



Town of Haddam, Connecticut

2020 Annual Report

**General Permit for the Discharge of Stormwater
from Small Municipal Separate Storm Sewer Systems**

**Permit Number GSM000119
New MS4 Permittee**

MS4 General Permit
 Town of Haddam 2020 Annual Report
 New MS4 Permittee
 Permit Number GSM 000119
 January 01, 2020 - December 31, 2020

This report documents Town of Haddam’s efforts to comply with the conditions of the MS4 General Permit to the maximum extent practicable (MEP) from January 01, 2020 to December 31, 2020.

Liz Glidden, Town Planner was replaced by Bill Warner in late 2018.

Lizz Milardo, First Selectwoman was replaced by Robert McGarry, First Selectman in November 2019

Part I: Summary of Minimum Control Measure Activities

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

1.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Responsible Person and Department	Due	Date completed or projected completion date	Additional details
1-1 Implement public education and outreach	Beginning	A Stormwater Management web page was developed on the town website at: https://www.haddam.org/public-works-department/pages/storm-management The page contains links to the CT Nonpoint Education for Municipal Officials (NEMO) website, the Center for Watershed Protection (CWP) website and the US EPA Site for Stormwater Best Management Practices website. The websites	Meeting	JoAnn Ricardelli, First Selectwoman Administrative Assistant	July 01, 2019	April 06, 2017	Additional Public Education and Outreach resources will be posted on the website in the future.

also have links to additional stormwater education resources.

1-2 Address education/ outreach for pollutants of concern*	To Be Developed	2017 through 2020 - None	None	Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2019
1-3 Salmon River Watershed Partnership (SRWP) Activities	Ongoing	Pat Young, SRWP Coordinator represents the SRWP on statewide issues relating to water quality and non-point source pollution and related information in the 10 town watershed.	Public Education and Outreach on common stormwater topics	Pat Young, SRWP Coordinator	Ongoing Ongoing

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

The SRWP was formed in 2007 and has been conducting public education and outreach activities since then. SRWP public education and outreach activities for 2020 were severely curtailed due to the COVID-19 pandemic. It is anticipated that the SRWP will continue to conduct public education and outreach activities in late 2021 if pandemic conditions lessen.

1.3 Details of activities implemented to educate the community on stormwater

Program Element/Activity	Audience (and number of people reached)	Topic(s) covered	Pollutant of Concern addressed (if applicable)	Responsible Person and Department or Partner Org.
2017 - August	It is estimated that 100s of the general public stopped at the booth	Impact of stormwater quality on macroinvertebrates Sign-up Sheet for water quality monitoring volunteers	Impervious Surface Coverage	Pat Young, SRWP Coordinator

2018 - March - SRWP Annual Newsletter	100s	5 Easy Ways to Yardscape & Protect Water, Vegetated Watercourse Buffers, Roof Runoff Reuse, Lawn Care and Landscaping Diversity for Pollinators	Fertilizers, Pesticides and Herbicides	Pat Young, SRWP Coordinator
September 2017	It is estimated that 100s of the general public stopped at the booth	The SRWP had a booth set up at the Haddam Neck Fair showing SRWP activities as well as a sign-up for water quality monitoring of the impacts of water quality on macroinvertebrates.		Pat Young, SRWP Coordinator
June 2018	It is estimated that more than 50 members of the general public stopped at the booth	The SRWP had a booth set up at the Haddam Library for Agricultural Day showing SRWP activities as well as a sign-up for water quality monitoring of the impacts of water quality on macroinvertebrates. The booth also had an Enviroscape 3D stormwater teaching module.		Pat Young, SRWP Coordinator
September 2018	100s of members of the general public stopped at the booth	The SRWP had a booth set up at the Haddam Neck Fair showing SRWP activities as well as a sign-up for water quality monitoring of the impacts of water quality on macroinvertebrates.		Pat Young, SRWP Coordinator
September 2019	100s of members of the general public stopped at the booth	The SRWP had a booth set up at the Haddam Neck Fair for three days showing SRWP activities as well as a sign-up for water quality monitoring of the impacts of water quality on macroinvertebrates. A new brochure indicating steps that landowners can implement to protect water quality was also made available.		Pat Young, SRWP Coordinator
2020 - March - SRWP Annual Newsletter	100s	Be a Watershed Steward - Don't Flush: old medicine, furniture stripping materials, pesticides or oil; Go Native: utilize native plants in landscaping; Watch Your Salt: do	Fertilizers, Pesticides and Herbicides	Pat Young, SRWP Coordinator

not over-salt sidewalks and driveways; and Be Loud: advocate for your watershed.

Year Around

100s

Facebook

Pat Young, SRWP Coordinator

<https://www.facebook.com/10towns>

Year Around

100s

Salmon River Watershed

Pat Young, SRWP Coordinator

Partnership website

www.salmonriverct.org

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

2.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Responsible Person and Department	Due	Date completed or projected completion date	Additional details
2-1 Comply with public notice requirements for the Stormwater Management Plan	Completed	The Stormwater Management Plan was posted on the town website	Met	Lizz Milardo, First Selectwoman	April 03, 2017		
2-2 Comply with Public Notice requirements for Annual Reports	Completed	The Draft 2017 MS4 Annual Report was posted on the town website.	Met	JoAnn Ricardelli, First Selectwoman Administrative Assistant,	Feb 15, 2018	February 27, 2018	https://www.haddam.org/public-works-department/pages/storm-management
	Completed	The Draft 2018 MS4 Annual Report was posted on the town website.	Met	JoAnn Ricardelli, First Selectwoman Administrative Assistant,	Feb 15, 2019	March 07, 2019	https://www.haddam.org/public-works-department/pages/storm-management
	Completed	The Draft 2019 MS4 Annual Report was posted on the town website.	Met	JoAnn Ricardelli, First Selectman Administrative Assistant,	Feb 15, 2020	May 01, 2020	https://www.haddam.org/public-works-department/pages/storm-management
	Completed	The Draft 2020 MS4 Annual Report was posted on the town website.	Met	JoAnn Ricardelli, First Selectman Administrative Assistant,	Feb 15, 2021	February 23, 2021	https://www.haddam.org/public-works-department/pages/storm-management

2-3 Connecticut River Conservancy Source to Sea Cleanup	Completed	CT DEEP Adopt A Park Invasive Plant Cleanup/Litter Pickup at Haddam Meadows State Park	Attendance by volunteers	Cheryl Czuba, Coordinator		September 23, 2017	The 21 st annual Source to Sea Cleanup is conducted on one day.
Connecticut River Cleanup	Sept. 29, 2018	CT DEEP Adopt A Park Invasive Plant Cleanup/Litter Pickup at Haddam Meadows State Park	Attendance by 23 volunteers	Cheryl Czuba, Coordinator	Not Applicable	September 29, 2018	The 22 nd annual Source to Sea Cleanup was conducted on one day.
	Sept. 27-28, 2019	CT DEEP Adopt A Park Invasive Plant Cleanup/Litter Pickup at Haddam Meadows State Park	Attendance by 27 volunteers	Cheryl Czuba, Coordinator	Not Applicable	September 27-28 2019	The 23 rd annual Source to Sea cleanup was held over two days.
	Sept. 2020	CT DEEP Adopt A Park Invasive Plant Cleanup/Litter Pickup at Haddam Meadows State Park	Attendance by many volunteers	Cheryl Czuba, Coordinator	Not Applicable	September 2020	The 24 th annual Source to Sea Cleanup was held over the entire month.
2-4 SRWP Field Monitoring and Volunteer Training	Ongoing	19 sites are monitored for temperature, pH, dissolved oxygen, conductivity, total dissolved solids and salinity.	Participation by 12 local citizens	Pat Young, SRWP Coordinator	Not Applicable	2017 June - August 2018 June - August	

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

The SRWP was formed in 2007 and has been conducting public involvement/participation since then. It is anticipated that the SRWP will continue to conduct public involvement/participation activities in 2021.

It is anticipated that Haddam residents will take part in the 25th Annual Connecticut River Conservancy Source to Sea Cleanup of the Connecticut River scheduled for the entire month of September in 2021.

2.3 Public Involvement/Participation reporting metrics

Metrics	Implemented	Date	Posted
2017 - Availability of the 2017 Stormwater Management Plan announced to public	Yes	03/06/17	https://www.haddam.org/public-works-department/pages/storm-management
2018 - Availability of the 2017 Annual Report announced to public	Yes	March 06, 2018	https://www.haddam.org/public-works-department/pages/storm-management
2019 - Availability of the 2018 Annual Report announced to public	Yes	March 07, 2019	https://www.haddam.org/public-works-department/pages/storm-management
2020 - Availability of the 2019 Annual Report announced to public	Yes	May 01, 2020	https://www.haddam.org/public-works-department/pages/storm-management
2021 - Availability of the 2020 Annual Report announced to public	Yes	February 04, 2021	https://www.haddam.org/public-works-department/pages/storm-management

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	Responsible Person and Department	Due	Date completed or projected completion date	Additional details
3-1 Develop written IDDE program	In progress	2017 through 2020 - None The town will start the process of completing a written IDDE program using the CT IDDE program template subsequent to enactment of the IDDE Ordinance and Citation Hearing Procedure	Develop written plan of IDDE program	Board of Selectmen and Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2019	Anticipate completing after the IDDE Ordinance has been enacted.	
3-2 Develop list and maps of all MS4 stormwater outfalls in priority areas	In Progress	Approximately 440 MS4 stormwater outfalls were field located and mapped with a handheld GPS unit. A MS4 Stormwater Outfall GIS Layer was created as an ESRI map layer. Field Checking of MS4 Stormwater Outfall Mapping will be conducted in 2018.	MS4 Stormwater Outfall GIS Map	Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2020	Completed by the deadline of July 1, 2020.	

3-3 Implement Illicit Discharge Citizen Reporting Program	To Be Developed	2017 through 2020 - None	None	Board of Selectmen and Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2019	Anticipate completing concurrently with the development of an IDDE Program.
3-4 Establish legal authority to prohibit illicit discharges	To Be Developed	An Illicit Discharge Detection and Elimination Ordinance and a Citation Hearing procedure will be forwarded to the Office of the First Selectman for Town Attorney review and comment prior to enactment at a Town Meeting	None	Board of Selectmen and Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2019	Anticipate completing by July 01, 2021.
3-5 Develop record keeping system for IDDE tracking	To Be Developed	A Microsoft Excel spreadsheet will be developed for tracking illicit discharges	None	Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2017	Anticipate completing concurrently with the development of an IDDE Program.
3-6 Address IDDE in areas with pollutants of concern	To Be Developed	IDDE will first be addressed in the Village of Higganum and then be expanded to the Urbanized Area(UA)	None	Board of Selectmen and Nathan L. Jacobson & Associates, Inc., Town Engineer	Not specified	

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

Enact the IDDE Ordinance and IDDE Citation Hearing Procedure.

The written program will be posted to the Dept of Public works webpage and a link listed in each Annual Report will update the written IDDE program as needed throughout the permit term.

The DPW will maintain the master IDDE tracking spreadsheet and ensure all employees involved in IDDE program understand the illicit discharge logging process.

3.3 List of citizen reports of suspected illicit discharges received during this reporting period.

Date of Report	Location / suspected source	Response taken
Scott Martinson, R.S., M.S., and Chief Sanitarian of the Connecticut River are Health District (CRAHD) reported there were no reports of illicit discharge in 2017	Not Applicable	None Required
Scott Martinson, R.S., M.S., and Chief Sanitarian of the Connecticut River are Health District (CRAHD) reported there were no reports of illicit discharge in 2018	Not Applicable	None Required
Scott Martinson, R.S., M.S., and Chief Sanitarian of the Connecticut River are Health District (CRAHD) reported there were no reports of illicit discharge in 2019	Not Applicable	None Required
Scott Martinson, R.S., M.S., and Chief Sanitarian of the Connecticut River are Health District (CRAHD) reported there were no reports of illicit discharge in 2020	Not Applicable	None Required

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. There have been no SSOs in Haddam.

Location (Lat long/ street crossing /address and 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)
Not Applicable						

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

To Be Developed

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
2017 - Scott Martinson, M.S., R.S. and Chief Sanitarian of the Connecticut River Area Health District (CRAHD) was contacted. While several subsurface wastewater disposal systems were repaired, none of the repairs were for illicit discharges.	None Required	Not Applicable
2018 - Scott Martinson, M.S., R.S. and Chief Sanitarian of the Connecticut River Area Health District (CRAHD) was contacted. While several subsurface wastewater disposal systems were repaired, none of the repairs were for illicit discharges.	None required	Not Applicable
2019 - Scott Martinson, M.S., R.S. and Chief Sanitarian of the Connecticut River Area Health District (CRAHD) was contacted. While several subsurface wastewater disposal systems were repaired, none of the repairs were for illicit discharges.	None required	Not Applicable
2020 - Scott Martinson, M.S., R.S. and Chief Sanitarian of the Connecticut River Area Health District (CRAHD) was contacted. While several subsurface wastewater disposal systems were repaired, none of the repairs were for illicit discharges.	None required	Not Applicable

3.7 IDDE reporting metrics

Metrics	
Estimated or actual number of MS4 outfalls	440
Estimated or actual number of interconnections	TBD
Outfall mapping complete	90%
Interconnection mapping complete	0%
System-wide mapping complete (detailed MS4 infrastructure)	40%
Outfall assessment and priority ranking	0%
Dry weather screening of all High and Low priority outfalls complete	0%
Catchment investigations complete	0%
Estimated percentage of MS4 catchment area investigated	0%

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).

Department of Public Works employees will also be provided with a copy of the manual *entitled Illicit Discharge Detection and Elimination Manual, A Handbook for Municipalities*, dated January 2003, published by the New England Interstate Water Pollution Control Commission.

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

4.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Responsible Person and Department	Due	Date completed or projected completion date	Additional details
4-1 Implement, upgrade, and enforce land use regulations or other legal authority to meet requirements of MS4 general permit	In Progress	2020 - None	The applicable sections of Minimum Control Measure No. 4 - Construction Site Runoff Control were provided to Liz Glidden, Town Planner in 2018 for incorporation into the land use regulations.	Bill Warner, Town Planner	July 01, 2020		Representatives from Halloran & Sage LLP have indicated that a Regional Planning Agency is in the process of developing model land use regulations to meet the requirements of the 2017 MS4 General Stormwater Permit.
4-2 Develop/Implement plan for interdepartmental coordination in site plan review and approval	In Place	Continuing	Continued Implementation	Bill Warner, Town Planner	July 01, 2017		
4-3 Review Site Development Plans for stormwater quality concerns	In Place	Continuing	Continued Implementation	Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2017		
4-4 Conduct site inspections	In Place	Continuing	Continued Implementation	Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2017		

4-5 Implement procedure to allow public comment on site development	In Place	Continuing	Continued Implementation	Land Use Department	July 01, 2017
4-6 Implement procedure to notify developers about CT DEEP Construction Stormwater General Permit	In Place	No applicable land use applications were received by the land Use Department in 2017.	Continued Implementation	Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2017

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

Nathan L. Jacobson & Associates, Inc., Town Engineer, requires that developers integrate measures contained in the 2002 Connecticut Soil Erosion & Sediment Control Guidelines into land development project designs.

Nathan L. Jacobson & Associates, Inc. encourages developer’s engineers to utilize BMPs contained in the 2004 Connecticut Stormwater Quality Manual whenever applicable.

Nathan L. Jacobson & associates, Inc. will recommend that the developer register for the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities in land use application engineering review letters when applicable.

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

5.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Responsible Person and Department	Due	Date completed or projected completion date	Additional details
5-1 Establish and/or update legal authority and guidelines regarding LID and runoff reduction in site development planning	Completed	None	The applicable sections of Minimum Control Measures No. 5 - Post-Construction Runoff Control were provided to Liz Glidden, Town Planner in 2018 for incorporation into the land use regulations.	Bill Warner, Town Planner	July 01, 2022		Representatives from Halloran & Sage LLP have indicated that a Regional Planning Agency is in the process of developing model land use regulations to meet the requirements of the 2017 MS4 General Stormwater Permit.
5-2 Enforce LID/runoff reduction requirements for development and redevelopment projects	Ongoing	In Place	While not specifically in the current land use regulations, LID/runoff reduction measures are requested during land use application reviews by the Town Engineer	Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2022	July 01, 2017	

5-3 Identify retention and detention ponds in priority areas	To Be Completed	None	None	Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2020
5-4 Implement long-term maintenance plan for stormwater basins and treatment structures	To Be Completed	Continuing	None	Christopher Corsa, Assistant Director, Department of Public Works	July 01, 2020
5-5 DCIA mapping	Starting	Starting	DCIA reduction measures were implemented in a road reconstruction project	Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2020
5-6 Address post-construction issues in areas with pollutants of concern	To Be Completed	To Be Developed	None	Nathan L. Jacobson & Associates, Inc., Town Engineer	Not specified

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

2017 - None

2018 - None

2019 - Post-Construction Stormwater Management Facility Operation & Maintenance Plan Manual was developed.

2020 - Procedures outlined in the Post-Construction Stormwater Management Facility Operation & Maintenance Plan Manual will begin to be implemented in 2021.

5.3 Post-Construction Stormwater Management reporting metrics

Metrics	
Baseline (2012) Directly Connected Impervious Area (DCIA)	7.57 Acres
DCIA disconnected (redevelopment plus retrofits)	2012 to 2016 - To Be Determined
	2017 - Bartman Road Reconstruction DCIA Disconnection - 0.462 Acre (20,130 SF)
	2018 - 0.000 Acre
	2019 - 0.000 Acre
	Total - DCIA Disconnection - 0.462 Acre (20,130 SF)
Retrofits completed	1
DCIA disconnected	2012 to 2016 - To Be Determined
	2017 - Bartman Road Reconstruction DCIA Disconnection - 0.462 Acre (20,130 SF)
	2018 - 0.000 Acre
	2019 - 0.000 Acre
	Total - DCIA Disconnection - 0.462 Acre (20,130 SF)
Estimated cost of retrofits	2012 to 2016 - To Be Determined
	2017 - \$22,000
	2018 - \$0
	2019 - \$0
	Total - \$22,000
Detention or retention ponds identified	0 this year / 0 total

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

Based on information contained in the Factsheet: *Town of Haddam Water Quality and Stormwater Summary*, prepared by the CT DEEP, 1,041.70 acres of the town has an impervious area exceeding 12% which is approximately 3.52% of the town. 389.09 acres have an impervious cover of ranging from 12% to 25%, 494.33 acres have an impervious cover ranging from 26% to 50%, 122.13 acres have an impervious cover ranging from 51% to 75% and 36.15 acres have an impervious cover ranging from 76% to 100%.

Based on information contained in the MS4 mapping tab of Connecticut Environmental Conditions Online The impervious surface area consists of 207.10 acres of buildings, 442.50 acres of roads and 474.09 acres of other impervious surfaces for a total impervious surface area of 1,123.69 acres. Of the total of 442.50 acres of road impervious surface area, 287.32 acres are Town roads and 155.18 acres are State roads and. The State roads constitute approximately 35.1 percent of the total road impervious area.

The DCIA Mapping was conducted in substantial accordance with the methodologies presented in the October 25, 2017 UConn CLEAR Webinar entitled *CT MS4 Mapping Details, Clarifications and Tools*, the October 19, 2018 UConn CLEAR Workshop entitled *CT MS4 Mapping Workshop* as well as information contained in the EPA reference entitled *Estimating Change in Impervious Area (IA) and Directly Connected Impervious Area (DCIA) for Massachusetts Small MS4 Permit utilizing Sutherland Equations*.

The DCIA computations were prepared utilizing Connecticut Environmental Conditions Online MS4 base mapping prepared by UConn CLEAR.

Impaired waters were determined from the report entitled *2016 Integrated Water Quality Report*, dated April 2017, and the *2018 Integrated Water Quality Report*, dated August 01, 2019 prepared by the State of Connecticut Department of Energy and Environmental Protection.

The method to determine the 2012 baseline DCIA was to first compile the CT DEEP drainage basin characteristics in a Microsoft Excel spreadsheet. Information on the Connecticut Environmental Conditions Online MS4 Mapping was used to determine the impervious area breakdown as Buildings, Roads and Other. For CT DEEP drainage basins that fell in two or more municipalities the advanced mapping tab of Connecticut Environmental Conditions Online was used to delineate and determine the applicable town CT DEEP basin area. It was assumed that the entire drainage basin characteristics were directly proportional to the applicable town CT DEEP drainage basin area.

In that ConnDOT has a MS4 Stormwater Program which applies to state owned roads and facilities which the town has no control over, it was decided that the impervious state road area would be determined and deducted from the total impervious road area for each CT DEEP drainage basin as the impervious road areas associated with state highways and facilities constitutes a considerable portion of the total town impervious road area.

The ConnDOT state highway, parking lot and facility impervious road areas were then determined for each CT DEEP drainage basin.

The ConnDOT state highway, parking lot and facility impervious road areas were then deducted from the total town impervious road area to determine a town owned impervious road area for each CT DEEP drainage basin.

Subsequent to the above deduction, the total impervious area in acres and percentage was then recomputed for each CT DEEP drainage basin.

The DCIA formula for each of four development types was then utilized to compute the DCIA. The impervious area in acres was assigned to each of the four Sutherland equations which were modified for the northeastern United State. The Sutherland equation to be utilized was determined using the following methodology:

For impervious percentage less than 6%:

100% of the impervious area was assigned to the slight connectivity Sutherland Equation where $DCIA\% = 0.01 \cdot (IA\%)^{2.0}$

For an impervious area between 6% and 12 %:

50% of the area was assigned to the partial connectivity Sutherland Equation where $DCIA\% = 0.04 \cdot (IA\%)^{1.7}$
and 50% was assigned to the average connectivity Sutherland Equation where $DCIA\% = 0.10 \cdot (IA\%)^{1.5}$

For an impervious area between 12% and 18 %:

50% of the area was assigned to the average connectivity Sutherland Equation where $DCIA\% = 0.10 \cdot (IA\%)^{1.5}$
and 50% was assigned to the high connectivity Sutherland Equation where $DCIA\% = 0.40 \cdot (IA\%)^{1.2}$

For an impervious area of greater than 18 %:

100% of the area was assigned to the high connectivity Sutherland Equation where $DCIA\% = 0.40 \cdot (IA\%)^{1.2}$

The DCIA for each CT DEEP drainage basin was then summed to determine the entire town DCIA.

Subsequent to completion of 2012 Baseline DCIA computations, UConn CLEAR Mapping available on Connecticut Environmental Conditions Online (CT ECO) was revised to separate road impervious area into State Road Impervious Area (Acres) and Town Road Impervious Area (Acres).

The original 2012 Baseline DCIA computations were revised utilizing the UConn CLEAR State Road Impervious Area (Acres) and Town Road Impervious Area (Acres). No major 2012 Baseline DCIA computation discrepancies were noted.

Land use files will be reviewed to determine disconnection of DCIA since July 01, 2012 for utilization in reaching the CT DEEP goal of 2% disconnection of DCIA by June 30, 2022.

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

6.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Responsible Person and Department	Due	Date completed or projected completion date	Additional details
6-1 Develop/implement formal employee training program	To Be Developed	None	Not Applicable	Christopher Corsa, Assistant Director, Department of Public Works	July 01, 2019		
6-2 Implement MS4 property and operations maintenance	To Be Developed	None	Not Applicable	Christopher Corsa, Assistant Director, Department of Public Works	July 01, 2018		
6-3 Implement coordination with interconnected MS4s	The town currently coordinates with the MS4 towns of Chester, Durham and the City of Middletown	Continuing	Met	Christopher Corsa, Assistant Director, Department of Public Works	July 01, 2017	July 01, 2017	
6-4 Develop/implement program to control other sources of pollutants to the MS4	To Be Developed	None	Educate the general public about sources of bacteria	Christopher Corsa, Assistant Director, Department of Public Works and Nathan L. Jacobson & Associates, Inc., Town Engineer	Not specified		

6-5 Evaluate additional measures for discharges to impaired waters*	To Be Developed	None	Develop additional measures if needed	Christopher Corsa, Assistant Director, Department of Public Works and Nathan L. Jacobson & Associates, Inc., Town Engineer	Not specified
6-6 Track projects that disconnect DCIA	To Be Developed	Starting Reconstruction Projects that resulted in the disconnection of DCIA since 2012 will be determined in 2018.	The Bartman Road Reconstruction project resulted in disconnection of 0.462 acre of impervious surface disconnection. DCIA.	Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2017
6-7 Implement infrastructure repair/rehab program	Continuing	Park Road Reconstruction Project	Infrastructure repair projects consisted of paving of gravel roads and installation of a stormwater infiltration system.	Christopher Corsa, Assistant Director, Department of Public Works	July 01, 2021
6-8 Develop/implement plan to identify/prioritize retrofit projects	To Be Developed	Retrofit projects will be prioritized based on the following: High priorities will be given to outfalls which discharge directly to surface waters, outfalls discharging in drainage basins where the impervious surface	Refer to 6.5 Below	Christopher Corsa, Assistant Director, Department of Public Works and Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2020

6-9 Implement retrofit projects to disconnect 2% of DCIA	Started	coverage exceeds 12 percent and outfalls in the Urbanized Area (UA) The Bartman Road Reconstruction project resulted in disconnected DCIA.	Refer to 6.8 above	Christopher Corsa, Assistant Director, Department of Public Works	July 01, 2022
6-10 Develop/implement street sweeping program	The Town of Haddam currently has a road sweeping program in place whereby all town road are swept at least on time per year.	Continuing	Completed	Christopher Corsa, Assistant Director, Department of Public Works	July 01, 2018
6-11 Develop/implement catch basin cleaning program	The Town of Haddam currently has a program whereby catch basins, storm manholes, sedimentation tanks and hydrodynamic separators are vactored.	Continuing	Completed Starting in 2018, catch basin cleaning will focus on the watersheds with an impervious area of greater than 12% and the Urbanized Area (UA).	Christopher Corsa, Assistant Director, Department of Public Works	July 01, 2018
6-12 Develop/implement snow management practices	In Development	2017 - None 2018 - None	Consideration is being given to switching over to NaCl Salt treated with Ice B'Gone at the	Christopher Corsa, Assistant Director, Department of Public Works	July 01, 2018

rate of 6-8 gallons per ton obtained from DRVN Enterprises Inc. in New London.

In 2020 treated salt (Champion Blue™ Salt) was obtained from Champion Salt in New Haven and Providence.

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

DPW Employees will be encouraged to attend applicable workshops offered by the CT Technology Transfer Center and/or the Connecticut Interlocal Risk Management Agency (CIRMA).

All catch basin replacements provide a minimum sump depth of 2' below the lowest invert elevation whenever possible.

6.3 Pollution Prevention/ Good Housekeeping reporting metrics

Metrics

Employee training provided for key staff

2017 through 2020 - None

DPW Employees will be encouraged to attend applicable workshops offered by the Connecticut Training & Technical Assistance Center (T2Center) and/or Connecticut Interlocal Risk Management Agency (CIRMA)

It is anticipated that DPW Employee Training will be conducted in 2021 if the COVID-19 pandemic allows.

Street sweeping

Lane miles swept

188.30 (94.15 Miles)

Volume (or mass) of material collected

2017 - 1,500± Cubic Yards

	2018 - 1,400± to 1,600± Cubic Yards 2019 - 1,000± to 1,200± Cubic Yards 2020 - 1,000± to 1,200± Cubic Yards
Catch basin cleaning	
Total catch basins in priority areas	TBD
Total catch basins in MS4	1,800±
Catch basins inspected	2017 - 0 2018 - 900± 2019 - 900± 2020 - 900±
Catch basins cleaned	2017 - 0 2018 - 900± 2019 - 900± 2020 - 900±
Volume (or mass) of material removed from all catch basins	2017 - Not Determined 2018 - 500± Tons (370± C.Y.) 2019 - 500± Tons (370± C.Y.) 2020 - 450± Tons to 500± Tons (330± C.Y. to 370± C.Y.)
Volume removed from catch basins to impaired waters (if known)	2017 - Not Known. 2018 - Not Known 2019 - Not Known 2020 - Not Known
Snow management	
Type(s) of deicing material used	2017 to the second or third storm event of Winter 2019-2020 the road deicing mix consisted of a 2 Parts Sand:1 Part NaCl Salt Beginning on the second or third storm event of Winter 2019-2020 the road deicing mix was changed to a treated NaCl salt.
Total amount of each deicing material applied	Winter 2017 to 2018 - 6,000± Tons, 3,400± Tons Sand and 2,600± Tons Salt Winter 2018 to 2019 - 6,000± Tons, 3,400± Tons Sand and 2,600± Tons Salt Winter 2019 to 2020 400± Tons Sand/Salt Deicing mixture 550± Tons to 600± Tons treated NaCl Salt Winter 2020 to 2021 - 1,500± Tons treated NaCl Salt (Projected)
Type(s) of deicing equipment used	Nine large 40,000 GVW Snow Plow/Spreaders Three F-550 Snow Plow/Spreaders

Lane-miles treated	Spreaders are adjustable from 100 pounds per lane mile to 900 pounds per lane mile. Typically applied at 200-400 pounds per lane mile depending on the storm.
Snow disposal location	All spreaders are ground speed controlled.
Staff training provided on application methods & equipment	188.30 (94.15 Miles)
	Roadside
	2017 through 2020 - No DPW Employee Training
Municipal turf management program actions (for permittee properties in basins with N/P impairments)	
Reduction in application of fertilizers (since start of permit)	0 lbs or 0%
Reduction in turf area (since start of permit)	Acres
Lands with high potential to contribute bacteria (dog parks, parks with open water, & sites with failing septic systems)	
	\$0 in 2017
Cost of mitigation actions/retrofits	

6.4 Catch basin cleaning program

Briefly describe the method used to optimize your catch basin inspection and cleaning schedule.

It is estimated there are approximately 1,800 catch basins in town.

Catch basins located in sag vertical curves with curbs and approaching catch basins are cleaned first.

2017 - No catch basins were cleaned.

2018 - 900± catch basins were cleaned.

2019 - 900± catch basins were cleaned.

2020 - 900± catch basins were cleaned.

Catch basins located in sag vertical curves with curbs and approaching catch basins are cleaned first.

Due to change from a sand/salt deicing mix to a treated salt deicing mix the volume of road sweeping and catch basin cleanings is anticipated to be significantly reduced which should drastically reduce sedimentation in wetlands and watercourses.

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.

2017 - Bartman Road Reconstruction

Prior to the road reconstruction, no stormwater quality treatment measures were in place and runoff from the road discharged directly to a wetland/watercourse with no treatment. Subsequent to road reconstruction, a large majority of the road runoff was pretreated by a VortSentry HS48 Hydrodynamic Separator prior to discharge to a water quality swale to reduce sediment and pollutant loads from the majority of the road stormwater runoff prior to discharge to the watercourse and downgradient ponds. The impervious pavement area treated is 0.462 acre (20,130 square feet).

2018 through 2020 - None

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

While the 5-year goal of 2% DCIA reduction (0.151 acre) has been achieved, stormwater retrofits will be incorporated into the designs whenever possible to reduce DCIA. Most road reconstruction projects are in rural locations so reduction of DCIA will most likely be accomplished by routing stormwater to upland discharge points to provide for overland flow and stormwater treatment before entering a wetland, watercourse or waterbody.

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

DCIA will be reduced whenever possible during road reconstruction projects. Redevelopment projects will be designed to decrease proposed DCIA relative to existing conditions to the maximum extent practicable

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:

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 Connecticut River is the only impaired water in the Town of Haddam and the impairment is due to bacteria.

2017 - No investigation or wet weather sampling was conducted

2018 - No investigation or wet weather sampling was conducted.

2019 - It was anticipated that dry weather screening and sampling (where appropriate) of all MS4 stormwater outfalls which discharge directly to the Connecticut River would be conducted in early Fall. However, due to higher than average rainfall and resulting high groundwater conditions, no dry weather screening or sampling was conducted.

2020 - No investigation or wet weather sampling was conducted.

It is anticipated that dry weather screening and sampling (where appropriate) of all MS4 stormwater outfalls which discharge directly to the Connecticut River will be conducted in late Spring or early Summer 2021.

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

2.1 Screening data collected under 2017 permit

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?
2017 - No Screening Conducted					
2018 - No Screening Conducted					
2019 - No Screening Conducted					
2020 - No Screening Conducted					

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
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Not Applicable

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, 2021.

Outfall	Sample Date	Parameter(s)	Results	Name of Laboratory (if used)
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No outfall monitoring was conducted in 2017, 2018, 2019 or 2020.

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).

1. Catchment ID (DEEP Basin ID)	2. Category	3. Rank
4014-00-3-R1 53.16% Impervious	High Priority	1
4014-05-2-R4 14.14% Impervious	High Priority	2

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
No sampling was conducted in 2017, 2018, 2019 or 2020.										

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
No sampling was conducted in 2017, 2018, 2019 or 2020.									

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
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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
No screening or sampling was conducted in 2017, 2018, 2019 or 2020.					

3.3 Wet weather investigation outfall sampling data

Outfall ID	Sample date	Ammonia	Chlorine	Surfactants
No investigations were conducted in 2017, 2018, 2019 or 2020.				

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
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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

Print Name:

Print Name:

Robert McGarry, First Selectman

Wade M. Thomas, CPMSM

Signature:

Signature:

Date: April , 2021

Date: April , 2021