls, selected based on proximity (less than 100 feet) of a Category 5 waterbody, or tributaries to a Category 5 waterbody, as identified in the 2016 List of Integrated Waters. The remaining Town MS4 outfalls were inspected this year. The complete list of the 70 outfalls screened, the four (4) structure locations that did not exist, and the 31 structures that were not outfalls is attached as *Table 1: Outfall Sampling Locations*. All outfall screening locations are shown on *Figure 1: Outfall Sampling Locations*.

RESULTS AND RECOMMENDATIONS

A total of seven (7) outfalls were sampled under this task: 53-O, 194-O, 203-O, 257-O, 267-O, 288-O, and 289-O. All outfalls were analyzed in the field for pH, temperature, specific conductance, salinity, and dissolved oxygen. The samples that were collected were analyzed by a certified laboratory, ESS Laboratory, in Cranston, Rhode Island. All samples must be analyzed for ammonia, chlorine, E.coli, and surfactants. Additional sampling parameters were applied to outfalls discharging to waterbodies and/or watersheds with Total Maximum Daily Load (TMDL) requirements, such as phosphorus, BOD, and fecal coliform. A summary of the field and analytical results is presented in *Table 2: Stormwater Field Screening and Analytical Results*.

All outfall sampling results were below reporting limits, except for sampling results at outfall 203-O that discharges into the French Stream (MA94-03) and at outfall 257-O that discharges into an unnamed tributary to Ben Mann Brook. At 203-O, pH was detected below the 6.5 – 8 range, and at 257-O, pH was detected above of the 6.5 – 8 range. EP recommends beginning catchment investigations for the corresponding catchments of 203-O and 257-O, as well as the corresponding catchments of 177-O and 192-O (which had sampling results that were above reporting limits in 2020). These catchments are shown on *Figures 2 – 5*.

In the Notice of Intent (NOI) for coverage under the Small MS4 General Permit, submitted in September 2018, it was reported that there were 130 MS4 outfalls in the Town of Rockland. After several outfall inspection events, this MS4 outfall total has been adjusted to be only 71 outfalls. The remaining 59 possible outfalls were determined to either not exist or to be non-outfall stormwater structures (e.g. culvert outlets or outlets into BMPs). The stormwater GIS database shall be updated to reflect these changes, and the database will be sent to the Town's records/files. These changes will also be reflected in the Rockland IDDE Plan update, as well as the Catchment Ranking Table.

Attachments:

Table 1: Outfall Sampling Locations

Table 2: Stormwater Field Screening and Analytical Results

Figure 1: Outfall Sampling Locations

Figure 2: Outfall 177-O Catchment

Figure 3: Outfall 192-O Catchment

Figure 4: Outfall 203-O Catchment

Figure 5: Outfall 257-O Catchment

Laboratory Reports

Rockland Outfall Sampling Locations

					Field Parameters					
Waterbody	OF ID	Approx. Street Address	Additional Sampling Parameters	Inspection/ Sample Date	Dissolved Oxygen	Specific Cond.	Salinity	Temp	pH	Sample Time
Cushing Brook	199-O	283 E Water St		3/16/2021						NO
French Stream	203-O	75 Vinton Terr	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021	10.71	289	0.32	7.56	6.23	1150
	23-O	115 John A Dunn Memorial Dr	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						NO
	500-O	47-99 John A Dunn Memorial Dr	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						DNE
	501-O	47-99 John A Dunn Memorial Dr	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						DNE
Old Swamp River	22-O	651 Union St	Fecal Coliform	3/16/2021						NO
	237-O	136 Forest St	Fecal Coliform	3/16/2021						NF
	263-O	86 Veterans of Foreign Wars Dr	Fecal Coliform	3/16/2021						NO
	267-O	865 Liberty St	Fecal Coliform	3/16/2021	4.32	604.9	0.29	6.00	6.64	1200
	364-O	86 Veterans of Foreign Wars Dr	Fecal Coliform	3/16/2021						NF
	86-O	59 S Douglas St	Fecal Coliform	3/16/2021						NF
Studleys Pond	200-O	4 Icehouse Woods Ln	Fecal Coliform	3/16/2021						NF
	201-O	12 Icehouse Woods Ln	Fecal Coliform	3/16/2021						NF
	202-O	51 John Burke Dr	Fecal Coliform	3/16/2021						NF
	93-O	34 Thayer Terr	Fecal Coliform	3/16/2021						NF
Unnamed Pond near Ben Mann Brook	256-O	21 Commerce Rd		3/16/2021						NF
	64-O	21 Commerce Rd		3/16/2021						NF
	65-O	21 Commerce Rd		3/16/2021						NO
	66-O	21 Commerce Rd		3/16/2021						NF
Unnamed Tributary near French Stream	197-O	224 North Ave	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						NF
	198-O	224 North Ave	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						NF
	299-O	244 North Ave	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						NO
	300-O	260 North Ave	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						NF
Unnamed Tributary near Studleys Pond	164-O	30 Emerson St	Fecal Coliform	3/16/2021						NO
	287-O	15 Emerson St	Fecal Coliform	3/16/2021						NO
	288-O	276 Plain St	Fecal Coliform	3/16/2021	10.02	1180	0.45	9.44	7.45	1100
	289-O	276 Plain St	Fecal Coliform	3/16/2021	10.86	734	0.38	8.57	6.52	1115
Unnamed Tributary to Ben Mann Brook	136-O	40 Reservoir Park Dr		3/16/2021						NO
	137-O	40 Reservoir Park Dr		3/16/2021						NF
	138-O	195-247 Ledgewood Pl		3/16/2021						NF
	139-O	64 Ledgewood Pl		3/16/2021						NF
	140-O	64 Ledgewood Pl		3/16/2021						NO
	252-O	2 Saw Mill Ln		3/16/2021						NO
	253-O	584 Webster St		3/16/2021						NF
	257-O	64 Ledgewood Pl		3/16/2021	3.73	880	0.43	4.30	8.84	1130
	258-O	929 Hingham St		3/16/2021						NO
	259-O	933 Hingham St		3/16/2021						NO
	32-O	1149 Hingham St		3/16/2021						NO
	34-O	1149 Hingham St		3/16/2021						NO
	35-O	1149 Hingham St		3/16/2021						NO
	45-O	1001 Hingham St		3/16/2021						NF
	47-O	1000-1004 Hingham St		3/16/2021						NF
	48-O	954-996 Hingham St		3/16/2021						NO
	49-O	954-996 Hingham St		3/16/2021						NO
	50-O	2-6 Commerce Rd		3/16/2021						NO
	53-O	1001 Hingham St		3/16/2021	5.74	1470	0.74	5.90	6.50	1245
	54-O	1001 Hingham St		3/16/2021						NF
Unnamed Tributary to French Stream	101-O	506 Summer St	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						NF
	102-O	507 Summer St	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						NF
	157-O	11-37 Satucket Rd	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						NO
	191-O	803-951 Summer St	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/17/2021						NO
	194-O	274 Levin Rd	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021	12.77	313	0.12	4.55	6.57	1210
	229-O	8 Franklin Hunt Rd	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/18/2021						NF
	230-O	12 Franklin Hunt Rd	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/18/2021						NF
	231-O	14 Franklin Hunt Rd	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/18/2021						NO
	243-O	325 Market St	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/18/2021						NO
	271-O	760-870 Beech St	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						NO
	503-O	841 Market St	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/17/2021						NF
	95-O	14 Winter Cir	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						NF
	96-O	14 Winter Cir	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						NO
Unnamed Wetlands to Cushing Brook	294-O	338-400 Hingham St	Fecal Coliform	3/16/2021						NF
	295-O	400 Hingham St	Fecal Coliform	3/16/2021						NO
	296-O	400 Hingham St	Fecal Coliform	3/16/2021						NF
Unnamed Wetlands to French Stream	160-O	72-78 Satucket Rd	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						NF
	161-O	43 Satucket Rd	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						NO
	162-O	43 Satucket Rd	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						NO
	178-O	40 Beech St	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						NO
	180-O	40 Beech St	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						DNE
	184-O	10 Bay Path Ln	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						NF
	189-O	46 Bay Path Ln	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						NO
	215-O	6 Autumn Ln	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						DNE
	218-O	627 Summer St	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						NF
	219-O	627 Summer St	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						NF
	270-O	872-1032 Beech St	Dissolved Oxygen, Fecal Coliform, Total Phosphorus	3/16/2021						NO

All Ofs sampled for: chlorine, ammonia, surfactants, E.coli
DNE = Structure does not exist
NF = No flow at structure
NO = Structure is not an outfall

Table 2: Stormwater Field Screening and Analytical Results

Rockland, Massachusetts

March 18, 2021

Outfall Identification		53-O	194-O	203-O	257-O	267-O	288-O	289-O
Discharge Waterbody		Unnamed Tributary to Ben Mann Brook	Unnamed Tributary to French Stream	French Stream	Unnamed Tributary to Ben Mann Brook	Old Swamp River	Unnamed Tributary near Studleys Pond	Unnamed Tributary near Studleys Pond
Date Sampled		3/18/2021	3/18/2021	3/18/2021	3/18/2021	3/18/2021	3/18/2021	3/18/2021
Sample Time		12:45 PM	12:10 PM	11:50 AM	11:30 AM	12:00 PM	11:00 AM	11:15 AM
Field Test Results	**Threshold**							
Temperature (˚C)	-	5.90	4.55	7.56	4.30	6.00	9.44	8.57
Specific Conductance (µS/cm)	2000 (µS/cm)	1470	313	289	880	604.9	1180	734
Salinity (ppt)	-	0.74	0.12	0.32	0.43	0.29	0.45	0.38
pH	6.5-8.0	6.50	6.57	**6.23**	**8.84**	6.64	7.45	6.52
DO (mg/L)	-	5.74	12.77	10.71	3.73	4.32	10.02	10.86
Analytical Results								
Ammonia as Nitrogen (mg/L)	0.5 mg/L	ND	ND	ND	0.23	0.30	ND	ND
Chlorine (TRC) (mg/L)	-	ND	ND	ND	ND	ND	ND	ND
E. coli (MPN/100 mL)	236 MPN/100 mL	<1	1.0	2.0	13.5	35.9	<1	228
Surfactants, MBAS (mg/L)	0.25 mg/L	ND	ND	ND	ND	ND	ND	ND
Phosphorus, Total (mg/L)	-	-	ND	0.11	-	-	-	-
Biochemical Oxygen Demand (mg/L)	-	-	ND	ND	-	-	-	-
Fecal Coliform (CFU/100 mL)	-	-	4.1	4.1	-	90.9	<1	291

Notes:

- : Not Tested

ND: Non-detect

Bold Values exceed contaminant criteria.

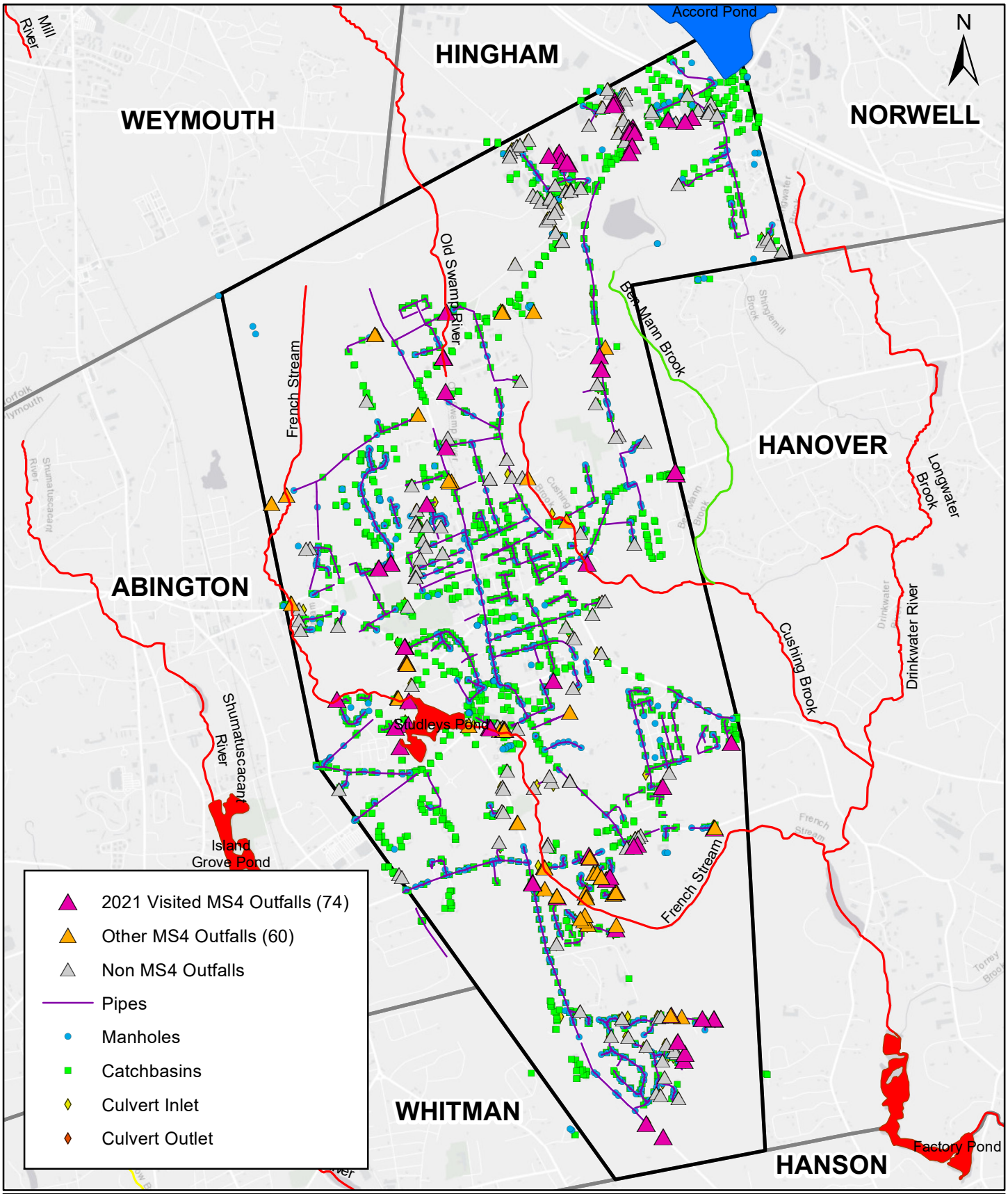


Figure 1. Outfall Sampling Locations
Rockland, Massachusetts

ENVIRONMENTAL PARTNERS

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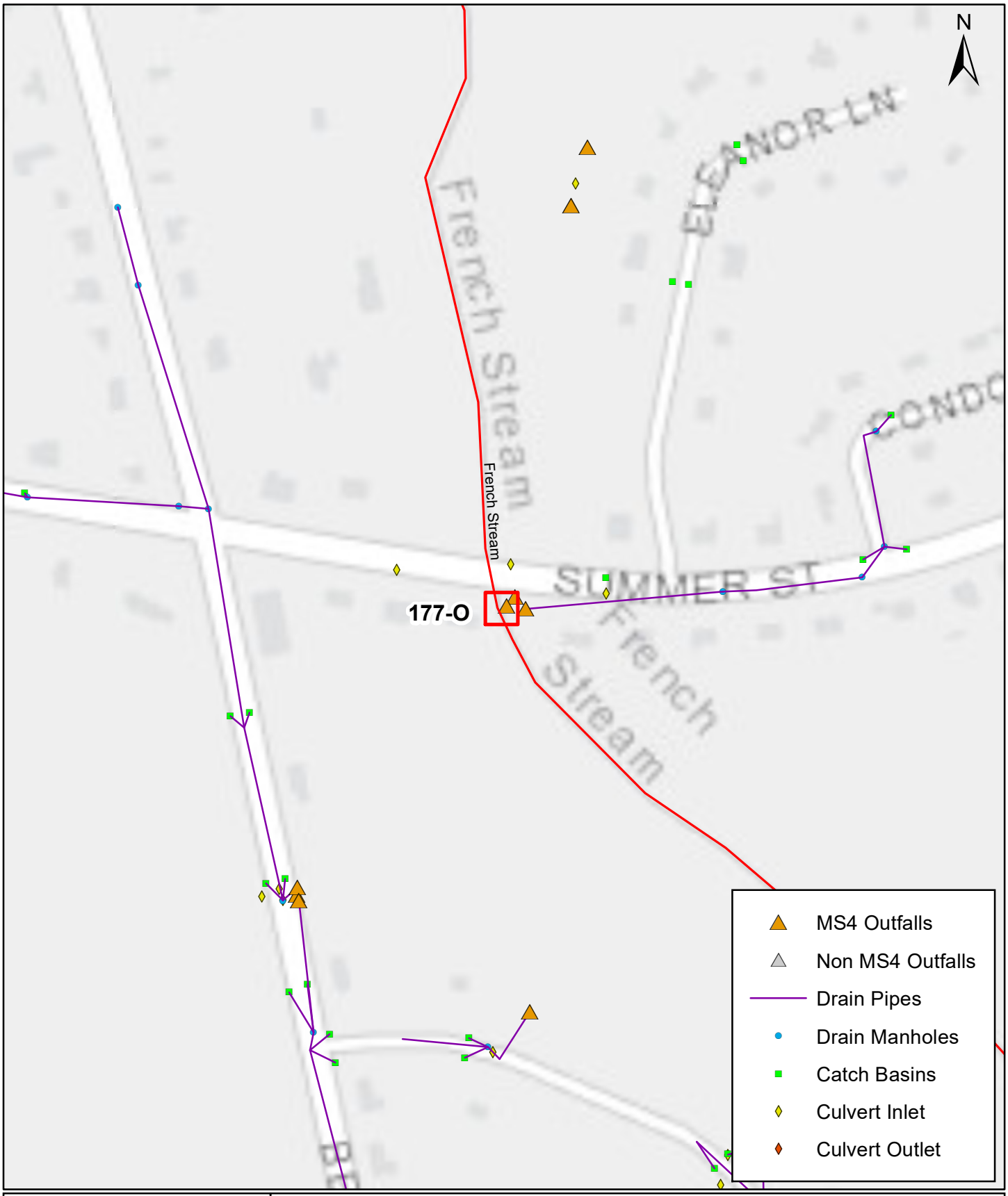

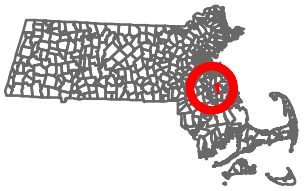

Figure 2. Outfall 177-O Catchment
Rockland, Massachusetts

ENVIRONMENTAL PARTNERS

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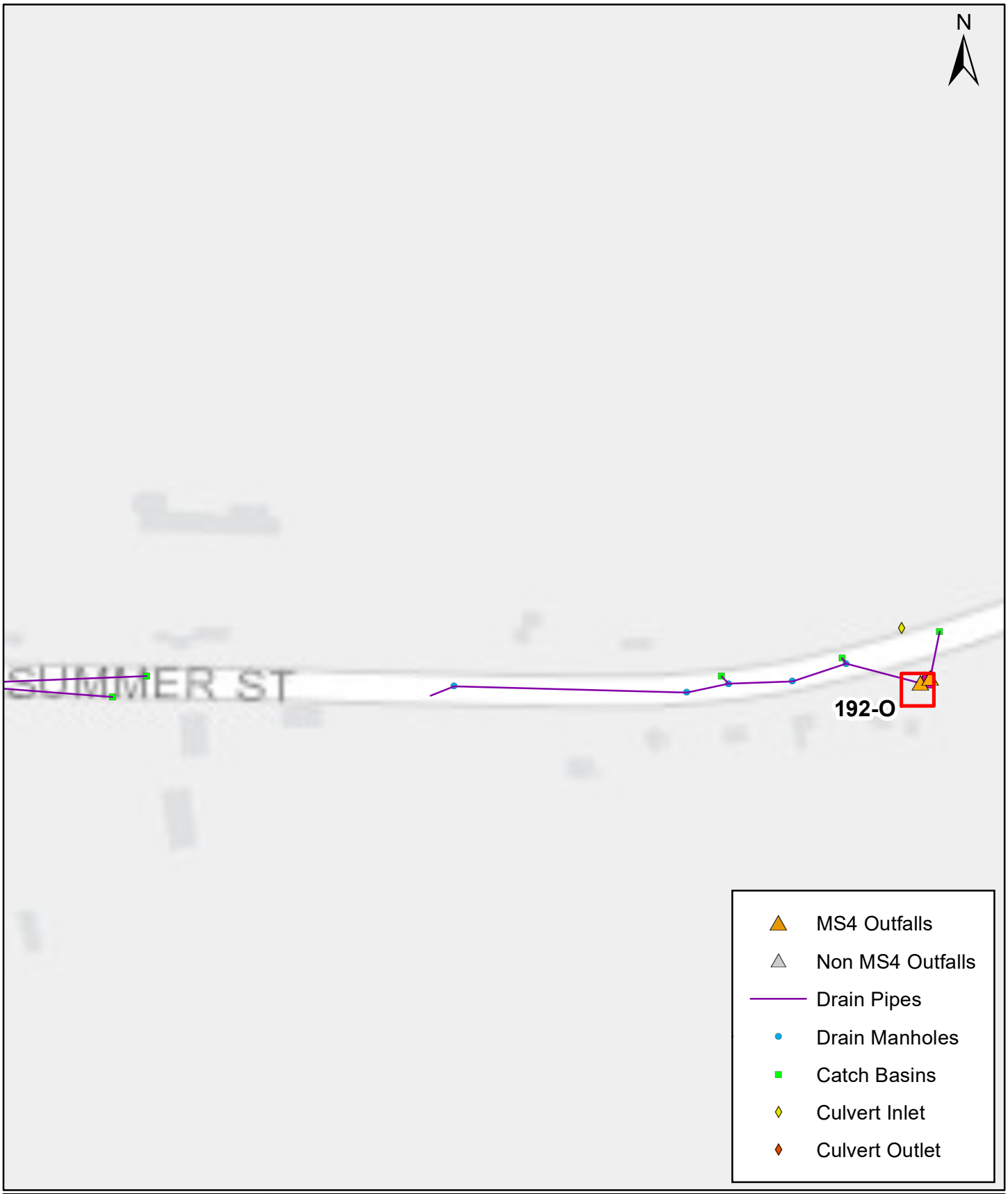

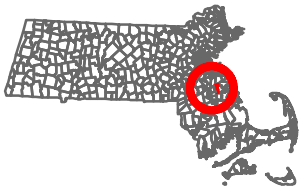

Figure 3. Outfall 192-O Catchment
Rockland, Massachusetts

ENVIRONMENTAL PARTNERS

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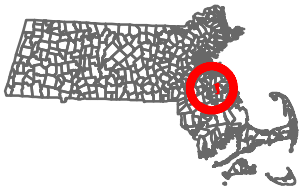

Figure 4. Outfall 203-O Catchment
Rockland, Massachusetts

ENVIRONMENTAL PARTNERS

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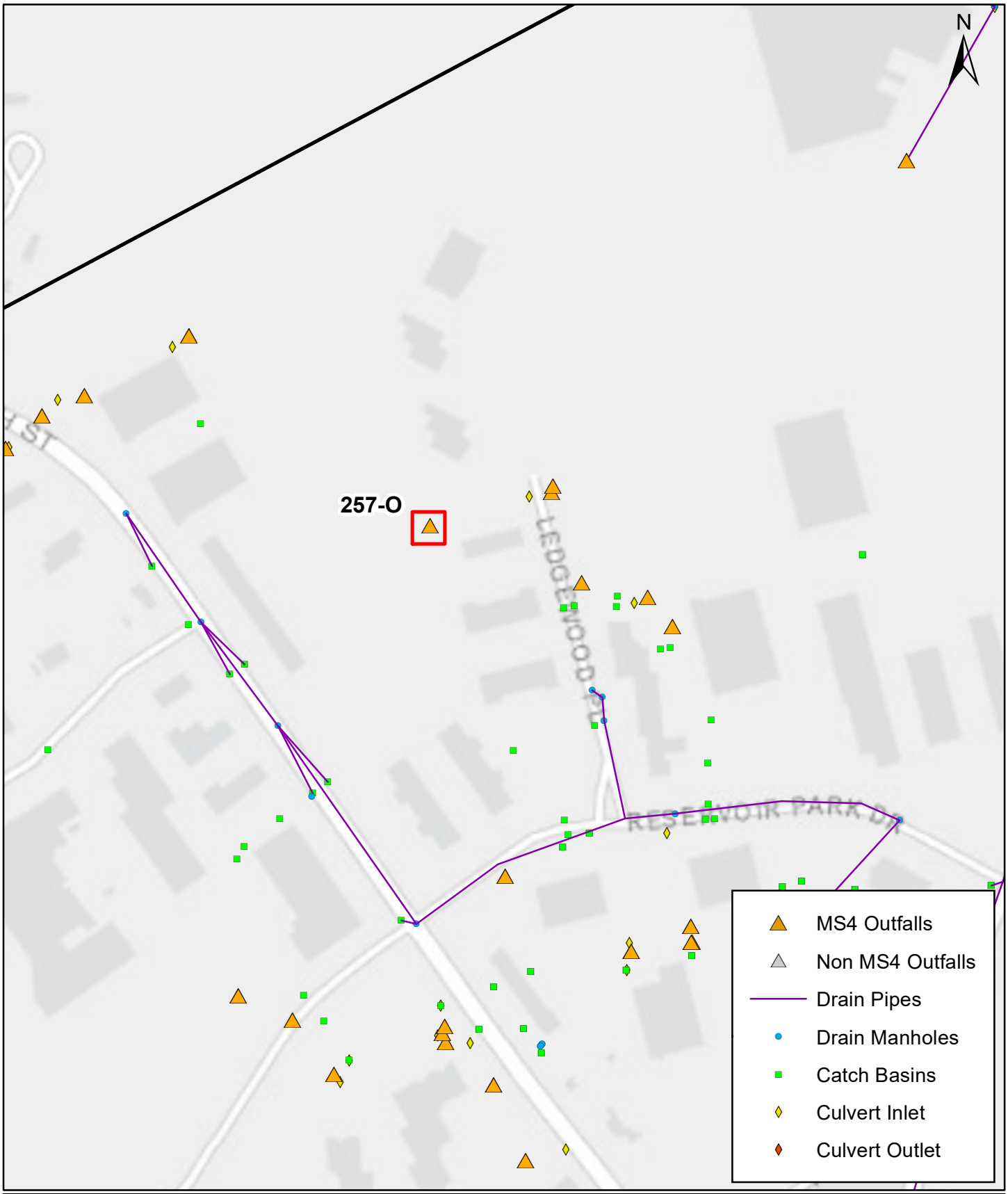

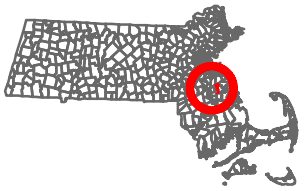

Figure 5. Outfall 257-O Catchment
Rockland, Massachusetts

ENVIRONMENTAL PARTNERS

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CERTIFICATE OF ANALYSIS

William Watts
Environmental Partners Group
1900 Crown Colony Drive, Suite 402
Quincy, MA 02169

RE: Rockland Outfall Sampling (R183-2002)
ESS Laboratory Work Order Number: 21C0674

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 3:37 pm, Mar 25, 2021

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

Subcontracted Analyses

BAL Laboratory - Cranston, RI	E Coli, Fecal Coliform

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling

ESS Laboratory Work Order: 21C0674

SAMPLE RECEIPT

The following samples were received on March 18, 2021 for the analyses specified on the enclosed Chain of Custody Record.

The samples and analyses listed below were analyzed in accordance with the Guidelines Establishing Test Procedures for the Analysis of Pollutants, 40 CFR Part 136, as amended.

Lab Number	Sample Name	Matrix	Analysis
21C0674-01	288-O	Stormwater	350.1, 4500Cl G, 5540C, SM9223B
21C0674-02	289-O	Stormwater	350.1, 4500Cl G, 5540C, SM9223B
21C0674-03	203-O	Stormwater	350.1, 365.1, 4500Cl G, 5210 B, 5540C, SM9223B
21C0674-04	194-O	Stormwater	350.1, 365.1, 4500Cl G, 5210 B, 5540C, SM9223B
21C0674-05	257-O	Stormwater	350.1, 4500Cl G, 5540C, SM9223B
21C0674-06	267-O	Stormwater	350.1, 4500Cl G, 5540C, SM9223B
21C0674-07	53-O	Stormwater	350.1, 4500Cl G, 5540C, SM9223B

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling

ESS Laboratory Work Order: 21C0674

PROJECT NARRATIVE

Classical Chemistry

21C0674-01	**The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.**
21C0674-02	**The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.**
21C0674-03	**The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.**
21C0674-04	**The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.**
21C0674-05	**The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.**
21C0674-06	**The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.**
21C0674-07	**The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.**

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling

ESS Laboratory Work Order: 21C0674

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH
MADEP 18-2.1 - VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling
Client Sample ID: 288-O
Date Sampled: 03/18/21 11:00
Percent Solids: N/A

ESS Laboratory Work Order: 21C0674
ESS Laboratory Sample ID: 21C0674-01
Sample Matrix: Stormwater

All methods used are in accordance with 40 CFR 136.

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	ND (0.10)		350.1		1	JLK	03/22/21 20:30	mg/L	DC12215
MBAS as LAS	ND (0.1)		5540C		1	CCP	03/19/21 15:00	mg/L	DC11926
Total Residual Chlorine	ND (0.06)		4500Cl G		1	CCP	03/18/21 19:30	mg/L	DC11849

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling
Client Sample ID: 288-O
Date Sampled: 03/18/21 11:00
Percent Solids: N/A

ESS Laboratory Work Order: 21C0674
ESS Laboratory Sample ID: 21C0674-01
Sample Matrix: Stormwater

All methods used are in accordance with 40 CFR 136.

Microbiology

Analyte	Results (MRL)	MDL	Method	Limit	Analyst	Analyzed	Units
E.coli	**< 1.0** (N/A)		SM9223B		ARG	03/18/21 17:15	MPN/100mL
Fecal Coliform	**< 1.0** (N/A)		SM9223B		ARG	03/18/21 17:15	MPN/100mL

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling
Client Sample ID: 289-O
Date Sampled: 03/18/21 11:15
Percent Solids: N/A

ESS Laboratory Work Order: 21C0674
ESS Laboratory Sample ID: 21C0674-02
Sample Matrix: Stormwater

All methods used are in accordance with 40 CFR 136.

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	ND (0.10)		350.1		1	JLK	03/22/21 20:31	mg/L	DC12215
MBAS as LAS	ND (0.1)		5540C		1	CCP	03/19/21 15:00	mg/L	DC11926
Total Residual Chlorine	ND (0.06)		4500Cl G		1	CCP	03/18/21 19:30	mg/L	DC11849

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling
Client Sample ID: 289-O
Date Sampled: 03/18/21 11:15
Percent Solids: N/A

ESS Laboratory Work Order: 21C0674
ESS Laboratory Sample ID: 21C0674-02
Sample Matrix: Stormwater

All methods used are in accordance with 40 CFR 136.

Microbiology

Analyte	Results (MRL)	MDL	Method	Limit	Analyst	Analyzed	Units
E.coli	**228** (N/A)		SM9223B		ARG	03/18/21 17:15	MPN/100mL
Fecal Coliform	**291** (N/A)		SM9223B		ARG	03/18/21 17:15	MPN/100mL

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling
Client Sample ID: 203-O
Date Sampled: 03/18/21 11:50
Percent Solids: N/A

ESS Laboratory Work Order: 21C0674
ESS Laboratory Sample ID: 21C0674-03
Sample Matrix: Stormwater

All methods used are in accordance with 40 CFR 136.

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	ND (0.10)		350.1		1	JLK	03/22/21 20:32	mg/L	DC12215
Biochemical Oxygen Demand	ND (3)		5210 B		1	LAB	03/19/21 16:43	mg/L	DC11907
MBAS as LAS	ND (0.1)		5540C		1	CCP	03/19/21 15:00	mg/L	DC11926
Total Phosphate as P	**0.11** (0.10)		365.1		1	EEM	03/19/21 15:01	mg/L	DC11914
Total Residual Chlorine	ND (0.06)		4500Cl G		1	CCP	03/18/21 19:30	mg/L	DC11849

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling
Client Sample ID: 203-O
Date Sampled: 03/18/21 11:50
Percent Solids: N/A

ESS Laboratory Work Order: 21C0674
ESS Laboratory Sample ID: 21C0674-03
Sample Matrix: Stormwater

All methods used are in accordance with 40 CFR 136.

Microbiology

Analyte	Results (MRL)	MDL	Method	Limit	Analyst	Analyzed	Units
E.coli	**2.0** (N/A)		SM9223B		ARG	03/18/21 17:15	MPN/100mL
Fecal Coliform	**4.1** (N/A)		SM9223B		ARG	03/18/21 17:15	MPN/100mL

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling
Client Sample ID: 194-O
Date Sampled: 03/18/21 12:10
Percent Solids: N/A

ESS Laboratory Work Order: 21C0674
ESS Laboratory Sample ID: 21C0674-04
Sample Matrix: Stormwater

All methods used are in accordance with 40 CFR 136.

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	ND (0.10)		350.1		1	JLK	03/22/21 20:33	mg/L	DC12215
Biochemical Oxygen Demand	ND (3)		5210 B		1	LAB	03/19/21 16:43	mg/L	DC11907
MBAS as LAS	ND (0.1)		5540C		1	CCP	03/19/21 15:00	mg/L	DC11926
Total Phosphate as P	ND (0.10)		365.1		1	EEM	03/19/21 15:02	mg/L	DC11914
Total Residual Chlorine	ND (0.06)		4500Cl G		1	CCP	03/18/21 19:30	mg/L	DC11849

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling
Client Sample ID: 194-O
Date Sampled: 03/18/21 12:10
Percent Solids: N/A

ESS Laboratory Work Order: 21C0674
ESS Laboratory Sample ID: 21C0674-04
Sample Matrix: Stormwater

All methods used are in accordance with 40 CFR 136.

Microbiology

Analyte	Results (MRL)	MDL	Method	Limit	Analyst	Analyzed	Units
E.coli	**1.0** (N/A)		SM9223B		ARG	03/18/21 17:15	MPN/100mL
Fecal Coliform	**4.1** (N/A)		SM9223B		ARG	03/18/21 17:15	MPN/100mL

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling
Client Sample ID: 257-O
Date Sampled: 03/18/21 11:30
Percent Solids: N/A

ESS Laboratory Work Order: 21C0674
ESS Laboratory Sample ID: 21C0674-05
Sample Matrix: Stormwater

All methods used are in accordance with 40 CFR 136.

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	**0.23** (0.10)		350.1		1	JLK	03/22/21 20:41	mg/L	DC12215
MBAS as LAS	ND (0.1)		5540C		1	CCP	03/19/21 15:00	mg/L	DC11926
Total Residual Chlorine	ND (0.06)		4500Cl G		1	CCP	03/18/21 19:30	mg/L	DC11849

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling
Client Sample ID: 257-O
Date Sampled: 03/18/21 11:30
Percent Solids: N/A

ESS Laboratory Work Order: 21C0674
ESS Laboratory Sample ID: 21C0674-05
Sample Matrix: Stormwater

All methods used are in accordance with 40 CFR 136.

Microbiology

Analyte	Results (MRL)	MDL	Method	Limit	Analyst	Analyzed	Units
E.coli	**13.5** (N/A)		SM9223B		ARG	03/18/21 17:15	MPN/100mL

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling
Client Sample ID: 267-O
Date Sampled: 03/18/21 12:00
Percent Solids: N/A

ESS Laboratory Work Order: 21C0674
ESS Laboratory Sample ID: 21C0674-06
Sample Matrix: Stormwater

All methods used are in accordance with 40 CFR 136.

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	**0.30** (0.10)		350.1		1	JLK	03/22/21 20:42	mg/L	DC12215
MBAS as LAS	ND (0.1)		5540C		1	CCP	03/19/21 15:00	mg/L	DC11926
Total Residual Chlorine	ND (0.06)		4500Cl G		1	CCP	03/18/21 19:30	mg/L	DC11849

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling
Client Sample ID: 267-O
Date Sampled: 03/18/21 12:00
Percent Solids: N/A

ESS Laboratory Work Order: 21C0674
ESS Laboratory Sample ID: 21C0674-06
Sample Matrix: Stormwater

All methods used are in accordance with 40 CFR 136.

Microbiology

Analyte	Results (MRL)	MDL	Method	Limit	Analyst	Analyzed	Units
E.coli	**35.9** (N/A)		SM9223B		ARG	03/18/21 17:15	MPN/100mL
Fecal Coliform	**90.9** (N/A)		SM9223B		ARG	03/18/21 17:15	MPN/100mL

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling
Client Sample ID: 53-O
Date Sampled: 03/18/21 12:45
Percent Solids: N/A

ESS Laboratory Work Order: 21C0674
ESS Laboratory Sample ID: 21C0674-07
Sample Matrix: Stormwater

All methods used are in accordance with 40 CFR 136.

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	ND (0.10)		350.1		1	JLK	03/22/21 20:43	mg/L	DC12215
MBAS as LAS	ND (0.1)		5540C		1	CCP	03/19/21 15:00	mg/L	DC11926
Total Residual Chlorine	ND (0.06)		4500Cl G		1	CCP	03/18/21 19:30	mg/L	DC11849

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling
Client Sample ID: 53-O
Date Sampled: 03/18/21 12:45
Percent Solids: N/A

ESS Laboratory Work Order: 21C0674
ESS Laboratory Sample ID: 21C0674-07
Sample Matrix: Stormwater

All methods used are in accordance with 40 CFR 136.

Microbiology

Analyte	Results (MRL)	MDL	Method	Limit	Analyst	Analyzed	Units
E.coli	**< 1.0** (N/A)		SM9223B		ARG	03/18/21 17:15	MPN/100mL

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling

ESS Laboratory Work Order: 21C0674

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Classical Chemistry										
Batch DC11849 - General Preparation										
Blank										
Total Residual Chlorine	ND	0.06	mg/L							
LCS										
Total Residual Chlorine	0.39		mg/L	0.3999		98	80-120			
Batch DC11907 - BOD Prep										
LCS										
Biochemical Oxygen Demand	186		mg/L	200.0		93	84.6-115.4			
Batch DC11914 - TPO4 Prep										
Blank										
Total Phosphate as P	ND	0.10	mg/L							
LCS										
Total Phosphate as P	0.52	0.10	mg/L	0.5000		103	90-110			
Batch DC11926 - General Preparation										
Blank										
MBAS as LAS	ND	0.1	mg/L							
LCS										
MBAS as LAS	0.9	0.1	mg/L	1.000		94	85-115			
Batch DC12215 - NH4 Prep										
Blank										
Ammonia as N	ND	0.10	mg/L							
LCS										
Ammonia as N	0.98	0.10	mg/L	0.9994		98	80-120			

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling ESS Laboratory Work Order: 21C0674

Notes and Definitions

U	Analyte included in the analysis, but not detected
HT	The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.
<	Less than the Method Detection Limit.
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit
MF	Membrane Filtration
MPN	Most Probably Number
TNTC	Too numerous to Count
CFU	Colony Forming Units

CERTIFICATE OF ANALYSIS

Client Name: Environmental Partners Group
Client Project ID: Rockland Outfall Sampling

ESS Laboratory Work Order: 21C0674

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

ESS Laboratory Sample and Cooler Receipt Checklist

Client: EPG - Environmental Partners Group - TB

Shipped/Delivered Via: ESS Courier

ESS Project ID: 21C0674
Date Received: 3/18/2021
Project Due Date: 3/25/2021
Days for Project: 5 Day

1. Air bill manifest present? No
   Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
   Temp: 2.9 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. **Were labs informed about short holds & rushes?** Yes / No / NA
10. Were any analyses received outside of hold time? Yes / No

11. Any Subcontracting needed? Yes / No
    ESS Sample IDs: **All**
    Analysis: **E. Coli + Fecal Coliform**
    TAT: 5 Day
12. Were VOAs received? Yes / No
    a. Air bubbles in aqueous VOAs? Yes / No
    b. Does methanol cover soil completely? Yes / No / NA
13. Are the samples properly preserved? Yes / No
    a. If metals preserved upon receipt: Date: Time: By:
    b. Low Level VOA vials frozen: Date: Time: By:

Sample Receiving Notes:

Bacti cups were brought directly to BAL

14. Was there a need to contact Project Manager? Yes / No
    a. Was there a need to contact the client? Yes / No
    Who was contacted? Date: Time: By:

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
1	144926	Yes	N/A	Yes	500 mL Poly	H2SO4	
1	144933	Yes	N/A	Yes	500 mL Poly	NP	
1	144940	Yes	N/A	Yes	1L Amber	NP	
1	144947	Yes	N/A	Yes	100 mL Bacti	NP	
1	144954	Yes	N/A	Yes	100 mL Bacti	NP	
2	144927	Yes	N/A	Yes	500 mL Poly	H2SO4	
2	144934	Yes	N/A	Yes	500 mL Poly	NP	
2	144941	Yes	N/A	Yes	1L Amber	NP	
2	144948	Yes	N/A	Yes	100 mL Bacti	NP	
2	144955	Yes	N/A	Yes	100 mL Bacti	NP	
3	144928	Yes	N/A	Yes	500 mL Poly	H2SO4	
3	144935	Yes	N/A	Yes	500 mL Poly	NP	
3	144942	Yes	N/A	Yes	1L Amber	NP	
3	144949	Yes	N/A	Yes	100 mL Bacti	NP	
3	144956	Yes	N/A	Yes	100 mL Bacti	NP	
3	144959	Yes	N/A	Yes	1L Poly	NP	

185 Frances Avenue
Cranston, RI 02921
Phone: 401-461-7181
Fax: 401-461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

ESS Lab # 21C0674 | Page 1 of 1

Turn Time: [X] >5 [ ] 5 [ ] 4 [ ] 3 [ ] 2 [ ] 1 [ ] Same Day

Regulatory State: Criteria:

Is this project for any of the following?: [ ] CT RCP [ ] MA MCP [ ] RGP [ ] Permit [ ] 401 WQ

ELECTRONIC DELIVERABLES (Final Reports are PDF)

[ ] Limit Checker [ ] State Forms [ ] EQuIS
[X] Excel [ ] Hard Copy [ ] Enviro Data
[ ] CLP-Like Package [X] Other (Specify) → PDF

CLIENT INFORMATION

Client: Environmental Partners
Address: 1900 Crown Colony Drive
Quincy, MA 02169
Phone: 617 657 0200
Email Distribution List:
wmw@envpartners.com

PROJECT INFORMATION

Project Name: Rockland OF Sampling
Project Location: Rockland, MA
Project Number: R183-2002
Project Manager: Scott Turner
Bill to:
PO#:
Quote#:

Client acknowledges that sampling is compliant with all EPA / State regulatory programs

REQUESTED ANALYSES

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	Ammonia	Chlorine	Surfactants	E. Coli	Fecal Coliform	Total Phosphorus	BOD	Total Number of Bottles
1	3/18/21	1100	Grab	stormwater	288-O	X	X	X	X	X			5
2	3/18/21	1115	Grab	stormwaters	289-O	X	X	X	X	X			5
3	3/18/21	1150	Grab	stormwater	203-O	X	X	X	X	X	X	X	7
4	3/18/21	1210	Grab	stormwater	194-O	X	X	X	X	X	X	X	7
5	3/18/21	1130	Grab	Stormwater	257-O	X	X	X	X				
6	3/18/21	1200	Grab	Stormwater	267-O	X	X	X	X	X			
7	3/18/21	1245	Grab	Stormwater	53-O	X	X	X	X				

Container Type:	AC-Air Cassette AG-Amber Glass B-BOD Bottle C-Cubitainer J-Jar O-Other P-Poly S-Sterile V-Vial					P	P	AG	S	S	P	P										
Container Volume:	1-100 mL 2-2.5 gal 3-250 mL 4-300 mL 5-500 mL 6-1L 7-VOA 8-2 oz 9-4 oz 10-8 oz 11-Other*					5	5	6	1	1	3	6										
Preservation Code:	1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Other*					3	1	1	1	1	3	1										

Sampled by: Bill Watts / Steve Gabriel

Chain needs to be filled out neatly and completely for on time delivery.

Laboratory Use Only
Cooler Temperature (°C): 2.9

Comments: * Please specify "Other" preservative and containers types in this space

All samples submitted are subject to ESS Laboratory's payment terms and conditions.

Dissolved Filtration
[ ] Lab Filter

Relinquished by (Signature)	Date	Time	Received by (Signature)	Relinquished by (Signature)	Date	Time	Received by (Signature)
	3/18/21	1400	3/18/21 1400		3/18/21	16:26	
Relinquished by (Signature)	Date	Time	Received by (Signature)	Relinquished by (Signature)	Date	Time	Received by (Signature)

ENVIRONMENTAL PARTNERS
— An Apex Company —

MEMORANDUM

Date: September 26, 2023

To Dave Taylor, Jr.- Highway Superintendent

From Natalie Pommersheim – Project Manager, Environmental Partners

CC Megan Fountaine – Stormwater Drainage Clerk

Karen Chan – Project Scientist, Environmental Partners

Subject: Illicit Discharge Detection & Elimination (IDDE) Year 5 Catchment Investigations Findings and Recommendations

This memorandum summarizes the Illicit Discharge Detection & Elimination (IDDE) catchment investigations, outlined in Task 1b of the contract for Professional Engineering Services for the Municipal Separate Storm Sewer System (MS4) General Permit between the Town of Rockland and Environmental Partners Group LLC (EP), signed October 24, 2022. In accordance with the 2016 Massachusetts MS4 General Permit, the Town of Rockland must perform catchment investigations at each of the Town's 70 catchments by the end of the Permit term (i.e., Year 10). During the field investigations, 3 outfalls were identified as being culverted streams and were removed from the outfall inventory, bringing the total to 67 outfalls.

During dry weather conditions, EP visited 37 catchments on May 25, 2023, and between June 14, 2023, and June 16, 2023. Catchment investigations at 30 catchments were fully completed; initial field investigations were completed at 4 catchments and require additional Town assistance to complete the field work. Additionally, flow was encountered at 4 outfall catchments, which include:

- 41-O (22 Bay Path Lane)
- 44-O (10 Bay Path Lane)
- 60-O (22 Winter Circle)
- 73-O (31 Studley Court)
- 210-O (22 Winter Circle)
- 237-O (53 Boxberry Lane)

Field sampling results are shown in **Table 2: Stormwater Field Test Kit Results**.

The investigated catchments were based on the Town's outfall-catchment ranking table. EP targeted outfall-catchments that were ranked as "high priority" based on outfall screenings conducted in June 2019 for investigation. The locations of the investigated catchments are listed in **Table 1: Catchment Investigation Locations** and in **Figure 1: Catchment Investigation Progress**. Catchment packages for each catchment investigated are attached to this report and contain field forms summarizing the work and findings.

During these catchment investigations, EP followed the catchment investigation methodology detailed in the MS4 General Permit. This methodology can be summarized as follows:

- EP verified stormwater mapping,
- EP identified the key junction manholes (KJMs) for each catchment and inspected them during dry weather, starting at the most downstream location,
- At each KJM, EP completed a field form noting the structure's condition, presence and source of any flow, and the invert, diameter, and material of the structure and all inlet and outlet pipes. In addition, pictures were taken of the inside and outside of the structure. The KJM field forms are attached to this memorandum,
- If flow was found in a KJM, EP used field test kits to screen for ammonia, total chlorine, and surfactants,
- If field sampling results or visual and olfactory inspection indicated potential illicit discharges, the upstream area was flagged for further investigation,
- EP continued inspecting and, if flowing, sampling all KJMs until the whole catchment was evaluated,
- Refined catchment delineations were developed in the office after field work was complete,
- EP worked with the Town to identify system vulnerability factors (SVFs) within each catchment, and
- If no evidence of illicit connections were found, the catchment investigation is considered complete.

As part of the catchment investigations, mapping updates within the Town's geographic information (GIS) database were also performed. Mapping updates included:

- Adding or removing stormwater structures (catch basins, drain manholes, drainage pipes, outfalls/outlets, inlets, and culverts)
- Updating pipe connectivity between stormwater structures
- Updating the GIS database with elevation/invert data and
- Reviewing the final totals of the stormwater structure inventory

The mapping updates have been made on the Town's Rockland IAM cloud-based GIS. Any additional mapping updates made by the Town or EP will continue to be made in the cloud platform.

Manhole/Catch Basin Sampling Results

A summary of the field sampling results is presented in **Table 2.** Environmental Partners sampled a total of 4 structures for field analysis. All 4 sampled structures showed detectable total chlorine. Surfactants, also known as detergents, were present in concentrations between 0.25 and 0.50 mg/L in all structures sampled. Lastly, there was no detectable ammonia found in any of the sampled structures. In accordance with the MS4 Permit, these field test results alone do not indicate the presence of an illicit discharge. A summary of the sampling kit results is presented in Table 2: Stormwater Field Test Kit Analysis Results.

Catchment Investigation Findings

During field investigations, some structures were identified as needing maintenance or replacement, and additional Town follow-up. Maintenance/replacement needs, and additional Town follow-up are summarized below.

Required Town Follow-up for Catchments with Initial Catchment Field Work Complete

- Outfall-catchment 19-O (18 Rice Avenue)
    - Could not complete catchment investigation due to the key junction manholes (KJMs) on both South Douglas Street and Holbrook Street being paved over. The drainage on both streets continues into Rice Avenue.
        - To complete the catchment investigation, additional Town assistance is needed to expose the buried manholes on both South Douglas Street and Holbrook Street.
- Outfall-catchment 86-O (59 South Douglas Street)
    - Could not complete catchment investigation due to paved manholes found on South Douglas Street. Crew could not confirm connectivity and end of catchment.
        - To complete the catchment investigation, additional Town assistance is needed to expose the buried manholes on South Douglas Street.
- Outfall-catchment 177-O (369 Summer Street)
    - Could not complete catchment investigation due to broken manhole cover found at KJM at the intersection of Beech Street and Summer Street. Per Town, construction is to be completed in the upcoming fiscal year.
        - To complete the catchment investigation, replacement of the broken manhole cover is needed. Additionally, if there are any paved over manholes along Summer Street that are within the 177-O catchment, they should remain exposed after construction has been completed.
- Outfall-catchment 219-O (619 Summer Street)
    - Could not complete catchment investigation due to the KJM being sealed, EP could not open the manhole to verify if that manhole was the end of the catchment or start of a new catchment.
        - To complete the catchment investigation, additional Town assistance is needed to unseal the manhole. The Town has stated that the manhole has been sealed due to past noise complaints.

Maintenance Items Noted

- Outfall-catchment 101-O (587R Summer Street)
    - Could not locate incoming pipe in upstream catch basin and confirmed that the surrounding catch basins did not discharge that basin. To confirm connectivity, record drawings are requested.
- Outfall-catchment 102-O (506 Summer Street)
    - Cleaning is recommended at the upstream manhole, MH-385, as the bottom of the structure was filled with debris and deposits.
- Outfall-catchment 103-O (506 Summer Street)

    - Cleaning is recommended at the upstream manhole, MH-383, as the bottom of the structure was filled with debris and deposits.
- Outfall-catchment 202-O (49 John Burke Drive)
    - Significant yard waste was found in the upstream catch basins, CB-723 and CB-724. Cleaning (jetting) is recommended throughout the line.
- Outfall-catchment 203-O (102 Brookside Road)
    - Significant overgrown and overhanging vegetation was observed over the upstream structure, catch basin CB-1785. For future access, Town should cut back and routinely prune the vegetation around that area.

Refined catchment delineations for the 30 inspected catchments are currently ongoing. A figure showing the refined catchment delineations will be submitted with the final catchment investigation report. Also, an SVF analysis was conducted for the catchments visited, and no SVFs were identified for any catchments. **Table 3: SVF Assessment** details the SVF assessment.

Recommendations

In conclusion, EP completed catchment investigations at 45 percent of the Town's outfall-catchments (30 out of 67). EP recommends the following:

- Complete the maintenance suggested above, which includes cleaning of structures, and either additional maintenance or replacement of drainage pipes,
- Complete the suggested follow-up suggested above, which includes assisting EP on locating the identified manhole and catch basin structures that could not be located during the catchment investigations, and confirming pipe connectivity, and
- Continue IDDE catchment investigations, investigating a portion of the remaining catchments each year for the next 5 years.

Attachments

Certification Page
Figure 1: Catchment Investigation Progress
Table 1: Catchment Investigations Locations
Table 2: Stormwater Field Test Kit Results
Table 3: SVF Assessment
Catchment Forms

MS4 CERTIFICATION PAGE

ENVIRONMENTAL PARTNERS
— An Apex Company —

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."

Printed Name _____

Signature _____ Date _____

FIGURE 1

Catchment Investigation Progress

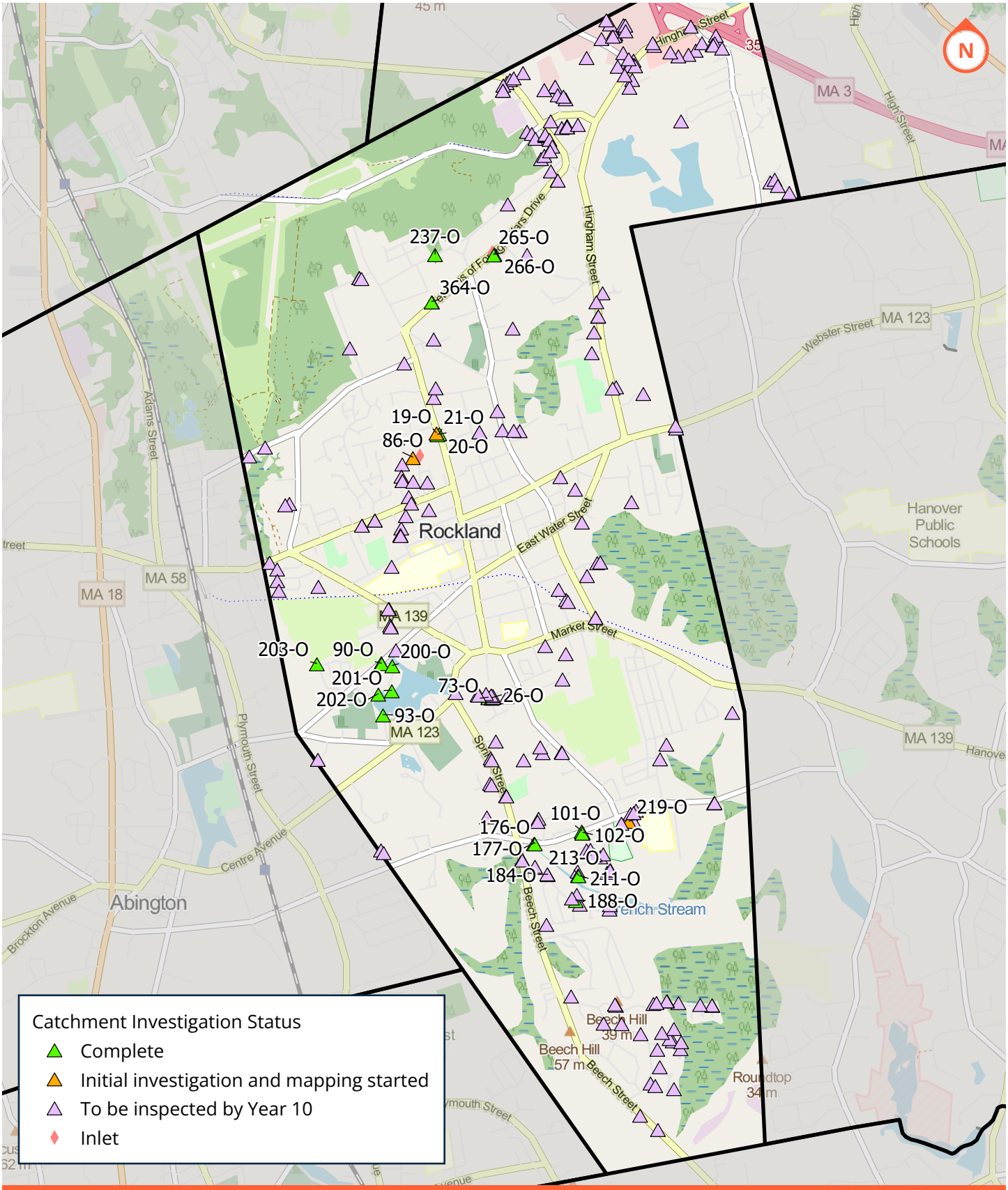


Figure 1
Catchment Investigation Progress
Rockland, MA
August 2023

ENVIRONMENTAL PARTNERS
An Apex Company

TABLE 1

Catchment Investigations Locations

Table 1: Catchment Investigation Locations
Rockland, MA

Outfall ID	Receiving Water	Approximate Street Address	Catchment Investigation Date	Flow Status	Catchment Investigation Status
184-O	Unnamed Wetlands to French Stream	13 Bay Path Lane	5/25/2023	Dry	Complete
188-O	Unnamed Wetlands to French Stream	27 Bay Path Lane	5/25/2023	Dry	Complete
210-O	French Stream	22 Winter Circle	5/25/2023	Flowing	Complete
214-O	Unnamed Wetlands to French Stream	6 Autumn Lane	5/25/2023	Dry	Complete
32-O	French Stream	50 Bay Path Lane	5/25/2023	Dry	Complete
34-O	Unnamed Wetland to French Stream	6 Autumn Lane	5/25/2023	Dry	Complete
41-O	French Stream	22 Bay Path Lane	5/25/2023	Flowing	Complete
43-O	French Stream	10 Bay Path Lane	5/25/2023	Dry	Complete
44-O	French Stream	10 Bay Path Lane	5/25/2023	Flowing	Culvert
45-O	French Stream	10 Bay Path Lane	5/25/2023	Dry	Complete
46-O	French Stream	2 Bay Path Lane	5/25/2023	Dry	Complete
60-O	French Stream	22 Winter Circle	5/25/2023	Flowing	Complete
101-O	Unnamed Tributary to French Stream	587R Summer Street	6/14/2023	Dry	Complete
102-O	Unnamed Tributary to French Stream	506 Summer Street	6/14/2023	Dry	Complete
103-O	Unnamed Tributary to French Stream	487 Summer Street	6/14/2023	Dry	Complete
176-O	French Stream	383 Summer Street	6/14/2023	Dry	Complete
177-O	French Stream	338 Summer Street	6/14/2023	Dry	Initial investigation and mapping started
219-O	Unnamed Wetlands to French Stream	619 Summer Street	6/14/2023	Dry	Initial investigation and mapping started
26-O	French Stream	30 Martha Drive	6/14/2023	Dry	Complete
73-O	French Stream	31 Studley Court	6/14/2023	Flowing	Complete
19-O	Old Swamp River	585 Union Street	6/15/2023	Dry	Initial investigation and mapping started
20-O	Old Swamp River	572 Union Street	6/15/2023	Dry	Complete
21-O	Old Swamp River	572 Union Street	6/15/2023	Dry	Complete
265-O	Cushing Brook	279 Pleasant Street	6/15/2023	Dry	Complete
266-O	Cushing Brook	279 Pleasant Street	6/15/2023	Dry	Complete
364-O	Old Swamp River	95 Lincoln Road	6/15/2023	Dry	Complete
90-O	French Stream	330 West Water Street	6/15/2023	Dry	Complete
151-O	Old Swamp River	295 Forest Street	6/16/2023	Dry	Culvert
200-O	Studleys Pond	4 Icehouse Woods Lane	6/16/2023	Dry	Complete
201-O	Studleys Pond	14 Icehouse Woods Lane	6/16/2023	Dry	Complete
202-O	Studleys Pond	49 John Burke Drive	6/16/2023	Dry	Complete
203-O	French Stream	102 Brookside Road	6/16/2023	Dry	Complete
237-O	Old Swamp River	53 Boxberry Lane	6/16/2023	Flowing	Complete
264-O	Cushing Brook	279 Pleasant Street	6/16/2023	Dry	Culvert
267-O	Old Swamp River	845 Liberty Street	6/16/2023	Dry	Complete
86-O	Old Swamp River	59 South Douglas Street	6/16/2023	Dry	Initial investigation and mapping started
93-O	Studleys Pond	34 Thayer Terrace	6/16/2023	Dry	Complete

TABLE 2

Stormwater Field Test Kit Results

Table 2: Stormwater Field Test Kit Results

Rockland, MA

Outfall ID		210-O	73-O	237-O	
Approximate Outfall Address		22 Winter Circle	31 Studley Court	69 Boxberry Lane	295 Forest Street
Discharge Waterbody		French Stream		Old Swamp River	
Structure ID		MH-327 (structure)	CB-1763 (structure)	MH-210-12:00 (incoming line on 69 Boxberry Lane)	MH-402 (incoming line on 295 Forest Street)
Date Sampled		5/25/2023	6/14/2023	6/16/2023	6/16/2023
Field Test Parameter	**Threshold**				
Ammonia (mg/L)	0.5 mg/L	0.0	0.0	0.0	0.0
Total Chlorine (mg/L)	Detectable	**0.02**	**0.09**	**0.13**	**0.15**
Surfactants (mg/L)	0.25 mg/L	**0.50**	**0.25**	**0.25**	**0.25**
pH	6.5 - 8.0	7.91	7.55	6.39	5.79
Temperature (°C)	None	17.8	23.1	19.6	22.8
Specific Conductance (µS/cm)	2000 µS/cm	406.0	479.0	640.0	320.0

Red, bolded values exceed contaminant criteria.

TABLE 3

SVF Assessment

Table 3: Outfall-Catchment System Vulnerability Factor (SVF) Inventory
Rockland, Massachusetts

			Required Factors								
Outfall ID	Address	Receiveing Water	History of SSOs	Common or Twin Invert Manholes	Common Trench Construction	Storm/Sanitary Crossings (Sanitary Above)	Sanitary Lines with Underdrains	Inadequate Sanitary Level of Service	Areas Formerly Served by Combined Sewers	Sanitary Infrastructure Defects	SVF Identified
101-O	587R Summer Street	Unnamed Tributary to French Stream	No	No	No	No	No	No	N/A	No	NO
102-O	506 Summer Street	Unnamed Tributary to French Stream	No	No	No	No	No	No	N/A	No	NO
103-O	487 Summer Street	Unnamed Tributary to French Stream	No	No	No	No	No	No	N/A	No	NO
176-O	383 Summer Street	French Stream	No	No	No	No	No	No	N/A	No	NO
200-O	4 Icehouse Woods Lane	Studleys Pond	No	No	No	No	No	No	N/A	No	NO
201-O	14 Icehouse Woods Lane	Studleys Pond	No	No	No	No	No	No	N/A	No	NO
202-O	49 John Burke Drive	Studleys Pond	No	No	No	No	No	No	N/A	No	NO
41-O	22 Bay Path Lane	French Stream	No	No	No	No	No	No	N/A	No	NO
43-O	10 Bay Path Lane	French Stream	No	No	No	No	No	No	N/A	No	NO
44-O	10 Bay Path Lane	French Stream	No	No	No	No	No	No	N/A	No	NO
45-O	10 Bay Path Lane	French Stream	No	No	No	No	No	No	N/A	No	NO
46-O	2 Bay Path Lane	French Stream	No	No	No	No	No	No	N/A	No	NO
34-O	6 Autumn Lane	Unnamed Wetland to French Stream	No	No	No	No	No	No	N/A	No	NO

Table 3: Outfall-Catchment System Vulnerability Factor (SVF) Inventory
Rockland, Massachusetts

Outfall ID	Address	Receiveing Water	History of SSOs	Common or Twin Invert Manholes	Common Trench Construction	Storm/Sanitary Crossings (Sanitary Above)	Sanitary Lines with Underdrains	Inadequate Sanitary Level of Service	Areas Formerly Served by Combined Sewers	Sanitary Infrastructure Defects	SVF Identified
60-O	22 Winter Circle	French Stream	No	No	No	No	No	No	N/A	No	NO
32-O	50 Bay Path Lane	French Stream	No	No	No	No	No	No	N/A	No	NO
203-O	102 Brookside Road	French Stream	No	No	No	No	No	No	N/A	No	NO
20-O	572 Union Street	Old Swamp River	No	No	No	No	No	No	N/A	No	NO
211-O	22 Winter Circle	French Stream	No	No	No	No	No	No	N/A	No	NO
213-O	22 Winter Circle	French Stream	No	No	No	No	No	No	N/A	No	NO
21-O	572 Union Street	Old Swamp River	No	No	No	No	No	No	N/A	No	NO
237-O	53 Boxberry Lane	Old Swamp River	No	No	No	No	No	No	N/A	No	NO
265-O	279 Pleasant Street	Cushing Brook	No	No	No	No	No	No	N/A	No	NO
266-O	279 Pleasant Street	Cushing Brook	No	No	No	No	No	No	N/A	No	NO
26-O	30 Martha Drive	French Stream	No	No	No	No	No	No	N/A	No	NO
364-O	95 Lincoln Road	Old Swamp River	No	No	No	No	No	No	N/A	No	NO
73-O	31 Studley Court	French Stream	No	No	No	No	No	No	N/A	No	NO
90-O	330 West Water Street	French Stream	No	No	No	No	No	No	N/A	No	NO
93-O	34 Thayer Terrace	Studleys Pond	No	No	No	No	No	No	N/A	No	NO

Notes:
SSOs were reported on1/26/2023 and 3/15/2023 at WWTP. No reports of SSO occuring outside of plant, only discharging into French Stream.

Presence/Absence Evaluation Criteria:

1. History of SSOs, including, but not limited to, those resulting from wet weather, high water table, or fat/oil/grease blockages
2. Common or twin-invert manholes serving storm and sanitary sewer alignments
3. Common trench construction serving both storm and sanitary sewer alignments
4. Crossings of storm and sanitary sewer alignments where the sanitary system is shallower than the storm drain system
5. Sanitary sewer alignments known or suspected to have been constructed with an underdrain system
6. Inadequate sanitary sewer level of service (LOS) resulting in regular surcharging, customer back-ups, or frequent customer complaints
7. Areas formerly served by combined sewer systems
8. Sanitary sewer infrastructure defects such as leaking service laterals, cracked, broken, or offset sanitary infrastructure, directly piped connections between storm drain and sanitary sewer infrastructure, or other vulnerability factors identified through Inflow/Infiltration Analyses, Sanitary Sewer Evaluation Surveys, or other infrastructure investigations
9. Sewer pump/lift stations, siphons, or known sanitary sewer restrictions where power/equipment failures or blockages could readily result in SSOs
10. Any sanitary sewer and storm drain infrastructure greater than 40 years old

inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance)
e of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance)

CATCHMENT INVESTIGATION FORMS

19-O, MH-392

Created	2023-06-15 15:41:20 UTC by EPField 01
Updated	2023-07-11 20:50:18 UTC by EPField 01
Location	42.1378797, -70.9186181

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	19-O
Structure ID	MH-392
Structure Type	Manhole
Date	2023-06-15
Time	11:41
Address	585 Union Street Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	79

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	50

9

Pipe Clock Position	9
Flow Direction	In
Pipe Material	Clay
Pipe Diameter (inches)	8
Pipe Invert (inches)	48

12

Pipe Clock Position	12
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	48
Pipes Submerged	No
Flow Present	No
Structure Notes	Standing water present

Physical Indicators

Floatables	No
Odor	No

Surface Photos

Interior Photos

20-O, CB-1032

Created	2023-06-15 17:20:56 UTC by EPField 01
Updated	2023-07-31 19:28:06 UTC by EPField 01
Location	42.1373968, -70.9182191

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	20-O
Structure ID	CB-1032
Structure Type	Catch Basin
Date	2023-06-15
Time	13:20
Address	572 Union Street Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	69

12

Pipe Clock Position	12
Flow Direction	Out
Pipe Material	HDPE
Pipe Diameter (inches)	18
Pipe Invert (inches)	63

6

Pipe Clock Position	6
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	18
Pipe Invert (inches)	69

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	18
Pipe Invert (inches)	69

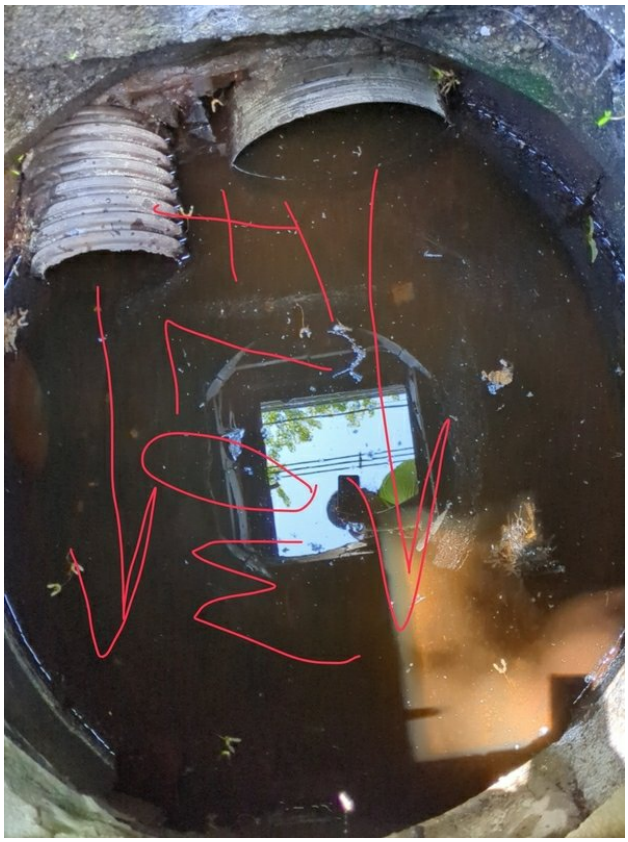
1

Pipe Clock Position	1
Flow Direction	In
Pipe Material	HDPE
Pipe Diameter (inches)	10
Pipe Invert (inches)	57

Pipes Submerged	Fully
Flow Present	Yes
Flow Description	Trickle
Flow Source	12 and 11 pipe from culvert
Structure Notes	Culvert runs through structure

Physical Indicators

Floatables	No
Odor	No
Surface Photos	
Interior Photos	



21-O, CB-1031

Created	2023-06-15 17:34:34 UTC by EPField 01
Updated	2023-07-31 19:28:49 UTC by EPField 01
Location	42.1374636, -70.9181807

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	21-O
Structure ID	CB-1031
Structure Type	Catch Basin
Date	2023-06-15
Time	13:34
Address	572 Union Street Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	65

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	HDPE
Pipe Diameter (inches)	10
Pipe Invert (inches)	61

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	HDPE
Pipe Diameter (inches)	10
Pipe Invert (inches)	61

12

Pipe Clock Position	12
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	18
Pipe Invert (inches)	65
Pipes Submerged	Fully
Flow Present	No
Structure Notes	Culvert runs through the structure

Physical Indicators

Floatables	No
Odor	No

Surface Photos

Interior Photos

Other Photos

26-O, CB-0

Created	2023-06-14 18:16:49 UTC by EPField 01
Updated	2023-07-11 23:14:00 UTC by EPField 01
Location	42.1189641, -70.9132994

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	26-O
Structure ID	CB-0
Structure Type	Catch Basin
Date	2023-06-14
Time	14:16
Address	30 Martha Drive Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	40

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	15
Pipe Invert (inches)	40

12

Pipe Clock Position	12
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	42
Pipes Submerged	No
Flow Present	No
Structure Notes	Catch basin is on private property

Physical Indicators

Floatables	No
Odor	No

Surface Photos

Interior Photos

73-O, CB-1763

Created	2023-06-14 17:40:02 UTC by EPField 01
Updated	2023-07-11 23:15:07 UTC by EPField 01
Location	42.1186536, -70.9138374

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	73-O
Structure ID	CB-1763
Structure Type	Catch Basin
Date	2023-06-14
Time	13:40
Address	31 Studley Court Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	72

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	Corrugated Metal
Pipe Diameter (inches)	10
Pipe Invert (inches)	45

9

Pipe Clock Position	9
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	15
Pipe Invert (inches)	42

5

Pipe Clock Position	5
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	15
Pipe Invert (inches)	69
Pipes Submerged	Fully
Flow Present	Yes
Flow Description	Moderate
Flow Source	Unknown but could be surcharged flow from culvert
Structure Notes	Verify if this is part of MS4

Physical Indicators

Floatables	No
Odor	No

Structure

Sampling Location	Structure

Field Kits

Temperature	73.6
pH	7.55
Specific Conductivity (SPC)	479
Surfactants	0.25
Chlorine	0.09
Ammonia	0
Surface Photos	

Interior Photos

86-O, MH-405

Created	2023-06-16 12:30:45 UTC by EPField 01
Updated	2023-07-11 23:16:02 UTC by EPField 01
Location	42.1358108, -70.920268

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	86-O
Structure ID	MH-405
Structure Type	Manhole
Date	2023-06-16
Time	08:30
Address	59 South Douglas Street Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	40

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	24
Pipe Invert (inches)	39

9

Pipe Clock Position	9
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	39

12

Pipe Clock Position	12
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	24
Pipe Invert (inches)	39

4

Pipe Clock Position	4
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	39

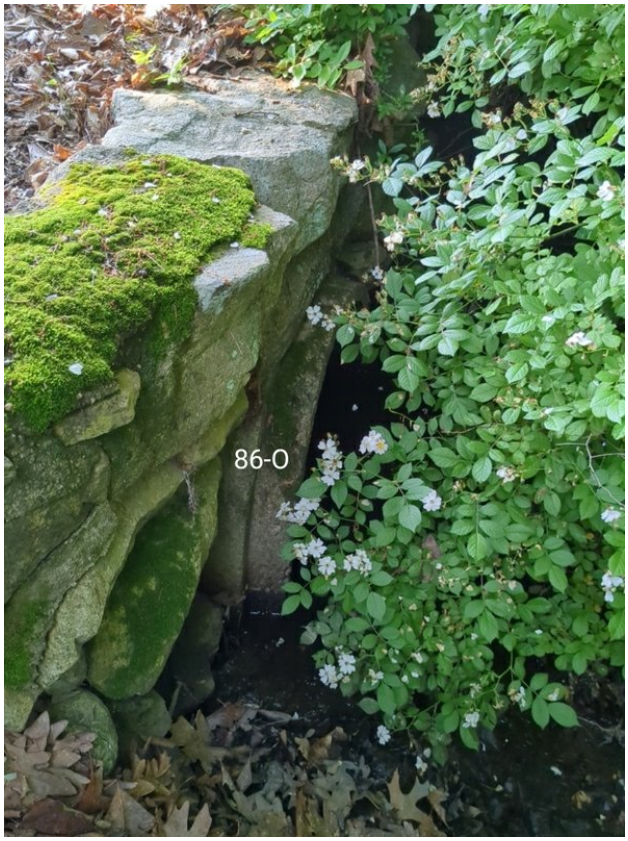
Pipes Submerged	Partially
Submerged Pipes	All
Flow Present	No
Structure Notes	Standing water present. 12:00 incoming pipe is from a culvert located upstream.

Physical Indicators

Floatables	No
Odor	No
General Notes	Upstream structures on S. Douglas are paved over.
Surface Photos	

Interior Photos

Other Photos



90-O, CB-751

Created	2023-06-15 15:01:20 UTC by EPField 01
Updated	2023-06-15 15:04:23 UTC by EPField 01
Location	42.1214306, -70.9236132

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	90-O
Structure ID	CB-751
Structure Type	Catch Basin
Date	2023-06-15
Time	11:01
Address	330 West Water Street Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	64

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	50

11

Pipe Clock Position	11
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	49
Pipes Submerged	No
Flow Present	No

Physical Indicators

Floatables	No
Odor	No

Surface Photos

Interior Photos

93-O, CB-1783

Created	2023-06-16 19:08:44 UTC by EPField 01
Updated	2023-07-11 23:16:42 UTC by EPField 01
Location	42.1177207, -70.9234464

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	93-O
Structure ID	CB-1783
Structure Type	Catch Basin
Date	2023-06-16
Time	15:08
Address	34 Thayer Terrace Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	50

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	24
Pipe Invert (inches)	34
Pipes Submerged	No
Flow Present	No
Structure Notes	Standing water present

Physical Indicators

Floatables	No
Odor	No
General Notes	Catch basins upstream and along Thayer Terrace do not connect to this structure. Verify with Town how the system drains. Town stated that this area may be a "coffin catch basin" area.

Surface Photos

Interior Photos

Other Photos

101-O, CB-1768

Created	2023-06-14 15:32:34 UTC by EPField 01
Updated	2023-07-11 20:27:48 UTC by EPField 01
Location	42.1093323, -70.9053118

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	101-O
Structure ID	CB-1768
Structure Type	Catch Basin
Date	2023-06-14
Time	11:32
Address	587R Summer Street Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	80

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	49

11

Pipe Clock Position	11
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	8
Pipe Invert (inches)	49
Pipe Notes	Could not find any incoming structures from the 11:00
Pipes Submerged	No
Flow Present	No
Structure Notes	Standing water observed

Physical Indicators

Floatables	No
Odor	No
General Notes	Could not locate where the 11:00 incoming pipe comes from

Surface Photos

Interior Photos

Other Photos

102-O, MH-385

Created	2023-06-14 15:45:29 UTC by EPField 01
Updated	2023-07-11 20:29:25 UTC by EPField 01
Location	42.1097411, -70.9046101

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	102-O
Structure ID	MH-385
Structure Type	Manhole
Date	2023-06-14
Time	11:45
Address	506 Summer Street Rockland, Massachusetts 02370

Structure Information

Maintenance Required	Yes
Maintenance Needs	Debris
Manhole Invert (inches)	61

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	61

12

Pipe Clock Position	12
Flow Direction	In
Pipe Material	PVC
Pipe Diameter (inches)	8
Pipe Invert (inches)	68
Pipes Submerged	No
Flow Present	No
Structure Notes	Structure is filled with debris

Physical Indicators

Floatables	No
Odor	No

Surface Photos

Interior Photos

103-O, MH-383

Created	2023-06-14 15:08:32 UTC by EPField 01
Updated	2023-07-11 20:44:08 UTC by EPField 01
Location	42.1094934, -70.9054625

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	103-O
Structure ID	MH-383
Structure Type	Manhole
Date	2023-06-14
Time	11:08
Address	487 Summer Street Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	73

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	76

11

Pipe Clock Position	11
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	66

1

Pipe Clock Position	1
Flow Direction	In
Pipe Material	PVC
Pipe Diameter (inches)	12
Pipe Invert (inches)	61
Pipes Submerged	Partially
Submerged Pipes	6:00
Flow Present	No
Structure Notes	Standing water present

Physical Indicators

Floatables	No

Odor	No
Surface Photos	
	

Interior Photos

103-O, MH-384

Created	2023-06-14 15:24:45 UTC by EPField 01
Updated	2023-07-11 20:41:38 UTC by EPField 01
Location	42.1096978, -70.9047412

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	103-O
Structure ID	MH-384
Structure Type	Manhole
Date	2023-06-14
Time	11:24
Address	506 Summer Street Rockland, Massachusetts 02370

Structure Information

Maintenance Required	Yes
Maintenance Needs	Debris build up
Manhole Invert (inches)	64

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	65

11

Pipe Clock Position	11
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	61
Pipe Notes	Filled with debris
Pipes Submerged	Partially
Submerged Pipes	6:00
Flow Present	No
Structure Notes	Debris and standing water present

Physical Indicators

Floatables	No
Odor	No

Surface Photos

Interior Photos

151-O, 151-O

Created	2023-06-16 17:02:42 UTC by EPField 01
Updated	2023-06-16 17:03:33 UTC by EPField 01
Location	42.1518039, -70.9141571

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	151-O
Structure ID	151-O
Structure Type	Culvert
Date	2023-06-16
Time	13:02
Address	295 Forest Street Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	0
Pipes Submerged	No
Flow Present	No
Structure Notes	This outfall is actually a culvert.

Physical Indicators

Floatables	No
Odor	No

Surface Photos

Interior Photos

176-O, MH-382

Created	2023-06-14 14:13:42 UTC by EPField 01
Updated	2023-07-11 20:48:47 UTC by EPField 01
Location	42.1089609, -70.9087734

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	176-O
Structure ID	MH-382
Structure Type	Manhole
Date	2023-06-14
Time	10:13
Address	383 Summer Street Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	59

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	18
Pipe Invert (inches)	61

8

Pipe Clock Position	8
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	54

11

Pipe Clock Position	11
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	58

5

Pipe Clock Position	5
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	55

Pipes Submerged	No
Flow Present	No

Physical Indicators

Floatables	No
Odor	No
Surface Photos	

Interior Photos

177-O, MH-388

Created	2023-06-14 13:38:59 UTC by EPField 01
Updated	2023-07-11 20:49:25 UTC by EPField 01
Location	42.1090631, -70.9102395

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	177-O
Structure ID	MH-388
Structure Type	Manhole
Date	2023-06-14
Time	09:38
Address	338 Summer Street Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	54

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	24
Pipe Invert (inches)	48

12

Pipe Clock Position	12
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	18
Pipe Invert (inches)	52
Pipes Submerged	No
Flow Present	No

Physical Indicators

Floatables	No
Odor	No

Surface Photos

Interior Photos

184-O, MH-462

Created	2023-05-25 16:13:51 UTC by Vern Lincoln
Updated	2023-07-17 15:26:07 UTC by EPField 01
Location	42.1064379, -70.9078958

Background Data

Client	Town of Rockland
EP Representatives	Megan Fountaine, Vern Lincoln
Outfall ID	184-O
Structure ID	MH-462
Structure Type	Manhole
Date	2023-05-25
Time	12:13
Address	13 Bay Path Lane Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	52

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	18
Pipe Invert (inches)	53

2

Pipe Clock Position	2
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	54

1

Pipe Clock Position	1
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	51

12

Pipe Clock Position	12
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	49

Pipes Submerged	No
Flow Present	Yes
Flow Description	Trickle
Flow Source	11

Physical Indicators

Floatables	No
Odor	No
Surface Photos	

Interior Photos

188-O, MH-464

Created	2023-05-25 17:22:29 UTC by Vern Lincoln
Updated	2023-07-17 15:26:44 UTC by EPField 01
Location	42.1046755, -70.9055319

Background Data

Client	Town of Rockland
EP Representatives	Megan Fountaine, Vern Lincoln
Outfall ID	188-O
Structure ID	MH-464
Structure Type	Manhole
Date	2023-05-25
Time	13:22
Address	27 Bay Path Lane Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	66

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	18
Pipe Invert (inches)	66

11

Pipe Clock Position	11
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	67

1

Pipe Clock Position	1
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	62
Pipes Submerged	No
Flow Present	Yes
Flow Description	Trickle
Flow Source	Groundwater

Physical Indicators

Floatables	No

Odor	No
Surface Photos	
Interior Photos	

200-O, MH-401

Created	2023-06-16 17:30:19 UTC by EPField 01
Updated	2023-07-11 20:50:59 UTC by EPField 01
Location	42.120997, -70.9228607

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	200-O
Structure ID	MH-401
Structure Type	Manhole
Date	2023-06-16
Time	13:30
Address	4 Icehouse Woods Lane Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	70

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	15
Pipe Invert (inches)	68

1

Pipe Clock Position	1
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	67

12

Pipe Clock Position	12
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	70
Pipes Submerged	No
Flow Present	No

Physical Indicators

Floatables	No
Odor	No

Surface Photos

Interior Photos

201-O, CB-755

Created	2023-06-16 17:20:06 UTC by EPField 01
Updated	2023-07-11 20:51:27 UTC by EPField 01
Location	42.1198355, -70.9228877

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	201-O
Structure ID	CB-755
Structure Type	Catch Basin
Date	2023-06-16
Time	13:20
Address	14 Icehouse Woods Lane Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	65

11

Pipe Clock Position	11
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	50

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	51
Pipes Submerged	No
Flow Present	No
Structure Notes	Standing water observed

Physical Indicators

Floatables	No
Odor	No
General Notes	Some pollen on top of the standing water.

Surface Photos

Interior Photos

202-O, CB-723

Created	2023-06-16 17:48:52 UTC by EPField 01
Updated	2023-07-11 20:52:51 UTC by EPField 01
Location	42.1192215, -70.9241203

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	202-O
Structure ID	CB-723
Structure Type	Catch Basin
Date	2023-06-16
Time	13:48
Address	49 John Burke Drive Rockland, Massachusetts 02370

Structure Information

Maintenance Required	Yes
Maintenance Needs	Yard Waste
Manhole Invert (inches)	44

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	15
Pipe Invert (inches)	28

10

Pipe Clock Position	10
Flow Direction	In
Pipe Material	Corrugated Metal
Pipe Diameter (inches)	12
Pipe Invert (inches)	30

11

Pipe Clock Position	11
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	30
Pipes Submerged	Partially
Submerged Pipes	All
Flow Present	No
Structure Notes	Both this catch basin and the one upstream need to be cleaned.

Physical Indicators

Floatables	No
Odor	Yes
Odor Type	Decaying vegetation
Surface Photos	

Interior Photos

203-O, CB-1785

Created	2023-06-16 18:09:53 UTC by EPField 01
Updated	2023-07-11 22:57:01 UTC by EPField 01
Location	42.12115, -70.92941

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	203-O
Structure ID	CB-1785
Structure Type	Catch Basin
Date	2023-06-16
Time	14:09
Address	102 Brookside Road Rockland, Massachusetts 02370

Structure Information

Maintenance Required	Yes
Maintenance Needs	Clear overgrown vegetation above structure
Manhole Invert (inches)	53

6

Pipe Clock Position	6
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	24
Pipe Invert (inches)	54

10

Pipe Clock Position	10
Flow Direction	In
Pipe Material	PVC
Pipe Diameter (inches)	15
Pipe Invert (inches)	35

9

Pipe Clock Position	9
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	15
Pipe Invert (inches)	24

1

Pipe Clock Position	1
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	15

Pipe Invert (inches)	39
Pipes Submerged	Partially
Submerged Pipes	6:00
Flow Present	No

Physical Indicators

Floatables	No
Odor	No
Surface Photos	

Interior Photos

213-O, 211-O, MH-327

Created	2023-05-25 14:23:53 UTC by Vern Lincoln
Updated	2023-07-12 13:59:25 UTC by EPField 01
Location	42.1073437, -70.9048759

Background Data

Client	Town of Rockland
EP Representatives	Megan Fountaine, Vern Lincoln
Outfall ID	213-O, 211-O
Structure ID	MH-327
Structure Type	Manhole
Date	2023-05-25
Time	10:23
Address	22 Winter Circle Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	69

2

Pipe Clock Position	2
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	59

10

Pipe Clock Position	10
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	50

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	0
Pipe Invert (inches)	60
Pipes Submerged	No
Flow Present	Yes
Flow Description	Trickle
Flow Source	2, 10

Physical Indicators

Floatables	No

Odor	No

Structure

Sampling Location	Structure

Field Kits

Temperature	64
pH	7.91
Specific Conductivity (SPC)	4.06
Surfactants	0.5
Chlorine	0.02
Ammonia	0
Surface Photos	

Interior Photos

219-O, CB-481

Created	2023-06-14 16:42:18 UTC by EPField 01
Updated	2023-07-11 23:02:29 UTC by EPField 01
Location	42.110868, -70.900687

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	219-O
Structure ID	CB-481
Structure Type	Catch Basin
Date	2023-06-14
Time	12:42
Address	619 Summer Street Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	69

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	HDPE
Pipe Diameter (inches)	15
Pipe Invert (inches)	53

2

Pipe Clock Position	2
Flow Direction	In
Pipe Material	HDPE
Pipe Diameter (inches)	18
Pipe Invert (inches)	58
Pipe Notes	Incoming pipe is larger than outgoing.

5

Pipe Clock Position	5
Flow Direction	In
Pipe Material	HDPE
Pipe Diameter (inches)	15
Pipe Invert (inches)	54
Pipes Submerged	No
Flow Present	No
Structure Notes	Standing water present

Physical Indicators

Floatables	No

Odor	No
Surface Photos	
Interior Photos	

237-O, MH-210

Created	2023-06-16 14:49:01 UTC by EPField 01
Updated	2023-07-11 23:08:32 UTC by EPField 01
Location	42.1500766, -70.9177302

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	237-O
Structure ID	MH-210
Structure Type	Manhole
Date	2023-06-16
Time	10:49
Address	69 Boxberry Lane Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	83

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	18
Pipe Invert (inches)	77

7

Pipe Clock Position	7
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	55

12

Pipe Clock Position	12
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	18
Pipe Invert (inches)	76

5

Pipe Clock Position	5
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	62

Pipes Submerged	Partially
Submerged Pipes	6:00 and 12:00
Flow Present	Yes
Flow Description	Moderate
Flow Source	12:00

Physical Indicators

Floatables	No
Odor	No

Pipe, 12

Sampling Location	Pipe
Pipe Clock Position	12

Field Kits

Temperature	67.3
pH	6.39
Specific Conductivity (SPC)	640
Surfactants	0.25
Chlorine	0.13
Ammonia	0
General Notes	Some suds observed around the 12:00 pipe
Surface Photos	

Interior Photos

237-O, MH-402

Created	2023-06-16 15:43:31 UTC by EPField 01
Updated	2023-07-11 23:07:33 UTC by EPField 01
Location	42.1518039, -70.9141571

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	237-O
Structure ID	MH-402
Structure Type	Manhole
Date	2023-06-16
Time	11:43
Address	295 Forest Street Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	84

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	15
Pipe Invert (inches)	77

9

Pipe Clock Position	9
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	68

12

Pipe Clock Position	12
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	15
Pipe Invert (inches)	76

3

Pipe Clock Position	3
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	50

Pipes Submerged	Partially
Submerged Pipes	6:00 and 12:00
Flow Present	Yes
Flow Description	Moderate
Flow Source	12:00 and 9:00
Structure Notes	9:00 is a trickle and does not have enough flow to sample

Physical Indicators

Floatables	No
Odor	No

Pipe, 12

Sampling Location	Pipe
Pipe Clock Position	12

Field Kits

Temperature	73
pH	5.79
Specific Conductivity (SPC)	320
Surfactants	0.25
Chlorine	0.15
Ammonia	0
Surface Photos	

Interior Photos

237-O, MH-404

Created	2023-06-16 14:17:49 UTC by EPField 01
Updated	2023-07-11 23:08:55 UTC by EPField 01
Location	42.1497704, -70.9184869

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	237-O
Structure ID	MH-404
Structure Type	Manhole
Date	2023-06-16
Time	10:17
Address	53 Boxberry Lane Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	62

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	68

8

Pipe Clock Position	8
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	55

10

Pipe Clock Position	10
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	56

3

Pipe Clock Position	3
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	63

Pipes Submerged	No
Flow Present	No

Physical Indicators

Floatables	No
Odor	No
Surface Photos	

Interior Photos

264-O, 264-O

Created	2023-06-16 13:58:29 UTC by EPField 01
Updated	2023-06-16 14:02:51 UTC by EPField 01
Location	42.1498733, -70.9129567

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	264-O
Structure ID	264-O
Structure Type	Outfall
Date	2023-06-16
Time	09:58
Address	279 Pleasant Street Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	0
Pipes Submerged	No
Flow Present	No
Structure Notes	Culvert

Physical Indicators

Floatables	No
Odor	No
General Notes	Not an outfall, culverted stream

Surface Photos

Interior Photos

Other Photos

265-O, MH-397

Created	2023-06-15 12:13:04 UTC by EPField 01
Updated	2023-07-11 23:11:14 UTC by EPField 01
Location	42.1499785, -70.9129457

Background Data

Client	Town of Holbrook
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	265-O
Structure ID	MH-397
Structure Type	Manhole
Date	2023-06-15
Time	08:13
Address	279 Pleasant Street Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	81

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	18
Pipe Invert (inches)	79

10

Pipe Clock Position	10
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	70

1

Pipe Clock Position	1
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	18
Pipe Invert (inches)	77

3

Pipe Clock Position	3
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	60

Pipes Submerged	Partially
Submerged Pipes	6
Flow Present	No
Structure Notes	Standing water present

Physical Indicators

Floatables	No
Odor	No
Surface Photos	

Interior Photos

Other Photos

266-O, MH-394

Created	2023-06-15 14:08:25 UTC by EPField 01
Updated	2023-07-11 23:11:50 UTC by EPField 01
Location	42.1498852, -70.9130585

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan
Outfall ID	266-O
Structure ID	MH-394
Structure Type	Manhole
Date	2023-06-15
Time	10:08
Address	279 Pleasant Street Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	83

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	24
Pipe Invert (inches)	83

11

Pipe Clock Position	11
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	18
Pipe Invert (inches)	80

2

Pipe Clock Position	2
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	15
Pipe Invert (inches)	69
Pipes Submerged	No
Flow Present	No
Structure Notes	Standing water present

Physical Indicators

Floatables	No
Odor	No

General Notes	Most upstream structure before the outfall.
Surface Photos	
Interior Photos	

Other Photos

266-O, MH-395

Created	2023-06-15 13:55:11 UTC by EPField 01
Updated	2023-07-11 23:11:35 UTC by EPField 01
Location	42.1496961, -70.9134874

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	266-O
Structure ID	MH-395
Structure Type	Manhole
Date	2023-06-15
Time	09:55
Address	279 Pleasant Street Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	74

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	18
Pipe Invert (inches)	75

11

Pipe Clock Position	11
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	61

12

Pipe Clock Position	12
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	18
Pipe Invert (inches)	75

3

Pipe Clock Position	3
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	60

Pipes Submerged	Partially
Submerged Pipes	6
Flow Present	No

Physical Indicators

Floatables	No
Odor	No
Surface Photos	

Interior Photos

267-O, 267-O

Created	2023-06-16 13:07:29 UTC by EPField 01
Updated	2023-07-11 23:13:24 UTC by EPField 01
Location	42.1434223, -70.918703

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	267-O
Structure ID	267-O
Structure Type	Manhole
Date	2023-06-16
Time	09:07
Address	845 Liberty Street Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	164

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	30
Pipe Invert (inches)	164

12

Pipe Clock Position	12
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	30
Pipe Invert (inches)	169

3

Pipe Clock Position	3
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	60

7

Pipe Clock Position	7
Flow Direction	In
Pipe Material	HDPE
Pipe Diameter (inches)	4
Pipe Invert (inches)	28

Pipes Submerged	Partially
Submerged Pipes	6:00 and 12:00
Flow Present	Yes
Flow Description	Moderate
Flow Source	Culverted stream

Physical Indicators

Floatables	No
Odor	No
General Notes	Culverted stream runs through the manhole. Drain is also deeper than sewer; SVF identified. Manhole is the outfall.
Surface Photos	

Interior Photos

Other Photos

364-O, MH-400

Created	2023-06-15 13:06:39 UTC by EPField 01
Updated	2023-07-11 23:14:38 UTC by EPField 01
Location	42.1463844, -70.9187889

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	364-O
Structure ID	MH-400
Structure Type	Manhole
Date	2023-06-15
Time	09:06
Address	95 Lincoln Road Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	68

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	RCP
Pipe Diameter (inches)	15
Pipe Invert (inches)	67

12

Pipe Clock Position	12
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	64

1

Pipe Clock Position	1
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	63

2

Pipe Clock Position	2
Flow Direction	In
Pipe Material	RCP
Pipe Diameter (inches)	12
Pipe Invert (inches)	47

Pipes Submerged	No
Flow Present	No

Physical Indicators

Floatables	No
Odor	No
Surface Photos	

Interior Photos

NEW OUTLET, CB-1793

Created	2023-06-16 16:19:30 UTC by EPField 01
Updated	2023-07-11 23:32:52 UTC by EPField 01
Location	42.1557659, -70.9076089

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	NEW OUTLET
Structure ID	CB-1793
Structure Type	Catch Basin
Date	2023-06-16
Time	12:19
Address	526 Forest Street Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	38

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	PVC
Pipe Diameter (inches)	8
Pipe Invert (inches)	18
Pipes Submerged	No
Flow Present	No
Structure Notes	Per GIS, this outlet is not within 100' of a waterbody or wetland and is therefore not a MS4 outfall.

Physical Indicators

Floatables	No
Odor	No

Surface Photos

Interior Photos

Other Photos

NEW OUTLET-2, CB-1794

Created	2023-06-16 16:23:18 UTC by EPField 01
Updated	2023-07-11 23:32:32 UTC by EPField 01
Location	42.1557115, -70.9076069

Background Data

Client	Town of Rockland
EP Representatives	Karen Chan, Megan Fountaine
Outfall ID	NEW OUTLET-2
Structure ID	CB-1794
Structure Type	Catch Basin
Date	2023-06-16
Time	12:23
Address	526 Forest Street Rockland, Massachusetts 02370

Structure Information

Maintenance Required	No
Manhole Invert (inches)	37

6

Pipe Clock Position	6
Flow Direction	Out
Pipe Material	PVC
Pipe Diameter (inches)	8
Pipe Invert (inches)	20
Pipes Submerged	No
Flow Present	No
Structure Notes	Per GIS, this outlet is not within 100' of a waterbody or wetland and is therefore not a MS4 outfall.

Physical Indicators

Floatables	No
Odor	No

Surface Photos

Interior Photos

Other Photos

APPENDIX F

New England Interstate Water Pollution Control Commission IDDE Manual

ILLICIT DISCHARGE DETECTION AND ELIMINATION MANUAL

A Handbook for Municipalities

NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION

January 2003

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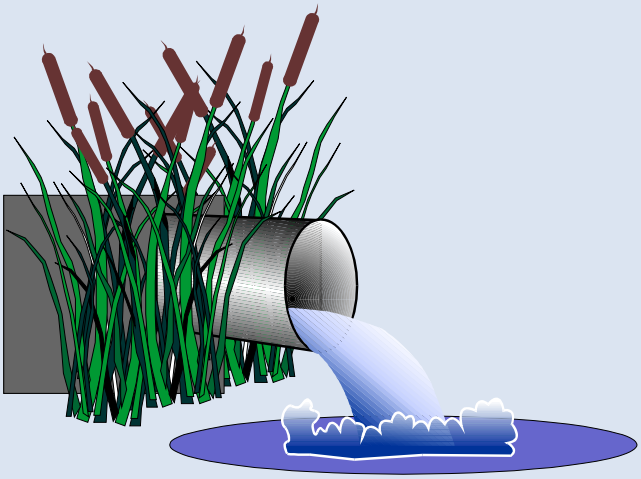
ILLICIT DISCHARGE DETECTION AND ELIMINATION MANUAL

A Handbook for Municipalities



Prepared by the

NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION

Boott Mills South

100 Foot of John Street

Lowell, Massachusetts 01852

Ronald F. Poltak, *Executive Director*

COMPACT MEMBER STATES

Connecticut
Maine
Massachusetts
New Hampshire
New York
Rhode Island
Vermont

Copies of this document may be downloaded from *www.neiwpcc.org.*

January 2003

ACKNOWLEDGEMENTS

This manual was developed by the New England Interstate Water Pollution Control Commission (NEIWPCC). NEIWPCC is a nonprofit interstate agency, established by an Act of Congress in 1947, that serves its member states (Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont) by providing coordination, public education, training, and leadership in the management and protection of water quality.

This project was initiated by NEIWPCC's Storm Water Workgroup, which is composed of state and federal environmental agency staff. The group perceived a need for resources to help municipalities in NEIWPCC-member states that are regulated under the U.S. Environmental Protection Agency's (EPA's) Phase II storm water program comply with regulatory requirements. This manual is intended to help municipalities develop illicit discharge detection and elimination programs—one of the six minimum control measures under Phase II.

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CONTENTS

ACRONYMS

BMP	Best Management Practice
BWSC	Boston Water and Sewer Commission
GIS	Geographic Information System
GPS	Global Positioning System
IDDE	Illicit Discharge Detection and Elimination
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
NOV	Notice of Violation
SIC	Standard Industrial Classification

EPA	U.S. Environmental Protection Agency
CTDEP	Connecticut Department of Environmental Protection
MEDEP	Maine Department of Environmental Protection
MADEP	Massachusetts Department of Environmental Protection
NHDES	New Hampshire Department of Environmental Services
NYSDEC	New York State Department of Environmental Conservation
RIDEM	Rhode Island Department of Environmental Management
VTDEC	Vermont Department of Environmental Conservation

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INTRODUCTION

Although the quality of the nation's waters has improved greatly since the passage of the Clean Water Act in 1972, many water bodies are still impaired by pollution. According to the U.S. Environmental Protection Agency's (EPA's) 2000 National Water Quality Inventory, 39 percent of assessed river and stream miles, 46 percent of assessed lake acres, and 51 percent of assessed estuarine square miles do not meet water quality standards. The top causes of impairment include siltation, nutrients, bacteria, metals (primarily mercury), and oxygen-depleting substances. Polluted storm water runoff, including runoff from urban/suburban areas and construction sites, is a leading source of this impairment. To address this problem, EPA has put into place a program that regulates certain storm water discharges.

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In 1990, EPA promulgated Phase I of its storm water program under the National Pollutant Discharge Elimination System (NPDES) permit provisions of the Clean Water Act. Phase I addressed storm water runoff from "medium" and "large" municipal separate storm sewer systems (MS4s) generally serving populations of 100,000 or greater, construction activity that would disturb five or more acres of land, and 10 categories of industrial activity. To further reduce the adverse effects of storm water runoff, EPA instituted its Storm Water Phase II Final Rule on December 8, 1999.

WHO ADMINISTERS THE PHASE II STORM WATER PROGRAM?

The Phase II storm water program is part of EPA's NPDES program, which in many states is delegated to state authorities to administer. Connecticut, Maine, New York, Rhode Island, and Vermont are authorized to serve as NPDES permitting authorities. EPA Region 1 serves as the permitting authority for Massachusetts and New Hampshire. EPA is also the permitting authority for all federally recognized Indian Country lands and for federal facilities in Massachusetts, New Hampshire, and Vermont.

WHAT IS REGULATED UNDER PHASE II?

Phase II regulates discharges from small MS4s located in "urbanized areas" (as delineated by the Census Bureau in the most recent census) and from additional small MS4s designated by the permitting authority. Phase II also regulates construction activities that would disturb between one and five acres of land. In addition, the Phase II Final Rule ends the temporary exemption from Phase I requirements for some municipally operated industrial activities[1] and revises the "no exposure" provision for Phase I-regulated industrial activities.

MS4s are typically operated by municipalities, but the Phase II definition of "municipal separate storm sewer systems" includes storm sewer systems owned or operated by other public bodies (e.g., states, counties, Indian tribes, departments of transportation, universities). EPA also notes that an MS4 is not always just a system of underground pipes; it can include roads with drainage systems, gutters, and ditches.

[1] This temporary exemption was provided by the Intermodal Surface Transportation Act (ISTEA) of 1991.

The rules for determining which small MS4s are regulated under Phase II are somewhat complex; MS4 operators should consult the NPDES permitting authority for their state to determine whether their MS4s are regulated. Note also that requirements may be different if a municipality is located only partially within an urbanized area.

WHERE DOES IDDE FIT IN?

EPA's Phase II rule specifies that permitting authorities must issue general permits for "automatically designated" small MS4s by December 9, 2002. The rule requires that operators of these automatically designated small MS4s apply for NPDES permit coverage within 90 days of permit issuance, and no later than March 10, 2003[2]. To obtain this coverage, an MS4 operator must develop, implement, and enforce a storm water management program that is designed to reduce the discharge of pollutants to the maximum extent practicable, protect water quality, and satisfy the applicable water quality requirements of the Clean Water Act. EPA's Storm Water Phase II Final Rule states that this storm water management program must include the following six minimum control measures:

- Public education and outreach on storm water impacts
- Public involvement and participation
- ➤ **Illicit discharge detection and elimination (IDDE)**
- Construction site storm water runoff control
- Post-construction storm water management in new development and redevelopment
- Pollution prevention and good housekeeping for municipal operations

As part of their applications for permit coverage, MS4 operators must identify the best management practices they will use to comply with each of the six minimum control measures and the measurable goals they have set for each measure.

ABOUT THIS MANUAL

This manual is intended to help municipalities in the New England states and New York develop illicit discharge detection and elimination (IDDE) programs required by EPA's Phase II storm water program. EPA's Phase II storm water regulations provide guidelines that are used by permitting authorities in writing their permits. This manual provides general information based on EPA's Phase II storm water regulations; it is important to consult the permitting authority in your state (see Chapter 10) to find out about state-specific requirements.

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Chapter 1 explains the IDDE requirement of EPA's Phase II regulations. Chapters 2 through 8 describe the required elements of an IDDE program and provide information to help municipalities execute each of these elements. Chapter 9 provides information on best management practices and measurable goals for IDDEs. Chapter 10 lists additional resources and contacts that may be helpful in developing an IDDE program.

[2] There are some exceptions to this deadline; contact the permitting authority in your state for up-to-date official information.

1 GETTING STARTED WITH YOUR IDDE PROGRAM

As you set out to develop your illicit discharge detection and elimination (IDDE) program, you will need to start by making sure that you know the answers to two key questions: (1) What is an illicit discharge? and (2) What are the required elements of an IDDE program? In this chapter we'll review the answers to these questions; we'll provide supporting information and details in subsequent chapters.

WHAT IS AN ILLICIT DISCHARGE?

The term "illicit discharge" is defined in EPA's Phase II storm water regulations as "any discharge to a municipal separate storm sewer that is not composed entirely of storm water, except discharges pursuant to an NPDES permit and discharges resulting from fire-fighting activities."

Illicit discharges can be categorized as either direct or indirect.

- Examples of direct illicit discharges:
  - sanitary wastewater piping that is directly connected from a home to the storm sewer
  - materials (e.g., used motor oil) that have been dumped illegally into a storm drain catch basin
  - a shop floor drain that is connected to the storm sewer
  - a cross-connection between the municipal sewer and storm sewer systems
- Examples of indirect illicit discharges:
  - an old and damaged sanitary sewer line that is leaking fluids into a cracked storm sewer line
  - a failing septic system that is leaking into a cracked storm sewer line or causing surface discharge into the storm sewer

Illicit discharge

Any discharge to a municipal separate storm sewer that is not composed entirely of storm water, except discharges pursuant to an NPDES permit and discharges resulting from fire-fighting activities.

WHAT ARE THE ELEMENTS OF AN IDDE PROGRAM?

EPA's Phase II regulations state that an IDDE program must incorporate the following four elements.

- Develop (if not already completed) a storm sewer system map showing the location of all outfalls, and the names and location of all waters of the United States that receive discharges from those outfalls.

NON-STORM WATER DISCHARGES THAT YOUR IDDE PROGRAM MAY NOT NEED TO ADDRESS

According to EPA's Phase II storm water regulations, an illicit discharge detection and elimination program need only address the following categories of non-storm water discharges if the operator of a small MS4 identifies them as significant contributors of pollutants to the MS4:

- water line flushing
- landscape irrigation
- diverted stream flows
- rising ground waters
- uncontaminated ground water infiltration
- uncontaminated pumped ground water
- discharges from potable water sources
- foundation drains
- air conditioning condensation
- irrigation water
- springs
- water from crawl space pumps
- footing drains
- lawn watering
- individual residential car washing
- flows from riparian habitats and wetlands
- dechlorinated swimming pool discharges
- street wash water

- To the extent allowable under state, tribal, or local law, effectively prohibit through ordinance, or other regulatory mechanism, illicit discharges into the separate storm sewer system and implement appropriate enforcement procedures and actions as needed.
- Develop and implement a plan to detect and address illicit discharges, including illegal dumping, to the system.
- Inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste.

For each of these mandatory elements, EPA suggests a variety of approaches that can help in creating a successful IDDE program. The mandatory elements and the suggested approaches will be discussed further in the next seven chapters.

REFERENCES: CHAPTER 1

USEPA. 1999. National Pollutant Discharge Elimination System – Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges; Final Rule. *Federal Register* Vol. 64 No. 235 (December 8, 1999), pp. 68722-68851. *http://www.epa.gov/npdes/regulations/phase2.pdf*

USEPA. 2000. EPA Storm Water Phase II Final Rule Fact Sheet 2.5: *Illicit Discharge Detection and Elimination Minimum Control Measure.* EPA 833-F-00-007. January 2000. *http://cfpub.epa.gov/npdes/stormwater/swfinal.cfm*

2 DEVELOPING A STORM SEWER MAP

The creation of a storm sewer map is the first mandatory element of an IDDE program. Phase II requires that the operator of a regulated MS4 develop a map of the MS4 that shows, at a minimum, the location of all outfalls and the names and locations of all waters of the United States that receive discharges from those outfalls. While many municipalities in the Northeast already have detailed maps of their storm sewer systems, others, typically those in older or more rural areas, have the information scattered in different locations. These municipalities will have the most work to do to comply with this requirement. If you need to develop a map, begin by collecting any existing information on outfall locations (e.g., review city records, drainage maps, storm drain maps, state or federal storm water permit files, state transportation maintenance maps), and then conduct field surveys to verify the locations.

CONDUCTING A FIELD SURVEY

A field survey of outfall locations will often be necessary to create a map or verify and update an existing map. The References section at the end of the chapter provides a Web link for a sample guide for conducting a storm drain mapping survey (MA DFWELE, 2002). Field outfall surveys generally include the following basic steps:

- Survey receiving waters on foot or by boat to look for all outfalls (i.e., wade small receiving waters or use a boat for larger receiving waters).
- Note the locations of outfalls on a map. The map scale should be such that outfalls can be located accurately.
- Assign a code or label to each outfall. Adopt a logical, easy-to-understand system (e.g., distance along the stream).
- Fill out a survey sheet for each outfall, noting characteristics such as dry weather discharge and deposits or stains.

The goal of a mapping program should be functionality—find a way to map outfalls such that you (and the permitting authority) can locate any specific outfall to check on discharges.

MAPPING OPTIONS

For municipalities that do not already have a storm sewer map, it is important to determine the type of map (e.g., topographic, hand or computer drafted) that best fits your needs. Because there is no specific mapping standard in the Phase II rule, the goal of a mapping program should be functionality—find a way to map outfalls such that you

CAN A DITCH BE AN OUTFALL?

The paragraph below is an excerpt from EPA's Storm Water Phase II Final Rule (USEPA, 1999).

The term "outfall" is defined in 40 CFR 122.26(b)(9) as "a point source at the point where a municipal separate storm sewer discharges to waters of the United States." The term "municipal separate storm sewer" is defined at 40 CFR 122.26(b)(8) as "a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains)." Following the logic of these definitions, a "ditch" may be part of the municipal separate storm sewer, and at the point where the ditch discharges to waters of the United States, it is an outfall. As with any determination about jurisdictional provisions of the CWA, however, final decisions require case-specific evaluations of fact.

(and the permitting authority) can locate any specific outfall to check on discharges. The most basic way to meet the mapping requirement is to use an existing map (e.g., a topographic map) that shows receiving waters. You can then mark outfall locations on the map by hand (using existing information augmented by a field survey). Make sure the names of receiving waters are shown on the map; for receiving waters that don't have names, it is helpful to indicate the nearest named water body downstream. The graphic at the beginning of this chapter shows an example of a marked-up United States Geological Survey map (markings do not represent actual outfalls). The next step up is a more sophisticated paper map (e.g., blueprint-style). Figure 1 presents an example of a simple paper map showing outfalls and other key features of the storm sewer system.

In many municipalities, a paper map may be completely adequate for carrying out an IDDE program. However, if your MS4 has the resources, or if your municipality has a complex storm sewer system, you may want to make use of available computer technology in making your map.

Global Positioning System (GPS) technology can be used to obtain the coordinates (longitude and latitude) for each outfall. A GPS unit, which uses data from the U.S. Department of Defense's constellation of GPS satellites to constantly update position, can be carried with you on your field survey. A particular position can be recorded and later downloaded into a Geographic Information System (GIS) database. Using GIS, the coordinates can be linked with other site-specific information, such as a picture and history of the outfall. GPS units can be purchased or rented.

There are various computerized mapping programs. A GIS program (e.g., ArcGIS) combines a georeferenced database with mapping capability, so that different geographical attributes (e.g., streets, outfalls, land use, monitoring data) can be mapped as

"layers" and displayed either separately or together. AutoCAD®, a design/drafting platform, is another program commonly used for storm sewer mapping.

If you plan to map via computer, decide if you want to make the mapping system compatible with other departments within your municipality and/or with other data sources (e.g., state agencies that provide GIS layers). Since storm sewer systems are often constructed in roadways, the use of the GIS road line data layer can be helpful in developing a map. If this layer is available, it is usually very accurate and frequently updated by state or regional agencies. Local or regional planning commissions may be able to provide assistance with GIS technology and map development. Once a particular software system has been chosen, it is helpful to require developers to submit compatible electronic updates for subsequent development to ensure that the map and data remain current after the initial mapping effort is finished.

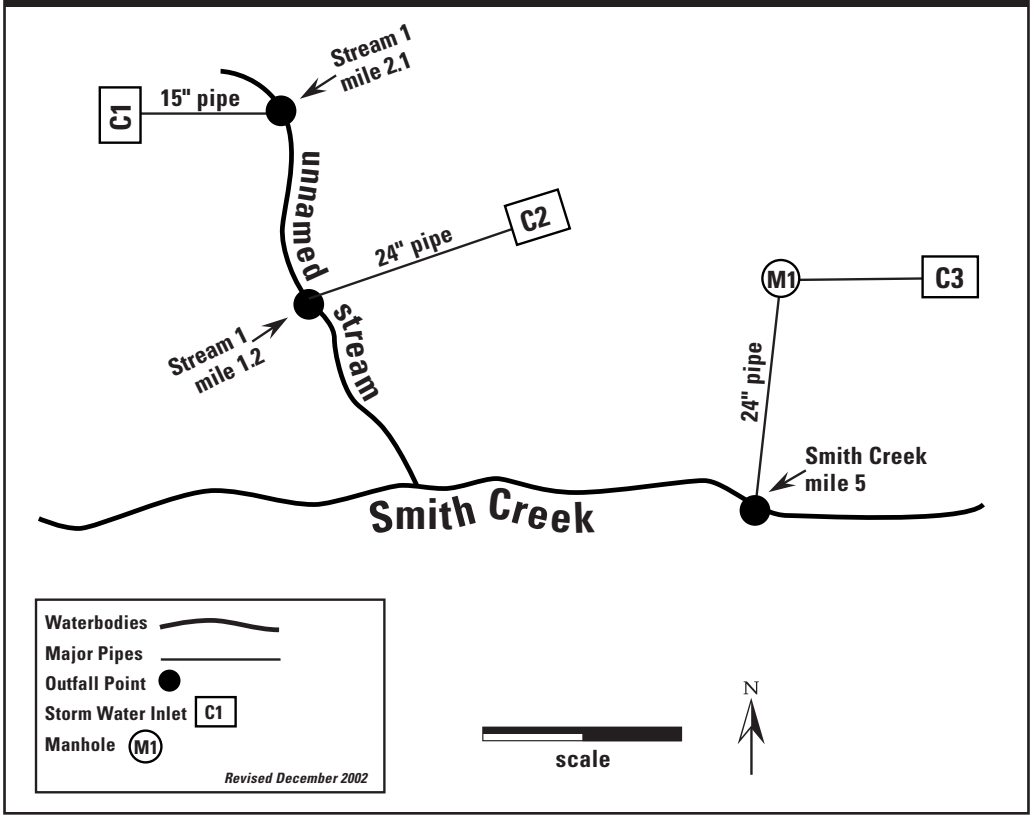
PRIORITIZING AREAS TO BE MAPPED

You may find that practical considerations will dictate the need to conduct mapping in phases. In this case, it is best to prioritize your mapping agenda. For example, older developed areas are more likely to have illicit discharges than newer areas for various reasons (e.g., many municipalities have imposed inspection requirements on new construction that help to prevent illegal connections). Therefore, if your community has limited resources, you would benefit from mapping the older areas first to ensure that priority areas are mapped.

You may find that practical considerations will dictate the need to conduct mapping in phases. In this case, it is best to prioritize your mapping agenda.

Other considerations in setting mapping priorities include land uses, reports of illicit discharges, and other information specific to each MS4. Although EPA's Phase II regulations require that only outfalls be mapped, once an illicit discharge is detected at an outfall, it may be necessary to map the portion of the storm sewer system leading to the outfall so that you are able to locate the source of the discharge. If possible, mapping the entire storm sewer system may prove very helpful to your IDDE program.

Figure 1 SAMPLE MAP



REFERENCES: CHAPTER 2

Colorado Department of Public Health and Environment, Water Quality Control Division. 2001. *Colorado's Phase II Municipal Guidance: A guide to application requirements and program development for coverage under Colorado's Phase II municipal stormwater discharge permit.* *http://www.cdphe.state.co.us/wq/PermitsUnit/wqcdpmt.html*

Massachusetts Division of Fisheries, Wildlife, and Environmental Law Enforcement. 2002. *Storm Drain Mapping Project Field Manual* (Draft). *http://www.state.ma.us/dfwele/River/pdf/rivstormdrainmanual.pdf*

Oakland County, Michigan. 2002. *Illicit Discharge Elimination Program.* *http://www.co.oakland.mi.us/drain/program_service/illicit_disch.html*

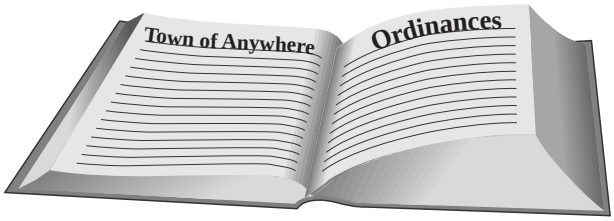
Pitt, R., M. Lalor, R. Field, D.D. Adrian, and D. Barbe. 1993. *Investigation of Inappropriate Pollutant Entries into Storm Drainage Systems: A User's Guide.* USEPA Office of Research and Development. EPA/600/R-92/238. *http://www.epa.gov/clariton*

Rohrer, C.A., and Beckley, R.J. Undated. *Using GIS Tools to Implement an Illicit Discharge Elimination Program in Livonia, Michigan.* Rouge River Demonstration Project. *http://www.rougeriver.com/proddata*

USEPA. 1999. National Pollutant Discharge Elimination System – Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges; Final Rule. *Federal Register* Vol. 64 No. 235 (December 8, 1999), pp. 68722-68851. *http://www.epa.gov/npdes/regulations/phase2.pdf*

3 PROHIBITING ILLICIT DISCHARGES

The second mandatory element of a Phase II IDDE program requires that MS4 operators "to the extent allowable under State, Tribal, or local law, effectively prohibit through ordinance, or other regulatory mechanism, illicit discharges into the separate storm sewer system and implement appropriate enforcement procedures and actions as needed."



ILLICIT DISCHARGE ORDINANCES

As EPA's guidance specifies, a municipal ordinance created to comply with Phase II regulations must include a *prohibition* of illicit discharges and an *enforcement* mechanism. Note that it is also essential for the municipality to establish legal authority to inspect properties suspected of releasing contaminated discharges into the storm sewer system. Your municipality may already have a sewer use ordinance or similar bylaw that meets Phase II requirements, or that can be amended to meet the requirements. Consult with your town counsel and other municipal authorities to review your town's existing bylaws and regulations and determine what changes or additions are needed and what the procedure is for making those changes. If you need to make changes, you may want to review the model bylaws and other guidance discussed below.

EPA's nonpoint source pollution program Web site offers several examples of local ordinances for illicit discharges (USEPA, 2002). Appendix A of this manual presents EPA's general model ordinance, which synthesizes a number of existing municipal ordinances. In using any of these ordinances as a model, a community should take into account the legal authority granted to it under state law, the Phase II permit requirements in that state, the enforcement methods it deems appropriate, and any other locality-specific considerations.

A municipal ordinance created to comply with Phase II regulations must include a* prohibition *of illicit discharges and an* enforcement *mechanism.

A workgroup chaired by Massachusetts Department of Environmental Protection (MADEP) staff has been working on developing model bylaws that municipalities in the state can use to help them comply with Phase II regulations. The products of this group's work (model bylaws and associated guidance) are expected to be available on the MADEP Web site (see Chapter 10) by the time this manual is published. This group found that many of the available model ordinances did not fit well with the structure of Massachusetts government and, therefore, developed models that would work for towns in the state. The group also found that entry onto private property can be a tricky legal issue and should be treated carefully in any new or amended bylaws.

The Boston Water and Sewer Commission's (BWSC's) *Regulations Governing the Use of Sanitary and Combined Sewers and Storm Drains* are available on the Web (*http://*www.bwsc.org; click on "Engineering" then "Regulations") and may serve as a useful local model. The regulations specify certain conditions under which BWSC

representatives must be granted access to property; denial of access may lead to termination of water service.

Note that illicit discharges to *storm* sewers should be addressed hand-in-hand with the issue of illegal connections of extraneous water to *sanitary* sewers (typically referred to as infiltration/inflow or I/I programs); bylaws or regulations should make clear which discharges belong in which system.

REFERENCES: CHAPTER 3

BWSC. 2002. *Regulations Governing the Use of Sanitary and Combined Sewers and Storm Drains.* *http://www.bwsc.org*

Personal communication from Ginny Scarlet, MADEP, November 29, 2002.

USEPA. 1999. National Pollutant Discharge Elimination System – Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges; Final Rule. *Federal Register* Vol. 64 No. 235 (December 8, 1999), pp. 68722-68851.

USEPA. 2002. *Model Ordinances to Protect Local Resources: Illicit Discharges.* *http://www.epa.gov/owow/nps/ordinance/discharges.htm*

4 DEVELOPING AND IMPLEMENTING AN IDDE PLAN: LOCATING PRIORITY AREAS

Developing and implementing a plan to detect and address illicit discharges is the third mandatory element of a Phase II IDDE program. EPA recommends that the plan include the following four components: locating priority areas; tracing the source of an illicit discharge; removing the source of an illicit discharge; and program evaluation and assessment. The first component, locating priority areas, is the subject of this chapter. Each of the other three components will be discussed in chapters five, six, and seven respectively.

THE IDDE PLAN

- ➤ **Locating priority areas**
- **Tracing the source of an illicit discharge**
- **Removing the source of an illicit discharge**
- **Program evaluation and assessment**

The process of identifying "priority areas" can be broken down into three steps:

- ➤ ***Use available information to identify potential hot spots***
- ➤ ***Conduct dry-weather field screening to look for non-storm water discharges***
- ➤ ***Conduct water quality tests to see if these non-storm water discharges seem to be illicit discharges***

The following sections focus on each of these approaches.

IDENTIFYING POSSIBLE HOT SPOTS

"Hot spots" are areas that are considered to be likely sources of illicit discharges, based on available information. The following list provides examples of potential hot spots.

Commercial/ industrial areas These areas have been found in some communities' IDDE programs to (a) have significant numbers of illicit connections and/or (b) have discharges with a high potential to affect water quality (Tuomari, 1999 and Pitt et al., 1993). Specific business sectors can be prioritized (e.g., businesses subject to waste water pretreatment rules, businesses falling under certain Standard Industrial Classification [SIC] codes, or business sectors with a record of enforcement actions).

Older areas of town Older development may predate more stringent construction codes regarding illegal connections and may have deteriorating sewer and/or storm sewer infrastructure that can lead to infiltration problems.

Hot spots
Areas that are considered to be likely sources of illicit discharges, based on available information.

Areas where there have been repeated complaints Areas where illegal dumping or apparently contaminated discharges have been reported are obvious priority targets. Geographic Information System (GIS) mapping can be useful for visualizing complaint locations. These maps can be overlain with other pertinent resource information (e.g., locations of facilities that have had compliance violations, water quality data for receiving waters).

Locations identified from ambient water quality sampling data The locations of high levels of particular contaminants (e.g., bacteria) can help to target priority outfalls. Good resources for this information are the periodic water quality assessment reports ("305(b) reports") and lists of impaired waters ("303(d) lists") that the Clean Water Act requires each state to prepare and submit to EPA. These reports are prepared by each state's environmental agency and are available to the public, often on the state's Web site. Also, local watershed groups monitor many water bodies, particularly those in more developed areas. In addition to providing sampling data, these groups can often serve as valuable resources for information about a particular water body and potential problem areas. Other possible sources of water quality data include local Boards of Health (in Massachusetts, they must test at beaches) and water districts or departments.

CONDUCTING DRY-WEATHER OUTFALL/MANHOLE SURVEYS

Once your general geographic priority areas have been determined, dry-weather surveys of outfalls and/or manholes can be undertaken to look for non-storm water flows.

EPA recommends that you make visual observations of outfalls during dry weather. Some operators have found that dry-weather manhole inspections can also be useful. The presence of flow in a storm sewer outfall or manhole during dry weather indicates a likely illicit discharge. (Other explanations for the presence of such flow include infiltrating ground water or the diversion of a surface stream into the storm sewer system.) Because illicit discharges are often intermittent, you should ideally check for discharges multiple times in a given location (particularly in a priority location). Please note that only those with confined-space training should enter a manhole or outfall. The observation and sampling strategies described below can typically be conducted without entering manholes or outfalls.

IMPORTANT NOTE:
Only those with confined-space training should enter a manhole or outfall.

In implementing your dry-weather survey, consider adopting the following strategies.

- Combine this survey with the outfall mapping field survey (see Chapter 2) and/or water quality sampling of the discharges (discussed in the next section of this chapter).
- Enlist a watershed association or other volunteer organization to help with the outfall survey.
- Notify the public that the survey will be taking place (e.g., send notices to property owners in the area). Note that while it is desirable to keep the public informed

about the presence of survey-takers to prevent undue alarm, notification may also tip off an illegal discharger to curtail discharges; use your judgment as to the most appropriate course of action. For example, you might just specify a very general time frame during which the survey will take place.

- Keep safety considerations at the forefront of survey procedures at all times. Likely hazards should be anticipated and discussed with the individuals carrying out the survey, and individuals should be instructed to use their judgment and err on the side of caution as they conduct the survey. The survey should be conducted in groups of two or more. If manholes are opened for inspection as part of the survey, staff should wear high-visibility safety vests and block off their work area with traffic cones; police presence can be helpful for safety and to allay public concerns that can be created by individuals opening manholes.

- Determine your criterion for "dry weather." The working definition of dry weather used for sampling programs can vary depending on location-specific factors. Pitt et al. (1993) suggest that storm-runoff drainage ends in most urban areas no more than 12 hours after a storm event, but many programs (e.g., Boston, NH DES, San Diego) use a longer time period, such as no rain or no more than 1/10 inch of rain in the last 48 or 72 hours.

- Observe dry-weather flows for odor, color, turbidity, and floatable matter. Observe outfalls for deposits and stains, vegetation, and damage to outfall structures. This information can help identify contaminants present in the discharge and/or the likely nature of the discharge (e.g., sanitary, industrial). Some of the resources listed in Chapter 10 provide examples of data and observation sheets to be filled out for each outfall.

- Look up some of the resources listed in the references for this chapter for more detailed instructions for conducting dry-weather field surveys (e.g., MA DFWELE, 2002).

CASE STUDY: BOSTON WATER AND SEWER COMMISSION

USING SANDBAGS TO DETECT ILLICIT DISCHARGES

The Boston Water and Sewer Commission has had success using sandbags to help detect illicit discharges. Sandbags are placed in storm drain outlets that empty into manholes and/or water bodies. The sandbags are small enough that they do not block the storm drain outlet. They must be placed in the outlet after 48 hours of dry weather (1/10 inch of rain or less). After the bag is placed in the outlet, another 48 hours of dry weather is needed (total of 96 hours of dry weather). The outlet is then observed, and any water buildup behind the sandbag is sampled. This method is very effective in narrowing down the manhole junctures that contain illicit discharges. Sandbags cost approximately $60 each and can be reused. The main difficulty in using this method is the need for 96-hour periods of dry weather.

Information from an interview with Paul Barden, Deputy Director of Engineering Services, and Charlie Jewell, Project Director, Boston Water and Sewer Commission, August 15, 2002.

CONDUCTING WATER QUALITY TESTS

When dry-weather flow is observed, visual or odor observations (e.g., observation of pieces of toilet paper, strongly colored or very muddy discharge, or the odor of sewage or chemicals) may provide enough information to determine that the discharge is illicit and to identify the likely source. If not, water quality sampling can be used to determine whether the flow is likely to have resulted from an illicit discharge.

Certain water quality parameters can serve as indicators of the likely presence or absence of a specific type of discharge. Some of these parameters can be measured in the field with probes or test kits; others must be analyzed for in the laboratory. A wide variety of water quality parameters can be measured in an IDDE program, and many references exist that describe these parameters. Some of the more commonly used and useful parameters are summarized in Table 1, which focuses on parameters suggested in Pitt et al. (1993) and the subset of those recommended in EPA's Phase II regulations.

CASE STUDY: WINOOSKI, VERMONT

USE OF OPTICAL BRIGHTENERS

The city of Winooski, Vermont has found that testing for optical brighteners is an efficient, cheap way to determine the presence of a non-storm water discharge in a particular outfall. Optical brighteners are used in laundry detergents and thus serve as a marker for household or commercial laundry discharges. These tests are extremely sensitive to the presence of detergents.

To perform an optical-brightener test, an untreated cotton pad ($9/100 pads) surrounded by a mesh bag or a suet cage is placed in a storm drain outlet, manhole, or catch basin that has been found to have dry-weather discharge and left for a certain period of time (i.e., 5-7 days). The cotton pad is then brought back to the lab and placed under a UV lamp (approximately $200) in a dark room. A blue color indicates the presence of detergents, signifying either illegal dumping, a direct illicit connection, a leaking sewer, or leakage from a failed septic system. If the test is positive for detergents, further tests need to be performed to determine the source.

Information from an interview with Tim Grover, Water Pollution Control Facility Superintendent, City of Winooski, August 9, 2002.

TABLE 1 WATER QUALITY TEST PARAMETERS AND USES

Water Quality Test	Use of Water Quality Test	Comments
Conductivity	Used as an indicator of dissolved solids	- Pitt et al. 1993 suggested parameter; EPA Phase II regulations recommended parameter - Typically measured in the field with a probe
Ammonia	High levels can be an indicator of the presence of sanitary wastewater	- Pitt et al. 1993 suggested parameter; EPA Phase II regulations recommended parameter - Used very often and equipment is readily available; Boston, MA uses a field test kit (see case example)
Surfactants	Indicate the presence of detergent (e.g., laundry, car washing)	- Pitt et al. 1993 suggested parameter; EPA Phase II regulations recommended parameter - Boston, MA uses a field test kit (see case example)
pH	Extreme pH values (low or high) may indicate commercial or industrial flows; not useful in determining the presence of sanitary wastewater (which, like uncontaminated baseflows, tends to have a neutral pH, i.e., close to 7)	- Pitt et al. 1993 suggested parameter; EPA Phase II regulations recommended parameter - Typically measured in the field or lab with a probe
Temperature	Sanitary wastewater and industrial cooling water can substantially influence outfall discharge temperatures. This measurement is most useful during cold weather.	- Pitt et al. 1993 suggested parameter - Measured in the field with a thermometer or probe
Hardness	Used to distinguish between natural and treated waters	- Pitt et al. 1993 suggested parameter
Total Chlorine	Used to indicate inflow from potable water sources; not a good indicator of sanitary wastewater because chlorine will not exist in a "free" state in water for long (it will combine with organic compounds)	- Pitt et al. 1993 suggested parameter
Fluoride	Used to indicate potable water sources in areas where water supplies are fluoridated	- Pitt et al. 1993 suggested parameter
Potassium	High levels may indicate the presence of sanitary wastewater	- Pitt et al. 1993 suggested parameter
Optical Brighteners (Fluorescence)	Used to indicate presence of laundry detergents (which often contain fabric whiteners, which cause substantial fluorescence)	-Pitt et al. 1993 suggested parameter -Used by City of Winooski, VT (see case example)
Bacteria (fecal coliform, *E. coli,* and/or *enterococci)*	Used to indicate the presence of sanitary wastewater	- Used by NHDES (see case example in chapter 5)

REFERENCES: CHAPTER 4

Clark County (WA) Public Works. 2000. *Illicit Discharge Screening Project: Annual Summary 2000.* *http://www.co.clark.wa.us/site/clean/download/2000rept.pdf*

Colorado Department of Public Health and Environment, Water Quality Control Division. October 2001. *Colorado's Phase II Municipal Guidance: A guide to application requirements and program development for coverage under Colorado's Phase II municipal storm water discharge permit.* *http://www.cdphe.state.co.us/wq/PermitsUnit/wqcdpmt.html*

Donlon, A. 2001. *2000 Coastal Illicit Connection Remediation Grant Program: Final Report.* New Hampshire Department of Environmental Services and New Hampshire Estuaries Project. R-WD-01-10. *http://www.des.state.nh.us/wmb/was/nhep2000.pdf*

Interview with Paul Barden and Charlie Jewell, BWSC, August 15, 2002.

Interview with Andrea Donlon, NHDES, July 29, 2002.

Interview with Tim Grover, City of Winooski, VT, August 9, 2002.

Jewell, C. 2001. A Systematic Methodology for Identification and Remediation of Illegal Connections. Presented at the Water Environment Federation Specialty Conference *2001 A Collection Systems Odyssey: Combining Wet Weather and O&M Solutions.* *http://www.wef.org*

Massachusetts Division of Fisheries, Wildlife, and Environmental Law Enforcement. *Storm Drain Mapping Project Field Manual* (Draft). January 2002. *www.state.ma.us/dfwele/River/pdf/rivstormdrainmanual.pdf*

North Central Texas Council of Governments. 2002. *Storm Water Management in North Central Texas: Illicit Discharge Detection and Elimination.* *http://www.dfwstormwater.com/Storm_Water_BMPs/illicit.html*

Pitt, R., M. Lalor, R. Field, D.D. Adrian, and D. Barbe. 1993. *Investigation of Inappropriate Pollutant Entries into Storm Drainage Systems: A User's Guide.* USEPA Office of Research and Development. EPA/600/R-92/238.

San Diego Stormwater Copermittees Jurisdictional Urban Runoff Management Program. 2001. *Illicit Connection/Illicit Discharge (IC/ID) Detection and Elimination Model Program Guidance.* *http://www.projectcleanwater.org/html/model_programs.html*

Sargent, D. and W. Castonguay. 1998. *An Optical Brightener Handbook.* *http://www.mvpc.org/services_sec/mass_bays/optical_handbook.htm*

Tuomari, D. 1999. *Dos and Don'ts on Implementing a Successful Illicit Connection Program.* Rouge River Demonstration Project. *http://www.rougeriver.com/proddata*

USEPA. 1999. National Pollutant Discharge Elimination System – Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges; Final Rule. *Federal Register* Vol. 64 No. 235 (December 8, 1999), pp. 68722-68851.

USEPA. 2002. Storm Water Phase II Menu of BMPs - *Illicit Discharge Detection and Elimination: Identifying Illicit Connections.* *http://cfpub.epa.gov/npdes/stormwater/menuofbmps/illi_2.cfm*

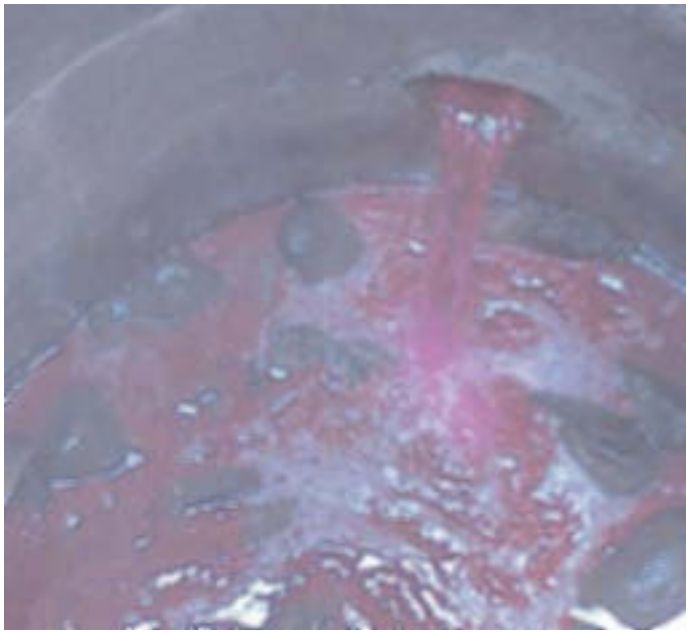
5 DEVELOPING AND IMPLEMENTING AN IDDE PLAN: TRACING THE SOURCE OF AN ILLICIT DISCHARGE

***D**eveloping and implementing a plan to detect and address illicit discharges is the third mandatory element of a Phase II IDDE program. EPA recommends that the plan include the following four components: (1) locating priority areas; (2) tracing the source of an illicit discharge; (3) removing the source of an illicit discharge; and (4) program evaluation and assessment. The second component, tracing the source of an illicit discharge, is the subject of this chapter.*

THE IDDE PLAN

- Locating priority areas
- ➤ Tracing the source of an illicit discharge
- Removing the source of an illicit discharge
- Program evaluation and assessment

Once storm drain outlets with evidence of illicit discharges have been located, various methods can be used to pinpoint the exact source of the discharge. These techniques, many of which are already used by municipal sewer departments, include manhole observation, video inspection, smoke testing, dye testing, aerial infrared and thermal photography, and tracking illegal dumping.



MANHOLE OBSERVATIONS

A key tracing technique is to follow dry-weather flows upstream along the conveyance system to bracket the location of the source. This can be accomplished by taking the following steps:

- ➤ Consult the drainage system map.
- ➤ Check the next "upstream" manhole with a junction to see if there is evidence of discharge. You may wish to sample each manhole that has a discharge.
- ➤ Repeat these steps until a junction is found with no evidence of discharge; the discharge source is likely to be located between the junction with no evidence of discharge and the next downstream junction.
- ➤ Be aware of the surrounding areas and look for water in gutters and streets.

A key tracing technique is to follow dry-weather flows upstream along the conveyance system to bracket the location of the source.

Note that the Boston Water and Sewer Commission has had success working in the opposite direction (i.e., upstream to downstream) (Jewell 2001). Manhole observations can be time-consuming, but they are generally a necessary step before conducting other tests.

VIDEO INSPECTION

Mobile video cameras can be guided remotely through storm sewer lines to observe possible illegal connections into storm sewer systems and record observations on a videocassette or DVD. Public works staff can observe the videos and note any visible illegal connections. This technique is time-consuming and expensive but thorough and usually definitive, and it does not require the intrusion on members of the public that some of the other methods do.

SMOKE TESTING

This technique involves injecting non-toxic smoke into storm sewer lines and then noting the emergence of smoke from sanitary sewer vents in illegally connected buildings or from cracks and leaks in the storm sewer lines. The injection is accomplished by placing a smoke bomb in the storm sewer manhole below ground and forcing air in after it. Smoke-generating machines can also be used. Test personnel should be stationed at points of suspected illegal connections or cracks/leaks, noting any escape of smoke (indicating an illicit connection or damaged storm sewer infrastructure). Prior to performing this test, it is necessary to inform building owners and occupants in the area in advance. It is also advisable to inform the police and fire departments.

Smoke testing involves injecting non-toxic smoke into storm sewer lines and then noting the emergence of smoke from sanitary sewer vents in illegally connected buildings or from cracks and leaks in the storm sewer lines.

For a more thorough smoke-test program, the sanitary sewer lines can also be smoked. For houses that do not emit smoke during either the sanitary sewer or the storm sewer system tests, sewer gas may be venting inside, which is hazardous. Interviews with various IDDE program staff suggest that the smoke-test method is more effective in infiltration/inflow investigations of the sanitary sewer system than in detecting illegal connections to the storm sewer system.

Smoke may cause minor irritation of respiratory passages; residents with respiratory conditions should receive special attention to determine if it is safe for them to be present for the testing. Smoke testing is typically used to survey an area all at once, in contrast to dye testing, which tests one building at a time.

DYE TESTING

This technique involves flushing non-toxic dye into toilets and sinks and observing storm sewer and sanitary sewer manholes and storm sewer outfalls for the presence of the dye. Prior to performing this test, it is necessary to inform building owners and occupants in advance and gain permission for entry. Local public health and state water quality staff should also be notified so that they will be prepared to respond to citizens calling about any dye observed in surface waters.

To perform the test, you need a crew of two or more people (ideally, all with two-way radios). One person is inside the building; the others are stationed at the appropriate storm sewer and sanitary sewer manholes (which

CASE STUDY: NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES

LOCATING AND TRACING ILLICIT DISCHARGES IN NEW HAMPSHIRE COASTAL COMMUNITIES

In 1996, the New Hampshire Department of Environmental Services (NHDES) began a program of investigating and eliminating illicit connections to storm drainage systems in coastal communities to reduce bacterial contamination in coastal waters. The following excerpt from the NHDES report on the first phase of the project describes the process used to detect and trace illicit discharges.

Beginning in the summer of 1996, the coastal shorelines were surveyed by foot or canoe at low tide for potential pollution sources. All pipes, seeps, streams, and swales with flow were sampled for bacteria. In addition, temperature was measured, and observations related to the condition of the pipe (stained or structurally damaged), odor, evidence of untreated wastewater (e.g., toilet paper), turbidity, color, debris, estimated flow, and any other observations were noted. Dry pipes were rechecked on several occasions for intermittent flow. Evidence indicating the presence of wastewater and/or elevated bacteria levels prompted further investigation of these locations.

Upstream catch basins and manholes associated with the outfall pipes that were identified by the screening process were surveyed for evidence of wastewater and sampled for bacteria. Smoke testing (using non-toxic smoke blown into catch basins) was then used to identify buildings connected to the storm drainage system by canvassing the neighborhood for vents emitting smoke. Final confirmation of an illicit connection from the buildings that emitted smoke was accomplished by dye testing indoor plumbing and observing the storm drainage and sewer systems for the presence or absence of the dye.

Feeder streams were surveyed for outfall pipes with dry-weather flow. Other potential bacteriological sources (e.g., pigeon roosting sites on bridges) were bracketed with water quality sampling stations. Where contaminated seeps and swales were suspected, the drainage area was surveyed for potential sources, such as broken sewer mains.

Landry, N. 1999. Elimination of Illicit Connections in Coastal New Hampshire Spurs Cooperation and Controversy: A Final Report to the New Hampshire Estuaries Project. New Hampshire Department of Environmental Services.

should be opened) and/or outfalls. The inside person drops dye into a plumbing fixture (i.e., toilet or sink) and runs a sufficient amount of water to move the dye through the plumbing system. The inside person then radios to the outside crew that the dye has been dropped, and the outside crew watches for the dye in the storm sewer and sanitary sewer, recording the presence or absence of the dye.

The test is relatively quick (about 30 minutes per test), effective (results are usually definitive), and cheap. Dye testing is best used when the likely source of an illicit discharge has been narrowed down to a few specific houses or businesses.

AERIAL INFRARED AND THERMAL PHOTOGRAPHY

Aerial infrared and/or thermal photography can be used to locate illicit discharges from outfalls and failing septic systems using temperature and vegetation as markers. This technique requires knowledge of aerial photo interpretation. Using aerial infrared or thermal photographs, do the following:

- For outfalls
  - Note if discharge has a higher temperature than that of the stream
  - Note if algae growth is concentrated near an outfall
- For potentially failing septic systems
  - Note evidence of increased moisture in surrounding soil
  - Observe vegetation located close to the potentially failing septic system, and note any increase in vegetation compared to the surrounding area
  - Observe any increase in temperature readings at the septic system location

Aerial infrared and/or thermal photography can be used to locate illicit discharges from outfalls and failing septic systems using temperature and vegetation as markers.

This is still a developing technology and not commonly used for IDDE programs. You may still need further tests to determine specific houses/businesses with illegal connections. This technique has been used primarily for the detection of failing septic systems, which are only considered "illicit discharges" under the Phase II Storm Water program if they discharge into the storm sewer system.

TRACKING ILLEGAL DUMPING

Developing a coordinated system for collecting and tracking reports of illegal dumping can help pinpoint this difficult-to-find source of illicit discharges. Suggestions for tracking illegal dumping include the following:

- Create a hotline that can be used to report any illegal-dumping behavior (i.e., who illegally dumped and where illegal dumping occurred).
- Observe the materials that have been illegally dumped and trace the potential sources of the materials.
- Note where dumping occurs most often, record patterns of time of day and day of the week, and note common responsible parties.

Developing a coordinated system for collecting and tracking reports of illegal dumping can help pinpoint this difficult-to-find source of illicit discharges.

Challenges in addressing illegal dumping include the difficulty of catching dumpers in the act and the significant staff time needed to receive, respond to, and track complaints.

REFERENCES: CHAPTER 5

Center for Watershed Protection. *Pollution Prevention Fact Sheet: Illegal Dumping Control.* *http://www.stormwatercenter.net/Pollution_Prevention_Factsheets/IllegalDumpingControl.htm*

City of Cambridge, MA. 2002. *Cambridge Sewer and Stormwater Line Inspection and Testing Program.* *http://www.ci.cambridge.ma.us/~TheWorks/dye.html*

Jewell, C. 2001. A Systematic Methodology for Identification and Remediation of Illegal Connections. Presented at the Water Environment Federation Specialty Conference *2001 A Collection Systems Odyssey: Combining Wet Weather and O&M Solutions.* *http://www.wef.org*

Johnson, B. and D. Tuomari. 1998. *Did you know…The Impact of On-site Sewage Systems and Illicit Discharges on the Rouge River.* Rouge River Demonstration Project. *http://www.rougeriver.com/proddata*

Pierce County (WA) Public Works and Utilities. 2002. *BMP S.1: Eliminate Illicit Storm Drain Connections.* *http://www.co.pierce.wa.us/pc/services/home/environ/water/swm/sppman/bmps1.htm*

San Diego Stormwater Copermittees Jurisdictional Urban Runoff Management Program. 2001. *Illicit Connection/Illicit Discharge (IC/ID) Detection and Elimination Model Program Guidance.* *http://www.projectcleanwater.org/html/model_programs.html*

Town of Cary, NC. 2002. *Town of Cary Smoke Test.* *http://www.townofcary.org/smoke*

Tuomari, D. 1999. *Dos and Don'ts on Implementing a Successful Illicit Connection Program.* Rouge River Demonstration Project. *http://www.rougeriver.com/proddata*

USEPA. 2002. Storm Water Phase II Menu of BMPs - *Illicit Discharge Detection and Elimination: Failing Septic Systems.* *http://cfpub.epa.gov/npdes/stormwater/menuofbmps/illi_1.cfm*

USEPA. 2002. Storm Water Phase II Menu of BMPs - *Illicit Discharge Detection and Elimination: Identifying Illicit Connections.* *http://cfpub.epa.gov/npdes/stormwater/menuofbmps/illi_2.cfm*

USEPA. 2002. Storm Water Phase II Menu of BMPs - *Illicit Discharge Detection and Elimination: Illegal Dumping.* *http://cfpub.epa.gov/npdes/stormwater/menuofbmps/illi_3.cfm*

USEPA Region 5. 1998. *Illegal Dumping Prevention Guidebook.* EPA905-B-97-001. Waste, Pesticides, and Toxics Division, Chicago, Illinois. *http://www.epa.gov/reg5rcra/wptdiv/illegal_dumping/*

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6 DEVELOPING AND IMPLEMENTING AN IDDE PLAN: REMOVING THE SOURCE OF AN ILLICIT DISCHARGE

Developing and implementing a plan to detect and address illicit discharges is the third mandatory element of a Phase II IDDE program. EPA recommends that the plan include the following four components: (1) locating priority areas; (2) tracing the source of an illicit discharge; (3) removing the source of an illicit discharge; and (4) program evaluation and assessment. The third component, removing the source of an illicit discharge, is the subject of this chapter.

THE IDDE PLAN

- Locating priority areas
- Tracing the source of an illicit discharge
- ➢ Removing the source of an illicit discharge
- Program evaluation and assessment

Because there are various sources of illicit discharges to the storm sewer system, there are different kinds of actions municipalities may have to take to remove those sources and prevent future illicit discharges. This section groups those actions into three categories: compliance assistance and enforcement for illegal connections to homes and businesses; proper construction and maintenance of MS4s; and responding to and preventing illegal dumping.

COMPLIANCE ASSISTANCE AND ENFORCEMENT FOR ILLEGAL CONNECTIONS TO HOMES AND BUSINESSES

There is a range of ways in which municipalities may wish to handle the removal of illegal connections between homes or businesses and the storm sewer system. Enforcement measures should be spelled out in the required IDDE ordinance (see Chapter 3), but the MS4 operator will normally be allowed to use judgment about what mix of compliance assistance and enforcement actions is appropriate in a given situation. Typically, a municipality responds to the discovery of an illegal connection in a graduated manner, beginning with efforts to obtain voluntary compliance and escalating to increasingly severe enforcement actions if compliance is not obtained.

Voluntary Compliance

Often, home or business owners are not aware of the existence of illegal connections between their buildings and the storm sewer systems. In these cases, providing the responsible party with information about the connection, its environmental consequences, the applicable regulations, and how to remedy it may be enough to secure vol-

untary compliance. The cost of removing the connection and reconnecting it to the sanitary sewer system can be an obstacle. Recognizing this, some localities (e.g., Boston and coastal New Hampshire) have chosen to provide assistance with these costs, using municipal public works funds or state or federal grants.

Typically, a municipality responds to the discovery of an illegal connection in a graduated manner, beginning with efforts to obtain voluntary compliance and escalating to increasingly severe enforcement actions if compliance is not obtained.

Enforcement

EPA's model illicit discharge ordinance (Appendix A) provides an example of the enforcement steps that might be specified in a typical local ordinance. These steps are summarized below.

- The authorized enforcement agency sends the property owner a Notice of Violation (NOV), which may require the violator to take steps such as monitoring, elimination of an illicit connection or discharge, or payment of a fine.
- The person receiving the NOV may appeal it.
- If the person receiving the NOV does not appeal or loses the appeal and fails to correct the violation, the enforcement agency may "take any and all measures necessary to abate the violation and/or restore the property." The agency then may require reimbursement from the violator for the cost of the abatement, including administrative costs.
- The authorized enforcement agency also has the ability to seek an injunction against the violator "restraining the person from activities which would create further violations or compelling the person to perform abatement or remediation of the violation."

If the municipality has not yet obtained enforcement authority (e.g., because a local ordinance has not yet been passed), it may be possible for the municipality to seek enforcement action from state or federal authorities. Involvement of state or federal

CASE STUDY: WAYNE COUNTY, MICHIGAN

ENFORCEMENT PROCEDURE

Wayne County, Michigan, began its illicit discharge detection and elimination program by targeting certain industrial and commercial facilities for site inspections—starting at the other end of the pipe from the outfall survey approach. County personnel visited the facilities, dye tested a representative number of plumbing fixtures, and observed general "housekeeping" practices.

If no violations were found, a thank you letter was sent to the facility acknowledging staff participation and closing the file. If a facility was found to have an illicit connection, a violation letter was sent, giving the facility 30 to 90 days to correct it. If a facility failed to comply with the request, the municipal plumbing inspector or building department became involved. If the municipality was not able to gain compliance, the facility was referred to the Michigan Department of Environmental Quality. When an illicit connection was eliminated, the county provided confirmation. Once a correction was confirmed, a confirmation/thank you letter was sent to facility management, thanking them for their participation and closing the file.

Information from Tuomari, D. 1999. Dos and Don'ts on Implementing a Successful Illicit Connection Program. *Technical Report of the Rouge River Demonstration Project.* ***http://www.rougeriver.com/proddata***

CASE STUDY: ST. LOUIS, MISSOURI

ENFORCEMENT PROCEDURE

The Metropolitan St. Louis Sewer District has a comprehensive ordinance regulating users who discharge into the sanitary sewer and storm sewer systems. Upon discovery of a violation of this ordinance, the Sewer District notifies the user of the nature of the violation and directs that actions be taken to remedy the noncompliance. Within 30 days of receipt of the notice, the user must submit a plan for correction of the violation to the Sewer District. If a violation is found within the house or business that appears to present an immediate danger to human health or welfare, a verbal notification is given immediately by telephone or visit, directing the user to take immediate action to discontinue or reduce the discharge to safe levels. A written notice is sent within five days of the verbal notification.

The Sewer District has the power to issue the following Administrative Orders: Cease and Desist Order (directing the user to stop the violating action), Compliance Order (directing the user take action to correct violation), Show Cause Order (directing the user to show cause why a proposed enforcement action should not be taken), and Consent Order (establishing an agreement with a user to correct a violation).

If the violator does not take action within the time allotted, the Sewer District has the right to eliminate the illicit discharge at the expense of the violator. Legal actions can be taken against, and penalties imposed on, any violator that does not comply.

Information from Metropolitan St. Louis Sewer District Ordinance No. 8472, on EPA's nonpoint source pollution Web site at ***http://www.epa.gov/owow/nps/ordinance/discharges.htm***

authorities may also be necessary if the source of an illicit discharge is located outside of the municipality's boundaries. Examples of enforcement procedures implemented in Wayne County, Michigan, and St. Louis, Missouri, are included in this section.

PROPER CONSTRUCTION AND MAINTENANCE OF MS4s

Some illicit discharge problems may be the responsibility of the MS4 operator. These problems include cross-connections between the sanitary sewer and storm sewer systems and infiltration into damaged or deteriorating storm sewer pipes.

Cross-connections between a municipality's sanitary sewer and storm sewer systems may exist by mistake, because of deterioration over time, or as part of the design in an antiquated system. Complete and accurate maps of the sewer and storm sewer systems can help identify these cross-connections and prevent them during any new construction that takes place.

Contamination can infiltrate into a cracked or leaking MS4 from leaking sanitary sewer pipes, failing septic systems, or contaminated groundwater. To help prevent this, both MS4s and sanitary sewer systems should be inspected periodically and maintained properly to keep them in good repair.

PREVENTING AND RESPONDING TO ILLEGAL DUMPING

It is often difficult to identify and locate the individuals responsible for illegal dumping; therefore, a program to address illegal dumping should focus on prevention, backed up by enforcement to the extent possible.

EPA Region 5 has prepared an *Illegal Dumping Prevention Guidebook* that suggests the following key strategies that can be used to prevent illegal dumping.

- **Site maintenance and controls** Measures should be taken to clean up areas where illegal dumping has taken place, and controls such as signs or access restrictions should be used, as appropriate, to prevent further dumping.
- **Community outreach and involvement** Outreach is the linchpin of an illegal-dumping prevention program and can include the following components:
  - Educating businesses, municipal employees, and the general public about the environmental and legal consequences of illegally disposing of waste into the storm sewer system
  - Providing and publicizing ways for citizens to properly dispose of waste
  - Providing opportunities for citizens to get involved in preventing and reporting illegal dumping
- **Targeted enforcement** This strategy should include a prohibition against illegal dumping via ordinance or another similar measure, backed up by trained law-enforcement personnel and possibly field operations.
- **Program measurement** Tracking and evaluation methods should be used to measure the impact of illegal-dumping prevention efforts and determine whether goals are being met.

Although the EPA Region 5 guidebook is targeted more to land dumping of solid waste, these strategies can also be applied to illegal dumping into the storm drain system. Some specific methods that municipalities can use to implement these strategies include the following:

- **Site maintenance and controls**
  - Storm-drain stenciling program
  - Spill-response plans for hazardous-waste spills
- **Community outreach and involvement**
  - An illegal-dumping reporting hotline
  - Outreach to business sectors that handle hazardous materials and/or have a history of illegal-dumping problems; outreach should include information on Best Management Practices for spill prevention and proper waste disposal

- Printed outreach materials for the public
- Publicizing of waste-disposal options, such as used oil recycling and household hazardous waste collections

➤ **Targeted enforcement**

- An illegal-dumping ordinance (or section of IDDE ordinance)
- Surveillance of known illegal-dumping locations
- Business facility inspections
- Training of municipal employees, police officers, and other local entities to be on lookout

➤ **Program measurement**

- Tracking of incident locations
- Compilation of statistics (e.g., annual cleanup costs, facility compliance, arrests, convictions, fines, complaints)

REFERENCES: CHAPTER 6

California Coastal Commission. 2002. *Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities.* *http://www.coastal.ca.gov/la/murp.html*

Center for Watershed Protection. *Pollution Prevention Fact Sheet: Illegal Dumping Control.* *http://www.stormwatercenter.net/Pollution_Prevention_Factsheets/IllegalDumpingControl.htm*

Interview with Paul Barden and Charlie Jewell, BWSC, August 15, 2002.

Interview with Andrea Donlon, NHDES, July 29, 2002.

North Central Texas Council of Governments. 2002. *Storm Water Management in North Central Texas: Illicit Discharge Detection and Elimination.* *http://www.dfwstormwater.com/Storm_Water_BMPs/illicit.html*

San Diego Stormwater Copermittees Jurisdictional Urban Runoff Management Program. 2001. *Illicit Connection/Illicit Discharge (IC/ID) Detection and Elimination Model Program Guidance.* *http://www.projectcleanwater.org/html/model_programs.html*

USEPA. 1997. *Guidance Manual for Implementing Municipal Storm Water Management Programs – Volume 1: Planning and Administration* (Draft). Office of Wastewater Management and Office of Research and Development. *http://www.epa.gov/npdes/pubs/owm0233.pdf*

USEPA. 1999. National Pollutant Discharge Elimination System – Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges; Final Rule. *Federal Register* Vol. 64 No. 235 (December 8, 1999), pp. 68722-68851. *http://www.epa.gov/npdes/regulations/phase2.pdf*

USEPA. 2002. Storm Water Phase II Menu of BMPs - *Illicit Discharge Detection and Elimination: Illegal Dumping.* *http://cfpub.epa.gov/npdes/stormwater/menuofbmps/illi_3.cfm*

USEPA. 2002. *Model Ordinances to Protect Local Resources: Illicit Discharges.* *http://www.epa.gov/owow/nps/ordinance/discharges.htm*

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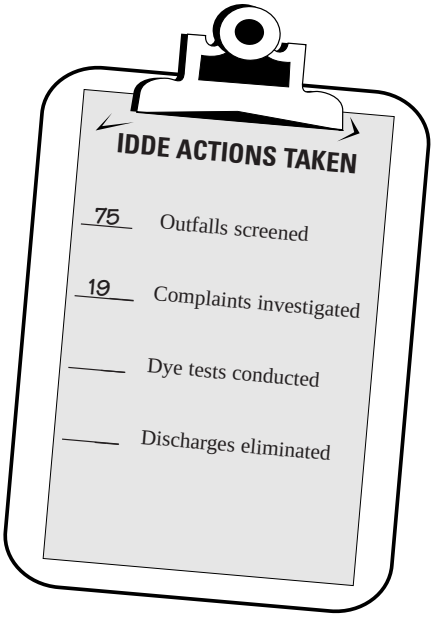
7 DEVELOPING AND IMPLEMENTING AN IDDE PLAN: EVALUATION OF THE IDDE PROGRAM

Developing and implementing a plan to detect and address illicit discharges is the third mandatory element of a Phase II IDDE program. EPA recommends that the plan include the following four components: (1) locating priority areas; (2) tracing the source of an illicit discharge; (3) removing the source of an illicit discharge; and (4) program evaluation and assessment. The fourth component, program evaluation and assessment, is the subject of this chapter.

THE IDDE PLAN

- Locating priority areas
- Tracing the source of an illicit discharge
- Removing the source of an illicit discharge
- ➤ Program evaluation and assessment

EPA recommends that the IDDE plan include procedures for program evaluation and assessment. Program evaluation is the time to step back, look at what has been done, determine what worked and what didn't, and make adjustments to planned future actions as appropriate. In this final component of your IDDE plan, you outline how you will go about evaluating your program.



EVALUATION STRATEGY

Evaluation procedures should include documentation of actions taken to locate and eliminate illicit discharges. Such documentation might include numbers of outfalls screened, complaints taken and investigated, feet of storm sewers videotaped, numbers of discharges eliminated, or number of dye or smoke tests conducted. Note that this component of the IDDE plan fits in with the overall Phase II requirements for identifying measurable goals for each Best Management Practice (BMP) and reporting on progress toward achieving those goals. (Chapter 9 discusses BMPs and measurable goals in more detail.) Annual reports are necessary during the first permit term (typically five years), and in years two and four in subsequent terms. (For more information on reporting requirements, see EPA's Fact Sheet 2.9.)

Evaluation procedures should include documentation of actions taken to locate and eliminate illicit discharges.

Determining the impact of these actions is more of a challenge, but it is an important part of the overall process because EPA allows for adjustments to the storm water management program over the life of the permit. Assessment of what worked and what didn't provides the information needed to make these adjustments to your IDDE program. EPA's Phase II regulations do not specify exactly how to evaluate your IDDE program, so check whether your permitting authority has made any particular specifications, and brainstorm from there.

Here are few suggestions for assessing the effectiveness of various IDDE strategies:

- Evaluate the number of possible illicit discharges that were detected using different detection methods. This can help you determine which detection methods are most effective.
- Evaluate the number of discharges and/or quantity of discharges eliminated using different possible enforcement and compliance measures.
- If you have access to monitoring data for receiving waters, evaluate changes in the water quality of receiving waters.
- Program evaluation might also include procedures for considering efficiency and feasibility. Questions you might want to ask include:
  - How much staff time and expense did it take to achieve a given result?
  - Were practical difficulties encountered with this approach? What were they, and how much of a problem did they present?

The strategies listed above are only suggestions. Because you are allowed a great deal of flexibility in determining what procedures you will use for program evaluation and assessment, you can decide what procedures will be most helpful in providing the information that you will need to move forward with your IDDE program.

REFERENCES: CHAPTER 7

USEPA. 1999. National Pollutant Discharge Elimination System – Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges; Final Rule. *Federal Register* Vol. 64 No. 235 (December 8, 1999), pp. 68722-68851. *http://www.epa.gov/npdes/regulations/phase2.pdf*

USEPA. 2000. EPA Storm Water Phase II Final Rule Fact Sheet 2.9: *Permitting and Reporting: The Process and Requirements.* EPA 833-F-011. January 2000. *http://cfpub.epa.gov/npdes/stormwater/swfinal.cfm*

USEPA New England. 2002. *NPDES General Permit for Storm Water Discharges from Regulated Small Municipal Separate Storm Sewer Systems (MS4s*) (Draft). September 27, 2002. *http://www.epa.gov/region01/npdes/ms4.html*

8 OUTREACH TO EMPLOYEES, BUSINESSES, AND THE GENERAL PUBLIC

The fourth mandatory element of an IDDE program calls for the MS4 operator to "inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste." As noted in the Introduction, the requirement for public education and outreach on storm water impacts is also one of the six minimum control measures in the storm water management program. Therefore, fulfilling the outreach requirement for IDDE helps the MS4 to comply with this mandatory element; IDDE outreach can be integrated into the broader storm water outreach program.

Some suggestions for conducting IDDE outreach to the different community sectors are presented below. Many examples of storm water outreach materials, including some that are intended to be modified and used by anyone, are available on the Web; some useful Web sites are listed in Chapter 10. Operators of regulated small MS4s may want to work together with other operators in their area in developing outreach materials and campaigns to share ideas and save money.

PUBLIC EMPLOYEES

While it is clear that public works employees should receive specific technical training on the requirements of the IDDE program and the techniques that will be used to carry it out, other municipal departments should also be targeted for training.

A training program for municipal employees on pollution prevention techniques is required under the "Pollution Prevention/Good Housekeeping for Municipal Operations" minimum control measure. Preventing non-storm water discharges into the storm sewer system from municipal operations can be one part of this training.

Many public employees can play an important role as partners in the detection and/or prevention of illicit discharges.

Many public employees can play an important role as partners in the detection and/or prevention of illicit discharges. For example, highway department staff who maintain catch basins can look for signs of illicit discharges. Municipal building inspectors can help ensure that illegal connections to the storm sewer system do not take place in construction and renovation projects. Police officers, public works employees, and other municipal staff whose jobs keep them outside and mobile can help spot illegal dumpers. Fire and police department personnel who respond to hazardous material spills can help keep these spills out of the storm sewer system and adjacent water bodies.

BUSINESSES

Most businesses are willing to comply with environmental requirements and take proactive steps to prevent pollution if they understand the issues and the possible solutions. Here are some steps you can take to reach out to businesses.

Most businesses are willing to comply with environmental requirements and take proactive steps to prevent pollution if they understand the issues and the possible solutions.

- Create a general brochure and presentation to inform businesses about the IDDE program. This information can be presented and/or made available at Chamber of Commerce meetings and other business forums.
- Conduct compliance assistance outreach (e.g., visits, group training, and/or printed materials) for specific business types (e.g., auto repair shops, mobile carpet cleaning, restaurants).
- Provide contractors and developers with information on preventing illegal connections (in coordination with training on construction and post-construction storm water requirements).

GENERAL PUBLIC

There are many ways in which the general public can be made aware of environmental issues and the things they can do to help mitigate or prevent problems. Here are some things you can do to inform and involve the public.

- Work with citizen groups to conduct storm-drain stenciling (e.g., "Don't Dump – Drains to River") and outfall surveys.
  - In conducting these activities, you should:
    - Educate the groups about their activity (either informally or via a video or other presentation)
    - Make sure volunteers understand constraints associated with storm-drain stenciling activities (e.g., heavy traffic use areas, historic districts)
    - Have volunteers sign liability forms, if necessary
  - You may also wish to:
    - Publicize the activities through the media
    - Give volunteers brochures to hand out to the public with who they interact
    - Repeat stenciling periodically (due to paint wear off), unless placards are used—stenciling on curbs lasts longer than on street surfaces
    - See Chapter 10 for information on storm-drain stenciling resources

If made aware of environmental issues, the general public can help mitigate or prevent problems.

- Create a program to promote, publicize, and facilitate public reporting of illicit connections or discharges (e.g., a hotline). Some considerations in running a hotline include:
  - Callers should be able to at least leave a message at any time of day
  - It may be helpful to have the hotline staffed during business hours
  - A system should be created for monitoring the hotline so that staff can follow up quickly on reports of discharges

  - The municipality may wish to offer a small reward for callers that provide information leading to the detection of an illicit discharge source

- Distribute (by mail and by making available at various locations and events) printed outreach materials. A general flyer about illicit discharges might include information on the following:
  - Background information on water pollution
  - A definition of what constitutes an illicit discharge
  - Measures to prevent illicit discharges
  - Information about the municipality's illicit discharge ordinance
- Create Public Service Announcements for radio and/or television.
- Work with the local access cable station and local newspapers to develop features on illicit discharge prevention.
- Create and publicize a household hazardous waste disposal/recycling program.
- Provide classroom speakers and/or printed information for schools.

REFERENCES: CHAPTER 8

Chesterfield County (VA). Undated. *Household Guide to Chesterfield County's Illicit Discharge Ordinance.* *http://www.chesterfield.gov/CommunityDevelopment/Engineering/HouseholdFactSheet.pdf*

North Central Texas Council of Governments. 2002. *Storm Water Management in North Central Texas: Illicit Discharge Detection and Elimination.* *http://www.dfwstormwater.com/Storm_Water_BMPs/illicit.html*

USEPA. 1999. National Pollutant Discharge Elimination System – Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges; Final Rule. *Federal Register* Vol. 64 No. 235 (December 8, 1999), pp. 68722-68851. *http://www.epa.gov/npdes/regulations/phase2.pdf*

USEPA. 2000. *Storm Water Phase II Compliance Assistance Guide.* EPA 833-R-00-002. Office of Water. *http://www.epa.gov/npdes/pubs/comguide.pdf*

USEPA. 2000. EPA Storm Water Phase II Final Rule Fact Sheet 2.3: *Public Education and Outreach Minimum Control Measure.* EPA 833-F-00-005. January 2000. *http://cfpub.epa.gov/npdes/stormwater/swfinal.cfm*

USEPA. 2000. EPA Storm Water Phase II Final Rule Fact Sheet 2.8: *Pollution Prevention/Good Housekeeping Minimum Control Measure*. EPA 833-F-00-010. January 2000. *http://cfpub.epa.gov/npdes/stormwater/swfinal.cfm*

USEPA. 2002. Storm Water Phase II Menu of BMPs – *Public Education and Outreach on Storm Water Impacts.* *http://cfpub.epa.gov/npdes/stormwater/menuofbmps/pub_ed.cfm*

USEPA. 2002. Storm Water Phase II Menu of BMPs – *Public Education and Outreach on Storm Water Impacts: Proper Disposal of Household Hazardous Wastes.* *http://cfpub.epa.gov/npdes/stormwater/menuofbmps/edu_5.cfm*

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9 BMPS AND MEASURABLE GOALS FOR IDDE

As mentioned in the Introduction, operators of regulated small MS4s generally must submit applications for Phase II storm water general permits by March 10, 2003. As part of their application, they must identify best management practices (BMPs) that they will use to comply with each of the six minimum control measures, and the measurable goals that they will use to demonstrate BMP implementation. Within the first permit term, the operators have to fully implement their storm water management programs.

GETTING STARTED

EPA allows MS4 operators a great deal of flexibility in determining what BMPs are most appropriate for their storm water programs. The agency has developed the following materials to assist operators in identifying appropriate BMPs:

- A *National Menu of Best Management Practices for Storm Water Phase II*, which includes a toolkit of example BMPs for each of the Phase II minimum control measures (available on the Web)
- *Measurable Goals Guidance for Small MS4s*
- A *Storm Water Phase II Compliance Guide*, which offers examples of BMPs and measurable goals for each of the six minimum measures

EPA allows MS4 operators a great deal of flexibility in determining what BMPs are most appropriate for their storm water programs.

Others, including states, regional agencies, trade associations, and non-profit organizations have also developed BMP information.

A sample list of IDDE BMPs and measurable goals is presented below. This list draws from BMP and measurable goal recommendations that have been offered by EPA and others. The list has not been officially endorsed by EPA or state agencies; it is intended to serve as a starting point to help municipalities think about the BMPs and measurable goals that are appropriate to their IDDE programs. BMPs are listed in bold, followed by the measurable goals for each BMP. (The BMPs are organized according to the four elements required in an IDDE program.)

STORM SEWER MAP

- **Create a storm sewer map**
  - Map a certain percentage of outfalls (adding up to 100% by the end of the permit term) or of the area of the town

ORDINANCE

➤ Pass an illicit discharge ordinance

- Draft an IDDE ordinance (or storm water ordinance with IDDE component) or an amendment to existing bylaws
- Pass an ordinance or amendment

IDDE PLAN

➤ Prepare an IDDE plan

- Complete a final plan and obtain the signature of the person overseeing the plan

➤ Conduct dry weather field screening of outfalls

- Screen a certain percentage of outfalls (adding up to 100% by the end of the permit term)

➤ Trace the source of potential illicit discharges

- Trace the source of a certain percentage of continuous flows (adding up to 100% by the end of the permit term)
- Trace the source of a certain percentage of intermittent flows and illegal dumping reports (100% may never be an achievable goal in this case)

➤ Eliminate illicit discharges

- Eliminate a certain number of discharges and/or a certain volume of flow, or a certain percentage of discharges whose source is identified (adding up to 100% by the end of the permit term)

OUTREACH

➤ Implement and publicize a household hazardous waste collection program

- Hold a periodic (e.g., annual) hazardous waste collection day
- Mail flyers about the hazardous waste collection program to all town residences

➤ Create and distribute an informational flyer for homeowners about IDDE

- Mail the flyer to town residences
- Print the flyer as a doorknob hanger and have water-meter readers distribute it

➤ Create and distribute an informational flyer for businesses about IDDE

- Mail the flyer to targeted businesses

➤ Work with community groups to stencil storm drains

- Stencil a certain percentage of drains

➤ **Create and publicize an illicit discharge reporting hotline**

- Put the hotline in place
- Include an announcement of the hotline in sewer bills
- Follow up on all hotline reports within 48 hours

REFERENCES: CHAPTER 9

North Central Texas Council of Governments. 2002. *Storm Water Management in North Central Texas: Illicit Discharge Detection and Elimination.* *http://www.dfwstormwater.com/Storm_Water_BMPs/illicit.html*

USEPA. 1999. National Pollutant Discharge Elimination System – Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges; Final Rule. *Federal Register* Vol. 64 No. 235 (December 8, 1999), pp. 68722-68851. *http://www.epa.gov/npdes/regulations/phase2.pdf*

USEPA. 2000. *Storm Water Phase II Compliance Assistance Guide.* EPA 833-R-00-002. Office of Water. *http://www.epa.gov/npdes/pubs/comguide.pdf*

USEPA. 2000. EPA Storm Water Phase II Final Rule Fact Sheet 2.9: *Permitting and Reporting: The Process and Requirements.* EPA 833-F-011. January 2000. *http://cfpub.epa.gov/npdes/stormwater/swfinal.cfm*

USEPA. 2002. *National Menu of Best Management Practices for Storm Water Phase II.* *http://cfpub.epa.gov/npdes/stormwater/menuofbmps/menu.cfm*

USEPA. 2002. *Measurable Goals Guidance for Phase II Small MS4s.* *http://cfpub.epa.gov/npdes/stormwater/measurablegoals/index.cfm*

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10 RESOURCES

WEB SITES AND PUBLICATIONS

Key Information Available on EPA's Storm Water Web Site

Entry Point and General Information
http://www.epa.gov/npdes
→ click on "Storm Water"
→ click on "Municipal Separate Storm Sewer Systems" or "Phase II"

Storm Water Phase II Final Rule
http://www.epa.gov/npdes/regulations/phase2.pdf
IDDE section of the Phase II Final Rule: see section II(H)(3)(b)(iii), pp. 68756-68758.

EPA's Fact Sheet Series
http://cfpub.epa.gov/npdes/stormwater/swfinal.cfm

Overview
1.0 *Storm Water Phase II Final Rule: An Overview*

Small MS4 Program
2.0 *Small MS4 Storm Water Program Overview*
2.1 *Who's Covered? Designation and Waivers of Small Regulated MS4s*
2.2 *Urbanized Areas: Definition and Description*

Minimum Control Measures
2.3 *Public Education and Outreach*
2.4 *Public Participation/Involvement*
2.5 *Illicit Discharge Detection and Elimination*
2.6 *Construction Site Runoff Control*
2.7 *Post-Construction Runoff Control*
2.8 *Pollution Prevention/Good Housekeeping*
2.9 *Permitting and Reporting: The Process and Requirements*
2.10 *Federal and State-Operated MS4s: Program Implementation*

Construction Program
3.0 *Construction Program Overview*
3.1 *Construction Rainfall Erosivity Waiver*

Industrial "No Exposure"
4.0 *Conditional No Exposure Exclusion for Industrial Activity*

Documents
Storm Water Phase II Compliance Assistance Guide
http://www.epa.gov/npdes/pubs/comguide.pdf

National Menu of BMPs for Storm Water Phase II
http://cfpub.epa.gov/npdes/stormwater/menuofbmps/menu.cfm

Measurable Goals Guidance for Phase II Small MS4s
http://cfpub.epa.gov/npdes/stormwater/measurablegoals/index.cfm

Storm Water Web Sites

The Rouge River National Wet Weather Demonstration Project
http://www.rougeriver.com
(See specific information on IDDE at http://www.rougeriver.com/techtop/illicit/overview.html .)

Center for Watershed Protection's Storm Water Manager's Resource Center
http://www.stormwatercenter.net

The University of Tennessee's Municipal Technical Advisory Service NPDES Phase II Storm Water Management BMP Toolkit
http://www.mtas.utk.edu/bmptoolkit.htm
The Illicit Discharge section provides a number of useful web links and downloadable PDFs.

Organization Web Sites

Water Environment Federation
http://www.wef.org

American Public Works Association
http://www.apwa.net

Local Government Environmental Assistance Network
http://www.lgean.org

Center for Watershed Protection
http://www.cwp.org

The Boston Water and Sewer Commission
(the Web site includes the BWSC's regulations, outreach information, and other useful items)
http://www.bwsc.org

Storm Water Manuals

California Coastal Commission. 2002. *Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities.* *http://www.coastal.ca.gov/la/murp.html*

Colorado Department of Public Health and Environment, Water Quality Control Division. October 2001. *Colorado's Phase II Municipal Guidance: A guide to application requirements and program development for coverage under Colorado's Phase II municipal stormwater discharge permit.*
http://www.cdphe.state.co.us/wq/PermitsUnit/wqcdpmt.html

IDDE Manuals

San Diego Stormwater Copermittees Jurisdictional Urban Runoff Management Program. 2001. *Illicit Connection/Illicit Discharge (IC/ID) Detection and Elimination Model Program Guidance.*
http://www.projectcleanwater.org/html/model_programs.html

Pitt, R., M. Lalor, R. Field, D.D. Adrian, and D. Barbe. 1993. *Investigation of Inappropriate Pollutant Entries into Storm Drainage Systems: A User's Guide.* USEPA Office of Research and Development. EPA/600/R-92/238. (Available on the Web via EPA's National Environmental Publications Information System, *http://www.epa.gov/clariton*.)

North Central Texas Council of Governments. 2002. *Storm Water Management in North Central Texas: Illicit Discharge Detection and Elimination.*
http://www.dfwstormwater.com/Storm_Water_BMPs/illicit.html

Information on Specific Topics

Ordinances

USEPA's Model Ordinances to Protect Local Resources: Illicit Discharges.
http://www.epa.gov/owow/nps/ordinance/discharges.htm
(The same information can be found at *http://www.stormwatercenter.net.*)

Boston Water and Sewer Commission's *Regulations Governing the Use of Sanitary and Combined Sewers and Storm Drains. http://www.bwsc.org*

The Massachusetts Citizen Planner Training Collaborative offers "Tips on Drafting Bylaws" for Massachusetts municipalities: *http://www.umass.edu/masscptc/Tips_on_Drafting.html*

Optical Brighteners

Sargent, D. and W. Castonguay. 1998. *An Optical Brightener Handbook.* Available at:
http://www.mvpc.org/services_sec/mass_bays/optical_handbook.htm and
http://www.naturecompass.org/8tb/sampling/

Dye Testing

Dye supplier used by a reviewer of this manual: NORLAB, Inc., Amherst, OH. 1-800-247-9422;
http://www.norlabdyes.com

Smoke Testing

Smoke testing equipment supplier used by a reviewer of this manual: Hurco Technologies, Inc., 1-800-888-1436;
http://www.hurcotech.com

Outfall/Manhole Surveys

Massachusetts Division of Fisheries, Wildlife, and Environmental Law Enforcement. Storm Drain Mapping Project Field Manual (Draft). January 2002. *http://www.state.ma.us/dfwele/River/pdf/rivstormdrainmanual.pdf*

Jewell, C. 2001. A Systematic Methodology for Identification and Remediation of Illegal Connections. Presented at the Water Environment Federation Specialty Conference *2001 A Collection Systems Odyssey: Combining Wet Weather and O&M Solutions.* (Available for purchase via the WEF Web site, *http://www.wef.org*.)

Outreach

- **Household Hazardous Waste Collection**
  Household hazardous waste collection days in New Hampshire can be viewed online at *http://www.des.state.nh.us/hhw/hhwevent.htm.*

  Environmental Depot, Burlington VT. *http://www.cswd.net/facilities/hazardous_waste.shtml*

- **Storm-Drain Stenciling**
  Earthwater Stencils, an organization that does storm drain stenciling: *http://www.earthwater-stencils.com/*

  The Ocean Conservancy's Storm Drain Sentries program has a goal of having volunteers stencil one million storm drains with educational pollution prevention messages. The Ocean Conservancy supplies volunteers with a fact sheet about nonpoint source pollution, tips on conducting a stenciling project, and stencils for volunteer organizations to use. In return, stenciling project leaders are asked to submit data about the number of storm drains they stenciled, the types of pollutants found near the storm drains, and potential pollutant sources. This information is added to a growing database maintained by the Ocean Conservancy. Contact the Ocean Conservancy's Office of Pollution Prevention and Monitoring at 757-496-0920 or *stormdrain@oceanconservancyva.org.*
  http://www.oceanconservancy.org/dynamic/getInvolved/events/sentries/sentries.htm

  Resources for storm drain stenciling programs in New Hampshire:

  - Coordinated by Julia Peterson of UNH-Cooperative Extension in the coastal watershed *http://ceinfo.unh.edu/Common/Documents/gsc5401.htm*. Also described at *http://www.seagrant.unh.edu/extension.htm*
  - Coordinated by the NH Coastal Program (part of the Office of State Planning) *http://www.state.nh.us/coastal/CoastalEducation/marinedebris.htm*
  - Description of Manchester's storm drain stenciling on EPA's Web site describing the SEPP *http://www.epa.gov/region1/eco/csoman/sepp.html* (See #1 and #6)

- **Outreach Materials**
  EPA is preparing educational materials on different water topics each month as part of the year-long celebration of the 30th anniversary of the Clean Water Act. April 2003 will be Storm Water Month. The public education kit is expected to include:

  - General Storm Water Awareness brochure
  - Homeowner Guide (car washing, vehicle fluids changing, lawn & garden care, pet waste, septic system management)
  - Small Construction Guide poster
  - Press release
  - Public service announcement for the radio
  - Stickers
  - Door hanger with illicit discharge message
  - PowerPoint presentation

  These items will be available for download or order on EPA's Year of Clean Water Web site, *http://www.epa.gov/water/yearofcleanwater/month.html*. Before the materials are available on the Web site, you can contact EPA's contractor, TetraTech, to be on the mailing list for the materials.
  Email Kathryn Phillips at *tetratech1@earthlink.net* or *kathryn.phillips@tetratech-ffx.com.*

CONTACTS

USEPA-New England is the NPDES permitting authority for Massachusetts and New Hampshire. The other five NEIWPCC member states serve as NPDES permitting authorities for the storm water program. Contact information below was taken from the EPA-New England Web site *http://www.epa.gov/region01/npdes/stormwater/administration.html*, the EPA NPDES Web site *http://www.epa.gov/npdes*, and the New York State Department of Environmental Conservation Web site *http://www.dec.state.ny.us*.

U.S. EPA

EPA Region 1, New England
Regional Storm Water Coordinator
Thelma Murphy 617-918-1615; *murphy.thelma@epa.gov*

Regional Storm Water Assistance Team
Ann Herrick 617-918-1560; *herrick.ann@epa.gov*
Shelly Puleo 617-918-1545; *puleo.shelly@epa.gov*
Olga Vergara 617-918-1519, *vergara.olga@epa.gov*

Massachusetts Assistance
Dave Gray 617-918-1577; *gray.davidj@epa.gov*

EPA Region 2
Regional Storm Water Coordinator
Karen O'Brien 212-637-3717; *obrien.karen@epa.gov*

STATES

Connecticut
Connecticut Department of Environmental Protection
Bureau of Water Management
Permitting, Enforcement, and Remediation Division
http://www.dep.state.ct.us

Contact: Chris Stone 860-424-3850; *chris.stone@po.state.ct.us*

Maine
Maine Department of Environmental Protection
Bureau of Land and Water Quality
http://www.state.me.us/dep/blwq/stormwtr/index.htm

Contact: David Ladd 207-287-5404; *david.ladd@state.me.us*

Massachusetts
Massachusetts Department of Environmental Protection
Division of Watershed Management
http://www.state.ma.us/dep/brp/stormwtr/stormhom.htm

Contacts: Ginny Scarlet 508-767-2797; *ginny.scarlet@state.ma.us*
Linda Domizio 508-849-4005; *linda.domizio@state.ma.us*

New Hampshire
New Hampshire Department of Environmental Services
Storm Water Fact Sheet: *http://www.des.state.nh.us/factsheets/wwt/web-8.htm*
Storm Water Web Site: *http://www.des.state.nh.us/StormWater*
Contacts: Jeff Andrews 603-271-2984
Public Information and Permitting Office 603-271-2975

New York
New York State Department of Environmental Conservation
Division of Water
http://www.dec.state.ny.us/website/dow/mainpage.htm
Contact: Mike Rafferty 518-402-8094; *mrraffer@gw.dec.state.ny.us*

Rhode Island
Rhode Island Department of Environmental Management
Water Resources – Permitting
http://www.state.ri.us/dem/programs/benviron/water/permits/ripdes/stwater/index.htm
Contacts: Margarita Chatterton 401-222-4700 x7605; *mchatter@dem.state.ri.us*
Greg Goblick 401-222-4700 x7265; *ggoblick@dem.state.ri.us*

Vermont
Vermont Department of Environmental Conservation
Water Quality Division
http://www.anr.state.vt.us/dec/waterq/stormwater.htm
Contact: Peter LaFlamme 802-241-3765; *petel@dec.anr.state.vt.us*

APPENDIX A

Model Illicit Discharge and Connection Stormwater Ordinance[1]

ORDINANCE NO. _____

SECTION 1. PURPOSE/INTENT.

The purpose of this ordinance is to provide for the health, safety, and general welfare of the citizens of (_____) through the regulation of non-storm water discharges to the storm drainage system to the maximum extent practicable as required by federal and state law. This ordinance establishes methods for controlling the introduction of pollutants into the municipal separate storm sewer system (MS4) in order to comply with requirements of the National Pollutant Discharge Elimination System (NPDES) permit process. The objectives of this ordinance are:

1)To regulate the contribution of pollutants to the municipal separate storm sewer system (MS4) by stormwater discharges by any user

(2) To prohibit Illicit Connections and Discharges to the municipal separate storm sewer system

(3) To establish legal authority to carry out all inspection, surveillance and monitoring procedures necessary to ensure compliance with this ordinance

SECTION 2. DEFINITIONS.

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

Authorized Enforcement Agency: employees or designees of the director of the municipal agency designated to enforce this ordinance.

Best Management Practices (BMPs): schedules of activities, prohibitions of practices, general good house keeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to stormwater, receiving waters, or stormwater conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

Clean Water Act. The federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.), and any subsequent amendments thereto.

Construction Activity. Activities subject to NPDES Construction Permits. Currently these include construction projects resulting in land disturbance of 5 acres or more. Beginning in March 2003, NPDES Storm Water Phase II permits will be required for construction projects resulting in land disturbance of 1 acre or more. Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.

Hazardous Materials. Any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Illegal Discharge. Any direct or indirect non-storm water discharge to the storm drain system, except as exempted in Section X of this ordinance.

Illicit Connections. An illicit connection is defined as either of the following:

[1] USEPA. 2002. *Model Ordinances to Protect Local Resources: Illicit Discharges.* http://www.epa.gov/owow/nps/ordinance/discharges.htm

Any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the storm drain system including but not limited to any conveyances which allow any non-storm water discharge including sewage, process wastewater, and wash water to enter the storm drain system and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by an authorized enforcement agency or,
Any drain or conveyance connected from a commercial or industrial land use to the storm drain system which has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.
Industrial Activity. Activities subject to NPDES Industrial Permits as defined in 40 CFR, Section 122.26 (b)(14).
National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Permit. means a permit issued by EPA (or by a State under authority delegated pursuant to 33 USC § 1342(b)) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.
Non-Storm Water Discharge. Any discharge to the storm drain system that is not composed entirely of storm water.
Person. means any individual, association, organization, partnership, firm, corporation or other entity recognized by law and acting as either the owner or as the owner's agent.
Pollutant. Anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordinances, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.
Premises. Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.
Storm Drainage System. Publicly-owned facilities by which storm water is collected and/or conveyed, including but not limited to any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage channels, reservoirs, and other drainage structures.
Storm Water. Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.
Stormwater Pollution Prevention Plan. A document which describes the Best Management Practices and activities to be implemented by a person or business to identify sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to Stormwater, Stormwater Conveyance Systems, and/or Receiving Waters to the Maximum Extent Practicable.
Wastewater means any water or other liquid, other than uncontaminated storm water, discharged from a facility.

SECTION 3. APPLICABILITY.
This ordinance shall apply to all water entering the storm drain system generated on any developed and undeveloped lands unless explicitly exempted by an authorized enforcement agency.

SECTION 4. RESPONSIBILITY FOR ADMINISTRATION.
The_____ [authorized enforcement agency] shall administer, implement, and enforce the provisions of this ordinance. Any powers granted or duties imposed upon the authorized enforcement agency may be delegated in writing by the Director of the authorized enforcement agency to persons or entities acting in the beneficial interest of or in the employ of the agency.

SECTION 5. SEVERABILITY.
The provisions of this ordinance are hereby declared to be severable. If any provision, clause, sentence, or paragraph of this Ordinance or the application thereof to any person, establishment, or circumstances shall be held invalid, such invalidity shall not affect the other provisions or application of this Ordinance.

SECTION 6. ULTIMATE RESPONSIBILITY.

The standards set forth herein and promulgated pursuant to this ordinance are minimum standards; therefore this ordinance does not intend nor imply that compliance by any person will ensure that there will be no contamination, pollution, nor unauthorized discharge of pollutants.

SECTION 7. DISCHARGE PROHIBITIONS.

Prohibition of Illegal Discharges.

No person shall discharge or cause to be discharged into the municipal storm drain system or watercourses any materials, including but not limited to pollutants or waters containing any pollutants that cause or contribute to a violation of applicable water quality standards, other than storm water.

The commencement, conduct or continuance of any illegal discharge to the storm drain system is prohibited except as described as follows:

(1) The following discharges are exempt from discharge prohibitions established by this ordinance: water line flushing or other potable water sources, landscape irrigation or lawn watering, diverted stream flows, rising ground water, ground water infiltration to storm drains, uncontaminated pumped ground water, foundation or footing drains (not including active groundwater dewatering systems), crawl space pumps, air conditioning condensation, springs, non-commercial washing of vehicles, natural riparian habitat or wetland flows, swimming pools (if dechlorinated - typically less than one PPM chlorine), fire fighting activities, and any other water source not containing Pollutants.

(2) Discharges specified in writing by the authorized enforcement agency as being necessary to protect public health and safety.

(3) Dye testing is an allowable discharge, but requires a verbal notification to the authorized enforcement agency prior to the time of the test.

(4) The prohibition shall not apply to any non-storm water discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Federal Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drain system.

Prohibition of Illicit Connections.

(1) The construction, use, maintenance or continued existence of illicit connections to the storm drain system is prohibited.

(2) This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

(3) A person is considered to be in violation of this ordinance if the person connects a line conveying sewage to the MS4, or allows such a connection to continue.

SECTION 8. SUSPENSION OF MS4 ACCESS.

Suspension due to Illicit Discharges in Emergency Situations

The _____ [authorized enforcement agency] may, without prior notice, suspend MS4 discharge access to a person when such suspension is necessary to stop an actual or threatened discharge which presents or may present imminent and substantial danger to the environment, or to the health or welfare of persons, or to the MS4 or Waters of the United States. If the violator fails to comply with a suspension order issued in an emergency, the authorized enforcement agency may take such steps as deemed necessary to prevent or minimize damage to the MS4 or Waters of the United States, or to minimize danger to persons.

Suspension due to the Detection of Illicit Discharge

Any person discharging to the MS4 in violation of this ordinance may have their MS4 access terminated if such

termination would abate or reduce an illicit discharge. The authorized enforcement agency will notify a violator of the proposed termination of its MS4 access. The violator may petition the authorized enforcement agency for a reconsideration and hearing.

A person commits an offense if the person reinstates MS4 access to premises terminated pursuant to this Section, without the prior approval of the authorized enforcement agency.

SECTION 9. INDUSTRIAL OR CONSTRUCTION ACTIVITY DISCHARGES.

Any person subject to an industrial or construction activity NPDES storm water discharge permit shall comply with all provisions of such permit. Proof of compliance with said permit may be required in a form acceptable to the _____ [authorized enforcement agency] prior to the allowing of discharges to the MS4.

SECTION 10. MONITORING OF DISCHARGES.

1. Applicability.
   This section applies to all facilities that have storm water discharges associated with industrial activity, including construction activity.

2. Access to Facilities.

(1) The_____ [authorized enforcement agency] shall be permitted to enter and inspect facilities subject to regulation under this ordinance as often as may be necessary to determine compliance with this ordinance. If a discharger has security measures in force which require proper identification and clearance before entry into its premises, the discharger shall make the necessary arrangements to allow access to representatives of the authorized enforcement agency.

(3) Facility operators shall allow the _____[authorized enforcement agency] ready access to all parts of the premises for the purposes of inspection, sampling, examination and copying of records that must be kept under the conditions of an NPDES permit to discharge storm water, and the performance of any additional duties as defined by state and federal law.

(3) The _____ [authorized enforcement agency] shall have the right to set up on any permitted facility such devices as are necessary in the opinion of the authorized enforcement agency to conduct monitoring and/or sampling of the facility's storm water discharge.

(4) The _____ [authorized enforcement agency] has the right to require the discharger to install monitoring equipment as necessary. The facility's sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the discharger at its own expense. All devices used to measure stormwater flow and quality shall be calibrated to ensure their accuracy.

(5) Any temporary or permanent obstruction to safe and easy access to the facility to be inspected and/or sampled shall be promptly removed by the operator at the written or oral request of the [authorized enforcement agency] and shall not be replaced. The costs of clearing such access shall be borne by the operator.

(6) Unreasonable delays in allowing the _____ [authorized enforcement agency] access to a permitted facility is a violation of a storm water discharge permit and of this ordinance. A person who is the operator of a facility with a NPDES permit to discharge storm water associated with industrial activity commits an offense if the person denies the authorized enforcement agency reasonable access to the permitted facility for the purpose of conducting any activity authorized or required by this ordinance.

(7) If the _____ [authorized enforcement agency] has been refused access to any part of the premises from which stormwater is discharged, and he/she is able to demonstrate probable cause to believe that there may be a violation of this ordinance, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program designed to verify compliance with this ordinance or any order issued hereunder, or to protect the overall public health, safety, and welfare of the community, then the authorized enforcement agency may seek issuance of a search warrant from any court of competent jurisdiction.

SECTION 11. REQUIREMENT TO PREVENT, CONTROL, AND REDUCE STORM WATER POLLUTANTS BY THE USE OF BEST MANAGEMENT PRACTICES.

[Authorized enforcement agency] will adopt requirements identifying Best Management Practices for any activity, operation, or facility which may cause or contribute to pollution or contamination of storm water, the storm drain system, or waters of the U.S. The owner or operator of a commercial or industrial establishment shall provide, at their own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the municipal storm drain system or watercourses through the use of these structural and non-structural BMPs. Further, any person responsible for a property or premise, which is, or may be, the source of an illicit discharge, may be required to implement, at said person's expense, additional structural and non-structural BMPs to prevent the further discharge of pollutants to the municipal separate storm sewer system. Compliance with all terms and conditions of a valid NPDES permit authorizing the discharge of storm water associated with industrial activity, to the extent practicable, shall be deemed compliance with the provisions of this section. These BMPs shall be part of a stormwater pollution prevention plan (SWPP) as necessary for compliance with requirements of the NPDES permit.

SECTION 12. WATERCOURSE PROTECTION.

Every person owning property through which a watercourse passes, or such person's lessee, shall keep and maintain that part of the watercourse within the property free of trash, debris, excessive vegetation, and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, the owner or lessee shall maintain existing privately owned structures within or adjacent to a watercourse, so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse.

SECTION 13. NOTIFICATION OF SPILLS.

Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into storm water, the storm drain system, or water of the U.S. said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of such a release of hazardous materials said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the authorized enforcement agency in person or by phone or facsimile no later than the next business day. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to the _____ [authorized enforcement agency] within three business days of the phone notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

SECTION 14. ENFORCEMENT.

1. Notice of Violation.
   Whenever the _____ [authorized enforcement agency] finds that a

person has violated a prohibition or failed to meet a requirement of this Ordinance, the authorized enforcement agency may order compliance by written notice of violation to the responsible person. Such notice may require without limitation:
(a) The performance of monitoring, analyses, and reporting;
(b) The elimination of illicit connections or discharges;
(c) That violating discharges, practices, or operations shall cease and desist;
(d) The abatement or remediation of storm water pollution or contamination hazards and the restoration of any affected property; and
(e) Payment of a fine to cover administrative and remediation costs; and
(f) The implementation of source control or treatment BMPs.
If abatement of a violation and/or restoration of affected property is required, the notice shall set forth a deadline within which such remediation or restoration must be completed. Said notice shall further advise that, should the violator fail to remediate or restore within the established deadline, the work will be done by a designated governmental agency or a contractor and the expense thereof shall be charged to the violator.

SECTION 15. APPEAL OF NOTICE OF VIOLATION.
Any person receiving a Notice of Violation may appeal the determination of the authorized enforcement agency. The notice of appeal must be received within _ days from the date of the Notice of Violation. Hearing on the appeal before the appropriate authority or his/her designee shall take place within 15 days from the date of receipt of the notice of appeal. The decision of the municipal authority or their designee shall be final.

SECTION 16. ENFORCEMENT MEASURES AFTER APPEAL.
If the violation has not been corrected pursuant to the requirements set forth in the Notice of Violation, or , in the event of an appeal, within __ days of the decision of the municipal authority upholding the decision of the authorized enforcement agency, then representatives of the authorized enforcement agency shall enter upon the subject private property and are authorized to take any and all measures necessary to abate the violation and/or restore the property. It shall be unlawful for any person, owner, agent or person in possession of any premises to refuse to allow the government agency or designated contractor to enter upon the premises for the purposes set forth above.

SECTION 17. COST OF ABATEMENT OF THE VIOLATION.
Within __ days after abatement of the violation, the owner of the property will be notified of the cost of abatement, including administrative costs. The property owner may file a written protest objecting to the amount of the assessment within __ days. If the amount due is not paid within a timely manner as determined by the decision of the municipal authority or by the expiration of the time in which to file an appeal, the charges shall become a special assessment against the property and shall constitute a lien on the property for the amount of the assessment.
Any person violating any of the provisions of this article shall become liable to the city by reason of such violation. The liability shall be paid in not more than 12 equal payments. Interest at the rate of __ percent per annum shall be assessed on the balance beginning on the _st day following discovery of the violation.

SECTION 18. INJUNCTIVE RELIEF.
It shall be unlawful for any person to violate any provision or fail to comply with any of the requirements of this Ordinance. If a person has violated or continues to violate the provisions of this ordinance, the authorized enforcement agency may petition for a preliminary or permanent injunction restraining the person from activities which would create further violations or compelling the person to perform abatement or remediation of the violation.

SECTION 19. COMPENSATORY ACTION.
In lieu of enforcement proceedings, penalties, and remedies authorized by this Ordinance, the authorized enforcement agency may impose upon a violator alternative compensatory actions, such as storm drain stenciling, attendance at compliance workshops, creek cleanup, etc.

SECTION 20. VIOLATIONS DEEMED A PUBLIC NUISANCE.

In addition to the enforcement processes and penalties provided, any condition caused or permitted to exist in violation of any of the provisions of this Ordinance is a threat to public health, safety, and welfare, and is declared and deemed a nuisance, and may be summarily abated or restored at the violator's expense, and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be taken.

SECTION 21. CRIMINAL PROSECUTION.

Any person that has violated or continues to violate this ordinance shall be liable to criminal prosecution to the fullest extent of the law, and shall be subject to a criminal penalty of _____ dollars per violation per day and/or imprisonment for a period of time not to exceed ____ days.

The authorized enforcement agency may recover all attorney's fees court costs and other expenses associated with enforcement of this ordinance, including sampling and monitoring expenses.

SECTION 22. REMEDIES NOT EXCLUSIVE.

The remedies listed in this ordinance are not exclusive of any other remedies available under any applicable federal, state or local law and it is within the discretion of the authorized enforcement agency to seek cumulative remedies.

SECTION 23. ADOPTION OF ORDINANCE.

This ordinance shall be in full force and effect __ days after its final passage and adoption. All prior ordinances and parts of ordinances in conflict with this ordinance are hereby repealed.

PASSED AND ADOPTED this ____ day of _____, 19__, by the following vote:

APPENDIX G

IDDE Employee Training Record

Illicit Discharge Detection and Elimination (IDDE)

Employee Training Record

Rockland, Massachusetts

Date of Training: July 18th 2024

Duration of Training: 40 mins.

Name	Title	Signature
Megan Fountaine	Clerk Laborer (stormwater)	Megan Fountaine
D. Tanis	Supt.	

ENVIRONMENTAL PARTNERS

An Apex Company

ENVIRONMENTAL PARTNERS

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