

Stormwater Management Program (SWMP)

City of Rochester, NH



209 Chestnut Hill Road, Rochester, NH 03867-5142

EPA NPDES Permit Number NHR041028

June 30, 2019

Revision 1 - June 30, 2020

Revision 2 – June 30, 2021

Revision 3 – June 30, 2022

Revision 4 – June 30, 2023

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Attachments

- 1- Notice of Intent (NOI)
- 2- Authorization to Discharge
- 3- Illicit Discharge Detection and Elimination (IDDE) Plan
- 4- Draft Operations & Maintenance (O & M) Program
- 5- Stormwater Pollution Prevention Plan (SWPPP)
- 6- Street Design and Parking Lot Guidelines Report
- 7- Green Infrastructure Report
- 8- Nitrogen Source Identification Report (NSIR)
- 9- Planned and Potential Best Management Practices (BMPs)

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: Blaine Cox, City Manager

Signature:  B4F9B7BC7D0C4EB...

Date: 6/29/2023

Revision History:

No.	Description	Date	Printed Name	Title	Signature
0	Year 1	6/2019	Blaine Cox	City Manager	See above
1	Year 2 ¹ Updates	6/2020	Blaine Cox	City Manager	See above
2	Year 3 Updates	6/2021	Blaine Cox	City Manager	See above
3	Year 4 Updates	6/2022	Blaine Cox	City Manager	See above
4	Year 5 Updates	6/2023	Blaine Cox	City Manager	See above

¹ Year 2 Requirements presented in this Stormwater Management Plan were updated based on the proposed modifications to the 2017 New Hampshire Small MS4 General Permit. The proposed modifications are available in “New Hampshire Exhibit A: Proposed Permit Modifications, December 9, 2019” document: <https://www.regulations.gov/document?D=EPA-HQ-OGC-2019-0685-0003>.

BACKGROUND

Stormwater Regulation

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

Permit Program Background

On May 1, 2003, EPA Region 1 issued its Final General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (2003 small MS4 permit) consistent with the Phase II rule. The 2003 small MS4 permit covered "traditional" (i.e., cities and towns) and "non-traditional" (i.e., Federal and state agencies) MS4 Operators located in the states of Massachusetts and New Hampshire. This permit expired on May 1, 2008 but remained in effect until operators were authorized under the 2017 General Permit for Stormwater Discharges from Small MS4 (MS4 Permit), which became effective on July 1, 2018.

Stormwater Management Program (SWMP)

The SWMP describes and details the activities and measures that will be implemented to meet the terms and conditions of the permit. The SWMP describes the permittee's plans and activities as per the SWMP revision date. The document should be updated and/or modified during the permit term as the permittee's activities are modified, changed, or updated to meet permit conditions during the permit term. The main elements of the stormwater management program are (1) a public education program in order to affect public behavior causing stormwater pollution, (2) an opportunity for the public to participate and provide comments on the stormwater program (3) a program to effectively find and eliminate illicit discharges within the MS4 (4) a program to effectively control construction site stormwater discharges to the MS4 (5) a program to ensure that stormwater from development projects entering the MS4 is adequately controlled by the construction of stormwater controls, and (6) a good housekeeping program to ensure that stormwater pollution sources on municipal properties and from municipal operations are minimized.

The SWMP is required to be updated on an annual basis (by June 30th) to reflect progress made during the permit year. The SWMP is posted to the City's website to allow the public an opportunity to provide input and comment on the SWMP.

Major Permit Milestones

Below is a summary of some of the major permit milestones that need to be achieved as part of implementation of the SWMP and MS4 Permit. This summary does not include all of the permit requirements.

- Update the SWMP on an annual basis by June 30th to reflect progress made during the permit year
- Deliver at least two (2) public education and outreach messages to each of four (4) targeted audiences (residents; businesses, institutions, and commercial facilities; developers, engineers, and construction contractors; and industrial facilities) during the 5-year permit term
- Provide opportunities to engage the public to participate in the review and implementation of the City's SWMP
- Update an annual inventory of Sanitary Sewer Overflows (SSOs) that have discharges to the MS4 within the previous 5 years
- Update the storm drain network system map on an annual basis
- Inspect all outfalls/interconnections for the presence of dry weather flow including follow-up inspections and dry weather flow sample collection as applicable by permit year 3
- Investigate catchments associated with Problem Outfalls (begin by permit year 2 and complete by permit year 7) and catchments where any information gathered on the outfall/interconnection identifies sewer input (complete by permit year 7)
- Investigate catchments associated with High- and Low-priority Outfalls by permit year 10
- Collect one wet weather sample at outfalls with at least one system vulnerability factor by permit year 10
- Provide annual training to employees involved in the IDDE program including how to recognize illicit discharges and SSOs
- Implement a construction erosion and sediment control ordinance, site plan review procedures, and construction site inspections to minimize or eliminate erosion and maintain sediment on site so that it is not transported in stormwater and allowed to discharge to a water of the U.S. through the City's MS4
- Implement a post construction stormwater management ordinance for new development and redevelopment to minimize the water quality impact from new development and reduce the water quality impact due to stormwater runoff from a redeveloped site
- Maintain and update an inventory of priority ranked City-owned properties and existing infrastructure that could be retrofitted with BMPs designed to reduce the frequency, volume and pollutant loads of stormwater discharges to its MS4 through the mitigation of impervious area
- Implement an operations and maintenance program for City operations at City owned parks, buildings, and maintenance facilities with a goal of preventing or reducing pollutant runoff and protecting water quality from operations
- Maintain catch basins to ensure that the sumps in the catch basins are no more than 50% full
- Sweep streets and parking lots at least twice annually, once in spring and once in fall

- Submit an annual report to EPA by the end of September documenting progress made during the permit year

Rochester MS4 Boundary

The City of Rochester (City) is located in southeastern New Hampshire in Strafford County. The City has a total area of approximately 44 square miles and is one of the largest cities in New Hampshire. The City population was 29,752 as reported in the 2010 census. Based on the City's current outfall mapping, the City has an estimated 204 stormwater outfalls subject to the MS4 Permit. The MS4 area boundary for the City is outlined in the map included in the Notice of Intent (NOI) (Attachment 1).

SMALL MS4 AUTHORIZATION

The NOI was submitted on September 28, 2018 (see Attachment 1). Authorization to Discharge was granted on June 12, 2019 (see Attachment 2 for the Authorization Letter). On March 22, 2023, EPA administratively continued permit coverage (see Attachment 2 for Administratively Continued Permit Coverage letter) of the 2017 NH MS4 Permit until such discharges are authorized under a reissued general permit, an individual permit, or other alternative general permit.

STORMWATER MANAGEMENT PROGRAM TEAM

SWMP Team Coordinator

Name: Jarrod Norris, P.E.	Title: Assistant City Engineer
Department: Rochester Department of Public Works	
Phone Number: 603-332-4096	Email: Jarrod.Norris@rochesternh.gov
Responsibilities: Program coordination/implementation	

SWMP Team

Name: Timothy Goldthwaite, P.E. (NH)	Title: Assistant City Engineer
Department: Rochester Department of Public Works	
Phone Number: 603-332-4096	Email: Timothy.goldthwaite@rochesternh.gov
Responsibilities: Program coordination/implementation	

RECEIVING WATERS

The list of receiving waters, impairments and number of outfalls discharging to each waterbody segment is included in the NOI (Attachment 1).

ELIGIBILITY: ENDANGERED SPECIES AND HISTORIC PROPERTIES

*Reminder: The proper consultations and updates to the SWMP must be conducted for construction projects related to your permit compliance where Construction General Permit (CGP) coverage, which requires its own endangered species and history preservation determination, is NOT being obtained.

Attachments:

- ☒ The results of Appendix C U.S. Fish and Wildlife Service endangered species screening determination
- ☐ The results of the Appendix D historic property screening investigations
- ☐ If applicable, any documents from the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO), or other Tribal representative to mitigate effects

These attachments are required within one year of the permit effective date and are:

- ☒ Attached to this document (Attachment 1 – NOI)
 - ☐ Publicly available at the website listed below: Not Applicable
-

Under what criterion did permittee determine eligibility for ESA?

- ☐ Criterion A
- ☐ Criterion B
- ☒ Criterion C

Under what criterion did permittee determine eligibility for Historic Properties?

- ☒ Criterion A
- ☒ Criterion B
- ☒ Criterion C
- ☐ Criterion D

Below add any additional measures for structural controls that you're required to do through consultation with U.S. Fish and Wildlife Service (if applicable):

Not Applicable

Below add any additional measures taken to avoid or minimize adverse impacts on places listed, or eligible for listing, on the NRHP, including any conditions imposed by the SHPO or THPO (if applicable):

Not Applicable

MCM 1 - PUBLIC EDUCATION AND OUTREACH

Permit Part 2.3.2

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

Program Summary

Minimum Control Measure #1 (MCM 1) of the MS4 Permit requires that an Education and Outreach Program be developed to increase the awareness and understanding of how certain activities conducted by residents, institutions, developers, and other entities might affect stormwater and water quality issues within the City. The ultimate objective of a public education program is to effectively change the way certain activities are conducted so that the potential for pollutants conveyed to adjacent waterbodies by stormwater can be reduced.

The type and number of educational messages that need to be disseminated each year to the targeted audiences depends on whether there are waterbodies with water quality impairments in the MS4 area. If there are no water quality impairments, the City is required to deliver at least two (2) messages to each of four (4) targeted audiences every other year over the 5-year permit term. The targeted audiences include:

- › Residents
- › Businesses, Institutions, and Commercial Facilities
- › Developers, Engineers and Construction Contractors
- › Industrial Facilities

However, since the City has both bacteria and nitrogen impaired waterbodies according to the 2016 state 303(d) list of impaired waterbodies and the Authorization to Discharge (Attachment 2), respectively, the City is required to deliver four (4) different annual messages per Appendix H requirements to promote best practices to reduce bacteria or nitrogen source contributions. Specifically, to address bacteria requirements, the City is required to deliver annual messages to residents and businesses, as appropriate, regarding proper cleanup and disposal of pet waste as well as proper septic system maintenance. To address the nitrogen impairment, the City is required to deliver annual messages to residents and businesses to encourage proper disposal of grass clipping and leaf litter as well as encourage reduced fertilizer use or at a minimum use of only slow release fertilizers for lawn management.

In addition to the water quality impairment related messages, the City is also required to deliver separate messages to developers, engineers or construction contractors and industrial facilities every other year. For developers, engineers and contractors the messaging might focus on increased use of best management practices for erosion control measures and low impact development measures. For industrial facilities, the educational messages might focus on best practices for waste handling and storage, spill control and/or lawn maintenance.

Best Management Practices

Table 1-1 outlines the City's proposed message topics for each of the targeted audiences by permit year. The technical content for these messages will be derived from educational materials developed by the Piscataqua Region Estuary Partnership (PREP), UNH Stormwater Center, NH Department of Environmental Services (DES) and the UNH Cooperative Extension as part of a collaborative effort with municipal members of the Seacoast Stormwater Coalition.

The MS4 Permit requires that measurable goals be developed for each educational message to assess the effectiveness of each message and report on the overall progress in achieving these goals in future annual reports. Measurable goals have been included in the Education BMP description summaries below.

Annual Reporting Elements

For each Annual Report, due at the end of September during each permit year, the City will summarize what types of messages were delivered to specific audiences, the method of delivery and any feedback or any observed changes in behavior or improvements in reducing pollutant sources (e.g. less dog waste accumulation on the ground, less grass clippings or leaves on the road, more leaf litter collected, more certified SnoPro operators being used, etc.). Any potential changes or opportunities to improve future message delivery and/ or effectiveness will also be noted.

Table 1-1: Summary of the Planned Educational BMPs for each Target Audience by Year

ID	Educational BMP	Target Audience	Target Month / Season	Schedule by Permit Year (Fiscal Year)				
				1 (FY19)	2 (FY20)	3 (FY21)	4 (FY22)	5 (FY23)
1-1	Pet Waste Ed. Flyers/Post Cards/Signage	Residents and Businesses	March-July ¹	X	X	X	X	X
1-2	Grass Clipping /Slow-Release Fertilizer Factsheet	Residents and Businesses	April/May	X ²	X	X	X	X
1-3	“Get Pumped” Septic System Brochure	Residents	September	X ²	X	X	X	X
1-4	Leaf Litter Disposal Factsheet	Residents and Businesses	August-October	X ²	X	X	X	X
1-5	Green SnoPro Cert. / Salt Efficiency Factsheet	Businesses and Industrial Facilities	Fall / Winter					X
1-6	Erosion Control Site Plan Review Factsheet	Developers (Construction)	Spring		X			
1-7	Low Impact Development Factsheet	Developers (Construction)	Summer			X	X	
1-8	Waste Disposal/Spill Prevention Factsheet	Industrial Facilities	Fall					X
1-9	Stormwater Regulations for Residents Brochure	Residents	Spring / Summer				X	

1. Appendix F Part II of the MS4 Permit requires the annual pet waste management message at the time of issuance or renewal of a dog license or other appropriate time. Appendix H Part I of the MS4 Permit requires the annual pet waste management message in the summer timeframe (June/July). Dog licenses in the City are generally renewed in March and April.
2. Was not completed during Permit Year 1, because the Authorization to Discharge (see Attachment 2) indicating the City was subject to Appendix H Part I of the MS4 Permit was not received until June 2019.

The following summarizes the planned educational BMPs including who is responsible for distribution,

what type of message will be distributed, and how effectiveness will be measured.

Pet Waste Educational Flyer / Post Cards / Signage

BMP 1-1

FY2019 Completed ☒

FY2020 Completed¹ ☒

FY2021 Completed ☒

FY2022 Completed ☒

FY2023 Completed ☒

Document Name and/or Web Address: [FYI: Dog Waste and Clean Water | Rochester NH](#)

Description: The City will distribute and post educational flyers and post cards at various locations throughout the City to encourage dog owners and residents to cleanup and properly disposed pet waste.

Targeted Audience: Residents

Responsible Department/Parties: Rochester Department of Public Works / Parks and Recreation

Measurable Goals: Reduce the presence of dog waste on the ground in popular dog walking locations such as along the Columbus Avenue trail, Woodman Park, Parson Park, and the Riverwalk.

Message Date(s): FY2019, 2020, 2021, 2022, 2023

Note:

1. In FY2020, due to the COVID-19 public health crisis, all dog licenses were issued online, and hard copy post cards and flyers were not created. The City Clerk's office emailed a PDF of the flyer with dog license confirmations.
2. In FY2021, due to the COVID-19 public health crisis and City offices being closed, the City posted the fact sheet on the home page of the Rochester City website.

Grass Clipping / Slow-Release Fertilizer Factsheet

BMP 1-2

FY2020 Completed¹ ☒

FY2021 Completed ☒

FY2022 Completed ☒

FY2023 Completed ☒

Document Name and/or Web Address: [FYI: Green Grass and Clean Water | Rochester NH](#)

Description: Distribute brochures prepared by UNH Coop Extension detailing proper lawn maintenance topics including fertilizer usage, cutting heights, clipping disposal, natural pest controls, leaf litter/yard waste disposal and composting.

Targeted Audience: Residents and applicable businesses

Responsible Department/Parties: Rochester Department of Public Works

Measurable Goals: Increase the amount of yard waste/leaf litter collected each year. Waste Management provides curb side pickup of yard waste twice in the Spring and twice in the Fall; there is also a Waste Management location for residential yard waste drop off.

Message Date(s): FY2020, 2021, 2022, 2023

Note:

1. In FY2020, due to the COVID-19 public health crisis and City offices being closed, the City posted the fact sheet on the home page of the Rochester City website. The City also sent out two emails to distribute the message. The first email went to City residents through the E-Alert and the second email went out to businesses.
 2. In FY2021, due to the COVID-19 public health crisis and City offices being closed, the City posted the fact sheet on the home page of the Rochester City website.
-

“Get Pumped” Septic System Brochure / Webpage

BMP 1-3

FY2020 Completed¹ ☒

FY2021 Completed ☒

FY2022 Completed ☒

FY2023 Completed ☒

Document Name and/or Web Address:

[https://www.rochesternh.gov/sites/g/files/vyhlif1131/f/uploads/2019 -
_rochester_septic_system_message.pdf](https://www.rochesternh.gov/sites/g/files/vyhlif1131/f/uploads/2019_-_rochester_septic_system_message.pdf)

Description: The City will distribute educational brochures to homes and businesses not serviced by sanitary sewer to encourage residents and businesses to pump out their septic systems. The “Get Pumped” program provides a list of septic haulers participating in a rebate program to encourage pump outs.

Targeted Audience: Residents and applicable businesses

Responsible Department/Parties: Rochester Department of Public Works / Rochester Planning Department

Measurable Goals: Increase septic system awareness and pump-out frequency.

Message Date(s): FY2020, 2021, 2022, 2023

Note:

1. In FY2020, this message was distributed in the Fall of 2020 (the Permit indicates it should be distributed in the Fall).
-

Leaf Litter Disposal Factsheet**BMP 1-4****FY2020 Completed¹** ☒**FY2021 Completed** ☒**FY2022 Completed** ☒**FY2023 Completed** ☒**Document Name and/or Web Address:**https://www.rochesternh.gov/sites/g/files/vyhlf1131/f/uploads/what_you_can_do_yard_waste.pdf

Description: The City will disseminate NHDES' lawn maintenance brochure to encourage residents and businesses to dispose grass clippings, leaf litter and other yard waste at the nearby Turnkey landfill facility.

Targeted Audience: Residents and applicable businesses

Responsible Department/Parties: Rochester Department of Public Works / School Department

Measurable Goals: Collaborate with Waste Management at Turnkey facility to promote yard waste collection and composting for residents. Observe less grass clipping and yard waste blown into City Streets or disposed of in drainage areas based on anecdotal observations.

Message Date(s): FY2020, 2021, 2022, 2023

Note:

1. In FY2020, this message was distributed in the Fall of 2020 (the Permit indicates it should be distributed in the Fall).

Green SnoPro Certification/ Salt Minimization Factsheet**BMP 1-5****FY2023 Completed** ☒

Document Name and/or Web Address: Snow and Ice Management: Clean Water and Safe Parking Lots

Description: Distribute salt minimization / snow storage factsheet to institutions within the community. Topics will focus on tools and resources to enhance efficiency in deicing procedures, contractor training and snow storage. The City sent an email message including the fact sheet to approximately 350 members via the Chamber of Commerce.

Targeted Audience: Businesses, Institutions, Industrial, and Commercial Facilities

Responsible Department/Parties: Rochester Department of Public Works

Measurable Goals: Increase the number of business property owners that utilize Green SnoPro Certified applicators.

Message Date(s): FY2023

Erosion Control Site Plan Review Factsheet

BMP 1-6

FY2020 Completed ☑

Document Name and/or Web Address:

https://www.rochesternh.gov/sites/g/files/vyhlf1131/f/uploads/c_constructionerosioncontrol_factsheet_051820.pdf

Description: A brief factsheet and checklist detailing a standard erosion control inspection process for new and redevelopment project will be distributed to developers through the site plan approval process. The checklist with outline standard erosion control measures that should be considered and included on site plans for new construction and redevelopment.

Targeted Audience: Developers (Construction)

Responsible Department/Parties: Rochester Department of Public Works / Rochester Planning Department

Measurable Goals: Increase the use and maintenance of proper erosion control measures and reduce the number of incidences of observed tracking or flow of sediment from construction sites.

Message Date(s): FY2020

Note:

1. A draft Erosion Control Site Plan Review Factsheet has been prepared based on proposed updates to the Chapter 218 (formerly Chapter 50) Stormwater ordinance.
-

Low Impact Development

BMP 1-7

FY2021 Completed ☑

FY2022 Completed ☑

Document Name and/or Web Address: Low Impact Development Tri-Fold Brochure for developers (hard copy)

Description: The City will disseminate a factsheet highlighting the benefits of LID design and BMP Practices to encourage more use of LID practices in new and redevelopment projects. Hard copies of the brochure will be distributed during the technical review process.

Targeted Audience: Developers (Construction)

Responsible Department/Parties: Rochester Department of Public Works / Rochester Planning Department

Measurable Goals: Increase the use of LID design and BMP practices to reduce the amount of impervious cover in new and redevelopment projects.

Message Date(s): FY2021, FY2022

Waste Disposal/Spill Prevention Factsheet

BMP 1-8

FY2023 Completed ☒

Document Name and/or Web Address: Stormwater Pollution Control for Industrial Facilities

Description: A brief factsheet describing best practices for waste disposal/storage for industrial facilities may be considered as an educational message. The factsheet details tips to minimize impact, including information on cleaning, maintenance, washing, storage, spill prevention, disposal, infiltration, and training. This factsheet was distributed as a mailed hardcopy to the seven (7) pretreatment users.

Targeted Audience: Industrial Facilities

Responsible Department/Parties: Rochester Department of Public Works / Rochester Planning Department

Measurable Goals: Update/distribute factsheet to enhance awareness and improve timely reporting and permit compliance.

Message Date(s): FY2023

Stormwater Regulation for Residents Brochure

BMP 1-9

FY2022 Completed ☒

Document Name and/or Web Address: Chapter 218 Brochure for Residents

Description: A brief factsheet describing stormwater management and erosion control regulations, including how to file for a permit, when a stormwater permit is required, and typical erosion and sediment controls. Hard copies will be distributed during the technical review process.

Targeted Audience: Residents

Responsible Department/Parties: Rochester Department of Public Works / Rochester Planning Department

Measurable Goals: Update/distribute factsheet to enhance awareness and help residents comply with stormwater regulations.

Message Date(s): FY2022

MCM 2 - PUBLIC INVOLVEMENT AND PARTICIPATION

Permit Part 2.3.3

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

Program Summary

Minimum Control Measure #2 (MCM 2) of the MS4 Permit requires that the City provide opportunities to engage the public to participate in the review and implementation of the City's SWMP.

Consistent with Section 2.3.3 of the MS4 Permit, the City plans to annually make the Annual Report and SWMP available to the public; annually provide the public an opportunity to participate in the review and implementation of the SWMP, which may include websites, hotlines, clean-up teams, monitoring teams or an advisory committee.

Best Management Practices

The BMPs proposed below summarize the planned public involvement and participation BMPs including the location of relevant documents, who is responsible, and how effectiveness will be measured.

Annual Reporting Elements

For each Annual Report, due at the end of September during each permit year, the City will describe the activities used to promote public participation including documentation of compliance with the state public notice regulations (NH: RSA Chapter 91-A). Any potential changes or opportunities to improve future public participation and outreach will also be noted.

Public Review of Stormwater Management Program

BMP 2-1

FY2019 Completed ☒

FY2020 Completed ☒

FY2021 Completed ☒

FY2022 Completed ☒

FY2023 Completed ☒

Location of Plan and/or Web Address: <https://www.rochesternh.gov/stormwater-center>

Responsible Department/Parties: Rochester Department of Public Works

Measurable Goal(s): Stormwater Management Plan is publicly available.

Public Participation in Stormwater Management Program Development

BMP 2-2

FY2019 Completed ☒

Document Name and/or Web Address:

<https://www.rochesternh.gov/sites/rochesternh/files/minutes/ccpwc20190620min.pdf>

Description: Provide overview of SWMP; announce posting of SWMP on city website; and explain how public can provide comments on SWMP at Rochester Department of Public Works Commission Public Meeting, June 20, 2019.

Responsible Department/Parties: Rochester Department of Public Works/Geosyntec Consultants

Measurable Goal(s): Annual public input provided.

Public Participation in Stormwater Management Program Development

BMP 2-3

FY2021 Completed ☒

Document Name and/or Web Address: Zoom meeting

Description: A Zoom meeting with the School Superintendent / Grounds Maintenance to present an overview of the MS4 Permit and highlight the MS4 Permit requirements pertaining to public school properties.

Responsible Department/Parties: Rochester Department of Public Works/Geosyntec Consultants

Measurable Goal(s): Annual public input provided.

Public Participation in Stormwater Management Program Development

BMP 2-4

FY2020 Completed ☒

Document Name and/or Web Address:

<https://www.rochesternh.gov/sites/g/files/vyhlf1131/f/minutes/ccpwc20200618min.pdf>

Description: A presentation to the Public Works and Buildings Committee on June 18, 2020 included an overview of the MS4 Permit and highlight the MS4 Permit requirements.

Responsible Department/Parties: Rochester Department of Public Works/Geosyntec Consultants

Measurable Goal(s): Annual public input provided.

Public Participation in Stormwater Management Program Development

BMP 2-5

FY2020 Completed ☒

Document Name and/or Web Address:

- <https://www.facebook.com/citman.rochester/posts/1484133291760788>
- <https://rochesterportal.com/2020/04/22/resident-invited-to-do-onething4earth-to-celebrate-2020-earth-day/>
- <https://www.facebook.com/photo.php?fbid=1468508773323240&set=a.1412286648945453&type=3&theater>

Description: Posted three stormwater messages (two on the City of Rochester’s Facebook page and one on the City of Rochester’s “News and Events Portal”) and included a link to the SWMP for residents to review and comment. Note, public input from FY2019 was used to expand the public education and public involvement components of the SWMP. For example, public input during FY2019 included using Facebook or other social media to better reach City residents. FY2020 outreach included social media posts on Facebook.

Responsible Department/Parties: Rochester Department of Public Works/Geosyntec Consultants

Measurable Goal(s): Annual public input provided.

Public Participation in Stormwater Program Development

BMP 2-5

FY2021 Completed ☒

FY2022 Completed ☒

FY2023 Completed ☒

Document Name and/or Web Address: [Stormwater Center | Rochester NH](#)

Description: Posted announcement on City’s news page with the link to the Stormwater Center webpage.

Responsible Department/Parties: Rochester Department of Public Works/Geosyntec Consultants

Measurable Goal(s): Annual public input provided.

MCM 3 - ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE) PROGRAM

Permit Part 2.3.4

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

Program Summary

Minimum Control Measure #3 (MCM 3) of the MS4 Permit requires that an Illicit Discharge Detection Elimination (IDDE) program be implemented to systematically find and eliminate sources of non-stormwater discharges to its municipal separate storm sewer system and implement procedures to prevent 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.

Consistent with Section 2.3.4 of the MS4 Permit, the City will develop an inventory of Sanitary Sewer Overflows (SSOs) that have discharged to the MS4 within the previous 5 years and update the inventory annually; revise the system map to include the Phase I required information and update annually; develop a written IDDE plan; develop an initial outfall and interconnection inventory and priority ranking to assess illicit discharge potential based on existing information (catchments draining to any waterbody impaired for bacteria or pathogens shall be designated either Problem Catchments or High-priority); inspect all outfalls/interconnections for the presence of dry weather flow including follow-up inspections and dry weather flow sample collection as applicable; develop a written catchment investigation procedure identifying maps, plans, records, and data sources; outlining a manhole inspection methodology; and establishing procedures to isolate and confirm sources of illicit discharges; investigate catchments associated with Problem Outfalls (begin by year 2 and complete by year 7) and catchments where any information gathered on the outfall/interconnection identifies sewer input (complete by year 7); investigate catchments associated with High- and Low-priority Outfalls by year 10; and provide annual training to employees involved in the IDDE program including how to recognize illicit discharges and SSOs.

Best Management Practices

The BMPs proposed below summarize the planned IDDE program BMPs including the location of relevant documents, who is responsible, a description, and how effectiveness will be measured.

Annual Reporting Elements

For each Annual Report, due at the end of September during each permit year, the City will describe the activities related to implementation of the IDDE program including: status of the map; status and results of the illicit discharge potential ranking and assessment; identification of problem catchments; status of all protocols described in Parts 2.3.4 of the MS4 Permit (program responsibilities and systematic procedure); number and identifier of catchments evaluated; number and identifier of outfalls screened; number of illicit discharges located; number of illicit discharges removed; gallons of flow removed; identification of tracking indicators and measures of progress based on those indicators; updates to the SSO inventory including status of mitigation and corrective measures to address each identified SSO; and employee training.

IDDE Legal Authority

BMP 3-1

Completed (by May 1, 2008) ☑

Ordinance Link or Reference: [City of Rochester, NH Stormwater Management and Erosion Control](#)

Description: The City adopted Stormwater Management Regulations (Chapter 50 [Now Chapter 218], Section 14 of the City's Ordinances) in 2008 that contain language that prohibits illicit discharges and connections to the City storm drain system. The Stormwater Management Ordinance can be found on the City web site. The Stormwater Management Ordinance provides the Department of Public Works with adequate legal authority to:

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

The City updated Chapter 218 to ensure the stormwater ordinance is consistent with the requirements in the 2017 MS4 Permit. See BMP 5-1: Post-Construction Ordinance for information about Chapter 218.

Department Responsible for Enforcement: Pursuant to the provisions of the Stormwater Management and Erosion Control Ordinance, the Rochester Department of Public Works has the lead responsibility for implementing the IDDE program, including reviewing permit applications for new and redevelopment projects and storm drain construction projects that disturb more than 5,000 sq.ft. Other departments with responsibility for aspects of the program include the Rochester Planning and Development Department who are responsible for the Land Use and Site Plan Review Regulations.

Sanitary Sewer Overflow (SSO) Inventory

BMP 3-2

FY2019 Completed ☒

FY2020 Completed ☒

FY2021 Completed ☒

FY2022 Completed ☒

FY2023 Completed ☒

Document Location and/or Web Address: See Table 4-1 of the IDDE Plan (Attachment 3)

Description: An inventory of all SSOs that have discharged to the MS4 within the previous five years [Part 2.3.4.4 of the MS4 Permit].

Responsible Department/Parties: Rochester Department of Public Works, VHB

Measurable Goal(s): Annually track and report the following SSO information: the location; a clear statement of whether the discharge entered a surface water directly or entered the MS4; date(s) and time(s) of each known SSO occurrence; estimated volume(s) of the occurrence; description of the occurrence indicating known or suspected cause(s); mitigation and corrective measures completed with dates implemented; and mitigation and corrective measures planned with implementation schedules. Update inventory as needed.

SSO Reporting: In the event of an overflow or bypass, a notification must be reported within 24 hours by phone to EPA. Follow up the verbal notification with a written notification to EPA and NHDES within five days of becoming aware of the SSO occurrence.

The NHDES contact is:

(603) 271-3503

PO Box 95

Concord, NH 03302-0095

The EPA contact is:

EPA New England

(617) 918-1510

5 Post Office Square

Boston, MA 02109

Map of Storm Sewer System**BMP 3-3****Phase I Completed**
(by Year 2) ☒**Phase II Completed**
(by Year 10) ☐

Document Location and/or Web Address: Rochester originally mapped its stormwater outfalls to meet the mapping requirements of the 2003 MS4 Permit. Additional infrastructure mapping has been completed to include the necessary elements of the Phase I mapping program including outfalls and the sanitary and storm sewer network. Rochester's GIS data is available upon request

Description: The 2017 MS4 Permit requires a more detailed storm system map than was required by the 2003 MS4 Permit.

Phase I Mapping – A revision of the storm sewer system map to include the Phase I required information (outfalls, receiving waters, open channels, interconnections, stormwater treatment structures, waterbodies and impairments, and initial catchment delineations) [Part 2.3.4.5.a of the MS4 Permit].

Phase II Mapping – A revision of the storm sewer map to include the Phase II required information (outfall spatial location, pipes, manholes, catch basins, refined catchment delineations, municipal sanitary sewer system, municipal combined sewer system) [Part 2.3.4.5.b of the MS4 Permit].

Phase II storm system mapping information will be collected during the catchment investigations (see **BMP 3-7**).

Responsible Department/Parties: Rochester Department of Public Works, Geosyntec Consultants/VHB

Measurable Goal(s): Map 100% of outfalls and receiving waters, open channel conveyances, interconnections with other MS4s and other storm sewer systems, municipally owned stormwater treatment structures, waterbodies identified by name and indication of all use impairments, and initial catchment delineations within 2 years of the permit's effective date. Map 100% of outfall spatial locations, pipes, manholes, catch basins, refined catchment delineations, municipal sanitary sewer system (if available), and municipal combined sewer system (if applicable) within 10 years of the permit's effective date.

IDDE Program**BMP 3-4****FY2019 Completed** ☒**FY2020 Completed** ☒**FY2021 Completed** ☒**FY2022 Completed** ☒**FY2023 Completed** ☒

Document Location and/or Web Address: See IDDE Plan (Attachment 3)

Description: A written plan referencing the existing legal authority, summarizing IDDE program responsibilities, and outlining procedures (including an outfall and interconnection screening and

sampling procedure as outlined in Part 2.3.4.7.b of the MS4 Permit) to implement the requirements of Parts 2.3.4.7 and 2.3.4.8 of the MS4 Permit.

Responsible Department/Parties: Rochester Department of Public Works

Measurable Goal(s): Conduct 100% of outfall screening on High and Low Priority Outfalls within 3 years of the permit's effective date. Complete catchment investigations for 100% of the Problem Outfalls within 7 years of the permit's effective date. Complete 100% of all catchment investigations within 10 years of the permit's effective date.

The outfall/interconnection inventory and initial ranking and the dry weather outfall and interconnection screening and sampling results can be found: See IDDE Plan (Attachment 3)

Employee Training**BMP 3-5****FY2019 Completed** ☒**FY2020 Completed¹** ☒**FY2021 Completed** ☒**FY2022 Completed** ☒**FY2023 Completed** ☒

Description: Annual training provided to employees involved in the IDDE program including how to recognize illicit discharges and SSOs. Training may also include elements specific to the functions of particular personnel and their function within the framework of the IDDE program. Report on the frequency and type of employee training in the Annual Report.

Responsible Department/Parties: Rochester Department of Public Works

Measurable Goal(s): Training occurs annually and is tracked in Appendix E of the IDDE Plan (Attachment 3).

Note:

1. For FY2020, due to the COVID-19 public health crisis, the employee in-person training was held in September 2020.
-

Wet Weather Screening**BMP 3-6****FY2022 (Started Work)** ☒**Year 10 (Complete)** ☐

Document Location and/or Web Address: See IDDE Plan (Attachment 3)

Description: Wet weather screening (sampling) will be conducted for any outfall that has at least one (1) System Vulnerability Factor (as described in the IDDE Plan). Wet weather sampling will occur during or after a storm event or adequate depth or intensity to produce stormwater runoff and will be analyzed for the following parameters: ammonia, chlorine, surfactants, bacteria, temperature, and total nitrogen.

Responsible Department/Parties: Rochester Department of Public Works

Measurable Goal(s): Conduct 100% of wet weather screening within 10 years of the permit's effective date.

Catchment Investigation**BMP 3-7****FY2022 (Started Work)** ☒**Year 10 (Complete)** ☐

Document Location and/or Web Address: See IDDE Plan (Attachment 3)

Description: Catchment investigations for each outfall will be conducted according to the IDDE Plan in order to implement the requirements of Parts 2.3.4.7 and 2.3.4.8 of the MS4 Permit. Catchment investigations may include a review of historic plans and records, manhole observations, dry and wet weather sampling results, video inspection, smoke testing, and dye testing. Phase II storm system mapping information will also be collected during the catchment investigations.

Responsible Department/Parties: Rochester Department of Public Works

Measurable Goal(s): Conduct catchment investigations for 100% of the outfalls within 10 years of the permit's effective date.

MCM 4 - CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

Permit Part 2.3.5

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

Program Summary

Minimum Control Measure #4 (MCM 4) of the MS4 Permit requires that a construction stormwater runoff control program be implemented to minimize or eliminate erosion and maintain sediment on site so that it is not transported in stormwater and allowed to discharge to a water of the U.S. through the City's MS4.

Consistent with Section 2.3.5 of the MS4 Permit, the City will continue to implement the existing construction site stormwater runoff program and revise as necessary to meet the requirements of Part 2.3.5.3; develop written procedures for site inspection and enforcement of sediment and erosion control measures; and develop written procedures for site plan review; and annually track the number of site reviews, inspections, and enforcement actions.

Best Management Practices

The BMPs proposed below summarize the planned construction site stormwater runoff control program BMPs including the location of relevant documents, who is responsible, a description, and how effectiveness will be measured.

Annual Reporting Elements

For each Annual Report, due at the end of September during each permit year, the City will evaluate the construction runoff management including number of project plans reviewed; number of inspections; and number of enforcement actions.

Sediment and Erosion Control Ordinance

BMP 4-1

Completed (by May 1, 2008) ☒

Ordinance Link or Reference: Chapter 218 (formerly Chapter 50) Ordinance.

Department Responsible for Enforcement: Rochester City Council through a public hearing process

Site Plan Review Procedures

BMP 4-2

FY2019 Completed ☒

Document Name and/or Web Address:

Description: Written procedures for site plan review [Part 2.3.5.3.e of the MS4 Permit]

Responsible Department/Parties: Rochester City Council through a public hearing process

Measurable Goals: Conduct site plan review of 100% of projects according to the procedures outlined in the site plan review process.

Site Inspections and Enforcement of Sediment and Erosion Control Measures Procedures

BMP 4-3

FY2019 Completed ☒

Document Name and/or Web Address:

Description: Written procedures for site inspection and enforcement of sediment and erosion controls measures [Part 2.3.5.3.b of the MS4 Permit]

Responsible Department/Parties: Rochester City Council through a public hearing process

Measurable Goals: Inspect 100% of construction sites as outlined in the above document and take enforcement actions as needed.

MCM 5 - POST CONSTRUCTION STORMWATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT

Permit Part 2.3.6

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

Program Summary

Minimum Control Measure #5 (MCM 5) of the MS4 Permit requires implementation of a post construction stormwater management program for new development and redevelopment to minimize the water quality impact from new development and reduce the water quality impact due to stormwater runoff from a redeveloped site.

Consistent with Section 2.3.6 of the MS4 Permit, the City will continue to implement and enforce its post construction stormwater runoff program and revise as necessary to meet the requirements of Part 2.3.6.a and Appendix H Part I of the MS4 Permit; modify the existing stormwater management and erosion control ordinance; develop a street design and parking lot guidelines report, a green infrastructure report, and a list of municipal BMP retrofit opportunities.

Best Management Practices

The BMPs proposed below summarize the planned post construction stormwater management program BMPs including the location of relevant documents, who is responsible, a description, and how effectiveness will be measured.

Annual Reporting Elements

For each Annual Report, due at the end of September during each permit year, the City will evaluate stormwater management for new development and redevelopment, include status of ordinance development; provide status of the street design assessment; provide status of the green infrastructure assessment; report on the permittee-owned properties and infrastructure inventoried that have been retrofitted with BMPs to mitigate impervious area (non-MS4 owned property may also be included beginning in year 5).

Post-Construction Ordinance**BMP 5-1****FY2021 Completed** ☑**Town Ordinances Link or Reference:** [City of Rochester, NH Stormwater Management and Erosion Control](#)

Description: Revised Chapter 218 (formerly Chapter 50) – Stormwater Management and Erosion Control Ordinance to be consistent with the Construction Site Stormwater Runoff Control [Part 2.3.5 of the MS4 Permit] and Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management) [Part 2.3.6 of the MS4 Permit] requirements contained in the MS4 Permit. New regulations approved June 1, 2021 and will be posted.

Department Responsible for Enforcement: City Council through public hearing process

Street Design and Parking Lot Guidelines Report**BMP 5-2****FY2022 Completed** ☑**Document Name and/or Web Address:** Street Parking Report (Attachment 6)

Description: Report assessing current street design and parking lot guidelines and other local requirements that affect the creation of impervious cover to determine if design standards can be modified to support low impact design options. If the assessment indicates that changes can be made, the assessment shall include recommendations and proposed schedules to incorporate policies and standards into relevant documents and procedures to minimize impervious cover attributable to parking areas and street designs [Part 2.3.6.c of the MS4 Permit].

Responsible Department/Parties: Rochester Department of Public Works

Measurable Goals: Implement all recommendations, in accordance with the schedules contained in the assessment. Involve local planning boards and local transportation boards in this assessment to the extent feasible. Report in each Annual Report on the status of this assessment including any planned or completed changes to local regulations and guidelines.

Green Infrastructure Report**BMP 5-3****FY2022 Completed** ☑**Document Name and/or Web Address:** Green Infrastructure Report (Attachment 7)

Description: A report that assesses existing local regulations to determine the feasibility of making, at a minimum, the following green infrastructure practices allowable when appropriate site conditions exist: (1) green roofs; (2) infiltration practices; and (3) water harvesting devices. The assessment shall indicate whether and under what circumstances the practices are allowed in the MS4 jurisdiction. If the practices are not allowed, the permittee shall identify impediments to the use of these practices, and what changes in local regulations may be made to make them allowable, and provide a schedule for implementation of recommendations. Information is available at: <http://www.epa.gov/region1/npdes/stormwater/assets/pdfs/AddressingBarrier2LID.pdf> [Part 2.3.6.d of the MS4 Permit].

Responsible Department/Parties: Rochester Department of Public Works

Measurable Goals: Implement all recommendations, in accordance with the schedules contained in the assessment. Report in each Annual Report on findings and progress towards making the practices allowable.

List of Municipal Retrofit Opportunities

BMP 5-4

FY2022 Completed ☒

Document Name and/or Web Address: Retrofit Potential of City-Owned Properties (included in the Nitrogen Source Identification Results [Attachment 7])

Description: An inventory and priority ranking of permittee-owned property and existing infrastructure that could be retrofitted with BMPs designed to reduce the frequency, volume and pollutant loads of stormwater discharges to its MS4 through the mitigation of impervious area. Properties and infrastructure for consideration shall include those with the potential for mitigation of on-site impervious area, as well as those that could provide mitigation of off-site impervious area. At a minimum, consider municipal property with significant impervious area (including parking lots, buildings, and maintenance yards) that could be mitigated, and open space and undeveloped land available to mitigate impervious area and associated stormwater from proximate offsite properties. MS4 infrastructure to be considered includes existing street right-of-ways, outfalls and conventional stormwater conveyances and controls (including swales and detention practices) that could be readily modified to provide reduction in frequency, volume or pollutant loads of such discharges through the mitigation of impervious cover. The permittee may also include in its inventory properties and infrastructure that are privately-held or that do not contribute stormwater to its MS4.

The inventory and priority ranking shall, at minimum, be a screening level ranking that may be based on existing or readily obtainable data. In determining the potential for retrofitting particular properties, consider, on a screening level and subject to availability of data, factors such as access for maintenance purposes; subsurface geology; depth to water table; site slope and elevation; and proximity to aquifers and subsurface infrastructure including sanitary sewers and septic systems. Consider public safety when evaluating potential retrofits and any other information the permittee deems relevant to the ranking. In determining priority ranking, consider, on a screening level and subject to availability of data, factors such as schedules for planned capital improvements to storm and sanitary sewer infrastructure and paving projects; current storm sewer level of service; and control of discharges to impaired waters, first or second order streams, and critical receiving waters; the complexity and cost of implementation; and opportunities for public use and education. For the purposes of this Part, critical receiving waters include public swimming beaches, public drinking water supply sources, outstanding resource waters, cold water fisheries, and shellfish growing areas [Part 2.3.6.e of the MS4 Permit]. Retrofit inventory and priority ranking under 2.3.6.e shall include consideration of BMPs to reduce nitrogen discharges [Appendix H Part I].

Responsible Department/Parties: Rochester Department of Public Works

Measurable Goals: The list is completed by Year 4 and updated as needed.

MCM 6 - GOOD HOUSEKEEPING AND POLLUTION PREVENTION FOR PERMITTEE OWNED OPERATIONS

Permit Part 2.3.7

Objective: The permittee shall implement an operations and maintenance program for permittee-owned operations that has a goal of preventing or reducing pollutant runoff and protecting water quality from all permittee-owned operations.

Program Summary

Minimum Control Measure #6 (MCM 6) of the MS4 Permit requires implementation of an operations and maintenance program for City operations that includes a training component and has a goal of preventing or reducing pollutant runoff and protecting water quality from all permittee operations.

Consistent with Section 2.3.7 and Appendix H Part I of the MS4 Permit, the City will develop written operation and maintenance (O&M) procedures for municipal activities including parks and open space, buildings, and vehicles and equipment. The City will also develop written O&M procedures for infrastructure including catch basin cleaning, street sweeping, winter road maintenance, and stormwater treatment structures inspection and maintenance. In addition, the City will develop and fully implement a stormwater pollution prevention plan (SWPPP) for each of the following City-owned or operated facilities: maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater.

Best Management Practices

The BMPs proposed below summarize the planned good housekeeping and pollution prevention program BMPs including the location of relevant documents, who is responsible, a description, and how effectiveness will be measured.

Annual Reporting Elements

For each Annual Report, due at the end of September during each permit year, the City will provide the status of the O&M programs required by Part 2.3.7.1 and the status of SWPPP required by Part 2.3.7.2 including inspection results.

PERMITTEE OWNED FACILITIES

Parks and Open Spaces Operations and Maintenance Procedures

BMP 6-1

FY2020 Completed ☒

Document Name and/or Web Address: See Draft O&M Program (Attachment 4)

Description: Written O&M procedures to address the proper use, storage, and disposal of pesticides, herbicides, and fertilizers (PHF) including minimizing the use of these products and using them only in accordance manufacturer's instruction. Evaluate lawn maintenance and landscaping activities to ensure practices are protective of water quality. Protective practices include reduced use of PHFs, integrated pest management (IPM), recycling or proper disposal of lawn clippings and other vegetative waste, and use of native and drought resistant landscaping materials. Establish procedures for management of trash containers at parks (scheduled cleanings; sufficient number), and for placing signage in areas concerning the proper disposal of pet wastes. Establish procedures to address waterfowl congregation areas where appropriate to reduce waterfowl droppings from entering the MS4. Establish procedures to address erosion or poor vegetative cover when the permittee becomes aware of it; especially if the erosion is within 50 feet of a surface water [Part 2.3.7.1.a of the MS4 Permit]. Establish requirements for use of slow release fertilizers on permittee owned property currently using fertilizer, in addition to reducing and managing fertilizer use as provided in 2.3.7.1; establish procedures to properly manage grass cuttings and leaf litter on permittee property, including prohibiting blowing organic waste materials onto adjacent impervious surfaces [Appendix H Part I].

Responsible Department/Parties: Rochester Department of Public Works

Measurable Goals: Implement the SOP listed above on 100% of the parks and open spaces.

Properties List (Optional):

Buildings and Facilities Operations and Maintenance Procedures

BMP 6-2

FY2020 Completed ☒

Document Name and/or Web Address: See Draft O&M Program (Attachment 4)

Description: This includes schools (to the extent they are permittee-owned or operated), town offices, police, and fire stations, municipal pools and parking garages and other permittee-owned or operated buildings or facilities. Evaluate the use, storage, and disposal of petroleum products and other potential stormwater pollutants. Provide employee training as necessary so that those responsible for handling these products know proper procedures. Ensure that Spill Prevention Plans are in place, if applicable, and coordinate with the fire department as necessary. Develop management procedures for dumpsters and other waste management equipment. Sweep parking lots and keep areas surrounding the facilities clean to reduce runoff of pollutants [Part 2.3.7.1.b of the MS4 Permit].

Responsible Department/Parties: Rochester Department of Public Works

Measurable Goals: Implement the SOP listed above on 100% of buildings and facilities.

Properties List (Optional):

Vehicles and Equipment Operations and Maintenance Procedures

BMP 6-3

FY2020 Completed ☒

Document Name and/or Web Address: See Draft O&M Program (Attachment 4)

Description: Procedures for the storage of permittee vehicles. Vehicles with fluid leaks shall be stored indoors or containment shall be provided until repaired. Evaluate fueling areas owned by the permittee or used by permittee vehicles. If possible, place fueling areas under cover in order to minimize exposure. Establish procedures to ensure that vehicle wash waters are not discharged to the municipal storm sewer system or to surface waters. The permit does not authorize such discharges [Part 2.3.7.1.c of the MS4 Permit].

Responsible Department/Parties: Rochester Department of Public Works

Measurable Goals: Implement the SOP listed above for 100% of vehicles and equipment.

Properties List (Optional):

INFRASTRUCTURE

Infrastructure Operations and Maintenance Procedures

SEE BMP 6-4—6-8

FY2020 Completed ☒

Document Name and/or Web Address: See Draft O&M Program (Attachment 4)

Description: A written program detailing the activities and procedures that will be implemented so the MS4 infrastructure is maintained in a timely manner to reduce the discharge of pollutants from the MS4 [Part 2.3.7.1.d.i of the MS4 Permit].

Responsible Department/Parties: Rochester Department of Public Works

Measurable Goals: 100% of infrastructure is maintained to ensure proper function in accordance with the procedures in the document referenced above.

Catch Basin Cleaning Program

BMP 6-4

FY2019 Completed ☒

FY2020 Completed ☒

FY2021 Completed ☒

FY2022 Completed ☒

FY2023 Completed ☒

Document Name and/or Web Address: See Draft O&M Program (Attachment 4)

Description: A plan for optimizing catch basin cleaning, inspection plans, or its schedule for gathering information to develop the optimization plan. Documentation shall include metrics and other information used to reach the determination that the established plan for cleaning and maintenance is optimal for the MS4. Keep a log of catch basins cleaned or inspected [Part 2.3.7.1.d.ii of the MS4 Permit].

Responsible Department/Parties: Rochester Department of Public Works

Measurable Goals: All catch basins are cleaned in accordance with the Catch Basin Cleaning Program such that no catch basin is more than 50% full at any given time.

Street Sweeping Program

BMP 6-5

FY2019 Completed ☒

FY2020 Completed ☒

FY2021 Completed ☒

FY2022 Completed ☒

FY2023 Completed ☒**Document Name and/or Web Address:** See O&M Program (Attachment 4)

Description: Establish and implement procedures for sweeping and/or cleaning streets and permittee owned parking lots. All streets with curbing and/or catch basins in the MS4 regulated area shall be swept and/or cleaned a minimum of twice per year (once in the spring and once in the fall). The procedures shall also include more frequent sweeping of targeted areas determined on the basis of pollutant load reduction potential, based on inspections, pollutant loads, catch basin cleaning or inspection results, land use, impaired or TMDL waters or other relevant factors as determined [Part 2.3.7.1.iii and Appendix H of the MS4 Permit].

Responsible Department/Parties: Rochester Department of Public Works

Measurable Goals: Semi-annually (i.e., two times per year) sweep 100% of all municipal owned streets and parking lots in accordance with the schedule listed in the document referenced above. Report in each Annual Report the number of miles cleaned, and the volume or mass of material removed.

Winter Road Maintenance Program**BMP 6-6**FY2019 Completed ☒FY2020 Completed ☒FY2021 Completed ☒FY2022 Completed ☒FY2023 Completed ☒**Document Name and/or Web Address:** See O&M Program (Attachment 4)

Description: Establish and implement procedures for winter road maintenance including the use and storage of salt and sand; minimize the use of sodium chloride and other salts; and ensure that snow disposal activities do not result in disposal of snow into waters of the United States [Part 2.3.7.1.v of the MS4 Permit].

Responsible Department/Parties: Rochester Department of Public Works

Measurable Goals: Evaluate and implement procedures for use and storage of salt and sand.

Stormwater Treatment Structures Inspection and Maintenance Procedures**BMP 6-7**FY2019 Completed ☒FY2020 Completed ☒FY2021 Completed ☒FY2022 Completed¹ ☒FY2023 Completed ☒

Document Name and/or Web Address: See O&M Program (Attachment 4)

Description: Establish and implement inspection and maintenance frequencies and procedures for the storm drain systems and for all stormwater treatment structures such as water quality swales, retention/detention basins, infiltration structures, proprietary treatment devices or other similar structures. All permittee-owned stormwater treatment structures (excluding catch basins) shall be inspected annually at a minimum [Part 2.3.7.1.vi of the MS4 Permit].

Responsible Department/Parties: Rochester Department of Public Works

Measurable Goals: Inspect and maintain 100% of treatment structures to ensure proper function.

Note:

1. The City completed inspection of all stormwater treatment facilities and is working toward establishing easements to maintain the facilities.
-

SWPPP

BMP 6-8

FY2020 Completed ☒

FY2021 Completed ☒

FY2022 Completed ☒

FY2023 Completed ☒

Document Name and/or Web Address: See Stormwater Pollution Prevention Plan (Attachment 5)

Description: Develop and fully implement a Stormwater Pollution Prevention Plan (SWPPP) for each of the following permittee-owned or operated facilities: maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater. If facilities are located at the same property, one SWPPP may be developed for the entire property. A SWPPP does not need to be developed for a facility if the permittee has either developed a SWPPP or received a no exposure certification for the discharge under the Multi-Sector General Permit or the discharge is authorized under another NPDES permit [Part 2.3.7.2 of the MS4 Permit].

Responsible Department/Parties: Rochester Department of Public Works

Measurable Goals: Develop and implement one SWPPP for the DPW Operating Facility located at 209 Chestnut Hill Road¹ in Rochester, New Hampshire.

Note:

1. In FY2022, the DPW Facility moved from 45 Old Dover Road to 209 Chestnut Hill Road, Rochester, New Hampshire. The old facility will be decommissioned and sold. The SWPPP was updated for the new facility.
-

ANNUAL EVALUATION

Insert introduction into requirements of when an annual report is to be submitted. And what is required of the annual report.

Year 1 Annual Report

Document Name and/or Web Address: Year 1 Annual Report New Hampshire Small MS4 General Permit Reporting Period: May 1, 2018 – June 30, 2019.

<https://www3.epa.gov/region1/npdes/stormwater/nh/reports/2019/rochester-nh-ar19.pdf>

Year 2 Annual Report

Document Name and/or Web Address: Year 2 Annual Report New Hampshire Small MS4 General Permit Reporting Period: July 1, 2019 – June 30, 2020.

<https://www3.epa.gov/region1/npdes/stormwater/nh/reports/2020/rochester-nh-ar20.pdf>

Year 3 Annual Report

Document Name and/or Web Address: Year 3 Annual Report New Hampshire Small MS4 General Permit Reporting Period: July 1, 2020 – June 30, 2021

https://www3.epa.gov/region1/npdes/stormwater/nh/reports/2021/ROCHESTER_NH_AR21.pdf

Year 4 Annual Report

Document Name and/or Web Address: Year 4 Annual Report New Hampshire Small MS4 General Permit Reporting Period: July 1, 2021 – June 30, 2022

Year 5 Annual Report

Document Name and/or Web Address:

Year 6 Annual Report

Document Name and/or Web Address:

TMDLS AND WATER QUALITY LIMITED WATERS

Bacteria/Pathogens

Combination of Impaired Waters Requirements and TMDL Requirements as Applicable

Applicable Receiving Waterbody(ies)	TMDL Name (if applicable)
All	Statewide TMDL

Annual Requirements Beginning Year 1

Illicit Discharge Detection and Elimination

Rank outfalls to these receiving waters as high priority for IDDE implementation in the initial outfall ranking

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are: **BMP 3-4**

Public Education and Outreach

(Public education messages can be combined with other public education requirements as applicable (see Appendix H and F for more information))

Annual message encouraging the proper management of pet waste, including noting any existing ordinances where appropriate.

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are: **BMP 1-1**

Permittee or its agents disseminate educational material to dog owners at the time of issuance or renewal of dog license, or other appropriate time.

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are: **BMP 1-1**

Provide information to owners of septic systems about proper maintenance in any catchment that discharges to a water body impaired for bacteria.

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are: **BMP 1-3**

Nitrogen Impairment

Applicable Receiving Waterbody(ies)	TMDL Name (if applicable)
All	N/A

Annual Requirements Beginning Year 1

Public Education and Outreach

(Public education messages can be combined with other public education requirements as applicable (see Appendix H and F for more information))

Distribute an annual message in the spring (April/May) that encourages the proper use and disposal of grass clippings and encourages the proper use of slow-release fertilizers.

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are: **BMP 1-2**

Distribute an annual message in the summer (June/July) encouraging the proper management of pet waste, including noting any existing ordinances where appropriate.

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are: **BMP 1-1**

Distribute an annual message in the fall (August/September/October) encouraging the proper disposal of leaf litter.

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are: **BMP 1-4**

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

Establish requirements for the use of slow release fertilizers on permittee owned property currently using fertilizer, in addition to reducing and managing fertilizer use as provided in part 2.3.7.1.

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are: **BMP 6-1**

Establish procedures to properly manage grass cuttings and leaf litter on permittee property, including prohibiting blowing organic waste materials onto adjacent impervious surfaces.

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are: **BMP 6-1**

Increase street sweeping frequency of all municipal owned streets and parking lots subject to Permit part 2.3.7.a.iii.(c) to a minimum of two times per year (spring and fall).

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are: **BMP 6-5**

Nitrogen Reduction Tracking BMP

Any structural BMPs listed in Attachment 3 to Appendix F already existing or installed in the regulated area by the permittee or its agents shall be tracked and the permittee shall estimate the nitrogen removal by the BMP consistent with Attachment 3 to Appendix F. The structural BMPs listed in Attachment 3 to Appendix F are listed below:

- Infiltration Trench;
- Surface Infiltration Practices (i.e., basins, rain gardens and bio-retention);
- Bio-filtration Practice;
- Gravel Wetland System;
- Enhanced Bio-filtration with Internal Storage Reservoir (ISR);
- Sand Filter;
- Porous Pavement;
- Wet Pond or wet detention basin;
- Dry Pond or detention basin; and
- Dry Water Quality Grass Swale with Detention.

The BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated nitrogen removed in mass per year by the BMP is included in Attachment 8 of this SWMP, in the Nitrogen Source Identification Report. The information in Attachment 8 will be updated annually at a minimum and included in each Annual Report.

Requirements Due by Year 3

Stormwater Management in New Development and Redevelopment

The requirement for adoption/amendment of the permittee's ordinance or other regulatory mechanism shall include a requirement that new development and redevelopment stormwater management BMPs be optimized for nitrogen removal.

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are: **BMP 5-1**

Requirements Due by Year 4

Complete a Nitrogen Source Identification Report.

The document name (if attached) and/or web address is/are: Nitrogen Source Identification Report (Attachment 8).

Stormwater Management in New Development and Redevelopment

Retrofit inventory and priority ranking under 2.3.6.e shall include consideration of BMPs to reduce nitrogen discharges.

The document name (if attached) and/or web address is/are: Nitrogen Source Identification Report (Attachment 8).

Requirements Due by Year 5

Potential Structural BMPs

Evaluate all permittee-owned properties identified as presenting retrofit opportunities or areas for structural BMP installation under Permit part 2.3.6.e or identified in the Nitrogen Source Identification Report that are within the drainage area of the impaired water or its tributaries.

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are: Planned and Potential Best Management Practices (BMPs) (Attachment 9)

Complete a listing of planned structural BMPs and a plan and schedule for implementation.

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are: Planned and Potential Best Management Practices (BMPs) (Attachment 9)

Solids, Oil and Grease (Hydrocarbons), or Metals Impairments

Applicable Receiving Waterbody(ies)	TMDL Name (if applicable)
NHRIV600030603-06 ¹	N/A

Note:

- 1. No outfalls discharge to this waterbody.

Annual Requirements Beginning Year 1

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

Increase street sweeping frequency of all municipal owned streets and parking lots to a schedule to target areas with potential for high pollutant loads.

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are: **BMP 6-5**

Prioritize inspection and maintenance for catch basins to ensure that no sump shall be more than 50 percent full; Clean catch basins more frequently if inspection and maintenance activities indicate excessive sediment or debris loadings.

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are: **BMP 6-4**

Requirements Due by Year 3

Stormwater Management in New Development and Redevelopment

Stormwater management systems designed on commercial and industrial land use area draining to the water quality limited water body shall incorporate designs that allow for shutdown and containment where appropriate to isolate the system in the event of an emergency spill or other unexpected event.

The relevant BMP number(s) listed above in the Stormwater Management Program OR the description of implementation actions and document location(s) are: **BMP 5-1**

ATTACHMENT 1
NOTICE OF INTENT (NOI)

Notice of Intent (NOI) for coverage under Small MS4 General Permit Page 1 of 19Part I: General Conditions**General Information**

Name of Municipality or Organization: City of Rochester State: NH

EPA NPDES Permit Number (if applicable): NHR041000

Primary MS4 Program Manager Contact Information

Name: Blaine Cox Title: City Manager

Street Address Line 1: 31 Wakefield Street

Street Address Line 2:

City: Rochester State: NH Zip Code: 03867

Email: blaine.cox@rochesternh.net Phone Number: (603) 335-7500

Fax Number:

Other InformationStormwater Management Program (SWMP) Location
(web address or physical location, if already completed): Department of Public Works - 45 Old Dover Road Rochester NH 03867**Eligibility Determination**

Endangered Species Act (ESA) Determination Complete? Yes

Eligibility Criteria
(check all that apply): ☐ A ☐ B ☒ C

National Historic Preservation Act (NHPA) Determination Complete? Yes

Eligibility Criteria
(check all that apply): ☒ A ☒ B ☒ C ☐ D☒ Check the box if your municipality or organization was covered under the 2003 MS4 General Permit**MS4 Infrastructure** (if covered under the 2003 permit)**Estimated Percent of Outfall Map Complete?**
(Part II, III, IV or V, Subpart B.3.(a.) of 2003 permit)

100%

If 100% of 2003 requirements not met, enter an
estimated date of completion (MM/DD/YY):

Web address where MS4 map is published:

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

See attached

Regulatory Authorities (if covered under the 2003 permit)**Illicit Discharge Detection and Elimination (IDDE) Authority Adopted?**
(Part II, III, IV or V, Subpart B.3.(b.) of 2003 permit)

Yes

Effective Date or Estimated
Date of Adoption (MM/DD/YY): 05/06/08**Construction/Erosion and Sediment Control (ESC) Authority Adopted?**
(Part II, III, IV or V, Subpart B.4.(a.) of 2003 permit)

Yes

Effective Date or Estimated
Date of Adoption (MM/DD/YY): 05/06/08**Post-Construction Stormwater Management Adopted?**
(Part II, III, IV or V, Subpart B.5.(a.) of 2003 permit)

Yes

Effective Date or Estimated
Date of Adoption (MM/DD/YY): 05/06/08

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

Part II: Summary of Receiving Waters

Please list the waterbody segments to which your MS4 discharges. For each waterbody segment, please report the number of outfalls discharging into it and, if applicable, any impairments.

New Hampshire list of impaired waters: <http://des.nh.gov/organization/divisions/water/wmb/swqa/>

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

[illegible]

Waterbody segment that receives flow from the MS4	Number of outfalls into receiving water segment	Chloride	Chlorophyll-a	Dissolved Oxygen/ DO Saturation	Nitrogen	Oil & Grease/ PAH	Phosphorus	Solids/ TSS/ Turbidity	E. coli	Enterococcus	Other pollutant(s) causing impairments
NHRIV600030607-08	2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	pH
NHRIV600030607-12	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
NHRIV600030607-13	7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
NHRIV600030607-14	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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[Click to lengthen table](#)

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

Part III: Stormwater Management Program Summary

Identify the Best Management Practices (BMPs) that will be employed to address each of the six Minimum Control Measures (MCMs).

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

MCM 1: Public Education and Outreach

BMP Media/Category (enter your own text to override the drop down menu)	BMP Description	Targeted Audience	Responsible Department/Parties (enter your own text to override the drop down menu)	Measurable Goal	Beginning Year of BMP Implementation
Various delivery methods	Varied. Use Seacoast Stormwater Coalition (SSC) outreach materials and guidance to implement outreach for relevant impairments.	Residents	Department of Public Works in collaboration with SSC	To be determined with coordination with Seacoast Stormwater Coalition	2018
Various delivery methods	Varied. Use Seacoast Stormwater Coalition (SSC) outreach materials and guidance to implement outreach for relevant impairments.	Businesses, Institutions and Commercial Facilities	Department of Public Works in collaboration with SSC	To be determined with coordination with Seacoast Stormwater Coalition	2018
Various delivery methods	Varied. Use Seacoast Stormwater Coalition (SSC) outreach materials and guidance to implement outreach for relevant impairments.	Developers (construction)	Department of Public Works in collaboration with SSC	To be determined with coordination with Seacoast Stormwater Coalition	2019

City of Rochester

[illegible]

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

Part III: Stormwater Management Program Summary (continued)

MCM 2: Public Involvement and Participation

[illegible]

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

Part III: Stormwater Management Program Summary (continued)

MCM 3: Illicit Discharge Detection and Elimination (IDDE)

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

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[illegible]

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

Part III: Stormwater Management Program Summary (continued)

MCM 4: Construction Site Stormwater Runoff Control

[illegible]

City of Rochester

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

Part III: Stormwater Management Program Summary (continued)

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

BMP Categorization (enter your own text to override the drop down menu or entered text)	BMP Description	Responsible Department/Parties (enter your own text to override the drop down menu)	Measurable Goal (all text can be overwritten)
As-built plans for on-site stormwater control	Adoption, amendment, or modification of a regulatory mechanism to meet permit requirements	City Council through public hearing process	Complete 2 years after effective date of permit
Target properties to reduce impervious areas	Complete an inventory and priority ranking of permittee-owned property and existing infrastructure that could be retrofitted with BMPs designed to reduce the frequency, volume and pollutant loads of stormwater discharges to its MS4 through the mitigation of impervious area	Department of Public Works	Complete 4 years after effective date of permit and report annually on retrofitted properties
Determine feasibility and allow for green infrastructure implementation	Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist	City Council through public hearing process	Complete 4 years after effective date of permit and implement recommendations of report
Street design and parking lot guidelines	Develop a report assessing requirements that affect the creation of impervious cover. The assessment will help determine if changes to design standards for streets and parking lots can be modified to support low impact design options.	City Council through public hearing process	Complete 4 years after effective date of permit and implement recommendations of report

City of Rochester

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[illegible]

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

Part III: Stormwater Management Program Summary (continued)

MCM 6: Municipal Good Housekeeping and Pollution Prevention

BMP Categorization (enter your own text to override the drop down menu or entered text)	BMP Description	Responsible Department/Parties (enter your own text to override the drop down menu)	Measurable Goal (all text can be overwritten)	Beginning Year of BMP Implementation
Operation and Maintenance (O&M) Procedures	Create written O&M procedures including all requirements contained in 2.3.7.1 for parks and open spaces, buildings and facilities, and vehicles and equipment	Department of Public Works	Complete and implement 2 years after effective date of permit	2018
Inventory all permittee-owned parks and open spaces, buildings and facilities, and vehicles and equipment	Prepare inventory	Department of Public Works	Complete 2 years after effective date of permit and implement annually	2018
Infrastructure Operations and Maintenance	Establish and record annually implementation of program activities for maintenance, repair and rehabilitation of MS4 infrastructure	Department of Public Works	Complete 2 years after effective date of permit	2018
Stormwater Pollution Prevention Plan (SWPPP)	Create SWPPPs for municipal properties or individual facilities per requirements of section 2.3.7.2	Department of Public Works	Complete 2 years after effective date of permit	2019
Catch basin cleaning	Establish schedule for catch basin cleaning such that each catch basin is no more than 50% full and clean catch basins on that schedule, ensure proper storage of basin cleanings	Department of Public Works	Clean catch basins on established schedule and report number of catch basins cleaned and volume of material moved annually	2019

[illegible]

[illegible]

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

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Part IV: Notes and additional information

Use the space below to indicate the part(s) of 2.2.2 that you have identified as not applicable to your MS4 and provide all supporting documentation below or attach additional documents if necessary.

Provide any additional information about your MS4 program below.

The listing of water quality impairments and water quality limited water bodies is based on information included in the Final NHDES 2016 303(d) list dated November 30, 2017 for the City of Rochester.

By submitting this Notice of Intent to Comply with the Provisions of the 2017 New Hampshire Small MS4 General Permit pursuant to Section 1.7.2, the City of Rochester does not waive any rights it has to object or contest the applicability of any provision or requirement of the Permit, including, but not limited to, any issues raised by any party in the appeal of the Permit before the United States Court of Appeals for the District of Columbia Circuit, Case Number 17-1060.

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

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Part V: Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly 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 have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

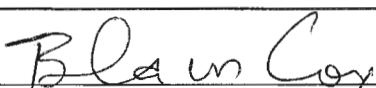
Name:

Blaine Cox

Title:

City Manager

Signature:

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

Date:

9-28-18

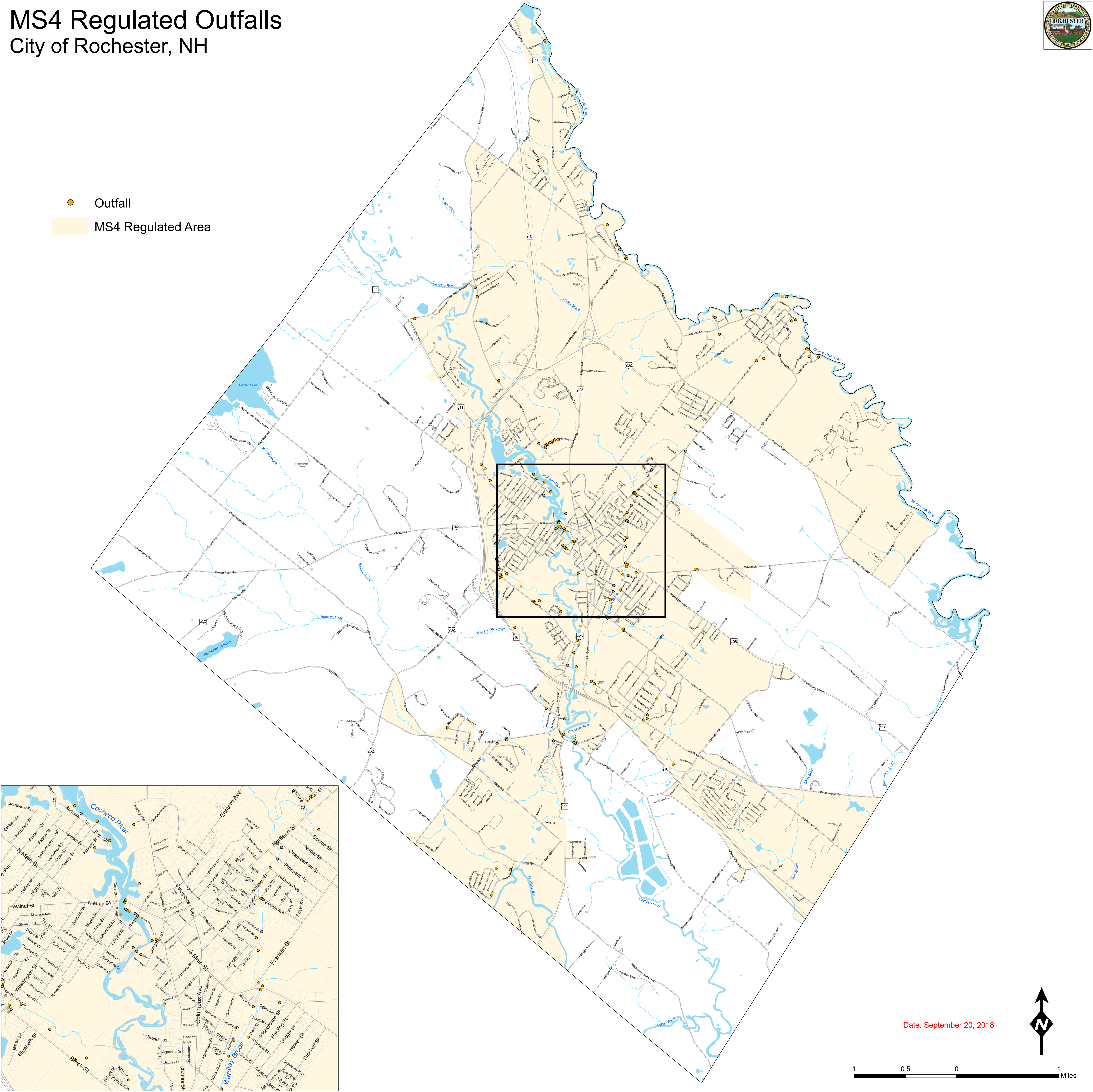
Note: When prompted during signing, save the document under a new file name

MS4 Regulated Outfalls

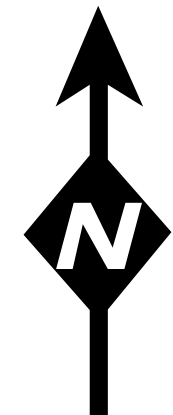
City of Rochester, NH



- Outfall
- MS4 Regulated Area



Date: September 20, 2018



IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Maine and New Hampshire



Local offices

Maine Ecological Services Field Office

☎ (207) 469-7300

📠 (207) 902-1588

MAILING ADDRESS

P. O. Box A

East Orland, ME 04431

PHYSICAL ADDRESS

306 Hatchery Road

East Orland, ME 04431

<http://www.fws.gov/mainefieldoffice/index.html>

New England Ecological Services Field Office

☎ (603) 223-2541

📠 (603) 223-0104

70 Commercial Street, Suite 300
Concord, NH 03301-5094

<http://www.fws.gov/newengland>

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

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

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

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

Mammals

NAME	STATUS
------	--------

Northern Long-eared Bat *Myotis septentrionalis*
 No critical habitat has been designated for this species.
<https://ecos.fws.gov/ecp/species/9045>

Threatened

Flowering Plants

NAME

STATUS

Small Whorled Pogonia *Isotria medeoloides*
 No critical habitat has been designated for this species.
<https://ecos.fws.gov/ecp/species/1890>

Threatened

Critical habitats

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

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds
<http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds
<http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general

public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

American Oystercatcher *Haematopus palliatus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/8935>

Breeds Apr 15 to Aug 31

Bald Eagle *Haliaeetus leucocephalus*

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

Breeds Oct 15 to Aug 31

Black-billed Cuckoo *Coccyzus erythrophthalmus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9399>

Breeds May 15 to Oct 10

Bobolink *Dolichonyx oryzivorus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 20 to Jul 31

Buff-breasted Sandpiper *Calidris subruficollis*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9488>

Breeds elsewhere

Canada Warbler *Cardellina canadensis*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 20 to Aug 10

Dunlin *Calidris alpina arctica*

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Breeds elsewhere

Eastern Whip-poor-will *Antrostomus vociferus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 1 to Aug 20

Evening Grosbeak *Coccothraustes vespertinus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds elsewhere

Golden Eagle *Aquila chrysaetos*

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1680>

Breeds elsewhere

Lesser Yellowlegs *Tringa flavipes*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9679>

Breeds elsewhere

Prairie Warbler *Dendroica discolor*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 1 to Jul 31

Rusty Blackbird *Euphagus carolinus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds elsewhere

Semipalmated Sandpiper *Calidris pusilla*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds elsewhere

Short-billed Dowitcher *Limnodromus griseus*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9480>

Snowy Owl *Bubo scandiacus*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wood Thrush *Hylocichla mustelina*

Breeds May 10 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (I)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

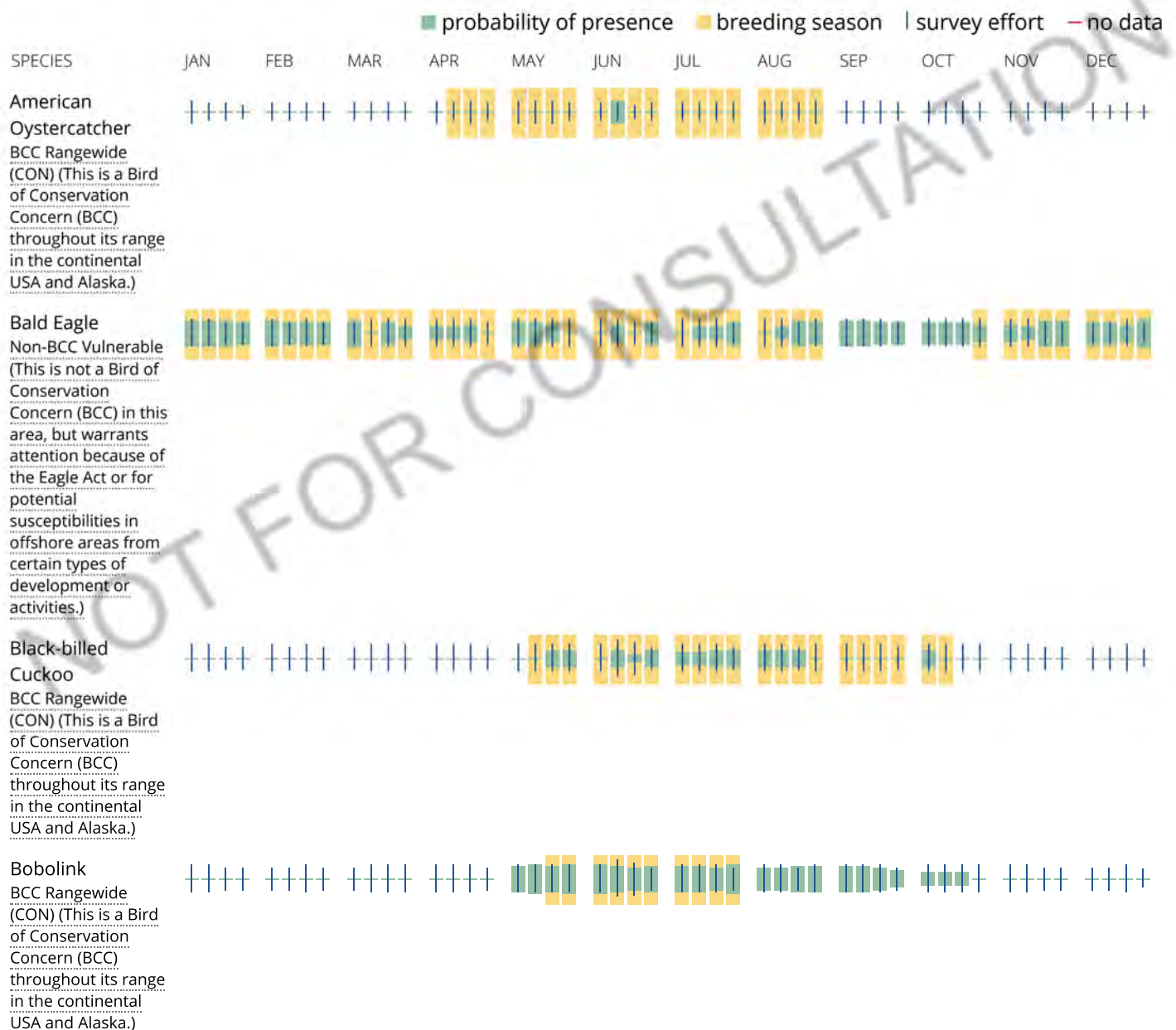
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

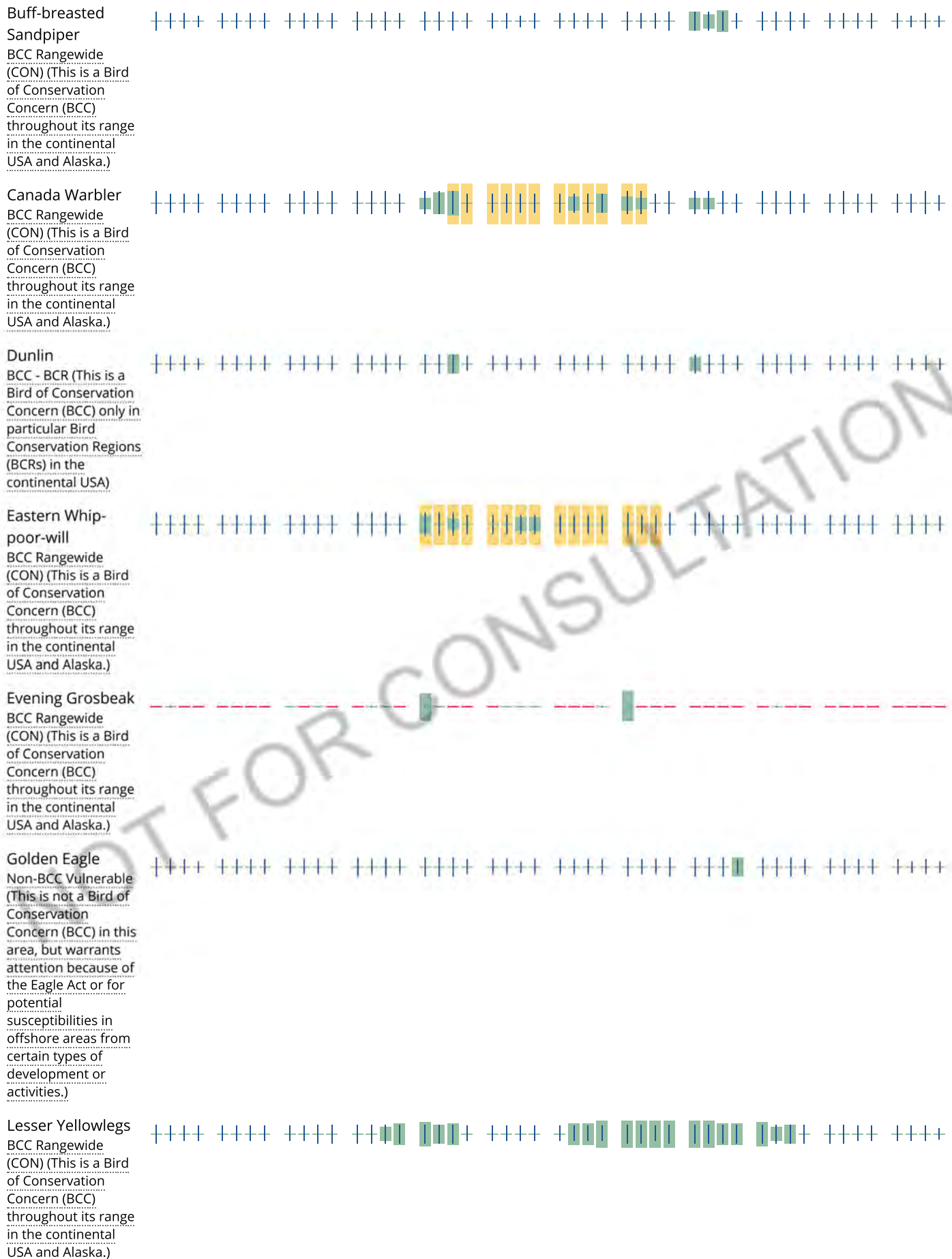
No Data (—)

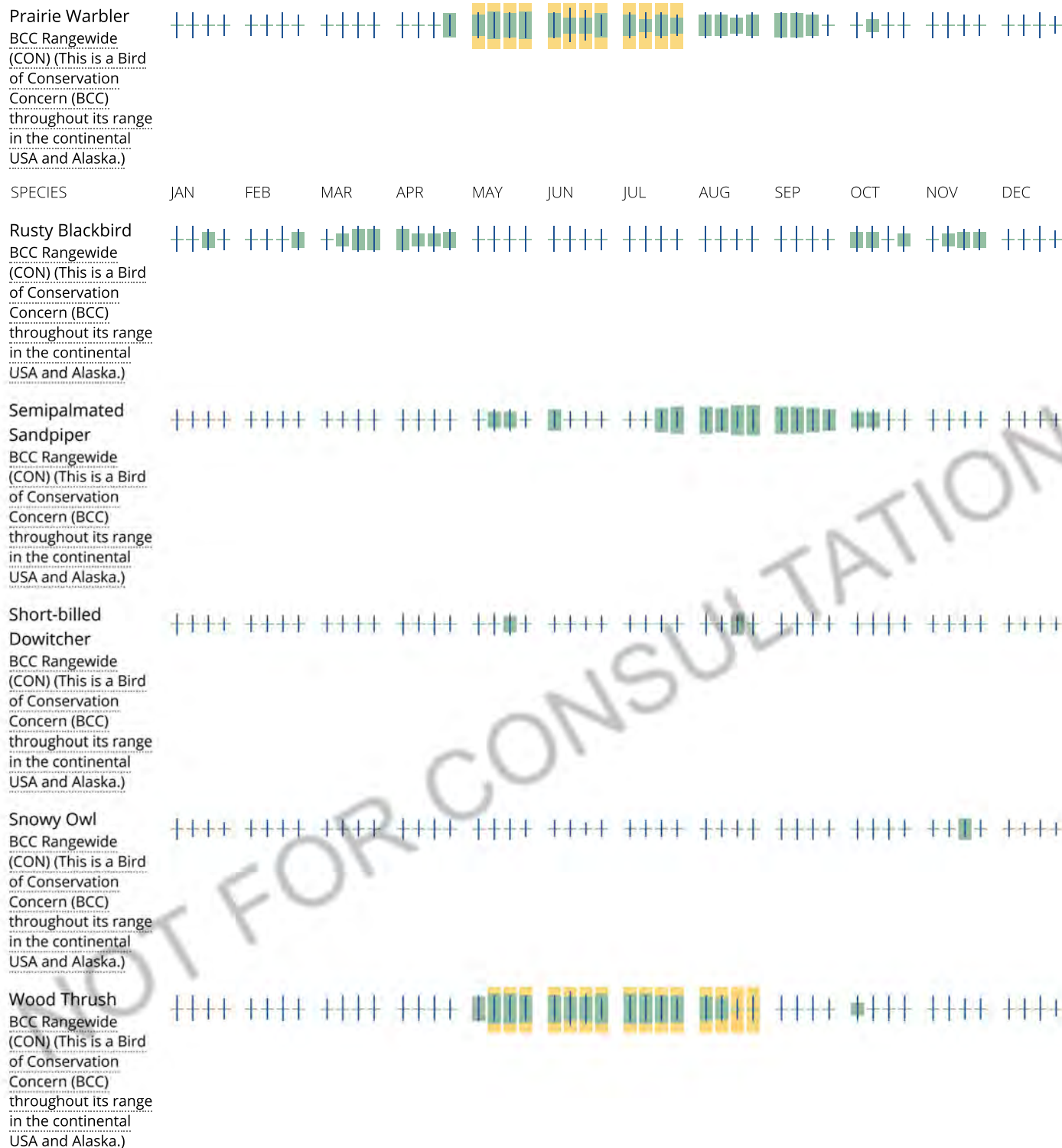
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.







Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) and/or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [E-bird Explore Data Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review.

Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the [NWI map](#) to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

ATTACHMENT 2
AUTHORIZATION TO DISCHARGE



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

VIA EMAIL

June 12, 2019

Blaine Cox
City Manager
31 Wakefield Street
Rochester, NH 03867
blaine.cox@rochesternh.net

Re: National Pollutant Discharge Elimination System (NPDES) Permit ID: NHR041028, City of Rochester, NH

Dear Blaine Cox:

Your Notice of Intent (NOI) for coverage under the 2017 NPDES General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in New Hampshire (MS4 General Permit) has been reviewed by EPA and appears to be complete. You are hereby granted authorization by EPA to discharge stormwater from your MS4 in accordance with applicable terms and conditions of the MS4 General Permit, including all applicable Appendices. This authorization to discharge expires at midnight on **June 30, 2023**.

As a permittee located within the Great Bay Watershed, part 2.2.2.a of the 2017 MS4 General Permit identified your MS4 as discharging to a waterbody impaired due to total nitrogen, or tributary of a waterbody impaired due to total nitrogen. As such, discharges from your MS4 within the Great Bay Watershed are subject to the requirements of Appendix H Part I of the permit.

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

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

Information about the permit and available resources can be found on our website: <https://www.epa.gov/npdes-permits/new-hampshire-small-ms4-general-permit>. Should you have any questions regarding this permit please contact Suzanne Warner at warner.suzanne@epa.gov or (617) 918-1383.

Sincerely,

A handwritten signature in blue ink that reads "Thelma Murphy". The signature is fluid and cursive, with a long horizontal flourish extending from the end of the name.

Thelma Murphy, Chief
NPDES Permits Branch
Water Division
United States Environmental Protection Agency, Region 1



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 1

**5 Post Office Square – Suite 100
BOSTON, MA 02109-3912**

VIA EMAIL

Dated by electronic signature

Re: 2017 New Hampshire Small Municipal Separate Storm Sewer System General Permit - Administratively Continued Permit Coverage

Dear Permit Holder:

You are receiving this letter because stormwater discharges from your municipal separate storm sewer system (MS4) are currently authorized under the 2017 New Hampshire Small MS4 Permit (NH MS4 permit), which will expire on July 1, 2023. In accordance with Part 1.6 of the NH MS4 Permit, the NH MS4 Permit will be administratively continued on July 1, 2023. The NH MS4 Permit will remain in effect for discharges that were authorized prior to July 1, 2023 until such discharges are authorized under a reissued general permit, an individual permit, or other alternative general permit. No action is required at this time to remain covered under the NH MS4 Permit.

If you have any questions regarding this matter, please contact Michelle Vuto (vuto.michelle@epa.gov) of the Stormwater Permits Section.

Sincerely,

Lynne Jennings, Chief
Water Permits Branch
Water Division
Environmental Protection Agency, Region 1

ATTACHMENT 3
ILLICIT DISCHARGE DETECTION AND ELIMINATION
(IDDE) PLAN

Illicit Discharge Detection and Elimination (IDDE) Plan

City of Rochester, New Hampshire



**June 2019
Revised June 2023**



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Appendix C: Sanitary Sewer Overflows for Rochester, New Hampshire

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Appendix E: Field Forms and Chain-of-Custody Forms (to be added)

Appendix F: Catchment Investigation Plan

Appendix G: IDDE Employee Training Record



1 Introduction

1.1 MS4 Program

This Illicit Discharge Detection and Elimination (IDDE) Plan has been developed by the City of Rochester (the City) to address the requirements of the United States Environmental Protection Agency's (USEPA's) 2017 National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in New Hampshire, hereafter referred to as the "2017 MS4 Permit."

The 2017 MS4 Permit requires that each permittee or regulated community address the following six minimum control measures:

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

The 2017 MS4 Permit requires the City to implement an IDDE program to systematically find and eliminate sources of discharges not related to stormwater (i.e., non-stormwater discharges) to its MS4 and implement procedures to prevent such discharges. The IDDE program must also be recorded in a written (hardcopy or electronic) document. This written IDDE Plan has been prepared to address this requirement. All updates to the City's IDDE program will be included in progress memorandums (**Appendix A**).

1.1.1 Illicit Discharges

An illicit discharge is any discharge to a drainage system that is not composed entirely of stormwater. There are two exceptions to this definition:

- Discharges pursuant to a NPDES permit
- Discharges resulting from fighting fires

Illicit discharges can enter the drainage system through direct or indirect connections. Direct connections might be relatively obvious, such as cross-connections of sewer services to the storm drain system. Indirect connections might 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 intermittently discharges contaminated water.

Some illicit discharges are intentional, such as a waste hauler or recreational vehicle owner illegally releasing the contents of hazardous or sanitary waste from an onboard holding tank



into a catch basin or on a paved surface that drains into the City's storm system and eventually into surface waters.

Additionally, solid waste, such as pet waste or yard waste, that is dumped into the storm drain can also be a significant source of pollutants, including nutrients and bacteria. This solid waste dumping can be minimized through a combination of educating residents and providing enough waste receptacles for public use and regularly disposing of the collected materials.

Regardless of the source of the illicit discharges, if they are not addressed, they can contribute high levels of pollutants, such as heavy metals, toxics, oil, grease, solvents, nutrients, and pathogens, to surface waters.

1.1.2 Allowable Non-Stormwater Discharges

In most instances, the following categories of non-stormwater discharges are allowed under the 2017 MS4 Permit:

- Waterline flushing
- Landscape irrigation
- Diverted stream flows
- Rising groundwater
- Uncontaminated groundwater infiltration, as defined at 40 Code of Federal Regulations (CFR) section 35.2005(20)
- Uncontaminated pumped groundwater
- Discharge from potable water sources
- Foundation drains
- Air conditioning condensation
- Irrigation water, springs
- Water from crawlspace pumps
- Footing drains
- Lawn watering
- Individual resident car washing
- Flows from riparian habitats and wetlands
- Dechlorinated swimming pool discharges
- Street wash waters
- Residential building wash waters without detergents

Although the list above are considered allowable in most cases, if the permittee, USEPA, or the New Hampshire Department of Environmental Services (NHDES) identifies any category or individual discharge of non-stormwater discharges listed above as a significant contributor of pollutants to the MS4 regulated area, then those discharges must be considered illicit and addressed in the IDDE Plan (i.e., either control these sources so they are no longer significant contributors of pollutants or eliminate them entirely).



1.1.3 Receiving Waters and Impairments

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 2017 MS4 Permit requires that IDDE Plans list the impaired water bodies within the permittee's regulated area. **Table 1-1** lists the impaired waters within Rochester's regulated area based on the 2016 New Hampshire Integrated List of Waters.

Table 1-1. Impaired Waters, Rochester, New Hampshire

Water Body Name	Assessment Unit ID	Impairment(s)	Associated Approved TMDL/Other Impairment
Salmon Falls River – Baxter Mill Dam Pond	NHIMP600030405-04	pH, non-native aquatic plants	Bacteria (<i>E. coli</i>)
Cochecho River – City Dam 1	NHIMP600030603-01	DO saturation, pH, non-native aquatic plants	None
Cochecho River – Hatfield Dam	NHIMP600030603-02	pH	Bacteria (<i>E. coli</i>)
Cochecho River – Gonic Dam Pond	NHIMP600030607-02	pH	Bacteria (<i>E. coli</i>)
Rochester Reservoir	NHLAK600030602-03	cyanobacteria hepatotoxic Microcystins	pH
Cochecho River	NHRIV600030603-08	macroinvertebrate bioassessments, pH, habitat assessments	Bacteria (<i>E. coli</i>)
Willow Brook	NHRIV600030603-10	macroinvertebrate bioassessments, DO saturation, pH, habitat assessments	Bacteria (<i>E. coli</i>)
Hurd Brook	NHRIV600030603-11	pH	None
Isinglass River	NHRIV600030607-01	macroinvertebrate bioassessments, pH	None
Hanson Brook	NHRIV600030607-08	pH	None
Isinglass River	NHRIV600030607-10	DO saturation, pH	Bacteria (<i>E. coli</i>)

DO: dissolved oxygen

TMDL: total maximum daily load

1.2 Illicit Discharge Detection and Elimination Program Goals, Framework, and Timeline

The goals of the IDDE program are to find and eliminate illicit discharges to the MS4 and to prevent illicit discharges from happening in the future. The program consists of the following major components as outlined in the 2017 MS4 Permit:

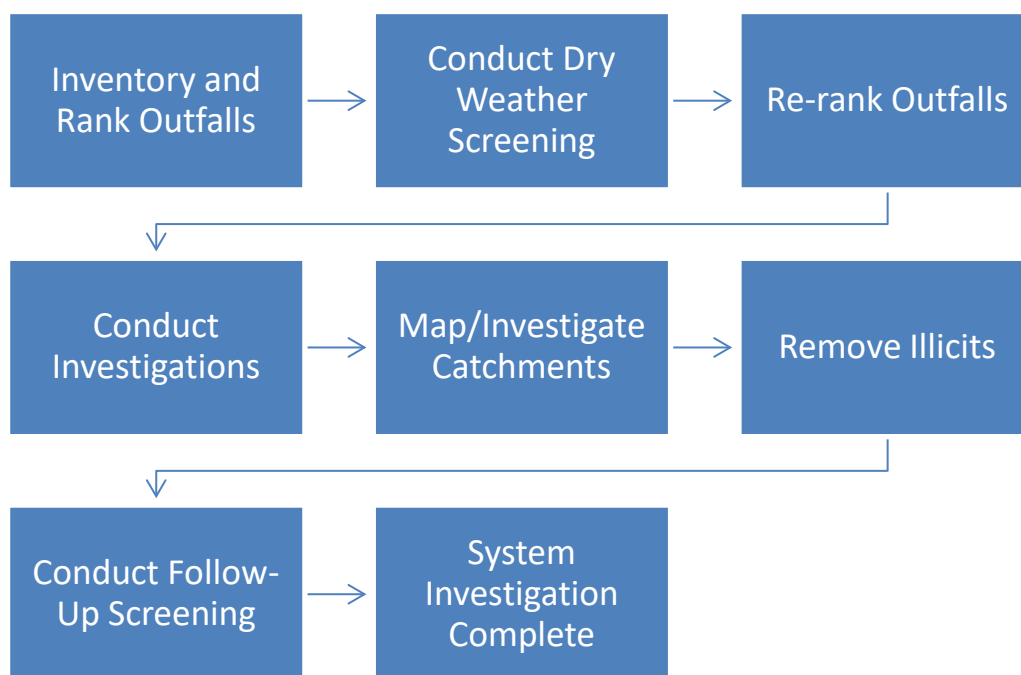


- Legal authority and regulatory mechanism to prohibit illicit discharges and enforce this prohibition
- Storm system mapping
- Inventory and ranking of outfalls¹ and interconnections²
- Dry-weather outfall screening
- Catchment investigations including wet weather screening
- Identification and confirmation of illicit sources
- Illicit discharge removal
- Follow-up screening
- Employee training

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**.

¹ **Outfall**, as defined by 40 CFR 122.2, is a point source where a municipal separate storm sewer discharges to waters of the United States. Outfalls do not include open conveyances that connect two municipal separate storm sewers, pipes, or tunnels or other conveyances that connect segments of the same stream or other waters of the United States. Culverts longer than a simple road crossing shall be included in the inventory unless the permittee can confirm that they are free of any connections and simply convey waters of the United States.

² **Interconnection** is the point (excluding sheet flow over impervious surfaces) where the permittee's MS4 discharges to another MS4 or other storm sewer system, through which the discharge is conveyed to waters of the United States or to another storm sewer system and eventually to a water of the United States.

**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	1.5 Years	2 Years	3 Years	7 Years	10 Years
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 Ordinance (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-Priority, and Low-Priority Outfalls						X



1.3 Requirements Already in Place from 2003 MS4 Permit

The City's 2003 MS4 Permit required each MS4 community to develop a plan to detect illicit discharges using a combination of mapping 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 the removal would be documented.

The City completed the following IDDE program activities consistent with the requirements of the previous 2003 MS4 Permit requirements:

1. Adopted a Stormwater Management Ordinance (Chapter 50: Prohibits illicit discharges/connections and establishes testing and enforcement/removal procedures)
2. Developed a map of outfalls and receiving waters
3. Performed video camera work of sewer and storm drain systems in selected areas

2 Authority and Statement of IDDE Responsibilities

2.1 Legal Authority

In 2008, the City of Rochester adopted Stormwater Management Regulations (Chapter 50, Section 14 of the City's Ordinances) that contain language prohibiting illicit discharges and connections to the MS4. These ordinances were adopted to meet the requirements of the 2003 MS4 Permit. The Stormwater Management Ordinance can be found on the City website. The Stormwater Management Ordinance provides the Department of Public Works (DPW) with adequate legal authority for the following:

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

The City updated its Stormwater Management Ordinance (now Chapter 218) and related permitting and approval policies to be consistent with the 2017 MS4 Permit.

According to Chapter 218, the following discharges are allowed into the city storm drainage system, meaning the following are not considered illicit discharges. These discharge types closely align to the 2017 MS4 Permit:



- Waterline flushing
- Landscape irrigation/lawn watering
- Diverted stream flows
- Rising groundwater
- Groundwater infiltration
- Uncontaminated pumped groundwater
- Foundation/footing drains
- Crawlspace pumps
- Air conditioner condensate
- Natural springs
- Noncommercial washing of vehicles
- Riparian habitat or wetland flows
- Dechlorinated swimming pool water (<1 part per million [ppm] chlorine)
- Fire-fighting activities

2.2 Statement of Responsibilities

Pursuant to the provisions of the Stormwater Management Ordinance, the Rochester DPW has the lead responsibility for implementing the IDDE program, including reviewing permit applications for new projects and storm drain construction for projects that disturb more than 5,000 square feet. The Rochester Planning and Development Department is responsible for the Land Use and Site Plan Review regulations.



3 Stormwater System Mapping

The City originally mapped its stormwater outfalls to meet the mapping requirements of the 2003 MS4 Permit. A copy of the existing storm system map is provided in **Appendix B**. The 2017 MS4 Permit requires a more detailed storm system map than was required by the 2003 MS4 Permit. The revised mapping is intended to help with identifying key infrastructure, factors influencing proper system operation, and the potential for illicit discharges. The storm system map in **Appendix B** will be updated as additional mapping is completed.

The 2017 MS4 Permit requires the storm system map to be updated in two phases as outlined below. The DPW is responsible for updating the stormwater system mapping pursuant to the 2017 MS4 Permit. Along with updates to the storm system map included in this IDDE plan (**Appendix B**), the annual reports include updated progress made on the storm system map. The annual reports are submitted to USEPA.

3.1 Phase I Mapping

The 2017 MS4 Permit Phase I mapping must be completed within 2 years after the effective date of the permit. The effective date of the 2017 MS4 Permit is July 1, 2018. Phase I mapping requirements include the following items:

- Outfalls and receiving waters
- Open channel conveyances (swales, ditches, etc.)
- Interconnections with other MS4s and other storm sewer systems
- Municipally owned stormwater treatment structures
- Water bodies relevant to Rochester identified by name and indication of all use impairments as identified on the most recent USEPA-approved New Hampshire Integrated List of Waters report (**Table 1-1**)
- Initial catchment delineations (topographic contours and drainage system information may be used to produce initial catchment delineations)

The City has completed the Phase I mapping requirements.

3.2 Phase II Mapping

The 2017 MS4 Permit Phase II mapping must be completed within 10 years of the effective date of the permit. The effective date of the 2017 MS4 Permit is July 1, 2018. Phase II mapping requirements are as follows:

- 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)
- Municipal combined sewer system (if applicable)

3.3 Additional Recommended Mapping Elements

Although not a requirement of the 2017 MS4 Permit, the City will consider including the following recommended elements in its storm system mapping as part of the completion of the Phase II mapping efforts:

- Storm sewer material, size (pipe diameter), age
- Sanitary sewer system material, size (pipe diameter), age
- Privately owned stormwater treatment structures
- Where a municipal sanitary sewer system exists, properties known or suspected to be served by a septic system, especially in high-density urban areas
- 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

Any recommended elements listed above that the City includes in its mapping will be identified and discussed in the progress update memorandums included in **Appendix A**.



4 Sanitary Sewer Overflows

The 2017 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. A summary of SSOs that have discharged in the MS4 area is included as

Appendix C.

The City will eliminate any detected SSO as quickly 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 City will provide oral notice to USEPA within 24 hours and written notice to USEPA and NHDES within 5 days. In addition, when and if new SSOs are detected, the City will update the SSO inventory in **Appendix C**. The SSO inventory, including the status of mitigation and corrective measures to address each identified SSO, will also be included in the annual report that will be submitted to USEPA.



5 Assessment and Priority Ranking of Outfalls

As part of this IDDE Plan, the City assesses and ranks its outfalls in terms of their potential to have illicit discharges and related public health significance consistent with the 2017 MS4 Permit. The ranking determines the priority order for performing IDDE investigations and meeting permit milestones.

5.1 Preliminary Outfall Catchment Delineations

A catchment is the area that drains to an individual outfall or interconnection. The catchments for each of the MS4 outfalls will be 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. Initial catchment delineations are part of the Phase I mapping, and refined catchment delineations are part of the Phase II mapping to reflect information collected during catchment investigations.

5.2 Outfall and Interconnection Inventory and Initial Ranking

The Rochester DPW assesses which outfalls and interconnections have the greatest potential for illicit discharges through information obtained during the outfall and interconnection inventory and priority ranking. The outfall and interconnection inventory will identify each outfall and interconnection discharging from the MS4, record its location and condition, and provide a framework for tracking inspections, screenings, and other IDDE program activities.

Outfalls and interconnections will be classified as one of four categories: problem outfalls, high-priority outfalls, low-priority outfalls, or excluded outfalls. The definitions of these categories are presented below.

- 1. Problem Outfalls:** Problem outfalls are outfalls and interconnections with known or suspected contributions of illicit discharges based on existing information. Any outfalls or interconnections where previous screening indicates there is likely sewer input shall be designated as a problem outfall. Likely sewer input indicators are any of the following:
 - Olfactory or visual evidence of sewage
 - A combination of ammonia levels of ≥ 0.5 milligrams per liter (mg/L), surfactant (i.e., the primary component of cleaning detergents) levels of ≥ 0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water
 - A combination of ammonia levels of ≥ 0.5 mg/L, surfactant levels of ≥ 0.25 mg/L, and detectable levels of chlorine



As described in **Section 6** of this IDDE Plan and Part 2.3.4.7.b of the MS4 Permit, dry weather screening and sampling are not required for problem outfalls.

2. **High-Priority Outfalls:** High-priority outfalls are outfalls and interconnections that have not been classified as problem outfalls but satisfy either of the following requirements:
 - Indications that the outfall is discharging to an area of concern to public health such as near public beaches, recreational areas, drinking water supplies, or shellfish beds
 - Determined by the permittee as a high priority based on characteristics of the defined catchment areas (Section 5.2.1) or other available information.
3. **Low-Priority Outfalls:** Low-priority outfalls are outfalls and interconnections determined by the permittee as low priority based on the characteristics listed below or other available information.
4. **Excluded Outfalls:** Excluded outfalls are outfalls and interconnections that have no potential for illicit discharges and, therefore, 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; cross-country drainage alignments (that neither cross nor are near sanitary sewer alignments) through undeveloped land.

5.2.1 Characteristics to Inform Ranking

Outfalls that have not been deemed as excluded outfalls, will be ranked into the priority categories 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.

- **Previous screening results:** Previous screening and sampling results indicate likely sewer input (see criteria above for problem outfalls).
- **Past discharge complaints and reports**
- **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
 - 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. Some examples of these types of sites are car dealers, car washes, gas stations, garden centers, and industrial manufacturing areas.



- **Age of development and infrastructure:** Industrial areas that are over 40 years old and areas where the sanitary sewer system is over 40 years old have a high potential for illicit discharge. Developments that are less than 20 years old have a low potential for illicit discharge.
- **Sewer conversion:** Contributing catchment areas that were once serviced by septic systems but have been converted to sewer connections could have a high potential for illicit discharge.
- **Historic combined sewer systems:** Contributing areas that were once serviced by a combined sewer system but have been separated could have a high potential for illicit discharge.
- **Surrounding density of aging septic systems:** Septic systems that are over 30 years old in residential areas are prone to have failures and have a high potential for illicit discharge.
- **Culverted streams:** Culverted streams are rivers or streams that are culverted for distances greater than a simple roadway crossing could have a high potential for illicit discharge.
- **Water-quality-limited water bodies:** Water bodies that receive discharge from the MS4 or waters with approved total maximum daily loads (TMDLs) that are applicable to the permittee need to be considered because any illicit discharge to those water bodies has the potential to contain the pollutant that has been identified as the cause of the water quality impairment.

5.2.2 Initial Outfall Inventory and Ranking

An initial outfall inventory and priority ranking summary can be found in **Appendix D**.

The outfall inventory and ranking (**Appendix D**) will be updated annually to include data collected in connection with dry-weather screening and other relevant inspections. This updated inventory and ranking will also be provided in each annual report.



6 Dry Weather Outfall Screening and Sampling

One common indicator of potential illicit connections is when there is flow present during dry weather. The 2017 MS4 Permit requires all outfalls and interconnections other than problem outfalls and excluded outfalls to be inspected for the presence of dry weather flow. The DPW is responsible for conducting dry weather outfall screening. Based on the initial priority rankings described in the previous section, the DPW will screen high-priority outfalls first. Once the high-priority screenings are completed, the DPW will screen the low-priority outfalls.

6.1 Weather Conditions

In terms of dry weather outfall screening and sampling, dry weather conditions occur when no more than 0.1 inches of rainfall has occurred in the previous 24 hours and no significant snow melt is occurring. In order to determine if dry weather conditions have been met so that dry weather screening and sampling can occur, DPW staff will use one of the following two resources:

- Precipitation data available online at Weather Underground (www.wunderground.com) for three weather stations within or closest to Rochester. If any of the three stations document more than 0.1 inches of rainfall in the previous 24-hour period, DPW staff will not count that as a dry weather period.
- Precipitation data from the National Oceanic and Atmospheric Administration (NOAA) Station KNHROCHE25 (Rochester 25) on King Street in Rochester. If Rochester 25 Station is not available or not reporting current weather data, then NOAA Station KNHROCHE7 (Rochester 7) on Rochester Hill Road will be used as a back-up.

6.2 Dry Weather Screening and Sampling Procedure

6.2.1 General Procedure

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

1. Identify outfall(s) to be screened or 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).



- c. Look for and record visual and 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 Section 6.2.3 (Sample Collection and Analysis).**
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 7 days 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. Enter results from the screening and sampling into a spreadsheet or database. Include pertinent information in the outfall and interconnection inventory and priority ranking.
7. Include all screening data in the annual report.

6.2.2 Field Equipment

Field equipment commonly used for dry-weather outfall screening and sampling is listed in **Table 6-1**.

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 w/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	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



Equipment	Use/Notes
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. Keep extra sample containers on hand at all times. Make sure there are proper sample containers for what is being sampled for (i.e., bacteria requires sterile containers).
Pry Bar or Pick	For opening catch basins and manholes when necessary
Sandbags	For damming low flows in order to take samples
Small Mallet or Hammer	For 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

GPS: global positioning system

6.2.3 Sample Collection and Analysis

If flow is present during a dry weather outfall inspection, a sample of the flow will be collected and analyzed for the required permit parameters listed in **Table 6-2**.³ The general procedure for collecting outfall samples is as follows:

1. Fill out all sample information on sample bottles and field sheets (see **Appendix E** for sample labels and field sheets).
2. Put on protective gloves (nitrile/latex/other) before sampling.
3. Collect sample 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. Triple rinse any device used (e.g., dipper) with distilled water and then in the water to be sampled. Bacteria sample bottles should not be rinsed.
5. Use test strips, test kits, and field meters (rinse similar to dipper) for most parameters (see **Table 6-2**).

³ Other potentially useful parameters, although not required by the MS4 Permit, include **fluoride** (indicator of potable water sources in areas where water supplies are fluoridated), **potassium** (high levels can be indicative of the presence of sanitary wastewater), and **optical brighteners** (indicative of laundry detergents).



6. Place laboratory samples on ice for analysis of bacteria and pollutants of concern.⁴
7. Fill out chain-of-custody form (**Appendix E**) for laboratory samples.
8. Deliver samples to either the City laboratory or selected commercial 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) by receiving-water backflow, field staff will move to the next upstream structure for visual inspection or sampling. If the receiving-water backflow is still influencing this first upstream structure, the field crew will continue to move upstream until they have identified a structure where there is no longer an influence from the receiving water on the visual inspection or sampling. The location of the first accessible upstream manhole or structure found for observation and sampling will be reported along with the screening results.

For parameters other than indicator bacteria or pollutants of concern, the field crew can use field test kits or field instruments to collect data. Field kits need to have appropriate detection limits and ranges. **Table 6-2** lists sampling parameters and associated analysis methods.

Table 6-2. Sampling Parameters and Analysis Methods

Analyte or Parameter	Instrumentation (Portable Meter)	Field Test Kit
Ammonia	CHEMetrics™ V-2000 Colorimeter Hach™ Pocket Colorimeter™ II	CHEMetrics™ K-1410 LaMotte 5864-01 Ammonia-Nitrogen Test Strips
Chlorine	CHEMetrics™ V-2000 Hach™ Pocket Colorimeter™ II	SenSafe Total Chlorine Test Strips
Conductivity	YSI Pro30 Extech ExStik® II	NA
Salinity	YSI Pro30 Extech ExStik® II	NA
Surfactants (Detergents)	CHEMetrics™ I-2017	CHEMetrics™ K-9400
Temperature	YSI Pro30 Extech ExStik® II	NA

⁴ Pollutants of concern vary according to the particular water body that could be affected by discharge. Where the flow is directly discharged into a water-quality-limited water or a water subject to an approved TMDL of pollutants, the sample must be analyzed for the pollutant(s) of concern identified as the cause of that particular water quality impairment. Table 1-1 includes the pollutants of concern for impaired water bodies included in the Rochester MS4 area.



Analyte or Parameter	Instrumentation (Portable Meter)	Field Test Kit
Indicator Bacteria: <i>E. coli</i> (freshwater) or <i>Enterococcus</i> (saline water)	EPA certified laboratory procedure (40 CFR § 136)	NA
Pollutants of Concern	EPA-certified laboratory procedure (40 CFR § 136)	NA

Testing for indicator bacteria and any pollutants of concern must be conducted using analytical methods and procedures found in 40 CFR § 136.⁵ 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 ₂ SO ₄ to pH <2, No preservative if analyzed immediately
Chlorine	SM: 4500-Cl G	0.02 mg/L	Analyze within 15 minutes	None Required
Conductivity (Specific Conductance)	EPA: 120.1, SM: 2510B	0.2 µs/cm	28 days	Cool ≤6°C
Salinity	SM: 2520	-	28 days	Cool ≤6°C
Surfactants	SM: 5540-C	0.01 mg/L	48 hours	Cool ≤6°C
Temperature	SM: 2550B	<i>not applicable</i>	Immediate	None Required
Indicator Bacteria: <i>E. coli</i> <i>Enterococcus</i>	<i>E. coli</i> EPA: 1603 SM: 9221B, 9221F, 9223 B Other: Colilert®, Colilert-18® <i>Enterococcus</i> SM: 9230 C Other: Enterolert®	<i>E. coli</i> EPA: 1 cfu/100 mL SM: 2 MPN/100 mL Other: 1 MPN/100 mL <i>Enterococcus</i> SM: 1 MPN/100 mL Other: 1 MPN/100 mL	8 hours	Cool ≤10°C, 0.0008% Na ₂ S ₂ O ₃

⁵ 40 CFR § 136: [ecfr.gov/cgi-bin/text-idx?SID=b3b41fdea0b7b0b8cd6c4304d86271b7&mc=true&node=pt40.25.136&rgn=div5](https://www.ecfr.gov/cgi-bin/text-idx?SID=b3b41fdea0b7b0b8cd6c4304d86271b7&mc=true&node=pt40.25.136&rgn=div5)



Analyte or Parameter	Analytical Method	Detection Limit	Max. Hold Time	Preservative
Total Nitrogen (Ammonia + Nitrate/Nitrite, TKN)	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 ₂ SO ₄ to pH <2
Total Phosphorus	EPA: 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 ₂ SO ₄ to pH <2

°C: degrees Celsius

cfu: colony-forming unit

H₂SO₄: sulfuric acid

µs/cm: microsiemens per centimeter

mg/L: milligram(s) per liter

mL: milliliter

MPN: most probable number

Na₂S₂O₃: sodium thiosulfate

SM: standard method

TKN: total Kjeldahl nitrogen

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 USEPA 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
Chlorine	>0.02 mg/L (detectable levels per the 2017 MS4 Permit)
Surfactants	>0.25 mg/L



Analyte or Parameter	Benchmark
Indicator Bacteria ⁶ : <i>E.coli</i> <i>Enterococcus</i> ⁷	<p><i>E.coli</i>: the geometric mean of the five most recent samples taken during the same bathing season shall not exceed 126 cfu/100 mL and no single sample taken during the bathing season shall exceed 235 cfu/100 mL</p> <p><i>Enterococcus</i>: the geometric mean of the three most recent samples taken during a 60-day period shall not exceed 35 cfu/100 mL and no single sample taken during the bathing season shall exceed 104 cfu/100 mL</p>

cfu: colony-forming unit
mg/L: milligrams per liter
mL: milliliter

6.4 Follow-Up Ranking of Outfalls and Interconnections

The City will update and reprioritize (as needed) the initial outfall and interconnection rankings based on information gathered during dry-weather screenings. The rankings will be updated periodically as dry weather screening information becomes available but will be completed within 3 years of the effective date of the 2017 MS4 Permit.

Outfalls and interconnections where relevant information was 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 and interconnections will be ranked at the top of the high-priority outfalls category for catchment investigations. The original ranking of other outfalls and interconnections may be changed based on any new information from the dry weather screening.

Outfall and interconnection rankings will be updated in **Appendix D** and any ranking adjustments will be included in the annual report that will be submitted to USEPA.

⁶ Center for Watershed Protection and University of Alabama. 2004. "Indicator Monitoring" Chapter 12 of Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments. Available at <https://www3.epa.gov/npdes/pubs/iddmanualwithappendices.pdf>.

⁷ <https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/2020-01/bb-14.pdf>



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. The catchment investigations may include a review of past plans and records; manhole observations; dry weather and wet weather sampling results; 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 will be recorded and reported in each annual report. Catchment investigation procedures are described in a separate Catchment Investigation Plan (**Appendix F**).

8 Training

Annual IDDE training will be made available to all employees involved in the IDDE program. This training will at a minimum include information on how to identify illicit discharges and SSOs. Training may also include additional subjects that are specific to the functions of particular personnel within the framework of the IDDE program. Training records will be maintained in **Appendix G**. The frequency and type of training conducted will be included in the annual report.

9 Progress Reporting

The City will be providing documentation of progress and success of the IDDE program in progress memorandums and the annual report that is submitted to USEPA. The progress updates will include 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 that were evaluated using the catchment investigation procedure
- Number of dry weather outfall inspections and screenings completed
- Number of wet weather outfall inspections and sampling events completed
- 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 will be measured by the IDDE activities completed within the required permit timelines.



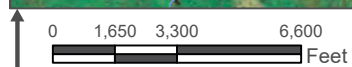
Appendix A

IDDE Program Progress Memorandums



Appendix B

Storm System Map



Rochester MS4

Rochester, New Hampshire

Legend

IDDE_Priority

- Low (70)
- High (90)

Rivers/Streams

Bacteria Impaired Rivers/Streams

Municipal Boundary

Lakes/Ponds

MS4 Urban Area

IDDE Outfall Prioritization

ESRI, Geosyntec, GRANIT, VHB



Appendix C

Sanitary Sewer Overflows for Rochester, New Hampshire

Appendix C: SSO Inventory for Rochester, New Hampshire
Revision Date: June 2023

SSO Location ¹	Discharge Statement ²	Time Start ³	Time End ³	Estimated Volume ⁴	Description ⁵	Mitigation Completed ⁶	Mitigation Planned ⁷
River Street Pump Station	Yes, some of the SSO entered a surface water but the majority filtered through a treatment swale	4:00 PM, April 1, 2019	1:30 PM, April 3, 2019	170,000 Gallons	Pump station malfunction resulting in no activation of low-level alarm. Due to the malfunction, water was discharging from a manhole and the manual bar screen room.	Bubbler has been replaced in the pump station, and both wet wells have been vacuumed. The low-level alarm was raised to increase alarm activation for future events.	Increase inspection and cleaning of wet wells at pump station
Highland Street/Salmon Falls Road	No, the SSO was contained in ditch lines and catch basins	3:00 PM, November 3, 2018	Unknown November 3, 2018	Unknown	Sewer main collapse that resulted in sewage back-up and discharge from upstream manholes.	Bulk septage haulers were contracted to shut off and transport effluent from upstream pump stations while 24 feet of 18-inch sewer main was installed. Saturated leaf debris, ditch lines, and catch basins were all vacuumed.	The City lined the sewer main and investigated the structural integrity of the sewer main further downstream.
86 South Main Street	Yes, illicit connection to the stormwater system for unknown time period	10:30 AM, February 13, 2018	3:00 PM, February 14, 2018	Unknown	Illicit connection of a building’s wastewater lateral owned by RM Edgerly and Sons Inc. was directly connected to a catch basin located along South Main Street.	City staff capped the discharge line and closed the business to prevent possible flow. New sewer lateral was run to connect the building to the City’s sanitary system. Illicit lateral was abandoned using brick and cement.	Further investigate how illicit connection was created.
Route 11 Pump Station	No, water was contained in a low-lying swale area outside pump station	11:15 PM, December 31, 2017	9:00 AM, January 2, 2017	35,000–40,000 Gallons	An electric fault caused a failure of the pump station and corresponding overflow alarm. Lack of working pump caused wet wells to overflow.	Lime was spread over the general area of the overflow after pumping the wet wells. The electrical connection was repaired to restore operations.	Future installation of high-level float with duplicate output for backup control.
Brookside Place at Ledgeview	Unknown	3:00 AM, June 8, 2017	7:00 AM, June 8, 2017	4,800 Gallons	Leak in air bubbler line at pump station resulted in pumps not being signaled due to high wet-well levels.	Air bubbler line was replaced, and a pressure transducer was installed for additional high wet-level alarm indication.	Replacement of older pump station controllers.
Tara Estates Pump Station	No, SSO ran into large grass field before infiltrating	4:00 PM, October 22, 2016	7:30 AM, October 24, 2016	39,958 Gallons	Cable modem at pump station malfunctioned due to an electrical surge disabling the pump controller/alarm. SSO was discharging from pump station manhole cover.	Damaged modem was repaired, and lime was spread over the affected area.	Upgraded ethernet surge arrestor to prevent future surge malfunctions.
Western Ave Pump Station	Yes, a portion of the SSO reached Willow Brook	1:00 PM, April 12, 2015	2:00 PM, April 12, 2015	2,580 Gallons	Leak in air bubbler line resulted in pumps not being signaled to run. Upstream manholes overflowed into roadway because of backup.	Bubbler tubing was replaced and a backup float for high wet-well reporting was installed.	None
Western Ave Pump Station	Yes, a portion of the SSO reached Willow Brook	9:30 AM, March 30, 2015	10:30 AM, March 30, 2015	300–500 Gallons	Leak in air bubbler line resulted in pumps not being signaled to run. Upstream manholes overflowed into roadway because of backup.	Portion of the bubbler tubing was replaced.	None
Thomas Street Pump Station	Unknown	8:30 PM, July 5, 2014	10:30 PM, July 5, 2014	1,000 Gallons	Electrical surge tripped out both pumps and corresponding alarms resulting in a back-up at the pump station overflowing out of upstream manhole.	Lime was spread over the affected area and the electrical systems were repaired to normal operating conditions.	None

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
⁷ Mitigation and corrective measures planned



Appendix D

Initial Outfall Prioritization Technical Memorandum



Memorandum

To: Peter Nourse
 Michael Bezanson
 Timothy Goldthwaite
 cc. Dan Bourdeau,

Date: May 2, 2019
 Revised: May 23, 2019

Project #: 52323.05

From: Bill Arcieri, VHB
 David Horner, VHB

Re: Rochester MS4 -
 Outfall/Interconnection Priority Ranking

1) Outfall Priority Ranking

VHB has conducted an initial priority ranking of the City's outfall and interconnection inventory to assess the relative priority for conducting dry weather screening of the mapped stormwater outfalls to detect illicit discharges. As of now, based on the City's current outfall mapping, the City has an estimated 160 stormwater outfalls subject to the MS4 permit. The criteria used to categorize the outfalls into four priority ranking categories are presented below consistent with the permit. Dry weather screening is anticipated to start this summer in 2019 following completion of the IDDE Plan. Depending on weather and available resources, it is expected that the dry weather screening can be completed in 2019 but the permit allows till the end of July 2021 to complete the initial screening process. The results of the dry weather screening collected to date and any changes to the outfall ranking will be included in each annual report.

The Permit outlines the criteria to be used to categorize the known outfalls and interconnections into Problem, High, Low or Excluded categories based on existing conditions and are described as follows:

- **Problem Outfalls:** Outfalls/interconnections with known or suspected contributions of illicit discharges based on existing information shall be designated as Problem Outfalls. This includes any outfalls or interconnections where sewer influences were previously observed. Likely sewer influence 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.

Note: Dry weather screening and sampling, as described in Part 2.3.4.7.b of the MS4 Permit, is not required for Problem Outfalls.

- **High Priority:** Outfalls/interconnections that have not been classified as Problem Outfalls and that are:
 - Discharge to an area of public health concern due to proximity of public beaches, recreational areas, drinking water supplies or shellfish beds
 - Discharge to a water quality limited water or a water with an approved TMDL
 - Discharges near delineated surface water intake areas
 - Discharges from conveyance systems located near aging sanitary sewer infrastructure (>20 years) with potential for illicit contributions
- **Low Priority Outfalls:** Outfalls/interconnections considered to be Low Priority are remaining outfalls that were not classified as Problem, High Priority or Excluded outfalls.
- **Excluded outfalls:** Outfalls/interconnections considered to have very limited or no potential for illicit discharges because the outfalls are primarily associated with open roadway drainage in undeveloped areas with no dwellings and no sanitary sewers; drainage from athletic fields, parks or undeveloped green space and

2 Bedford Farms Drive
 Suite 200
 Bedford, NH 03110-6532
 P 603.391.3900

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associated parking without services; cross-country drainage alignments (that neither cross nor are in proximity to sanitary sewer alignments) through undeveloped land.

Table 1 presents our initial outfall priority ranking summary based on the aforementioned criteria for mapped outfalls and are shown in **Figure 1**. Due to the presence of bacteria impaired waters, slightly more than half of the outfalls are classified as High Priority and the remaining outfalls are considered Low Priority. None of the outfalls are currently considered Problem Outfalls and at this time and we have not classified any as being Excluded. Based on further discussions with the City, we may re-evaluate whether any Problem or Exclude outfalls exist. There are several outfalls that could potentially be considered Excluded given their location. However, at this time, it seems prudent to categorize all known outfalls as either High or Low priority rather than raise the risk of being questioned as to whether a handful of outfalls met the qualifying criteria to be considered Excluded. The level of effort to conduct the dry weather screening is not expected to change much if several outfalls were excluded from the screening process. Both High and Low priority outfalls need to undergo dry weather screening and, thus, whether they are classified as High or Low priority does not matter much or affect the level of effort.

Table 1. Outfall Inventory and Priority Ranking Summary
Revision Date: May 2, 2019

Outfall Priority	# of Outfalls¹
Problem	0
High Priority	90
Low Priority	70
Excluded	0
Total Outfalls	160

Note: ¹The number of outfalls within each priority category is subject to change as more information becomes available.

VHB will proceed in fully developing the IDDE Plan to outline the dry weather screening and sampling protocols. Only outfalls with observed dry weather flow will need to be sampled for indicators of illicit connection and pollutants of concern. Pollutants of concern relate to any listed water quality impairment or water with an approved TMDL.

Following the dry weather screening, the Permit requires that outfalls be re-ranked into the priority categories prior to launching into the next catchment investigation phase based on the dry weather screening results and any system vulnerability factors within the defined initial catchment areas, where information is available. The additional relevant characteristics relate primarily to historical conditions that may suggest there is potential for sanitary sewer or septic systems to influence stormwater quality and will be utilized in future iterations of the priority ranking analysis.

- **Previous screening results** – previous screening/sampling results that may indicate sewer input (see criteria above for Problem Outfalls).
- **Past discharge complaints and reports.**

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- **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
 - Surfactants levels greater than or equal to 0.25 mg/l
- **Sewer conversion** – Contributing catchment areas that were once serviced by septic systems but have been converted to sewer connections may have a high illicit discharge potential.
- **Historic combined sewer systems** – Contributing areas that were once serviced by a combined sewer system but have been separated may have a high illicit discharge potential.
- **Surrounding density of aging septic systems** – Septic systems thirty years or older in residential land use areas are prone to have failures and may have a high illicit discharge potential.

2) Sanitary Sewer Overflow (SSO) Inventory

Another key component of the IDDE Plan required by the Permit, is a summary of any Sanitary Sewer Overflow (SSO) discharges over the last five years. An inventory of SSOs has been provided by the City and has been included in the IDDE Plan consistent with the Permit requirements. VHB will discuss with City and consider any an additional review needed to determine if any of the outfalls may be connected to or have been influenced by SSOs, which may warrant reclassifying them as "Problem Outfalls" in the next priority ranking.



Appendix E

Field Forms, Sample Bottle Labels, and Chain-of-Custody Forms
(to be added)



Appendix F

Catchment Investigation Plan

Catchment Investigation Plan

Prepared For:

City of Rochester
New Hampshire



Date: June 2020

Revised June 2023



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ATTACHMENTS

Attachment A: Manhole Field Inspection Form

Attachment B: Advanced Forensic Tools



1.0 Introduction

1.1 Purpose and Need

This Catchment Investigation Plan (Plan) was developed to describe the field protocols to be used to investigate storm drain outfalls and associated catchment areas to identify potential illicit discharges within catchment areas of each outfall or interconnection and to describe measures that will be used to confirm and eliminate any identified illicit discharges and connections.

Prior to initiating the field component of the catchment investigations, the project team will use existing mapping and outfall screening data to prioritize outfalls based on their potential to have an illicit discharge or connection. The results of this outfall prioritization will be presented separately and included as an attachment to this Plan.

1.2 Catchment Investigation Timeline and Process

Consistent with the United States Environmental Protection Agency (USEPA) 2017 Municipal Separate Storm Sewer Systems (MS4) Permit (2017 MS4 Permit), the catchment investigation involves the following four major components or tasks:

1. Review existing data: identify maps, historical plans, sewer separation plans, sanitary sewer overflow (SSO) records, and other sources of data to identify system vulnerability factors
2. Inspect manholes and conduct a storm drain connection investigation
3. Conduct wet weather sampling
4. Isolate and eliminate any illicit discharges and confirm successful elimination

Timeline

The 2017 MS4 Permit requires catchment investigations to be completed according to the timeline presented in Table 1-1 depending on the outfall prioritization.

Table 1-1. Catchment Investigation Implementation Timeline

Catchment Investigation Task	Completion Date from Effective Date of Permit				
	1.5 Years	2 Years	3 Years	7 Years	10 Years
Written Catchment Investigation Procedure	X				
Begin Catchment Investigations of Problem Outfalls		X			
Complete Catchment Investigations of Problem Outfalls				X	
Complete Catchment Investigations w/ Likely Sewer Input				X	
Complete Investigations for all Outfalls/ Catchments					X

2.0 Review of Existing Data

The City will use existing data, including plans related to the construction of the storm drain and sanitary sewers, prior work performed on the storm drains and sanitary sewers, board of health or other municipal data on septic system failures or required upgrades and complaint records related to SSOs, sanitary



sewer surcharges, and septic system breakouts to identify system vulnerability factors (SVFs) within each subcatchment.

2.1 System Vulnerability Factors

The 2017 MS4 Permit requires the City to review relevant mapping and historical plans to identify and record the presence of any of the following specific SVFs for its outfalls:

- History of SSOs, including 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 underdrains to redirect groundwater
- Inadequate sanitary sewer level of service resulting in regular customer back-ups, or frequent customer complaints
- 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 SVFs identified through inflow/infiltration analyses, sanitary sewer evaluation surveys, or other infrastructure investigations

USEPA recommends the following also be considered as SVFs:

- Sewer pump/lift stations, siphons, or known sanitary sewer restrictions where power or equipment failures or blockages could readily result in SSOs
- Any sanitary sewer and storm drain infrastructure more than 40 years old
- Known areas where septic system failures are prevalent due to inadequate soils, water table separation, or other physical constraints of the area rather than poor owner maintenance

The City will document the presence or absence of SVFs for each outfall, retain this documentation as part of its IDDE program, and report this information in future annual reports. Catchments with a minimum of one SVF will be targeted for wet weather sampling in accordance with Section 3.0 below.

3.0 Wet Weather Sampling Program

Wet weather sampling will be conducted for any outfall that has at least one SVF within its catchment area. Wet weather sampling will be targeted for periods with high groundwater conditions typically in the March-to-June period to assess whether wet weather-induced flows indicate any influence of sanitary sewer flows to the MS4 area.

The following procedures will be used in guiding the wet-weather sampling process:

- Wet weather sampling will occur during or after a storm event of enough depth (0.20 inches or more) or intensity to produce stormwater runoff.
- Sampling will be done in a manner to avoid the “first flush” typically considered to be in the first 30 minutes after the storm begins. This will help to detect the influence of more continuous or chronic illicit inputs versus those that are caused by pollutants washed off impervious surfaces.
- Wet weather samples will be analyzed for the same parameters that the dry weather samples are analyzed for, including the following:
 - Ammonia
 - Chlorine



- Surfactants
- *E. coli* (freshwater) or *enterococcus* (saline or brackish waters)
- Temperature
- Pollutants of concern (total nitrogen).

Based on the wet-weather sampling and field investigation results, outfalls that may indicate sanitary sewer inputs or an illicit connection will require additional investigation techniques to find and isolate the source.

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.

The sampling results and follow-up investigation activities will be summarized in the annual report.

4.0 Illicit Discharge Source Tracing

Once an illicit discharge has been reported or detected through a dry weather inspection or citizen call-in, the next step is to locate the source. The tracing technique selected will depend on the type of illicit discharge detected, the information collected during initial discovery and observation (whether through an inspection by a municipal employee or through a citizen call-in), and the resources and technology available to the municipality. A single technique may be used, or several techniques may need to be combined to identify the source of the discharge.

4.1 Categories of Illicit Discharges

Figure 4-1 presents a flow chart for selecting tracing techniques that can be applied to the two categories of potential illicit discharges:

1. Transitory or intermittent discharges (where upon returning to the site, no flow is present at the location where the illicit discharge was initially reported)
2. Continuous discharges (where upon returning to the site a continuous flow is present and the flow might be more easily traced to its source).

While these conditions may not cover the universe of discharges that can be discovered, they should provide general guidance for selecting tracing techniques. Each of these circumstances is described below.

Transitory or Intermittent Discharges

These conditions may occur as a result of an inspection or a citizen complaint. While initial information may have been collected regarding the potential illicit discharge, a return trip might show that the discharge was either intermittent or transitory (e.g., no flow is present upon return to the site). The investigative techniques that should be used will depend on whether a potential source location was identified during the initial observation:

- Potential source identified: If a potential source for the illicit discharge was initially identified, steps should be taken to investigate the potential source site, such as inspecting the site and storm drain system near the site. If floor drains, sumps, or other suspect discharge locations are observed during this inspection, dye testing, smoke testing, electronic location of subsurface pipes, or televising may be used. These techniques should definitively show whether the suspect site was the source of the illicit discharge.

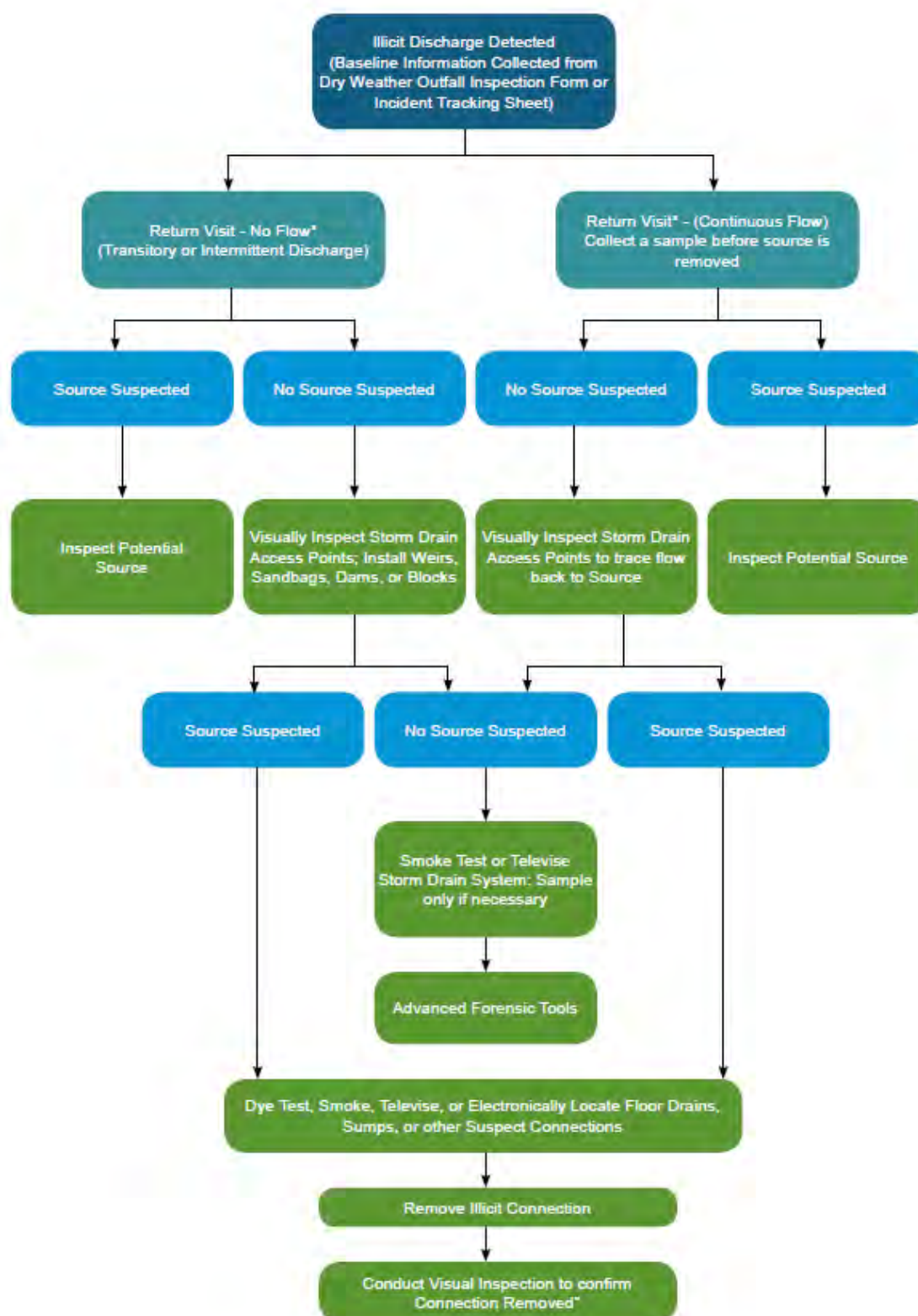


Figure 4-1. Selecting a Tracing Technique

*Consider use of AFTs



- Potential source not identified: If no source site is suspected, and only the general area of the illicit discharge is known, it might be possible to trace the evidence of the illicit discharge by visually inspecting the storm drain access points. If this catch basin/manhole inspection technique is not fruitful, some interim steps could be taken to try to trap water from an intermittent discharge. For example, sand bagging, damming, or block testing of selected storm drain access points combined with installing an optical brightener trap to assess whether detergents are present in a discharge can help reveal the source of the discharge. If these techniques have no positive result (no water pools behind the weir or sandbag), the discharge was likely transitory (one time only), and it might not be possible to determine its origin. In this case, the location of the originally reported illicit discharge should be added to a regular inspection program to provide for the possibility of future incidents. If the original report of the illicit discharge was severe or gross pollution, then smoke testing or televising of the storm drain system may be warranted.

Continuous Discharges

Tracing continuous discharges is typically more fruitful than tracing transitory or intermittent discharges. The primary difference between tracing a transitory or intermittent discharge and tracing a continuous discharge is that sandbagging and weirs are not required for a continuous discharge. Visual observation of the system access points should reveal where the flow is coming from. Just as for tracing a transitory or intermittent discharge, if visual inspections are not fruitful in identifying the source and the original report was severe or gross pollution, then televising, smoke testing, or sample collection would be warranted. NHDES recommends collecting a grab sample for bacterial analysis from any pipe with a significant flow, even if the discharge appears to be clear.

4.2 Tracing Techniques

To select an effective tracing technique, one must have a good understanding of the technique and its limitations. The following are tracing techniques that may be used to locate the source of an illicit discharge:

- Visual inspection at manholes
- Sandbagging
- Smoke testing
- Dye testing
- CCTV/video inspections
- Optical brightener monitoring
- Advanced forensic tools

Visual Manhole Inspection

This technique is typically used when there is no suspected source site. It is the most cost-effective and efficient method of tracing. In general, structures should be systematically inspected starting at the initial detection location, gradually working upstream through the system. If the field crew is tracking a continuous discharge, the inspections may be relatively easy, and the flow can be tracked back to its source. If the field crew is attempting to track a transitory or intermittent discharge, the field crew should make the observations depending on the information provided from the initial identification (e.g., color, clarity).

Several important terms related to the dry weather manhole inspection program are defined by the 2017 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 IDDE program. Adequate implementation of the IDDE 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.

The field crews will systematically inspect key junction manholes during dry weather conditions to detect evidence of illicit discharges. The overall goal involves progressive inspection and sampling, if necessary, at manholes in the storm drain network to detect and isolate the source of the illicit discharges. These investigations will seek to document the storm drain connections and general conditions at key junction manholes in the drainage system.

Prior to initiating field investigations, maps of the proposed sequence of outfall locations will be developed. The field crew will meet to discuss potential vehicle traffic control needs, accessibility issues and/or other safety concerns. The field crew will identify potential sampling locations and access equipment needed. Infrastructure connection information and observations will be documented using global positioning system (GPS) mobile data collection tools to allow the data to be incorporated into the City storm drain geodatabase.

The manhole inspection will be conducted as follows:

1. Manholes will be opened and inspected for visual and olfactory evidence of illicit connections (key observations and fields to be documented are shown on the draft manhole field inspection form provided in Attachment A).
2. If flow is observed, the field crew should look for visual indicators consistent with what is observed at the outfall. Field crews should follow the flow to its source. If a source cannot be found, the field crew should collect a sample of the flow to be analyzed at a minimum for ammonia, chlorine, and surfactants using appropriate field kits in accordance with procedures outlined in the City's IDDE Plan. Additional sampling may assist in determining potential sources (e.g., bacteria and total nitrogen as impaired water pollutants of concerns).
3. Where sampling results or visual or olfactory evidence indicate potential illicit discharges, the area draining to the junction manhole will be flagged for further upstream manhole investigation and/or isolation and confirmation of sources.
4. Subsequent key junction manhole inspections will proceed until the location of suspected illicit discharges or SSOs can be isolated to a pipe segment between two manholes.

If no evidence of an illicit discharge is found, field inspections of manholes and outfalls will be considered complete and wet weather sampling (Section 3.0) will be initiated for investigation information, where appropriate.

Sandbagging

Sandbagging or damming is typically only conducted when the discharge flow has ceased since initial detection. This technique can be useful when attempting to isolate small, intermittent flows with very little perceptible or periodic flow. The technique involves placing sandbags or similar barriers (e.g., caulking, weirs/plates, or other temporary barriers) within the bottom of manholes to form a temporary dam that collects any intermittent flows that may occur. Sandbags are typically lowered on a rope through the manhole to form a dam along the bottom of the storm drain, taking care not to fully block the pipe (in case it rains before the sandbag is retrieved). If the catch basin has a sump, the sump may have to be pumped to remove all standing water before the sandbags are installed.

Sandbags are typically left in place for 48 hours and should only be used when dry weather is forecast.



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 sandbag, 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.

Smoke Testing

Smoke testing is a useful technique for tracing intermittent discharges or continuous discharges that have no apparent source site. Smoke testing involves injecting nontoxic smoke into drain lines and detecting the emergence of smoke at locations that are connected to the system. Smoke testing works best for short reaches of pipe, or in situations where pipe diameters are too small for video testing.

Smoke testing requires public notice to residents and/or business owners in the area well as local police and fire departments notified to avoid unnecessarily alarming people of possible fire. Depending on the potential connection (e.g., floor drains), smoke can be emitted into a building. ***Smoke can 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.***

Two types of smoke sources can be used. The first type is a smoke bomb or candle that burns at a controlled rate and releases very white smoke visible at relatively low concentrations. Smoke bombs are suspended beneath a blower in a manhole. Candles are available in 30-second to 3-minute sizes.

The second type of smoke source is liquid smoke, which is a petroleum-based product that is injected into the hot exhaust of a blower where it is heated and vaporized. The length of smoke production can vary depending on the length of the pipe being tested. In general, liquid smoke is not as consistently visible and does not travel as far as smoke from the smoke bombs.

Along with a smoke source, smoke testing requires a smoke blower. Smoke blowers provide a high volume of air that forces smoke through the storm drainpipe. Two types of blowers are commonly used: squirrel cage blowers and direct-drive propeller blowers. Squirrel cage blowers are large and may weigh more than 100 pounds but allow the operator to generate more controlled smoke output. Direct-drive propeller blowers are considerably lighter and more compact, which allows for easier transport and positioning.

Three basic steps are involved in smoke testing.

1. The storm drain is sealed off by plugging storm drain inlets.
2. The smoke is released and forced by the blower through the storm drain system.
3. The crew looks for any escape of smoke above ground to find potential leaks. Septic vents on rooftops are clear indicators of cross connections to the storm drain system.

One of three methods can be used to seal off the storm drain: Sandbags, beachballs, and expandable plugs. Sandbags can be lowered into place with a rope from the street surface. Beach balls that have a diameter slightly larger than the drain can be inserted into the pipe. The beach ball is then placed in a mesh bag with a rope attached to it so it can be secured and retrieved. If the beach ball gets stuck in the pipe, it can simply be punctured, deflated and removed. Expandable plugs are available and may be inserted from the ground surface.

Once the smoke is started, blowers should be set up next to the open manhole. Only one manhole is tested at a time. If a smoke candle is used, crews simply light the candle, place it in a bucket, and lower it in the manhole. The crew then watches to see where smoke escapes from the pipe. The two most common situations that indicate an illicit discharge are when smoke is seen rising from internal plumbing fixtures (typically reported by residents) or from sewer vents. Sewer vents extend upward from the sewer lateral to release gas buildup and are not supposed to be connected to the storm drain system.

If the initial test of the storm drain system is unsuccessful, a more thorough smoke test of the sanitary sewer lines can 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.

Dye Testing

Dye testing is typically conducted when a potential source has been identified, and the crew is trying to determine whether the location the source is coming from has floor drains or other locations that connect and discharge to the storm drain system. Dye testing involves flushing nontoxic dye into plumbing fixtures such as toilets, showers, floor drains and sinks and then determining if the dye is observed in nearby storm drains and sewer manholes as well as stormwater outfalls. Like smoke testing, it is important to inform 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 (i.e., toilet or sink) and runs an enough 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.

CCTV/Video Inspection

Televised video inspections are a useful technique when an illicit connection or infiltration from a nearby sanitary sewer is suspected but little evidence of the illicit discharge remains behind. Two types of video cameras are available for use: (1) a small camera that can be manually pushed on a stiff cable through storm drains to observe the interior of the piping, or (2) a larger remote operated video camera on treads or wheels that can be guided through storm drains to view the interior of the pipe. Typically, the operator of the camera has access to a keyboard or audio voice-over to record significant findings on the videotape that is produced for future review and evaluation. While this tool is both effective and usually definitive, it can be costly and time consuming when compared to other techniques.

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 least expensive method 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 ultraviolet (UV) light to determine whether brighteners were present during the monitoring period. An alternate but more expensive method involves using handheld fluorometers to detect optical brighteners in water samples collected from outfalls or in ambient surface waters.

Use of a fluorometer, while more quantitative, can be more challenging to use in the field depending on the ambient light conditions and accessibility and is not as effective at detecting intermittent discharges as other source isolation techniques.

Advanced Forensic Tools

Advanced forensic tools (AFTs) are targeted analytes and investigation methods designed for the identifying, locating, and eliminating specific nutrient and bacterial sources. AFTs are more effective at identifying waste sources than conventional IDDE tracing methods. AFTs target the sources with the highest human health risk and/or bioavailability. Identifying and locating the specific sources causing the



greatest human health and/or aquatic habitat impacts for abatement narrows the cost of treatment, which saves money compared to having to treat all sources of bacteria and nutrients. Sources of bacteria and nutrients to an MS4 can generally be categorized into three groups: human waste sources, nonhuman sources related to human activities, and nonhuman sources independent of human activity (Table 4-1). Human waste sources have the highest human pathogen levels of the three bacteria sources and therefore, also carry the highest illness risk. Human waste sources also contain highly bioavailable nutrients (e.g., nitrate and dissolved phosphorous) that can lead to eutrophication and algal blooms in downstream surface waters. Despite the threat that human waste sources pose to both human and aquatic health, most current IDDE programs usually target the removal of both bacteria and nutrients and do not use AFTs capable of discerning between human and nonhuman sources.

Table 4-1. Common Sources of Bacteria and Nutrients in Urban Watersheds

Human Waste Sources	Nonhuman Sources Related to Human Activities	Nonhuman Sources Independent of Human Activity
Sanitary sewer overflows	Pets (dogs, cats, etc.)	Wildlife (raccoons, birds, deer, coyote, etc.)
Leaky sewer pipes (exfiltration)	Livestock (horses, cows, etc.)	Decaying plants
Illicit connections to MS4	Rodents (mice, rats, etc.)	Algae and biofilms
Leaky or failing septic systems	Birds (gulls, pigeons, etc.)	Natural soil and sediment
Porta-potties	Dumpsters and trash cans	
Bathers and open defecation	Garbage trucks	
Boats and recreational vehicles	Animal manure/compost	
Dumpsters and trash cans	Wash water	
Garbage trucks	Green waste	
Illegal dumping	Litter	
Illegal discharges	Grease bins and traps	
Gray water discharges	Irrigation runoff	
Recycled water	Fertilizers	
	Atmospheric deposition	

AFTs may be used in conjunction with or as a follow-up to conventional IDDE tools and are most effective when incorporated into a tiered IDDE management strategy or study design where specific source hypotheses have been identified (Figure 4-1). AFTs may be implemented in catchments where traditional IDDE source tracing has been completed but elevated levels of bacteria and/or nutrients remain (Track A, Figure 4-1). If AFT use is targeted to only those catchments where other tools have not been effective, the added cost of the AFT to an IDDE program is minimized. In some cases, overall cost savings may also be achieved by integrating AFT use early in an IDDE program (Track B, Figure 4-2). For example, screening MS4 outfall discharges for human waste sources allows traditional IDDE efforts to be focused on sewage-impacted catchments, which will provide the greatest reduction of risk to human and aquatic health for the effort.

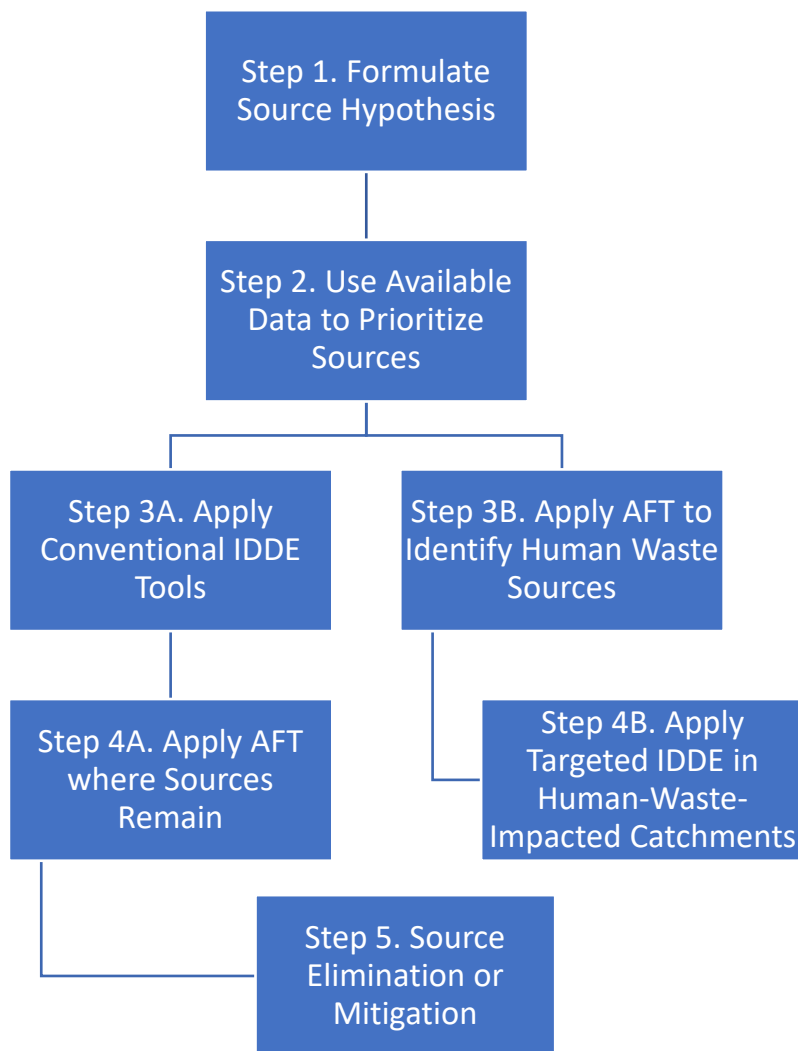


Figure 4-2. Comparison between Follow-Up and Early Implementation of AFTs In a Tiered IDDE Management Strategy

The following four AFTs are summarized in **Attachment B**, and the following subsections outline the recommended approach to applying these AFTs alongside conventional IDDE methods:

- **DNA Markers:** DNA markers are used to identify the presence of bacteria associated with human waste. Markers are also available for nonhuman waste sources (e.g., cattle, dogs, birds). Markers are useful for identifying both bacteria and nutrient sources within the MS4. Human markers are often detected in recycled water.
- **Nitrate Isotopes:** Nitrate Isotopes are used to distinguish nitrate sources based on isotopic ratios of nitrogen and oxygen. Isotopes are able to differentiate chemical fertilizers and atmospheric deposition from human waste and animal manure-based sources. Nitrate Isotopes are best used in combination with other tools to identify nutrient sources.
- **Advanced Chemical Indicators:** Advanced chemical indicators are useful for detecting pharmaceuticals and personal care products (PPCPs), which are an indication of likely sewage or septic impacts. Indicators are useful for identifying both bacteria and nutrient sources to the MS4 and may also be able to identify recycled water sources.



- **Advanced Dye Testing:** Advanced dye testing using rhodamine dye and a field fluorometer allows leaks and intermittent connections to be identified that would not be found through conventional dye testing. Advanced dye testing is useful for identifying a hydraulic connection between the sanitary sewer and the MS4 that may be responsible for bacteria and nutrients.

The selection and use of AFTs is determined by a combination of the following:

- The presence of fecal indicator bacteria or elevated nutrient levels measured through preliminary outfall screening
- The hypothesized sources that may be contributing to these locations (e.g., human, nonhuman but human related, or nonhuman and independent of human activity)

Because human waste sources such as sewer leaks and illicit sewer connections are a primary concern of most IDDE programs and these sources can contribute to an elevated public health risk and add highly bioavailable nutrients to downstream receiving waters, determining the presence or absence of the human waste source is a priority. This is frequently accomplished using the HF183 marker. However, this marker may not always be appropriate, such as in case where nutrients are the primary contaminant of concern and bacteria from human waste may have decayed or been removed through groundwater transport.

The two example scenarios included below show where using AFTs could be more cost-effective than traditional tracing methods.



Scenario 1. Elevated Fecal Indicator Bacteria (FIB) or Elevated FIB and Nutrients (Sewered area)

The following study design is recommended when an outfall's dry weather screening results include elevated FIB or elevated FIB and nutrients, and the outfall drainage area includes a sewered area.

Hypothesized sources: Sewer exfiltration or illicit connections

Advanced tools recommended: Early implementation of the human DNA marker HF183

Potential study design:

1. *Desktop GIS evaluation* (MS4, sanitary sewers, septic parcels) to identify the contributing MS4 network, the catchment area, and potential areas with human waste sources (e.g., where sewer lines cross or parallel the MS4 network).
2. Dry weather *HF183 outfall sampling* to quantify and evaluate the persistence of human waste (at least three rounds are recommended).
3. *Aboveground flow tracking* concurrent with sampling to identify the flowing portion of the MS4 network and survey aboveground bacteria and nutrient sources.
4. *HF183 results evaluation*:
 - a. *If HF183 detected* at high concentrations (e.g., >1,000 copies per 100 milliliters [100ml]¹):
 - i. *Conduct additional HF183 sampling* at major MS4 nodes within the same outfall's network to determine the section of pipe containing the human waste source input (for large networks with many flowing areas).
 - ii. After completion of the step above, *conduct CCTV investigation* on the section of pipe identified to visually identify infiltration or illicit connections.
 - iii. If the above steps are unsuccessful, *implement dye testing* (conventional or advanced) of nearby sewers to identify source of infiltration or illicit connection.
 - b. *If HF183 is not detected* or is detected at low concentrations (e.g., <1,000 copies/100mL):
 - i. Reevaluate source hypotheses and investigate hypothesized nonhuman sources, such as dogs and birds, if further source investigation is desired.
 - ii. Analyze samples previously collected for HF183 for dog and bird DNA markers, if these sources are suspected.
5. Conduct *abatement actions* to mitigate or eliminate identified bacteria and nutrient sources.
6. Perform *confirmation sampling* to confirm that identified waste sources were successfully abated after completion of abatement actions.

¹ 1,000 copies/100mL represents an approximate risk-based threshold for recreational water contact based on diluted sewage from published literature. An appropriate action level should be determined prior to study.



Scenario 2. Elevated Nutrients and Low FIB (Area serviced by septic systems)

The following study design is recommended when an outfall's dry weather screening results include elevated nutrients, but low FIB, and the outfall drainage area mostly includes areas served by septic systems.

Hypothesized sources: Septic system leaks

Advanced tools recommended: Advanced chemical indicators (PPCPs) and nitrate isotopes

Potential study design:

1. *Desktop GIS evaluation* (MS4, septic parcels) to identify the contributing MS4 network, the catchment area, and potential areas with human waste sources (e.g., where septic effluent or leaks could enter the MS4).
2. *PPCP and nitrate isotope outfall sampling* to identify nutrient sources (at least three rounds are recommended).
3. *Aboveground flow tracking* concurrent with sampling to identify the flowing portion of the MS4 network and survey aboveground bacteria and nutrient sources.
4. *PPCP and nitrate isotope results evaluation:*
 - a. *If PPCPs are detected* and isotopic ratios are consistent with human/animal waste, then septic systems are likely source that should be targeted for management actions.
 - b. *If PPCPs are not detected* and isotopic ratios are consistent with other sources, then reevaluate source hypotheses and investigate other sources, if desired.
5. Conduct *abatement actions* to mitigate or eliminate identified nutrient sources.
6. Conduct *confirmation sampling* to confirm that identified waste sources were successfully abated after completion of the measures in Step 5.

Identifying illicit waste sources, both human and nonhuman, conveyed in storm drains and urban receiving waters is imperative for human and environmental health. A successful IDDE approach requires coordinating the careful study design with cost-effective tools and actionable interpretation of the collected results. The informed implementation of AFTs into an IDDE program can increase success rates and cut long-term cost by providing highly specific identification of waste sources leading to more-efficient source abatement. In combination with conventional analytes, GIS, and observational data, sources can now be more efficiently eliminated through targeted and cost-effective management programs. Additional information can be found in **Attachment B**.

5.0 Removing the Source of an Illicit Discharge

There is a range of ways in which municipalities can remove an illicit connection between homes or businesses and the storm sewer system. In accordance with the 2017 MS4 Permit, upon detection of an illicit discharge, the City shall locate, identify, and eliminate the illicit discharge as expeditiously as possible (within 60 days).

Once the source of an illicit discharge has been identified, steps should be taken to fix or eliminate the discharge. Four questions should be answered for each individual illicit discharge to determine how to proceed; the answers will usually vary depending on the source of the discharge.

- Who is responsible?
- What methods will be used to repair?



- How long will the repair take?
- How will removal be confirmed?

The financial responsibility for source removal typically falls on property owners, MS4 operators, or a combination of the two. Methods for removing illicit discharges usually involve a combination of education and enforcement. A process for addressing illicit discharges that focuses on identifying the responsible party and enforcement procedures is presented in **Figure 5-1**.

The City should use judgment in exercising the right mix of compliance assistance and enforcement. The authority and responsibility for correction and enforcement is defined in the IDDE ordinance. Voluntary compliance should be used for first-time, minor offenders. Often, property owners are not even aware of a problem, and are willing to fix it when educated. More serious violations or continued noncompliance may warrant a more aggressive, enforcement-oriented approach. 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, as presented in **Figure 5-1**.

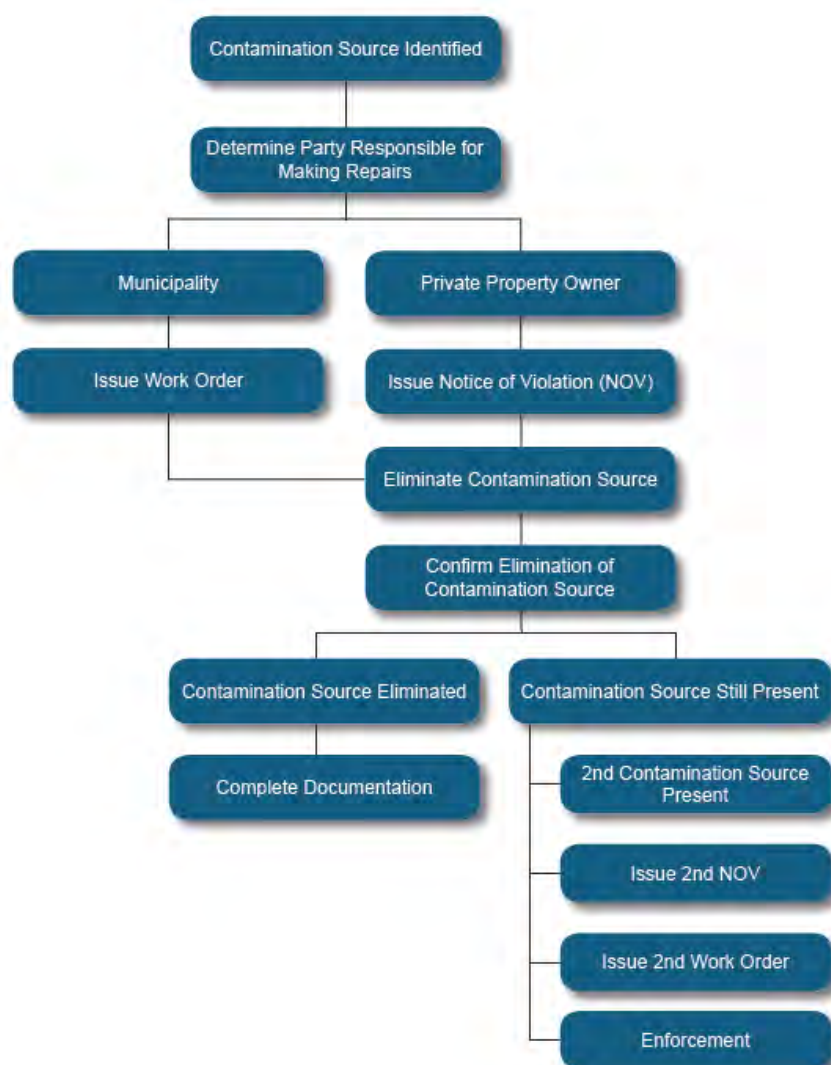


Figure 5-1. Corrective Action Flow Chart



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
- The date of discovery
- The date of elimination, mitigation, or enforcement action OR planned corrective measures and a schedule for completing the illicit discharge removal
- An estimate of the volume of flow removed

5.1 Confirmatory Outfall Screening

After completing the removal of illicit discharges from a catchment, the outfall subcatchment will then be rescreened to verify corrections. Within 1 year of removal of the identified illicit discharge within a catchment area, confirmatory outfall or interconnection screening will be conducted. Depending on the extent and timing of corrections, confirmatory screening can be done at the initial junction manhole or the closest downstream manhole to the location of removal. Confirmation is accomplished by using the same visual inspection, field monitoring, and damming techniques as described above.

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.

6.0 Ongoing Screening

Upon completion of all outfall catchment investigations and illicit discharge removal and confirmation (if necessary), each outfall or interconnection will be reprioritized and scheduled for ongoing screening once every 5 years.

Ongoing screening will consist of dry weather screening and sampling consistent with the procedures described in the IDDE Plan. Ongoing wet weather screening and sampling will also be conducted at outfalls where wet weather screening was required due to SVFs. All sampling results will be reported in the annual report.

Attachment A: Manhole Field Inspection Form

**DRAIN MANHOLE INSPECTION LOG****Manhole ID:**

Inspection Date: _____

Tributary Area: _____

Street: _____

Inspector: _____

Inspection: Not Found ____ Surface ____ Internal ____ Follow Up Inspection _____

Time Since Last Rain: < 48 hours ____ 48 – 72 hours ____ > 72 hours ____ Est Amt _____ inches

Observations:

Standing Water in Manhole: Yes ____ No ____ Water Clarity: Clear ____ Cloudy ____ Other _____

Flow in Manhole: Yes ____ No ____ Velocity: Slow ____ Medium ____ Fast ____ Depth of Flow: ____ in.

Color of Flow: No Flow: ____ Clear ____ Tea ____ Brown ____ Iron ____ Suspended Solids ____ Other _____

Blockages: Yes ____ No ____ Sediment in Manhole: Yes ____ No ____ If Yes: Percent of Pipe Filled: ____

% Floatables: None ____ Sewage ____ Oily Sheen ____ Foam ____ Other _____

Odor: None ____ Sewage ____ Oil ____ Soap ____ Other _____

Field Testing:

Temp ____ Conductivity ____ Surfactants: Yes/No Ammonia: Yes/No Chlorine ____ Salinity ____

Lab analysis:

E. coli ____ Pollutants of Concern* _____

*For TMDLs or Water Quality Limited (WQL), refer to Appendix G of the MS4 Permit.

MH DETAILS

Location:	Material:	MH Cover size:	MH Diameter:	Invert/Flow Channel:
Roadway	Brick	24"	48"	Present Y/N
Gutter	Block	26"	60"	Material:
Grass	Concrete	30"	Other (describe below)	Concrete
Easement	Lined	36"		Brick/mortar
Other (describe below)	Other (describe below)	Other (describe below)		Other (describe below)

CONDITION

Cover:	Ring & Frame	Chimney:	Wall:	Rungs:
Good	Good	Good	Good	Good
Loose	Loose	Cracked/Broken	Cracked/Broken	Unsafe
Below Grade	Displaced	Corroded	Corroded	Missing any
Damaged	Missing Grout	Misaligned	Misaligned	Corroded
Sealed	Raise	Infiltration	Infiltration	N/A - no rungs
Holes (# of holes)	Lower	Roots at Joints	Roots at Joints	

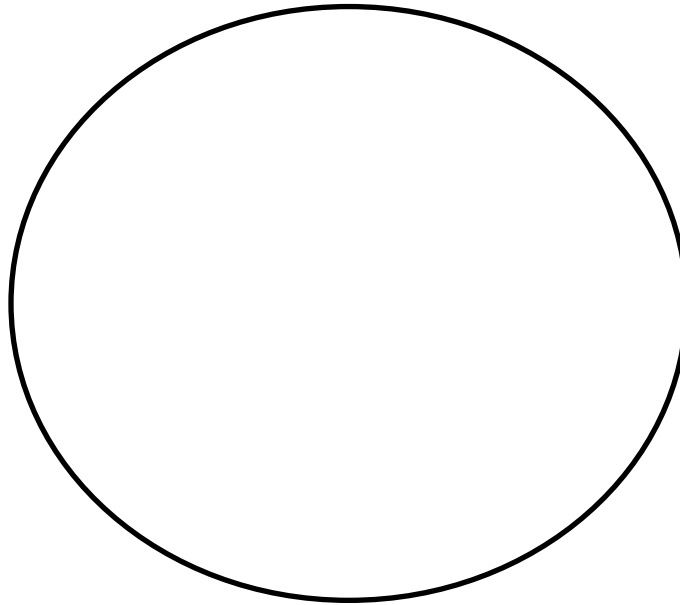
Include any pertinent notes regarding component conditions below:



MANHOLE DIAGRAM

Manhole ID: _____

(Outgoing pipe should be at the 6:00 position. Label all pipes with size/type and flow direction)



INSERT PHOTO(S) BELOW:

Attachment B: Advanced Forensic Tools

APPENDIX B

ADDITIONAL INFORMATION ON ADVANCED FORENSIC TOOLS

1. DNA Markers

DNA-based marker analyses allow for the rapid identification and quantification of fecal bacteria from specific hosts including humans, cattle, dogs, birds and other animals. Analysis is performed using published DNA markers in a validated laboratory by quantitative polymerase chain reaction (qPCR) or droplet digital polymerase chain reaction (ddPCR) methodologies. The use of ddPCR allows for the greatest sensitivity (ability to detect highly diluted fecal waste) and reduces inhibition associated with qPCR in some sample matrices (which can lead to false negative results).

The USEPA released methods 1696 and 1697 in 2019 for the quantification of human fecal pollution in water. Guidance on the use of these DNA markers, as well as markers for other animals, was previously released in 2013 for California¹ and has been successfully used across the United States. The most sensitive and specific DNA-marker for the quantification of human fecal bacteria HF183. When analyzed by ddPCR, HF183 can be detected in sewage diluted up to one million times. Detection of HF183 indicates that human waste impacts are present. However, treated waste (e.g., recycled water) may also result in marker detections and therefore recycled water use within drainage areas to sample locations should be considered. The health risks from water contact recreation in water containing diluted sewage have been estimated based on the concentration of human markers including HF183. A HF183 concentration of approximately 4,000 copies/100ml has been predicted to increase the public health risk above USEPA tolerable risk levels. Use of an HF183 screening threshold or action level in the range of 500 to 1,000 copies/100ml is recommended as a conservative concentration to prioritize follow-up actions to locate and eliminate human waste sources. Sewage impacts above this level would be expected to contribute to elevated bacteria and nutrients, in addition to representing a potential public health risk.

Where HF183 is low (below the action level) or not detected, but bacteria and nutrient sources remain elevated, other host-specific DNA-markers (e.g., for cattle, dogs, and/or birds) may help further inform the identification and quantification of non-human sources that are contaminating the MS4 and impacting downstream surface waters.

2. Nitrate Isotopes

The combined analysis of oxygen and nitrogen isotope ratios of nitrate ($\delta^{18}\text{O}$ and $\delta^{15}\text{N}$, respectively) can be used to distinguish the primary source of nitrate based on typical values that have been established in literature (Figure 1). Although this analyte does not distinguish between human waste and animal waste nitrate sources, it can differentiate nitrate from natural soils, ammonium fertilizer, synthetic fertilizers, and precipitation from animal and human wastes. Typical ranges for nitrate vary by source and location and may overlap with other sources. Therefore, source samples (e.g., samples of fertilizer) are recommended to identify the source in MS4 discharges or other water samples. Denitrification of nitrate occurring between the source and the sampling location (e.g., as nitrate travels through groundwater) also impacts the ratios. Therefore, nitrate isotope analysis is recommended as an additional line of

¹ The California Microbial Source Identification Manual, available at:
https://www.waterboards.ca.gov/water_issues/programs/beaches/cbi_projects/docs/sipp_manual.pdf.

evidence to confirm nitrate sources (e.g., combined with PPCPs), rather than the sole line of evidence indicating the source. The use of nitrate isotopes as tracers of nitrogen sources has been used for over 20 years and guidance has been developed by the USGS².

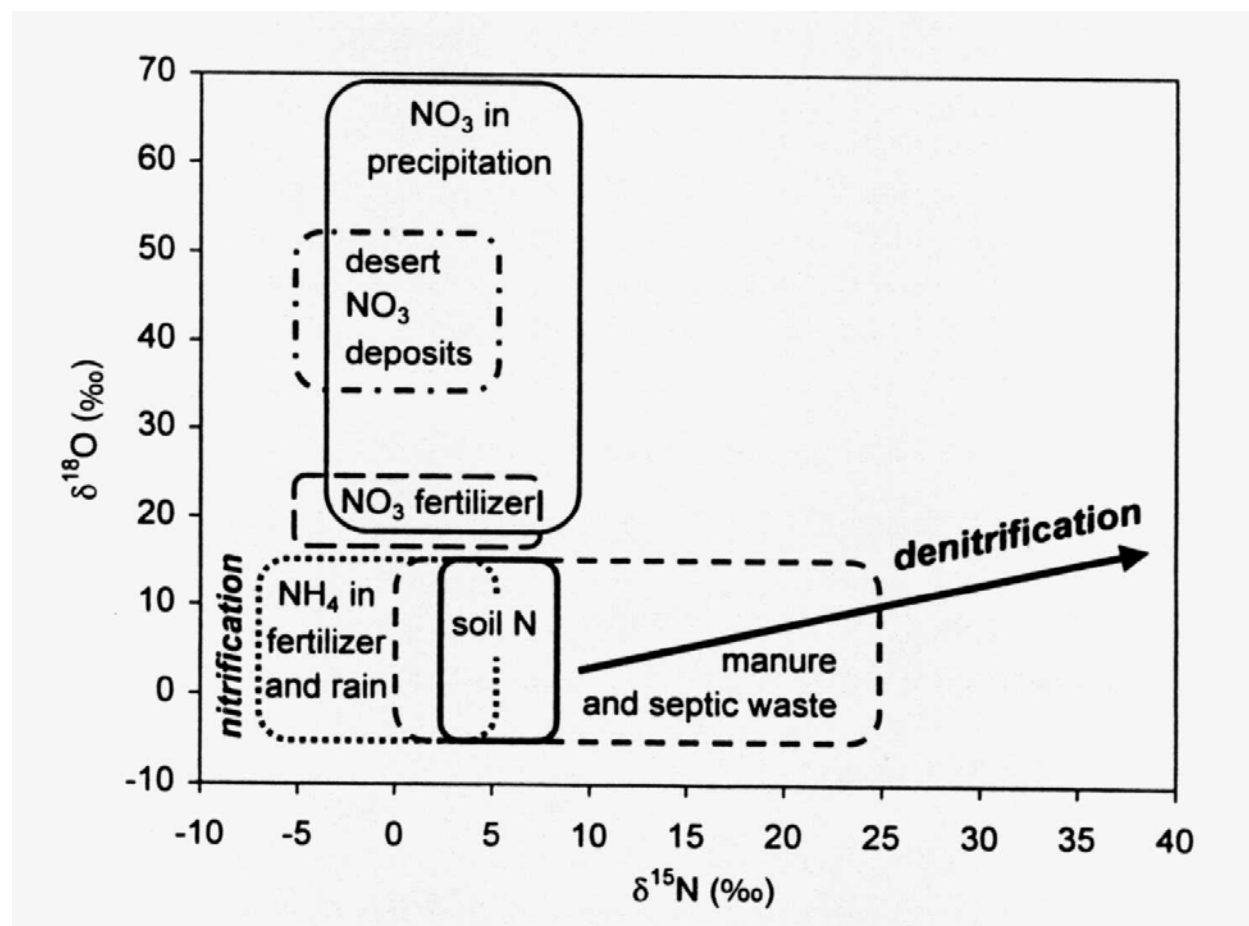


Figure 1. Typical ranges of nitrate isotopes from various sources (USGS, 1998)

3. Advanced Chemical Indicators

The detection of pharmaceutical and personal care products (PCPPs) such as Acesulfame, Acetaminophen, Methylparaben, Naproxen, Paraxanthine, Sucralose, Sulfamethoxazole, and Trimethoprim in MS4 samples provide evidence of the presence of human waste. Each of these chemicals is generally present in raw sewage at concentrations one thousand to one million times the detection limit when analyzed by HPLC/MS/MS (USEPA Method 1694), and these chemicals are not naturally occurring. Some PPCPs such as Acetaminophen and Methylparaben are effectively removed during typical wastewater treatment processes, whereas others such as acesulfame and sucralose remain and can easily be detected in treated effluent. Thus, which PPCPs are detected can provide evidence as to whether a sample is impacted by untreated (e.g., raw sewage) or treated human waste source (e.g., recycled water).

² Tracing Nitrogen Sources and Cycling in Catchments, available at:
<https://www.camnl.wr.usgs.gov/isoig/isopubs/itchch16.html>

4. Advanced Dye Testing

Visual dye testing is a useful tool used in many traditional IDDE programs to identify a hydraulic connection between sanitary sewer lines and the MS4. A hydraulic connection may be due to illicit connections to the MS4 or exfiltration from aging or damaged sewer lines that then travels to the MS4 through the subsurface. Visual dyes, such as fluorescein and rhodamine, can be added to the sewer then observed in the downgradient storm drain if there is a major leak or connection. Visual dyes are generally detectable to 1 part per million in clear water. However, visual detection is not always possible (e.g., in dark or deep pipes) and may not be able to identify small leaks, heavily diluted inputs or leaks that have long transport times from the sewer to the MS4. Detection of dye using a probe capable of measuring fluorescence allows these same dyes to be detected to 1 part per billion and over a much longer continuous period of time compared to a more limited snapshot captured by visual detection. Thus, dye diluted over one million times can be detected (the concentration of dye in commercially available tracers varies from 1-20%).

For advanced dye testing, Rhodamine WT dye is recommended with detection using a YSI 600 OMS Sonde w/ rhodamine sensor (or similar probe capable of continuous measurement of rhodamine). A desktop evaluation of GIS data (MS4 and sanitary sewers) is first performed to determine where sewers cross or run near the MS4 and prioritize these areas for dye testing. Field reconnaissance is then conducted to confirm accuracy of GIS data and identify suitable locations for dye addition and probe placement. The probe is placed either at the outfall or within the MS4 downgradient of the testing area. Dye is added directly to the sewer system upgradient of areas identified for testing. It is recommended that continuous fluorescence measurements be taken prior to dye addition (i.e., background measurements) and for multiple days following the addition of dye. Depending on the transport pathway from the sewer to the MS4, leaks may take time to travel to the MS4. Fluctuations in water use throughout the day may also impact transport, both in the sewer and in the MS4 through irrigation overspray. Finally, the probe is retrieved, and data analysis is performed to determine if above background levels of dye were detected in the MS4. Follow-up testing may be required to locate the source if multiple dye additions were performed in a single test or if intermittent flow and/or human waste sources are being investigated.

5. Study Design Considerations

The effectiveness of an IDDE investigation relies heavily on study design factors applicable to both conventional and advanced tools, including the timing and number of sampling events as well as sampling locations with respect to suspected sources. The overall study design should be based on the hypothesized sources. In most cases, collection of samples during dry weather for source investigation should be done prior to wet weather sampling and analysis. The investigation and mitigation of dry weather bacterial and nutrient sources prior to wet weather investigation allows for identification and abatement of sources that would otherwise be diluted and/or mixed with additional sources during wet weather when increased overland flow from throughout the catchment mobilizes contaminants from the land surface.

The repetition of sampling events is also an important study design component that is needed to characterize transient sources of flow and contaminants, as well as for the prioritization of priority or high-risk areas. Multiple rounds of sampling are required to assess source variability and identify intermittent sources. Three to five rounds of initial sampling are generally recommended for most investigations, although more replication may be required if statistically significant differences in concentration are required to test source hypotheses (particularly for bacterial targets). After initial rounds of

screening/sampling are complete, areas can be prioritized for further investigation, identified sources abated, and confirmation sampling performed. Confirmation sampling after abatement actions have been completed is important to show that sources have been successfully eliminated and/or that bacteria and nutrients have been significantly reduced.

Lastly, when collecting water quality analytes, the sampling location within the MS4 network can be leveraged to further narrow the potential location of illicit sources of nutrients and bacteria. When sampling at the outfall, or the final terminus of a contributing MS4 network, the measurement characterizes the entire drainage area. However, when combined with active above ground source tracking methods by field technicians, upstream in-network sampling can be useful to pinpoint areas with human waste or other source inputs. Samples can be collected at major MS4 nodes to reduce the contributing area required for further investigation or at MS4 manholes downstream and upstream of a suspected source area (particularly in wet weather).

6. Cost of Advanced Forensic Tools

Cost is frequently one of the driving factors when selecting tools to be included in an IDDE program. As previously discussed, although AFTs are generally more expensive than conventional tools on a per sample or per day of implementation cost, overall cost saving can be achieved through more efficient identification of sources contributing the greatest loads or having the greatest public and aquatic health risks. The relative costs of commonly used tools are shown in Table 1 compared to AFTs. Overall costs will depend on program details and study design, but as a reference, a basic chemical indicator like ammonia would cost approximately \$10 per sample (\$) whereas a human DNA marker or PPCP suite would typically cost >\$250 per sample (\$\$\$).

Table 1. Relative Costs of Conventional and Advanced Tools

Tool	Description	Cost
Visual Surveys and Outfall Screening	Field observations to identify flowing outfalls and potential bacteria and nutrient sources.	\$
GIS	Essential for planning and analyzing data in relation to infrastructure. Useful prior to field investigations to target areas for more detailed investigation.	\$
Fecal Indicator Bacteria (FIB)	Basic indicator of bacterial contamination tied to regulatory receiving water limits.	\$
Basic Chemical Indicators	Includes detergents/surfactants, fluoride, ammonia, and potassium. Low-cost field kits may be useful in MS4 networks (e.g., ammonia).	\$
Dye Testing	Visual detection of dye. Useful for identifying illicit connections from sewers to storm drains.	\$
CCTV	Cameras used in the MS4. Useful for locating illicit connections, infiltration, and tracking flow sources.	\$\$
<i>Advanced Dye Testing</i>	<i>Fluorometer based detection of dye. Useful for identifying high diluted sewage such as infiltration from sewers to storm drains.</i>	<i>\$\$</i>
<i>Advanced Chemical Indicators (PPCPs)</i>	<i>Includes sucralose, caffeine, and cotinine, as well as many contaminants of emerging concern. Useful as a second line of evidence for sewage sources.</i>	<i>\$\$\$</i>
<i>Human DNA Markers</i>	<i>Most sensitive and specific tool for identifying human waste. Useful for sampling in receiving waters, outfalls, within the MS4, and groundwater.</i>	<i>\$\$\$</i>
<i>Non-Human DNA Markers</i>	<i>Able to identify non-human sources of waste including cows, dogs, birds, deer, and others. Useful after human sources have been ruled out.</i>	<i>\$\$\$</i>
<i>Stable Isotopes</i>	<i>Isotopic ratios of nitrogen and oxygen in nitrate to identify nutrient sources</i>	<i>\$\$</i>

Advanced Forensic Tools (AFTs) are shown in bold italic font.



Appendix G

IDDE Employee Training Record
(to be added)

ATTACHMENT 4
OPERATIONS & MAINTENANCE (O & M) PROGRAM

City-Wide Operation and Maintenance (O & M) Program

Prepared For:

City of Rochester
New Hampshire



Date: June 2022

Revised: March 2023



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ATTACHMENTS

Attachment A – City Catch Basin Inspection Form

Attachment B – Annual Stormwater BMP Inspection Forms



PURPOSE

The 2017 New Hampshire National Pollution Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit requires the City to develop a stand-alone, Operations and Maintenance (O&M) Plan to describe its Good Housekeeping and Pollution Prevention measures consistent with the requirements of Minimum Control Measure (MCM) 6 or Section 2.3.7 of the Permit.

This City-wide O&M plan is intended to be a living document and should be updated as facilities and/or current practices change. This O&M Plan can serve as a reference guide to help maintain consistency and understanding of activities amongst the various Departments as well as to help train new employees.

This O&M Plan includes an inventory of City-owned facilities (e.g., buildings, DPW facility, parks and recreational facilities, schools, wastewater treatment facilities, and stormwater infrastructure). It describes specific good housekeeping and pollution prevention procedures and measures used by City personnel in the operations and maintenance activities associated with these facilities.

The Permit identifies principal best management practices (BMPs) for permittee-owned facilities or activities that should be included in the O&M Plan, these include:

- a) Parks and Open Spaces
- b) Buildings and Facilities
- c) Vehicle/Equipment Storage and Maintenance Facilities
- d) Stormwater Infrastructure (e.g., catch basins, outfalls, and treatment BMPs)
- e) Winter Road Maintenance
- f) Pesticide, Fertilizer and Herbicide Storage, Use and Disposal

The O&M activities described in this O&M Plan involve several City Departments. These Departments and the facilities or activities they maintain are detailed in table below.

DEPARTMENT	FACILITIES OR ACTIVITIES RESPONSIBLE FOR MAINTAINING
Buildings and Grounds	<ul style="list-style-type: none"> • 16 City owned buildings • Recreational facilities such as pools, playgrounds, tennis, and basketball courts • 20+ acres of City owned parks and grounds • Winter maintenance of City owned parking lots, driveways, and walks • Downtown maintenance including litter cleanup and trash pickup • City owned athletic fields
Public Works	<ul style="list-style-type: none"> • DPW facility • City owned parking lots including winter maintenance • City roads including catch basins and winter maintenance • Stormwater Treatment Systems • Subsurface infrastructure including drainage, sewer, and water • Wastewater treatment facility • Water treatment plant
Recreation and Arena	<ul style="list-style-type: none"> • Ice Arena
School – Facility and Maintenance Division	<ul style="list-style-type: none"> • School buildings • Athletic fields



This document is organized by best management practice (BMP) topic area and references other BMPs within each section. The best management practices are as follows:

- BMP 1 – Parks and Open Space
- BMP 2 – Buildings and Facilities
- BMP 3 – Maintenance of Vehicles and Equipment
- BMP 4 – Catch Basin Cleaning
- BMP 5 – Street/Parking Lot Sweeping
- BMP 6 – Stormwater Treatment BMPs
- BMP 7 – Winter Maintenance
- BMP 8 – Fertilizer, Pesticides and Herbicides: Use, Storage and Disposal



BMP 1: Parks and Open Space

Parks and open space operations and maintenance activities commonly involve the operation of equipment such as mowers and tractors; disposal of waste from mowing, planting, weeding, raking, pruning, and trash collection; application of pesticides, herbicides, and fertilizers; cleaning and maintenance of park amenities such as play equipment, restrooms, and structures; and snow removal. The goal of this BMP is to provide guidance to municipal employees on the operation and maintenance of parks and open space to reduce the discharge of pollutants from the MS4.

Tables 1-1 and **1-2** provides an inventory and a summary of the various activities and control measures at each of the parks, recreation fields and open space areas maintained by City and School staff, respectively.

Table 1-1: Inventory of City Parks, Recreation Fields and Open Space Areas

Parks / Recreation Fields / Open Space	Managed Turf	Fuel / Chemical Storage	Waste Collection	Sanitary Services	Dog Waste Station
<i>Trails and Green Space</i>					
Pickering Ponds	Mow	No	Weekly	No	No
Gonic Trails	No	No	No	No	No
William H Champlin Jr. Forest ¹	No	No	No	No	No
<i>Athletic Fields</i>					
Keay Field	No	No	Yes	No	No
Mons. Giles Simard Babe Ruth Field ²	No	No	Yes	No	No
<i>Parks and Outdoor Recreation</i>					
Hanson Pines	Mow	No	Daily	No	No
Squamagonic Recreation Area	No	No	No	No	No
Rochester Common	Mow	No	Daily	Yes	No
Community Center Tennis Court	Mow	No	Daily	Yes	No
Riverwalk / Lilac City Grill	Mow	No	Daily	No	Yes
Parson Main Park	Mow	No	Daily	No	Yes
Columbus Ave Walking Path	Mow	No	Daily	No	Yes
Woodman Park	Mow	No	Daily	No	Yes
<i>Swimming Pools</i>					
East Rochester Pool	Mow	No	Daily	Yes	No
Gonic Pool	Mow	No	Daily	Yes	No
Hanson Pines Pool/Kiddie Pool	Mow	No	Daily	Yes	No

Notes: ¹The Champlin Forest is managed /maintained by the Society for the Protection of NH Forests

²Mons.Giles Sinard Babe Ruth Field is maintained by a private organization.

**Table 1-2 Inventory of School Recreation Fields and Open Space Areas**

Parks / Recreation Fields / Open Space	Managed Turf¹	Fuel / Chemical Storage	Waste Collection	Sanitary Services	Dog Waste Station
<i>Athletic Fields</i>					
Lower Practice Field	Yes	No	Yes	No	No
Hillsdale Practice Field	Yes	No	Yes	No	No

Notes: ¹ Lawn maintenance consists of mowing and occasional use of lawn care chemicals, applied by a licensed applicator.

Procedures

Lawn Maintenance and Landscaping

The City Buildings and Grounds crew mows and maintains the grassed and landscaped areas associated with parks and opens spaces in the City, except for school-owned properties. The City implements the following lawn maintenance and landscaping procedures to reduce discharge of pollutants from the MS4 areas.

- Remove debris and trash from landscaped areas prior to mowing.
- Collect grass clippings and leaves after mowing. Do not blow or wash them into the street, gutter, or storm drains.
- Properly compost or dispose of organic waste after mowing, weeding, and trimming.
- Reduce mowing frequencies wherever possible by establishing low/no-mow areas in lesser-used spaces.
- Maintain grass heights of 3-inch to reduce the need for irrigation and plant stress during drought.
- Brush off mowers (reels and decks) and tractors over grassy areas or in contained washout areas.
- Leave clippings on grassy areas or dispose of them in the trash or by composting.
- Do not hose off mowers over paved areas that drain into the MS4 or directly to surface waters.
- Ensure mower blades are routinely sharpened to reduce plant damage.
- Follow proper vehicle and equipment maintenance procedures to prevent leaks.
- Do not allow grease from mowers to fall onto areas where they can be washed into the stormwater system.

General Maintenance

The City implements the following general maintenance procedures to reduce discharge of pollutants from the MS4 areas.

- Wastewater from power washing signs, structures, or bleachers cannot be discharged into the stormwater system.
- When painting park equipment, use a drop cloth and clean up any spills immediately.
- Do not leave open containers on the ground where they may accidentally tip over.
- Sweep parking lots with a street sweeper and dispose of street sweepings in designated areas (See BMP 6 for more information).
- Never wash debris from parking lots into the storm drain.



Pesticides, Herbicides, and Fertilizers

The City does not apply pesticides, herbicides or fertilizer to property that it maintains. The School Facility and Maintenance Department hires a licensed commercial applicator to apply any fertilizers or any other lawn maintenance chemicals on an as needed basis to maintain safe playing surfaces on the school-maintained athletic fields and other recreational areas. Use of lawn chemicals is limited to the higher intensity use fields associated with the middle and high schools. No lawn chemicals are stored onsite.

The City and School Department implement the following pesticide, herbicide and fertilizer procedures to reduce discharge of pollutants from the MS4 areas.

- Where appropriate, non-chemical turf management practices such as aeration, dethatching and over-seeding should be used to promote plan health and turf density.
- If fertilizers are needed, only slow release fertilizers shall be used on City and School maintained property.
- Also, on as needed basis, the City will hire a licensed commercial applicator to apply weed control materials to limit excessive weed and invasive plant growth in select areas.
- See BMP 8 for more information on storage, use and disposal.

Waste Management

Trash disposal containers are managed by the City's Buildings and Grounds Department. Currently, the City empties trash containers approximately three times a week during the non-winter months and less frequently during winter months. The City also places signage in areas concerning the proper disposal of pet wastes. The City implements the following waste management procedures to reduce discharge of pollutants from the MS4 areas.

- All waste and recycling containers must be leak-tight with tight-fitting lids or covers.
- Conduct periodic inspections of waste areas to check for leaks and spills.
- Place waste and recycling containers indoors or under a roof or overhang whenever possible.
- Clean and sweep up around outdoor waste containers regularly.
- Do not wash out waste or recycling containers outdoors or in a parking lot.
- Ensure there are enough trash and recycling containers at appropriate areas. Monitor waste and recycling containers at heavily used sites and on holidays to ensure that there is no overflow.

Pet Waste

The City has established pet waste disposal stations and signage in popular dog walking locations. The City has produced public education messages to promote pet waste cleanup and disposal. These messages are generally posted in the Spring during the dog relicensing period. Pet waste disposal stations are located at the following four locations:

- Riverwalk/Lilac City Grill
- Parson Main Park
- Columbus Avenue Walking Path
- Woodman Park

The City inspects the stations on a frequent basis to ensure that stations have bags and trash receptacles are emptied.

Waterfowl Congregation

In areas where waterfowl congregate, steps to prevent waterfowl droppings from entering the stormwater system or surrounding waterbodies should be deployed. These measures may include:



- Use of strobe lights or reflective tape
- Establishment of no-mow zones to reduce available feeding areas
- Planting of thick vegetation along waterlines
- Installation of signage to educate the public on negative effects of waterflow feces entering the stormwater system or nearby waterbodies in order to discourage public feeding.

Erosion and Poorly Vegetated Areas

The City implements the following erosion control procedures to reduce discharge of pollutants from the MS4 areas.

- Repair damage to landscaped or mulch or vegetated bare areas as soon as possible to prevent erosion. If there are areas of erosion or poor vegetation, repair them as soon as possible, especially if they are within 50 feet of a surface water (e.g., pond, lake, or river).
- In select areas, use appropriate barriers/fencing to avoid vehicle traffic and damage due to compaction and tire wear

Winter Maintenance

The City implements the following winter maintenance procedures to reduce discharge of pollutants from the MS4 areas.

- Store salt or sand for snow removal indoors under a roof or in a covered container and on impervious surfaces.
- Any damage done to vegetated areas caused by plows or deicing materials should be repaired as early as possible in the spring.
- See BMP 7 for more information on property snow disposal and storage procedures.



BMP 2: Buildings and Facilities

Municipal buildings and facilities (schools, municipal offices, police and fire stations, municipal pools, parking garages, etc.) often house various chemicals, such as petroleum products and hazardous materials. As a result, these buildings and facilities are potential sources of pollutant discharges to the storm drainage system. The goal of this BMP is to provide guidance to municipal employees on the use, storage, and disposal of chemicals and other stormwater pollutants to reduce the discharge of pollutants from the MS4. If services are contracted, this O&M Plan should be provided to the contractor.

Table 2-1 and **2-2** provide a listing of City- and School-owned buildings and facilities, respectively, that use, store and/or dispose of petroleum products, materials, aggregates or chemicals. The City has adopted various practices to minimize exposure of stored material and/or related maintenance activities to stormwater. The School Facilities and Maintenance Department are responsible for maintaining the school grounds and athletic fields.

The Department of Public Works Facility has one main fueling station supplied by an aboveground storage tank. The catch basins within 50 feet of the fueling station are deep sump catch basins, thereby limiting the potential for spills from polluting the storm drain system. The dispensing nozzles are equipped with automatic shut-off valves triggered when fuel tanks are full.

Table 2-1: City-Owned Building and Facility Inventory

Facility Name	Location	Fuel or Chemical Storage	Outdoor Bulk Materials	Waste Receptacles
Fire Department Station 1	37 Wakefield St	No	No	Yes
Fire Department Station 2 (Gonic)	7 Pickering Rd	No	No	Yes
Police Department	23 Wakefield St	No	No	Yes
Community Center and Arena	150 Wakefield St	No	No	Yes
Public Library	65 South Main St	No	No	Yes
Revenue Building	19 Wakefield St	No	No	Yes
City Hall	31 Wakefield St	No	No	Yes
City Hall Annex	33 Wakefield St	No	No	Yes
Public Works	209 Chestnut Hill Road	Fuel (2 above ground tanks)	Yes	Yes
Surface Water Treatment Plant	64 Strafford Rd	Heating Fuel	No	Yes
Groundwater Treatment Plant	157 Farmington Road	Fuel (Propane)	No	No
Wastewater Treatment Plant	175 Pickering Rd	Chemical / Fuel	No	Yes
Quonset Hut	217 Washington St	No	Yes	N/A
Former Kane Brickyard	58 Pickering Rd	No	Yes	N/A
Snow Dump	65 Chamberlain St	No	No	N/A
Material Storage	183 Haven Hill Rd	No	Yes	N/A
Bulk Storage and Laydown Area	321 Old Dover Rd	No	Yes	N/A

Table 2-2: Inventory of School Facilities and Related Operational and Maintenance Activities

Facility Name	Location	Fuel or Chemical Storage	Outdoor Bulk Materials	Waste Receptacles/ Dumpsters
Spaulding High School	130 Wakefield St	None	Clean Soil Aggregates ²	Yes
Field Equipment Storage Barn	135 Wakefield St	None	None	Yes



Facility Name	Location	Fuel or Chemical Storage	Outdoor Bulk Materials	Waste Receptacles/ Dumpsters
Bud Carlson Academy	150 Wakefield St	None	None	Yes
R.W. Creteau Reg. Technology Center	140 Wakefield St	None	None	Yes
Facilities Maintenance Shop	150 Wakefield St	None	None	Yes
Rochester Middle School	47 Brock St	Generator fuel tank ¹	None	Yes
Chamberlain Street School	65 Chamberlain St	None	None	Yes
East Rochester School	773 Portland St	None	None	Yes
Gonic School	10 Railroad Ave	None	None	Yes
Maple Street Magnet School	27 Maple St	None	None	Yes
McClelland School	59 Brock St	None	None	Yes
Nancy Loud School	5 Cocheco Ave	None	None	Yes
School Street School	13 School St	None	None	Yes
William Allen School	23 Granite St	None	None	Yes

Notes: ¹Double-wall fuel tank associated with emergency generator

² Clean soil aggregates consist of extra stone dust and soil for field repairs

Sanitary Sewer System

While the Wastewater Treatment Facility (WWTF) is located outside the defined MS4 area and therefore, not subject to the MS4 Permit, there are several sanitary sewer pump stations located within the MS4 urbanized area that have diesel storage tanks to fuel the back-up generators. **Table 2-3** lists 13 sanitary sewer pump stations in the MS4 area that have ancillary petroleum fuel storage. These diesel storage tanks are double-wall, steel tanks for spill and leak protection. The City follows procedures, described below, to ensure tanks are in good condition and that there are no leaks and spills during refilling.

Table 2-3 Inventory of Sanitary Sewer Pump Stations with Petroleum Fuel Storage in the MS4 Area

Pump Station ID	Station Name/Location	Fuel Backup
SPS01	Ryan Circle	Diesel
SPS02	Old 125	Diesel
SPS03	Washington S	Diesel
SPS04	River St Pump Station	Diesel
SPS06	South Main St Pump Station	Diesel
SPS07	Front St Pump Station	Diesel
SPS08	Salmon Falls Rd Pump Station	Diesel
SPS11	Rt. 11 Pump Station	Diesel
SPS12	Rt. 125 Pump Station	Diesel
SPS15	Tara Estates Pump Station	Diesel
SPS19	Ledgeview Pump Station	Diesel
SPS24	Ray Dr Pump Station	Diesel
SPS27	Chestnut Hill Rd Pump Station	Diesel



Water Treatment Plant

The Surface Water Treatment Plant located in the western portion of the City off Stafford Road is outside the regulated Urbanized Area. The Groundwater Treatment Plant located off Farmington Road is also outside the northwesterly limit of the mapped urbanized area, which ends at Little Falls Bridge Road along Route 11. However, as shown in **Table 2-4**, there is one water service booster/pump station within the MS4 area which has a diesel fuel tank to supply the back-up generator. The City follows procedures, described below, to ensure tanks remain in good condition and that there are no leaks and spills during refilling.

Table 2-4 Inventory of Water Pump Stations with Petroleum Fuel Storage in the MS4 Area

Pump Station ID	Station Name/Location	Fuel Backup
WPS01	Richardson Street Pump Station	Diesel

Procedures

Handling, Storage, Transfer, and Disposal of Trash and Recyclables

The City generally uses the following recommended hauling, storage, transfer and disposal of trash and recyclable procedures to reduce discharge of pollutants from the MS4 areas.

- All liquid and solid waste must be disposed of properly. Some of the most common sources of pollution at municipal facilities are a result of littering, improper collection of debris, and improper disposal of solid or liquid waste.
- All waste and recycling receptacles must be leak-tight with tight-fitting lids or covers.
- Keep lids on dumpsters and containers closed at all times unless adding or removing material. If using an open-top roll-off dumpster, cover it and tie it down with a tarp unless adding materials.
- Place waste or recycling receptacles indoors or under a roof or overhang whenever possible.
- Locate dumpsters on a flat, paved surface and install berms or curbs around the storage area to prevent run-on and run-off.
- Do not locate dumpsters over or adjacent to catch basins.
- Prior to transporting waste, trash, or recycling, ensure that containers are not leaking (double bag if needed) and properly secure containers to the vehicle.
- Clean and sweep up around outdoor waste containers regularly.
- Clean up any liquid leaks or spills with dry cleanup methods.
- Arrange for waste or recycling to be picked up regularly and disposed of at approved disposal facilities.
- Never place hazardous materials, liquids, or liquid-containing wastes in a dumpster or recycling or trash container.
- Do not wash trash or recycling containers outdoors or in parking lots.
- Conduct periodic inspections of solid and liquid waste storage areas to check for leaks and spills.
- Conduct periodic inspections of work areas to ensure that all wastes are being disposed of properly.
- In dumpster areas, regularly pick up surrounding trash and debris and regularly sweep the area.
- In compactor areas, regularly check the hydraulic fluid hoses and reservoir to ensure that there are no cracks or leaks. Regularly sweep the area.



Building Maintenance

The City generally uses the following recommended building maintenance procedures to reduce discharge of pollutants from the MS4 areas.

- When power washing buildings and facilities, ensure that the wash water does not flow into the storm drain system. Containment or filtering systems should be provided.
- Paint and other chemicals should not be applied on the outside of buildings when it is raining or prior to expected rain.
- When sanding, painting, power washing, etc., ensure that sites are properly prepared (e.g., use tarps) and cleaned (e.g., use dry cleaning methods) especially if they are near storm drains. Protect catch basins when maintenance work is conducted upgradient of them.
- When painting, use a drop cloth and clean up any spills immediately.
- Do not leave open containers on the ground where they may accidentally tip over.
- Buildings should be routinely inspected for areas of potential leaks.
- Do not discharge chlorinated pool water into the stormwater system. Water must be properly dechlorinated and tested before it is discharged.
- Streets and parking lots surrounding municipal buildings and facilities should be swept and kept clean to reduce runoff of pollutants and debris to the stormwater system (refer to BMP 5 for more information).

Storage and Handling of Petroleum Products and Potential Pollutants

The City generally uses the following recommended storage of petroleum products procedures to reduce discharge of pollutants from the MS4 areas.

- Floor drains in storage areas should be disconnected from the stormwater system.
- Routinely inspect buildings and facilities for areas of potential leaks.
- Avoid loading/unloading materials in the rain and/or provide cover.
- Retrace areas where materials have been transferred to identify spills. If spills are found, immediately clean them up.
- Time delivery and handling of materials during favorable weather conditions whenever possible (e.g., avoid receiving loads of sand during windy weather).
- Inspect containers for material compatibility and structural integrity prior to loading/unloading any raw or waste materials.
- Use dry cleanup methods (e.g., squeegee and dustpan, sweeping, and absorbents as last step) rather than hosing down surfaces.
- For storage and handling procedures for fertilizers, pesticides, and herbicides, refer to BMP 8.

Spill Response and Cleanup

Prevention of spills is preferable to even the best response and cleanup. To mitigate the effects of a contaminant release, provide proper maintenance and inspection at each facility. To protect against contaminant release, adhere to the following guidance:

- Ensure all employees are properly trained to respond in the case of a spill, understand the nature and properties of the contaminant, and understand the spill control materials and personnel safety equipment. Maintain training records of current personnel on site and retain training records of former personnel for at least three years from the date last worked at the facility.
- Implement good management practices where chemicals and hazardous wastes are stored:
 - Ensure storage in closed containers inside a building and on an impervious surface



wherever possible.

- If storage cannot be provided inside, ensure secondary containment for 110 percent of the maximum volume of the storage container.
- Locate storage areas near maintenance areas to decrease the distance required for transfer.
- Provide accurate labels, Material Safety Data Sheets (MSDS) information, and warnings for all stored materials.
- Regularly inspect storage areas for leaks.
- Ensure secure storage locations, preventing access by untrained or unauthorized persons.
- Maintain accurate records of stored materials.
- Replace traditional hazardous materials such as pesticides and cleansers with non-hazardous products such as bio-lubricants which can reduce response costs in the case of a spill.

Maintain appropriately stocked spill response kits at each of the facilities and locations where oil, chemicals, or other hazardous materials are handled and stored.



BMP 3: Maintenance of Vehicles and Equipment

Regular maintenance of both municipal and contracted vehicles and heavy equipment not only prolongs the life of municipal assets but also helps reduce the potential for leaking of fluids associated with normal wear and tear. Potential pollutants include fuels, oil, antifreeze, brake fluid, solvents, and battery acid. The goal of this BMP is to provide guidance to municipal employees to help reduce the discharge of pollutants from the MS4 as a result of leaks from vehicles and equipment. If services are contracted with respect to vehicles and equipment, this BMP should be provided to the contractor.

The City and School conduct maintenance of vehicles and/or equipment at the facilities listed in **Table 3-1**. Vehicle maintenance is typically done inside within the maintenance bays. Used and new vehicle fluids are stored indoors on container pallets or tanks with secondary containment

Table 3-1: Building and Facilities Where Vehicle or Equipment Maintenance is Conducted

Facility Name	Location	Fuel or Chemical Storage	Vehicle or Equipment Maintenance	Other Outdoor Storage/ Waste Receptables
Department of Public Works	209 Chestnut Hill Road	Diesel Fuel	Yes/Vehicle Washing Indoors	Aggregate/ Street Sweeping Material
Fire Department Station 1	37 Wakefield St	TBD	Yes/Vehicle Washing Indoors	TBD
Fire Department Station 2 (Gonic)	7 Pickering Rd.	TBD	Yes/Vehicle Washing Indoors	TBD
Wastewater Treatment Plant	175 Pickering Rd	TBD	Yes	TBD
School Field Equipment Storage Barn	135 Wakefield St	TBD	Minor equipment repairs indoors	Dumpster
School Facilities Maintenance Shop	150 Wakefield St	TBD	Small engine repair indoors; occasional vehicle washing	Dumpster

Procedures

Vehicle Maintenance

All vehicle maintenance and especially fluid exchanges are done inside the DPW Facility that has multiple vehicle bays. Waste oil is stored indoors within the waste oil tank.

School Department vehicle maintenance primarily occurs off-site through a contracted mechanic; however, some small engine repair and regular maintenance occurs at the Field Equipment Storage Barn and the Facilities Maintenance Shop. All in-house vehicle maintenance is conducted on an as needed basis inside each facility.

The City generally uses the following recommended vehicle maintenance procedures to reduce discharge of pollutants from the MS4 areas.

- Conduct routine inspections of heavy equipment and vehicles to proactively identify maintenance needs or potential leaks.
- Perform routine preventive maintenance to ensure heavy equipment and vehicles are operating optimally.
- Recycle or dispose of waste properly and promptly.
- Sweep and pick up trash and debris as needed.



- Do not dump any liquids or other materials outside, especially near or in storm drains or ditches.

Vehicle Washing

Vehicle washing is done outdoors or in a designated area where rinse water does not flow directly into adjacent catch basins or nearby wetlands or water bodies. Occasionally, during winter months, vehicles may be washed indoors in bays equipped with a floor drain that is connected to a grit chamber and a holding tank that is pumped out as needed. Smaller vehicles are also at times washed at commercial car wash facilities.

The City's Police Department primarily conducts vehicle washing at a designated commercial car wash facility and not onsite. The Fire Department conducts vehicle washing within the stations vehicle bays where floor drains collect the runoff.

Most School Department vehicles are washed at a privately-owned car wash facility within the City of Rochester. Some vehicle washing does occur on an as needed basis at the School Maintenance shop, primarily to rinse off salt and sand with water. It should be noted that the School Department also sanctions several car wash fundraising events for clubs and sports teams that take place on school property.

Outdoor Vehicle Washing Procedures

Outdoor washing of municipal vehicles should be avoided unless wash water is contained in a tight tank or similar structure. Where no alternative wash system is available, and full containment of wash water cannot be achieved, the City implements the following outdoor vehicle washing procedures to reduce discharge of pollutants from the MS4 areas.

- Avoid discharge of any wash water directly to the storm drainage system or surface water (e.g., stream, pond, or drainage swale).
- Minimize the use of water to the extent practicable.
- Where the use of detergent cannot be avoided, use products that do not contain regulated contaminants. The use of a biodegradable, phosphate-free detergent is preferred.
- Do not use solvents except in dedicated solvent parts washer systems or in areas not connected to a sanitary sewer.
- Do not power wash, steam clean, or perform engine or undercarriage cleaning.
- Grassy and pervious (porous) surfaces may be used to promote direct infiltration of wash water, providing treatment before recharging groundwater and minimizing runoff to an adjacent stormwater system. Pervious surfaces or other infiltration-based systems should not be used within wellhead protection areas or within other protected resources.
- Impervious surfaces discharging to the storm drainage system should not discharge directly to a surface water unless treatment is provided. The treatment device should be positioned such that all drainage must flow through the device, preventing bypassing or short-circuiting.
- Periodic sweeping and/or cleaning should be completed to prevent accumulation from forming on the washing area.
- Maintain absorbent pads and drip pans to capture and collect spills or noticeable leaks observed during washing activities.
- Heavily soiled vehicles or vehicles dirtied from salting or snow removal efforts.

Indoor Vehicle Washing Procedures

The City generally uses the following the recommended indoor vehicle washing procedures to reduce discharge of pollutants from the MS4 areas.

- Vehicles and equipment should be washed inside whenever possible to reduce runoff to the stormwater system.



- Where the use of detergent cannot be avoided, use products that do not contain regulated contaminants. The use of biodegradable, phosphate-free detergent is preferred.
- Detergents should not be used in areas where oil/water separators provide pre-treatment of drainage.
- Floor drains should be connected to a sanitary sewer or tight tank. Floor drains discharging to adjacent surface water bodies or engineered storm drain systems should be permanently plugged or otherwise abandoned before any vehicle wash activities are completed.
- Designate separate areas for routine maintenance and vehicle cleaning. This helps prevent contamination of wash water by motor oils, hydraulic lubricants, greases, or other chemicals.
- Dry cleanup methods are recommended within garage facilities. Do not wash down floors and work areas with water.
- Bring smaller vehicles to commercial washing stations.
- Maintain absorbent pads and drip pans to capture and collect spills or noticeable leaks observed during washing activities.

Vehicle Storage

The City generally uses the following recommended vehicle storage procedures to reduce discharge of pollutants from the MS4 areas.

- Monitor vehicles and equipment for leaks and use drip pans as needed until repairs can be performed.
- When drip pans are used, avoid overtopping.
- Drain fluids from leaking or wrecked vehicles and parts as soon as possible. Dispose of fluids properly.
- Store and park vehicles on impervious surfaces and/or under cover or indoors whenever possible.

Body Repair and Painting

The City generally uses the following recommended body repair and painting procedures to reduce discharge of pollutants from the MS4 areas.

- Conduct all body repair and painting work indoors.
- Minimize waste from paints and thinners. Calculate paint needs based on surface area.
- Use dry cleanup methods (vacuum, sweep) to clean up metal filings and dust and paint chips from grinding, shaving and sanding. Sweep debris from wet sanding after allowing it to dry overnight on the shop floor. Dispose of waste properly; never dump waste into storm or sanitary sewers.
- Use sanding tools equipped with vacuum capability to pick up debris and dust.

Fueling

The City generally uses the following fueling procedures to reduce discharge of pollutants from the MS4 areas.

- Fuel storage facilities have secondary containment and are located in a secure area.
- Fueling areas should be evaluated to ensure that pollutants (e.g., gasoline or oil) do not enter the MS4.



Material Management

The City generally uses the following recommended material management procedures to reduce discharge of pollutants from the MS4 areas.

- Store materials and waste in labeled containers under cover and in secondary containment.
- Chemicals should not be combined in containers.
- Hazardous waste must be labeled and stored according to hazardous waste regulations.
- Carefully transfer collected fluids from containers into designated storage areas as soon as possible.
- Store new and used batteries securely to avoid breakage. Store indoors or in secondary containment to contain potential acid leaks. Recycle used batteries.
- Conduct periodic inspections of storage areas to detect possible leaks.
- Do not wash or hose down storage areas unless there is prior approval to collect and discharge the water into the sanitary sewer. Use dry cleanup methods whenever possible.
- Keep lids on containers. Store them indoors or under cover to reduce exposure to rain.
- Inspect and maintain all pretreatment equipment, including interceptors, according to the manufacturer's maintenance schedule and at least once per year.
- Proper spill protocol should be followed to prevent chemicals from entering the stormwater system.

Parts Cleaning

The City generally uses the following recommended parts cleaning procedures to reduce discharge of pollutants from the MS4 areas.

- Use designated areas for engine, parts, or radiator cleaning. Do not wash or rinse parts outdoors. If parts cleaning equipment is not available, then capture parts cleaning fluids.
- Recycle cleaning solution. Never discharge waste to the sanitary sewer or storm sewer.
- Use steam cleaning or pressure washing of parts instead of solvent cleaning. Cleaning equipment must be connected to an oil/water interceptor prior entering the sanitary sewer.
- When using solvents for cleaning, drain parts over the solvent tank to avoid drips to the floor. Catch excess solutions and divert them back to tank. Allow parts to dry over the hot tank.

Heavy Equipment Washing Procedures

The City generally uses the following recommended procedures for equipment washing to reduce discharge of pollutants from the MS4 areas.

- Mud and heavy debris removal should occur on impervious surfaces or within a retention area.
- Maintain these areas with frequent mechanical removal and proper disposal of waste.
- Impervious surfaces with engineered storm drain systems should not discharge directly to a surface water.
- Floor drains should be connected to a sanitary sewer or tight tank. Floor drains discharging to adjacent surface waterbodies or engineered storm drain systems should be permanently plugged or otherwise abandoned before any vehicle wash activities are completed.
- Where the use of detergent cannot be avoided, use products that do not contain regulated contaminants. The use of biodegradable, phosphate-free detergent is preferred.
- Detergents should not be used in areas where oil/water separators provide pre-treatment of drainage.



- Maintain absorbent pads and drip pans to capture and collect spills or noticeable leaks observed during washing activities.

Engine and Steam Washing Procedures

The City generally uses to the following recommended engine and steam washing procedures to reduce discharge of pollutants from the MS4 areas.

- Maintain drip pans and smaller containers to contain motor oils, hydraulic lubricants, greases, etc. and to capture and collect spills or noticeable leaks observed during washing activities, to the extent practicable.
- Where use of detergent cannot be avoided, use products that do not contain regulated contaminants. The use of a biodegradable, phosphate-free detergent is preferred.
- Avoid cleaning with solvents except in dedicated solvent parts washer systems. Make use of pressure washing and steam cleaning.
- Recycle clean solutions and rinse water to the extent practicable.
- Wash water should discharge to a tight tank or a sanitary sewer via an oil/water separator. Detergents should not be used in areas where oil/water separators provide pre-treatment of drainage.



BMP 4: Catch Basin Cleaning

The City has an established catch basin cleaning program, implemented by the Highway Foreman, to minimize the amount of sediment and debris accumulation in the drainage system. The City tracks inspections and cleaning of catch basins in GIS and has identified approximately 3,300 catch basins within streets and parking lots maintained by the City.

The City has an inspection, tracking and accounting database where data is collected for each catch basin when it is cleaned. The City uses this information to prioritize the frequency of catch basin cleaning to ensure that no basins are more than 50% full. On an annual basis, the City uses data collected to prioritize a cleaning schedule for the coming year.

General Permit Requirement

The 2017 MS4 Permit requires that routine inspections, cleaning and maintenance of catch basins be conducted such that the following conditions are met:

Routine Inspection, Cleaning and Maintenance Conditions	Establish a schedule with the goal of ensuring no catch basin at any time will be more than 50% full.
	Prioritize cleaning efforts based on the receiving water impairment and the potential for the MS4 to contribute to this impairment.
	Maintain a cleaning log to record which catch basins have been cleaned and the volume of material recovered
	Prioritize areas that may require more frequent catch basin cleaning due to higher sediment and/or nutrient loads resulting from nearby land use practices, steep terrain or construction activity.
	Catch basin cleanings be properly stored and contained prior to disposal or reuse such that they do not discharge to receiving waters.

Reporting Requirements

For each Annual Report, the MS4 permit requires the following items be reported:

- Number of catch basins inspected;
- Number of catch basins cleaned;
- Total mass of material removed from all catch basins; and
- Whether any changes are planned to the catch basin cleaning schedule to help ensure no sump is more than 50% full at any given time.

Inspection and Cleaning Procedure

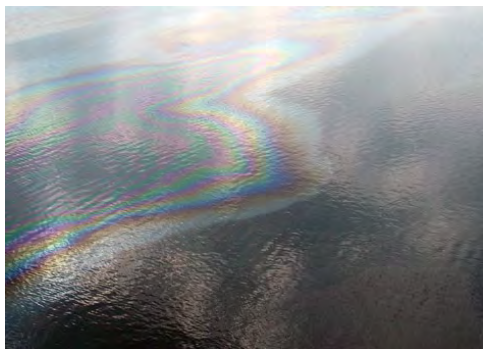
Catch basin inspection and cleaning procedures should address both the grate opening and the catch basin structure, including the sump and any inlet and outlet pipes. During the inspection, any and all observations about the condition of the catch basin structure and water quality shall be documented.

Collect data on the following conditions:

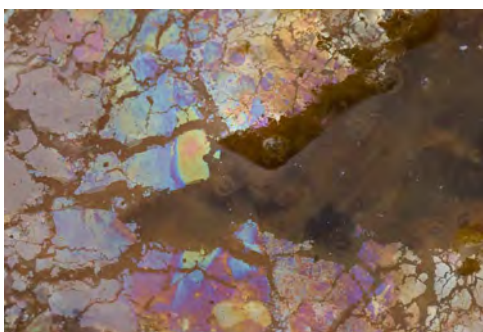
- Physical basin structure, its frame, and the grate; and
- Quality of stormwater conveyed by the structure.



Observations such as oil sheen, discoloration and trash and debris can indicate sources of pollution within the storm drain system.



Petroleum sheen on water surface. If disturbed the petroleum will remain intact and move in a swirl pattern. This type of sheen is considered a pollutant.



Iron bacteria sheen on water surface. If disturbed the bacteria will separate and appear “blocky”. This is naturally occurring sheen and is not considered a pollutant.

Observations like those below can indicate a potential connection of a sanitary sewer to the storm drain system, which is an illicit discharge:

- Indications of sanitary sewage, including fecal matter or sewage odors
- Foaming, such as from detergent
- Optical enhancers, fluorescent dye added to laundry detergent

Prior to cleaning, the following information shall be collected:

- Depth to sediment from the top of the catch basin grate

All observations shall be noted by the field crew and logged into the inspection form and/or tablet with mobile data collection system (included as Attachment A).

Handling and Disposal of Catch Basin Cleanings

The City generally uses the following recommended procedures for handling and disposal of catch basin cleaning material to reduce discharge of pollutants from the MS4 areas.

- Properly dispose of collected sediments and catch basin cleanings (solid material, such as leaves, sand, and twigs removed from stormwater collection systems during cleaning operations).
- Stockpile and cover catch basin residuals on an impervious surface that discharges to a sanitary sewer or buffered area until test results are known.
- Test catch basin residual stockpile as follows:



- If catch basin sediments are obviously contaminated (based on visual and/or olfactory examination) due to influence of sanitary wastewater, animal wastes, oil, gasoline or other petroleum products, the sediments should be tested pursuant to the hazardous waste determination requirements in ENV-Hw 502 and dispose of as follows:
 - If testing indicates non-hazardous – dispose at any permitted, lined solid waste landfill or other solid waste treatment facility permitted to accept this material.
 - If testing indicates hazardous material – dispose of in accordance with NH Hazardous Waste Rules, ENV-Hw 100-1100
- If not obviously contaminated:
 - The need and type of testing will depend on the ultimate disposal method and whether the sediments are planned for reuse and where.
 - Disposal at a licensed landfill as daily cover is an accepted disposal method, however, the land fill will likely require its own testing requirements prior to disposal.
 - Additional testing may be required for any planned reuse of catch basin cleanings to assess contamination risks. The NHDES Risk Characterization and Management Policy (RCMP) S-3 Soil Standards has set acceptable levels for metals, VOCs and PAHs for reuse as road base or subbase. In this instance, when used solely for road base material, the City may request a waiver from the NHDES Solid Waste Bureau to avoid future testing based on testing results.
 - For any other potential reuse options, testing should be conducted to compare to the lower NHDES RCMP S-1 Soil Standards for unrestricted reuse.



BMP 5: Street/Parking Lot Sweeping

Regular sweeping of streets and municipally owned parking lots is important for maintaining clean and safe roadways. It also plays a vital role in keeping pollutants like sand, trash, and leaves out of the MS4. The City has maintained a comprehensive street sweeping program for many years and sweeps many of its roadways on a monthly basis, if not more frequently. The highway foreman implements the street sweeping program. The City has approximately 300 curb-lane miles of roadway and 14 acres of parking lots that it maintains as part of its sweeping program.

General Permit Requirement

The 2017 MS4 Permit requires that all streets and parking lots with curb and gutter drainage and/or catch basins meet the following conditions:

Routine Maintenance Conditions	Sweep a <i>minimum of twice per year</i> including once in early spring (following winter activities such as sanding) and at least once in the fall (following leaf fall)
	More frequent sweeping of targeted areas determined based on pollutant load reduction potential based on inspections, pollutant loads, catch basin cleaning, land use and status of receiving water body.

Reporting Requirements

For each Annual Report, the MS4 permit requires the following items be reported:

- Number of miles swept; and
- Volume or mass of material removed.

Sweeping Procedure

The City's current street sweeping program is conducted between May and October. The City conducts more frequent sweeping in the downtown area during these months. In general, street sweeping shall be conducted according to the following procedures to reduce discharge of pollutants from the MS4 areas.

Street sweeping should be conducted in dry weather. Sweeping should not be conducted during or immediately after rainstorms.

- Dry cleaning methods should be used whenever possible, except for very fine water spray for dust control. Avoid wet cleaning or flushing of the pavement.
- When necessary, enact parking bans to facilitate sweeping on busy streets.
- Sweep in a manner that avoids depositing debris into storm drains.
- Sweeping equipment (mechanical, regenerative air, vacuum filter, tandem sweeping) should be selected depending on the level of debris. Brush alignment, sweeper speed, rotation rate, and sweeping pattern should be set to optimal levels to manage debris.
- Routinely inspect and perform maintenance on sweeping equipment to reduce the potential for leaks.

Sweepings Reuse and Disposal

The City generally uses the following recommended handling and disposal of procedures for street sweeping debris to reduce discharge of pollutants from the MS4 areas.



- Properly dispose of collected street sweeping residuals in a contained stockpile on an impervious surface that does not discharge directly to a storm drain catch basin or a nearby surface water or wetland area until test results are known.
- For street sweeping disposal and testing requirements see section on catch basin cleaning and disposal methods above.



BMP 6: Stormwater Treatment BMP Inspection and Maintenance

Stormwater treatment BMPs are policies, procedures and structures designed to reduce stormwater pollution, prevent contaminant discharges to natural water bodies, and reduce stormwater facility maintenance costs. Structural BMPs are permanent site features designed to treat stormwater before infiltrating it to the subsurface or discharging it to a surface water body. Regular inspection and maintenance of structural stormwater BMPs is critical for these engineered systems to function as designed (e.g., provide benefits to water quality, groundwater recharge, and peak flow attenuation). Inspection forms by stormwater treatment BMP type are included as Attachment B.

Table 6-1 lists various City-owned and maintained stormwater treatment BMPs that have been installed to treat stormwater from roadway and parking lot areas.

Table 6-1: Stormwater Treatment BMPs the City Owns/Maintains within MS4 Regulated Area

ID	Location	SW BMP Type	Waterbody
SWT0003	Channings Ln	Wet Extended Detention Pond	Heath
SWT0008	Farmington Rd	Wet Extended Detention Pond	Other
SWT0013	Ian's Way	Wet Extended Detention Pond	Other
SWT0020	Industrial Way	Wet Extended Detention Pond	Cocheco
SWT0026	Ebony Dr	Wet Extended Detention Pond	Cocheco
SWT0027	Ebony Dr	Secondary Treatment	Cocheco
SWT0028	Ebony Dr	Wet Extended Detention Pond	Cocheco
SWT0029	Ebony Dr	Wet Extended Detention Pond	Cocheco
SWT0030	Winkley Farm Ln	Dry Infiltration Basin	Cocheco
SWT0031	Winkley Farm Ln	Constructed Wetland	Cocheco
SWT0040	Columbus Ave	Vortechnic Unit	Cocheco
SWT0041	Brock St	Wet Extended Detention Pond	Cocheco
SWT0043	Charles St	Bioretention Pond	Cocheco
SWT0044	River St	Vortechnic Unit	Cocheco
SWT0045	Lupine Ln	Wet Extended Detention Pond	Salmon Falls
SWT0046	Anderson Ln	Wet Extended Detention Pond	Willow
SWT0047	Collins Cir	Wet Extended Detention Pond	Willow
SWT0048	Collins Cir	Wet Extended Detention Pond	Willow
SWT0049	Norway Plains Rd	Wet Extended Detention Pond	Cocheco
SWT0053	Butterfly Ln	Dry Detention Pond	Cocheco
SWT0054	Kinsale Dr	Wet Extended Detention Pond	Heath
SWT0056	Jay Way	Wet Extended Detention Pond	Salmon Falls
SWT0057	Regency Ct	Wet Extended Detention Pond	Willow
SWT0058	Knobby Way	Wet Extended Detention Pond	Willow
SWT0059	Eastern Ave	Vegetated Swale	Willow
SWT0060	Crimson Ln	Wet Extended Detention Pond	Willow
SWT0061	Pray St	Wet Extended Detention Pond	Willow
SWT0062	Stonewall Dr	Wet Extended Detention Pond	Willow
SWT0063	Kodiak Ct	Wet Extended Detention Pond	Salmon Falls
SWT0065	Brenda Ln	Dry Detention Pond	Willow



ID	Location	SW BMP Type	Waterbody
SWT0066	Brenda Ln	Wet Extended Detention Pond	Willow
SWT0067	Katie Ln	Wet Extended Detention Pond	Salmon Falls
SWT0068	Allen St	Dry Detention Pond	Willow
SWT0069	Allen St	Infiltration Pond	Willow
SWT0071	Congress St	Wet Extended Detention Pond	Cocheco
SWT0080	Laredo Ln	Wet Extended Detention Pond	Salmon Falls
SWT0091	Alice Ln	Wetland	Cocheco
SWT0092	Seavey Brook Ln	Wet Extended Detention Pond	Cocheco
SWT0095	Trinity Cir	Constructed Wetland	Other
SWT0097	Ledgeview Dr	Wet Extended Detention Pond	Cocheco
SWT0098	Ledgeview Dr	Wet Extended Detention Pond	Cocheco
SWT0108	Misty Ln	Wet Extended Detention Pond	Other
SWT0126	Little Falls Bridge Rd	Unknown	Cocheco
SWT0127	Sterling Dr	Vegetated Swale	Cocheco
SWT0128	Little Falls Bridge Rd	Unknown	Cocheco
SWT0129	Crimson Ln	Unknown	Willow
SWT0131	Rebekah Ln	Wet Extended Detention Pond	Cocheco
SWT0133	Alice Ln	Infiltration Pond	Cocheco
SWT0134	Capital Cir	Wet Extended Detention Pond	Cocheco
SWT0135	Stone Ridge Dr	Wet Extended Detention Pond	Salmon falls
SWT0136	Ryan Cir	Wet Extended Detention Pond	Willow
SWT0138	Chestnut Hill Rd	Vortechnic Unit	Cocheco
SWT0139	Western Ave	Dry Detention Pond	Willow
SWT0141	Miller's Farm Rd	Dry Detention Pond	Cocheco
SWT0144	North Main St	Gravel Wetland	Wetland
SWT0145	North Main St	Vortechnic Unit	Wetland
SWT0147	Champlin Woods	Wet Extended Detention Pond	Blackwater
SWT0148	Champlin Woods	Vegetated Swale	Blackwater
SWT0149	Front St	Vortechnic Unit	Salmon Falls
SWT0150	Airport Dr	Wet Extended Detention Pond	Salmon Falls
SWT0151	Airport Dr	Wet Extended Detention Pond	Salmon Falls
SWT0175	Gagne St	Vortechnic Unit; Vegetated Swale	Cocheco
SWT0180	Chestnut Hill Rd	Infiltration Basin	Cocheco
SWT0181	Chestnut Hill Rd	Infiltration Basin	Cocheco
SWT0182	Portland St	Vegetated Swale	Salmon Falls
SWT0183	Portland St	Rain Garden	Salmon Falls
SWT0184	Portland St	Rain Garden	Salmon Falls
SWT0185	Portland St	Rain Garden	Salmon Falls
SWT0186	Portland St	Rain Garden	Salmon Falls
SWT0187	Portland St	Vegetated Swale	Salmon Falls
SWT0188	Portland St	Rain Garden	Salmon Falls



The School Department has also installed various rain gardens at the School Street property and permeable pavement within the basketball court. The rain gardens are maintained through a volunteer group associated with an Adopt-a-Garden Program.

Procedures

The City generally uses the following recommended inspection and maintenance procedures for stormwater treatment BMPs to reduce discharge of pollutants from the MS4 areas.

Bioretention Areas and Rain Gardens

Bioretention areas and rain gardens are shallow depressions filled with sandy soil, topped with a thick layer of mulch, and planted with dense native vegetation. There are two types of bioretention cells:

1. Filtering bioretention area: Areas that are designed solely as an organic filter.
2. Exfiltration bioretention area: Areas that are configured to recharge groundwater in addition to acting as a filter.

Regular inspection and maintenance are important to prevent against premature failure of bioretention areas or rain gardens. Regular inspection and maintenance of pretreatment devices and bioretention cells for sediment buildup, structural damage and standing water can extend the life of the soil media.

Maintenance Schedule: Bioretention ("Retention") Areas and Rain Gardens

Activity	Time of Year	Frequency
Inspect for soil erosion and repair	Year Round	Annually
Seed/mulch areas with poor vegetation cover (<75% cover)	Spring	Annually
Remove and replace dead vegetation	Spring and Fall	Bi-Annually
Remove excessive sediment and/or trash accumulation	Year Round	Annually
Inspect and remove invasive species by hand if present	Spring and Fall	Bi-Annually
Prune	Spring or Fall	Annually
Ensure outlet is free-flowing and no channel scour downstream	Year Round	Annually

When failure is discovered, excavate the bioretention area, scarify the bottom and sides, replace the filter fabric and soil, replant vegetation, and mulch the surface.

Never store snow within a bioretention area or rain garden. This would prevent the recharge and water quality treatment of ground water.

Extended Dry Detention Basins

Extended dry detention basins are designed to control both stormwater quantity and quality. These BMPs are designed to hold stormwater for at least 24 hours, allowing solids to settle and reducing local and downstream flooding. Pretreatment is required to reduce the potential for overflow clogging. The outflow may be designed as either fixed or adjustable. Additional nutrient removal may be achieved by a micro-pool or shallow marsh.

Annual inspection of extended dry detention basins is required to ensure that the basins are operating properly. Potential problems include erosion within the basin and banks, tree growth on the embankment, damage to the emergency spillway, and sediment accumulation around the outlet. Should any of these problems be encountered, necessary repairs should be made immediately.



Maintenance Schedule: Extended Dry Detention Basins

Activity	Time of Year	Frequency
Inspect basin	Spring and Fall	Bi-annually
Examine outlet structure for clogging or high outflow release velocities	Spring and Fall	Bi-annually
Mow upper stage, side slopes, embankment and emergency spillway	Spring through Fall	Bi-annually
Remove trash and debris	Spring	Bi-annually
Remove sediment from basin	Year round	At least once every 5 years

Proprietary Media Filters

Media Filters are designed to reduce total suspended solids and other target pollutants, such as organics, heavy metals, or nutrients – these materials are sorbed onto the filter media, which is contained in a concrete structure. The substrate used as filter media depends on the target pollutants, and may consist of leaf compost, pleated fabric, activated charcoal, perlite, amended sand in combination with perlite, and zeolite.

Two types of Media Filters are manufactured:

- Dry media filters, which are designed to dewater within 72 hours; and
- Wet media filters, which maintain a permanent pool of water as part of the treatment system.

Maintenance in accordance with the manufacturer's requirements is necessary to ensure stormwater treatment. Inspection or maintenance of the concrete structure may require OSHA confined space training. Dry media filters are required to dewater in 72 hours, thus preventing mosquito and another insect breeding. Proper maintenance is essential to prevent clogging. Wet media filters require tight fitting seals to keep mosquitoes and other insects from entering and breeding in the permanent pools. Required maintenance includes routine inspection and treatment.

Maintenance Schedule: Proprietary Media Filters and SWT's, Underground Hydrodynamic Separators

Activity	Time of Year	Frequency
Inspect for standing water, trash, sediment and clogging	Per manufacturer's schedule	Bi-annually (minimum)
Remove trash and debris	Year round	Bi-annually
Estimate to determine if system drains in 72 hours	Spring, after large storm	Annually
Inspect filtering media for clogging	Per manufacturer's schedule	Per manufacturer's schedule

Sand and Organic Filters

Sand and organic filters, also known as filtration basins, are intended for stormwater quality control rather than quantity control. These filters improve water quality by removing pollutants through a filtering media and settling pollutants on top of the sand bed and/or in a pretreatment basin. Pretreatment is required to prevent filter media from clogging. Runoff from the filters is typically discharged to another BMP for additional treatment.

If properly maintained, sand and organic filters have a long life. Maintenance requirements of the filters include raking the sand and removing sediment, trash, and debris from the surface of the BMP. Over time, fine sediments will penetrate deep into the sand requiring replacement of several inches or the entire sand layer. Discolored sand is an indicator of the presence of fine sediments, suggesting that the sand should be replaced.



Maintenance Schedule: Sand and Organic Filters

Activity	Time of Year	Frequency
Inspect filters and remove debris	Spring and Fall	Bi-annually (minimum)

Wet Basins

Wet basins are intended to treat stormwater quality through the removal of sediments and soluble pollutants. A permanent pool of water allows sediments to settle and removes the soluble pollutants, including some metals and nutrients. Additional dry storage is required to control peak discharges during large storm events. If properly designed and maintained, wet basins can add fire protection, wildlife habitats, and aesthetic values to a property.

To ensure proper operation, wet basin outfalls should be inspected for evidence of clogging or excessive outfall releases. Potential problems to investigate include erosion within the basin and banks, damage to the emergency spillway, tree growth on the embankment, sediment accumulation around the outlet, and the emergence of invasive species. Should any of these problems be encountered, perform repairs immediately. An on-site sediment disposal area will reduce sediment removal costs.

Maintenance Schedule: Wet Basins

Activity	Time of Year	Frequency
Inspect wet basin	Spring and/or Fall	Annually
Mow upper stage, side slopes, embankment and emergency spillway	Spring through Fall	Bi-annually (minimum)
Remove sediment, trash and debris	Spring through Fall	Bi-annually (minimum)
Remove sediment from basin	Year Round	As required, once every 10 years (minimum)

Dry Wells

Dry wells are used to infiltrate uncontaminated runoff. These BMPs should never be used to infiltrate stormwater or runoff that has the potential to be contaminated with sediment and other pollutants. Dry wells provide groundwater recharge and can reduce the size and cost required of downstream BMPs or storm drains. However, they are only applicable in drainage areas of less than one acre and may experience high failure rates due to clogging.

Proper dry well function depends on regular inspection. Clogging has the potential to cause high failure rates. The water depth in the observation well should be measured at 24- and 48-hour intervals after a storm and the clearance rate calculated. The clearance rate is calculated by dividing the drop-in water level (inches) by the time elapsed (hours).

Maintenance Schedule: Dry Wells

Activity	Time of Year	Frequency
Inspect dry wells	Spring and/or Fall	Annually

Infiltration Basins

Infiltration basins are designed to contain stormwater and provide groundwater recharge. Pollution prevention and pretreatment are required to ensure that contaminated stormwater is not infiltrated. Infiltration basins reduce local flooding and preserve the natural water balance of the site. High failure rates, however, often occur due to improper siting, inadequate pretreatment, poor design, and lack of maintenance.

Regular maintenance is required to prevent clogging, which results in infiltration basin failure. Clogging may be due to upland sediment erosion, excessive soil compaction, or low spots. Inspections should include



signs of differential settlement, cracking, erosion, leakage in the embankments, tree growth on the embankments, riprap condition, sediment accumulation, and turf health.

Maintenance Schedule: Infiltration Basins

Activity	Time of Year	Frequency
Preventative maintenance	Spring and Fall	Bi-annually
Inspection	Spring and Fall	Bi-annually
Mow/rake buffer area, side slopes and basin bottom	Spring and Fall	Bi-annually
Remove trash, debris and organic matter	Spring and Fall	Bi-annually



BMP 7: Winter Maintenance Practices

Winter road maintenance includes snow removal and the use of salt, sand, or deicers to ensure safe winter driving conditions. Proper maintenance procedures and use and storage of materials can help reduce the discharge of pollutants, such as sand and salt, from the MS4 and to receiving waters. The goal of this written procedure is to provide guidance to municipal employees on the use and storage of salt and sand, minimizing the use of salt, evaluating opportunities for use of alternative materials, and ensuring that snow disposal activities to not result in disposal of snow into surface waters. If services are contracted, this BMP should be provided to the contractor.

The DPW clears snow on approximately 150 miles of roadway and 80 miles of sidewalks as well as parking lots including assistance with School facilities. The City utilizes the following basic practices to optimize its snow and ice control operations and minimize its deicing chemical usage:

- Plowing snow is considered the first line of defense for clearing roads. Followed by general maintenance, road salt application, and sand application.
- School bus routes and the downtown area are generally given highest priority.
- Applying road salt to roads is done only when necessary and under appropriate temperature conditions.
- Road salt is generally applied along the roadway centerline to allow vehicle traffic and the crown slope mix the salt with precipitation/snow to create a brine mix. This is done in both the fall and winter seasons.
- DPW spreader trucks are calibrated each year prior to each winter season to make sure that application settings are putting out the targeted amount.
- DPW uses various weather forecast information to help in the decision-making process in determining when plowing and/or deicer applications may be necessary.
- Several DPW employees have attended the Green SnowPro® Certification training program and will look to continue to train employees in the future as funding allows
- Sand is only applied in select areas to assist with traction. Unpaved or gravel roads are only treated with sand.
- Road salt and sand mixed with salt are stored under cover or enclosed buildings.

Procedures

The City generally uses the following recommended procedures for winter maintenance to reduce discharge of pollutants from the MS4 areas:

Deicing Applications

- Only apply road salt when the pavement temperature is above 15° F.
- Using a ratio of 3 salt: 1 sand mixture
- Only apply enough deicer so that plows can remove the snow and ice. Adjust the application rate of deicers based on the type of storm, type of agent used, and anti-icing and pre-wetting techniques used.
- Perform unloading/loading of trucks on impervious surfaces whenever possible. These areas should be frequently cleaned and swept to reduce the tracking and runoff of salt and to capture any spills.
- Track the amount of deicer used and maintain records of the application of sand, anti-icing and/or de-icing chemicals to document the reduction of chemicals to meet established goals.



Equipment and Maintenance

- Calibrate equipment to reduce and optimize salt use and ensure deicing agents are being used efficiently. Provide employee training on proper calibration procedures.
- Do not overfill trucks with deicing materials as it may lead to spills.
- Encourage the use of automated application equipment like zero velocity spreaders.
- When possible, retrofit vehicles to include equipment such as on-board application regulators, temperature sensors for air and pavement, and anti-icing and pre-wetting equipment.
- Wash equipment using proper procedures to prevent pollutants from entering the stormwater system. Dry cleanup procedures should be used when possible.
- Regularly inspect and maintain equipment to reduce the potential for leaks.

Storage of Deicing Materials

- Prevent exposure of deicing product (salt, sand, or alternative products) storage piles to precipitation by enclosing or covering the storage piles. Implement good housekeeping, diversions, containment or other measures to minimize exposure resulting from adding to or removing materials from the pile. Store piles in such a manner as not to impact surface water resources, groundwater resources, recharge areas, and wells.
- Store materials under covered or enclosed areas and on impervious surfaces.
- Ensure that there are adequate drainage controls in storage areas to prevent runoff from entering the stormwater system.
- Follow appropriate loading and unloading procedures. If there are spills when loading or unloading materials.
- Frequently sweep near the storage/loading areas to reduce the amount of salt, sand, or other materials that is tracked out.
- For liquid deicing chemicals, provide secondary storage containment.
- Do not store road salt near drinking water supplies, surface water resources, groundwater resources, recharge areas, and wells.

Snow Storage and Disposal

- The City currently uses a designated snow dump storage area, when needed, in a location that is in general compliance with the NHDES Snow Storage/Disposal guidelines and MS4 requirements.
- The NHDES Snow Storage and Disposal guidelines (Fact Sheet WMB-3) include the following recommendations:
 - Disposed snow should be stored near flowing surface waters, but at least 25 feet from the high watermark of the surface water and/or top of stream bank. If a site cannot be found near a flowing surface water, then upland sites further from surface waters are acceptable, provided they do not impact water supply sources as described below.
 - A silt fence or equivalent barrier should be securely placed between the snow storage area and the highwater mark and/or the top of stream bank with care taken not to exceed the barrier with over-piling. This area should also be accessible for post-melt cleanup. Note: silt fence must be installed prior to the ground freezing.
 - The snow storage area should be at least 75 feet from any private water supply wells, at least 200 feet from any community water supply wells, and at least 400 feet from any municipal wells. (Note: Snow storage areas are prohibited in wellhead protection areas.)
 - All debris in the snow storage area should be cleared from the site prior to snow storage.



- By May 15 of each year, all debris from active snow storage areas should be cleared and properly disposed of.

Snow Disposal Site Selection

- Estimate how much snow disposal capacity is needed for the season so that an adequate number of sites can be selected and prepared.
- Sites lacking mature tree growth are preferred; trees make collection of debris more difficult after the winter season.
- Identify sites that could potentially be used for snow disposal such as municipal open space, parks, recreation fields and parking areas. If no additional municipal sites are available, consider securing permission from landowners of non-municipally owned sites.

BMP 8: Fertilizer, Pesticide and Herbicide: Use, Storage and Disposal

The use and improper storage of pesticides, herbicides, and fertilizers can contribute to the discharge of nutrients and toxic compounds to the municipal storm drainage system and surface waters. The goal of this BMP is to provide guidance to municipal employees on proper handling and storage of pesticides, herbicides, and fertilizers to prevent the discharge of pollutants from the MS4.

The City currently as a general practice does not use fertilizer, pesticides or herbicides on City property. The School Department works with a licensed applicator for fertilizer application on athletic fields, when necessary. The City DPW occasionally hires a licensed applicator for weed control in select areas on as needed basis. All handling, transport and application of materials is handled by the commercial applicator.

Procedures

If management practices change for the City or School Department, where the use and storage of fertilizers or pesticides may be required, the following procedures should be reviewed and adopted as they apply for the storage and use of fertilizers, pesticides, and herbicides by municipal employees. In this section, the term "pesticide" includes products used as herbicides.

Storage

- Store pesticides and fertilizers in high, dry locations in accordance with the manufacturer's specifications.
- Store in cool, well-ventilated, and insulated areas to protect against temperature extremes.
- Store in areas that have been constructed in accordance with local fire codes for storing flammable or combustible materials.
 - Flammable products should be stored separately from non-flammable products, preferably in a fire-proof cabinet.
 - Small quantities (less than 500 lbs. or 220 gallons) of pesticides can be stored in cabinets constructed of double-walled 18-gauge sheet metal.
 - Large quantities (greater than 500 lbs. or 220 gallons) of pesticides can be stored in a prefabricated Hazardous Material Storage building or in a purpose-built storage facility. It is not anticipated that many municipal facilities will store quantities in excess of 500 lbs. or 220 gallons of pesticides.
 - Building walls should have a two-hour fire rating and be impervious to the stored materials.
 - Floors should be watertight, impervious, and provide spill containment.



- Store materials in an enclosed area or in covered, impervious containment, such as a locked cabinet. The cabinet should be in a first story room or one that has direct access to the outdoors. Storage areas should be equipped with easily accessible spill cleanup materials and portable firefighting equipment. Regularly inspect storage areas for leaks and spills. Emergency eyewash stations and emergency drench showers should be located near the storage area.
- For pesticides, storage cabinets should be kept locked and the door to the storage area should contain a weatherproof sign that warns of the existence and danger of the pesticides inside. The door should be kept locked. The sign should be visible at 25 feet and should read as follows:

**DANGER
PESTICIDE STORAGE AREA
ALL UNAUTHORIZED PERSONS KEEP OUT
KEEP DOORS LOCKED WHEN NOT IN USE**

The sign should be posted in both English and any other language used by maintenance workers.

- Pesticides should not be stored in the same place as ammonium nitrate fertilizer.
- Separate pesticides and fertilizers from other chemical storage and other flammable materials.
- Label all containers with date of purchase. Clearly label all secondary containers. Use older materials first.
- Order for delivery as close to the time of use as possible to reduce the amount of chemicals stored at the facility.
- Order only the amount of materials needed in order to minimize excess or obsolete materials, which require storage and disposal.
- Never leave unlabeled or unstable pesticides and fertilizers in uncontrolled locations.
- Maintain a current written inventory of all pesticides and fertilizers at the storage site.
- Ensure that contaminated waste materials are kept in designated containers and stored in labeled, designated, covered, and contained areas.
- Dispose of excess or obsolete pesticides/fertilizers and associated waste materials in accordance with the manufacturer's specification and all applicable regulations.

Use and Application of Fertilizers

- Perform soil testing before choosing a fertilizer. The quantity of available nutrients already present in the soil will determine the type and amount of fertilizer that is recommended. The soil test will also determine the soil pH, humic matter, texture, and exchangeable acidity, which will indicate whether pH adjustment is required for fertilizer to work efficiently. A soil test should be completed at each facility, as soil type can vary widely within a single community. o Soil tests are recommended every 3-4 years for turf and plantings (more frequently for problem or newly planted areas) and every year for soil where phosphorus-containing fertilizers are used. Soil pH tests should be conducted every year for all sites.
- When collecting soil samples, take multiple samples for each target area at a four-inch depth; mix the samples together in a container and properly label the sample with property information and site use type. Separately sample areas that have discoloration, abnormal plant growth, or other problems. Take the sample at approximately the same time every year. If the area has been fertilized, wait eight weeks after fertilizing to test the soil to ensure nutrients have been absorbed.
- When selecting the optimal type of fertilizer to use on an area, consider the soil test results, type of turf, and type of turf use. Slow-use fertilizer should be used for turf grass.
- Calibrate application equipment regularly to ensure proper application and loading rates.



- Mix fertilizers using clean application equipment under cover in an area where accidental spills will not enter surface water or groundwater and will not contaminate the soil.
- Fertilizers should only be applied by properly trained personnel.
- Never apply fertilizers in quantities exceeding the manufacturer's instructions. Instead, apply small amounts throughout the growing season.
- Time fertilizer application methods for maximum plant uptake, usually in the fall and spring (e.g., between April 15 and October 15). When applying at the beginning and end of planting season, take into consideration the slower uptake rate of fertilizer by plants and adjust the fertilizer application accordingly.
- Never apply fertilizer during a drought, when the soil is dry or frozen, when it is raining, or immediately before expected rain.
- Fertilizer should be applied when the ground temperature is above 55° F.
- Apply fertilizers in amounts appropriate for the type of vegetation to minimize losses to surface water and groundwater. Use the results of the soil test to determine optimal fertilizer timing and application rates.
- Where applicable, till fertilizers into the soil rather than dumping or broadcasting (proper application techniques will depend on the type of soil and vegetation).
- Do not hose down paved areas after fertilizer application if drainage will enter into an engineered storm drain system or drainage ditch.
- Limit irrigation after fertilizer application to prevent runoff (approximately ½ inch of water per application for a week following application).
- Turn off irrigation systems during periods of adequate rainfall.
- Do not over-apply fertilizer in late fall to "use it up" before winter. The effectiveness of fertilizer does not reduce when stored.
- If phosphorus fertilizer is used when re-seeding, mix the phosphorus into the root zone. Do not apply directly to the soil surface.
- Avoid combined products such as "weed and feed," which do not target specific problems at the appropriate time.

Use and Application of Pesticides

- Pesticides should only be applied by licensed or certified applicators.
- Calibrate application equipment regularly to ensure proper application and loading rates.
- Ensure that pesticide application equipment is capable of immediate shutoff in case of emergency.
- Conduct spray applications according to specific label directions and applicable local regulations.
- Never apply pesticides in quantities exceeding the manufacturer's instructions.
- Apply pesticides at the life stage when the pest is most vulnerable.
- Never apply pesticides if it is raining or immediately before expected rain.
- Establish setback distances from pavement, storm drains, and waterbodies, which act as buffers from pesticide application, with disease-resistant plants and minimal mowing.
- Do not apply pesticides within 100 feet of open waters or of drainage channels.
- Spot treat infected areas instead of the entire location.
- Mix pesticides and clean application equipment under cover in an area where accidental spills will not enter surface water or groundwater and will not contaminate soil.
- Do not hose down paved areas after pesticide application to a storm drain or drainage ditch.



- Recycle rinsate from equipment cleaning back into product.
- Choose the least toxic pesticide that is still capable of reducing the infestation to acceptable levels.
- Use alternatives to pesticides, such as manual weed control, biological controls, and Integrated Pest Management strategies.
- For the use of herbicides, reduce seed release of weeds by timing cutting and pesticide application at seed set. Select vegetation and landscaping that is low maintenance in order to tolerate low levels of weeds without interfering with aesthetics.



Attachment A City Catch Basin Inspection Form

Job No.:

Town:

Inspector:

Date:

CATCH BASIN INSPECTION FORM

Catch Basin I.D.		Final Discharge from Structure? Yes <input type="checkbox"/> No <input type="checkbox"/> If Yes, Discharge to Outfall No: _____	
Catch Basin Label:	Stencil <input type="checkbox"/> Ground Inset <input type="checkbox"/> Sign <input type="checkbox"/> None <input type="checkbox"/> Other _____		
Basin Material:	Concrete <input type="checkbox"/> Corrugated metal <input type="checkbox"/> Stone <input type="checkbox"/> Brick <input type="checkbox"/> Other: _____ <input type="checkbox"/>	Catch Basin Condition:	Good <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Crumbling <input type="checkbox"/>
Pipe Material:	Concrete <input type="checkbox"/> HDPE <input type="checkbox"/> PVC <input type="checkbox"/> Clay Tile <input type="checkbox"/> Other: _____ <input type="checkbox"/>	Pipe Measurements:	Inlet Dia. (in): d= _____ Outlet Dia. (in): D= _____
<div>Required Maintenance/ Problems (check all that apply):</div> <div><div><input type="checkbox"/> Tree Work Required <input type="checkbox"/> New Grate is Required <input type="checkbox"/> Pipe is Blocked <input type="checkbox"/> Frame Maintenance is Required <input type="checkbox"/> Remove Accumulated Sediment <input type="checkbox"/> Pipe Maintenance is Required <input type="checkbox"/> Basin Undermined or Bypassed</div><div><input type="checkbox"/> Cannot Remove Cover <input type="checkbox"/> Ditch Work <input type="checkbox"/> Corrosion at Structure <input type="checkbox"/> Erosion Around Structure <input type="checkbox"/> Remove Trash & Debris <input type="checkbox"/> Need Cement Around Grate Other: _____</div></div>			
Catch Basin Grate Type :	Sediment Buildup Depth :	Description of Flow:	Street Name/ Structure Location:
Bar: <input type="checkbox"/> Cascade: <input type="checkbox"/> Other: _____ Properly Aligned: Yes <input type="checkbox"/> No <input type="checkbox"/>	0-6 (in): _____ 6-12(in): _____ 12-18 (in): _____ 18-24 (in): _____ 24 + (in): _____	Heavy <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Trickling <input type="checkbox"/>	
*If the outlet is submerged check yes and indicate approximate height of water above the outlet invert. h above invert (in): _____		Yes <input type="checkbox"/>	No <input type="checkbox"/>
<input type="checkbox"/> Flow <input type="checkbox"/> Standing Water (check one or both)	Observations: Color: _____ Odor: _____	Circle those present:	
Weather Conditions : Dry > 24 hours <input type="checkbox"/> Wet <input type="checkbox"/>		Foam	
Sample of Screenings Collected for Analysis? Yes <input type="checkbox"/> No <input type="checkbox"/>		Oil Sheen	
Comments:		Sanitary Waste	
		Bacterial Sheen	
		Orange Staining	
		Floatables	
		Excessive sediment	
		Pet Waste	
		Optical Enhancers	
		Other: _____	



Attachment B

Annual Stormwater BMP Inspection Forms

STORMWATER BMP INSPECTION CHECKLIST DETENTION BASINS / FILTER SYSTEM		
Date:	Inspector:	Days Since Last Rain Event:
Location:	BMP ID	BMP Type:
Current Weather:		
Inspection Items	Condition Assessment Good (G) Poor (P)	Comments/Corrective Action
1. Vegetative Cover		
Vegetation coverage (generally > 75%)	G P	
Vegetation is healthy	G P	
No evidence of invasive plants	G P	
Vegetation has been pruned /mowed (as applicable)	G P	
2. Soil / Slope Condition		
Basin floor and slopes are stable - no evidence of bank erosion or preferential flow/channelizing	G P	
No excessive sediment accumulation in basin	G P	
No evidence of downstream / upstream channel scour	G P	
3. Trash/ Debris Cleanup (1 time/year minimum, Spring/Fall)		
Minimal trash. Leaves, or dead vegetation that needs to be removed	G P	
4. Outlet		
Inlet and outlet/bypass are clear / no clogging	G P	
5. Infiltration / Filtration BMPs		
No standing water after 48 -72 hours since rainfall	G P	
Note any additional issues not previously covered.	G P	
Corrective Action Needed		Target Date
1.		
2.		
3.		
Inspector Signature		Date

Memorandum

Date: March 30, 2023
To: City of Rochester, NH
From: Renee Bourdeau, P.E. (NH) and Emma Williamson, EIT
Subject: Evaluation of Winter Road Maintenance Alternatives

PURPOSE

Under the 2017 New Hampshire MS4 General Permit (Permit), the City of Rochester (the City) is required to evaluate opportunities for the use of alternative materials for winter road maintenance, as described in Section 2.3.7.1.d.v. This memorandum describes possible alternatives including minimizing the use of sodium chloride, alternative materials, and ensuring proper snow disposal and disposal location maintenance.

Although there are currently no chloride impaired waterbodies within the City, the list of chloride impaired waterbodies within New Hampshire continues to expand, and now includes over 50 waterbodies mainly located in the south central and southeast portions of the state.

Existing Options for Winter Road Maintenance

Currently, the City prioritizes winter road maintenance in their Operation and Maintenance Plan as follows: plowing first, followed by general maintenance (described below), road salt application, and sand application.

General winter maintenance and best practices for the City consists of the following:

- using a brining technique: treating roads with salt during the fall season and allowing precipitation to create a brine with the existing salt in advance of the winter season
- applying salt along the centerline to allow traffic to mix snow and salt to make a brine during the winter
- generally using a ratio of 3 salt: 1 sand
- using forecasting information to determine plowing and deicing applications
- adjusting deicing techniques to use minimum amounts required for the storm event
- tracking amount of deicer used and maintaining records of application of sand and deicing chemicals
- calibrating Department of Public Works (DPW) spreader trucks annually for targeted amount of salt

Winter Road Maintenance Alternatives

March 30, 2023

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- only applying salt when pavements are above 15 °F
- only applying sand to assist with traction
- only treating unpaved or gravel roads with sand
- storing road salt and sand mixed with salt in covered or enclosed buildings
- unloading and loading on impervious surfaces that are regularly cleaned to reduce tracking and runoff of salt
- If the loading/unloading occurs within 50 feet of a catch basin – the catch basin should be covered during loading / unloading activity and swept immediately with a power broom following each activity

Most of the existing management practices employed by the City are considered engineering controls that rely on employees' time and physical presence to remedy. Options for additional controls involve investigating potential changes to the City's use of deicing chemicals.

Winter Conditions

To contextualize operational efficiencies and effectiveness it is important to know the realistic lowest operating temperature during the winter. **Table 1** provide the winter weather averages in the City.

Table 1. Winter Weather Statistics for Closest Climate Station

Month	Temperature °F ¹		Average No. of Days with Snowfall ²	Average Snow Accumulation (inches) ²
	Average Low	Average High		
December	22	38	17	14.6
January	16	33	22	18.6
February	17	36	18	16.6
March	25	44	13	13.6

Source: [Climate \(weather.gov\)](https://climate.weather.gov)

1. Rochester Skyhaven Airport location

2. Portland Maine location

Alternatives

The City evaluated adding or expanding the use of liquid deicers such as sodium chloride brine to pretreat roads or magnesium chloride brine as a prewetting solution to enhance the efficacy of road salt. The enhanced effectiveness of these practices can reduce the amount of traditional dry rock salt applied. Pretreatment requires a brine tanker truck equipped with a spray bar to apply, but under the right circumstances the initial application can often delay or limit the amount of subsequent salt applications needed during a storm event. Appropriate weather conditions are typically limited to temperatures above 28°F and little to no rain in the forecast, as rain prior to a snow/ice event can wash the pretreated application off the road. Prewetting road salt with a liquid

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deicer at the time of application enhances the effectiveness of the salt and enables it to stick to the road better, thus reducing the amount of lost material that bounces off the road. Prewetting does require upfront costs for equipment modifications including saddle tanks and spray nozzles as well as additional storage tanks.

Another alternative considered by the City is to purchase salt already pretreated with a liquid deicer which can be applied with conventional spreaders. Suppliers have made pretreated salt more available in recent years, which is regular salt with liquid deicer already added but it costs approximately 20 to 30% more than regular road salt. The liquid component is usually an organic, agricultural byproduct such as beet juice. These organic-based liquids can exert a relatively high biological and chemical oxygen demand during decomposition as well as can have a relatively high nutrient content and thus, the use of material should be limited in drainage areas to water bodies that are sensitive to dissolved oxygen demand issues or added nutrient inputs.

The City also considered equipping their material spreaders with ground speed controllers and/or closed loop controllers to better regulate and provide more consistent applications that adjust for vehicle speed and auger speed in the case of closed loop controllers. Most closed-loop controllers have built-in capability to track vehicle miles and material usage, which in some models can be uploaded wirelessly.

Additionally, the City also considered equipping a few key patrol vehicles with vehicle-mounted, mobile road weather and pavement condition sensor units such as Vaisala MD-30 sensor² that continuously collect pavement temperature, moisture and friction or tire grip conditions. See link below. This technology will help to better inform the decision-making process beyond traditional weather data and provide a historical record of conditions throughout the winter to help make relative comparisons of winter weather severity and deicer material usage.

Recommendations

The City reviewed and considered the alternatives described in the section above and determined that the current strategy (described in the existing options section) is the most appropriate for the current conditions. However, the City will continue to evaluate opportunities moving forward.

Additional Resources

NHDES maintains resources, including Winter Maintenance BMPs such as Anti-Icing, Application Rate, Salt Alternatives, Calibration, Prewetting, Road Temperature, and Salt Storage

² [Vaisala | Road & Runway Surface Condition](#)

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as well as general resources such as the New Hampshire Salt System Database and Green SnoPro Trainings on their website³.

Attachments:

Table 1: Deicer Background/ Alternatives

³ [Winter Maintenance | NH-MS4 Municipalities](#)

Winter Road Maintenance Alternatives
 March 30, 2023
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Attachment 1 – Deicer Background/ Alternatives

Deicer	Pros	Cons
Calcium Magnesium Acetate (CMA) ⁴	<ul style="list-style-type: none"> ▪ Biodegradable with low aquatic toxicity ▪ Non-corrosive ▪ Can be used under conditions down to -17 °F 	<ul style="list-style-type: none"> ▪ Has a production cost of \$650 per ton ▪ Has been shown to cause measurable damage to concrete but very minimal damage to metals
Magnesium Chloride ¹	<ul style="list-style-type: none"> ▪ Helps with dust control as snow melts ▪ Leaves little residue after application ▪ Can be used under conditions down to -7 °F 	<ul style="list-style-type: none"> ▪ Shown to cause measurable damage to concrete and metals ▪ Humidity can cause magnesium chloride to become slick or icy ▪ Noted to have no measurable environmental impacts due to runoff from the Magnesium portion—chlorides still have an impact ▪ Higher cost than regular road salt
Calcium Chloride ¹	<ul style="list-style-type: none"> ▪ Works by creating a brine and releasing heat allowing use down to -25 °F ▪ Helps with dust control as snow melts ▪ Moisture absorption properties and less corrosive to cement 	<ul style="list-style-type: none"> ▪ Humidity can cause calcium chloride to become slick or icy ▪ Highly corrosive to metals ▪ Only outperforms sodium chloride when temperatures are below 20 °F⁵ ▪ Noted to have no measurable environmental impacts due to runoff from the Calcium

⁴ [Evaluation of Alternative Anti-Icing and Deicing Compounds Using Sodium Chloride and Magnesium Chloride as Baseline Deicers – Phase I \(bts.gov\)](#)

⁵ [Economics of Using Calcium Chloride vs. Sodium Chloride for Deicing/Anti-Icing \(iowa.gov\)](#)

Winter Road Maintenance Alternatives

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Deicer	Pros	Cons
		<p>portion—chlorides still have an impact</p> <ul style="list-style-type: none"> Higher cost than regular road salt
Bio-based ⁶	<ul style="list-style-type: none"> Created from fermentation or processing of cane or beet sugar syrup (can use corn, barley, or milk) Intended use as a prewetting deicer to be used in combination with chlorides or acetates to increase the ability to melt ice and act as a corrosion inhibitor Examples include IceClear (potassium lactate), IceBan (magnesium chloride and an agricultural byproduct) Non corrosive Lowering freezing point and enhances melting capacity of brine solutions 	<ul style="list-style-type: none"> Presents a concern of oxygen depletion when incorporated into runoff if too much phosphorous is present Some options of biobased deicers have limited field testing available Tend to be higher in cost but highly dependent on manufacturer and can be cheaper if mixing with additional deicer

⁶ [pdf \(iop.org\)](#)

ATTACHMENT 5
STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

Stormwater Pollution Prevention Plan
Department of Public Works Operating Facility
209 Chestnut Hill Road
Rochester, New Hampshire



EPA NPDES Permit Number NHR041028

June 2022

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Stormwater Pollution Prevention Plan
 Rochester Department of Public Works Operating Facility
 209 Chestnut Hill Road, Rochester, NH

1.0 Stormwater Pollution Prevention Plan Overview

This Stormwater Pollution Prevention Plan (SWPPP) has been developed by the Rochester Department of Public Works (DPW) to address the requirements of the United States Environmental Protection Agency's (USEPA's) 2017 National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in New Hampshire, hereafter referred to as the MS4 permit.

The MS4 permit requires that each permittee or regulated community address six minimum control measures:

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 #6, Good Housekeeping and Pollution Prevention for Permittee Owned Operations, the permittee is required, per Section 2.3.7.2 of the MS4 permit, to

... develop and fully implement a SWPPP for each of the following permittee owned or operated facilities: maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater.

To meet the requirements of Section 2.3.7.2 of the MS4 permit, the City of Rochester prepared this SWPPP for the DPW Operating Facility located at 45 Old Dover Road in Rochester, New Hampshire.

Below is a list of the required elements of the SWPPP and the relevant section of this document.

SWPPP Element	Section
Stormwater Pollution Prevention Team	Section 2
Description of the facility and identification of potential pollutant sources	Section 3
Identification of stormwater controls	Section 4
Management practices, including minimize or prevent exposure, good housekeeping, preventative maintenance, spill prevention and response, erosion and sediment control, management of runoff, management of salt storage piles or piles containing salt, employee training, and maintenance of control measures.	Section 4
Site inspections	Section 5

Stormwater Pollution Prevention Plan
Rochester Department of Public Works Operating Facility
209 Chestnut Hill Road, Rochester, NH

2.0 Stormwater Pollution Prevention Team

The following personnel represent the stormwater pollution prevention team for the DPW Operating Facility.

Stormwater Program Coordinator:

Michael Bezanson, P.E. (NH)
City Engineer
603-332-4096
Michael.bezanson@rochesternh.net

SWMP Team Member(s):

Timothy Goldthwaite, P.E. (NH)
Assistant City Engineer
603-332-4096
Timothy.goldthwaite@rochesternh.net

Stormwater Pollution Prevention Plan
Rochester Department of Public Works Operating Facility
209 Chestnut Hill Road, Rochester, NH

3.0 Site Description

3.1 Facility Overview

The Rochester DPW Operating Facility is located at 209 Chestnut Hill Road in Rochester, New Hampshire, and is owned and operated by the City of Rochester DPW. The facility includes the DPW building, covered salt storage sheds (one small shed for salt for residents and a larger shed for municipal salt), material storage area, vehicle bays, employee and visitor parking areas, a fueling area, and two aboveground storage tanks (ASTs). The facility is open to the public and is used by the citizens of Rochester to obtain salt in the winter and to dispose of used motor oil.

A map of the facility is included as **Attachment 1** of this SWPPP.

3.2 Facility Structures and Site Features

Vehicle Storage and Maintenance

Vehicle storage and maintenance is conducted in the DPW building located in the central portion of the property. Vehicle maintenance conducted at the facility includes fluid exchange, light mechanical repairs, and vehicle washing in the dedicated vehicle washing bay. Vehicle maintenance fluids, including oil, coolant, and lubricants, are stored in designated cabinets inside the fluid storage room which is equipped with a sump alarm. Waste oil is stored inside the DPW building in a designated waste oil tank. Vehicles are washed in the vehicle bays that contain floor drains with grit chambers.

Material Storage

Salt for deicing is stored at the facility in a covered storage shed to the east of the facility and in a smaller covered storage shed adjacent to the employee and visitor parking area. Winter sand consisting of sand and salt is stored outdoors in a designated stockpile area. Sediment that is removed from within the City's catch basins is stored outdoors in a containment area.

Administrative Offices

The administrative offices are located in the front of the building. This portion of the DPW building includes administrative offices and restrooms.

Aboveground Storage Tanks

Two 10,000 gallon ASTs (diesel and gasoline) are located in the southern portion of the facility and are used to store fuel for City-owned vehicles, including DPW and police. The ASTs are located within a concrete secondary containment structure and are covered.

An inventory of significant materials is included in **Attachment 2** and will be regularly updated by site personnel.

Fuel Islands

A fueling island with four fuel pumps is located at the southern portion of the facility. This island is currently being used for fueling vehicles and is supplied by the two ASTs. The island is covered. The dispensing nozzles are equipped with automatic shutoff valves.

Solid Waste Management

The City maintains dumpsters adjacent to the south side of the DPW building, including a dedicated metal waste dumpster. These dumpsters are kept closed when not in use and are served by a private waste hauler approximately once per week.

Stormwater Pollution Prevention Plan
 Rochester Department of Public Works Operating Facility
 209 Chestnut Hill Road, Rochester, NH

Parking Areas

The facility includes parking for employees and guests to the west of the building. The parking area is a paved, impervious surface. DPW vehicle storage is located within the building and additional vehicle storage is located to the north of the building.

3.3 Site Drainage

Stormwater runoff from the site is collected in catch basins. Many of the catch basins throughout the site, especially those in high potential pollutant areas such as the fueling stations, are deep sump hooded catch basins to mitigate any potential spills. In addition, many of the catch basins then flow through hydrodynamic separators before discharging the stormwater runoff into two infiltration basins on site. The infiltration basins are located to the west and south of the building. The site drainage is shown on the site map (**Attachment 1**).

3.4 Site Activities

Table 3-1 includes a list of activities that occur at the facility and the potential pollutants that may be associated with each activity. These activities were described in Section 3.2.

Table 3-1: Facility activity list and potential pollutants associated with each activity.

Activity #	Description	Potential Pollutants
1	Vehicle Washing	Petroleum products, sediment
2	Vehicle Maintenance	Automotive fuel and oil, lubricants, solid waste
3	Vehicle Fueling	Gasoline and/or diesel fuel
4	Deicing Material Storage	Sand, salt
6	Waste Oil Storage	Waste oil
7	Employee/Visitor Parking	Automotive fuel and oil, litter

Stormwater Pollution Prevention Plan
 Rochester Department of Public Works Operating Facility
 209 Chestnut Hill Road, Rochester, NH

4.0 Pollution Prevention

This section describes pollution prevention practices that are either already in place or that will be implemented to control pollutants that have the potential to contaminate stormwater. The following subsections describe the relevant management practices that will be implemented as identified in Section 2.3.7.2 (iv) in the MS4 permit. Unless otherwise stated, measures will be implemented to be consistent with the schedule required in the MS4 permit or no later than the end of year 5 of the permit, if not otherwise described.

4.1 Minimize or Prevent Exposure

Permit Language: *The permittee shall to the extent practicable either locate materials and activities inside or protect them with storm-resistant coverings in order to prevent exposure to rain, snow, snowmelt and runoff (although significant enlargement of impervious surface area is not recommended). Materials do not need to be enclosed or covered if stormwater runoff from affected areas will not be discharged directly or indirectly to surface waters or to the MS4 or if discharges are authorized under another NPDES permit.*

The following are site-specific practices to minimize or prevent exposure of pollutants to stormwater runoff:

- The deicing salt storage area is kept covered.
- Vehicles are washed in designated areas located away from catch basins or indoors in vehicle bays equipped with floor drains with a grit chamber and tank that is pumped out.
- Vehicle maintenance fluids are kept in designated storage cabinets/containers inside the maintenance building.
- Vehicle maintenance and fluid changing occur indoors in designated vehicle bays.

4.2 Good Housekeeping

Permit Language: *The permittee shall keep clean all exposed areas that are potential sources of pollutants, using such measures as sweeping at regular intervals. Ensure that trash containers are closed when not in use, keep storage areas well swept and free from leaking or damaged containers; and store leaking vehicles needing repair indoors.*

The following list describes good housekeeping practices followed at this facility:

- Waste oil is stored indoors in containers on pallets or in tanks with secondary containment.
- The impervious surfaces at the facility are swept at least annually to minimize sediment and associated pollutants from entering the stormwater system.
- Catch basins are cleaned at least once per year.
- Used antifreeze is kept in covered containers within the maintenance building.
- Leaking vehicles needing repair are temporarily stored in the maintenance building.
- Fueling is conducted at the fuel island, which is equipped with automatic shut off valves.
- Floor drains in vehicle bays with grit chambers and tanks that are pumped out.
- Outdoor storage areas are kept free of leaking or damaged containers.
- No fertilizers, herbicides, or pesticides are stored or used at the facility.
- Hazardous material storage containers are properly posted with signage and labels, are stored with secondary containment and access to these materials is restricted.
- Waste oil storage containers and gas cans are labeled.

Stormwater Pollution Prevention Plan
 Rochester Department of Public Works Operating Facility
 209 Chestnut Hill Road, Rochester, NH

- Waste oil disposal is arranged through a commercial waste company.
- Dumpsters are emptied weekly through a commercial waste company.
- Work areas are generally kept clean and well organized.
- Material Safety Data Sheets (SDSs) are maintained at the facility.

4.3 Preventative Maintenance

Permit Language: *The permittee shall regularly inspect, test, maintain, and repair all equipment and systems to avoid situations that may result in leaks, spills, and other releases of pollutants in stormwater to receiving waters. Inspections shall occur at a minimum once per quarter.*

The following is a list of preventative maintenance procedures practiced at this facility:

- Hydraulic equipment is kept in good repair to minimize leaks.
- All staff members are aware of spill prevention and response procedures.
- Vehicle storage areas are inspected frequently for evidence of leaking oil or fluids.
- Material storage tanks and containers are regularly inspected for leaks.
- All material and bulk deliveries including fuel deliveries are monitored by facility employees.
- All waste oil is fully contained, and the containers are inspected regularly.

4.4 Spill Prevention and Response

Permit Language: *The permittee shall minimize the potential for leaks, spills, and other releases that may be exposed to stormwater and develop plans for effective response to such spills if or when they occur. See Section 2.3.7.2 (iv) in the MS4 permit for additional details.*

The DPW facility has a Spill Prevention Control and Countermeasure (SPCC) Plan, included as **Attachment 3**. The following is a list of spill prevention and response procedures practiced at this facility:

- Designated facility personnel conduct routine facility inspections (described in Section 5.0) of potential pollutant sources such as the ASTs, used oil containers, fueling station, etc.
- Spill cleanup kits are maintained at locations where oil and vehicle fluids are used, stored, or may be present, including inside the maintenance building and at the fuel island.
- Drip pans are used when changing fluids, and spigots and funnels are used to minimize drips and leaks.
- This facility has a written spill prevention and response policy that is consistent with the MS4 requirements described in Section 2.3.7.2 (iv) including:
 - Spills will be contained as close to the source as possible with a dike of absorbent materials from the emergency spill kit, and a cover or dike will protect any catch basins or other stormwater intake structures.
 - All spills will be evaluated to determine the necessary response.
 - The assigned team leader will be advised immediately of all hazardous or regulated material spills, regardless of quantity.
 - Spillage of chemicals will be promptly cleaned and reported as required and used spill cleanup materials will be disposed of properly.

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Rochester Department of Public Works Operating Facility
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4.5 Erosion and Sediment Control

Permit Language: *The permittee shall use structural and non-structural control measures at the facility to stabilize and contain runoff from exposed areas and to minimize or eliminate onsite erosion and sedimentation. Efforts to achieve this may include the use of flow velocity dissipation devices at discharge locations and within outfall channels where necessary to reduce erosion.*

Erosion and sediment control measures at the facility include the following:

- Stabilization: Stabilization at the facility to reduce the potential for sediment erosion include pavement, vegetation, and gravel.
- Perimeter Control: Perimeter controls at the facility include concrete block walls to contain storage materials, including sand/salt.
- Outfall Protection: The stormwater outfalls from the facility into the infiltration basins are stabilized with riprap to reduce the potential for erosion and scour at the outfall.

4.6 Management of Runoff

Permit Language: *The permittee shall manage stormwater runoff from the facility to prevent or reduce the discharge of pollutants. This may include management practices which divert runoff from areas that are potential sources of pollutants, contain runoff in such areas, or reuse, infiltrate or treat stormwater to reduce the discharge of pollutants.*

Structural stormwater best management practices (BMPs) at the facility include the following:

- Catch basin structures capture stormwater runoff from impervious surfaces.
- Hydrodynamic separators provide additional stormwater treatment.
- Infiltration basins treat stormwater and provide groundwater recharge.

4.7 Salt Storage Piles

Permit Language: *For storage piles of salt or piles containing salt used for deicing or other purposes (including maintenance of paved surfaces) for which the discharge during precipitation events discharges to the permittee's MS4, any other MS4 or to a Water of the United States, the permittee shall prevent exposure of the storage pile to precipitation by enclosing or covering the storage piles. Such piles shall be enclosed or covered within two (2) years of the permit effective date. The permittee shall implement appropriate measures (e.g., good housekeeping, diversions, containment) to minimize exposure resulting from adding to or removing materials from the pile. The permittee is encouraged to store piles in such a manner as not to impact surface water resources, ground water resources, recharge areas, and wells.*

Salt is stored in a covered building located in the eastern portion of the Rochester DPW facility. There is a smaller covered salt shed located to the west of the employee and visitor parking lot that is used to provide salt for residents.

4.8 Employee Training

Permit Language: *The permittee shall regularly train employees who work in areas where materials or activities are exposed to stormwater, or who are responsible for implementing activities identified in the SWPPP (e.g., inspectors, maintenance personnel), including all members of the Pollution Prevention Team. Training shall cover both the specific components and scope of the SWPPP and the control measures*

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required under this Part, including spill response, good housekeeping, material management practices, any best management practice operation and maintenance, etc. EPA recommends annual training.

DPW staff are regularly trained on stormwater-related topics, such as stormwater system maintenance practices, salt storage and handling procedures, and spill response and cleanup procedures. Please refer to The City of Rochester's Stormwater Management Plan (SWMP) for additional details on employee training.

The Rochester DPW will retain the following records on employee training:

- The training date, title, and duration
- Municipal attendee list
- Subjects covered during training

4.9 Maintenance of Control Measures

Permit Language: *The permittee shall maintain all control measures, required by this permit in effective operating condition. The permittee shall keep documentation onsite that describes procedures and a regular schedule for preventative maintenance of all control measures and discussions of back-up practices in place should a runoff event occur while a control measure is off-line. Nonstructural control measures shall also be diligently maintained (e.g., spill response supplies available, personnel trained).*

A City-wide Operation and Maintenance Plan (OMP) includes detailed procedures on maintenance of stormwater control measures including swales, catch basins, and outfalls.

Stormwater Pollution Prevention Plan
Rochester Department of Public Works Operating Facility
209 Chestnut Hill Road, Rochester, NH

5.0 Inspection and Record Keeping

5.1 Site Inspections

The Rochester DPW will conduct quarterly inspections of the facility. The inspections will cover all areas exposed to stormwater and all stormwater control measures. At least one of the inspections will be conducted when stormwater discharge is occurring. Additional inspections will occur on an as-needed basis if significant activities are exposed to stormwater. The inspections will contain the information included in **Attachment 4**, a digital site inspection form.

If control measures are discovered to need repair or be ineffective, whether as part of a routine inspection or otherwise, The Rochester DPW will repair or replace them as soon as practicable and preferably before the next storm event.

5.2 Record Keeping

The Rochester DPW will maintain records of all maintenance, inspection, training, and other activities required by Section 2.3.7.2 of the MS4 permit. Records will be maintained for at least five years, as required by Section 4.2.1 of the MS4 permit.

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Rochester Department of Public Works Operating Facility
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Attachment 1: Facility Site Map



FIGURE 1

209 CHESTNUT HILL ROAD
CITY OF ROCHESTER, NEW HAMPSHIRE 03867

LOCUS MAP

Stormwater Pollution Prevention Plan
 Rochester Department of Public Works Operating Facility
 209 Chestnut Hill Road, Rochester, NH

Attachment 2: Significant Materials Inventory

Material	Quantity	Containment (if applicable)	Is there Secondary Containment?	Location
Gasoline	10,000 gal	AST	Yes	Fueling Island
Diesel	10,000 gal	AST	Yes	Fueling Island
Emergency Generator Belly Tank Diesel	1,743 gal	AST	Yes	Adjacent to DPW Facility
Hydraulic Oil	280 gal	AST	Yes	Fluid Storage Room
ATF	280 gal	AST	Yes	Fluid Storage Room
5W-20	120 gal	AST	Yes	Fluid Storage Room
Waste Antifreeze	120 gal	AST	Yes	Fluid Storage Room
Waste Oil Tank	500 gal	AST	Yes	Fluid Storage Room

June 2022

Stormwater Pollution Prevention Plan
Rochester Department of Public Works Operating Facility
209 Chestnut Hill Road, Rochester, NH

Attachment 3: Spill Prevention Control and Countermeasure (SPCC) Plan



westonandsampson.com

55 Walkers Brook Drive, Suite 100
Reading, MA 01867
tel: 978.532.1900

REPORT

September 8, 2021

CITY OF

Rochester

DPW FACILITY, 209 CHESTNUT HILL ROAD,
ROCHESTER, NEW HAMPSHIRE 03867

Spill Prevention Control and
Countermeasure (SPCC) Plan

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1.0 INTRODUCTION

This Spill Prevention, Control and Countermeasure (SPCC) Plan was prepared by Weston & Sampson Engineers, Inc., (Weston & Sampson) for the City of Rochester Department of Public Works Facility (“the Facility”) located at 209 Chestnut Hill Road Rochester, New Hampshire (see Figure 1 Locus Map). The SPCC Plan is mandated under federal law by the Clean Water Act (CWA) and is administered by the United States Environmental Protection Agency (EPA). The EPA enforces the SPCC Plan through Title 40, Code of Federal Regulations, Part 112 (40 CFR, Part 112) - *Oil Pollution Prevention*, promulgated on December 11, 1973, revised November 5, 2009.

The Facility is classified as a non-production, on-shore facility where fuel, fuel products, and other oil products are stored, transferred, and consumed. The above regulations apply to the Facility because: 1) the total aboveground oil storage capacity exceeds the regulatory volume criterion of 1,320 gallons, and 2) a discharge of oil, should it occur, could potentially be discharged to navigable waters as defined in 40 CFR Part 112.2, via groundwater/tributary migration.

This SPCC Plan has the full approval of the facility’s management at a level of authority to commit the necessary resources to fully implement the Plan. Included in Appendix A is the Facility’s Certification of Commitment. This SPCC Plan is intended to serve as a guide for designated Facility personnel for the purpose of preventing, reducing, and responding to accidental discharges of oil, specifically by: 1) identifying areas of potential discharge (e.g., spills and leaks); 2) identifying preventive, control, and counter measures; and 3) guiding and instructing facility personnel and off-scene responders on response actions. This SPCC Plan shall be maintained on file at the Facility.

This SPCC Plan follows the format specified in 40 CFR Part 112.7. As shown below, the report sections correspond to the specific sections listed in 40 CFR Parts 112.7 and 112.8.

2.0 PART 112.7(a) (1) AND (2), CONFORMANCE WITH REQUIREMENTS

As discussed herein and in Section 26.0, the Facility conforms to the requirements of 40 CFR Part 112.

3.0 PART 112.7(a)(3), PHYSICAL LAYOUT OF THE FACILITY

The Rochester NH DPW Facility site limits are defined by the following: Chestnut Hill Road, Roger Allen Way, and Whispering Wind Lane. The facility has a fuel island located on the South side of the site, a salt shed structure to the North East, and the main building located in the center of the site, as shown in Figure 2.

4.0 PART 112.7(a)(3)(i), TYPE OF OIL IN EACH CONTAINER AND ITS CAPACITY

The attached Table 1 summarizes the type of oil, hazardous materials, or hazardous waste (OHM/W) in each container and its capacity. As shown on Table 1, the total aboveground storage capacity is 24,194 gallons and there is no underground storage.

5.0 PART 112.7(a)(3)(ii), DISCHARGE PREVENTION MEASURES

Discharges from the Facility’s OHM/W sources listed in Table 1 can be avoided or minimized by implementing Best Management Practices. Best Management Practices include:

- Use caution when filling the ASTs.
- Inspect the ASTs regularly and repair defects immediately.
- Use spill pallets or other means for drum secondary containment.
- Be aware of discrepancies during monthly product reconciliation.
- Stop the source of spills (i.e., leaks) immediately.
- Contain spills, protect catch basins, and clean up the spill.
- Never hose down spills on paved surfaces.
- Dispose of spill materials properly.
- Conduct SPCC training.

6.0 PART 112.7(a)(3)(iii), DISCHARGE OR DRAINAGE CONTROLS

Provided below is a description of the OHM/W storage container construction, potential release, and spill prevention controls. Table 1 also provides a summary of OHM/W sources.

6.1 Above Ground Storage Tanks

One (1) Diesel AST: The AST is a 10,000-gallon capacity tank that is used to fuel City vehicles. The AST is a double walled steel tank. The tank is UL 142 and UL 2085 listed. A spill from the primary tank would be contained with the secondary containment. A spill from the secondary containment would travel to a deep sump hooded catch basin, go through an oil-grit separator, and ultimately discharge to the western stormwater infiltration basin.

One (1) Gasoline AST: The AST is a 10,000-gallon capacity tank that is used to fuel City vehicles. The AST is a double walled steel tank. The tank is UL 142 and UL 2085 listed. A spill from the primary tank would be contained with the secondary containment. A spill from the secondary containment would travel to a deep sump hooded catch basin, go through an oil-grit separator, and ultimately discharge to the western stormwater infiltration basin.

One (1) Diesel Generator Tank: The generator belly tank is UL 142 listed, double walled with leak detection, 1,743-gallon total capacity. A spill from the primary tank would be contained with the secondary containment. A spill from the secondary containment would travel to a deep sump hooded catch basin, go through an oil-grit separator, and ultimately discharge to the southern stormwater infiltration basin.

Six (6) Bulk Storage Tanks (Fluid Storage Room): The tanks are 500-gallon, 280-gallon, and 120-gallon double walled steel tanks used for bulk storage of hydraulic oil (280 gal.), ATF (280 gal.), 15W-40 (280 gal.), 5W-20 (120 gal.), waste antifreeze (120 gal.), and waste oil (500 gal.). If a spill were to occur from these tanks, it would be contained in the secondary containment. If the secondary containment fails it would spill onto the floor of the fluid storage room and would enter the fluid storage room's sump. This would trigger the sump alarm and alert facility employees.

6.2 Drums/Miscellaneous Piping

Miscellaneous Piping and Hosing: All aboveground piping, hosing, and associated supports for the OHM sources discussed above will be inspected monthly for structural integrity and evidence of releases.

6.3 Oil-filled Operational Equipment

Not Applicable

7.0 PART 112.7(a)(3)(iv), COUNTERMEASURES FOR DISCHARGE DISCOVERY, RESPONSE, AND CLEANUP

7.1 SPCC Plan Personnel and Responsibilities

7.1.1 General

In an emergency, the SPCC Flowcharts shown in Figures 3 through 7D show the Facility's emergency response personnel to be contacted and steps required during an actual OHM/W spill or release event.

Each member of the emergency response team should be made aware of his/her role and responsibility, as well as those of other team members, to ensure that an effective emergency response program can be implemented. The telephone numbers of emergency response contacts are provided in Section 9.0.

The members of the response team must be trained at least annually on understanding and implementing this SPCC Plan. Also, training for all personnel who use/handle any of the OHM/W must be conducted at least annually. Records of training must be maintained for a minimum of three years.

7.1.2 Emergency Coordinator

The Emergency Coordinator is responsible for responding to a release and implementation of the SPCC Plan. Therefore, when a release of oil is discovered, the Emergency Coordinator on duty should be notified immediately. The Emergency Coordinator is authorized to utilize all available resources necessary to respond to a release and implement this plan.

The responsibilities of the Emergency Coordinator are to:

- Oversee the development, implementation, and maintenance of the SPCC Plan.
- Identify facility changes that would warrant amending the SPCC Plan.
- Implement the SPCC Plan upon a spill discovery.
- Assess the type, magnitude, and extent of the spill.
- Advise the emergency responders to bring containment equipment to the spill location.
- Supervise emergency responders during spill containment and recovery.
- Contact and coordinate with local off-site emergency responders (e.g., fire, police, and cleanup contractors) if needed.

- Provide emergency medical care or arrange transportation by ambulance to off-scene medical services (e.g., hospital), if needed.
- Report the release of any oil or petroleum products, chemicals, wastes or other potentially dangerous materials.
- Manage any recovered waste and contaminated materials.
- Manage release cleanup.
- Perform notifications in accordance with the procedures as shown in Figures 3 – 7D.
- Maintain the first-aid stations, fire extinguishers, and spill containment equipment at the designated locations.

7.1.3 Emergency Response Teams

An off-scene emergency response team may be contacted, if required. Off-scene responders shall include Rochester, NH Fire Department and/or a licensed spill response contractor.

7.2 SPCC ACTION PLAN

7.2.1 General

Activities that may result in an OHM/W spill at the facility include: 1) AST failure; 2) overfill/spill during delivery or dispensing; and 3) large spills. These scenarios and their respective control action plans are discussed in the following sections.

7.2.2 Scenario 1 – AST Failure

The general spill response procedure for this scenario is illustrated in Figure 7A. In the unlikely event of an AST failure that results in a discharge of OHM/W to the adjacent surfaces, absorbent methods should be used to contain and recover any minor spills. Absorbent methods include the use of spill kit items such as absorbent pads, booms, mops, Speedi-Dri, and sand. Absorbent booms and/or pads should be placed down gradient of the release to prevent or minimize dispersion and catch basins should be protected. Speedi-Dri and/or sand should be placed on the spill and then collected with a shovel and placed in a container for later disposal. The failed AST should be repaired or temporarily plugged to stop the source of release. If quick repair or plugging of the AST, is not feasible, it should be emptied into sound containers until the original AST, drum, or container is permanently repaired or replaced.

The used containment materials should be collected and placed in labeled containers and properly transported off-site for disposal by a certified contractor. Disposal manifests for the contaminated materials should be kept on record at the facility.

If there is a large spill of material, absorbent materials should be used to keep the spill from spreading. A licensed spill response contractor should be immediately contacted to clean up the spill.

7.2.3 Scenario 2 – Overfill/Spill During Delivery or Dispensing

The Facility receives delivery of oil and fuel via tank trucks. The general spill response procedures for this scenario are illustrated in Figure 7B. A licensed contractor performs oil/fuel delivery for the

tanks in accordance with the requirements of the Department of Transportation (DOT). During oil/fuel delivery, the delivery person as well as a Facility employee should be present for the entire duration of the tank-filling process to ensure that product transfer is completed safely. Communication between the Facility employee and the delivery person may be verbal or via hand signals. In the event of a minor release during delivery of oil/fuel, absorbent materials should be used to contain the release as discussed in Section 7.2.2. Additional details regarding tank truck unloading procedures are provided in Section 18.0.

Drip pans, as well as absorbent methods, should be used to contain and recover minor spills of oil/diesel during dispensing. The used containment materials should be collected using a shovel and placed in containers for proper disposal.

7.2.4 Scenario 3 – Large Spills

The general spill response procedure for this scenario is illustrated in Figure 7C. In the unlikely event of a vehicle accident (e.g., tank truck failure, two vehicles colliding, a vehicle colliding with a fuel tanker) resulting in a large release of oil/diesel, the local Fire Department and an emergency cleanup contractor should be contacted immediately to assist. Absorbent pads should be placed downgradient of the release to contain the spill and prevent migration of oil/diesel onto the adjacent property and catch basins should be protected. The cleanup contractor will pump out the remaining contents of the damaged vehicle and assist with cleanup and disposal of any contaminated materials. Cleanup personnel should wear respiratory protective equipment for protection against vapors while performing cleanup activities.

Based on the nature and the quantity of the spills discussed above, notification to local, state, and federal agencies may be required as discussed in Section 10.0 of this plan.

8.0 PART 112.7(a)(3)(v), METHODS OF DISPOSAL OF RECOVERED MATERIALS

Recovered materials shall be disposed of by a licensed contractor in accordance with local, state and federal regulations.

9.0 PART 112.7(a)(3)(vi), CONTACT LIST

The emergency response contacts to be notified in the event of an emergency are listed below:

RESPONSE TEAM

1. Emergency Coordinator

Name: Peter Nourse
Title: Director of City Services
Phone: (603) 332-4096
Cell: 603-923-1396

2. Assistant Emergency Coordinators

Name: Lisa Clark
Title: Administration & Utility Billing Supervisor
Phone: 603-335-7572
Cell: 603-781-4542

OUTSIDE EMERGENCY RESPONSE SERVICES

1. Fire City of Rochester Fire Department – Mark Klose, Fire Chief
37 Wakefield St.
Rochester, NH 03867
603-335-7545
2. Police Rochester Police Department – Paul Toussaint, Chief of Police
23 Wakefield St.
Rochester, NH 03867
603-330-7131
3. Ambulance 911
4. Hospital Frisbie Memorial Hospital
11 Whitehall Rd
Rochester, NH 03867
(603) 332-5211
5. NHDES New Hampshire Department of Environmental Services
Emergency Spill Response

To report a spill:
First: Contact your local 911 responder or fire department

Second: Call the NHDES Spill Response and Complaint Investigation
Section.

Monday – Friday, 8am to 4pm
(603) 271-3899
Weekends and Evenings
(603) 223-4381, State Police
6. National Response Center 1-800-424-8802 (24 hours)
7. Spill Response Contractor

Primary: Clean Harbors Environmental Services

Field Services:
20 Dunklee Road
Bow, NH 03304
603-224-6626

Corporate Headquarters:
42 Longwater Drive
Norwell, MA 02061-914
781-792-5746 (24 hours)

Alternate: Clean Harbors Environmental Services
221 Sutton St,
North Andover, MA 01845
(978) 683-1002

10.0 PART 112.7(a)(4), INFORMATION AND PROCEDURES FOR REPORTING A DISCHARGE

Provided below are the Reportable Spill Quantities and procedures for notifying the appropriate agencies.

10.1 Reportable Spill Quantities and Agency Notifications

10.1.1 EPA Notification

The EPA National Response Center should be notified, if a spill at the Facility is known or suspected to discharge to a navigable waterway (i.e., the Cocheco River). Verbal notification should be made by calling EPA's National Response Center (see Section 9.0). Written notification should be made within 60 days of the spill and include the following information:

- Description of the spill/ and impacted navigable waterway
- Facility name and location
- Facility operator/owner
- Maximum oil storage capacity at the facility and current normal daily inventory
- Facility maps (i.e., facility plan, surficial flow diagram, and topography).

10.1.2 NHDES and Fire Department Notification

Per "Contaminated Sites Management" Env-Or 600, any responsible party or other person having knowledge of a discharge of oil shall report such discharge to the DES Waste Management Division immediately (603) 271-3899 (Monday through Friday, 8 a.m. to 4 p.m.), or to the New Hampshire Department of Safety at (603) 223- 4381, 24 hours/day), unless all of the following conditions are met:

1. The discharge is less than 25 gallons.
2. The discharge is immediately contained.
3. The discharge and/or contamination is completely removed within 24 hours.
4. There is no impact or potential impact to groundwater or surface water.
5. There is no potential for vapors that pose an imminent threat to human health.

In the event of a NHDES reportable spill at the Facility, the Emergency Coordinator should follow the Spill Reporting Procedure summarized in Figure 4.

Verbal notification to NHDES will be made by calling the 24-hour Statewide Telephone Number, listed in Section 9.0. Verbal notification to the Fire Department will also be made, by calling the number listed in Section 9.0.

The Emergency Coordinator is responsible for verbally notifying NHDES by initiating the NHDES spill reporting procedure. The following information should be provided to NHDES:

- Exact address and location of discharge
- Facility phone number and name of caller/contact person
- Date and time of release
- Type of OHM released or threatened to be released
- Estimate of the total quantity of release or threatened to be released
- Estimate of the quantity released to navigable water
- Source of the release or threat of release
- Brief description of release or threat of release and all affected media
- Cause of the discharge
- Any damages or injuries caused by the discharge
- Immediate Response Action (IRA) activities being used to stop, remove and mitigate the effects of the discharge
- Whether an evacuation may be necessary
- Names of individuals and/or organizations who have also been contacted
- Any other information (i.e., potential human or ecological environmental impact) that is relevant to assessing the degree of hazard posed by the release or threat of release.

11.0 PART 112.7(a)(5), PLAN ORGANIZATION

This Plan follows the general format required by CFR Part 112.7 and is organized in a way that will make it readily usable in an emergency. In addition to the procedures outlined in Section 7.0 of this Plan, Figures 4 through 8B provides flow charts for various spill and emergency response procedures.

12.0 PART 112.7(b), POTENTIAL DISCHARGE INFORMATION

The OHM/W storage containers at the Facility have secondary containment in accordance with the SPCC regulations. In the event that a spill occurs, the direction of flow will depend on the location of the container and where the leak originates. The maximum volume of the release would be equivalent to the tank capacity and the actual rate of flow could vary from gradual to instantaneous depending on the nature of the container/equipment/piping failure. Spill response procedures will be implemented immediately following spill discovery in accordance with Section 7.0.

13.0 PART 112.7(c), CONTAINMENT STRUCTURES

The bulk storage containers at the facility are equipped with the appropriate secondary containment structures to help prevent a discharge as described in 40 CFR Part 112.1(b).

14.0 PART 112.7(d), PRACTICABILITY OF SECONDARY CONTAINMENT

The City of Rochester has determined that it is practicable to provide secondary containment for the ASTs.

15.0 PART 112.7(e), INSPECTIONS, TESTS, AND RECORDS

In accordance with 40 CFR 265.174 and CGS 22a-416 to 22a-449, periodic (at least weekly) inspections must be conducted where hazardous waste (e.g., waste oil) is stored. The purpose for periodic inspections is to identify and remedy problems in an effort to limit releases of hazardous waste. OHM storage containers should be inspected at least monthly. Inspection procedures are described below.

1. The Emergency Coordinator will appoint an inspector who will inspect the facility monthly. Inspections shall be documented using the form included in Figure 9 and placed in Appendix C of this SPCC Plan. Any remedial activity will be reported immediately to the Emergency Coordinator.
2. Using the Inspection Form, the Inspector will:
 - Indicate whether any leaks are detected in storage containers or secondary containment systems and provide a specific explanation whenever a spill or leak is discovered to the Emergency Coordinator. Should a spill be detected, immediately notify the nearest Supervisor, and take defensive action to control the spread of the spill and to prevent exposures.
 - Check to see if the waste oil tank complies with marking/labeling requirements.
 - Confirm the presence and operation of fire control equipment, spill control equipment, and personal protective equipment.
 - Insure that all “No Smoking” signs are in place.
 - Check housekeeping practices in all areas making sure that:
 - Sufficient aisle space (at least 3 feet) is available to allow access to storage areas and to provide unimpeded exit in emergencies.
 - No loose rags, papers or other possible fire hazards are present.
 - Containers are stored neatly and orderly.
 - Record discrepancies and include a brief description of the location and nature of the specific problem.
 - Perform non-destructive tank shell testing (such as hydrostatic or ultrasonic) on an as-needed basis.

The Emergency Coordinator and Inspector will immediately meet to ascertain any problems requiring immediate corrective action. If any are noted, the Emergency Coordinator will initiate the appropriate action by personally contacting appropriate persons to correct the problems.

In addition, documentation of tank truck loading/unloading inspections should be performed as described further in Section 18.0. Copies of completed inspection forms should be filed in

Appendix C. Documentation of inspections/tests should be kept on file for at least 3 years.

16.0 PART 112.7(f), PERSONNEL, TRAINING, AND DISCHARGE PREVENTION PROCEDURES

In accordance with 40 CFR 112.7, 40 CFR 265.16, 29 CFR 1910.120, RCSA Section 22a-454-1, and RCSA Section 22a-209-17, a training program will be offered that provides instruction to personnel working with, or exposed to, OHM/W in their respective working areas. The training program will include instruction on the proper handling and storage of OHM/W, and SPCC Plan implementation, relevant to the position. The training program is designed to ensure that Facility personnel are able to respond effectively to emergencies by familiarizing them with the properties and hazards of the OHM/W present at the Facility, emergency procedures, emergency equipment and systems, and personnel safety equipment.

It is the intent of this SPCC Plan to utilize outside response contractors for all major OHM/W incidents and clean-up/disposal. However, incidents involving small quantities of OHM/W shall be contained and cleaned up by employees with materials readily at hand in the immediate area.

16.1 Equipment Operation and Maintenance

Personnel at the Facility shall be instructed in the proper operation and maintenance of equipment to prevent the discharge of oil. Operations personnel must be thoroughly familiar with the system piping, valving, and control systems and shall be instructed in emergency spill containment procedures.

16.2 Pollution Control Laws and Regulations

Operations personnel shall be instructed in applicable pollution control laws and regulations regarding Facility operation, spill prevention, and spill notification.

16.3 Spill Prevention Measures and SPCC Plan

Facility employees shall be instructed on how to notify appropriate internal contacts in the event of a spill emergency. In addition, the Facility SPCC Plan shall be presented and reviewed to operating personnel, and operating personnel shall be familiar with their responsibilities identified in the SPCC Plan. Personnel shall be prepared to take appropriate actions during an emergency or spill situation.

17.0 PART 112.7(g), SECURITY

The Facility diesel and gasoline tanks have a fuel management system that only allows access to authorized users and the tanks are protected by bollards. The Facility is also equipped with 24-hour surveillance. The Facility grounds are equipped with adequate lighting via site lighting poles and canopy lights to assist with the discovery of discharges occurring during hours of darkness and to help prevent discharges through acts of vandalism.

The building will be kept locked and the fluid storage room will only be accessible to vehicle maintenance city employees on a regular basis.

18.0 PART 112.7(h), TANK TRUCK LOADING/UNLOADING RACK

The Facility does not have a tank truck loading/unloading rack, as described in the EPA's

December 16, 2013, “SPCC Guidance for Regional Directors” document. However, the Facility does receive delivery of gasoline and diesel fuel via tank trucks. Spill prevention controls to be used during tank truck unloading operations will include the following:

- The driver shall determine the available capacity of the receiving tank prior to filling.
- The driver, operator or attendant of any tank vehicle shall not leave the vehicle during filling activities.
- The tank vehicle shall be grounded during unloading activities.
- Wheel chocks shall be placed behind the tank truck wheels to prevent the vehicle from departing before complete disconnection of the transfer line.
- Prior to filling and departure, the lowest drain and all outlets of the tank truck will be closely inspected to ensure that they are properly secured.
- Tanks shall be filled through a liquid tight connection with a quick-connect type coupling.
- Drip pans shall be used where necessary.
- The driver shall “blow-back” the transfer line prior to disconnecting to ensure the line is empty.
- Document oil/diesel transfer inspections using Figure 9, and file completed inspection forms in Appendix C.

19.0 PART 112.7(i), FIELD-CONSTRUCTED ABOVE GROUND CONTAINER

Field-constructed above ground containers are not used at the Facility.

20.0 PART 112.7(j), CONFORMANCE WITH APPLICABLE STATE AND LOCAL REQUIREMENTS

The ASTs at the Facility are to be registered with the Fire Department and have current certificates of registration.

21.0 PART 112.8(b), FACILITY DRAINAGE

In general, the Facility’s ground surface is completely paved as shown in Figure 2. Storm water runoff from the facility is directed towards catch basins, which drain to oil grit separator and infiltration basins as shown on Figure 2. Best Management Practices and other control measures are implemented to minimize the potential of OHM spills reaching navigable waters.

22.0 PART 112.8(c), BULK STORAGE CONTAINERS

22.1 Part 112.8(c)(1), Construction

Bulk storage containers are constructed of materials that are compatible with the materials stored, as required.

22.2 Part 112.8(c)(2), Secondary Containment

As indicated previously in Sections 2.0 and 6.0, bulk storage containers on site have secondary containment.

22.3 Part 112.8(c)(3), Drainage of Diked Areas

There are no diked areas at the Facility.

22.4 Part 112.8(c)(4), Corrosion Protection

There are no underground tanks requiring corrosion protection at the Facility.

22.5 Part 112.8(c)(5), Partially Buried Tanks

There are no partially buried tanks at the Facility.

22.6 Part 112.8(c)(6), Inspections and Tests

Inspections and tests are conducted as indicated in Section 15.0.

22.7 Part 112.8(c)(7), Heating Coils

Heating coils are not used in the storage containers at the Facility.

22.8 Part 112.8(C)(8), Update Each Container to Avoid Discharges

As indicated in Part 112.8(c)(8), each container installation shall be updated in accordance with good engineering practices to avoid discharges, and at least one of the following devices shall be provided:

- (i) *High liquid level alarm with audible or visual signal, audible air vent is sufficient for small facilities.*
- (ii) *High liquid level pump cutoff device to stop flow*
- (iii) *Direct audible or code signal communication between container gauge and pumping station*
- (iv) *Direct vision gauges*
- (v) *Regularly test liquid level sensing devices*

This requirement does not apply to 55-gallon drums, as these are not permanently installed containers. The tanks to which this requirement applies are listed below along with the required discharge control.

<i>TANK</i>	<i>DISCHARGE CONTROL</i>
10,000 Gallon Diesel AST	Direct visual gauge with audible/visible high-level alarm, overfill prevention valve, and 25-gallon overfill bucket, See Note 1
10,000 Gallon Gasoline AST	Direct visual gauge with audible/visible high-level alarm, overfill prevention valve, and 25-gallon overfill bucket, See Note 1
Diesel Generator Tank	Direct Visual Gauge with high-level alarm, low level alarm, overfill prevention valve, & leak detection switches, See Note 1
Bulk Storage Tanks (Fluid Storage Room)	Direct Visual Gauge & overfill prevention valve, See Note 2
Waste Antifreeze Tank (Fluid Storage Room)	Direct visual gauge with audible/visible high-level alarm, & high level shutoff, See Note 2, and Note 3.
Waste Oil Tank (Fluid Storage Room)	Direct visual gauge with audible/visible high-level alarm, & high level shutoff, See Note 2, and Note 3.

Notes:

1. The tank is a primary steel tank with secondary containment provided by a second steel tank wall.
2. The tank is a double wall steel tank providing adequate secondary containment of the primary tank. This tank also has additional containment provided by the fluid storage room sump.
3. The waste oil and waste anti-freeze tanks are equipped with a high level shut-off system that shuts the supply air off to the air operated diaphragm pumps filling the tanks using a float and electrically operated solenoid valve system.

22.9 Part 112.8(c)(9), Effluent Treatment Facilities

Effluent is not treated at the Facility.

22.10 Part 112.8(c)(10), Visible Discharges

Visible discharges from any container or appurtenance - including seams, gaskets, piping, pumps, valves, rivets, and bolts – are quickly corrected upon discovery.

22.11 Part 112.8(c)(11), Mobile and Portable Containers

Small portable storage containers, such as 55-gallon drums, are or will be stored within secondary containment. Secondary containment can be provided via spill pallets, if the drums are not located in the fluid storage room. Any discharged material is quickly contained and cleaned up using sorbent materials and appropriate cleaning products.

23.0 PART 112.8(d), TRANSFER OPERATIONS, PUMPING, AND IN-PLANT PROCESSES

Transfer/pumping operations are discussed in Section 18.0. Regarding in-plant processes: pipes, pumps, and tanks are inspected at least monthly as described in Section 15.0.

24.0 AMENDMENTS TO SPCC PLAN

This SPCC Plan is specifically written for mitigating a release of OHM/W from the Facility sources summarized in Table 1. This SPCC Plan should be amended, if there is a change in Facility design, construction, operations and/or maintenance that would affect the potential for a spill of OHM/W. This SPCC Plan should be reviewed every five years (at a minimum) and amended if new, different, or more effective spill control and preventive mechanisms will be implemented at the Facility during a spill emergency.

Submittal of the SPCC Plan and amendments (if any) to the USEPA is generally not required. However, the City of Rochester must submit the SPCC Plan and any amendments to the EPA Regional Administrator, if either of the two following conditions occurs:

- Discharge of more than 1,000 gallons of OHM/W into navigable waters in a single spill event.
- Discharge of more than 42 gallons of OHM/W in each of two discharges into navigable waters within any 12-month period.

The following information should be submitted to the EPA Regional Administrator within 60 days of the discharge: facility name and location, facility operator/owner, maximum storage capacity of facility and current normal daily inventory, facility maps (i.e., facility plan, surficial flow diagrams and topography), a copy of the SPCC Plan and amendments, cause of spill, corrective actions and/or countermeasures taken (i.e., equipment repairs or replacements) and any additional preventive measures which show efforts to prevent a reoccurrence.

25.0 SUBSTANTIAL HARM CRITERIA

In accordance with 40 CFR 112.20, the City of Rochester is required to identify whether the Facility, “because of its location, could reasonably be expected to cause substantial harm to the environment by discharging into or on the navigable waters or adjoining shorelines.” This Facility does not meet the Substantial Harm Criteria in accordance with the Flowchart of Criteria for Substantial Harm (40 CFR 112.20). Therefore, preparation and submittal of a Response Plan to the EPA is not required. A Certification of the Applicability of the Substantial Harm Criteria has been completed and included in Appendix D.

26.0 FACILITY UPGRADES

This section summarizes recommended upgrades for the Facility to improve the Facility’s OHM/W spill control and countermeasures, and to help prevent OHM/W spills from reaching the Cochemo River.

26.1 List of Upgrades

N/A (New Facility)

27.0 CERTIFICATION OF SPCC PLAN

This SPCC Plan has been prepared for the facility in accordance with 40 CFR Part 112 - Oil Pollution Prevention. The SPCC Plan has been prepared by:



Tyler Cofelice, PE
Project Engineer
Weston & Sampson Engineers, Inc.

9/8/21
Date

This SPCC Plan has been reviewed and certified by a Registered Professional Engineer:

Certification: I hereby certify that I have or someone under my responsible charge has examined the Facility and, being familiar with the provisions of 40 CFR Part 112 - Oil Pollution Prevention, attest that this SPCC Plan has been prepared in accordance with good engineering practices.

Engineer: Duane Himes

Signature: Duane C Himes

License Number: 5398

Discipline: Civil Engineering

State: New Hampshire

Date: 9/8/21

Stamp/Seal:



Table 1

**OHM/W Source Inventory
DPW Facility, Rochester, NH**

Source of OHM/W	Approximate Location(s)	Size & Contents	Status/Use
ASTs	South Side of DPW Garage South Side of DPW Garage Southeast Side of DPW Fluid Storage Room Fluid Storage Room Fluid Storage Room Fluid Storage Room Fluid Storage Room Fluid Storage Room	10,000 Gallon Diesel AST 10,000 Gallon Gasoline AST 2,614 Gallon Diesel Generator Tank 280 Gallon Hydraulic Oil Tank 280 Gallon ATF Tank 280 Gallon 15W-40 Tank 120 Gallon 5W-20 Tank 120 Gallon Waste Antifreeze Tank 500 Gallon Waste Oil Tank	Vehicle Operation Vehicle Operation Backup Power Vehicle Operation/Maintenance Vehicle Operation/Maintenance Vehicle Operation/Maintenance Vehicle Operation/Maintenance Vehicle Operation/Maintenance Vehicle Operation/Maintenance
Total Approximate Below-Ground Storage Capacity		0 gallons	
Total Approximate Above-Ground Storage Capacity		24,194 gallons	

P:\NH\Rochester, NH\2180771 Rochester DPW Design\Industrial\SPCC\[Table 1 Rochester.xls]1

NOTES:

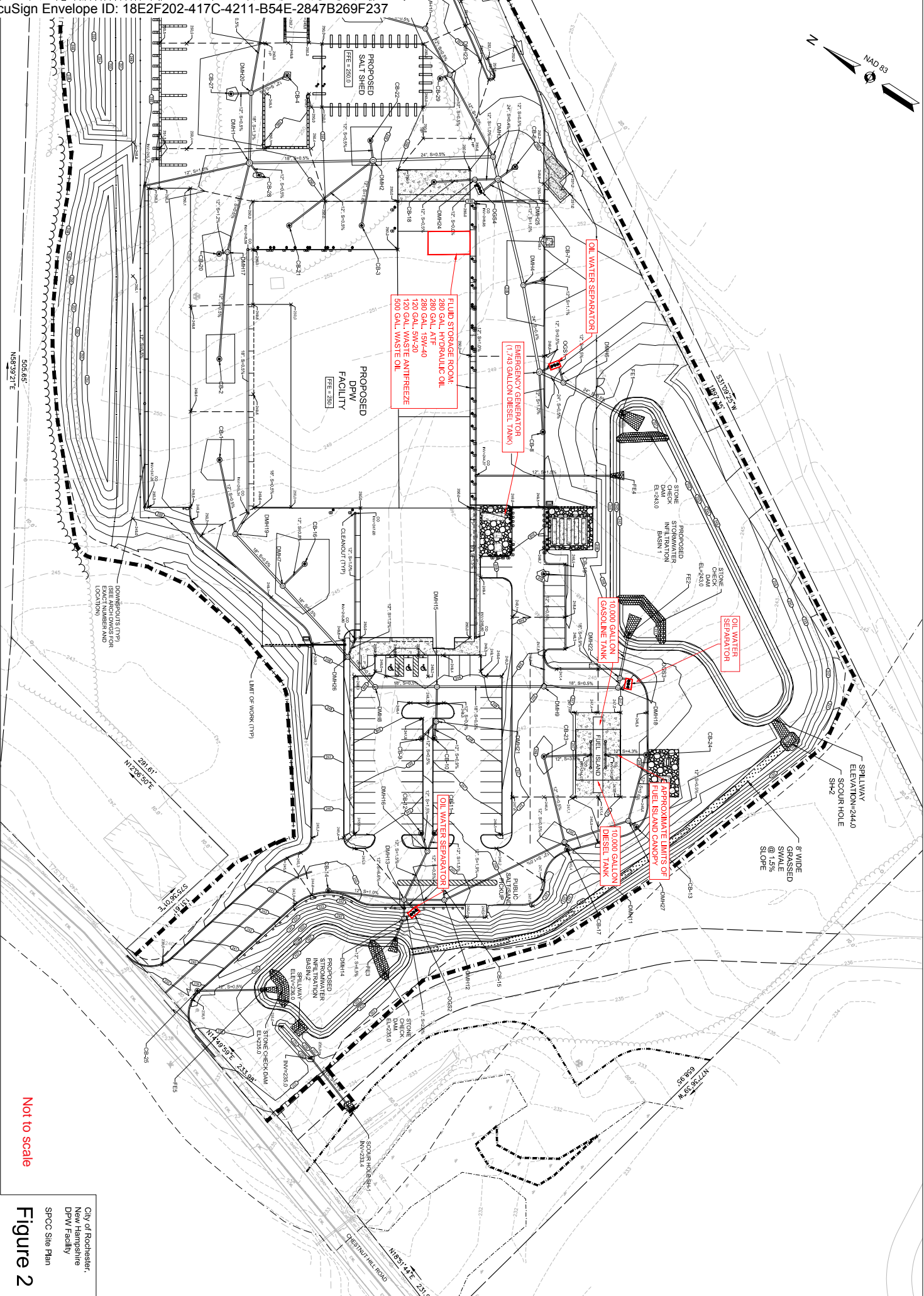
- AST = Aboveground Storage Tank
- SPCC plan required if AST quantity exceeds 1,320 gallons (minimum container size of 55 gallons) of OHM/W.



FIGURE 1

209 CHESTNUT HILL ROAD
CITY OF ROCHESTER, NEW HAMPSHIRE 03867

LOCUS MAP



Not to scale

City of Rochester,
New Hampshire
DPW Facility
SPCC Site Plan
Figure 2

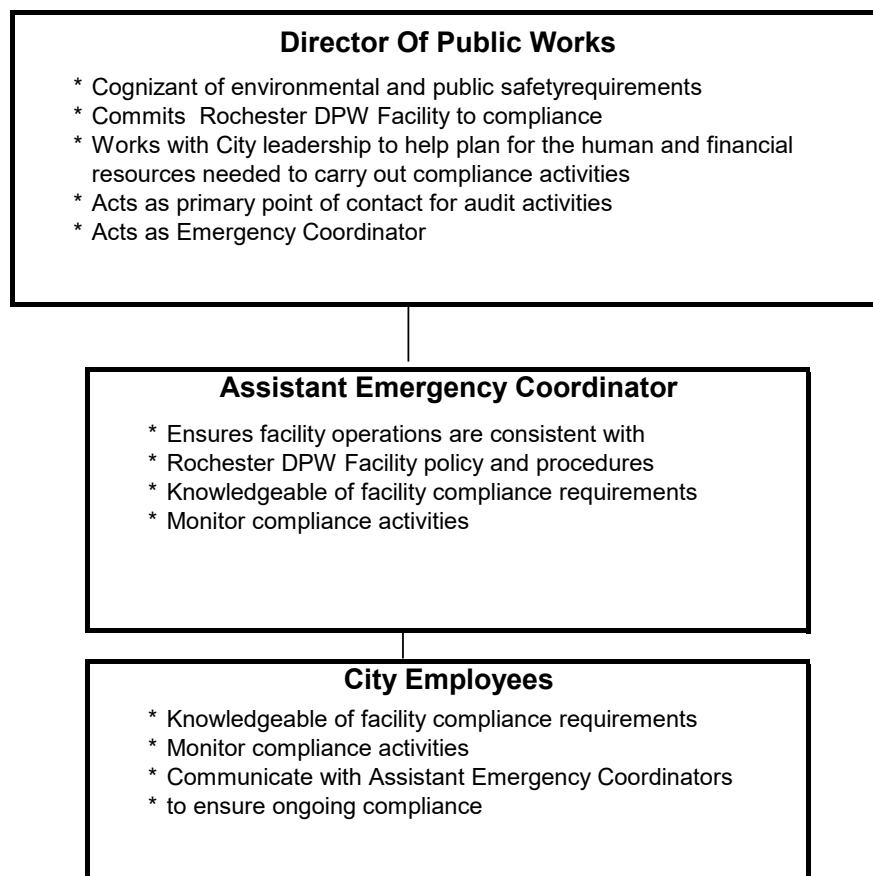
Figure 3**Environmental Compliance Organization Chart**

Figure 4
General Spill Response Communication Procedure

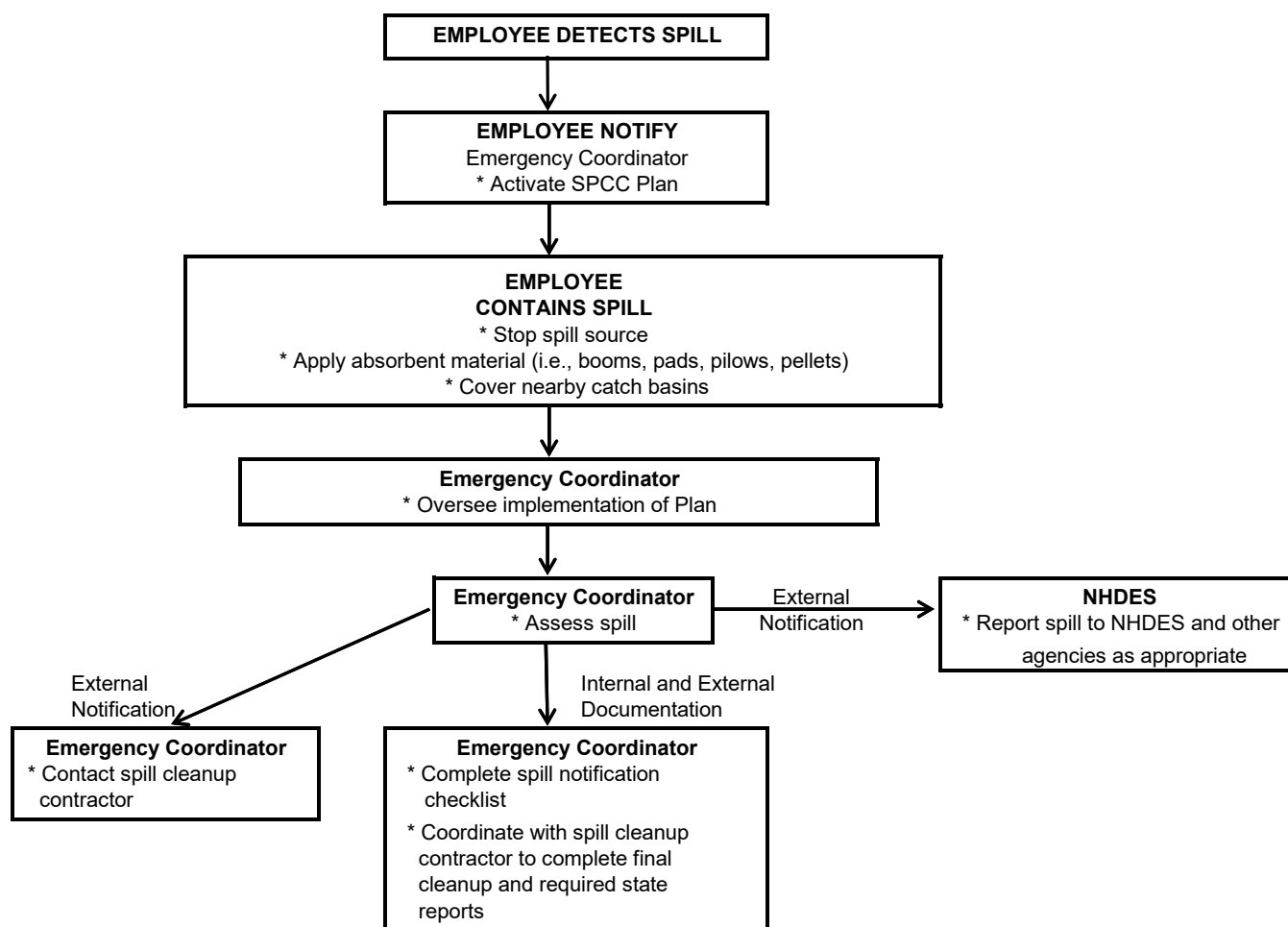
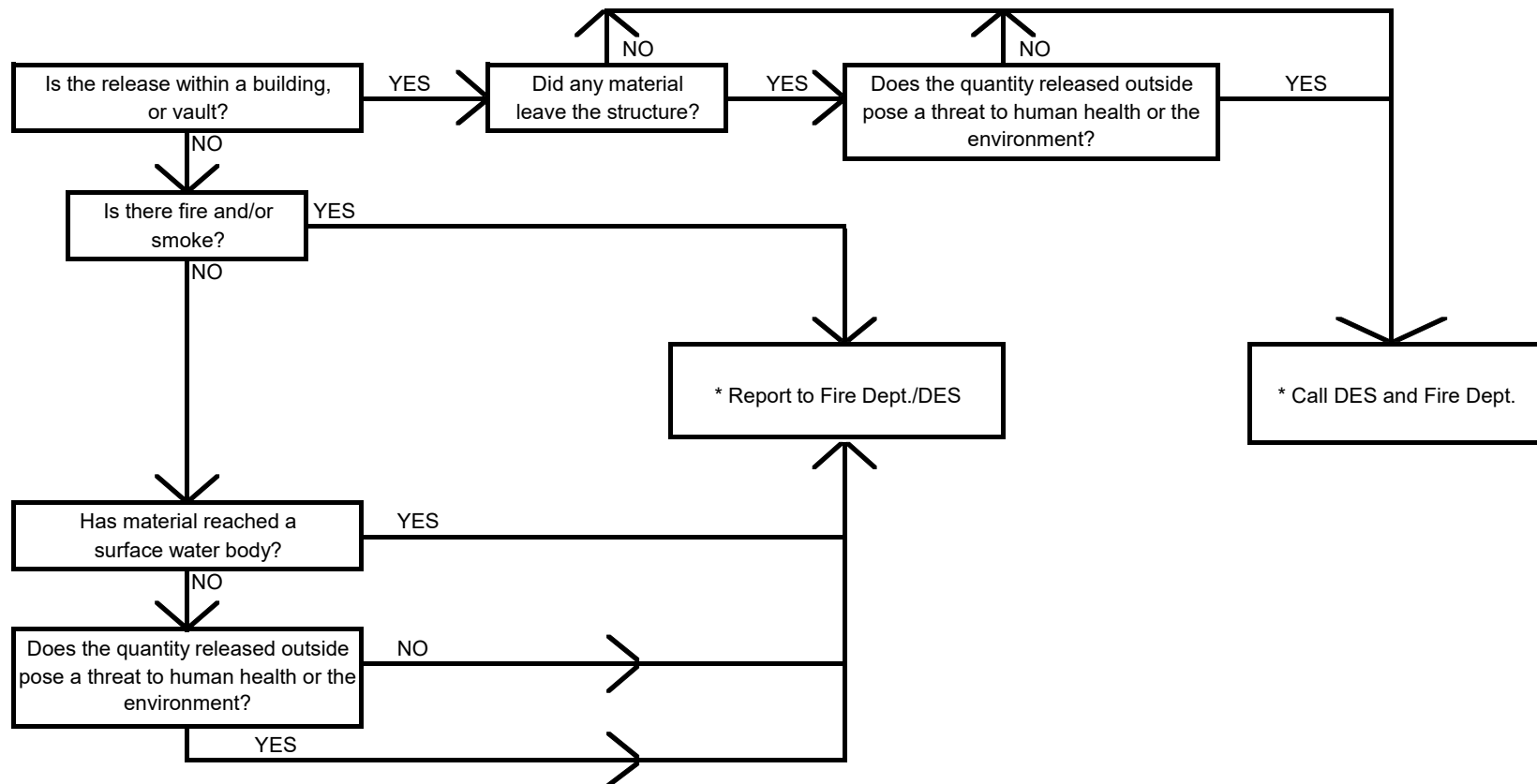


Figure 5

General Spill Reporting Procedure

**NOTE:**

Call DES immediately after spill is observed, but no later than 2 hours after spill is observed.

Figure 6
General Facility Evacuation Procedure

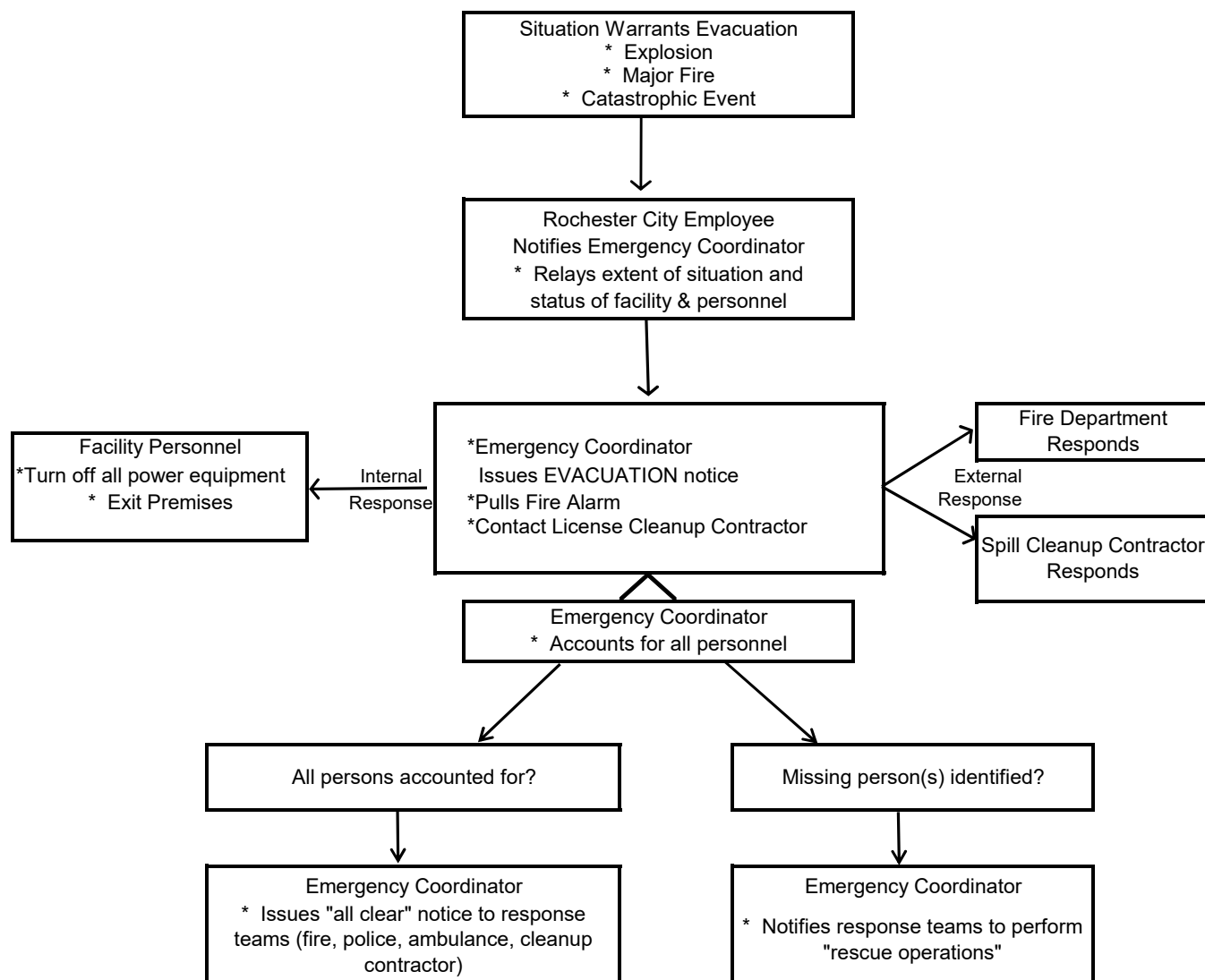


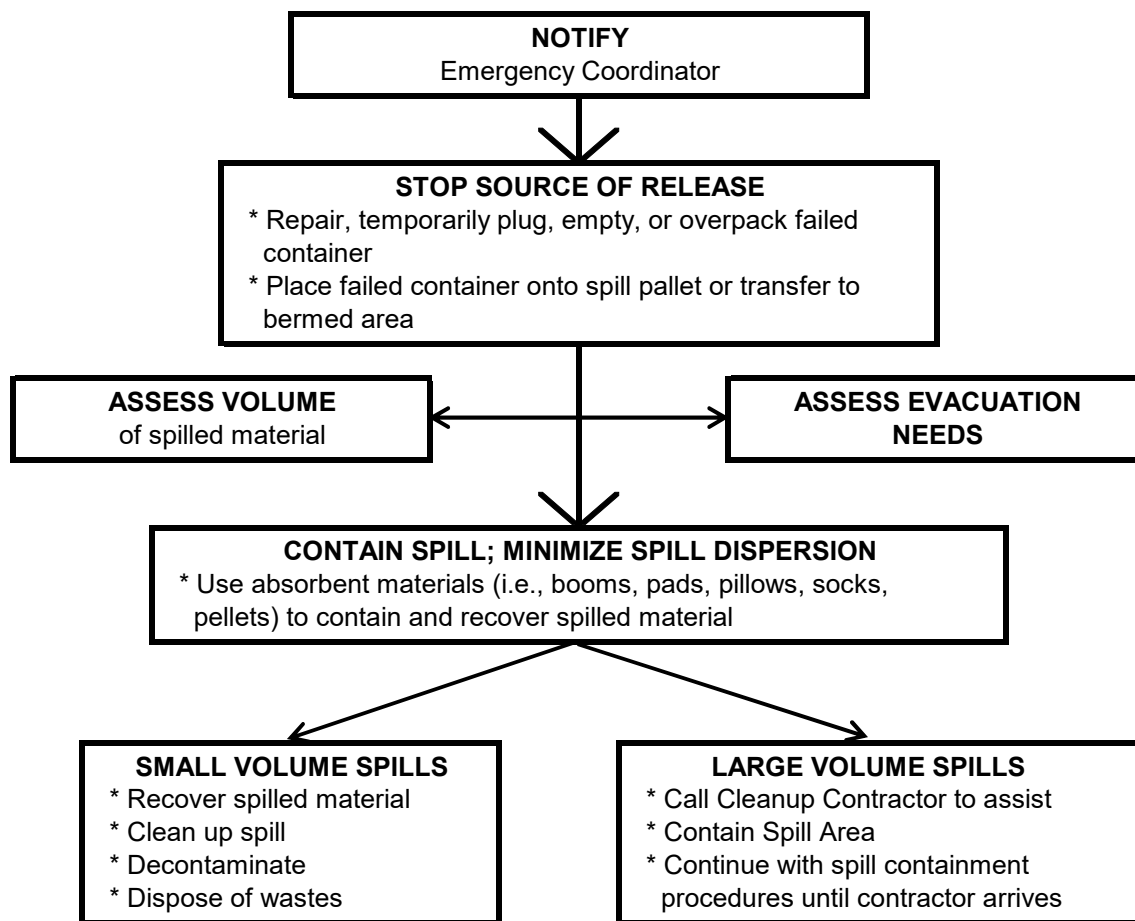
Figure 7A**General Spill Response Procedure
AST, Drum, or Container Failure**

Figure 7B

General Spill Response Procedure Tank Overfill/Spill During Delivery or Dispensing

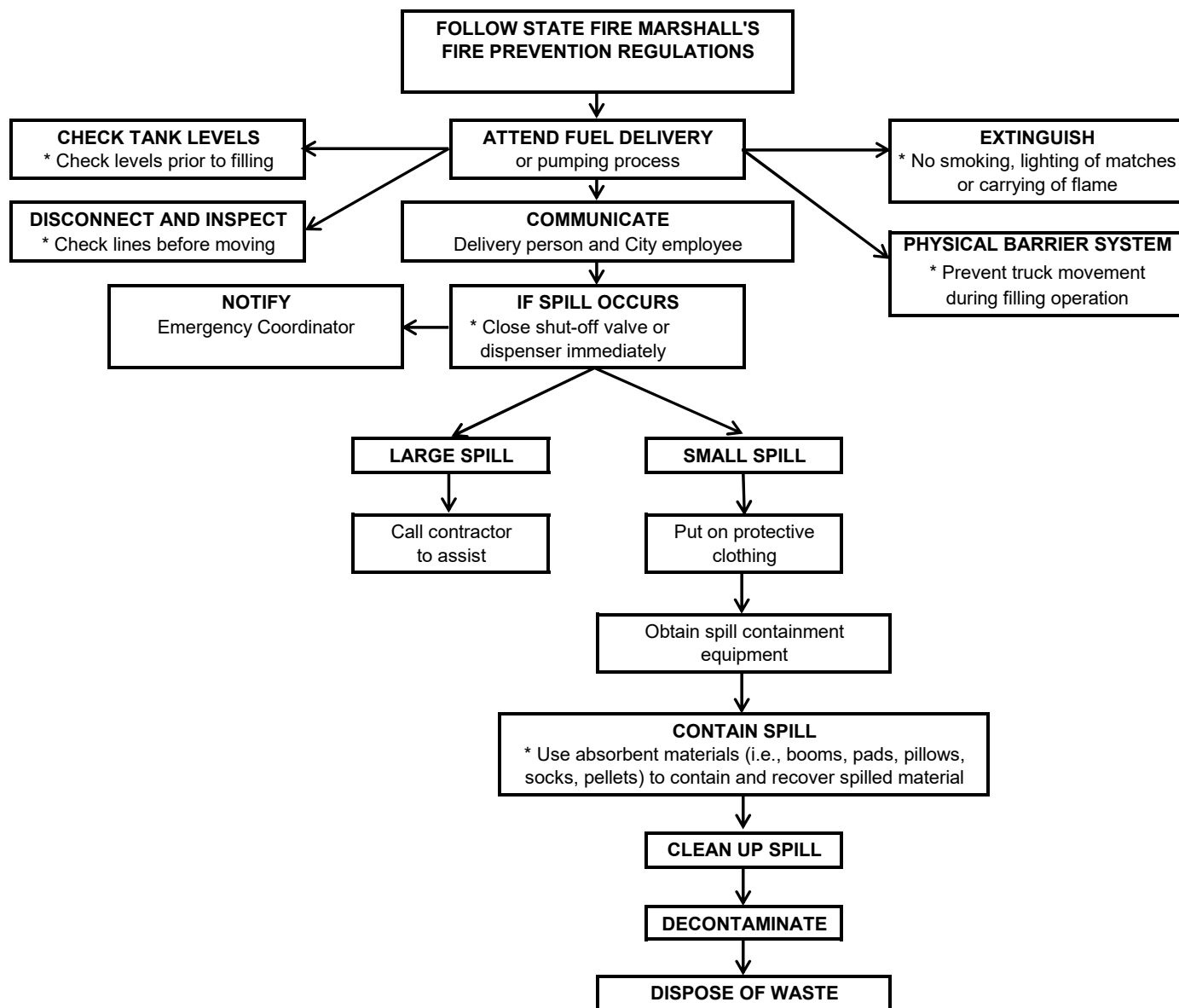


Figure 7C

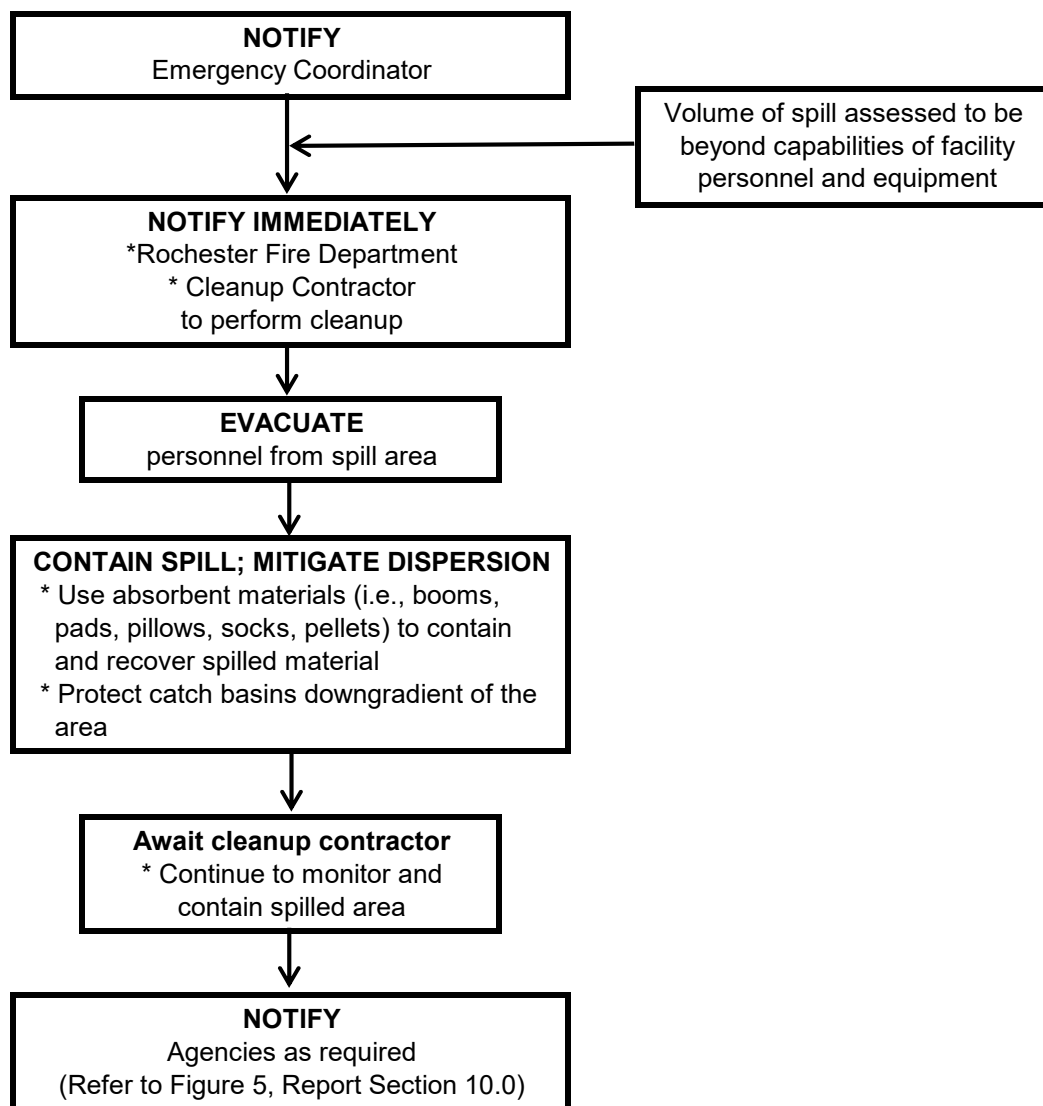
**General Spill Response Procedure
Tanker Truck Failure (Large Quantity Spills)**

Figure 7D

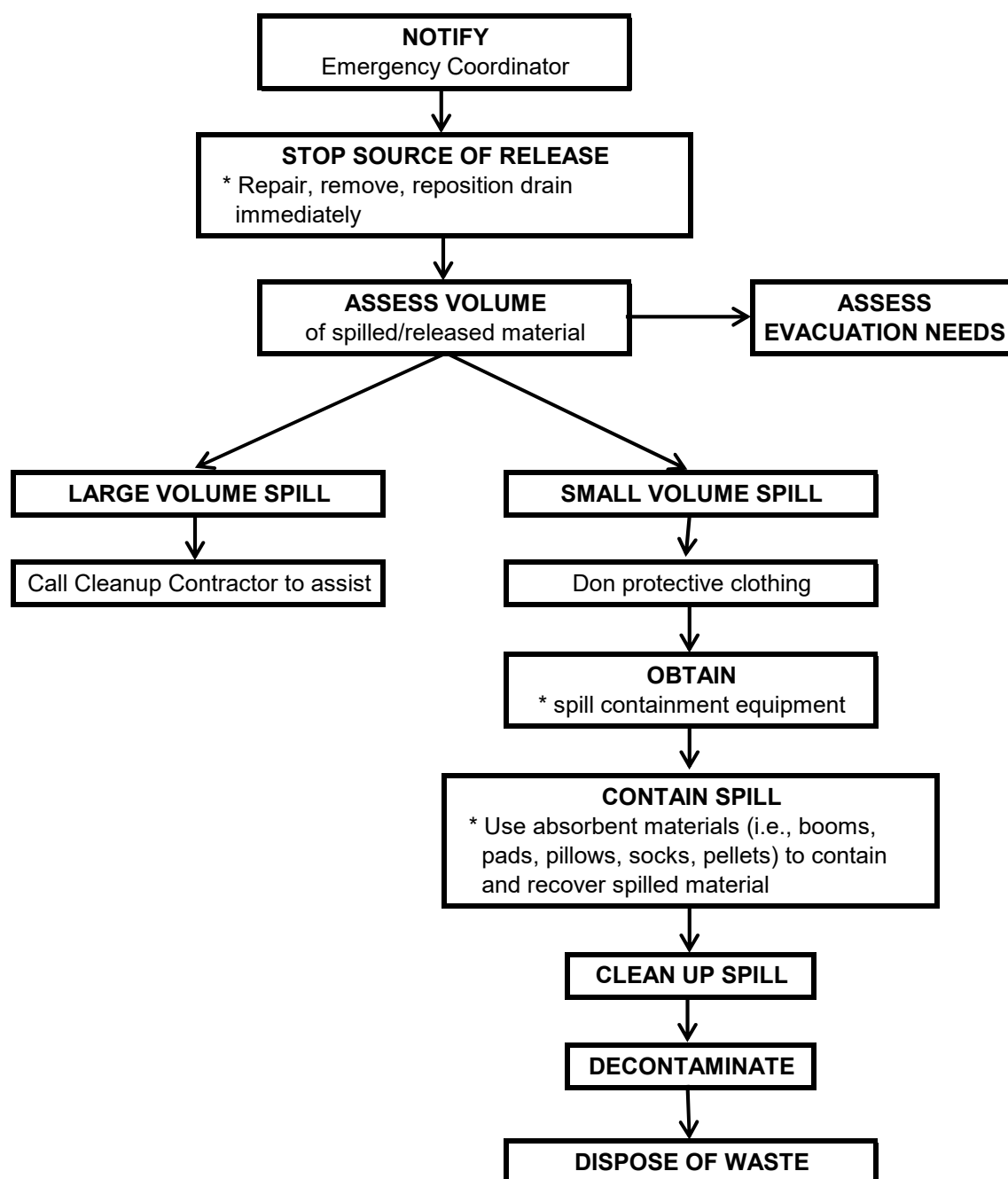
**General Spill Response Procedure
Equipment Failure**

FIGURE 8A
FACILITY INSPECTION FORM (OUTSIDE ASTs)

FACILITY: Rochester DPW Facility

INSPECTOR'S SIGNATURE: _____

INSPECTOR'S TITLE: _____

DATE: _____

This form shall be completed weekly for the aboveground storage tanks and forwarded to the Emergency Coordinator for review. This form shall be retained in the SPCC Plan for at least 3 years. The inspectors shall use the following system to complete this form:

- "✓ " Indicates that the item is in good or satisfactory condition without any leaks, cracks, areas of wear, corrosion, weaknesses, etc.
- "NO" Indicates the condition is unsatisfactory and a repair is needed. A description of the work needed should be at the bottom under comments. Any "No" conditions must be immediately reported to the Emergency Coordinator.
- "N/A" Indicates that the item does not apply to this tank.

Tank #:	1	2	3	
Location:	Fueling Facility	Fueling Facility	Emergency Generator Belly Tank	
Contents:	Gasoline	Diesel	Diesel	
Volume (gallons):	10,000-Gallon AST	10,000-Gallon AST	1,743 Gallon -AST	
TANK/DRUM CONDITION:				
Exterior Condition:				
Support Legs:				
Corrosion:				
Cracks:				
Bulging:				
Label w/ Contents and Capacity				
Level Gauge Equipment Condition:				
FOUNDATION & SECONDARY CONTAINMENT CONDITION:				
Staining:				
Cracking:				
Uneven Settlement:				
Liquid in secondary Containment:				
Drawoffs Locked, Closed when not in use:				
PIPES, HOSES & PUMPS:				
Corrosion:				
Paint Condition:				
Supports:				
High Level Alarm Condition:				
Valves Locked, Closed When not in Use:				
GENERAL:				
Housekeeping/Sufficient Aisle Space:				
Fire Extinguisher Nearby:				
Spill Equipment Nearby:				
"NO SMOKING" Signs Visible:				
WARNING Sign Visible to Unloading Vehicle "Disconnect lines prior to Departure":				
COMMENTS / REPAIRS / MAINTENANCE/TESTS: _____				

FIGURE 8B
FACILITY INSPECTION FORM (FLUID STORAGE ROOM)

FACILITY: **Rochester DPW Facility Fluid Storage Room**
INSPECTOR'S SIGNATURE: _____
INSPECTOR'S TITLE: _____
DATE: _____

This form shall be completed weekly for the aboveground storage tanks and forwarded to the Emergency Coordinator for review. This form shall be

- "/ " Indicates that the item is in good or satisfactory condition without any leaks, cracks, areas of wear, corrosion, weaknesses, etc.
- "NO" Indicates the condition is unsatisfactory and a repair is needed. A description of the work needed should be at the bottom under comments. Any "No" conditions must be immediately
- "N/A" Indicates that the item does not apply to this tank.

Tank #:	1	2	3	4	5
Location:	Fluid Storage Room	Fluid Storage Room	Fluid Storage Room	Fluid Storage Room	Fluid Storage Room
Contents:	Hydraulic Oil	ATF	15W-40	5W-20	Waste Antifreeze
Volume (gallons):	280-Gallon AST	280-Gallon AST	280-Gallon AST	120-Gallon AST	120-Gallon AST
TANK/DRUM CONDITION:					
Exterior Condition:					
Support Legs:					
Corrosion:					
Cracks:					
Bulging:					
Label w/ Contents and Capacity					
Level Gauge Equipment Condition:					
FOUNDATION & SECONDARY CONTAINMENT CONDITION:					
Staining:					
Cracking:					
Uneven Settlement:					
Liquid in secondary Containment:					
Drawoffs Locked, Closed when not in use:					
PIPES, HOSES & PUMPS:					
Corrosion:					
Paint Condition:					
Supports:					
High Level Alarm Condition:					
Valves Locked, Closed When not in Use:					
GENERAL:					
Housekeeping/Sufficient Aisle Space:					
Fire Extinguisher Nearby:					
Spill Equipment Nearby:					
"NO SMOKING" Signs Visible:					
WARNING Sign Visible to Unloading					
Vehicle "Disconnect lines prior to Departure":					

COMMENTS / REPAIRS / MAINTENANCE/TESTS: _____

FIGURE 8B (CONTINUED)
FACILITY INSPECTION FORM (FLUID STORAGE ROOM)

FACILITY: Rochester DPW Facility Fluid Storage Room
INSPECTOR'S SIGNATURE: _____
INSPECTOR'S TITLE: _____
DATE: _____

This form shall be completed weekly for the aboveground storage tanks and forwarded to the Emergency Coordinator for review. This form shall be

- ✓ " Indicates that the item is in good or satisfactory condition without any leaks, cracks, areas of wear, corrosion, weaknesses, etc.
- "NO" Indicates the condition is unsatisfactory and a repair is needed. A description of the work needed should be at the bottom under comments. Any "No" conditions must be immediately
- "N/A" Indicates that the item does not apply to this tank.

Tank #:	6	7	8	9	10
Location:	Fluid Storage Room				
Contents:	Waste Oil Tank				
Volume (gallons):	500-Gallon AST				
TANK/DRUM CONDITION:					
Exterior Condition:					
Support Legs:					
Corrosion:					
Cracks:					
Bulging:					
Label w/ Contents and Capacity					
Level Gauge Equipment Condition:					
FOUNDATION & SECONDARY CONTAINMENT CONDITION:					
Staining:					
Cracking:					
Uneven Settlement:					
Liquid in secondary Containment:					
Drawoffs Locked, Closed when not in use:					
PIPES, HOSES & PUMPS:					
Corrosion:					
Paint Condition:					
Supports:					
High Level Alarm Condition:					
Valves Locked, Closed When not in Use:					
GENERAL:					
Housekeeping/Sufficient Aisle Space:					
Fire Extinguisher Nearby:					
Spill Equipment Nearby:					
"NO SMOKING" Signs Visible:					
WARNING Sign Visible to Unloading					
Vehicle "Disconnect lines prior to Departure":					

COMMENTS / REPAIRS / MAINTENANCE/TESTS: _____

FIGURE 9

OIL, GASOLINE, DIESEL TRANSFER INSPECTION FORM

Stage	Tasks
Prior to loading/ unloading	<input type="checkbox"/> Visually check all hoses for leaks and wet spots.
	<input type="checkbox"/> Verify that sufficient volume (ullage) is available in the storage tank or truck.
	<input type="checkbox"/> Lock in the closed position all drainage valves of the secondary containment structure.
	<input type="checkbox"/> Secure the tank vehicle with wheel chocks and interlocks.
	<input type="checkbox"/> Ensure that the vehicle's parking brakes are set.
	<input type="checkbox"/> Verify proper alignment of valves and proper functioning of the pumping system.
	<input type="checkbox"/> If filling a tank truck, inspect the lowermost drain and all outlets.
	<input type="checkbox"/> Establish adequate bonding/grounding prior to connecting to the fuel transfer point.
	<input type="checkbox"/> Turn off cell phone.
	During loading/ unloading
<input type="checkbox"/> Periodically inspect all systems, hoses, and connections.	
<input type="checkbox"/> When loading, keep internal and external valves on the receiving tank open along with the pressure relief valves.	
<input type="checkbox"/> When making a connection, shut off the vehicle engine. When transferring Class 3 materials, shut off the vehicle engine unless it is used to operate a pump.	
<input type="checkbox"/> Maintain communication with the pumping and receiving stations.	
<input type="checkbox"/> Monitor the fluid level in the receiving tank to prevent overflow.	
<input type="checkbox"/> Monitor flow meters to determine the rate of flow.	
<input type="checkbox"/> When topping off the tank, reduce flow rate to prevent overflow.	
After loading/ unloading	<input type="checkbox"/> Make sure the transfer operation is completed.
	<input type="checkbox"/> Blow-back transfer line and close all tank and loading valves before disconnecting.
	<input type="checkbox"/> Securely close all vehicle internal, external, and dome cover valves before disconnecting.
	<input type="checkbox"/> Secure all hatches.
	<input type="checkbox"/> Disconnect grounding/bonding wires.
	<input type="checkbox"/> Make sure the hoses are drained to remove the remaining oil before moving them away from the connection. Use a drip pan.
	<input type="checkbox"/> Cap the end of the hose and other connecting devices before moving them to prevent uncontrolled leakage.
	<input type="checkbox"/> Remove wheel chocks and interlocks.
	<input type="checkbox"/> Inspect the lowermost drain and all outlets on tank truck prior to departure. If necessary, tighten, adjust, or replace caps, valves, or other equipment to prevent oil leaking while in transit.

APPENDIX A

Rochester DPW Certification of SPCC Plan Commitment

ROCHESTER DPW CERTIFICATION OF SPCC PLAN COMMITMENT

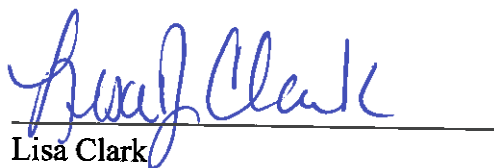
The following personnel have reviewed and understand the contents of this SPCC Plan. Their signatures below constitute their commitment to implementing the SPCC Plan. The commitment includes providing the manpower, equipment, and materials required to expeditiously control and remove any harmful quantity of OHM/W discharged.

Emergency Coordinator:

A handwritten signature in black ink, appearing to read "Peter Nourse", written over a horizontal line.

Peter Nourse

Assistant Emergency Coordinator:

A handwritten signature in blue ink, appearing to read "Lisa Clark", written over a horizontal line.

Lisa Clark

APPENDIX B

Release Notification Form



WMD Site No: _____
 Project No: _____
 Project Type: _____

**DEPARTMENT OF ENVIRONMENTAL SERVICES
 WASTE MANAGEMENT DIVISION
 Hazardous Waste or Petroleum
 Spill Reporting Form**

GUIDELINES FOR REPORTING A SPILL

1. Report the spill to your local 911 responder or fire department.
2. Call DES Spill Response & Complaint Section and provide as much of information listed below as possible.

Monday – Friday, 8 am to 4 pm (603) 271-3899

Weekend and Evenings (603) 223-4381 State Police Dispatch

3. Follow up the call to DES by submitting a completed spill reporting form. Email the completed form to orcb.wmd@des.nh.gov by highlighting, copying and paste the information onto the email.

Date Spill Reported to DES: _____ Time: _____

Your Name: _____

Mailing Address: _____

Town: _____ State: _____ Zip: _____

Home Telephone #: _____ Work Telephone #: _____ Email : _____

Company or Person Responsible

Business or Individual Name: _____

Mailing Address: _____

Town: _____ State: _____ Zip: _____ Telephone #: _____

Spiller Contact Information - Name: _____ Title: _____

Telephone #: _____ Email: _____

Spill Location

Site Name: _____

Town: _____

Street Address: _____

Directions to Site: _____

Spill Information

Substance spilled : _____ Amount: _____ Units:(gallons): _____

Date of Spill: _____ Time of Spill: _____

Cause of Spill: _____

How was Spill Detected: _____

Areas Impacted or Will Be Impacted
(Soil, Surface Water, Wetlands, Drinking Water Well)

Impacted Areas: _____ Distance from Spill: _____

Potentially Impacted Areas: _____ Distance from Spill _____

Attached sampling results, if any.

Response Company

Company Name: _____

Mailing Address: _____

Town: _____ State: _____ Zip: _____ Telephone #: _____

Contact Information – Name: _____ Title: _____

Telephone #: _____ Email: _____

Response Action

Attach response reports, if any.

Others Notified

Have you notified the person or party you believe is responsible? Yes ____ No ____

Have you reported this spill to local officials? Yes ____ No ____

If Yes, Town: _____ Department: _____

Representative's Name: _____

Spill Site Property Owner Information (Optional)

Property Owner Name: _____

Mailing Address: _____

Town: _____ State: _____ Zip: _____

Telephone #: _____

APPENDIX C

Completed Tank Inspection Forms

APPENDIX D

Certification of the Applicability of the Substantial Harm Criteria

CERTIFICATION OF THE APPLICABILITY OF THE SUBSTANTIAL HARM CRITERIA

Facility Name: City of Rochester Public Works Facility

Facility Address: 209 Chestnut Hill Road, Rochester, NH 03867

1. Does the Facility transfer oil over water to or from vessels and does the Facility have a total oil storage capacity greater than or equal to 42,000 gallons?

Yes _____ No X

2. Does the Facility have a total oil storage capacity greater than or equal to 1 million gallons and does the Facility lack secondary containment that is sufficiently large to contain the capacity of the largest above-ground oil storage tank plus sufficient freeboard to allow for precipitation within any aboveground oil storage tank area?

Yes _____ No X

3. Does the Facility have a total oil storage capacity greater than or equal to 1 million gallons and is the Facility located at a distance (as calculated using the appropriate formula in Attachment C-III to this Appendix or a comparable formula¹) such that a discharge from the Facility could cause injury to fish and wildlife and sensitive environments? For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA's "Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments" (see Appendix E to this part, section 10, for availability) and the applicable Area Contingency Plan.

Yes _____ No X

4. Does the Facility have a total oil storage capacity greater than or equal to 1 million gallons and is the Facility located at a distance such that a discharge from the Facility would shut down a public drinking water intake²?

Yes _____ No X

5. Does the Facility have a total oil storage capacity greater than or equal to 1 million gallons and has the Facility experienced a reportable oil spill in an amount greater than or equal to 10,000 gallons within the last 5 years?

Yes _____ No X

¹ If a comparable formula is used, documentation of the reliability and analytical soundness of the comparable formula must be attached to this form.

² For the purposes of 40 CFR part 122, public drinking water intakes are analogous to public water systems as described in 40 CFR 143.2c.

Stormwater Pollution Prevention Plan
Rochester Department of Public Works Operating Facility
209 Chestnut Hill Road, Rochester, NH

Attachment 4: Facility Inspection Form

SWPPP Inspection DPW

Inspection Log ▾

Inspection Date & Time

 m/d/yyyy

 hh:mm

Inspector

Weather

Hint

► Details

Stormwater Management ▾

Catch Basin Cleaning

☐ No action required

☐ Catch basin cleaning required

☐ Structural maintenance required

☐ No action required☐ Maintenance required (conduct full inspection)

Stormwater Discharge Description

☐ No flow☐ Light☐ Moderate☐ Heavy

Unidentified Discharges

Hint

► Details

☐ None☐ Gas☐ Oil☐ Unknown☐ Other (describe in notes)

Notes

Good Housekeeping ▾

Roadway/Parking Lot Condition

☐ No action required

☐ Street sweeping required

☐ Maintenance required

Residential Salt Shed Condition

Hint

► Details

☐ No action required

☐ Cleanup required

Salt Shed Condition

☐ No action required

☐ Cleanup required

Dumpster Condition

☐ No action required

☐ Cleanup required

Notes

Spill Prevention ▾

Spill Cleanup Kits

Hint

► Details

☐ Present

☐ Not present

Vehicle Storage Area

Hint

► Details

☐ No leaks or spills

☐ Evidence of leaks or spills

Material Storage Tanks

Hint

► Details

☐ No leaks or spills

☐ Evidence of leaks or spills

Waste Oil

Hint

► Details

☐ No leaks or spills

☐ Evidence of leaks or spills

Notes

photos ▾

Photo (1) ▾

Photo

Select image file




Photo Caption

Submit

ATTACHMENT 6
STREET DESIGN AND PARKING LOT GUIDELINES
REPORT

Street Design and Parking Lot Report

Prepared for

City of Rochester, New Hampshire

31 Wakefield Street
Rochester, NH 03867



Prepared by

Geosyntec Consultants, Inc.
75 Congress Street, Suite 301
Portsmouth, New Hampshire 03801

Project Number BR0583

May 2022

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- Table 1: Street Cross Section Design Standards
- Table 2: Recommendations Summary

1.0 INTRODUCTION

This report was developed to assess current street and parking lot design in the City of Rochester, New Hampshire and reviews the street design guidelines, parking lot guidelines, and other local requirements that impact the creation of impervious cover. This report also provides information on potential modifications that may be made to support low impact design options and recommends policies and standards to incorporate into relevant regulations and procedures to minimize impervious cover attributable to parking areas and street designs.

Impervious cover, especially directly connected impervious cover, can greatly impact the quantity and quality of stormwater. Reducing extraneous impervious cover can mitigate these impacts and this review identifies areas where the City of Rochester succeeds at limiting the creation of impervious area and identifies area for improvement, as well as other recommendations.

2.0 REVIEW OF LOCAL REGULATIONS AND ORDINANCES

A review of the local regulations and ordinances was performed to assess the impact on the creation of impervious cover. The detailed review of each regulatory document is described in the sections that follow.

2.1 Chapter 218 Stormwater Management and Erosion Control

Chapter 218 regulates the discharges into the City's stormwater drainage system and other waterbodies. Because of the aforementioned relationship between impervious cover and stormwater quality and quantity, Chapter 218 implicitly minimizes impervious cover. For example, §218-10 C(3)(a) states that "measures shall be taken to control the post-development peak rate and volume of runoff so that it does not exceed pre-development runoff rates or volumes for the two-, ten-, and twenty-five-year, twenty-four-hour storm events [...]." Although this statement does not explicitly limit the creation of impervious surface, it discourages the creation of extraneous impervious surface through the requirement of best management practices (BMPs) or other means to meet the post-development runoff requirements.

§218-10 B(1) promotes the reduction of impervious cover, stating that, "LID techniques include preserving existing vegetation, reducing impervious footprint, disconnecting impervious area, and using enhanced stormwater BMPs in landscaped areas." Although disconnecting impervious cover does not necessarily reduce the actual area of impervious area, it does reduce the impact of impervious cover on water quantity and quality. Similarly, §218-10 E(5) requires that, "stormwater runoff shall be directed into recessed vegetated and landscape areas designed for treatment and/or filtration to minimize effective impervious cover" thereby reducing the impact of the impervious cover.

2.2 Chapter 275 Zoning

Chapter 275, the City's Zoning Ordinance requires minimum areas for streets and parking lots and spaces. The ordinance also encourages low impact through limiting the number of parking spaces in some districts and promoting the creation of conservation subdivisions.

In residential areas, §275-5.1 B(1) states that, "parking areas/parking lots shall not be located in front setback areas [...], nor forward of the front façade except for parking situated within clearly defined driveways. Parking areas/parking lots shall be located in the side or rear." This requirement may implicitly lead to the creation of extraneous impervious surface through the use of driveways/roadways to reach the side and/or rear parking lots. However, this requirement serves to maintain the aesthetics in residential areas and area of impervious surface may be negligible.

Chapter 275 sets forth road design standards in §275-6.5 F(1) and §275-8.6 A with the following requirements:

- (a) Right-of-way: 60 feet
- (b) Lane width (each): 12 feet
- (c) Paved shoulder (each): four feet
- (d) Sidewalk (bituminous): five feet
- (e) Grass strip: five feet (between road and sidewalk)
- (f) Curb: determined by site plan review

Although the requirements do not specifically state that these are minimums, it is implied. It is not stated whether dimensions greater than those specified are acceptable.

The City of Rochester regulates the creation of impervious surface in the Aquifer Protection Overlay District. Specifically, §275-10.6 A states that, for any use that will render impervious area more than 20% of any lot or 5,000 square feet of land disturbance of any lot, whichever is greater, requires a stormwater management and erosion control plan. Note that this requirement only applies in the Aquifer Protection Overlay District and is not a City-wide requirement.

Article 21 Conditional Uses limits the parking spaces within the Downtown Commercial (DC) Zone District to 20 parking spaces for any single tenant through §275-21.4 K.

Article 26 Roads and Parking describes minimum number of parking spaces and size requirements in §275-26.1 which are as follows:

- A. Single-family: Minimum off-street parking requirements for single family dwellings are two spaces.

- B. Two-family: Minimum off-street parking requirements for two-family dwellings are four spaces (two per dwelling unit).
- C. Size. Each parking space for single- and two-family uses shall be at least nine (9) by eighteen (18) feet.

Article 33 Conservation Subdivisions promotes general low impact development concepts in §275-33.1 C, in the following objectives: (2) “Create open space that is useable and accessible,” (4) “Prevent disruption of existing topography,” (5) “Accommodate natural drainage systems,” (6) “Preserve important ecological features, wetlands, streams, ponds, floodplains, forests, fields, natural vegetation, and tree cover,” (12) “Promote innovative site design”, (13) “Reduce costs for the developer and maintenance costs for the City by reducing infrastructure,” and (18) “Promote efficiency in road and utility layout.” These objectives implicitly discourage the creation of impervious surface. Article 33 also discourages the creation of impervious surface by specifying an open space percentage in §275-33.3 D, stating “the proposed open space areas shall consist of a minimum of 40% of the buildable area of the property” and through providing density bonus enhancements in §275-33.6 for higher percentages of open space and open space access/linkage enhancements.

Attachment 6 summarizes dimensional standards for the zoning districts. The standards specify maximum building footprints and maximum lot coverages which limits the creation of impervious surface.

2.3 City of Rochester Subdivision Regulations

The City of Rochester Subdivision Regulations describe the Street Cross Section Design Standards in Section 5: Design Standards and summarizes them in a table, shown as **Table 1** below.

Table 1: Street Cross Section Design Standards

Cross-Section Item	Collectors & Arterial Streets	Minor Streets Residential Subdivision		Minor Streets Non-Residential Subdivision
		Agricultural Zoning District	All Other Zoning districts	
Right-of-Way width (ft)	60	50	50	50
Roadway Width (ft)	32	24**	24**	26**
Curbing Required	no*	no*	no*	no*
Shoulder-each side (ft)	3	3	3	3
Sidewalks	at discretion of Board	at discretion of Board	at discretion of Board	at discretion of Board
Sidewalks – width (if required)	5'	5'	5'	5'
Storm drainage system	open*	open*	open**	open**
Planting strips width each side (ft)	5	5	5	5

* The Board may require closed drainage, curbing and sidewalks based upon such factors as density, drainage characteristics of the area and adjacent street design. [16]

** At the discretion of the Board, roadway width may be increased based on density, the drainage system and public safety considerations. [16]

The regulations prescribe minimum right-of-way widths, roadway widths, shoulder widths, and sidewalk widths and do not state maximum widths. The planting strip requirement promotes the disconnection of impervious cover. Furthermore, the regulations do not require closed drainage systems which also promotes the disconnection of impervious cover.

Section 5.2.2 limits block widths to not less than 400 feet, the length between collector streets to 1000 feet, and the length between minor streets to 600 feet (or between collector streets and minor streets). This implicitly reduces the amount of impervious cover by limiting street density.

Section 5.3.3 states that “Existing streets shall be widened as if they were new streets,” which may increase the amount of impervious cover.

Exhibit F shows a Typical Cul-de-Sac layout with a radius of 50 feet. However, the Subdivision Regulations do not require a specific turning radius and therefore does not create extraneous impervious cover.

2.4 City of Rochester Site Plan Regulations

The site plan regulations list parking requirements in Section 10 – Parking and Circulation (A). This both encourages and limits the creation of impervious surface, as it both requires a set number of parking spaces in some areas and sets a maximum number of parking spaces. Furthermore, many uses do not have minimum parking requirements which helps to limit the amount of impervious cover required.

Additionally, Section 10 (C) gives the Planning Board the authority to reduce the number of required parking spaces in recognition of unique on-site or off-site conditions.

The Site Plan Regulations also set parking lot design standards in Section 10 – Parking and Circulation (E) and requires a minimum parking lot stall size of nine (9) feet by eighteen (18) feet. Section (F) also sets minimum driveway widths (20 feet); however, the Section 10 (F)(7) states that “any driveway wider than 24 feet should be justified based on large traffic volumes, the need to accommodate oversized vehicles, or other considerations” which limits the creation of impervious cover.

The City of Rochester encourages the use of permeable pavement in Section 10 (I). This is discussed in more detail in the “Green Infrastructure Report.” Additionally, Section 10 – General Requirements for Parking Lots and Circulation (F)(13) allows the use of traffic calming measures, implicitly allowing the use of curb extensions. This is also discussed in more detail in the “Green Infrastructure Report.”

Section 14 – Traffic and Access Management (B) sets minimum distances for spacing of driveways which implicitly reduces the creation of impervious surface. Additionally, Section 14 (B)(3) limits the number of driveways on one lot and encourages the sharing of access driveways by adjoining properties in Section 14(B)(5)(g).

3.0 RECOMMENDATIONS

Overall, the City of Rochester regulations generally limit the creation of impervious cover to the extent practical. These recommendations would support more restrictive creation of impervious cover.

1. **The City could set maximum rights-of-way widths and other associated roadway widths, to ensure that impervious surface is minimized.** Although the standards for street and parking lot design set minimum areas and rights-of-way (as in §275-6.5 F(1) and §275-8.6 A), these minimums are necessary for the safety and convenience of residents and visitors.
2. **Apply impervious coverage maximums to all lot types within the City.** The City of Rochester regulations succeed in promoting the reduction of impervious cover in §275 Article 10 (Aquifer Protection Overlay District) and Article 33 (Conservation Subdivisions). The requirement in §275-10.6 A for a stormwater management and

erosion control plan based impervious coverage of more than 20% of any lot could be added to other districts as well. This may not wholly reduce the amount of impervious cover but may encourage developers to be more efficient with layouts in order to reduce the amount of impervious cover.

3. **Promote general low impact development concepts to all districts.** Article 33 (Conservation Subdivisions) promotes general low impact development concepts in §275-33.1 C. These objectives could be applied to all (or most) districts as they do not contain explicit requirements, but rather a recommendation to consider ecological features, natural drainage systems, topography, and efficient layouts.
4. **Make Aquifer Overlay District a disturbance threshold only, consistent with Chapter 218.** Modify the threshold for submittal of a stormwater management and erosion control plan for land disturbances equal to or greater than 5,000 square feet. Remove the greater than 20% impervious cover of any lot requirement.

Table 2 outlines the steps to adjust and/or amend the code, identifies pertinent boards and committees responsible for amending the code, and includes an estimated timeline for each recommendation.

Table 2: Recommendations Summary

Rec.	Description	Steps	Boards/ Committees	Estimated Timeline
1	Maximum Right-of-Way widths	<ul style="list-style-type: none"> - Review recent developments and existing infrastructure to determine typical right-of-way widths - Develop a table of maximum right-of-way widths either by district/ type of development or City-wide (note: sidewalks should not be restricted) - Work with the Department of Public Works/Engineering and the Fire Department to ensure that these maximums are not an impediment to safety or infrastructure. 	Planning Board; Department of Public Works; Fire Department	2024
2	Maximum impervious cover for all lots	<ul style="list-style-type: none"> - Review impervious cover of lots in recent developments to determine typical impervious cover - Use typical impervious cover to develop a reasonable maximum value, use the 20% from the conservation subdivisions, or develop a table based on the district or other relevant information (e.g., the impervious cover restrictions could be 	Planning Board	2024

Table 2: Recommendations Summary

Rec.	Description	Steps	Boards/ Committees	Estimated Timeline
		less stringent in the Granite Ridge district, for example)		
3	Promote general low impact development concepts	- Modify objectives in all or most districts to include recommendations to consider ecological features, natural drainage systems, etc.	Planning Board	2023
4	Aquifer Overlay District Stormwater Management Threshold	- Modify the	Zoning/Planning Board	2023

REFERENCES

City of Rochester. “Chapter 218 Stormwater Management and Erosion Control.”

City of Rochester. “Chapter 275 Zoning.”

City of Rochester. “Subdivision Regulations.” Most recently amended October 10, 2018.

City of Rochester. “Site Plan Regulations.” Most recently amended March 22, 2021.

ATTACHMENT 7
GREEN INFRASTRUCTURE REPORT

Green Infrastructure Report

Prepared for

City of Rochester, New Hampshire

31 Wakefield Street
Rochester, NH 03867

Prepared by

Geosyntec Consultants, Inc.
75 Congress Street, Suite 301
Portsmouth, New Hampshire 03801

Project Number BR0583

May 2022



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1.0 INTRODUCTION

This report was developed to assess existing local regulations in the City of Rochester, New Hampshire to determine the feasibility of allowing and encouraging green infrastructure practices such as green roofs, infiltration practices (i.e., rain gardens, curb extensions, planter gardens, porous and pervious pavement, and other designs to manage stormwater), and the use of water harvesting devices (such as rain barrels and cisterns and the use of stormwater for non-potable uses). This report assesses under which circumstances these practices are allowable and if any impediments exist that make implementing these practices challenging.

2.0 REVIEW OF LOCAL REGULATIONS AND ORDINANCES

A review of the local regulations and ordinances was performed to assess the approach to green infrastructure practices. The following sections document the regulations relating to green infrastructure practices in more detail.

2.1 Chapter 218 Stormwater Management and Erosion Control

Chapter 218 regulates the discharges into the City's stormwater drainage system and other waterbodies. Chapter 218 promotes the use of general green infrastructure practices and low impact development, such as in §218-9 A(3) which states that "whenever practical, natural vegetation should be retained, protected, or supplemented."

Chapter 218 also has regulations for managing post-construction stormwater including in §218-10 B(1) which states that low impact development (LID) site planning and design strategies shall be used to the maximum extent practicable for both New Development and Redevelopment projects to reduce the discharge of stormwater runoff volume, protect water quality, and maintain predevelopment hydrology. This section goes on to state "LID techniques include preserving existing vegetation, reducing impervious footprint, disconnecting impervious area, and using enhanced stormwater BMPs (such as raingardens, bioretention, tree box filters and similar stormwater practices) in landscaped areas. Applicants shall document why LID strategies are not feasible if not used to manage stormwater, and such documentation shall be approved by DPW during review of the stormwater management system."

In §218-10 C(2) requires protection of groundwater resources by reducing the post-development stormwater runoff volume by infiltrating the groundwater recharge volume (GRV). This section promotes infiltration practices on-site.

2.2 Chapter 275 Zoning

Chapter 275 promotes green infrastructure and low impact development in Article 12 Conservation Overlay District and Article 33 Conservation Subdivisions, which both promote retaining natural systems and topography as much as possible and implementing an efficient layout of roads and lots. The regulations also allow the use of green infrastructure practices in §275-6.5 G(2) and §275-8.7 B, stating that "the Planning Board shall consider proposals for use of innovative stormwater control structures, such as porous pavement, bioretention areas,

gravel wetlands, etc.” and allows adjustments to parking lots and parking requirements to facilitate green infrastructure practices. This demonstrates that the City is willing to modify its requirements to promote green infrastructure practices.

2.3 City of Rochester Subdivision Regulations

The subdivision regulations explicitly require low impact development planning in Section 5.4.1(2), stating that “Low Impact Development (LID) site planning and design strategies must be used to the maximum extent practicable (MEP) in order to reduce the generation of the stormwater runoff volume for both new development and redevelopment projects.” In fact, it requires the applicant to document why LID strategies are not appropriate for the site if not used.

The subdivision regulations also discuss roadside trees, planting strips, and street tree installation in Sections 5.13, 6.2.5, and 6.11, respectively. Street trees and planting strips help to manage stormwater and the City’s regulations encourage planting of new trees and also regulate the removal of roadside trees.

2.4 City of Rochester Site Plan Regulations

The site plan regulations actively encourage and require the use of green infrastructure practices. Section 5 – Landscaping B(14) states that, “to promote on-site water retention and filtration, applicants are encouraged to design landscaped areas that will receive stormwater from on-site roads, driveways, parking areas and other impervious surfaces. Protection plant barriers should be designed with openings that allow stormwater to flow into vegetated areas. Such planting areas should be underlain by a suitable layer of crushed stone or other water holding reservoir, with an overlay of filter fabric to minimize clogging by superfine soils. The use of LID (low impact development) is encouraged.”

Section 5 also promotes the use of native plants and discourages use of grass cover in C(2), C(8), and F(6). Additional, Section 5 (G)(1) explicitly promotes the use of water harvesting devices (and general water conservation techniques), stating that, “installation of built-in mechanical irrigation systems is strongly encouraged. When irrigation systems are incorporated, use of water saving technologies, including rain sensors, flow meters, drip irrigation, and cisterns for roof water reuse are encouraged. Use of water other than municipal water is encouraged, especially use of gray water (reused water), detained stormwater, and roof drainage.” Appendix 2 details recommended landscaping species and prohibited invasive species, including shade trees, ornamental trees, and shrubs.

General low impact development (LID) techniques are encouraged in Section 8 – Natural Resources. Specifically, B(1) states that, “buildings, parking areas, travel ways, and other site elements should be located and designed in such a manner as to preserve natural resources and maintain natural topography to the extent practical. Extensive grading and filling should be avoided.”

Section 10 – Parking and Circulation (I) encourages the use of permeable paved surfaces for parking areas and travel ways, particularly in “relatively flat areas with well drained soils and a deep water table, low or moderate traffic levels, and use primarily by automobiles and other light duty vehicles” and additionally states that “whenever possible, the applicant is encouraged to utilize alternate paving methods for parking lots, such as but not limited to permeable pavement, permeable concrete or grass pavers to reduce the environmental impact and drainage requirements.” Additionally, Section 10 – General Requirements for Parking Lots and Circulation (F)(13) allows the use of traffic calming measures, stating that, “special techniques may be employed to slow traffic on site” and references Appendix % for specific traffic calming measures. Although these techniques are intended to slow traffic, they implicitly allow the use of curb extensions, particularly 2) Chicane, 3) Curb extension (widening), and 4) Central refuge (median). Overall, this section greatly promotes the use of green infrastructure practices.

2.5 International Building Codes

The City of Rochester currently enforces the following codes that include regulations pertaining to green infrastructure:

- International Building Code, 2015 Edition
- International Plumbing Code, 2015 Edition

Chapter 15 of the International Building Code regulates roof assemblies and rooftop structures. Specifically, Section 1507.16 regulates vegetated roofs, roof gardens, and landscaped roofs. There are no regulations specific vegetative roofs beyond the structural requirements detailed in Section 1607.12.3 and 1607.12.3.1. Therefore, the codes neither promote nor disallow green roofs.

Chapter 13, Section 1303 of the International Plumbing Code regulates nonpotable rainwater collection and distribution systems (e.g., rain barrels, rainwater harvesting, etc.). Specifically, the code regulates the collection surface and storage tank locations and requires the use of debris excluders and roof washers. The code also requires tests and inspections for roof gutters, roof washer, collection pipe and vent, storage tank, water supply system, backflow prevention assemblies, and vermin and insect protection, as well as requiring water quality tests meet specified standards. Similar to the building code, these regulations neither promote nor disallow rainwater harvesting measures.

3.0 RECOMMENDATIONS

Overall, the City of Rochester regulations encourage and do not inhibit the use of green infrastructure practices. Furthermore, some regulations require the implementation of green infrastructure. Specific recommendations to better facilitate the use of green infrastructure are as follows:

1. **Provide detailed best management practices (BMPs) for lawns and alternative ground covers (Site Plan Regulations, Section 5 – Landscaping).** For example, the regulations could require six (6) to twelve (12) inches of topsoil for new lawns to

encourage deeper root growth (NHDES, 2019). Additionally, along with the recommended trees and shrubs tables included in Appendix 2, the regulations could include a table of recommended alternatives to conventional turf lawns, as native plants generally require less water, herbicides, pesticides, fertilizers, and trimming (NHDES, 2018).

2. **Recommend soil tests for new development or redevelopment projects (Site Plan Regulations, Section 5 – Landscaping).** The regulations could also recommend soil be tested through the local UNH Cooperative Extension Office to reduce the application of fertilizer or lime (NHDES, 2019).
3. **Provide soil maps for infiltration-based green infrastructure practices (Site Plan Regulations, Section 5 – Landscaping).** A soil map of soils and associated infiltration rates could be included to show areas where soil is well drained and best suited for infiltration practices.
4. **Provide a checklist of common green infrastructure practices (Subdivision Regulations, 5.4.1(2)).** This section requires the applicant to state why low infrastructure development (LID) practices are not used if the applicant does not use LID to the extent practicable. This requirement could be expanded to include specific green infrastructure practices; therefore, the applicant would have to explain why a practice is not applicable to the site if they choose not to implement it. This checklist/requirement could be in the form of selecting at least one element for a subset of similar types (e.g., list potential infiltration-based practices to encourage the applicant to select at least one).

Table 1 outlines the steps needed to adjust and/or amend the code, identifies pertinent boards and committees responsible for amending the code, and includes an estimated timeline for each recommendation.

Table 1: Recommendations Summary

Rec.	Description	Steps	Boards/ Committees	Estimated Timeline
1	Detailed BMP List	<ul style="list-style-type: none"> - Amend regulation to require 6-12" of topsoil - Research alternatives to conventional turf lawns - Amend regulation to include table of recommended alternatives 	Planning Board; Department of Public Works (optional)	2024
2	Soil Tests	<ul style="list-style-type: none"> - Coordinate with the local UNH Cooperative Office to determine if this is feasible - Amend regulation to either recommend or require soil tests 	Planning Board	2024
3	Soil Maps	<ul style="list-style-type: none"> - Locate or upload a publicly available or opensource soils map (such as maps found on UNH GRANIT or similar) - Include this map formally in the regulations or informally by including a link on the Planning Board webpage 	Planning Board	2023

Table 1: Recommendations Summary

Rec.	Description	Steps	Boards/ Committees	Estimated Timeline
		- Create a schedule to check that the map is up to date and update link(s) as necessary		
4	Green Infrastructure Checklist	<ul style="list-style-type: none"> - Review BMP guidance documents such as the New Hampshire Stormwater Manual to compile list of potential BMPs - Create a checklist and either recommend or require its use in the regulations 	Planning Board; Department of Public Works (optional)	2023

REFERENCES

City of Rochester. “Chapter 218 Stormwater Management and Erosion Control.”

City of Rochester. “Chapter 275 Zoning.”

City of Rochester. “Subdivision Regulations.” Most recently amended October 10, 2018.

City of Rochester. “Site Plan Regulations.” Most recently amended March 22, 2021.

International Code Council, Inc. “2015 International Building Code.” Third Printing: October 2015.

International Code Council, Inc. “2015 International Plumbing Code.” Third Printing: August 2015.

NHDES. (2019). “New Hampshire Homeowner’s Guide to Stormwater Management.” Prepared by the Watershed Management Bureau. November 2019.

ATTACHMENT 8
NITROGEN SOURCE IDENTIFICATION REPORT (NSIR)



engineers | scientists | innovators

Nitrogen Source Identification Report

Prepared for

City of Rochester, New Hampshire

31 Wakefield Street
Rochester, NH 03867

Prepared by

Geosyntec Consultants, Inc.

75 Congress Street, Suite 301
Portsmouth, New Hampshire 03801

Project Number BR0583

June 2022



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1.0 INTRODUCTION

This Nitrogen Source Identification Report (NSIR) was developed to meet the requirements in Appendix H of the MS4 Permit for discharges to water quality limited waterbodies and their tributaries where nitrogen is the cause of the impairment.

Although none of the outfalls in Rochester directly discharge to waterbodies with nitrogen impairments, in Section 2.2.2 of the MS4 Permit, Rochester is listed for having discharges from its MS4 whose tributaries discharge to a nitrogen limited waterbody. Therefore, the requirements under Appendix H are applicable to Rochester's MS4.

As stated in Appendix H, Rochester needs to prepare a NSIR which includes the following elements:

- Calculation of the total MS4 area draining to the water quality limited water segments or their tributaries, incorporating updated mapping of the MS4 and catchment delineations
- Impervious area and directly connected impervious area (DCIA)¹ for the target catchment
- All screening and monitoring results targeting the receiving water segment
- Identification, delineation, and prioritization of potential catchments with high nitrogen loading
- Identification of potential retrofit opportunities or opportunities for the installation of structural stormwater BMPs during redevelopment

2.0 AREA DRAINING TO NITROGEN LIMITED SEGMENTS

Discharges from the MS4 enter segments of the Cocheco River or Salmon Falls River, both of which are tributaries to downstream nitrogen limited segments of these rivers. Rochester has approximately 160 outfalls and a total MS4 area of approximately 12,400 acres (~19 square miles).

For each outfall, the catchment delineation areas were calculated using ArcGIS. The datasets used are summarized in [Table 2-1](#) below.

Table 2-1: Outfall Data Sources

Dataset	Source
Land Use 2015	NH GRANIT
Impervious Surface Coastal 2016	NH GRANIT
Soils SSURGO	NH GRANIT

¹ All impervious area was assumed to be directly connected in the nitrogen load analyses as most catchment areas are curbed.

Dataset	Source
City of Rochester Outfalls	City of Rochester GIS
Outfall Catchment Areas	Delineated using GIS
City of Rochester City Boundary	City of Rochester GIS

3.0 SCREENING AND MONITORING RESULTS

In 2019, Rochester completed dry weather screening of the outfalls to determine the presence or absence of dry weather flow. Where dry weather flow was observed, Rochester collected analytical samples as required by the MS4 Permit. The results of the dry weather screening are included as Attachment 1.

In 2021, Rochester began conducting wet weather screening work as required under the MS4 Permit. The results of this effort are included in Attachment 2.

4.0 NITROGEN LOADING RESULTS

Rochester estimated the total nitrogen load from each outfall catchment using the methodology in Attachment 3 in Appendix F of the MS4 permit. The nitrogen load for each outfall catchment, along with the catchment area and catchment impervious area are included as Attachment 3 of this report. The total nitrogen load for all catchment areas in Rochester is approximately 25,000 pounds per year. This analysis assumes that no stormwater best management practices (BMPs) are installed within the Rochester to reduce total nitrogen. As noted in Section 5 below, this is not the case and the City alone (excluding privately owned and maintained BMPs), owns and maintains over 70 BMPs. Including Rochester and privately owned and maintained BMPs, the total nitrogen load per catchment area would be greatly reduced. Over the next year, the City will be working on quantifying the reductions within each catchment area based on implementation of BMPs.

All impervious area was assumed to be directly connected in the nitrogen load analysis as most catchment areas are curbed. Assuming that all impervious area is directly connected results in the total nitrogen load being overestimated. Rochester is working to best understand the area of the City that is curbed verses uncurbed; however, the MS4 Permit does not have a method to allow the City to reduce its nitrogen load for disconnected impervious cover.

The outfall catchments were then prioritized by nitrogen load (from largest to smallest) and the nitrogen load per area (N pounds/acre/year) was also calculated. These results are also included in Attachment 3. Outfall catchments that have high nitrogen loads and high nitrogen load per area should be further investigated for management strategies to reduce the overall nitrogen load.

5.0 STORMWATER BEST MANAGEMENT PRACTICES (BMPS)

5.1 Existing Stormwater BMPS

Rochester currently owns and maintains approximately 72 structural stormwater BMPS. BMPS include constructed and gravel wetlands, dry and wet detention ponds, infiltration ponds, hydrodynamic separators, and vegetated swales. Rochester estimated the drainage area to each BMP, quantified the untreated nitrogen load to the BMP, and the nitrogen load that the BMP removes, included as Attachment 4. The BMPS provide a total of 1,080 pounds/year of nitrogen load reduction.

5.2 Retrofit/Redevelopment Opportunities

5.2.1 Planned Infrastructure

The City of Rochester's Fiscal Year (FY) 2023 Proposed Capital Improvement Plan (CIP) budget² includes several proposed BMPS. These projects include:

- **Milton Rd/SFR/Amarosa Dr Intersection Improvements.** The evaluation and design are considered drainage improvements and stormwater treatment.
- **Union Street Parking Lot Reconstruction.** Includes stormwater treatment improvements.

Other ongoing and proposed stormwater treatment projects include:

- **Woodman/Myrtle Area St Reconstruction project**
- **Colonial Pines Drainage Improvements**
- **Columbus/Summer Intersection**
- **Wakefield Street Reconstruction**
- **Winter Street Neighborhood Reconstruction**

5.2.2 Engineering feasibility of redevelopment or retrofit of BMPS

A field survey of developed city-owned parcels was conducted in 2022 to determine potential retrofit opportunities and need for structural stormwater BMPS. The retrofit potential for BMPS for each parcel were prioritized from low to high, with high priority parcels having both the need for stormwater BMPS and adequate space to implement the BMPS. Low priority parcels have the need for stormwater BMPS but lack adequate space or would require a complete reconstruction of the parcel to implement BMPS. Some of the parcels visited were undeveloped (i.e., no impervious area) and therefore would not need BMPS and are listed as not applicable (N/A) in the priority ranking. The results of the field survey are included as Attachment 5.

² [fy23_cip_cm-proposed-final_4-4-22-web_version.pdf \(rochesternh.net\)](#)

ATTACHMENTS

Attachment 1

Dry Weather Screening Memorandum



Memorandum

Date: November, 2019

To: Peter C. Nourse, Director of City Services,
Michael Bezanson, PE, City Engineer,
Timothy Goldthwaite PE Assist City Engineer, Department of Public Works,
City of Rochester, New Hampshire

From: Daniel Bourdeau, PE, CPESC, CPSWQ Geosyntec Consultants
Bill Arcieri, VHB

CC:

Subject: Summary of Findings of 2019 Dry Weather Sampling for IDDE Purposes
City of Rochester, New Hampshire

In accordance with Section 2.3.4.7 (b) of the 2017 New Hampshire Small MS4 General Permit (MS4 Permit), VHB conducted visual dry weather outfall screening between August 14 and 21, 2019 and followed up with dry weather sampling on August 26 and 28, 2019 for the 160 stormwater outfalls identified within the MS4 urbanized area that are otherwise considered regulated outfalls in the City of Rochester. This memo describes the methods, results, and suggested next steps regarding the Illicit Discharge Detection and Elimination (IDDE) program.

Methodology

VHB began the dry weather outfall identification and prioritization process by evaluating the City's ArcGIS Online map of its storm drain network, catch basins, manholes, and outfalls. Based on this mapping, VHB ranked each of the outfalls as either high or low priority outfalls. None of the outfalls were identified as Problem outfalls.¹ VHB then added outfall attribute fields to the City mapping geodatabase including downstream receiving water quality impairments, flow status, and investigation status. Consistent with Appendix G of the MS4 Permit, pollutants of concern were identified for each outfall based on the 2016 NHDES 303(d) list of impairments and were entered into the database to alert field personnel as to which parameters need to be sampled beyond the sewer indicator parameters. Pollutants of concern consists of nitrogen for the Cochemo River watershed, total phosphorus for the Salmons Falls River and *E. coli* bacteria for all of the City water bodies. Samples were collected at any outfall that had dry weather flow following a period of dry weather in accordance with Section 4.2.3.7.b of the MS4 Permit. VHB developed a mobile data collection form using Survey123 to document field observations, measurements and outfall condition attributes. The survey form was linked to each outfall using the unique outfall identification number to collect and document data for each individual outfall.

Table 1 summarizes the sampling parameters that were measured using field testing equipment or were delivered to a laboratory for analysis. All laboratory samples were brought to Absolute

¹ Problem outfalls are known or suspected to have contributions of illicit discharges including sanitary sewer inputs.

City of Rochester
November 2019
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Resource Associates in Portsmouth, NH for analysis within eight hours of sampling to meet the bacteria holding time.

Table 1. Dry Weather Sampling Parameters and Analysis Type

Parameter type	Parameter	Field Test Kit or Lab Method
Standard Dry Weather Sampling Parameters at all Outfalls with Flow per Sec. 2.3.4.7.b.iii	Ammonia	Field (CHEMetrics K-1510)
	Chlorine	Field (Hach CN-70)
	Conductivity	Field (Extech EC500)
	Salinity	Field (Extech EC500)
	E. coli bacteria	Lab method SM93223B
	Surfactants	CHEMetrics K-9400
	Temperature & pH	Field (Extech EC500)
Pollutants of Concern for Water Quality Impairments	Total Phosphorus ¹	Lab method E365.3
	Total Nitrogen ¹	Lab method E300.3A

¹Total phosphorus and total nitrogen were sampled in outfalls that discharge to the Salmons Falls R.-Baxter Dam section, Cochecho R., Isinglass R. and Willow Brook due to listed dissolved oxygen impairments consistent with Appendix G of the MS4 Permit.

Results

VHB visited each of the 160 regulated outfalls over the course of 4 days between August 14 and 21 and identified outfalls that had dry weather flow following a period of at least 48 hours with less than 0.1-inch of rain. Based on this initial screening, 40 outfalls were initially found to have observable flow and were targeted for subsequent dry weather sampling. Dry weather sampling occurred over the course of 2 days between August 26 and 28 following a prolonged stretch of dry weather, and during this time, only 32 outfalls had observable dry weather flow.

Table 2 below and the attached figure provide a summary of results and show locations, respectively, of outfalls that had parameter levels above guidance/indicator thresholds (listed in first row of Table 2) or estimated typical background levels.

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Table 2. Summary of Results for Outfalls that had Parameter Levels Above Guidance Thresholds or Background Levels

Outfall	Location/ Address	Elevated Potential Sewer Indicator Parameters			Elevated Pollutants of Concern		Notes / Recommended Next Steps
		NH4 mg/L	Surfact mg/L	E. coli MPN/100	TP (mg/L)	NO3-N (mg/L)	
	Guidance / Indicator Thresholds	>0.5	>0.25	>414	>0.10	>1.0	
OUT 1	Behind the DPW facility	0.75	0.25	1,046	nt	nt	Discharge brown and cloudy. Warrants future investigation but new DPW facility could make this outfall obsolete
OUT 54	Off Riverlawn Avenue in north end of the City drains to Salmon Falls River	1.25	3.0	26.2	0.03	nt	orange rust color indicative of iron bacteria & low DO; warrants future investigation
OUT 59	Near Riverlawn Ave and drains to Salmon Falls River	<0.5	0.15	25.6	11.0	nt	Elevated TP but low levels for all other parameters; warrants future investigation
OUT 71	Off Old Dover Rd; near Bramber Ln - discharges to Willow Brook	<0.5	0.20	2.0	0.01	2.8	Elevated NO3-N level; warrants further investigation
OUT 87	On Lowell St at Willow Brook crossing	<0.5	0.10	>2,420 or TNTC	0.19	<1.0	V. High bacteria level. Mod. High TP level - low NO3-N
OUT 95	Off Portland Ave. to Willow Brook	< 0.5	< 0.20	29.5	0.02	1.4	Elevated NO3-N level
OUT 102	Off Western Ave - discharges to Willow Brk	<0.5	0.15	3.0	< 0.01	3.0	Elevated NO3-N level: warrants future investigation
OUT 307	Near High School off Wakefield St. and Yeagley Way	<0.5	1.0	1,733	< 0.01	1.7	High bacteria level moderate surfactant and NO3-N levels; warrants future investigation
OUT 354	Off Western Ave - discharges directly to Willow Brook	<0.5	0.20	13.4	0.04	2.4	Elevated nitrate-N level located close to Outfall 102.
OUT 359	Outfall at end of Sawyer Road connected to large storm drain system along South Main Street	<0.5	0.20	1,733	0.4	3.7	Elevated bacteria and NO3-N levels above background levels; warrants future investigation
OUT 362	Off Rte 125 (Columbus Ave. behind Aroma joes	< 0.5	< 0.20	195.6	0.07	1.4	Elevated NO3-N level

Notes: NH4 represents Ammonia; nt = not tested; TNTC = To Numerous To Count; Bold means readings are higher than suggested guidance/ sewer indicator levels or background levels

Sec. 2.3.4.7.e.(i) of the MS4 Permit describes that any of the following conditions or combination of results might indicate potential sanitary sewer inputs to a storm drain:

1. Olfactory or visual evidence of sewage;
2. Ammonia levels > 0.5 mg/L, surfactants \geq 0.25 mg/l and bacteria levels > state water quality standards
3. Ammonia levels > 0.5 mg/L, surfactants \geq 0.25 mg/l and chlorine above detectable levels

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None of the sampled outfalls had any distinct olfactory or visual evidence of sewage. Only two (2) outfalls, Outfalls 1 and 54, had elevated levels of both ammonia and surfactants above the guidance levels included in the Permit as either condition 2 or 3 listed above that may indicate a possible illicit connection. Outfall 1 also had elevated bacteria levels.

Three other outfalls, including Outfalls 87, 307 and 359 had elevated bacteria levels but low ammonia, surfactant and chlorine levels. Outfall 87 located on Lowell Street and the Willow Brook crossing had the highest *E. coli* bacteria level that was essentially too numerous to count. Outfalls 307 and 359 also had elevated total nitrogen (TN) levels as discussed further below.

Outfall 59 had an usually high total phosphorus (TP) level of 11.0 mg/L that is well above typical background levels that are generally around 0.1 mg/L or less. All other TP levels were less than 0.2 mg/L. It is unclear why this outfall had such an unusually high level at this time but warrants future investigation or at least a re-sampling as part of the future catchment investigation.

Seven (7) outfalls including Outfalls 71, 95, 102, 307, 354, 359 and 362 had elevated NO₃-N (nitrate) levels that ranged between 1.4 and 3.7 mg/l, which are higher than typical background levels of around 1.0 mg/L or less. Outfall 359 had the highest level at 3.7 mg/, and this outfall is connected to a large storm drain system that drains South Main Street that outlets at the end of Sawyer Road and discharges to Willow Brook. This outfall also had an elevated bacteria level but generally low levels for other parameters. Outfall 102, located along Western Ave. and also discharges to Willow Brook, had an unusual high level of 3.0 mg/L TN.

Outfall 601, which is not presented in Table 2, had a moderately elevated phosphorus level of 0.11 mg/L but low levels of most other parameters with the exception of conductivity. This elevated level may be in part due to the fact that the sample was collected from ponded water located below the outfall that perhaps contained suspended sediment or algae that may contain levels of phosphorus. This outfall is also likely to be a NHDOT drainage interconnection since its drainage area is mostly the Spaulding Turnpike ramp and the adjacent maintenance shed along Ten Road Rd. The outfall itself, however, appears to be outside the NHDOT road right-of-way. Another visit to this location may help confirm that the primary drainage area is from NHDOT property. Outfall 079 may also be a NHDOT interconnection and will need further review to determine jurisdiction although there were no elevated levels observed at this outfall.

Outfalls that discharge to the Salmon Falls River below the Baxter Dam were not sampled for total phosphorus or nitrogen as this stretch of river was not listed as impaired for low dissolved oxygen. Only low dissolved oxygen impairments require nutrient sampling according to Appendix G of the MS4 Permit.

Although most of the outfalls had chlorine levels that were at or slightly above the detection level of 0.05 mg/L, this parameter by itself does not appear to be a strong indicator of sewer influence and, as outlined in the MS4 Permit, chlorine levels above detectable limits are only useful in potentially identifying potential sewer inputs if both ammonia and surfactants levels are also elevated, which occurred only twice at Outfalls 1 and 54. Chlorine levels were detected as high as 0.10 mg/L in several outfalls but these outfalls had relatively low readings for all other parameters.

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Recommended Next Steps

As noted above, the outfalls that had elevated readings listed in Table 2 may warrant additional future investigations such as additional sampling or, at a minimum, be categorized as High Priority for the next phase of the IDDE process which involves catchment investigations. The catchment investigation process requires reprioritization of outfalls, perhaps additional dry weather confirmation sampling and wet weather sampling to confirm observed levels and potentially identify sources and related mitigation measures to reduce the elevated levels. Outfalls with elevated nitrate-N levels were somewhat spread out but mostly within the Willow Brook watershed. There is no obvious explanation for the observed nitrate levels being higher than typical background levels. A more detailed review of the City sewer system in this area including its age, condition, alignment and relative proximity to the storm drain system is warranted to shed some light on the potential for exfiltration in this area. Review of any Inflow/Infiltration Study done on the City sewer system would also be helpful.

Geospatial analysis of the septic system density and approximate age for the various neighborhoods or streets in this watershed may be useful. These actions align with the System Vulnerability Factors (SVFs) evaluation included in the Permit that would be used to reprioritize and re-rank outfalls for the future catchment investigations. These activities should be done in the early part of next year. It is worth noting that any future infrastructure upgrades that may alleviate or reduce the nitrate levels in this area should be tracked and documented in detail and be used as credit as part of the broader effort to reduce nitrogen loading from within the City.

The MS4 Permit requires a Catchment Investigation Plan to be developed within 18 months of the effective date or by end of December 2019. The Project team anticipates moving forward with developing this Plan with an initial draft to be completed by end of December 2019 and a final draft expected to be completed before the next sampling season.

* * * * *

Attachment 2

Outfall Wet Weather Sampling Results

Outfall Wet Weather Sampling Results

Outfall ID	Sample Date	Nitrite/Nitrate-N (mg/L)	Total Nitrogen (mg/L)	TKN (mg/L)
OUT-179	7/2/2021	<1	<1	<0.5
OUT-262	7/9/2021	<1	<1	<0.5
OUT-364	7/9/2021	<1	<1	<0.5
OUT-355	9/2/2021	<1	<1	0.6
OUT-63	9/2/2021	<1	<1	0.8
OUT-66	9/2/2021	<1	<1	<0.5
OUT-69	9/2/2021	2.8	3.7	0.9
OUT-417	9/2/2021	2	2	<0.5
OUT-147	9/2/2021	1	1.5	0.5
OUT-136	9/9/2021	<1.0	<1.0	<0.5
OUT-52	9/9/2021	<1.0	<1.0	<0.5
OUT-565	9/9/2021	<1.0	<1.0	<0.5
OUT-57	9/9/2021	<1.0	<1.0	0.6
OUT-625	9/9/2021	<1.0	<1.0	0.5
OUT-60	9/9/2021	3.2	3.2	<0.5
OUT-121	9/9/2021	2.5	2.5	<0.5
OUT-102	9/9/2021	2	2	<0.5
OUT-62	9/9/2021	1.6	1.6	<0.5
OUT-59	9/9/2021	1.4	1.4	<0.5
OUT-96	9/9/2021	1.3	1.3	<0.5
OUT-55	9/9/2021	<1.0	1.2	1.2
OUT-95	9/9/2021	1.2	1.2	<0.5
OUT-163	10/26/2021	<1.0	<1.0	0.9
OUT-21	10/26/2021	<1.0	<1.0	0.6
OUT-401	10/26/2021	<1.0	2.9	2.9
OUT-33	10/26/2021	1.4	2.3	0.9
OUT-315	10/26/2021	1.3	2.2	0.9
OUT-334	10/26/2021	<1.0	1.2	1.2
OUT-169	4/19/2022	<1.0	<0.5	<0.5
OUT-337	4/19/2022	<1.0	<0.5	<0.5
OUT-341	4/19/2022	<0.5	<0.5	<0.5
OUT-601	4/19/2022	<0.5	0.5	0.5
OUT-2	4/19/2022	<0.5	0.5	0.5
OUT-347	5/4/2022	<0.5	0.7	0.7
OUT-178	5/4/2022	<0.5	0.8	0.8
OUT-267	5/4/2022	0.6	1.3	0.8
OUT-18	5/4/2022	1	1.7	0.7
OUT-346	5/4/2022	<0.5	1	1

Attachment 3

Outfall Catchment Nitrogen Loading Results

Outfall Catchment Nitrogen Loading Results

Outfall ID	Catchment Area (acre)	Impervious Area (acre)	Nitrogen Load (pounds/year)	Nitrogen Load Per Area (pounds/acre/year)
Out345	0.4	0.35	5.24	13.10
Out198	1.37	1.29	17.83	13.02
Out358	1.12	0.99	13.47	12.02
Out348	3.23	2.74	38.19	11.82
Out346	0.52	0.44	6.10	11.72
Out341	16.03	12.68	184.38	11.50
Out11	0.39	0.35	4.43	11.36
Out1	7.65	5.76	85.66	11.20
Out24	0.56	0.43	6.13	10.95
Out209	1.53	1.27	16.68	10.90
Out43	1.69	1.43	18.32	10.84
Out208	0.14	0.12	1.50	10.71
Out365	1.21	0.95	12.82	10.59
Out217	0.9	0.78	9.44	10.49
Out364	0.51	0.40	4.87	9.55
Out23	0.25	0.19	2.35	9.40
Out514	1.23	0.85	11.39	9.26
Out70	0.67	0.51	6.08	9.07
Out41	3.28	1.95	29.27	8.92
Out42	5.62	3.69	48.35	8.60
Out14	2.27	1.29	19.51	8.60
Out100	0.15	0.10	1.27	8.49
Out20	2.58	1.45	21.81	8.45
Out18	205.24	119.26	1706.11	8.31
Out19	205.24	119.26	1706.11	8.31
Out265	205.24	119.26	1706.11	8.31
Out520	205.24	119.26	1706.11	8.31
Out52	11.47	6.37	94.70	8.26
Out262	147.96	83.53	1164.13	7.87
Out264	147.96	83.53	1164.13	7.87
Out268	147.96	83.53	1164.13	7.87
Out359	147.96	83.53	1164.13	7.87
Out93	147.96	83.53	1164.13	7.87
Out216	0.79	0.52	6.15	7.78
Out269	21.85	11.68	166.25	7.61
Out83	0.33	0.22	2.49	7.56
Out347	0.05	0.03	0.38	7.52
Out22	1.14	0.62	8.31	7.29
Out218	6.45	3.50	46.26	7.17
Out337	125.51	59.73	873.44	6.96
Out338	125.51	59.73	873.44	6.96
Out219	0.04	0.03	0.28	6.90

Outfall ID	Catchment Area (acre)	Impervious Area (acre)	Nitrogen Load (pounds/year)	Nitrogen Load Per Area (pounds/acre/year)
Out71	7.01	3.39	47.35	6.75
Out178	117.11	58.35	788.98	6.74
Out267	117.11	58.35	788.98	6.74
Out334	117.11	58.35	788.98	6.74
Out206	6.75	2.80	44.58	6.60
Out207	6.75	2.80	44.58	6.60
Out315	8.24	3.66	53.51	6.49
Out60	15.24	6.96	98.68	6.47
Out61	15.24	6.96	98.68	6.47
Out62	15.24	6.96	98.68	6.47
Out33	0.34	0.19	2.17	6.38
Out419	0.02	0.01	0.13	6.35
Out59	3.81	1.23	24.12	6.33
Out331	4.4	2.07	27.77	6.31
Out132	0.56	0.32	3.53	6.30
Out625	3.98	1.63	24.96	6.27
Out421	7.37	3.62	45.93	6.23
Out95	2.46	0.87	15.24	6.19
Out147	17.33	5.72	106.82	6.16
Out507	5.02	2.39	30.79	6.13
Out330	0.99	0.45	6.07	6.13
Out66	14.58	6.57	89.39	6.13
Out56	0.5	0.26	3.05	6.09
Out4	11.85	5.45	71.69	6.05
Out122	6.95	3.02	41.27	5.94
Out261	28.22	11.47	166.25	5.89
Out332	4.35	1.89	25.58	5.88
Out164	38.95	15.79	227.48	5.84
Out99	8.46	2.88	49.24	5.82
Out15	2.57	1.14	14.94	5.81
Out120	8.67	2.83	50.23	5.79
Out84	2.38	0.95	13.68	5.75
Out354	7.07	2.77	40.51	5.73
Out94	6.62	2.15	37.83	5.71
Out104	4.51	1.79	24.58	5.45
Out270	0.66	0.28	3.56	5.40
Out336	2.87	1.14	15.36	5.35
Out179	16.08	5.42	85.89	5.34
Out362	20.32	5.98	105.77	5.21
Out21	3.86	1.52	20.08	5.20
Out92	2.05	0.76	10.46	5.10
Out328	0.89	0.33	4.47	5.02
Out510	15.53	4.60	77.83	5.01
Out119	13.3	3.40	66.26	4.98

Outfall ID	Catchment Area (acre)	Impervious Area (acre)	Nitrogen Load (pounds/year)	Nitrogen Load Per Area (pounds/acre/year)
Out244	110.68	32.29	549.72	4.97
Out271	9.29	2.79	45.82	4.93
Out505	0.91	0.36	4.47	4.91
Out69	14.25	4.94	69.94	4.91
Out115	2.64	0.84	12.75	4.83
Out101	18.9	6.49	90.81	4.80
Out102	18.9	6.49	90.81	4.80
Out121	9.93	2.58	47.31	4.76
Out67	0.35	0.13	1.61	4.61
Out32	0.88	0.34	4.03	4.58
Out263	3.24	1.14	14.69	4.54
Out124	1.02	0.34	4.56	4.47
Out266	0.12	0.03	0.53	4.40
Out329	5.08	1.54	22.00	4.33
Out86	15.06	4.21	64.75	4.30
Out489	3.22	0.91	13.82	4.29
Out103	11.96	2.98	50.53	4.22
Out126	4.72	1.46	19.74	4.18
Out38	7.21	1.26	29.98	4.16
Out333	7.52	2.25	31.06	4.13
Out85	7.87	2.33	32.24	4.10
Out98	1.18	0.34	4.78	4.05
Out89	49.89	11.77	200.31	4.02
Out415	0.25	0.08	1.00	3.99
Out150	14.12	3.89	56.29	3.99
Out136	11.56	2.29	45.96	3.98
Out307	2.91	0.90	11.41	3.92
Out169	59.14	10.84	229.35	3.88
Out63	2.69	0.76	10.25	3.81
Out96	47.32	8.23	176.91	3.74
Out97	47.32	8.23	176.91	3.74
Out530	6.98	1.88	25.74	3.69
Out54	16.43	4.32	59.17	3.60
Out165	8.97	2.36	32.30	3.60
Out133	7.33	1.89	25.93	3.54
Out565	9.46	1.88	33.12	3.50
Out497	1.84	0.47	6.43	3.50
Out91	3.35	0.82	11.64	3.47
Out561	0.33	0.09	1.14	3.46
Out564	1.56	0.46	5.35	3.43
Out5	2.05	0.51	6.88	3.36
Out55	14.24	3.38	47.32	3.32
Out10	0.55	0.07	1.82	3.30
Out36	14.44	3.01	47.06	3.26

Outfall ID	Catchment Area (acre)	Impervious Area (acre)	Nitrogen Load (pounds/year)	Nitrogen Load Per Area (pounds/acre/year)
Out128	160.57	30.31	521.93	3.25
Out135	0.15	0.04	0.48	3.23
Out127	6.21	1.48	20.00	3.22
Out88	4.37	0.97	13.71	3.14
Out213	81.42	14.40	253.90	3.12
Out355	81.42	14.40	253.90	3.12
Out601	87.65	13.27	270.01	3.08
Out64	7.32	1.33	21.85	2.99
Out418	4.73	0.96	13.25	2.80
Oth541	148.3	17.70	413.66	2.79
Out2	0.73	0.15	1.94	2.66
Out163	28.88	4.91	72.12	2.50
Out57	138.74	13.45	330.58	2.38
Out87	52.1	7.21	123.65	2.37
Out82	68.44	7.79	158.67	2.32
Out563	3.31	0.61	7.65	2.31
Out401	25.83	2.82	59.67	2.31
Out417	7.45	1.12	16.48	2.21
Out116	13.01	1.61	27.35	2.10
Out196	21.08	2.37	43.51	2.06
Out118	49.24	4.50	97.76	1.99
Out357	44.03	3.70	81.61	1.85
Out26	5.01	0.38	6.20	1.24
Out34	1.81	0.12	2.17	1.20

Attachment 4

Nitrogen Load Removed from Existing Stormwater BMPs

Nitrogen Load Removed from Existing Stormwater BMPs

SWT ID	Nitrogen Load Entering BMP (pounds/year)	BMP Nitrogen Load Reduction (%)	BMP Nitrogen Load Reduction (pounds/year)	Drainage Area (acre)	BMP Type
SWT0003	17.36	28%	4.86	10.33	Wet Extended Detention Pond
SWT0004	199.66	28%	55.91	31.05	Wetland
SWT0008	47.46	28%	13.29	16.62	Wet Extended Detention Pond
SWT0013	20.59	28%	5.77	4.05	Wet Extended Detention Pond
SWT0020	251.52	28%	70.43	82.35	Wet Extended Detention Pond
SWT0026	77.46	28%	21.69	55.44	Wet Extended Detention Pond
SWT0027	0.07	28%	0.02	0.13	Wet Extended Detention Pond
SWT0028	71.31	28%	19.97	47.49	Wet Extended Detention Pond
SWT0029	1.44	28%	0.4	0.62	Wet Extended Detention Pond
SWT0030	5.77	96%	5.54	1.29	Infiltration Pond
SWT0031	30.58	28%	8.56	14.9	Constructed Wetland
SWT0040	572.32	9%	51.51	77.92	Vortech Unit
SWT0041	75.44	9%	6.79	29.12	Vortech Unit
SWT0043	3.77	28%	1.05	0.27	Wet Extended Detention Pond
SWT0045	11.69	28%	3.27	1.35	Wet Extended Detention Pond
SWT0046	59.63	28%	16.7	12.47	Wet Extended Detention Pond
SWT0047	39.50	28%	11.06	11.08	Wet Extended Detention Pond
SWT0048	2.08	28%	0.58	0.42	Wet Extended Detention Pond
SWT0049	7.37	28%	2.06	1.63	Wet Extended Detention Pond
SWT0053	12.00	9%	1.08	2.17	Dry Detention Pond
SWT0054	24.84	28%	6.96	3.85	Wet Extended Detention Pond
SWT0056	46.03	28%	12.89	10.39	Wet Extended Detention Pond
SWT0057	13.29	28%	3.72	2.2	Wet Extended Detention Pond
SWT0058	17.70	28%	4.96	2.52	Wet Extended Detention Pond
SWT0059	237.68	9%	21.39	45.03	Vegetated Swale
SWT0060	24.48	28%	6.85	5.88	Wet Extended Detention Pond
SWT0061	57.40	28%	16.07	11.02	Wet Extended Detention Pond
SWT0062	24.06	28%	6.74	3.98	Wet Extended Detention Pond

SWT ID	Nitrogen Load Entering BMP (pounds/year)	BMP Nitrogen Load Reduction (%)	BMP Nitrogen Load Reduction (pounds/year)	Drainage Area (acre)	BMP Type
SWT0063	86.03	28%	24.09	12.95	Wet Extended Detention Pond
SWT0064	6.58	28%	1.84	1.24	Wetland
SWT0065	4.75	9%	0.43	0.94	Dry Detention Pond
SWT0066	10.94	28%	3.06	2.11	Wet Extended Detention Pond
SWT0067	31.09	28%	8.71	5.79	Wet Extended Detention Pond
SWT0068	4.44	9%	0.4	0.56	Dry Detention Pond
SWT0069	77.22	96%	74.13	10.32	Infiltration Pond
SWT0071	279.65	28%	78.3	24.93	Wet Extended Detention Pond
SWT0080	66.38	28%	18.59	15.98	Wet Extended Detention Pond
SWT0091	43.27	28%	12.12	20.63	Wet Extended Detention Pond
SWT0092	13.52	28%	3.79	3.1	Wet Extended Detention Pond
SWT0095	72.36	28%	20.26	23.5	Constructed Wetland
SWT0097	31.31	28%	8.77	9.32	Wet Extended Detention Pond
SWT0098	75.88	28%	21.25	18.48	Wet Extended Detention Pond
SWT0108	13.46	28%	3.77	4.08	Wet Extended Detention Pond
SWT0124	2.71	28%	0.76	5.42	Pond
SWT0126	16.98	9%	1.53	4.38	Unknown
SWT0127	34.31	9%	3.09	10.16	Vegetated Swale
SWT0129	10.66	28%	2.99	2.1	Wet Extended Detention Pond
SWT0131	13.16	28%	3.69	2.8	Wet Extended Detention Pond
SWT0133	24.93	28%	6.98	6.41	Wet Extended Detention Pond
SWT0134	25.00	28%	7	8.12	Wet Extended Detention Pond
SWT0135	22.05	28%	6.17	4.87	Wet Extended Detention Pond
SWT0136	49.06	28%	13.74	9.85	Wet Extended Detention Pond
SWT0138	43.94	9%	3.95	6.98	Vortechnic Unit
SWT0139	15.51	9%	1.4	2.63	Dry Detention Pond
SWT0141	12.35	9%	1.11	8.57	Dry Detention Pond
SWT0144	236.72	57%	134.93	42.38	Gravel Wetland
SWT0145	251.19	9%	22.61	23.28	Vortechnic Unit
SWT0147	38.96	28%	10.91	8.47	Wet Extended Detention Pond

SWT ID	Nitrogen Load Entering BMP (pounds/year)	BMP Nitrogen Load Reduction (%)	BMP Nitrogen Load Reduction (pounds/year)	Drainage Area (acre)	BMP Type
SWT0148	6.07	9%	0.55	1.11	Vegetated Swale
SWT0149	97.23	9%	8.75	16.12	Vortechnic Unit
SWT0150	9.65	28%	2.7	1.62	Wet Extended Detention Pond
SWT0151	3.35	28%	0.94	0.78	Wet Extended Detention Pond
SWT0175	720.91	9%	64.88	103.72	Vortechnic Unit
SWT0180	0.96	96%	0.92	0.92	Infiltration Pond
SWT0181	0.47	96%	0.45	0.94	Infiltration Pond
SWT0182	99.07	96%	95.11	16.45	Infiltration Pond
SWT0183	1.77	96%	1.70	0.63	Infiltration Pond
SWT0184	1.16	96%	1.11	0.08	Infiltration Pond
SWT0185	0.63	96%	0.61	0.04	Infiltration Pond
SWT0186	2.48	96%	2.38	0.17	Infiltration Pond
SWT0188	14.49	96%	13.91	0.98	Infiltration Pond
SWT0197	3.94	96%	3.78	0.26	Infiltration Pond

Total Nitrogen Load Removed = 1,080 pounds/year.

Attachment 5

Retrofit Potential of City Owned Parcels

Retrofit Potential of City Owned Parcels

Address	Parcel ID	Area (acre)	Percent Impervious	Description	BMP Observations	Priority
7 PICKERING RD	0138-0053-0000	0.5	74.6%	Gonic Fire Station No. 2	Area with severe ponding; BMP location at grassed area; erosion	High
59 BROCK ST	0129-0003-0000	22.9	51.9%	Middle School	Multiple BMP sites; high priority site in back parking lot	High
0 CHARLES ST	0125-0278-0000	0.2	7.0%	Woodman Park; to be redeveloped	BMPs included in Woodman project	High
0 CONGRESS ST	0120-0357-0000	0.2	96.2%	Congress St Municipal Parking Lot; to be reconstructed with new stormwater treatment in Woodman project	BMPs included in Woodman project	High
6 BARKER CT	0121-0399-0000	1.3	90.1%	Union Street Municipal Parking Lot; to be reconstructed with improved stormwater treatment	BMPs included in project	High
13 SCHOOL ST	0120-0137-0000	1.3	44.8%	School St School	Restore existing BMPs; see Willow Brook study; BMP opportunity at catch basin near dumpster	Medium
23 GRANITE ST	0124-0014-0000	4.9	37.4%	William Allen School	Move dumpster to install BMP; existing riprap swale	Medium
130 WAKEFIELD ST	0113-0017-0000	37.7	51.5%	Spaulding High School	Multiple potential BMP sites	Medium
182 WAKEFIELD ST	0113-0018-0000	0.4	52.6%	Portion of Community Center parking lot, owned by the City; adjacent to Wakefield St project	Ponding; opportunity for BMP; existing BMP needs maintenance	Medium
151 PICKERING RD	0141-0037-0000	2.2	27.1%	City sewer headworks facility	Opportunity for water quality swale; existing riprap swale	Medium
217 WASHINGTON ST	0246-0005-0000	4.4	27.9%	City water booster pump station/DPW storage yard	Yard needs stabilization; BMP opportunities near catch basins (or pave lot) and culvert at entrance	Medium

Address	Parcel ID	Area (acre)	Percent Impervious	Description	BMP Observations	Priority
14 LIBERTY ST	0120-0344-0000	0.3	20.5%	House razed; municipal parking lot to be constructed	BMPs to be considered during reconstruction	Low
64 STRAFFORD RD	0235-0024-0000	61.3	3.0%	Water Treatment Plant	Low/dead spot; low priority BMP; site recently paved	Low
31 WAKEFIELD ST	0120-0408-0000	3.3	89.8%	City Hall	Parking lot - no BMP opportunities; opportunity for demonstration BMP at front of Annex	Low
65 SO MAIN ST	0120-0342-0000	1.1	77.2%	Rochester Public Library - City-owned facility	Redevelop and retrofit islands in lot	Low
11 BARKER CT	0121-0398-0000	0.1	100.0%	House razed; municipal parking lot to be expanded/reconstructed	BMPs to be considered during reconstruction	Low
27 MAPLE ST	0121-0191-0000	1.8	31.0%	Maple St School	No CBs but could use vegetation	Low
24 GREEN ST	0103-0143-0000	2.7	52.0%	Nancy Loud School	Overland flow, no CBs; some erosion/flow to adjacent property - BMP opportunity	Low
10 RAILROAD AVE	0139-0034-0000	20.7	12.1%	Gonic School	Direct flow to stream; BMP from gate; recently paved; 10' x 6' BMP	Low
65 CHAMBERLAIN ST	0119-0113-0000	27.2	10.1%	Chamberlain St School	Low priority at edge of pavement; ponding	Low
45 LOWELL ST	0128-0197-0000	5.4	38.5%	Rochester Ice Arena	BMP to stabilize area	Low
0 WAKEFIELD ST	0116-0182-0001	0.0	0.0%	Purchased parcel for incorporation into ROW at corner of Wakefield/Glenwood	BMPs to be considered during reconstruction	Low
0 WAKEFIELD ST	0116-0175-0001	0.1	4.3%	Open space owned by the City in front of HS; adjacent to Wakefield St project	BMPs to be considered during reconstruction	Low
1 WALNUT ST	0121-0306-0000	0.3	4.5%	building razed; to be incorporated into ROW for Strafford Square Roundabout	BMPs to be considered during reconstruction	Low

Address	Parcel ID	Area (acre)	Percent Impervious	Description	BMP Observations	Priority
2-4 WALNUT ST	0121-0286-0000	0.2	36.4%	Building razed; to be incorporated into ROW for Strafford Square Roundabout	BMPs to be considered during reconstruction	Low
64 GONIC RD	0138-0054-0000	0.2	35.9%	Open space owned by the City	Potential treatment prior to flow entering catch basin	Low
16 WALLACE ST	0120-0308-0000	0.2	91.2%	Brownfields site; remediation work completed; potential for redevelopment	BMPs to be considered during reconstruction	Low
106 NO MAIN ST	0121-0018-0000	0.6	78.2%	Municipal parking lot	Could install tree filter near catch basin; use parking space catch basin; install more formal BMP near bench with a riser	Low
24 YEAGLEY WAY	0116-0174-0000	1.8	52.8%	City Pool	No BMP opportunities	N/A
2 ST JAMES TER	0113-0010-0000	0.6	21.4%	Rental of house managed by RHA; property reserved for potential future bridge location	No BMP opportunities	N/A
45 OLD DOVER RD	0136-0077-0000	5.4	78.7%	Former DPW facility; to be sold	Private redevelopment	N/A
58 HANSON ST	0120-0398-0000	0.2	71.5%	Rochester Historical Society leases the building from the City; City owns property	No BMP opportunities	N/A
55 NO MAIN ST	0121-0372-0000	0.1	100.0%	Building is being redeveloped privately; no longer a City-owned parcel	Private redevelopment	N/A
38 HANSON ST	0120-0395-0000	0.3	96.6%	Building has been razed; property sale to private developer in process	Private redevelopment	N/A
773 PORTLAND ST	0108-0052-0000	30.1	12.9%	East Rochester School	Existing BMPs on site; no additional BMP opportunities	N/A
0 STILLWATER CIR	0261-0112-0000	4.6	0.1%	Open space owned by the City; park-like amenities have been	No BMP opportunities	N/A

Address	Parcel ID	Area (acre)	Percent Impervious	Description	BMP Observations	Priority
				envisioned for the residents of Stillwater		
4-6 LAFAYETTE ST	0121-0052-0000	0.1	5.3%	Neighborhood playground owned by the City	No BMP opportunities	N/A
0 STILLWATER CIR	0261-0111-0000	42.8	0.0%	Open space owned by the City around the Stillwater neighborhood	No BMP opportunities	N/A
8 BARKER CT	0121-0400-0000	0.0	100.0%	Sold to developer for redevelopment of 45-55 North Main Street	Private redevelopment	N/A
0 WAKEFIELD ST	0116-0175-0000	1.8	1.4%	Open space owned by the City in front of HS; adjacent to Wakefield St project	No BMP opportunities	N/A
235 SALMON FALLS RD	0211-0003-0000	0.1	40.6%	City sewer pump station	No BMP opportunities	N/A
121 WASHINGTON ST	0123-0086-0001	0.2	12.6%	City sewer pump station	No BMP opportunities	N/A
5 FIRST ST	0120-0177-0001	0.2	15.5%	City sewer pump station	No BMP opportunities	N/A
201-A SO MAIN ST	0126-0097-0000	0.1	64.9%	City water booster pump station	No BMP opportunities	N/A
20 THOMAS ST	0221-0129-0000	0.2	33.3%	City sewer pump station	No BMP opportunities	N/A
742 COLUMBUS AVE	0131-0004-0000	0.3	21.9%	City sewer pump station	No BMP opportunities	N/A
24 RIVER ST	0121-0019-0000	0.3	31.3%	City park, named Duval Park, with stormwater treatment units	Existing stormwater treatment units; no additional BMP opportunities	N/A
25 FARMINGTON RD	0216-0028-0001	0.1	80.8%	City sewer pump station	No BMP opportunities	N/A
8 AMAROSA DR	0205-0001-0000	1.1	7.9%	To be redeveloped for an intersection improvement project	Private redevelopment	N/A

Address	Parcel ID	Area (acre)	Percent Impervious	Description	BMP Observations	Priority
				in cooperation with Sig Sauer (also Map/Lot 210/033)		
424 COLUMBUS AVE	0125-0003-0000	0.2	38.7%	Open space owned by the City; former railroad property transferred to the City	No retrofit opportunities; BMPs to be considered during future reconstruction projects	N/A
0 CONGRESS ST	0121-0009-0000	0.4	24.1%	To be redeveloped to a City street named Water Street	No retrofit opportunities; BMPs to be considered during future reconstruction projects	N/A
2 WAKEFIELD ST	0120-0393-0000	0.2	51.0%	City park; contains statue of Parson Main	No BMP opportunities	N/A
0 CONGRESS ST	0120-0358-0000	0.2	63.2%	Congress St Municipal Parking Lot	No retrofit opportunities; BMPs to be considered during future reconstruction projects	N/A
9-11 CONGRESS ST	0120-0359-0000	0.3	53.4%	Congress St Municipal Parking Lot	No retrofit opportunities; BMPs to be considered during future reconstruction projects	N/A
141 COLUMBUS AVE	0120-0400-0000	0.2	98.9%	Municipal parking lot; to be sold to developer of 38 Hanson Street	Private redevelopment	N/A
13 FRONT ST	0102-0019-0000	0.5	40.2%	City sewer pump station	No BMP opportunities	N/A
588 COLUMBUS AVE	0125-0152-0000	1.9	22.3%	Open space owned by the City; former railroad property transferred to the City	No retrofit opportunities; BMPs to be considered during future reconstruction projects	N/A
139 SO MAIN ST	0125-0124-0000	4.2	11.2%	Municipal park named The Rochester Common	No BMP opportunities	N/A
536 COLUMBUS AVE	0125-0151-0000	1.1	49.5%	Municipal parking lot; former railroad property transferred to the City	No BMP opportunities	N/A
43 OLD DOVER RD	0132-0036-0000	2.0	33.3%	Portion of former DPW facility site; to be sold	Private redevelopment	N/A
10 WALLACE ST	0120-0306-0000	0.7	95.1%	Brownfields site; remediation work completed; potential for redevelopment	No retrofit opportunities; BMPs to be considered during future reconstruction projects	N/A

Address	Parcel ID	Area (acre)	Percent Impervious	Description	BMP Observations	Priority
0 PICKERING RD	0141-0027-0000	18.3	4.8%	former Kane Gonic Brickyard; owned by the City, but in the process of being sold for redevelopment (now #150 Pickering)	Private redevelopment	N/A

ATTACHMENT 9
PLANNED AND POTENTIAL BEST MANAGEMENT
PRACTICES (BMPS)

Address	Parcel ID	Area (acre)	Percent Impervious	Area of Impervious (acre)	Property Description	Retrofit/Redevelopment Potential	Priority	Planned Retrofit/ Redevelopment Date	Estimated Cost	Feasibility of Retrofit/ Redevelopment
1 WALNUT ST	0121-0306-0000	0.3	4.50%	0.01	building razed; to be incorporated into ROW for Strafford Square Roundabout	Stormwater improvements included as part of the Strafford Square roundabout project	Low	FY24	\$50,000	High
2-4 WALNUT ST	0121-0286-0000	0.2	36.40%	0.07	Building razed; to be incorporated into ROW for Strafford Square Roundabout	Stormwater improvements included as part of the Strafford Square roundabout project	Low	FY24	\$50,000	High
WATER ST				0.00	Water Street Development - series of right-of-ways paralleling North Main Street	City creating redevelopment opportunity through purchase of parcels which will include stormwater improvements	High	FY24 - FY25	\$500k - \$1M	High
0 CONGRESS ST	0121-0009-0000	0.4	24.10%	0.10	To be redeveloped to a City street named Water Street	City creating redevelopment opportunity through purchase of parcels which will include stormwater improvements	Low	FY24 - FY25	\$500k - \$1M	High
14 LIBERTY ST	0120-0344-0000	0.3	20.50%	0.06	House razed; municipal parking lot to be constructed	Stormwater improvements included as part of the Woodman project	Low	FY24 - FY25	\$25,000	High
0 CHARLES ST	0125-0278-0000	0.2	7.00%	0.01	Woodman Park; to be redeveloped	Stormwater improvements included as part of the Woodman project	High	FY24 - FY25	\$25,000	High
0 CONGRESS ST	0120-0357-0000	0.2	96.20%	0.19	Congress St Municipal Parking Lot	Stormwater improvements included as part of the Woodman project	High	FY24 - FY25	\$25,000	High
23 GRANITE ST	0124-0014-0000	4.9	37.40%	1.83	William Allen School	Stormwater improvements included as part of the Woodman project	Medium	FY24 - FY25	\$45,000	High
6 BARKER CT	0121-0399-0000	1.3	90.10%	1.17	Union Street Municipal Parking Lot	Stormwater improvements included in redevelopment of the Union Street municipal lot	High	FY24 - FY26	\$1M+	High
11 BARKER CT	0121-0398-0000	0.1	100.00%	0.10	House razed; municipal parking lot to be expanded/reconstructed	Stormwater improvements included in redevelopment of the Union Street municipal lot	High	FY24 - FY26	\$1M+	High
8 AMAROSA DR	0205-0001-0000	1.1	7.90%	0.09	To be redeveloped for an intersection improvement project in cooperation with Sig Sauer (also Map/Lot 210/033)	Stormwater treatment to be considered during redevelopment/retrofit	Low	FY25	TBD	High
7 PICKERING RD	0138-0053-0000	0.5	74.60%	0.37	Gonic Fire Station No. 2	Area with severe ponding; potential stormwater improvement location in grassed area; erosion observed	Medium	FY26 - FY28	\$500k - \$1M	High
182 WAKEFIELD ST	0113-0018-0000	0.4	52.60%	0.21	Portion of Community Center parking lot, owned by the City; adjacent to Wakefield St project	Ponding; opportunity for BMP; existing BMP needs maintenance	Medium	FY26 - FY28	<\$500k	High
151 PICKERING RD	0141-0037-0000	2.2	27.10%	0.60	City sewer headworks facility	Opportunity for water quality swale; existing riprap swale	Medium	FY26 - FY28	<\$500k	High
217 WASHINGTON ST	0246-0005-0000	4.4	27.90%	1.23	City water booster pump station/DPW storage yard	Yard needs stabilization; BMP opportunities near catch basins (or pave lot) and culvert at entrance	Medium	FY26 - FY28	<\$500k	High
59 BROCK ST	0129-0003-0000	22.9	51.90%	11.89	Middle School	Multiple stormwater improvement sites; high priority site in back parking lot	Medium			High
0 WAKEFIELD ST	0116-0182-0001	0	0.00%	0.00	Purchased parcel for incorporation into ROW at corner of Wakefield/Glenwood	Stormwater treatment to be considered during redevelopment/retrofit	Low			High
106 NO MAIN ST	0121-0018-0000	0.6	78.20%	0.47	Municipal parking lot	Could install tree filter near catch basin; use parking space catch basin; install more formal BMP near bench with a riser	Low			High
0 CONGRESS ST	0120-0358-0000	0.2	63.20%	0.13	Congress St Municipal Parking Lot	Stormwater treatment to be considered during redevelopment/retrofit	Low			High
9-11 CONGRESS ST	0120-0359-0000	0.3	53.40%	0.16	Congress St Municipal Parking Lot	Stormwater treatment to be considered during redevelopment/retrofit	Low			High
130 WAKEFIELD ST	0113-0017-0000	37.7	51.50%	19.42	Spaulding High School	Multiple potential BMP sites	Medium			Medium
31 WAKEFIELD ST	0120-0408-0000	3.3	89.80%	2.96	City Hall	Parking lot - no BMP opportunities; opportunity for demonstration BMP at front of Annex	Low			Medium

Address	Parcel ID	Area (acre)	Percent Impervious	Area of Impervious (acre)	Property Description	Retrofit/Redevelopment Potential	Priority	Planned Retrofit/ Redevelopment Date	Estimated Cost	Feasibility of Retrofit/ Redevelopment
65 SO MAIN ST	0120-0342-0000	1.1	77.20%	0.85	Rochester Public Library - City-owned facility	Redevelop and retrofit islands in lot	Low			Medium
24 GREEN ST	0103-0143-0000	2.7	52.00%	1.40	Nancy Loud School	Overland flow, no CBs; some erosion/flow to adjacent property - BMP opportunity	Low			Medium
10 RAILROAD AVE	0139-0034-0000	20.7	12.10%	2.50	Gonic School	Direct flow to stream; BMP from gate; recently paved; 10' x 6' BMP	Low			Medium
65 CHAMBERLAIN ST	0119-0113-0000	27.2	10.10%	2.75	Chamberlain St School	Low priority at edge of pavement; ponding	Low			Medium
45 LOWELL ST	0128-0197-0000	5.4	38.50%	2.08	Rochester Ice Arena	BMP to stabilize area	Low			Medium
0 WAKEFIELD ST	0116-0175-0001	0.1	4.30%	0.00	Open space owned by the City in front of HS; adjacent to Wakefield St project	Stormwater treatment to be considered during redevelopment/retrofit	Low			Medium
16 WALLACE ST	0120-0308-0000	0.2	91.20%	0.18	Brownfields site; remediation work completed; potential for redevelopment	Stormwater treatment to be considered during redevelopment/retrofit	Low			Medium
10 WALLACE ST	0120-0306-0000	0.7	95.10%	0.67	Brownfields site; remediation work completed; potential for redevelopment	Stormwater treatment to be considered during redevelopment/retrofit	Low			Medium
13 SCHOOL ST	0120-0137-0000	1.3	44.80%	0.58	School St School	Restore existing BMPs; see Willow Brook study; BMP opportunity at catch basin near dumpster	Medium			Low
64 STRAFFORD RD	0235-0024-0000	61.3	3.00%	1.84	Water Treatment Plant	Low/dead spot; low priority BMP; site recently paved	Low			Low
27 MAPLE ST	0121-0191-0000	1.8	31.00%	0.56	Maple St School	No catch basins on-site but could use vegetation	Low			Low
64 GONIC RD	0138-0054-0000	0.2	35.90%	0.07	Open space owned by the City	Potential treatment prior to flow entering catch basin	Low			Low
588 COLUMBUS AVE	0125-0152-0000	1.9	22.30%	0.42	Open space owned by the City; former railroad property transferred to the City	Stormwater treatment to be considered during redevelopment/retrofit	Low			Low
424 COLUMBUS AVE	0125-0003-0000	0.2	38.70%	0.08	Open space owned by the City; former railroad property transferred to the City	Stormwater treatment to be considered during redevelopment/retrofit	Low			Low
45 OLD DOVER RD	0136-0077-0000	5.4	78.70%	4.25	Former DPW facility; to be sold	Parcel being sold by City	-	Will be part of future private redevelopment cycle		
55 NO MAIN ST	0121-0372-0000	0.1	100.00%	0.10	Building is being redeveloped privately; no longer a City-owned parcel	Parcel being sold by City	-	Will be part of future private redevelopment cycle		
38 HANSON ST	0120-0395-0000	0.3	96.60%	0.29	Building has been razed; property sale to private developer in process	Parcel being sold by City	-	Will be part of future private redevelopment cycle		
8 BARKER CT	0121-0400-0000	0	100.00%	0.00	Sold to developer for redevelopment of 45-55 North Main Street	Parcel being sold by City	-	Will be part of future private redevelopment cycle		
141 COLUMBUS AVE	0120-0400-0000	0.2	98.90%	0.20	Municipal parking lot; to be sold to developer of 38 Hanson Street	Parcel being sold by City	-	Will be part of future private redevelopment cycle		

Address	Parcel ID	Area (acre)	Percent Impervious	Area of Impervious (acre)	Property Description	Retrofit/Redevelopment Potential	Priority	Planned Retrofit/ Redevelopment Date	Estimated Cost	Feasibility of Retrofit/ Redevelopment
43 OLD DOVER RD	0132-0036-0000	2	33.30%	0.67	Portion of former DPW facility site; to be sold	Parcel being sold by City	-	Will be part of future private redevelopment cycle		
0 PICKERING RD	0141-0027-0000	18.3	4.80%	0.88	Former Kane Gonic Brickyard; owned by the City, but in the process of being sold for redevelopment (now #150 Pickering)	Parcel being sold by City	-	Will be part of future private redevelopment cycle		
24 YEAGLEY WAY	0116-0174-0000	1.8	52.80%	0.95	City Pool	No BMP opportunities - limited space	-			
2 ST JAMES TER	0113-0010-0000	0.6	21.40%	0.13	Rental of house managed by RHA; property reserved for potential future bridge location	No BMP opportunities - limited space	-			
58 HANSON ST	0120-0398-0000	0.2	71.50%	0.14	Rochester Historical Society leases the building from the City; City owns property	No BMP opportunities - limited space	-			
0 STILLWATER CIR	0261-0112-0000	4.6	0.10%	0.00	Open space owned by the City; park-like amenities have been envisioned for the residents of Stillwater	No BMP opportunities - limited space	-			
4-6 LAFAYETTE ST	0121-0052-0000	0.1	5.30%	0.01	Neighborhood playground owned by the City	No BMP opportunities - limited space	-			
0 STILLWATER CIR	0261-0111-0000	42.8	0.00%	0.00	Open space owned by the City around the Stillwater neighborhood	No BMP opportunities - limited space	-			
0 WAKEFIELD ST	0116-0175-0000	1.8	1.40%	0.03	Open space owned by the City in front of HS; adjacent to Wakefield St project	No BMP opportunities - limited space	-			
235 SALMON FALLS RD	0211-0003-0000	0.1	40.60%	0.04	City sewer pump station	No BMP opportunities - limited space	-			
121 WASHINGTON ST	0123-0086-0001	0.2	12.60%	0.03	City sewer pump station	No BMP opportunities - limited space	-			
5 FIRST ST	0120-0177-0001	0.2	15.50%	0.03	City sewer pump station	No BMP opportunities - limited space	-			
201-A SO MAIN ST	0126-0097-0000	0.1	64.90%	0.06	City water booster pump station	No BMP opportunities - limited space	-			
20 THOMAS ST	0221-0129-0000	0.2	33.30%	0.07	City sewer pump station	No BMP opportunities - limited space	-			
742 COLUMBUS AVE	0131-0004-0000	0.3	21.90%	0.07	City sewer pump station	No BMP opportunities - limited space	-			
25 FARMINGTON RD	0216-0028-0001	0.1	80.80%	0.08	City sewer pump station	No BMP opportunities - limited space	-			
2 WAKEFIELD ST	0120-0393-0000	0.2	51.00%	0.10	City park; contains statue of Parson Main	No BMP opportunities - limited space	-			
13 FRONT ST	0102-0019-0000	0.5	40.20%	0.20	City sewer pump station	No BMP opportunities - limited space	-			
139 SO MAIN ST	0125-0124-0000	4.2	11.20%	0.47	Municipal park named The Rochester Common	No BMP opportunities - limited space	-			
536 COLUMBUS AVE	0125-0151-0000	1.1	49.50%	0.54	Municipal parking lot; former railroad property transferred to the City	No BMP opportunities - limited space	-			
773 PORTLAND ST	0108-0052-0000	30.1	12.90%	3.88	East Rochester School	Existing stormwater treatment units; no additional BMP opportunities	Complete			

Address	Parcel ID	Area (acre)	Percent Impervious	Area of Impervious (acre)	Property Description	Retrofit/Redevelopment Potential	Priority	Planned Retrofit/ Redevelopment Date	Estimated Cost	Feasibility of Retrofit/ Redevelopment
24 RIVER ST	0121-0019-0000	0.3	31.30%	0.09	City park, named Duval Park, with stormwater treatment units	Existing stormwater treatment units; no additional BMP opportunities	Complete			