



CITY OF GROTON

2022 ANNUAL REPORT

[January 1, 2022 – December 31, 2022]

General Permit for the Discharge of Stormwater from Small Municipal Separate Stormwater Sewer Systems (MS4 General Permit)

Permit Number GSM-000070

Executive Summary

This document presents the Stormwater Management Plan (SWMP) Annual Report for the City of Groton. The SWMP Annual Report was developed to provide a summary of the City's progress towards implementing the best management practices (BMPs) for the six Minimum Control Measures outlined in the SWMP to meet the requirements of the Connecticut Department of Energy & Environmental Protection (DEEP) General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4 General Permit) to the maximum extent practicable from January 1, 2022 to December 31, 2022.

The Annual Report includes a written discussion of the status of compliance with the MS4 General Permit, all monitoring data collected and analyzed, and all other information collected and analyzed, and follows the UCONN CLEAR MS4 Annual Report template.

The Draft Annual Report was available for public review during regular business hours at the Public Works Department offices and on-line at <http://cityofgroton.com/government-services/departments/public-works/engineering/phase-ii-stormwater-permitting-plan/>

A notice that the Draft Annual Report would be available was publicly posted 15 days earlier on the City of Groton Website and Facebook page.

2022 Annual Report
MS4 General Permit
City of Groton
Permit Number GSM-000070
[January 1, 2022 – December 31, 2022]

MS4 Contact: Heidi Comeau, Public Works Services Coordinator, 860-446-4164, comeauh@cityofgroton-ct.gov

This report documents City of Groton’s efforts to comply with the conditions of the MS4 General Permit to the maximum extent practicable (MEP) from January 1, 2022 to December 31, 2022.

Part I: Summary of Minimum Control Measure Activities

1. Public Education and Outreach (Section 6 (a)(1))

1.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable Goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
1-1 Implement public education and outreach	Ongoing	Within Groton there is a continuing program of public education and outreach.	Update Stormwater webpage annually	DPW	7/1/18	Ongoing	See Section 1.3 below for highlights of the 2022 public education and outreach program
1-1b Periodically post Stormwater management issues on social media	Ongoing	Posted the following to Facebook: Notice of review of annual report, advertised water quality and treatment display for Groton City Day	Post educational information on social media at least three times annually	DPW	7/1/18	Ongoing	Utilized City Facebook, website and electronic City Newsletter throughout the year to educate residents with respect to the impact of leaves, grass clippings, dog waste, etc. on stormwater systems.
1-1c Stormwater information provided on local cable access	Ongoing	GMTV aired BMP educational slides; New municipal TV Show	Program on local cable access channel aired once annually	DPW	7/1/18	Ongoing	BMP slides prepared by Baker Cove Watershed Committee aired on Groton Municipal Television (GMTV); Clean Water Ways (developed by Town of Groton in partnership with Save the Sound airs on GMTV. The

							intent of this component is to education residents and businesses on ways to support stormwater management.
1-1d Educate dog owners about picking up dog waste	Implemented	The Long Island Sound Study (LISS) brochure entitled "Step by Step, A citizen's guide to curbing polluted runoff" is distributed with dog license in June	Pet waste fact sheets distributed to licensed dog owners with annual dog license	DPW	7/1/18	7/1/18	Dog licenses for City residents are obtained from the Town of Groton's Clerks Office who distributes the brochure. .
1-2 Address education/outreach for pollutants of concern	Completed	Utilize bi-weekly City electronic newsletter to engage and educate residents in stormwater vernacular and good housekeeping practices	One post to social media addressing Stormwater Pollutants of Concern	DPW	7/1/18	Ongoing	Created flyers, posted educational materials in City lobby, website, Facebook and post public service announcements to the City electronic newsletter.

1.2 Describe any Public Education and Outreach activities planned for the next year, if applicable.

The City will continue to expand its Public Education and Outreach efforts to give the community more access to stormwater management information online. We will continue to utilize the City government bi-weekly electronic newsletter to City residents in an effort to engage the community and provide timely updates on projects and initiatives. DPW staff continues to have a marked presence on the Baker Cove Watershed Committee (BacWac). The Eastern Connecticut Conservation District (ECCD), with the aid of a Long Island Sound Futures Fund Grant, was able to install 2 rain gardens and a riparian buffer within the City of Groton with a focus on the use of native plants to foster a natural habitat for our pollinator species. ECCD conducted a workshop prior to the installation of the riparian buffer to educate the local community on the importance of rain gardens, riparian buffers and the growth of pollinators to our area. DPW staff will continue to participate in events with a focus on watershed education to reduce pollutants, specifically bacteria. DPW has scheduled another rain barrel sale in Spring 2023 as a way to engage and educate stakeholders within the watershed in reducing run-off and subsequently pollutants. DPW staff will continue to foster relationships with partner agencies to increase exposure and interest in stormwater management.

1.3 Details of activities implemented to educate the community on stormwater

Program Element/Activity	Audience (and Distribution)	Topics covered	Pollutant of Concern addressed	Responsible dept. or partner org.
Rain barrel sale/initiative	Specifically Groton residents, however there was a statewide reach	Runoff reduction	Bacteria, nitrogen, phosphorous	City of Groton DPW has scheduled a Rain Barrel sale in Spring 2023 with a focus on education to those within the City of Groton and the Baker Cove Watershed.

Clean Water Ways – municipal television program	Groton residents	Clean water	Bacteria, nitrogen, phosphorous	Town of Groton in partnership with Save the Sound.
National Public Works week	City residents (brochures, displays, videos and social media posts)	Grass clippings, leaves, vehicle washing, proper containment of sanitation	Nitrogen, bacteria	City of Groton DPW
City bi-weekly electronic newsletter	City residents	IDDE, watershed, stormwater pollution, best management practices	Fecal coliform/bacteria, nitrogen	City of Groton DPW
Fall Leaf Collection and Christmas Tree Collection	Residents (seasonal brochure)	Leaf management, collection schedule	Nitrogen	City of Groton DPW
Recycling/stormwater pollution education	Residents (seasonal brochure)	Stormwater pollution/Best Practices and Recycling	Surfactants, Chemical Oxygen Demand	City of Groton DPW
Baker Cove Watershed map	City/Town residents and visitors	Non-point source pollution, Good House Keeping Practices - BMP	Fecal coliform/bacteria	City of Groton DPW with Baker Cove Watershed Committee
City Day	City residents and visitors	Non-point source pollution, Good House Keeping Practices - BMP	Bacteria, nitrogen, phosphorous, surfactants	City of Groton DPW
Educational discussions/presentations at Mayor and Council meetings	Residents (accessible on GMTV)	Overview/purpose of MS4 permit and its requirements	Nitrogen, phosphorous, bacteria, surfactants	City of Groton DPW

2. Public Involvement/Participation (Section 6(a)(2))

2.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable Goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
2-1 Comply with public notice requirements for the Stormwater Management Plan	Completed	The City complied with the public notice requirements and submitted the SMP on Schedule	All required notices posted by deadline	DPW	4/3/17	3/31/2017	
2-1a Comply with public notice requirements for Annual Reports	Ongoing	Posted a notice that the draft annual report would be available for review	All required notices posted by deadline	DPW/Heidi Comeau	1/31/18	Ongoing	

2-2: Stormwater Committee meetings	On-going	Formal meeting, several coordination meetings amongst DPW, Planning and P&R	One meeting held annually	DPW/Heidi Comeau	6/30/19	Ongoing	Staff has participated in many informal meetings throughout the year to ensure continued communication.
2-3 Sponsor community participation event	Ongoing	See section 1.3 above	One event held annually	DPW	6/30/19	Ongoing	City staff continue to sponsor city-wide cleanup days. Rain garden and riparian buffer installations were advertised through social media and the public was invited to participate.

2.2 Describe any Public Involvement/Participation activities planned for the next year, if applicable.

The City will continue to sponsor city-wide clean up days as a way to engage our community. In an effort to increase public involvement/participation we have begun partnering with local businesses to provide volunteers for future green infrastructure projects. In addition to the formal committee meetings, we hold in-formal MS4 meetings to discuss and inform all applicable parties of the DPW's focus to adhere to and meet the requirements of the Permit and to garner support from our internal partners. Installation of the rain gardens and riparian buffers were advertised on social media in an effort to garner more public support and education on the benefits of these types of green infrastructure installations. City DPW has representation on the City Community Resiliency Planning Committee and has conducted in-person and virtual educational and informational workshops with our residents and external stakeholders with the intent to continue this practice.

2.3 Public Involvement/Participation reporting metrics

Metrics	Implemented	Date	Posted
Availability of the Stormwater Management Plan announced to public	Yes	3/31/2017/ongoing	http://cityofgroton.com/government-services/departments/public-works/engineering
Availability of Annual Report announced to public	Yes	1/31/2021 / ongoing	http://cityofgroton.com/government-services/departments/public-works/engineering/phase-ii-stormwater-permitting-plan/
Sponsor Community Participation event	Yes	4/24/2021 / ongoing	

3. Illicit Discharge Detection and Elimination (Section 6(a)(3) and Appendix B)

3.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable Goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
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3-1 Develop written IDDE program	Completed	Review and assess written IDDE plan	Written IDDE Program developed	DPW/Heidi Comeau	7/1/18	7/1/19	Written IDDE plan was developed. The City will continue to use this document as a tool in its procedures and update as necessary.
3-2 Develop list and maps of all MS4 stormwater outfalls in priority areas	Completed	Outfall mapping was completed under the 2004 MS4 Program, DPW is determining what additional details need to be added	Outfall and interconnections inventory and map completed by deadline	DPW/Heidi Comeau	7/1/19	7/1/19	City's outfall mapping was completed with the assistance of the SECCOG. All City outfalls have been identified and assigned attributes.
3-3 Implement citizen reporting program	Completed	Citizen reporting program has been in place since 2015	Formal written program developed	DPW/Heidi Comeau	7/1/17	7/1/19	Reported illicit discharges reported below.
3-4 Establish legal authority to prohibit illicit discharges	Completed	Ordinance to establish legal authority remains in place.	Ordinance reviewed and revised if necessary	DPW/Heidi Comeau	7/1/18	7/1/19	Ordinance prohibiting illicit discharges established under the 2004 MS4 Program. Ordinance will be reviewed annually to determine if additions or changes are required.
3-5 Develop record keeping system for IDDE tracking	Complete	Record keeping system has been in place since 2015	IDDE tracking spreadsheet	DPW/Heidi Comeau	7/1/17	Before 7/1/15	See list below
3-6 Address IDDE in areas with pollutants of concern	Completed/ongoing	None	Areas with failing septic systems identified by the deadline; % of failing systems addressed annually	LLHD	Not specified	Ongoing	Very few septic systems in the City (Eastwood Section/Groton Bank); septic systems in the City are managed by the Ledge Light Health District

3.2 Describe any IDDE activities planned for the next year, if applicable.

The City will continue to monitor activities as they relate to the IDDE plan and investigate, mitigate and track all known reports of Illicit Discharge. Eastern Connecticut Conservation District will be conducting a "Septic Systems Maintenance" workshop to educate residents/homeowners on the importance of properly maintaining their septic systems as a poorly maintained system can fail and leach harmful bacteria.

3.3 List of citizen reports of suspected illicit discharges received during this reporting period. None this period

Date of Report	Location / suspected source	Response taken

3.4 Provide a record of illicit discharges occurring during the reporting period and SSOs occurring July 2012 through end of reporting period using the following table.

SSO Location ¹	Discharge Point ²	Date ³	Time Start ³	Time End ³	Estimated Volume ⁴	Description ⁵	Mitigation Completed ⁶	Mitigation Planned ⁷
Bishop Court	State DOT system-Thames River	12/27/21	Unkn own	12:54 p.m.	5-10 gallons	Sewer line blockage	Basin sanitized with chlorine tablets	
Nathan Hale Road	Discharge to Birch Plain Creek	5/3/21	Unkn own	1:15p.m.	1000 gallons	Sewer line blockage	Line cleared; overflow sanitized	Regularly scheduled inspections of manhole
Bishop Lane	State DOT system – Thames River	3/15/21	Unkn own	1:15 p.m.	10 gallons	Sewer line blockage	Basin sanitized with chlorine tables	
Mitchell Street	Birch Plain Creek – reached storm drain	9/23/20	Unkn own	11:06 a.m.	Unknown	Chlorinated pool water – resident draining pool water into roadway	Impact of drainage reported to homeowner. Homeowner put on notice.	
First Street	Unknown	8/7/20	Unkn own	Unkn own	Unverified	report of camper discharging into a basin	Investigated. No storm sewer or catch basin located on this street. Reported incident to Pollution Abatement Facility as it is possible the discharge was to the public sewer system	
Thames/Smith Street, Eastern Point Road	Thames Street	3/17/20	Unkn own	12:10 p.m.	5-10 gallons	Fuel filter failure. Lost diesel fuel.	Contained with roadway booms	
Bishop Court	Reached storm drain	4/8/20	Unkn own	7:30 a.m.	Unknown	Sewer line blockage	Line cleared 4/8/20 and cleanup completed.	
Three Acre/Eastern Point Road	Reached storm drain	2/8/20	10:00 a.m.	10:52	50 gallons	Sewer line blockage	Line cleared and sanitized with chlorine	

171 Bridge Street	Thames River	10/1/19	8:00 a.m.		Unknown	Sewer line blockage/possible cracked line (seepage)	Line cleared 10/9/19	
Nathan Hale Road	Discharge to Birch Plain Creek	3/27/19	10:00 a.m.	3:49 p.m.	1,000-5,000 gallons	Sewer line blockage	Line cleared 3/27/19	
Meridian Street Pump station	Reached through MS4. Tributary to Birch Plain Creek	11/28/18	7:48 a.m.	8:30 a.m.	Unknown	Contractor backed into tank and created hole. Pump Station bioxide tank.	Clean up completed 11/28/18	
Chapman Street/EB South Yard	Reached storm drain	2/12/18	4:38 p.m.		1-50 gallons	Blockage caused by wipes	CL2 tablet put in catch basin. 2 inches of rain night before.	
Poquonnock Road and Rainville Avenue	Raw sewage to MS4	11/29/17	2:00 p.m.	3:15 p.m.	51-500 gallons	Electrical equipment failure. Main breaker tripped.	Cleanup completed 11/29/17.	

3.5 Briefly describe the method used to track illicit discharge reports, responses to those reports, and who was responsible for tracking this information.

Citizens can notify the City of a concern by phone or on-line (most come on-line). The Public Works Department would then investigate the complaint and initiate a work order to correct any issues. Work orders are tracked electronically. DPW communicates with homeowners, businesses and other City of Groton/Groton Utilities staff to ensure complete follow up in the investigation.

3.6 Provide a summary of actions taken to address septic failures using the table below.

Location and nature of structure with failing septic systems	Actions taken to respond to and address the failures	Impacted waterbody or watershed, if known
Septic systems in the city are under the authority of the Ledge Light Health District		

3.7 IDDE reporting metrics

Metrics	
Estimated or actual number of MS4 outfalls	81

Estimated or actual number of interconnections	22 – State of CT, Pfizer, General Dynamics, Town of Groton
Outfall mapping complete	100%
Interconnection mapping complete	100%
System-wide mapping complete (detailed MS4 infrastructure)	100%
Outfall assessment and priority ranking	75%
Dry weather screening of all High and Low priority outfalls complete	87% -71 basins investigated
Catchment investigations complete	7 of 81
Estimated percentage of MS4 catchment area investigated	8.5%

3.8 Briefly describe the IDDE training for employees involved in carrying out IDDE tasks including what type of training is provided and how often is it given (minimum once per year).

City DPW staff will be trained February 2023 as staff has been investigating training that is not cost prohibitive, inclusive of Spill Prevention Control and Countermeasure and Stormwater Pollution Prevention plan training.

4. Construction Site Runoff Control (Section 6(a)(4))

4.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable Goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
4-1a Implement, upgrade (as necessary) and enforce City land use regulations	In progress	The City Planner is currently updating regulations	Existing E&S control and stormwater regulations reviewed and revised as necessary by deadline	City Planning	7/1/19	7/1/19	
4-1b: Establish interagency or inter-jurisdictional agreements	In progress	The City is in ongoing discussions with other agencies to establish MOUs to control the contribution of pollutants between the City's MS4 and MS4s operated by others.	Interagency or inter-jurisdictional agreements established by deadline	DPW	7/1/19	7/1/19	Potentially interconnected MS4 that have been identified include the Town of Groton and CTDOT.

4-2 Develop/Implement plan for interdepartmental coordination in site plan review and approval	Completed/ongoing	The City has implemented interdepartmental coordination in site plan review and approval	Plan developed and implemented by deadline	DPW	7/1/17	Before 7/1/17	Detailed and on-going discussions with Planning and B&Z staff to ensure DPW has notification and sign-off on site plans
4-3 Review site plans for stormwater quality concerns	Completed/ongoing	Site plans are reviewed for stormwater quality concerns	100% of site plans received are reviewed prior to approval for E&S control	DPW	7/1/17	Before 7/1/17	Detailed and on-going discussions with Planning and B&Z staff to ensure DPW has notification and sign-off on site plans
4-4 Conduct site inspections	Completed	All sites are inspected	100% of site inspections conducted for all sites constructed within reporting period, and percent of resolutions achieved after discovery of deficiency	DPW	7/1/17	On-going	Formal inspection form has been developed for tracking purposes.
4-5 Implement procedure to allow public comment on site development	Completed	Currently any project requiring approval by a land use agency or commission is presented at a public meeting.	Public meetings held by Planning, Zoning and Inland Wetlands Agency for 100% of eligible projects. 100% of projects posted on City website when not presented at a meeting	City Planning/Building and Zoning	7/1/17	Before 7/1/17	
4-6 Implement procedure to notify developers about DEEP construction stormwater permit	Completed	The City notifies Contractors and developers that they must submit a registration Stormwater Construction General Permit when the City holds a preconstruction meeting or reviews an application	Flyers provided in 100% of preconstruction meetings and land use application reviews	City Planning/Building and Zoning	7/1/17	Before 7/1/17	

5. Post-construction Stormwater Management (Section 6(a)(5))

5.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable Goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
5-1 Establish and/or update legal authority and guidelines regarding LID and runoff reduction	Ongoing		1) Legal authority established for LID and runoff reduction practices; 2) Identification and, where appropriate, reduction or elimination of existing local regulatory barriers to implementing LID and runoff practices; and 3) Consideration of the watershed protection elements to manage the impacts of stormwater on receiving waters implemented	City Planning	7/1/21	7/1/21	City Planner is reviewing and updating Zoning Regulations to require stricter guidelines.
5-2 Enforce LID/runoff reduction requirements	Ongoing		Percent of <i>Water Quality Volume</i> retained	City Planning	7/1/19	7/1/20	Reports are being provided with submitted applications by contractors and developers providing required WQV information
5-3 Identify retention and detention ponds in priority area	Completed	2 ponds have been identified in the City	ID retention and detention ponds	DPW	7/1/19		Ponds were included in system wide mapping project
5-3 Implement long-term maintenance plan for stormwater basins and	Completed/ongoing	City actively researched and identified maintenance	Inspect 100% of City-owned stormwater basins and treatment structures annually	DPW	7/1/19	4/1/20	City DPW has inspected all basins and formally documenting its condition, approximately 880 basins within the City. 100%

treatment structures		management system(MMS)					complete. MMS is currently under development. Anticipated go-live date is February 2023.
5-4 DCIA mapping	Ongoing	DCIA mapping is updated as retrofit, new development and redevelopment data is provided	Percent of total outfalls that DCIA has been mapped and calculated for	DPW	7/1/19	12/30/19	Basin data has been reviewed and it was determined that there is approximately 213.30 acres of DCIA.
5-5 Address post-construction issues in areas with pollutants of concern	Ongoing	Utilize Construction Site Inspection Reports	Plan for correcting problems developed within 12 months of identification. 100% of identified problems corrected within required timeframe	DPW	On going		The City will continue to implement Construction Site Stormwater Inspection Reports, in addition to utilizing sampling data, to identify and mitigate problem areas.
5-6 Implement and maintain any control measures or conditions for New Discharge to an Impaired Water without an Established TMDL	Completed	None	100% of control measures or conditions implemented and maintained	DPW	7/1/17	7/1/17	
5-7 Additional requirements for all new and existing discharges to a water with an Established TMDL or with a Pollutant Load Reduction	Completed	None	100% of the discharge requirements consistent with the applicable Wasteload Allocations, Load Allocations or Water Quality Targets for that TMDL followed for new authorized discharges to a water with a TMDL or with a pollutant load reduction established within the TMDL	DPW	7/1/17	7/1/17	

5.2 Describe any Post-Construction Stormwater Management activities planned for the next year, if applicable.

In 2020 the City of Groton DPW engaged UCONN CLEAR Stormwater Corps to identify projects to reduce impervious cover and increase infiltration of runoff. These projects included use of Turfstone, rain gardens and additional tree filters. The City has been awarded a grant for the installation of 3 rain gardens at the City Municipal Building – we are in the contracting phase with DEEP for the grant and anticipate installation of the gardens in fall 2023 or spring 2024. DPW staff is also a participant with the City Community Resiliency working group, which is working with a consultant, SLR, to determine areas of focus within the City to address coastal flooding, heat islands and other concerns of climate change. We expect LID recommendations to be made to address these concerns. Continuing to work with the Planning and Building and Zoning Departments to ensure all requirements are met and we are engaging with contractors and developers in the planning and permitting stages to encourage incorporation of LID practices in projects.

5.3 Post-Construction Stormwater Management reporting metrics

Metrics	
Baseline (2012) Directly Connected Impervious Area (DCIA)	213.30 acres
Retrofits completed	3 this year / 1 project (7 tree filters)
DCIA disconnected	0.25 % this year / 4.25 % total since 2012
Estimated cost of retrofits	\$Grant funded – labor and equipment was in-kind contribution
Detention or retention ponds identified	2 total

5.4 Briefly describe the method to be used to determine baseline DCIA.

Identified Major Basins surrounding the City of Groton to which the stormwater drainage system outfalls. Utilized the formula for a wicked connected system and determined the estimated baseline DCIA. The City of Groton will be required to disconnect approximately 4.266 acres to meet the 2% disconnection threshold. City DPW has worked with Building and Zoning staff to identify permitted projects with a look back through 2012. The purpose was to identify projects where there was a potential change to directly connected impervious area and begin tracking those changes. As there are several large scale projects currently in the planning and permitting stages, we will continue to work with Building and Zoning and Planning to ensure we are tracking all changes to DCIA, both positively and negatively, to ensure accurate recording going forward.

6. Pollution Prevention/Good Housekeeping (Section 6(a)(6))

6.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable Goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
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6-1 Continue formal employee training program	On going	Conduct annual training for DPW operations staff	100% of required operational employees trained annually	DPW/Heidi Comeau	7/1/17	7/1/17	
6-2a Minimize the discharge of pollutants to MS4 from parks and open space management	On going	The City contracts with a professional lawn maintenance company (TruGreen) that optimizes the application of fertilizers, pesticides and herbicides on City lands. TruGreen has standard operating practices for the handling, storage, application, and disposal of pesticides and herbicides	100% of existing SOP's reviewed and updated by deadline. Missing SOP's (if applicable) developed within 12 months	DPW/Heidi Comeau	7/1/17	7/1/17	Application logs are being included as backup in stormwater management files. Copies are available as necessary.
6-2b Minimize the discharge of pollutants to the MS4 from pet waste	On going	The City has not identified any locations where inappropriate pet waste management practices are apparent and pose a threat to the MS4.	1) Locations with inappropriate pet waste management identified by deadline; and 2) % of locations where compliance activities are complete	DPW/Heidi Comeau	7/1/17	7/1/17	The City maintains dog waste stations in areas of high dog walking. The City does not have an established dog park.
6-2c Minimize the discharge of pollutants to the MS4 from waterfowl	On going	The City includes "Do Not Feed Waterfowl" statements in its rules and regulation for all beach and parks locations. Staff continues to enforce where applicable	1) Lands where waterfowl congregate identified within schedule; 2) % of identified lands that have signs installed or other targeted techniques to educate public and discourage feeding; 3) % of identified lands that have practices implemented to prevent congregation and/or the areas of direct drainage isolated	Parks and Recreation	7/1/17	7/1/17	The City has DPW staff represented on the Baker Cove Watershed Committee which will have a heavy focus on waterfowl pollutant mitigation. The City contracts with a pest waterfowl management company to prevent congregation
6-2d Minimize the discharge of pollutants to MS4	On going	The City swept all parking areas	1) Procedures developed and	DPW/Heidi Comeau	7/1/17	Ongoing	In 2017, the City evaluated all interior building floor drains,

from municipal buildings and facilities			implemented for dumpsters by deadline; 2) 100% of parking lots swept annually; 3) 100% of non-SWPPP facilities evaluated by deadline to ensure no interior floor drains connect to the MS4				and confirmed they are not connected to the MS4
6-2e: Minimize the discharge of pollutants to MS4 from municipal vehicle and equipment maintenance	On going	The City continues to maintain vehicles and equipment so as to minimize the discharge of pollutants to the MS4 as described in the SMP.	1)Procedures established for City vehicle storage; 2)Fueling areas evaluated; and 3)Procedures established to ensure that vehicle wash waters are not discharged to the MS4 or to surface waters	DPW/Heidi Comeau	7/1/17	Ongoing	City DPW is currently evaluating new catchbasin filters for basins within the DPW facility.
6-2f: Minimize the discharge of pollutants to MS4 from leaf management	Completed	Posted leaf collection schedule and proper management on Facebook, webpage and City electronic newsletter; regularly sweep streets in fall	Problem streets swept annually in the fall as part of BMP #6-9; Educational information provided on social media (BMP #1-1b) and on City Stormwater webpage (BMP #1-1a) annually	DPW/Heidi Comeau	7/1/17	Ongoing	
6-3 Implement coordination with interconnected MS4s	Ongoing	The City has identified the Town and CTDOT as interconnected MS4s	Interconnected MS4 coordination implemented within deadline	DPW/Heidi Comeau	7/1/19	Ongoing	Continued discussions with Town of Groton staff regarding relevant projects within the Town limits affecting City drainage and outfalls.
6-4 Develop & implement program to control other sources of pollutants to the MS4	Ongoing		Program developed and implemented to control the contribution of pollutants to MS4 by deadline	DPW/Heidi Comeau	12/31/17	12/31/17	

6-5 Evaluate additional measures for discharges to impaired waters	Ongoing		Additional measures implemented by deadline	DPW/Heidi Comeau	12/31/17	7/1/19	Baker Cove Watershed Committee is undertaking sampling of locations within the watershed to identify bacteria. The Committee is collaborating with local stakeholders to provide education on Good Housekeeping Practices to minimize bacteria contributing discharges.
6-6 Track projects that disconnect DCIA	Ongoing	City has a system to track these projects	The total amount of DCIA that has been disconnected during a given year	DPW/Heidi Comeau	7/1/17	Ongoing	The City DPW has implemented a system to track projects and their impacts on DCIA on a go-forward basis.
6-7 Develop infrastructure repair/rehab program	In Progress	City DPW has researched appropriate GIS based maintenance management system to track assets and infrastructure	Program developed and implemented by deadline	DPW/Heidi Comeau	7/1/21	7/1/21	Currently researching funding opportunities.
6-8 Develop & implement plan to identify/prioritize retrofit projects	In Progress	Prioritizing recommendations from the UCONN Clear Climate Corps in an effort to implement projects	Plan developed by deadline; 2% DCIA disconnected by deadline	DPW/Heidi Comeau	7/1/20	7/1/20	The City has determined its baseline DCIA and will continue to work with City Planning and Building and Zoning Departments to implement and enforce LID and to identify disconnection projects.
6-9 Develop & implement street sweeping program	Ongoing	<ul style="list-style-type: none"> Streets and parking lots are swept and/or cleaned with a minimum frequency of once per year in the spring following the cessation of winter maintenance activities. More frequent cleaning and/or sweeping of targeted areas occurs as needed (fall leaves). 	Street sweeping program developed and implemented	DPW/Heidi Comeau	7/1/17	Ongoing	
6-10 Develop & implement catch basin cleaning program	Completed	The City developed & implemented SOPs; all catch basins are cleaned once annually	100% of catch basins cleaned within schedule	DPW/Heidi Comeau	7/1/20	7/1/20	Catch basins inspected for repairs and maintenance, repairs are issued work orders and tracked electronically

6-11 Develop & implement snow management practices	Ongoing	Continue with snow management practices	1) SOPs implemented, 2) Percent of operational staff trained on application methods and equipment; and 3) goals for chemical application rates met annually	DPW/Heidi Comeau	7/1/18	Ongoing	
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6.2 Describe any Pollution Prevention/Good Housekeeping activities planned for the next year, if applicable.

Continue formal employee training program; City DPW staff is actively involved with the Baker Cove Watershed Committee (BacWac). BacWac has developed a work plan which includes good housekeeping practices and the education of stakeholders within the watershed in these practices. BacWac subcommittees will continue to focus on this initiative in 2023. The City will also continue with a catchbasin cleaning program and education to residents on the benefits of good housekeeping practices. We anticipate a rebuild of a seawall which is inclusive of several outfalls to impaired waters. This project will include in-line check valves at each of the outfalls.

6.3 Pollution Prevention/ Good Housekeeping reporting metrics

Metrics	
Employee training provided for key staff	Yes
Street sweeping	
Curb miles swept	60
Volume (or mass) of material collected	Not Tracked
Snow management	
Type(s) of deicing material used	Pre-treated Salt
Total amount of each deicing material applied	175 tons
Type(s) of deicing equipment used	Non-Automated Rear-Discharge Spreader
Lane-miles treated	40
Snow disposal location	City Park Property
Staff training provided on application methods & equipment	Continuous
Municipal turf management program actions (for permittee properties in basins with N/P impairments)	
Reduction in application of fertilizers (since start of permit)	Not Tracked
Reduction in turf area (since start of permit)	Not Tracked
Lands with high potential to contribute bacteria (dog parks, parks with open water, & sites with failing septic systems)	
Cost of mitigation actions/retrofits	None identified

6.4 Catch basin cleaning program

Provide any updates or modifications to your catch basin cleaning program

The City has mapped and is currently implementing Maintenance Management System – an ESRI GIS based system - for our stormwater drainage system (CityWorks). This system will allow us to track quantities of debris removal from each basin which will allow us to develop a priority cleaning and inspection list based on the results provided in the inspection reports. We will focus our cleaning efforts on those areas that continue to produce larger volumes of material removed at each cleaning. We have continued to have a robust street sweeping program throughout the City, again focusing on those areas determined to produce higher volumes of material.

6.5 Retrofit program

Briefly describe the Retrofit Program identification and prioritization process, the projects selected for implementation, the rationale for the selection of those projects and the total DCIA to be disconnected upon completion of each project

The City Public Works Department was engaged with the UConn Stormwater Corps in 2020. The Corps developed 5 runoff reduction recommendations for the City. If all 5 recommendations were implemented, the City would have an overall reduction of 21,477 sq. ft. of impervious cover disconnected resulting in the capture of 565,510 gallons of untreated stormwater and therefore preventing 5.88 pounds of Nitrogen and 1.27 pounds Phosphorous from entering local waterways. The City has prioritized the project and DPW has applied and been approved for grants to aid in the funding for such projects. The Eastern Connecticut Conservation District has applied for and been approved for 2 grants for projects within the City of Groton. The first is an engineer, design and build of a wetland enhancement which is currently in the contracting phases. The second grant was for the installation of a riparian buffer and 4 rain gardens – to date we have installed 2 rain gardens and 50' of the 100' of riparian buffer. The exact disconnection has not yet been determined.

Describe plans for continuing the Retrofit program and how to achieve a goal of 1% DCIA disconnection in future years

Working in conjunction with our Community Resiliency group and Planning and Economic Development, we will continue to research all practices available and the feasibility of their implementation. The Eastern Connecticut Conservation District has been approved for two (2) Clean Water Act Section 319 non-point source pollution grants for projects within the City of Groton. One grant will fund the installation of stormdrain retrofits, tree filters and rain gardens in Groton Estates. The second grant will fund the installation of a stormwater retrofit engineered wetland to improve infiltration, retention and treatment of stormwater flowing through “Lake George” prior to being discharged to Birch Plain Creek.

Describe plans for continuing the Retrofit program beyond this permit term to disconnect 1% annually over the next 5 years

The City Public Works Department continues to work closely with the City Planning and Building and Zoning Departments to ensure Retrofit and LID practices are incorporated into Zoning Regulations and formal tracking of development projects and LID practices will be ongoing. As the City is a densely populated urbanized area with growth expectations due to increase in contract work at Electric Boat, this requirement will create challenges however we have begun to look at creative initiatives to meet these goals.

Part II: Impaired waters investigation and monitoring

1. Impaired waters investigation and monitoring program

1.1 Indicate which stormwater pollutant(s) of concern occur(s) in your municipality or institution. This data is available on the MS4 map viewer: <http://s.uconn.edu/ctms4map>.

Nitrogen/ Phosphorus Bacteria Mercury Other Pollutant of Concern

1.2 Describe program status.

Discuss 1) the status of monitoring work completed, 2) a summary of the results and any notable findings, and 3) any changes to the Stormwater Management Plan based on monitoring results.

The City met the goal of screening 50% of outfalls by June 30, 2020, partially utilizing data collected under the 2004 permit. The City is working to determine its 6 highest contributing outfalls and will continue sampling the remainder of the outfalls to meet 100%. It is anticipated that follow-up investigations will be a focus in 2023.

2. Screening data for outfalls to impaired waterbodies (Section 6(i)(1) / page 41)

2.1 Screening data

Complete the table below for any outfalls screened during the reporting period. Each Annual Report will add on to the previous year's screening data showing a cumulative list of outfall screening data.

Outfall ID	Sample date	Parameter (Nitrogen, Phosphorus, Bacteria, or Other pollutant of concern)	Results	Name of Laboratory (if used)	Follow-up required?
CG-Out10	8/22/22	Nitrogen, Phosphorus, Bacteria, Other Pollutant of Concern	Enterococci Bacteria: 3650; Fecal Coliform: 24200; Nitrogen: 1.22; Phosphorus: 0.179	Phoenix Environmental Labs	Continue to monitor bacteria
CG-Out9	8/22/22	Nitrogen, Phosphorus, Bacteria, Other Pollutant of Concern	Enterococci Bacteria: 11200; Fecal Coliform: 17300; Nitrogen: 1.83; Phosphorus: 0.156	Phoenix Environmental Labs	Continue to monitor bacteria

CG-Out8	8/22/22	Nitrogen, Phosphorus, Bacteria, Other Pollutant of Concern	Enterococci Bacteria: 24200; Fecal Coliform: 4610; Nitrogen: 2.21; Phosphorus: 0.287	Phoenix Environmental Labs	Continue to monitor bacteria
CG-Out12	8/22/22	Nitrogen, Phosphorus, Bacteria, Other Pollutant of Concern	Enterococci Bacteria: 8660; Fecal Coliform: >24200; Nitrogen: 0.99; Phosphorus: 0.144	Phoenix Environmental Labs	Continue to monitor bacteria
CG-Out18	8/22/22	Nitrogen, Phosphorus, Bacteria, Other Pollutant of Concern	Enterococci Bacteria: 6870; Fecal Coliform: 3260; Nitrogen: 0.55; Phosphorus: 0.141	Phoenix Environmental Labs	Continue to monitor bacteria
CG-Out21	8/22/22	Nitrogen, Phosphorus, Bacteria, Other Pollutant of Concern	Enterococci Bacteria: 2910; Fecal Coliform: 2760; Nitrogen: 1.46; Phosphorus: 0.106	Phoenix Environmental Labs	Continue to monitor bacteria
CG-Out7	10/13/22	Nitrogen, Phosphorus, Bacteria, Other Pollutant of Concern	Enterococci Bacteria: 1920; Fecal Coliform: 609; Nitrogen: 1.07; Phosphorus: 0.133	Phoenix Environmental Labs	
CG-Out55	10/13/22	Nitrogen, Phosphorus, Bacteria, Other Pollutant of Concern	Enterococci Bacteria: 266; Fecal Coliform: 771; Nitrogen: 1.36; Phosphorus: 0.018	Phoenix Environmental Labs	
CG-Out50	10/13/22	Nitrogen, Phosphorus, Bacteria, Other Pollutant of Concern	Enterococci Bacteria: 399; Fecal Coliform: 1120; Nitrogen: 1.61; Phosphorus: 0.200	Phoenix Environmental Labs	
CG-Out51	10/13/22	Nitrogen, Phosphorus, Bacteria, Other Pollutant of Concern	Enterococci Bacteria: 538; Fecal Coliform: 52; Nitrogen: 3.89; Phosphorus: 0.262	Phoenix Environmental Labs	
CG-Out46	10/13/22	Nitrogen, Phosphorus, Bacteria, Other Pollutant of Concern	Enterococci Bacteria: 733; Fecal Coliform: 235; Nitrogen: 2.06; Phosphorus: 0.162	Phoenix Environmental Labs	
CG-Out15	9/24/21	Nitrogen, Phosphorus, Bacteria, Other Pollutant of Concern	E. Coli: 6870; Total Coliform: >24200; Nitrogen: 0.65; Phosphorus: 0.077	Phoenix Environmental Labs	Continue to monitor bacteria
CG-Out13	10/17/19	Nitrogen, Phosphorus, Bacteria, Other Pollutant of Concern	E. Coli: 11200; Total Coliform: >24200; Nitrogen: 0.54; Phosphorus: 0.063	Phoenix Environmental Labs	Continue to monitor bacteria
CG-Out33	10/17/19	Nitrogen, Phosphorus, Bacteria, Other Pollutant of Concern	E. Coli: 10500; Total Coliform: >24200; Nitrogen: 0.97; Phosphorus: 0.077	Phoenix Environmental Labs	Continue to monitor bacteria

CG-Out19	10/17/19	Bacteria	E. Coli: 1790; Total coliform: >24200	Phoenix Environmental Labs	Continue to monitor bacteria
CG-Out26	10/17/19	Bacteria	E. Coli: 495; Total coliform: >24200	Phoenix Environmental Labs	Continue to monitor bacteria
CG-Out25	10/17/19	Bacteria	E. Coli: 399; Total coliform: >24200	Phoenix Environmental Labs	Continue to monitor bacteria
CG-Int22	10/9/19	Nitrogen, Phosphorus, Bacteria, Other Pollutant of Concern	E. Coli: 1460 Total Coliform: >24200; Nitrogen: 0.79; Phosphorus: 0.099	Phoenix Environmental Labs	Continue to monitor bacteria
CG-Out48	6/25/19	Nitrogen, Phosphorus, Bacteria, Other Pollutant of Concern	E. Coli: 15500 Total Coliform: >24200; Nitrogen: 0.79; Phosphorus: 0.135	Phoenix Environmental Labs	Continue to monitor bacteria
CG-Out45	6/25/19	Nitrogen, Phosphorus, Bacteria, Other Pollutant of Concern	E. Coli: 3650 Total Coliform: >24200; Nitrogen: 0.93; Phosphorus: 0.0238	Phoenix Environmental Labs	Continue to monitor bacteria
CG-Out34	6/25/19	Nitrogen, Phosphorus	Nitrogen: .3.25; Phosphorus: 0.0379	Phoenix Environmental Labs	Industrial – screened bi-annually
CG- Out35	6/25/19	Nitrogen, Phosphorus	Nitrogen: .0.58; Phosphorus: 0.082	Phoenix Environmental Labs	Industrial – silt sack placed in basin – screened bi-annually

2.2 Credit for screening data collected under 2004 permit

If any outfalls to impaired waters were sampled under the 2004 MS4 permit, that data can count towards the monitoring requirements under the modified 2017 MS4 permit. Complete the table below to record sampling data for any outfalls to impaired waters under the 2004 MS4 permit.

Outfall	Sample date	Parameter (Nitrogen, Phosphorus, Bacteria, or Other pollutant of concern)	Results	Name of Laboratory (if used)	Follow-up required?
CG-Out 56	11/5/2008	Nitrogen, Phosphorus, Bacteria, Other Pollutant of Concern	E. Coli: 100; Nitrogen: 2.3; Phosphorus: 0.02	Connecticut Testing Laboratories	Continue to monitor bacteria
CG-Out 23	11/5/2008	Nitrogen, Phosphorus, Bacteria, Other Pollutant of Concern	E. Coli: 900; Nitrogen: 2.22; Phosphorus: 0.72	Connecticut Testing Laboratories	Continue to monitor bacteria

3. Follow-up investigations (Section 6(i)(1)(D) / page 43)

Provide the following information for outfalls exceeding the pollutant threshold.

Outfall	Status of drainage area investigation	Control measure implementation to address impairment
N/A	N/A	

4. Prioritized outfall monitoring (Section 6(i)(1)(D) / page 43)

Once outfall screening has been completed for at least 50% of outfalls to impaired waters, identify 6 of the highest contributors of any pollutants of concern. Begin monitoring these outfalls on an annual basis by July 1, 2020.

Outfall	Sample Date	Parameter(s)	Results	Name of Laboratory (if used)
N/A	N/A	N/A	N/A	N/A

Part III: Additional IDDE Program Data

1. Assessment and Priority Ranking of Catchments data (Appendix B (A)(7)(c) / page 5)

Provide a list of all catchments with ranking results (DEEP basins may be used instead of manual catchment delineations).

All City outfalls are within a priority area. Priority ranking of catchments will be addressed in 2023.

2. Outfall and Interconnection Screening and Sampling data (Appendix B (A)(7)(d) / page 7)

2.1 Dry weather screening and sampling data from outfalls and interconnections

Provide sample data for outfalls where flow is observed. Only include Pollutant of concern data for outfalls that discharge into stormwater impaired waterbodies.

Outfall / Interconnection ID	Screening / sample date	Ammonia	Chlorine	Conductivity	Salinity	E. coli or enterococcus	Surfactants	Water Temp	Pollutant of concern	If required, follow-up actions taken
CG-Out 56	5/14/20	0	0	196.6	0.10	63	0	49.6	Nitrogen - .28; Phosphorous - 0.016	
CG-Out 59	5/14/20	0	0	133.7	0	<10	0	52.7	N/A	

CG-Out 57	5/14/20	0	0	193.2	0.10	109	0.1	52.4	N/A	
CG-Out 58	5/14/20	0	0	90.5	0	131	0.1	52.3	N/A	
CG-Out 13	8/11/20	0	0	298	0.10	41	0.1	73.2	Nitrogen-0.54; Phosphorous-0.025	
CG-Int 18	8/11/20	0	0	543	0.30	345	0.10	74.3	Nitrogen-0.49; Phosphorous-0.128	Follow up screening and investigation for E.Coli exceeding acceptable thresholds.
CG-Out 55	8/11/20	0	0	663	.30	52	0	75.3	Nitrogen-0.52; Phosphorous-0.056	

2.2 Wet weather sample and inspection data

Provide sample data for outfalls and key junction manholes of any catchment area with at least one System Vulnerability Factor.

Outfall / Interconnection ID	Sample date	Ammonia	Chlorine	Conductivity	Salinity	E. coli or Enterococcus	Surfactants	Water Temp	Pollutant of concern
CG – Int22	10/9/19	.25	<3.0	24	Not available	>24200	0	42.8	

3. Catchment Investigation data (Appendix B (A)(7)(e) / page 9)

3.1 System Vulnerability Factor Summary

For those catchments being investigated for illicit discharges (i.e. categorized as high priority, low priority, or problem) document the presence or absence of System Vulnerability Factors (SVF). If present, report which SVF's were identified. An example is provided below.

Outfall ID	Receiving Water	System Vulnerability Factors
CG-Int22	Thames River	Potential sanitary sewer infrastructure defects; blockages

Where SVFs are:

1. History of SSOs, including, but not limited to, those resulting from wet weather, high water table, or fat/oil/grease blockages.
2. Sewer pump/lift stations, siphons, or known sanitary sewer restrictions where power/equipment failures or blockages could readily result in SSOs.
3. Inadequate sanitary sewer level of service (LOS) resulting in regular surcharging, customer back-ups, or frequent customer complaints.
4. Common or twin-invert manholes serving storm and sanitary sewer alignments.
5. Common trench construction serving both storm and sanitary sewer alignments.
6. Crossings of storm and sanitary sewer alignments.
7. Sanitary sewer alignments known or suspected to have been constructed with an underdrain system;
8. Sanitary sewer infrastructure defects such as leaking service laterals, cracked, broken, or offset sanitary infrastructure, directly piped connections between storm drain and sanitary sewer infrastructure, or other vulnerability factors identified through Inflow/Infiltration Analyses, Sanitary Sewer Evaluation Surveys, or other infrastructure investigations.
9. Areas formerly served by combined sewer systems.
10. Any sanitary sewer and storm drain infrastructure greater than 40 years old in medium and densely developed areas.
11. Widespread code-required septic system upgrades required at property transfers (indicative of inadequate soils, water table separation, or other physical constraints of the area rather than poor owner maintenance).
12. History of multiple local health department or sanitarian actions addressing widespread septic system failures (indicative of inadequate soils, water table separation, or other physical constraints of the area rather than poor owner maintenance).

3.2 Key junction manhole dry weather screening and sampling data

Key Junction Manhole ID	Screening / Sample date	Visual/ olfactory evidence of illicit discharge	Ammonia	Chlorine	Surfactants
N/A	N/A	N/A	N/A	N/A	N/A

3.3 Wet weather investigation outfall sampling data

Outfall ID	Sample date	Ammonia	Chlorine	Surfactants
N/A	N/A	N/A	N/A	N/A

3.4 Data for each illicit discharge source confirmed through the catchment investigation procedure

Discharge location	Source location	Discharge description	Method of discovery	Date of discovery	Date of elimination	Mitigation or enforcement action	Estimated volume of flow removed
CG-Int22	Sewer infrastructure defect	Sanitary sewer leaching into stormwater manhole	Citizen report of sewer smell	10/1/19	10/9/19	Line jetted sewer manhole blockage	unknown

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