

MS4 General Permit Town of Groton 2021 Annual Report

Existing Permittee, Permit Number GSM 000055, Reporting period: January 1, 2021 – December 31, 2021

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This report documents The Town of Groton’s efforts to comply with conditions of the MS4 General Permit to the maximum extent practicable (‘MEP’) from January 1, 2021 to December 31, 2021. Note these frequently used abbreviations: **TOG** = Town of Groton, **PWD** = Public Works Department, **OPDS** = Office of Planning & Development Services, **ECCD** = Eastern Connecticut Conservation District, and **B&L** = Barton & Loguidice, LLC (stormwater engineering firm).

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The MS4 permit can be found here: <https://portal.ct.gov/DEEP/Water-Regulating-and-Discharges/Stormwater/Municipal-Stormwater>.

Questions and comment are welcome and should be directed to the primary contact above.

Executive Summary

Submission of this report maintains compliance with reporting requirements under the General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4) no. GSM000055. The Town certifies with this documentation that the terms and conditions of the General Permit are being met to the maximum extent practicable (MEP).

The Town is in year two of a multi-year contract with professional engineers Barton & Loguidice (B&L). Through B&L, the Town continues toward completion of all outfall screening, sampling, and engineering-dependent obligations. B&L has fulfilled 83% of a primary task: visual survey of 352 municipally-owned outfalls during dry weather. In 2021, B&L completed **dry weather screening** of 27 outfalls and took three new samples. This brings *total screenings to 292* and *samples to 76*. Only one new sample suggested an illicit discharge. Added to the ten from 2020, this totals *11 prospective issues* from dry weather work. These were recategorized to high priority in outfall rankings and became subject to investigation.

From the subset of outfalls discharging to impaired waters, B&L collected six new **wet weather samples**. Wet weather sampling is a mandated higher level of examination. Of these, two had suspected illicit discharges. To date, *nine of these 54 pertinent outfalls have been sampled, with five suggesting illicit discharge*. These were also recategorized and flagged for investigation. The lower number of wet weather samples is due to a lack of qualifying storm events (ones which meet volume, day, and time parameters) and many outfalls being tidally influenced (underwater at times). Thus, in 2022, B&L will shift collection of wet weather samples to the upgradient, or next closest, structures. B&L will continue, however, to attempt collection of samples from all outfalls to impaired waters until all sites are accounted for.

Illicit Discharge Detection & Elimination (IDDE) is a track-down process which follows flagged sampling and aids **catchment investigations**. Of the 16 investigations to date (11 dry screening + five wet weather) eight were tracked to a source area. The remaining were dry at the follow-up or call for Town assistance so need revisiting. Stormwater ordinance ‘notice of violation’ (NOV) letters for finished investigations will be drafted early in 2022 and efforts continued. Note, continued sampling can result in further IDDE flags.

In 2021, much progress was made on a municipal **stormwater structure maintenance plan**, with B&L inspecting 35 of 46 sites featuring prospective retention or detention ponds, underground oil-water separators, and other structures. The updates to Town inventories may prompt assessment of ownership obligations, and in 2022, a plan of maintenance schedules with estimated costs will be finalized. To **control other pollutants**, B&L also identified likely candidates for Industrial & Commercial Stormwater General Permits from unregistered businesses and designed educational brochures for Town distribution.

Another 2021 undertaking was development of a Directly Connected Impervious Area (DCIA) **retrofit plan**. 40 sites were evaluated for DCIA, drainage, and depth to groundwater. Seven emerged as best candidates with concept retrofit designs developed and sites prioritized based on cost and disconnection benefit. Throughout 2021 B&L also completed other tasks, led numerous meetings and aided **GIS mapping**, through sharing of field data including misidentified outfalls, revised interconnections, and altered piping.

For its part, Groton maintained its commitment to **pollution prevention** through catch basin cleaning, street sweeping, intensive inspection schedules, construction site runoff control, and post-construction stormwater management. Relevant Boards and Commissions have become increasingly engaged in MS4 work and Town staff are leaders on Eastern CT Conservation District’s Baker Cove Watershed Committee. As well, the Town launched a stormwater education show on Groton Municipal Television (GMTV) with non-profit partner Save the Sound. “Clean Water Ways” can be viewed on-demand on YouTube and aired locally via Comcast XFINITY & Atlantic Broadband Groton Channel 2, and Frontier Vantage Channel 6110.

PART I: Summary of Minimum Control Measure Activities

1. Public Education and Outreach (Section 6 (a)(1) / page 19)

1.1 BMP Summary (Best Management Practice)

BMP	Activities in current reporting period	Sources Used (if applicable)	Method of Distribution	Audience (and number of people reached)	Measurable goal	Dept. / Person Responsible	Additional details
1-1 Implement public education and outreach	PWD distributes info via Facebook, YouTube, website, municipal TV, and conducts outreach with Parks & Rec, Library and ECCD.	Not Applicable	See details provided in the events / BMPs that follow in Table 1.1	See details provided below.	Post info on social media annually	Public Works/ Greg Hanover, Director	Stormwater content now regular content of PWD monthly reports

BMP	Activities in current reporting period	Sources Used (if applicable)	Method of Distribution	Audience (and number of people reached)	Measurable goal	Dept. / Person Responsible	Additional details
	An article was published in <i>The Day</i> local newspaper announcing the launch of the MS4 / non-point source pollution TV show.	Not Applicable	Article in <i>The Day</i> : https://www.theday.com/article/20211007/NWS01/211009579	The newspaper covers 20 towns, has ~100,000 readers daily, and has 1 million views per month on their website	Implement water quality related public outreach events	Public Works & <i>The Day</i> newspaper	See BMP 1-3 regarding new TV show
1-1 Implement public education and outreach (Continued)	A 1-week overnight education program at Marine Science camp was hosted in July 2021 for Grades 9-12.	Not Applicable	Education program at Marine Science camp	18 camper (2 students focused on water quality)	Implement water quality related public outreach events	Local non-profit Project Oceanology	Covered nitrates and ammonium sampling in Baker Cove & Poquonnock River
	A 1-week overnight education program at Marine Science camp was hosted in August 2021 for Grades 7-9.	Not Applicable	Education program at Marine Science camp	18 camper (3 students focused on water quality)			Covered temp, salinity, pH, and dissolved oxygen sampling in Baker Cove & Poquonnock River
	An 8-hour Bay Watershed Education and Training (B-WET) Program was provided to teachers in August 2021.	Not Applicable	Education/training program for teachers	8 teachers			Covered watersheds, point & non-point source pollution, Permeable surfaces, PWD Enviroscope, Run-off assessment on school grounds
	Three, 3-hour water quality education sessions were provided to Grade 5 students at Thames River Magnet School on 9/13/21, 9/22/21, and 10/7/21.	Not Applicable	Education for students at Mystic River Magnet School	65 students			Covered temp, salinity, dissolved oxygen, nutrients, and fecal coliform sampling Baker Cove & Poquonnock River
	Two, 3-hour Bay Watershed Education and Training (B-WET) Programs were provided to teachers on 10/5/21 and 11/17/21.	Not Applicable	Education/training program for teachers	10 teachers			Covered watershed mapping/land use survey of Baker Cove & Poquonnock River

BMP	Activities in current reporting period	Sources Used (if applicable)	Method of Distribution	Audience (and number of people reached)	Measurable goal	Dept. / Person Responsible	Additional details
1-2 Address education/outreach for pollutants of concern*	DEEP "Do Not Feed Waterfowl" brochures continue to be available at Town Hall Annex.	CT DEEP "Do Not Feed Waterfowl" brochure	Brochures continue to be available at Town Hall Annex	Available to all residents	Post info on social media annually	Public Works/ Greg Hanover, Director	See BMP 1-5 for education/outreach related to pet waste
1-2 Address education/outreach for pollutants of concern* (Continued)	Completed the Bacvac map showing ways groups & individuals can help prevent stormwater pollution. Covers pet waste, geese, septic, rain garden planting, rain barrels, volunteer, and how to become a leader.	Not Applicable	*Mail to Jupiter Point Rd & Twin Hills Dr residents *Mailed to condo/apt. complex property managers *Available at Town Hall Annex *Tabling at beach concerts 2x & farmers market 1x *Used by Project O in grant-funded classroom education program *Various small distributions	*193 mailed *15 provided to condo/apartment complex property managers *Available at Town Hall Annex *General distribution at various events/programs	Developed stormwater-centric map for education use by the general public	Public Works as member of Baker Cove Watershed Committee	PWD & OPDS are active on the Eastern CT Conservation District Baker Cove Watershed Committee to reduce pollutants of concern
1-3 Stormwater info provided on local cable access	PWD/OPDS initiated public access stormwater TV program "Clean Water Ways" partnering w Save the Sound	Not Applicable	Content aired annually on Groton Municipal Television via cable access and posted online through YouTube.	Available to all residents	Content aired annually on cable access	Public Works/ Greg Hanover, Director	Program will seek to educate residents & business community on ways to support town stormwater efforts
1-4 Stormwater info provided on town website	SWMP, Illicit Discharge reporting, Catch Basin Cleaning, & educational links are on PWD stormwater page	CT DEEP, EPA, Long Island Sound Study, Long Island Sound Resource Center	Town Webpage: https://www.groton-ct.gov/departments/pubwks/storm_water.php	Available to all residents	Update Stormwater webpage annually	Public Works/ Greg Hanover, Director	The Town website in its entirety was redesigned and features a more attractive, easy to navigate menu
	Educational information on lawn care, auto care, and pet waste provided on website	Not Applicable	Town Webpage: https://www.groton-ct.gov/departments/pubwks/pollution.php				

BMP	Activities in current reporting period	Sources Used (if applicable)	Method of Distribution	Audience (and number of people reached)	Measurable goal	Dept. / Person Responsible	Additional details
1-5 Educate dog owners about picking up pet waste	Brochures offered annually with dog license application & June renewals	"Step by Step, A citizen's guide to curbing polluted runoff" brochure by the Long Island Sound Study	Brochures offered annually with dog license application & June renewals	1,675 dog licenses were issued in 2021	Pet waste info given to dog owners with annual license.	Public Works/ Greg Hanover, Director	Brochure offers proper pet waste disposal instruction. Office ran out of brochures mid-year and did not seek to refill.

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

TOG will continue the above efforts including production and release of episodes 2 & 3 of the new public access TV show 'Clean Water Ways'. We will continue our leadership role on the Baker Cove Watershed Committee which includes ongoing outreach and distribution of educational maps, and we will aim to improve our website's stormwater page. As time & budget allows, we will continue collaboration with Parks & Rec, Library, and other areas orgs. Also remaining on our list is an Outreach campaign to area veterinarians to educate dog owners about the role they can play in improved stormwater conditions.

2. Public Involvement/Participation (Section 6(a)(2) / page 21)

2.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Dept. / Person Responsible	Projected or actual date complete	Location Posted
2-1 Final Stormwater Management Plan publically available	Completed / Ongoing	Posted required notices and reports	Report available online	Public Works/ Greg Hanover, Director	April 2019	https://www.groton-ct.gov/departments/pubwks/storm_water.php
2-2 Comply with public notice requirements for Annual Reports (annually by 2/15)	Completed / Ongoing	Public notice posted for Annual Report to Town website on Jan 31, 2021	Comply with annual notice requirements	Public Works/ Greg Hanover, Director	Feb 15, 2021	https://www.groton-ct.gov/departments/pubwks/storm_water.php
2-3 Conduct Stormwater Committee Meetings	Completed / Ongoing	March & October meeting discussed MS4 and ongoing project details	One meeting held annually	Public Works/ Greg Hanover, Director	October 14, 2021	
2-4 Sponsor community participation event	Completed / Ongoing	October field trip to Providence Stormwater Innovation Center	One event held annually	Public Works/ Greg Hanover, Director	October 27, 2021	

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

See Section 1.2 – The aforementioned partnerships will also support Public Involvement and Participation. Further, TOG will continue to give public notice of the draft annual report, offer for review and comment on the Town website, and conduct routine Stormwater Committee Meetings and host community participation events.

3. Illicit Discharge Detection and Elimination (Section 6(a)(3) and Appendix B / page 22)

3.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Dept. / Person Responsible	Projected or actual date complete	Additional details
3-1 Develop written IDDE program (Due 7/1/19)	Completed	n/a	written IDDE program	Public Works/ Greg Hanover, Director	October 2018	
3-2 Develop list and maps of all MS4 stormwater outfalls in priority areas (Due 7/1/20)	Substantially Complete	PWD is in year two of a contract with stormwater engineers Barton & Loguidice, which includes field verification/ updates to the municipal outfall list with corresponding mapping	Outfall & Interconnections inventory / map completed by deadline.	Public Works/ Greg Hanover, Director	Ongoing / June 30, 2020	Maps are substantially complete. Only minor changes were incorporated after field investigations were completed in 2021. Continued work has revealed need for additional updates to be conducted in 2022.
3-3 Implement citizen reporting program (Ongoing)	Completed	Program is being maintained	Complete citizen reporting program	Public Works/ Greg Hanover, Director	2017 and ongoing	
3-4 Establish legal authority to prohibit illicit discharges (Due 7/1/19)	Completed	Legal authority remains in place	Town enacts Ordinance	Public Works/ Greg Hanover, Director	May 1, 2018 and ongoing	Notice of the ordinance was added to the TOG website stormwater page
3-5 Develop record keeping system for IDDE tracking (Due 7/1/17)	Completed / Ongoing	The Town currently uses excel spreadsheets, along with GIS, for IDDE tracking. SSO Tracking is ongoing. See Table below.	IDDE tracking & SSO Inventory developed and incidents included in Annual Report.	Public Works/ Greg Hanover, Director	2017 and ongoing	
3-6 Address IDDE in areas with pollutants of concern	Completed / Ongoing	B&L initiated 4 IDDE investigations for catchment areas that discharge to impaired waters. It is anticipated B&L will complete initial investigations already started and continue to investigate added suspected illicit discharges in 2022 to the maximum extent practicable.	ID of areas w/ failing septic; % of failing systems addressed each yr.	Public Works/ Greg Hanover, Director	Ongoing	No notice received of new failing septic systems, except as noted in item 3-4 (resolved by LLHD)

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

Stormwater engineering contractor, B&L, engaged since 2020, will continue dry weather screenings to finish establishment of baseline data, and will update IDDE tracking spreadsheet and investigate reports. The TOG will continue the implementation of IDDE policy, including continued stand-up of the administrative portion and improved communication to support timely reporting with relevant Fire Districts and the Ledge Light Health District. With the assistance of B&L, the Town will continue to refine its list and mapping of municipal outfalls in 2022. It is anticipated that B&L will complete the initial IDDE investigations started and will continue to investigate additional suspected illicit discharges in 2022 to the maximum extent practicable.

3.3 Provide a record of all citizen reports of suspected illicit discharges and other illicit discharges occurring during the reporting period and SSOs occurring July 2017 through end of reporting period using the following table.

Illicit discharges are any unpermitted discharge to waters of the state that do not consist entirely of stormwater or uncontaminated groundwater except those discharges identified in Section 3(a)(2) of the MS4 general permit when such non-stormwater discharges are not significant contributors of pollution to a discharge from an identified MS4.

Location (Lat long/ st crossing /address & receiving water)	Date and duration of occurrence	Discharge to MS4 or surface water	Estimated volume discharged	Known or suspected cause / Responsible party	Corrective measures planned and completed (include dates)	Sampling data (if applicable)
Mumford Cove Pump Station, 80 Sunrise Rd, GLP	9/14/2017 @ 5:00 PM	No discharge to surface water / MS4	7,000 gallons	Mechanical equip. failure	SSO stop @ 6 PM on 9/14. Valve temp repaired, replacement completed 2018.	
Poquonnock River Pump Station: 1286 Poquonnock Rd	7/29/2018 @ 3:30 PM	Poquonnock River	Est 5,400 gal	Electrical equip. failure	SSO stop @ 4:55 PM w pump restart	
WPCF, 170 Gary Court	7/29/2018 @ 6:50 PM	Fort Hill Brook	125,000 gal	Electrical equip. failure	SSO stopped at 9:00 AM on 7/30/18. Repaired electrical power distribution.	
WPCF, 170 Gary Court	1/5/2019 @ 7:29 pm	Fort Hill Brook	62,500 gallons	Excess flow during storm event	Duration short (9 m), 7:38 pm stop, w only fully treated disinfected (clean) effluent. A \$5.5 million Effluent Pump Station upgrade is underway & will increase capacity and back-ups to reduce overflows.	
I-95 right-of-way betw. north & south lanes at Pamela Avenue	1/14/2019 @ 10:48 am	Drozdyk Drive stormwater basin	undetermined	Grease blockage plus pipe under I-95 sagged from weight	Reported by DOT personnel, incident time span & volume unknown. Sewer line was jetted to resolve SSO. Correction was to add monitoring & now jetting 1x monthly).	
WPCF, 170 Gary Court	7/22/2019 @ 10:28 pm	Fort Hill Brook	125,000 gallons	Excess flow during storm event	SSO stop @ 11:23 pm. Bypass fully treated (clean) effluent though DEEP filing says 'disinfected partially treated raw sewage' since 'clean' not a choice. A \$5.5 m Pump Station upgrade increased capacity & back-up to reduce overflows.	

Location (Lat long/ st crossing /address & receiving water)	Date and duration of occurrence	Discharge to MS4 or surface water	Estimated volume discharged	Known or suspected cause / Responsible party	Corrective measures planned and completed (include dates)	Sampling data (if applicable)
WPCF, 170 Gary Court	8/3/2019 @ 5:30 am	Fort Hill Brook	20,001 – 50,000 gallons	Electrical Equipment Failure	After discovery via a report by the on-site guard, SSO stopped at 6:30 pm when commercial power was restored and equipment was reset	
2590 Gold Star Highway private lateral (condos between Pumpkin Hill and Chesebrough Farm Rd)	7/28/2020 2 hours	MS4	51-500 gallons	Private force main struck during fence post install. Sewage seepage along 900 ft of uncurbed road edge. Very little reach to catch basin.	Contractor repaired main same day	
514 Judson Avenue manhole near New London Road	9/3/2020 1.75 hours	Fishtown Brook	1-50 gallons	blocked sewer	jettted sewer to clear blockage	
54 West Main Street	Reported 12/9/2020 Observed 11/30/2020	Not Applicable	undetermined	A corrugated pipe at rear of property drains to the parking lot behind it, which is associated with 1 Pearl Street.	PWD Engineering determined that what had appeared as a storm drain was a privately owned dry well, nullifying the complaint.	
78 Valley Road	Reported 5/13/2021	MS4	undetermined	An across the street neighbor called with a complaint that the 78 Valley homeowners habitually dump leaves & grass clippings into the storm drain which results in flooding to his yard	Staff took photos next morning which did not substantiate complaint and there were no prior reports/notes of flooding. Because SW ordinance is new, and such practices had been accepted historically, it was explained in a reply call to complainant that likely outcome for a first time violation if found would be education. PWD suggested he call at time of next incident. PWD will plan to create a related flyer for distribution in neighborhood, if not more widely.	
Manhole at 1250 Poquonnock Road	9/2/2021 1 hour	Poquonnock River	undetermined	Excessive flow from storm (3-4" per hour)	Sewage seeping from manhole in storm, draining to nearby river. Character clear grey water, no solids, very dilute.	

3.4 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
595 Noank-Ledyard Road, residential replacement failure	Repaired, reported to Health District	No known impacts, Southeast Shoreline basin
119 Haley Road, residential failure (Mantis/ leaching field)	Repaired, reported to Health District	No known impacts, Haley’s brook basin

3.5 Briefly describe the method and effectiveness of said method used to track illicit discharge reports.

The Town of Groton’s stormwater webpage includes a link “How to Report Illicit Discharges”, which includes a phone number and email address that the public can use to submit a report. Public Works is notified of illicit discharges by citizens, organizations, and/or police dispatch, and responds accordingly. The IDDE program contains guidance and a reporting template (Excel spreadsheet). Reports prompt investigation (site visit, interviews &/or photos) as soon as is practicable to gauge degree and manner of follow-up needed. The Public Works Project Management Specialist tasked with MS4 compliance tracking is responsible for the information.

3.6 IDDE reporting metrics

Metrics			
Estimated or actual number of MS4 outfalls	352 Town-owned	Outfall assessment and priority ranking	352 outfalls have initial rankings
Estimated or actual number of interconnections	74	Dry weather screening of all High and Low priority outfalls complete	292 outfall screens completed
Outfall mapping complete	100%	Catchment investigations complete	8 are complete, 8 are ongoing.
Interconnection mapping complete	Will start in 2022	Estimated % of MS4 catchment area investigated	3%
System-wide mapping complete (detailed MS4 infrastructure)	85%		

3.7 Briefly describe IDDE training for employees involved in carrying out IDDE tasks including type of training provided and how often given (min 1x yr).

Due to safety restrictions resulting from COVID-19, a virtual training was provided to select personnel from Public Works on May 27, 2021. The IDDE specific training slated for development and intro in 2019 will be undertaken in 2022 (see comment at top). Many IDDE topics are discussed during the Town’s annual SPCC and SWPPP training events.

4. Construction Site Runoff Control (Section 6(a)(4) / page 25)

4.1 BMP Summary

BMP	Status	Activities in reporting period	Measurable goal	Dept. / Person Responsible	Projected or actual date complete	Additional details
4-1 Implement, upgrade, &enforce land use regulations or other legal authority to meet requirements of MS4 general permit (Due 7/1/20)	Completed / Ongoing	Current standards were the result of 2019 updates and are enforced through plan review & the Zoning Officer.	Existing E&S control and stormwater regulations reviewed and revised as necessary by deadline.	Office of Planning & Development Svcs. (OPDS), Jon Reiner, Director	October 1, 2019	
4-1b: Establish interagency or inter-jurisdictional agreements	Completed / Ongoing	The agreements from 2019 remain in use.	Inter-jurisdictional agreements established to control pollutants between entities	Public Works/ Greg Hanover, Director	Jul 1, 2019	As time/funding permits, added attention will be given to DOT impact

BMP	Status	Activities in reporting period	Measurable goal	Dept. / Person Responsible	Projected or actual date complete	Additional details
4-2 Develop/ Implement plan for interdepartmental coordination in site plan review and approval (Ongoing)	Completed / Ongoing	TOG maintains the team approach used since 1980 for site plan review. OPDS sends applications to PWD, Pks & Rec, Fire Marshal, Police & Health District. Dept. reps meet the applicant to discuss concerns, then plan goes to Planning & Zoning Commission for decision.	Site plan review and approval procedures outlined.	Office of Planning & Development Svcs. (OPDS), Jon Reiner, Director	July 1, 2017	
4-3 Review site plans for stormwater quality concerns (Ongoing)	Completed / Ongoing	OPDS reviewed all site plans & administrative site plans received for E&S control to prevent or minimize impacts to water quality prior to approval.	100% of site plans reviewed for E&S control.	Office of Planning & Development Svcs. (OPDS), Jon Reiner, Director	July 1, 2017	All 2021 proposals which included site, subdivision and/or wetland permit plans were also reviewed by proper officials.
4-4 Conduct site inspections (Ongoing)	Completed / Ongoing	OPDS conducted weekly inspections for adequate E&S controls on all projects under construction until project sites were permanently stabilized	100% of site inspections conducted for all sites constructed within reporting period.	Office of Planning & Development Svcs. (OPDS), Jon Reiner, Director	July 1, 2017	
4-5 Implement procedure to allow public comment on site development (Ongoing)	Completed / Ongoing	Meetings were properly posted and held for required projects.	Public mtgs held by Planning, Zoning & Inland Wetlands Agency for 100% of eligible projects. 100% of projects posted on TOG website when not presented at a meeting.	Office of Planning & Development Svcs. (OPDS), Jon Reiner, Director	July 1, 2017	
4-6 Implement procedure to notify developers about DEEP construction stormwater permit (Ongoing)	Completed / Ongoing	Continued to provide flyers in 100% of preconstruction meetings and land use application reviews.	Flyers provided in 100% of preconstruction meetings and land use application reviews.	Jonathan Reiner, Director of Office of Planning and Developmental Services (OPDS)	July 1, 2017	
4-7 Document compliance with CT Anti-Degradation Implementation Policy in Water Quality Standards for all new or increased discharges to High Quality Waters	Completed / Ongoing	None - there were no relevant applications	100% compliance with policy for all new or increased discharges to high quality waters.	Office of Planning & Development Svcs. (OPDS), Jon Reiner, Director	July 1, 2017	

BMP	Status	Activities in reporting period	Measurable goal	Dept. / Person Responsible	Projected or actual date complete	Additional details
4-8 Demonstrate no new or increased discharges to Impaired Waters from the MS4	Completed / Ongoing	None - there were no relevant applications	Zero net increase in pollutant load in discharges to Impaired Waters.	Office of Planning & Development Svcs. (OPDS), Jon Reiner, Director	July 1, 2017	
4-9 Retain Water Quality Volume for all new stormwater discharges located less than 500 feet from a tidal wetland	Completed / Ongoing	None - there were no relevant applications	100% Water Quality Volume retained for new discharges <500 ft from non-freshwater tidal wetland.	Office of Planning & Development Svcs. (OPDS), Jon Reiner, Director	July 1, 2017	
4-10 Obtain required permits for stormwater discharges below coastal jurisdiction line	Completed / Ongoing	None - there were no relevant applications	100% of all required permits obtained	Office of Planning & Development Svcs. (OPDS), Jon Reiner, Director	July 1, 2017	

4.2 Describe any Construction Site Runoff Control activities planned for the next year, if applicable.

TOG will continue current efforts and maintain enforcement of strengthened Zoning Regulations.

5. Post-construction Stormwater Management (Section 6(a)(5) / page 27)

5.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Dept. / Person Responsible	Projected or actual date complete	Additional details
5-1 Establish or update legal authority & guidelines regarding LID and runoff reduction in site development planning (Due 7/1/22)	Completed	none	Adoption of updated legal authority & guidelines	Office of Planning & Development Svcs. (OPDS), Jon Reiner, Director	October 1, 2019	New Zoning Regulations in effect in 2019 required LID and more strict stormwater reduction & treatment
5-2 Enforce LID/runoff reduction requirements for development and redevelopment projects (Due 7/1/22)	Completed / Ongoing	Requirements, updated in 10/19, are enforced via site plan review & the Zoning Enforcement Officer.	Percent of Water Quality Volume retained.	Office of Planning & Development Svcs. (OPDS), Jon Reiner, Director	October 1, 2019	
5-3 Identify retention and detention ponds in priority areas (Due 7/1/20)	In Progress	To date, 31 ponds have identified in the Town.	ID retention and detention ponds	Public Works/ Greg Hanover, Director	July 2022	

BMP	Status	Activities in current reporting period	Measurable goal	Dept. / Person Responsible	Projected or actual date complete	Additional details
5-4 Implement long-term maintenance plan for stormwater basins and treatment structures (Ongoing)	Substantially Complete / Ongoing	The Town’s consultant, B&L, prepared a town-owned stormwater structure maintenance plan. 29 out of 46 stormwater treatment structures were inspected in 2021.	Inspect 100% of Town-owned stormwater basins & structures in Priority Areas	Public Works/ Greg Hanover, Director	July 2022	
5-5 DCIA mapping (Due 7/1/20)	Substantially Complete / Ongoing	TOG used impervious covers layer available to calculate DCIA priority areas.	Percent of total sub-basins for which DCIA has been mapped and calculated.	Public Works/ Greg Hanover, Director	June 2021/ Ongoing	DCIA mapping to be updated as retrofit, new development, & redevelopments data compilation is complete.
5-6 Address post-construction issues in areas with pollutants of concern	Not started			Office of Planning & Development Svcs. (OPDS), Jon Reiner, Director		

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

Middle School renovation incorporated significant stormwater engineering plus two added school renovations (Cutler & Westside) incorporated improved stormwater conditions – all were finished/came online in 2021. TOG will continue to enforce LID/runoff reduction for development and redevelopment projects. TOG will also continue inspections of stormwater treatment structures and implement maintenance at each structures per updated 2022 maintenance plan. TOG will continue to enforce LID/runoff reduction requirements for development and redevelopment projects and will continue updating the DCIA mapping, as necessary.

5.3 Post-Construction Stormwater Management reporting metrics

For details on this requirement, visit www.nemo.uconn.edu/ms4/tasks/post-construction.htm. Scroll down to DCIA section.

Metrics	
Baseline (2012) Directly Connected Impervious Area (DCIA)	2,755 acres of impervious area; 814 acres DCIA
DCIA disconnected (redevelopment plus retrofits)	0 acres this year / 0 acres total
Retrofit projects completed	0
DCIA disconnected	0% this year / Unknown % total since 2012
Estimated cost of retrofits	Approximately \$461,000 to disconnect an estimated 3.19 acres of DCIA
Stormwater treatment structures identified (including detention/retention ponds, oil water separators, hydrodynamic separators, green infrastructure, etc.)	31 stormwater basins and 15 oil water separators

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

- UCONN CLEAR calculated the impervious cover area for each DEEP sub basin in the Town and this info was incorporated into the Town’s GIS.
- To update the baseline DCIA for the Town of Groton, the Town’s consultant, Barton and Loguidice, LLC, used the process found on the CT NEMO website. CT NEMO developed 5 formulas to calculate the DICA and Impervious Cover (IC) based independently for each basin in Groton using the percent DCIA for the basin with the state DCIA removed from the equation. Barton and Loguidice took the formulas and created a bell curve to input the calculated percent of DCIA for each basin and calculate the total DCIA and IC amounts for the Town. Each basin value was added together to create the baseline for the DCIA and IC for the Town of Groton.

6. Pollution Prevention/Good Housekeeping (Section 6(a)(6) / page 31)

6.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Dept. / Person Responsible	Projected or actual date complete	Additional details
6-1 Develop/ implement formal employee training program (Ongoing)	Completed / Ongoing	Due to safety restrictions resulting from the COVID-19 pandemic, a virtual training was provided to select personnel from Public Works on May 27, 2021. The IDDE specific training slated for development and intro in 2019 will be undertaken in 2022 (see comment at top). However, there are many IDDE topics discussed during the Town’s annual SPCC and SWPPP training events.	Conducted annual training.	Public Works/ Greg Hanover, Director	Completed 2017/ Ongoing	
6-2a Minimize the discharge of pollutants to MS4 from parks & open space mgmt.	Completed / Ongoing	Continued to follow SOPs	100% of existing SOP’s reviewed updated	Public Works/ Greg Hanover, Director	Completed 2017/ Ongoing	
6-2b Minimize the discharge of pollutants to MS4 from pet waste	Completed / Ongoing	Continued parks monitoring for pet waste pollution, maintained Town pet waste stations, no dumping signs, & public education.	1) Inappropriate pet waste management sites IDed 2) % locations with compliance complete.	Public Works/ Greg Hanover, Director	Completed 2017/ Ongoing	

BMP	Status	Activities in current reporting period	Measurable goal	Dept. / Person Responsible	Projected or actual date complete	Additional details
6-2c Minimize the discharge of pollutants to MS4 from waterfowl	Completed / Ongoing	"Do Not Feed Waterfowl" brochures at Town Hall Annex. Joined ECCD Baker Cove Watershed Committee- formed in part to continue Goose Task Force work.	1) Identify waterfowl congregations & feed on a schedule 2) % of ID'd land w/ educational signs or methods to discourage feeding; 3) % of ID'd land prevention practices, congregation or areas of direct drainage isolated.	Public Works/ Greg Hanover, Director	Completed 2017/ Ongoing	
6-2d Minimize the discharge of pollutants to MS4 from buildings & facilities	Completed / Ongoing	Parking lots swept per plan. Existing SWPPP followed and maintained.	1) Dumpster procedures developed & implemented; 2) Parking lots swept annually; 3) Non-SWPPP facilities evaluated by deadline to ensure no interior floor drains connect to MS4.	Public Works/ Greg Hanover, Director	Completed 2017/ Ongoing	Non-SWPPP facility eval delayed, to be pursued in 2022
6-2e Minimize the discharge of pollutants to MS4 from municipal vehicle and equipment maintenance	Completed / Ongoing	Continued to follow procedures established for vehicle storage and washing.	1) Procedures established for Town vehicle storage; 2) Procedures established to ensure that vehicle wash waters are not discharged to the MS4 or to surface waters.	Public Works/ Greg Hanover, Director	Completed 2017/ Ongoing	
6-2f Minimize the discharge of pollutants to MS4 from leaf management	Completed / Ongoing	Streets are swept & leaf mgmt. info is promoted. Transfer Station flyer re-design better communicates guidelines (free drop off, loose or in paper bags)	Problem streets swept annually in fall as part of BMP #6-9; Educational info on TOG Stormwater page (BMP #1-4).	Public Works/ Greg Hanover, Director	Completed 2017/ Ongoing	
6-2 Implement MS4 property and operations maintenance (Ongoing)	Completed / Ongoing	Continued to follow SOPs Salt piles at municipal facilities stored under cover and on impervious surfaces. Town industrial stormwater discharges are monitored. Vehicle maintenance is performed undercover.	Review and update existing SOPs.	Public Works/ Greg Hanover, Director	Completed 2017/ Ongoing	The Town continues reviewi of current practices and looking for optimization.
6-3 Implement coordination with interconnected MS4s	Completed / Ongoing	Through outfall identification, the Town has identified several interconnections with neighboring towns/cities. Communication is ongoing with neighboring municipalities, the DOT and the Naval Base.	Coordinated among interconnected MS4s reps: Groton City, Ledyard, Navy Sub Base, & CT Dept. of Transportation	Public Works/ Greg Hanover, Director	Completed 2017/ Ongoing	

BMP	Status	Activities in current reporting period	Measurable goal	Dept. / Person Responsible	Projected or actual date complete	Additional details
6-4 Develop/ implement program to control other sources of pollutants to the MS4	Complete/ Ongoing	Consultants ID'd industrial & commercial facilities not registered under DEEP's Industrial Stormwater General Permit & Commercial Stormwater General Permit, respectively and drafted educational brochures.	Program developed and implemented to control the contribution of pollutants to MS4 by deadline	Public Works/ Greg Hanover, Director		Brochures will be mailed to these sites in 2022, notifying of potential obligation to register.
6-5 Evaluate additional measures for discharges to impaired waters*	Ongoing	n/a	Evaluate additional measures for discharges to impaired waters.	Public Works/ Greg Hanover, Director		
6-6 Track projects that disconnect DCIA (Ongoing)	Completed / Ongoing	TOG initiated tracking DCIA using a spreadsheet designed by UCONN CLEAR & updated by B&L. OPDS is in process of implementing new Tracking Form as part of applications for development. Info will be used to calculate changes in DCIA moving forward.	Continue to annually track the total acreage of DCIA that is disconnected from the MS4 as a result of redevelopment or retrofit projects.	Public Works/ Greg Hanover, Director	Ongoing	The Town will maintain a record of all disconnected DCIA projects.
6-7 Implement infrastructure repair/rehab program (Due 7/1/21)	In Progress	As part of outfall screening, B&L identified several outfalls that required maintenance. TOG started addressing issues on these and will work on completing in 2022 to the maximum extent practicable.	Program developed and implemented by deadline.	Public Works/ Greg Hanover, Director	December 2022	In 2022, it is anticipated TOG will review aging infrastructure to ID potential maintenance needs.
6-8 Develop/ implement plan to ID/prioritize retrofit projects (Due 7/1/20)	Substantially Completed/ Ongoing	A Stormwater Retrofit Plan was substantially completed in 2021. It is anticipated to be completed by February 2022.	Develop and implement a plan to identify and prioritize potential DCIA disconnection or retrofit projects. Focus on whether project is in MS4 urbanized (DCIA >11% discharge to impaired waters) area.	Public Works/ Greg Hanover, Director	February 2022	Final report will be made available on TOG Stormwater webpage
6-9 Implement retrofit projects to disconnect 2% of DCIA (Due 7/1/22)	Not started	When Retrofit Plan is finalized, TOG will begin process of fundraising and implementation.	Develop and implement retrofit projects to disconnect 2% of all DCIA.	Public Works/ Greg Hanover, Director	December 2025	Funds will be sought via ARPA (Covid relief), Capital Improvements + grant requests.

BMP	Status	Activities in current reporting period	Measurable goal	Dept. / Person Responsible	Projected or actual date complete	Additional details
6-10 Develop/implement street sweeping program	Completed / Ongoing	Town street sweeping continued through 2021.	Continue to implement the Town's street sweeping program.	Public Works/ Greg Hanover, Director	Ongoing	
6-11 Develop/implement catch basin cleaning program (Ongoing)	Completed / Ongoing	Town catch basin cleaning continued to the maximum extent practicable.	Continue with Town-wide catch basin cleaning program.	Public Works/ Greg Hanover, Director	Ongoing	
6-12 Develop/implement snow management practices (Due 7/1/18)	Completed / Ongoing	Town snow management practices continued.	1) SOPs implemented, 2) % of road crew trained on application methods and equipment; 3) goals for chemical application rates met annually	Public Works/ Greg Hanover, Director	December 31, 2017 Ongoing	In 2018 TOG adopted new Snow Mgmt to improve chemical application rates

6.2 Describe any Pollution Prevention/ Good Housekeeping activities planned for the next year, if applicable.

Existing efforts will be maintained but with added emphasis on finding possibilities to improve efficiency and quantifying results.

6.3 Pollution Prevention/ Good Housekeeping reporting metrics

Metrics	
Employee training provided for key staff	Yes – 5/27/21
Street sweeping	
Curb miles swept	Est 400 miles
Volume (or mass) of material collected	Est 913 cubic yards
Catch basin cleaning	
Total catch basins in priority areas (value will be less than or equal to total catch basins town -wide)	590
Total catch basins town- (or institution-) wide	2,656
Catch basins inspected	127
Catch basins cleaned	126
Volume (or mass) of material removed from all catch basins	46 CY
Volume removed from catch basins to impaired waters (if known)	unknown
Snow management	
Type(s) of deicing material used	Liquid Magnesium Chloride and IB30/70 treated salt
Total amount of each deicing material applied	300 gal Magnesium Chlorides + 3,490 tons IB30/70 treated salt
Type(s) of deicing equipment used	Computerized ground speed control spreaders
Lane-miles treated (A lane-mile is a mile of roadway in a single driving lane)	190.42 miles
Snow disposal location	741 Flanders Rd.

Staff training provided on application methods & equipment	Yes
Municipal turf management program actions (for permittee properties in basins with N/P impairments)	
Reduction in application of fertilizers (since start of permit)	Unknown – will attempt to determine or begin tracking in 2022
Reduction in turf area (since start of permit)	Unknown – will attempt to determine or begin tracking in 2022
Land w/ high potential to contribute bacteria (dog parks, parks w/ open water, & sites w/ failing septic systems)	
Cost of mitigation actions/retrofits	Unknown – will attempt to determine or begin tracking in 2022

6.4 Catch basin cleaning program

Provide any updates or modifications to your catch basin cleaning program
Catch basins are on a schedule to be inspected and cleaned out and the sumps are measured to the maximum extent practicable. When inspections and cleaning are conducted, the conditions and amount of material removed are recorded. A list is generated of catch basins with excess material present to be put on a more frequent cleaning schedule to ensure that the 50% design capacity for the sump is not exceeded.

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. (Due 7/1/20)				
In 2020, TOG twice worked with UCONN CLEAR (Land Use Center) and its Climate Corps undergrad team to identify potential projects for Retrofits. Stakeholders (including Bacwac) received final reports and were invited to presentations. In 2021, the Town’s consultant, B&L, reviewed the retrofit projects proposed by Climate Corps for feasibility and the presence of DCIA. Two of the Climate Corps projects were carried over into the Town’s retrofit plan.				
In 2021, the Town worked with B&L to prepare a retrofit plan. First B&L identified the Town-owned properties that contain a half acre or more of total impervious area were identified. A couple of privately owned sites were also added to the list due to various interested parties. A total of forty (40) sites were evaluated through a desktop analysis for the presence of DCIA, the drainage class of the soils, and the estimated depth to groundwater. Sites without DCIA were not evaluated further. Sites with excessively or poorly draining soils and/or shallow groundwater (per the USDA NRCS Web Soil Survey) were also not considered further.				
The potential candidate sites were discussed with the Town. Sites where construction projects are already underway and sites where the property ownership and/or use is currently under determination were tabled as potential future retrofit sites. A total of five (5) municipal sites were selected for the retrofit plan. Concept retrofit designs and estimated project costs were developed for each site and the estimated DCIA to be connected was calculated. With this information, the five (5) sites were prioritized based on the cost per DCIA disconnected, as shown in the table below:				
	Proposed Retrofit Project Sites	Total DCIA Disconnected	Total Estimated Project Capital Cost	Cost per DCIA Disconnected
1.	Fishtown Road (Outfall 0424)	28,200 sq ft	\$30,000	\$1.06/sq ft
2.	Community Center	18,000 sq ft	\$79,000	\$4.40/sq ft
3.	Noank Community Garden	11,000 sq ft	\$55,000	\$5.00/sq ft
4.	Village Lane Senior Housing	19,500 sq ft	\$247,000	\$13.00/sq ft
5.	Calvin Burrows Field	3,800 sq ft	\$65,000	\$17.00/sq ft
	Total:	80,500 sq ft	\$476,000	

If all five (5) projects are implemented, the total amount of DCIA estimated to be disconnected is approximately 80,500 square feet (1.85 acres). Funds will be requested for implementation of the retrofit plan, however, availability may be limited. In addition, two private sites were selected and concept retrofit designs drafted with estimates. This information will be made available to property owners with an invitation to discuss partnership in the work.

PWD & OPDS are both part of the ECCD Baker Cove Watershed Committee or 'Bacwac' (noted in Sect. 1). ECCD has submitted a proposal for the Clean Water Act 319 Non-Point Source Pollution Grant program in hopes of receiving funds for Fiscal Year 2022-2023. If granted, part of these funds would go towards purchasing a SUV vacuum truck with a B.I.R.D. attachment for the Town's use on permeable pavement. This was taken into consideration with the types of LID proposed in the retrofit plan.

In late 2020, Project Oceanology, local non-profit organization, joined Bacwac. Project O partnered with the Groton Board of Ed and was awarded funding towards education and resiliency projects for three school years (fall 2021 through spring 2024). Project O has applied to Project Rain Barrel for 25 rain barrels. If awarded, rain barrels will be implemented at the Thames River Magent School and other parts of Town.

Describe plans for continuing the Retrofit program and how to achieve a goal of 1% DCIA disconnection annually in future years. (Due 7/1/22)

In 2022, the Town will work with its consultant to finalize a plan for Retrofits and begin seeking funds for project implementation to the maximum extent practicable.

PART II: Impaired Waters Investigation And Monitoring

1. Impaired waters investigation and monitoring program

1.1 Indicate which stormwater pollutants of concern occur in your municipality. 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 results and any notable findings, and 3) any changes to the Stormwater Management Plan based on monitoring results.

Barton & Loguidice, LLC, the Town’s consultant, attempted to collect samples during multiple rain events during 2020, and again during 2021. Due to the impaired outfalls proximity to the coast, most of the outfalls in the Town are impacted by tide levels and storm surges. During 2021, B&L was able to collect an additional six samples during wet weather for impaired waterbody outfalls. To date, B&L has collected wet weather samples at nine outfalls. Of the nine samples collected during wet weather events, five of them were elevated for the required parameters analyzed triggering a need for further investigations.

Due to the limited number of qualifying storm events and the fact that most of the outfalls are tidally influenced, in 2022, B&L is focusing on collecting wet weather samples from the upgradient structures closest to the outfalls to the maximum extent practicable. B&L will continue to attempt to collect wet weather samples from the impaired outfalls until all known locations are sampled. Once the remaining impaired wet weather samples are collected, B&L will focus on the six annual priority samples and the wet weather investigation samples. Coordination with the tide schedule, storm surges and qualifying rain events will continue to be conducted for future monitoring events. Weather conditions during 2021 did not allow B&L to gain significant progress towards wet weather sampling; however, other local efforts resulted in the refinement of the Town’s list of outfalls to impaired waters. Previously there were 29 such outfalls and B&L has now located an additional 15 outfalls, bringing the total number of impaired outfalls to 54. No additional changes have been made to the Stormwater Management Plan at this time.

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

2.1 Screening data

Outfall ID	Latitude	Longitude	Sample Date	Enterococcus (col/100mL)	Fecal Coliform (col/100mL)	Nitrogen (mg/L)	Phosphorus (mg/L)	Lab	Investigation Required
0020	41.3725739	-71.966484	11/30/2020	11200	2910			Phoenix	Yes
0464	41.37352	-71.96603	11/30/2020	959	31			Phoenix	Yes
0885	41.37315	-71.9662	11/30/2020	5790	2490			Phoenix	Yes

Outfall ID	Latitude	Longitude	Sample Date	Enterococcus (col/100mL)	Fecal Coliform (col/100mL)	Nitrogen (mg/L)	Phosphorus (mg/L)	Lab	Investigation Required
0095	41.3805313	-72.087326	3/18/2021	145	327	0.06	0.34	Phoenix	Yes
0099	41.3794975	-72.087532	3/18/2021	109	< 10	0.083	5.97	Phoenix	Yes
0102	41.3784103	-72.087669	3/18/2021	62	< 10	0.143	0.7	Phoenix	No
0103	41.378006	-72.087494	3/18/2021	191	< 10	0.177	0.97	Phoenix	No
0378	41.3831253	-72.08728	3/18/2021	84	< 10	0.062	1.05	Phoenix	No
1074	41.3715782	-72.084938	3/18/2021	457	< 10	0.103	0.62	Phoenix	No

2.2 Credit for screening data collected under 2004 permit

Outfall	Latitude / Longitude	Sample date	Parameter (Nitrogen, Phosphorus, Bacteria, or Other pollutant of concern)	Results	Name of Laboratory (if used)	Follow-up required?
0312		12/12/16	Bacteria – E. Coli	360 col/100mL	CTL, Inc.	No

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

Provide the following information for outfalls exceeding the pollutant threshold.

Outfall ID	Status of drainage area investigation	Control measure to address impairment
	Due to the limited number of qualifying storm events and the fact that most of the outfalls are tidally influenced, in 2022, B&L is focusing on collecting wet weather samples from the upgradient structures closest to the outfalls to the maximum extent practicable. B&L will continue to attempt to collect wet weather samples from the impaired outfalls until all known locations are sampled. Once the remaining impaired wet weather samples are collected, B&L will focus on the wet weather follow-up investigations.	

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

Once outfall sampling 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	Latitude / Longitude	Sample Date	Parameter(s)	Results	Name of Laboratory (if used)
	Due to the limited number of qualifying storm events and the fact that most of the outfalls are tidally influenced, in 2022, B&L is focusing on collecting wet weather samples from the upgradient structures closest to the outfalls to the maximum extent practicable. B&L will continue to attempt to collect wet weather samples from the impaired outfalls until all known locations are sampled. Once the remaining impaired wet weather samples are collected, B&L will focus on the six annual priority samples.				

PART III: IDDE Program Data

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

List all catchments with their ranking (DEEP basins may be used instead of manual catchment delineations).

See attachment provided with this report.

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

Table 2.1a - Non-Impaired Waterbody Samples

Outfall ID	Latitude	Longitude	Sample Date	Ammonia (mg/L)	Chlorine (mg/L)	Conductivity (umhos/cm)	Salinity (g/kg)	Temp (oC)	Surfactants (mg/L)	E. Coli (col/100ml)	Lab	Investigation Required
0039	41.34665298	-72.0522537	5/6/2020	0.25	0	91.3	0.043	12.8	0.25	6490	Phoenix	No
0124	41.3646965	-71.9739456	5/19/2020	0	0	387	0.186	16.3	0.5	< 10	Phoenix	No
0125	41.36558533	-71.9740524	5/18/2020	0	0	161	0.0756	21.5	0.25	< 10	Phoenix	No
0132	41.35253143	-72.0074081	5/18/2020	0	0.09	390	0.192	14.2	0.25	< 10	Phoenix	No
0133	41.35408783	-71.9993286	5/19/2020	0.25	0.07	141	0.0669	15.4	0.25	< 10	Phoenix	No
0149	41.34929276	-71.9888229	5/14/2020	0	0	396	0.192	14.8	0.5	< 10	Phoenix	No
0155	41.33382416	-72.0016708	5/6/2020	0	0.23	302	0.146	14.3	0.5	< 10	Phoenix	No
0176	41.34951782	-72.0566177	5/13/2020	0.5	0.09	228	0.15	10.4	0.25	< 10	Phoenix	Yes
0180	41.35266113	-71.9986343	5/18/2020	0	0	267	0.126	15.5	0.35	< 10	Phoenix	No
0181	41.34946823	-71.9954834	5/19/2020	0	0.04	245	0.119	17.8	0.25	< 10	Phoenix	No
0186	41.34967804	-71.97966	5/13/2020	0	0	381	0.184	15	0.25	< 10	Phoenix	No
0205	41.35307312	-72.0085602	5/21/2020	0.25	0.01	156.9	0.07	20.6	0.5	10	Phoenix	No
0209	41.38142395	-72.0019531	5/13/2020	0	0.04	194.8	0.09	11.9	0.25	< 10	Phoenix	No
0210	41.38180923	-72.0005798	5/13/2020	0.25	0.08	84.9	0.04	9.4	2	10	Phoenix	No
0225	41.37506866	-71.9850082	5/6/2020	0.25	0.04	234	0.14	14.9	0.25	< 10	Phoenix	No
0237	41.39171982	-72.0043793	5/13/2020	0	0.05	4.3	0	15.9	0.25	20	Phoenix	No
0247	41.3711586	-72.0723724	5/14/2020	0.25	0	311	0.19	13.3	0.25	< 10	Phoenix	No
0250	41.35211945	-72.0632095	5/6/2020	0	0.12	542	0.244	12.2	0.25	< 10	Phoenix	No
0252	41.35556412	-72.0526276	5/6/2020	0	0	245	0.117	11.9	0.5	< 10	Phoenix	No
0262	41.32733154	-71.9849777	5/6/2020	0	0.21	685	0.335	11.6	1	< 10	Phoenix	No

Table 2.1a - Non-Impaired Waterbody Samples

Outfall ID	Latitude	Longitude	Sample Date	Ammonia (mg/L)	Chlorine (mg/L)	Conductivity (umhos/cm)	Salinity (g/kg)	Temp (oC)	Surfactants (mg/L)	E. Coli (col/100ml)	Lab	Investigation Required
0264	41.32585907	-71.9903641	5/6/2020	0	0.02	520	0.23	14.5	0.25	< 10	Phoenix	No
0275	41.36267471	-71.9930267	5/19/2020	0	0.08	233	0.111	14.4	0.5	< 10	Phoenix	No
0292	41.33322144	-72.0020828	5/19/2020	0	0.05	274	0.131	17	0.5	10	Phoenix	No
0300	41.34113693	-72.01931	5/6/2020	0	0.06	184.9	0.09	13.5	0.25	10	Phoenix	No
0317	41.35688782	-72.0544662	5/6/2020	0.5	0.07	268	0.135	16	0.75	41	Phoenix	Yes
0319	41.35826874	-72.0583878	5/6/2020	0.5	0.08	361	0.173	15.6	0.25	10	Phoenix	Yes
0320	41.34470367	-71.9829254	5/14/2020	0	0	543	0.244	12.1	0.25	< 10	Phoenix	No
0340	41.34743118	-71.9893112	5/14/2020	0.25	0.02	265	0.125	16	0.75	41	Phoenix	No
0348	41.35110092	-71.9889908	5/19/2020	0	0.05	315	0.15	16.9	0.3	768	Phoenix	No
0372	41.33790588	-72.0466385	5/19/2020	1	0.12	692	0.41	15.75	0.75	< 10	Phoenix	Yes
0393	41.34672165	-71.9782104	5/13/2020	0	0.01	273	0.132	10.7	0.25	161	Phoenix	No
0394	41.37468719	-71.983017	5/6/2020	0	0.01	206	0.12	14	0.25	< 10	Phoenix	No
0397	41.33848572	-72.0011063	5/6/2020	0	0	322.8	0.17	10.6	0.25	< 10	Phoenix	No
0400	41.36626816	-71.9813995	5/6/2020	0.25	0.02	217	0.13	13.8	0.25	10	Phoenix	No
0403	41.36229324	-71.9824753	5/19/2020	0	0	190	0.0902	16.1	0.25	< 10	Phoenix	No
0404	41.35911942	-71.9832306	5/19/2020	0	0.02	120	0.0571	17	0.25	20	Phoenix	No
0417	41.36755753	-72.0593338	5/21/2020	0.25	0.21	198	0.0942	18.5	0.25	20	Phoenix	No
0420	41.38817596	-72.0055389	5/13/2020	0	0.03	430.6	0.21	14.1	0.25	134	Phoenix	No
0431	41.39502335	-72.0796585	5/18/2020	0	0	126	0.07	18.3	0.25	740	Phoenix	No
0432	41.33686066	-72.0201874	6/2/2020	0.25	0	204	0.0972	18.4	0.25	< 10	Phoenix	No
0435	41.36832047	-72.0506363	5/21/2020	0.25	0.19	324	0.154	17.3	0.25	< 10	Phoenix	No
0437	41.34486389	-71.9826508	5/14/2020	0	0.2	815	0.4	15.4	0.75	< 10	Phoenix	No
0439	41.36780548	-71.9838409	5/6/2020	0.25	0	394	0.23	15.2	0.25	< 10	Phoenix	No
0444	41.3358345	-72.0018768	5/6/2020	0	0.03	333	0.16	14.7	0.25	< 10	Phoenix	No
0463	41.39541245	-71.9619141	5/18/2020	0.25	0.03	104	0.0491	20.3	0.25	< 10	Phoenix	No
0477	41.37667465	-71.9860229	5/6/2020	0	0	237	0.15	13.1	0.25	< 10	Phoenix	No
0479	41.38464737	-71.9822388	5/13/2020	0	0	145.7	0.07	14.3	0.25	< 10	Phoenix	No
0484	41.35070419	-71.9764252	5/21/2020	0	0.04	194	0.09	20.3	0.5	< 10	Phoenix	No
0525	41.35135	-71.97168	6/16/2020	0.25	0.07	549	0.247	21.5	0.25	171	Phoenix	No
0787	41.38428497	-72.0198822	5/18/2020	0	0.01	99.4	0.0496	20.9	0.25	< 10	Phoenix	No
0796	41.38261414	-72.0642853	5/21/2020	0.25	0.13	258	0.124	14.3	1.5	< 10	Phoenix	No

Table 2.1a - Non-Impaired Waterbody Samples

Outfall ID	Latitude	Longitude	Sample Date	Ammonia (mg/L)	Chlorine (mg/L)	Conductivity (umhos/cm)	Salinity (g/kg)	Temp (oC)	Surfactants (mg/L)	E. Coli (col/100ml)	Lab	Investigation Required
0817	41.34192276	-72.057045	6/2/2020	0.25	0.13	361	0.17	19	0.25	310	Phoenix	No
0843	41.36203766	-72.0602112	5/6/2020	0.25	0.07	250	0.12	13	0.5	< 10	Phoenix	No
0881	41.38715744	-72.002533	5/13/2020	0.25	0.12	177.3	0.23	15	0.25	< 10	Phoenix	No
1084	41.35917664	-72.0272064	5/14/2020	0	0	125.1	0.623	9.9	0.5	< 10	Phoenix	No
1137	41.39427567	-72.0792999	5/18/2020	0.25	0.02	199	0.1	17.78	0.5	< 10	Phoenix	No
1157	41.34456	-72.06062	5/6/2020	0.25	0	275	0.132	10.9	0.25	< 10	Phoenix	No
1162	41.38291168	-71.98423	5/13/2020	0.25	0.01	251	0.12	14.5	0.25	< 10	Phoenix	No
1181	41.34675217	-72.0204391	5/13/2020	1	0.02	422	0.205	14.2	0.25	< 10	Phoenix	Yes
1193	41.37896729	-72.0759964	5/18/2020	0	0.06	371	0.178	14	0.25	84	Phoenix	No
1204	41.36036301	-72.0695801	3/23/2021	0	0.02	1738	0.874	10.3	0.17	10	Phoenix	No
1297	41.37345123	-72.0550308	3/23/2021	0	0.11	577	0.265	2	0.09	10	Phoenix	No
1306	41.3721962	-72.064064	3/23/2021	0.5	0.02	386	0.189	9.8	0.41	10	Phoenix	Yes
1362	41.35009003	-71.9886322	5/14/2020	0	0.04	377	0.181	16.1	0.5	< 10	Phoenix	No
1449	41.38490295	-71.9800186	6/16/2020	0.5	0.05	234	0.111	17.2	0.5	< 10	Phoenix	Yes

Table 2.1b - Class SA & SB Impaired Waterbody Samples

Outfall	Latitude	Longitude	Sample Date	Enterococcus (col/100mL)	Fecal Coliform (col/100mL)	Nitrogen (mg/L)	Phosphorous (mg/L)	Lab	Investigation Required
0156	41.3313	-71.99164	5/6/2020	< 10	< 10			Phoenix	No
0213	41.3617	-71.96887	5/13/2020	144	450			Phoenix	Yes
0216	41.3573	-71.96887	6/2/2020	52	10			Phoenix	No
0222	41.3568	-71.96922	6/2/2020	771	75			Phoenix	Yes
0288	41.3518	-71.97187	5/13/2020	10	< 10			Phoenix	No
0296	41.3416	-72.03477	5/13/2020	< 10	20			Phoenix	No
0378	41.3831	-72.08728	5/14/2020	< 10	< 10	< 0.01	3.69	Phoenix	Yes
0426	41.3237	-72.00166	5/6/2020	41	< 10			Phoenix	No
0458	41.3277	-72.00285	5/6/2020	20	< 10			Phoenix	No
1022	41.3628	-71.96953	5/13/2020	75	160			Phoenix	No
1074	41.3716	-72.08494	5/18/2020	10	< 10	< 0.01	3.54	Phoenix	Yes

2.2 Wet weather sample and inspection data

Outfall / Interconnection ID	Latitude / Longitude	Sample date	Ammonia	Chlorine	Conductivity	Salinity	E. coli or Enterococcus	Surfactants	Water Temp	Pollutant of concern
<p>Due to the limited number of qualifying storm events and fact that most of outfalls are tidally influenced, in 2022, B&L will focus on collecting wet weather samples from upgradient structures closest to outfalls to the maximum extent practicable. B&L will continue attempts to collect wet weather samples from outfalls to impaired waters until all known locations are sampled. Once the remaining wet weather samples are collected, B&L will focus on the wet weather investigation samples.</p>										

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.

Outfall ID	Receiving Water	System Vulnerability Factors
It is anticipated that this will be initiated in 2022.		

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

Pipe ID	Outfall ID	Latitude	Longitude	Sample Date	Visual/olfactory evidence of illicit discharge	Ammonia (mg/L)	Chlorine (mg/L)	Surfactants (mg/L)	E. coli (col/100ml)	Enterococcus (col/100mL)	Fecal Coliform (col/100mL)	Nitrogen (mg/L)	Phosphorous (mg/L)
UNK31-MH0383	0039	41.3459	-72.05304	5/7/2021	Sewage Smell	0	0.01	0.39	10				
MH0177-CB2286	0176	41.35004	-72.05795	8/3/2021	None	0.25	0.05	0.08					
CB2285-CB2286	0176	41.35004	-72.05795	8/3/2021	None	0	0.07	0.1					
CB2298-CB2299	0176	41.35025	-72.05881	8/3/2021	None	0.25	0.22	0.1					
Inlet-CB1225	0210	41.38252	-72.00068	5/7/2021	None	0	0	0.11					
CB1475-CB0204	0213	41.36176	-71.96973	8/3/2021	None	0	0.02	0.11			10		
CB3437-CB0213	0213	41.36168	-71.97198	8/3/2021	None	0	0.05	0.14			31		
CB0214-CB0213	0213	41.36168	-71.97198	8/3/2021	None	0	0	0.1			31		
UNK1-CB0213	0213	41.36168	-71.97198	8/3/2021	None	0	0.05	0.09			<10		
CB0213-CB0212	0213	41.36168	-71.97198	8/3/2021	None	0	0.02	0.09			<10		
UNK10-CB0178	0213	41.3573	-71.97042	8/3/2021	None	0	0.06	0.11		565	52		
CB0180-CB0181	0213	41.35699	-71.97034	8/3/2021	Musty Smell	0	0.04	0.12		441	10		
CB0180-CB0182	0213	41.35699	-71.97034	8/3/2021	None	0.25	0.07	0.31		41	<10		
UNK11-CB0179	0222	41.35729	-71.97033	5/14/2021	None	0	0.09	0.11		<10	<10		
CB0183-MH0224	0222	41.35626	-71.9705	5/14/2021	None	0.25	0.05	0.29		63	20		
CB1951-CB1676	0222	41.32733	-71.98554	5/14/2021	None	0.25	0.08	0.15		576			
CB1674-CB1676	0222	41.32733	-71.98554	5/14/2021	None	0	0	0.18		160			
CB1677-CB1676	0222	41.32733	-71.98554	5/14/2021	None	0.25	0.02	0.15		<10			
CB1811-CB1758	0317	41.35583	-72.0558	8/3/2021	None	0	0.04	0.11					
CB1757-CB2808	0317	41.35679	-72.05468	8/3/2021	None	0.25	0.05	0.12					
CB0168-CB2808	0317	41.35679	-72.05468	8/3/2021	None	0	0.01	0.11					
UNK1-CBUNK2	0317	41.35571	-72.05708	8/3/2021	None	0.5	0.01	0.1					
CB0162-CB1068	0378	41.38351	-72.0867	5/7/2021	None	0.25	0.01	0.15		20	<10	2.68	0.011
Stream-CB0908	0378	41.38308	-72.08667	5/7/2021	None	0	0.03	0.24		30	10	7.48	0.055
CB3911-MH0630	1074	41.37252	-72.08498	5/7/2021	None	0	0.02	0.13		<10	<10	3.6	<0.010

Catchment ID	Latitude	Longitude	Date of Initial Sample	Date of Follow-Up	Evidence of Discharge at Time of Follow Up
0020	41.37257385	-71.96648407	11/30/2020	5/14/2021	No
0039	41.34665298	-72.05225372	5/6/2020	5/7/2021	Yes
0156	41.33128357	-71.99163818	5/6/2020	5/14/2021	No
0176	41.34951782	-72.05661774	5/13/2020	8/13/2021	Yes
0210	41.38180923	-72.00057983	5/13/2020	5/7/2021	Yes
0213	41.36174011	-71.96887207	5/13/2020	8/13/2021	Yes
0222	41.35682678	-71.96921539	5/13/2020	5/14/2021	Yes
0262	41.32733154	-71.98497772	5/6/2020	5/14/2021	Yes
0317	41.35688782	-72.05446625	5/6/2020	8/13/2021	Yes
0319	41.35826874	-72.05838776	5/6/2020	5/14/2021	No
0372	41.33790588	-72.04663849	5/19/2020	5/14/2021	No
0378	41.38312531	-72.08728027	5/14/2020	5/7/2021	Yes
0885	41.37314606	-71.96620178	11/30/2020	5/14/2021	No
1074	41.37157822	-72.08493805	5/18/2020	5/7/2021	Yes
1181	41.34675217	-72.02043915	5/13/2020	5/14/2021	No
1449	41.38490295	-71.98001862	6/16/2020	5/14/2021	No

3.3 Wet weather investigation outfall sampling data

Outfall ID	Latitude / Longitude	Sample date	Ammonia	Chlorine	Surfactants
It is anticipated this will be initiated and completed to the maximum extent practicable in 2022. B&L is focusing wet weather sampling efforts on impaired outfalls and the annual priority outfalls prior to conducting wet weather investigations.					

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

Outfall ID	Source Location(s) (Address)	Discharge Description	Method of Discovery	Date of Discovery	Date of Elimination	Mitigation or Enforcement Action	Est. Vol. of Flow Removed
0039	820 Poquonnock Rd	Only one pipe discharges in this system coming from the direction of 820 Poquonnock Rd & that is exceeding the threshold of surfactants and chlorine	Visually in field + Lab/Field Testing	5/7/2021		NOV Letters are being drafted	
0176	670 Meridian St Ext	There's a pipe discharging in this system coming from the direction of 670 Meridian St Ext that is exceeding the threshold limits of surfactants with trace amounts of surfactants and ammonia	Visually in field + Lab/Field Testing	8/3/2021		NOV Letters are being drafted	

Outfall ID	Source Location(s) (Address)	Discharge Description	Method of Discovery	Date of Discovery	Date of Elimination	Mitigation or Enforcement Action	Est. Vol. of Flow Removed
0210	129 and 147 Yetter Rd	The only pipe discharging water is a open channel/stream running through the system so likely spike of exceeding thresholds could have come from an illicit dumping upstream	Visually in field + Lab/Field Testing	5/7/2021		NOV Letters are being drafted	
0213	55 Cliff Ln, and 105,110 Starr St	There's a lateral discharging into the system coming from 55 Cliff Ln that is discharging exceeding limits of chlorine and trace amounts of surfactants and the main drainage line between 105 and 110 Starr St discharging exceeding amounts of chlorine and trace amount of surfactants	Visually in field + Lab/Field Testing	8/3/2021		NOV Letters are being drafted	
0222	17 and 30 Pearl St, and 20 Bank St	There's a lateral discharging from the area of 20 Bank St that is discharging exceeding amounts of chlorine and enterococcus. 30 Pearl St is discharging exceeding levels of chlorine and an area around 17 Pearl St is discharging exceeding levels of chlorine and surfactants with trace amounts of ammonia	Visually in field + Lab/Field Testing	5/14/2021		NOV Letters are being drafted	
0262	60 and 65 Front St	An area near 60 & 65 Front St is discharging exceeding levels of chlorine & enterococcus, near exceeding levels of surfactants, trace ammonia amounts.	Visually in field + Lab/Field Testing	5/14/2021		NOV Letters are being drafted	
0317	79 Maxson Rd, 27 Tormberg Ln, 168 and 176 Azalea Dr	79 Maxson Rd is discharging exceeding levels of chlorine & ammonia with trace amounts of surfactants. 27 Tormberg Ln is discharging exceeding levels of chlorine + trace amounts of surfactants. A pipe betw 168 & 176 Azalea Dr is discharging a small amount of chlorine + trace amounts of surfactants	Visually in field + Lab/Field Testing	8/3/2021		NOV Letters are being drafted	
1074	Odd Fellows Home Rd	The only discharging pipe in this system was coming from the private housing development of Odd Fellows Home Rd. This pipe is discharging exceeding levels of nitrogen and chlorine with trace amounts of surfactants	Visually in field + Lab/Field Testing	5/7/2021		NOV Letters are being drafted	

PART IV: Certification

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that a false statement made in this document or its attachments may be punishable as a criminal offense, in accordance with Section 22a-6 of the Connecticut General Statutes, pursuant to Section 53a-157b of the Connecticut General Statutes, and in accordance with any other applicable statute."

Chief Elected Official or Principal Executive Officer	Document Prepared by
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Signature / Date: to be signed and dated after review period, upon submission	Signature / Date:
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