

CITY OF SHELTON CONNECTICUT



FINAL STORMWATER MANAGEMENT PLAN

July 2017

This plan is based on a template originally created by Western Connecticut Council of Governments staff and modified for statewide use by staff from UConn Center for Land use Education and Research (CLEAR).

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Introduction

This Stormwater Management Plan (SMP) was developed by the City of Shelton to protect water quality and reduce the discharge of pollutants from the municipality's storm sewer system to the maximum extent practicable (MEP). This SMP addresses the requirements established by the CT Department of Energy and Environmental Protection's (DEEP) General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4 General Permit). This permit is the local enforcement mechanism of the U.S. Environmental Protection Agency's (EPA) National Pollutant Discharge Elimination System (NPDES) Stormwater Phase II Rule.

SMP Structure

The plan outlines a program of best management practices (BMPs), measurable goals, responsible individuals or departments, and implementation schedules for the following six minimum control measures:

- (1) Public education and outreach
- (2) Public involvement and participation
- (3) Illicit discharge detection and elimination
- (4) Construction site stormwater runoff control
- (5) Post-construction stormwater management in new development and redevelopment
- (6) Pollution prevention/good housekeeping

Appendices to this plan include the CT DEEP General Permit for the Discharge of Stormwater from Small MS4s and a map of the City's impaired waterbodies.

Area Subject to the Plan

The measures identified in this SMP will be applied throughout the boundaries of the City except as otherwise noted and be consistent with the MS4 General Permit requirements. Stormwater discharge from municipally-owned maintenance garages, salt sheds and other facilities subject to the DEEP Industrial Stormwater General Permit will continue to be regulated under the conditions of that permit.

SMP Development

A stormwater committee led by the Public Works Department and including representatives from Engineering and the Highways and Bridges Division will be assembled to coordinate the development and implementation of the SMP. Representatives from additional City Departments including Planning & Zoning, Conservation Commission, Water Pollution Control Authority, Parks and Recreation, Community Development, and Building Department will be consulted with as well.

Annual Reporting

The SMP's implementation will be tracked and documented in Annual Reports summarizing stormwater management activities carried out by the City and its partners. These reports will be submitted to DEEP on an annual basis no later than April 1.

Description of Municipality

The operator of the MS4 is the City of Shelton. The City is a public entity located in the county of Fairfield, State of Connecticut. The City covers an area of approximately 30.6 square miles, located in Southwestern Connecticut as shown in figure 1. This includes approximately 6.5 miles of shoreline along the Housatonic River, which forms the easterly boundary of the City.

One major river, the Farmill River drains Shelton flowing southeasterly to the Housatonic River at the Stratford City Line. Nine (9) major brooks drain the remainder of Shelton with seven (7) brooks flowing northeasterly and easterly into the Housatonic River. One flows southerly into the Town of Trumbull, and one flows southerly into the Town of Stratford. The largest water supply reservoir is Trap Falls Reservoir. The Means Brook and Isinglass reservoirs supply raw water to trap falls Reservoir. The City owns two former water supply reservoirs, the former Shelton No. 2 and Shelton No. 3 reservoirs.

The Connecticut Department of Transportation (DOT)

The Connecticut Department of Transportation (DOT) operates an MS4 on state highways located in the City. This system is regulated under the CT DOT's MS4 permit. Implementation of the BMPs identified in this plan will be coordinated between City and CT DOT.

Impaired Waters

In preparing the SMP, the CT DEEP's Water Quality Standards were reviewed in order to determine the Surface Water Quality Classifications for each watercourse in City. Certain BMP's address the watersheds containing watercourses designated as "impaired" by the CT DEEP.

Table 1 shows the water quality classification for each watershed. Table 2 summarizes the water bodies within or that run through the municipality that are listed on the Draft 2016 List of Connecticut Water Bodies in the Integrated Water Quality Report not meeting water quality standards and are designated as "impaired".

Category 4 has been assigned to waterbodies where the planning and implementation of pollution control and management measures have been initiated with the expectation to achieve CT WQS attainment in future assessments. Category 5 waters are those for which a TMDL or equivalent plan is required.

TABLE 1 Water Quality Surface Classifications Shelton, CT			
Drainage Basin Number	Name	Surface Water Quality Classification	Impaired per Water Quality Standards
CT6000-00_02	Housatonic River	B/SB	Yes
CT6000-00- 5+L4_01	Housatonic Lake	B	Yes
CT6000-73_01	Curtiss Brook	A	TMDL strategies
CT6025-00_02	Far Mill River	B	TMDL strategies

TABLE 2 Shelton Impaired Waterbody and those with TMDL Strategies						
Waterbody ID	EPA Category	Water Segment Description	Water Segment Length (miles)	Impaired Use	Pollutant	Cause/Potential Source
Housatonic River – Surface Water Quality Classification – B/SB						
CT6000-00_02	5			Recreation	Escherichia coli	Potential sources include stormwater, industrial discharges, illicit discharges, upstream sources
Housatonic Lake - Surface Water Quality Classification - B						
CT6000-00-5+L4_01	5			Recreation	Chlorophyll-a Excess Algal Growth Nutrient/ Eutrophication Biological Indicators	Potential sources include stormwater, municipal discharges, insufficient on-site treatment/ septic systems, agricultural activities, hydromodifications/ impoundments, upstream sources
Curtiss Brook - Surface Water Quality Classification - A						
CT6000-73_01	4a			Recreation	Escherichia coli	CT Statewide Bacteria TMDL
Far Mill River - Surface Water Quality Classification - B						
CT6025-00_02	4a			Recreation	Escherichia coli	CT Statewide Bacteria TMDL
Long Island Sound and Contributing Watersheds						
					Nitrogen	TMDL analysis to achieve water quality standards for dissolved oxygen in Long Island Sound
All CT Inland Waters						
					Mercury	Northeast Regional Mercury TMDL
Certain CT Inland Waters						
					Phosphorous	Interim Phosphorous Reduction Strategy

The surface water classifications currently assigned to City watercourses are defined below.

Class A

Surface water is known or presumed to meet Water Quality Criteria which support designated uses, which may include potential drinking water supply; fish and wildlife habitat; recreational use; agricultural, industrial supply and other legitimate uses, including navigation.

Class B

Designated uses are habitat for fish and aquatic life and wildlife; recreation; navigation; and industrial and agricultural water supply

Class SB

Designated uses are habitat for marine fish and aquatic life and wildlife; commercial shellfish harvesting; recreation; industrial water supply; and navigation.

Based on the DEEP Surface Water Quality Classifications, Curtiss Brook is identified as the surface water that should take the highest priority (Class A) in the City's efforts to address stormwater impacts. This was taken into consideration as the BMPs were developed.

(1) Public Education and Outreach

This minimum control measure outlines a program to communicate common sources of stormwater pollution and the impacts of polluted stormwater to the public. This will be done through distributing educational materials to the community and conducting outreach activities. The following BMPs and implementation schedule serve as the City's MS4 Public Education Program.

Goals:

- Raise public awareness that polluted stormwater runoff is the most significant source of water quality problems;
- Motivate residents to use Best Management Practices (BMPs) that reduce polluted stormwater runoff; and
- Reduce polluted stormwater runoff in City as a result of increased awareness and utilization of BMPs.

1.1 Implement public education program

The City will collect and distribute stormwater educational materials that, at a minimum, address the impacts of the following on water quality: pet waste, impervious cover, application of fertilizers, pesticides, and herbicides, and illicit discharges and improper disposal of wastes into the MS4. The primary means of publishing educational materials will be via the City's dedicated stormwater website.

The City of Shelton will maintain their own Stormwater Page under Public Works and will include links to UConn NEMO's comprehensive online library of stormwater educational material. The City website (<http://www.cityofshelton.org/>) will link directly to this web-based library and promote the availability of these materials. A clearly defined "stormwater management" section will be added to the City's website, with educational materials and useful information for the Residents. The stormwater section will make available the SMP for review, provide a link to the pertinent ordinances involved, identify activities and related meetings that may be planned by the City, and provide an overall Stormwater Program resource for the community. The City will also provide materials in a printed format to be on display in public locations within City Hall, the Plumb Memorial Library and the Shelton Community Center.

Additional targeted outreach efforts will be completed by the City to educate students, organizations such as the Boy Scouts/Girl Scouts, commercial businesses, developers, and homeowners on particular aspects of stormwater management.

The City will coordinate with the Lake Housatonic Authority and the Means Brook Pond Association to ensure that all required topics listed in this plan are covered and tracked on an annual basis.

1.2 Address education and outreach for pollutants of concern

The City will distribute information on common sources of phosphorus, nitrogen, bacteria, and mercury pollution and how to prevent or reduce the amount reaching the MS4 and discharging into waterways.

The table below shows additional topics to be covered to address the phosphorus, nitrogen, bacteria, and mercury impairments that exist in the City.

Phosphorus	Nitrogen	Bacteria	Mercury
Septic systems	Septic systems	Septic systems	Thermometers
Fertilizer use	Fertilizer use	Sanitary cross connections	Thermostats
Grass clippings and leaves management	Grass clippings and leaves management	Waterfowl	Fluorescent lights
Detergent use	Discharge of sediment (to which Nitrogen binds) from Construction sites	Pet waste	Button cell batteries
Discharge of sediment (to which Phosphorus binds) from Construction sites	Other erosive surfaces	Manure piles associated with livestock and horses	Thermometers
Other erosive surfaces			

Public outreach and education schedule

BMP	Lead department / individual	Month / year of implementation	Measurable goal
Implement public education program	City Engineer	By July 1, 2018 and continue until permit expires	Conduct a Public Meeting in each year of the permit, to inform the Residents and discuss the program
Address education/outreach for pollutants of concern	City Engineer	By July 1, 2018 and continue until permit expires	Develop stormwater website and post materials to website.
Literature distribution	City Engineer	By July 1, 2018 and continue until permit expires	Print and make available or distribute brochures or informative materials for public use
Storm Drain marking/stenciling	Supt. of Highways and Bridges	By July 1, 2018 and continue until permit expires	Add stencil markings to storm drains to remind the public about restrictions for disposal

(2) Public Involvement and Participation

This minimum control measure identifies the process for public involvement and participation in the City's stormwater management efforts.

Goals:

- Involve the community in planning and implementing the City's stormwater management activities.
- Provide a minimum 30 day notice to the public for this plan and annual reports.

2.1 Comply with public notice requirements for the Stormwater Management Plan and Annual Reports

The City will publish a public notice on its website (<http://www.cityofshelton.org/>), through an email or mailing list, or in the local newspaper (the New Haven Register). The notice will provide a contact name, phone number, address, and email to whom the public can send comments. Additionally, this plan and the Annual Reports will be publicly accessible on the City's web (<http://www.cityofshelton.org/>) and at City Hall. The public notice will allow for a 30-day comment period, at a minimum.

Public involvement and participation schedule

BMP	Lead department / individual	Month / year of implementation	Measurable goal
Comply with public notice requirements for the SMP and Annual Reports	City Engineer	July 1, 2017 and continue until permit expires	Post annually to stormwater website
Conduct a Household Hazardous Waste Collection day annually	Director of Public Works	July 1, 2017	Continue annual waste collection events.

(3) Illicit Discharge Detection and Elimination

This minimum control measure outlines a program to detect and eliminate current illicit discharges to the MS4 and prevent further illicit discharges in the future. All activities for this measure will be completed in the City's priority areas (urbanized area, catchment areas with directly connected impervious area (DCIA) > 11%, and outfalls that discharge to impaired waters).

Goal:

Find the source of any illicit discharges; eliminate those illicit discharges; and ensure ongoing screening and tracking to prevent and eliminate future illicit discharges.

3.1 Develop written IDDE plan

The City will develop a written IDDE plan to detect, locate and eliminate illicit discharges (to the maximum extent practicable) from the MS4 within the City's priority areas. The IDDE plan will provide enforceable legal authority to eliminate illicit discharges, assign responsibilities, and develop a citizen reporting program. The plan will also outline the outfall screening and IDDE protocols consistent with Appendix B of the MS4 General Permit to identify, prioritize, and investigate MS4 catchments for suspected illicit discharge of pollutants. Also, the IDDE plan will outline follow-up screening and illicit discharge prevention procedures.

3.2 Develop list and map of all MS4 outfalls and interconnections in priority areas

The City will develop a database of all stormwater discharges from a pipe or conduit located within and owned or operated by the municipality and all interconnections with other MS4s. Each entry will include:

- a. Type, material, size, shape and location (identified with a latitude and longitude) of conveyance, outfall or channelized flow (e.g. 24" concrete pipe);
- b. the name, water body ID and Surface Water Quality Classification of the immediate surface waterbody or wetland to which the stormwater runoff discharges;
- c. if the outfall does not discharge directly to a named waterbody, the name and water body ID of the nearest named waterbody to which the outfall eventually discharges;
- d. the name of the watershed, including the subregional drainage basin number (available from CT ECO at www.cteco.uconn.edu) in which the discharge is located;
- e. date of most recent inspection of the outfall, the condition, and any indicators of potential non-stormwater discharges as of most recent inspection;

The database will be exported into excel format for annual reports. The database will be updated at a minimum quarterly as field-work progresses.

3.3 Develop citizen reporting program

The City will establish a system to allow for citizen reporting of suspected illicit discharges into the stormwater system. The system will include an email address and phone number, or a website link for submitting a report. The City will affirmatively investigate and eliminate any illicit discharges for which a time and location of discharge are provided. The City will promptly inspect the reported outfall or manhole and proceed according to the

requirements of the written IDDE program. All citizen reports and responses will be included in the City's annual report.

3.4 Establish legal authority to prohibit illicit discharges

The City has already established **Ordinance #854** (Stormwater Management/Operation and Maintenance Requirements) and **Ordinance #855** (Illegal Discharges and Illicit Connections to the Public Storm Drainage System) to provide an enforceable legal authority and rules and regulations, permit, easement, contract, order or any other means, to eliminate illicit discharges. These ordinances give the City of Shelton the authority to:

- a. prohibit illicit discharges to its storm sewer system and require removal of such discharges consistent with the deadlines outlined in the MS4 general; and
- b. authorize the investigation of suspected illicit discharges and elimination of illicit discharge, including from properties not owned or controlled by the MS4 that discharge to the MS4
- c. control the discharge of spills and prohibit the dumping or disposal of materials including, but not limited to, residential, industrial and commercial wastes, trash, used motor vehicle fluids, pesticides, fertilizers, food preparation waste, leaf litter, grass clippings, and animal wastes into its MS4; and
- d. authorize appropriate enforcement procedures and actions;
- e. authorize fines or penalties and/or recoup costs incurred by the permittee from anyone creating an illicit discharge or spilling or dumping.

Some revision of these ordinances may be required, and the City will review the ordinances for compliance with the new General Permit program.

3.5 Develop record keeping system for IDDE tracking

The City will keep a record of illicit discharge abatement activities including location (including latitude and longitude or address), description, date(s) of inspection, sampling data (if applicable), action(s) taken, date of removal or repair and responsible party.

In addition, the City will develop and maintain an SSO inventory that records the location, date and time of occurrence, estimated volume of discharge, a description of known or suspected cause, and details about mitigating measures including dates of implementation.

This inventory will also:

- include all known SSOs to their MS4 in the past 5 years (July 1, 2012 – June 30, 2017);
- continue to be updated to track future SSOs; and
- be included in Annual Reports.

3.6 Address IDDE in areas with pollutants of concern

The City will identify which areas in City are most likely to contribute nitrogen, phosphorus, and bacteria to the MS4. This assessment will consider: historic on-site sanitary system failures, proximity to bacterial impaired waters, low infiltrative soils, and shallow groundwater. Any areas determined to have a high potential for septic system failure will be reported to the Naugatuck Valley Health District (NVHD) for corrective action.

3.7 Detailed MS4 infrastructure mapping

The City will revise their existing mapping to develop a detailed map of the MS4 to include:

- Components of the MS4 within priority areas:

- Outfalls & receiving waters;
- Pipes; open channel conveyances; catch basins; manholes;
- Interconnections with other MS4s and other storm sewer systems;
- Municipally-owned stormwater treatment structures (e.g. detention & retention ponds, infiltration systems, bioretention areas, water quality swales, gross particle separators, oil/water separators, or other systems);
- Catchment delineations for each outfall;
- Impaired water bodies identified by name and use impairment as defined by the most recent integrated water quality report;
- Municipal sanitary sewer system (if available);
- Municipal combined sewer system (if applicable).

The City will update the map as new information becomes available and will report on the progress of the development of this map in the annual report.

3.8 Complete list and maps of all MS4 stormwater outfalls throughout municipality

Illicit discharge detection and elimination schedule

BMP	Lead department / individual	Month / year of implementation	Measurable goal
Develop written IDDE program	Director of Public Works	July 1, 2018	Develop IDDE Plan
Develop list and maps of all MS4 stormwater outfalls in priority areas	City Engineer	July 1, 2019	Make both a physical and electronic copy of the plan available to the public
Develop citizen reporting program	Director of Public Works	July 1, 2018	Post contact information on City website and develop system for addressing and logging reports
Establish legal authority to prohibit illicit discharges	Director of Public Works	July 1, 2018	Evaluate existing ordinances and revise as necessary
Develop record keeping system for IDDE tracking	City Engineer	July 1, 2017	Develop system for tracking and develop an SSO inventory database
Address IDDE in areas with pollutants of concern	City Engineer	July 1, 2017	Conduct an initial assessment and use for prioritization of corrective actions.
Detailed MS4 infrastructure mapping	City Engineer	July 1, 2020	Make both a physical and electronic copy of the map available to the public
Complete list and maps of all MS4 stormwater outfalls throughout municipality	City Engineer	July 1, 2022	Make copy of the map available to the public

(4) Construction Site Stormwater Runoff Control

This minimum control measure outlines procedures for minimizing polluted stormwater runoff from activities that disturb one or more acres of land. In the City this is determined on a site by site basis OR collectively as part of a larger plan.

Goal:

Minimize polluted stormwater runoff from construction sites and prevent it from carrying sediment into waterways via MS4 infrastructure.

4.1 Implement, upgrade and enforce land use regulations to meet requirements of MS4 general permit

The City will revise (or in some cases continue to enforce) their existing land use regulations to establish the legal authority to control stormwater runoff from construction sites by requiring:

- a. developers, construction site operators, or contractors maintain consistency with the 2002 Guidelines for Soil Erosion and Sedimentation Control, as amended, the Connecticut Stormwater Quality Manual, and all stormwater discharge permits issued by the DEEP within the municipal or institutional boundary pursuant to CGS 22a-430 and 22a-430b;
- b. the implementation of additional measures to protect/improve water quality (in addition to the above requirements) as deemed necessary by the City;
- c. The City is authorized to carry out all inspection, surveillance and monitoring procedures necessary to determine compliance with municipal regulations, ordinances or programs or institutional requirements related to the management of the City's MS4. Inspections shall be conducted, where allowed, to inventory the number of privately-owned retention ponds, detention ponds and other stormwater basins that discharge to or receive drainage from the permittee's MS4;
- d. the owner of a site seeking development approval from the City shall provide and comply with a long term maintenance plan and schedule to ensure the performance and pollutant removal efficiency of privately-owned retention ponds, detention ponds and other stormwater basins that discharge to or receive discharge from the City's MS4 including short-term and long-term inspection and maintenance measures to be implemented by the private owner; and
- e. The City will control, through interagency or inter-jurisdictional agreements, the contribution of pollutants between the permittee's MS4 and MS4s owned or operated by others.

4.2 Develop and implement a plan for interdepartmental coordination of site plan review and approval

The City currently maintains a review coordination protocol between departments, including design review by the City Engineer, The Inland Wetland Commission and the Planning & Zoning Commission. The City will continue this program, and coordinate the functions of all the departments and boards involved in the review, permitting, or approval of land disturbance projects.

The City's current program includes review of site plans for single family homes and major subdivisions. The review includes an Inlands/Wetlands instruction sheet for "requirements for permit application" and a Planning & Zoning "Developers check-off list", requiring the applicant to follow state regulations for Soil Erosion and Sediment Control (the 2002 State Guidelines for Soil Erosion and Sediment Control). In addition, the City of Shelton has soil erosion and sediment control provisions in both the Planning & Zoning (P&Z) General Regulations and P&Z Subdivision Regulations.

4.3 Review site plans for stormwater quality concerns

The City will conduct site plan reviews that incorporate consideration of stormwater controls or management practices to prevent or minimize impacts to water quality on sites with soil disturbance of one acre or more. The City will also conduct site inspections to assess the adequacy of the installation, maintenance, operation, and repair of construction and post construction control measures and take enforcement action when necessary.

4.4 Conduct site inspections

The City will perform construction site inspections and take enforcement actions if necessary to ensure the adequacy of the installation, maintenance, operation, and repair of all construction and post-construction runoff control measures.

4.5 Implement procedure to allow public comment on site development

The City's procedure for public involvement in proposed and ongoing development and land disturbance activities is as follows:

INFORMATION/COMMENTS SUBMITTED BY THE PUBLIC TO THE PLANNING AND ZONING COMMISSION ARE FORWARDED TO THE PUBLIC WORKS DEPARTMENT WITHIN THE CITY FOR CONSIDERATION. INFORMATION RELATED TO CONSTRUCTION SITE RUNOFF IS FORWARDED TO THE PLANNING AND ZONING ADMINISTRATOR AND DIRECTOR OF PUBLIC WORKS.

4.6 Implement procedure to notify developers about DEEP construction stormwater permit

The City will notify developers and contractors of their potential obligation to obtain authorization under DEEP's General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities (construction general permit) if their project disturbs more than 1 acre of land and results in a point source discharge to Connecticut surface waters directly or through the City MS4. The City will also require a copy of the Storm Water Pollution Control Plan be made available to the City on request. The procedure to notify developers of the construction general permit is as follows:

The City will inform developers (working with the municipality) that they have a potential obligation to obtain authorization under the DEEP's General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities ("construction general permit") if their development or redevelopment project disturbs one or more acres of land, either individually or collectively, as part of a larger common plan, and results in a point source discharge to the surface waters of the state directly or through the permittee's MS4. The notification shall include a provision informing the developer/ contractor of their obligation to provide a copy of the Storm Water Pollution Control Plan (required by the construction general permit) to the permittee upon request. Deep General Permit applications are currently available to the public in the Planning and Zoning Office.

The contractor shall be required at all times to conduct his operations in conformity with all Federal and State permit requirements concerning water, air, noise pollution and the disposal of contaminated, or hazardous materials.

Construction site stormwater management schedule

BMP	Lead department / individual	Month / year of implementation	Measurable goal
Implement, upgrade and enforce land use regs to meeting MS4 permit requirements	Planning and Zoning	July 1, 2019	Will review and revise if required
Develop/implement plan for interdepartmental coordination in site plan review and approval	Planning and Zoning	July 1, 2017	Evaluate current practices and update as needed
Review site plans for stormwater quality concerns	City Engineer and the Planning and Zoning Administrator	July 1, 2017	Evaluate current practices and update as needed
	Planning and Zoning	July 1, 2017	Develop an inspection for that includes new permit requirements
Conduct site inspections			Develop system to track and log comments
Implement procedure to allow public comment on site development	Planning and Zoning	July 1, 2017	Notify developers if their project disturbs more than 1 acre of land
Implement procedure to notify developers about DEEP construction stormwater permit	Planning and Zoning	July 1, 2017	

(5) Post-construction Stormwater Management in New Development or Redevelopment

This minimum control measure outlines the City's program to address stormwater runoff from new or re-development projects that disturb one or more acres of land.

Goal:

Mitigate the long-term impacts of new and re-development projects on water quality through proper use of low impact development and runoff reduction practices.

5.1 Establish or update legal authority and guidelines regarding LID and runoff reduction in site development planning

The City will establish or update existing the legal authority by ordinance, bylaw, regulation, standard condition of approval, or other means to require, to the MEP, developers and contractors seeking the City's approval to consider the use of low impact development (LID) and runoff reduction site planning and development practices that meet or exceed those LID and runoff reduction practices in the CT Stormwater Quality Manual prior to other stormwater management practices allowed in the City's land use regulations, guidance or construction project requirements.

This legal authority will include the following standards:

- 1) for redevelopment of sites that are currently developed with Directly Connected Impervious Area (DCIA) of forty percent or more, the project must retain on-site half the water quality volume for the site, or
- 2) for new development and redevelopment of sites with less than forty percent DCIA, retain the water quality volume for the site, or
- 3) if those retention standards cannot be met, the developer will be required to provide a report indicating why the standard could not be met and a mitigation project on another property or pay a fee to fund a DCIA retrofit.

In developing this legal authority, the City will consider the following watershed protection elements to manage the impacts of stormwater on receiving waters:

- a. Minimize the amount of impervious surfaces (roads, parking lots, roofs, etc.) within each municipality by minimizing the creation, extension, and widening of parking lots, roads, and associated development and encourage the use of Low Impact Development or green infrastructure practices.
- b. Preserve, protect, create and restore ecologically sensitive areas that provide water quality benefits and serve critical watershed functions. These areas may include, but are not limited to; riparian corridors, headwaters, floodplains and wetlands.
- c. Implement stormwater management practices that prevent or reduce thermal impacts to streams, including requiring vegetated buffers along waterways, and disconnecting discharges to surface waters from impervious surfaces such as parking lots.
- d. Seek to avoid or prevent hydromodification of streams and other water bodies caused by development, including roads, highways, and bridges.
- e. Implement standards to protect trees, and other vegetation with important evapotranspirative qualities.
- f. Implement policies to protect native soils, prevent topsoil stripping, and prevent compaction of soils.

- g. Coordinate with state or local health officials to ensure no interference with performance of on-site septic systems.
- h. Limit turf areas.

In addition, the City will review its regulations - site planning requirements, zoning regulations, and subdivision (street design) regulations, with minimum size criteria for impervious cover (roads, parking lots, etc.) to identify and, where appropriate, reduce or eliminate existing regulatory barriers to implementation of LID and runoff reduction practices to the MEP.

5.2 Enforce LID/runoff reduction requirements for development and redevelopment projects

5.3 Implement long-term maintenance plan for stormwater basins and treatment structures

The City will develop a maintenance plan for retention / detention ponds and stormwater treatment structures that it owns or over which it holds an easement or other authority and that are located in the City's priority areas to ensure their long-term effectiveness. This plan will require an annual inspection of those retention / detention ponds and stormwater treatment structures and removal of accumulated sediment and pollutants in excess of 50% design capacity.

5.4 Directly Connected Impervious Area (DCIA) mapping

The City will follow guidance provided by DEEP and UConn CLEAR to calculate the Directly Connected Impervious Area (DCIA) that contributes stormwater runoff to each of its MS4 outfalls. Progress on this task will be documented in each Annual Report until completion.

5.5 Address post-construction issues in areas with pollutants of concern

For areas contributing to waters where Nitrogen, Phosphorus or Bacteria is a Stormwater Pollutant of Concern and erosion or sedimentation problems are found during the annual inspections conducted under the long-term maintenance plan described in BMP 5.2, the City will prioritize those areas for the DCIA retrofit program under minimum control measure 6 – Pollution Prevention/Good Housekeeping.

Post-construction stormwater management schedule

BMP	Lead department / individual	Month / year of implementation	Measurable goal
Establish or update legal authority and guidelines regarding LID and runoff reduction in site development planning	Planning and Zoning	July 1, 2021	Review bylaws and guidelines in order to incorporate LID
Enforce LID/runoff reduction requirements for development and redevelopment projects	Planning and Zoning	July 1, 2021	Educate the public on LID
Implement long-term maintenance plan for stormwater basins and treatment structures	Planning and Zoning	July 1, 2019	Inventory relevant structure and develop a schedule

BMP	Lead department / individual	Month / year of implementation	Measurable goal
Complete DCIA mapping	Planning and Zoning/Engineering	July 1, 2020	Document progress in Annual Reports
Address post-construction issues in areas with pollutants of concern	Planning and Zoning	July 1, 2019	Prioritize areas impaired by Nitrogen, Phosphorous and bacteria

(6) Pollution Prevention / Good Housekeeping

This minimum control measure outlines a program to mitigate the impact of City operations and maintenance on City owned and/or operated properties and the MS4 itself to water quality.

Goal:

Prevent or reduce pollutant runoff as a result of municipal operations.

The City will implement an operations and maintenance program to prevent or reduce pollutant runoff from City facilities and protect water quality.

6.1 Develop and implement formal employee training program

The City will establish its MS4 training program for City employees to increase awareness of water quality issues.

Training will include:

- Standard operating procedures consistent with the MS4 general permit;
- General goals and objectives of this Stormwater Management Plan;
- Identification and reporting of illicit discharges and improper disposal; and
- Spill response protocols and responsibilities.

These trainings may also include regional or statewide trainings coordinated by UConn CLEAR or others.

The Director of Public Works will be responsible for administering the training program.

6.2 Implement MS4 property and operations maintenance

City-owned or -operated properties, parks, and other facilities that are owned, operated, or otherwise the legal responsibility of the City will be maintained so as to minimize the discharge of pollutants to its MS4. Such maintenance will include, but not be limited to:

(i) Parks and open space

The City will optimize the application of fertilizers by municipal employees, institutional staff, or private contractors on lands and easements for which it is responsible for maintenance. Optimization practices considered may include:

- conducting soil testing and analysis to determine soil phosphorus levels,
- the reduction or elimination of fertilizers,
- reduction of fertilizer usage by adhering to the manufacturers' instructions,
- use of alternative fertilizers forms (i.e. products with reduced, slow-releasing, or insoluble phosphorus compositions),
- proper storage and application practices (i.e. avoid impervious surfaces),
- application schedule (i.e. appropriate season or month) and timing (i.e. coordinated with climatic conditions to minimize runoff potential);
- standard operating practices for the handling, storage, application, and disposal of pesticides and herbicides in compliance with applicable state and federal laws;

- evaluating reduced mowing frequencies and use of alternative landscaping materials like drought resistant and native plantings;
- establish procedures for management of trash containers at parks (scheduled cleanings; sufficient number).

City will establish practices for the proper disposal of grass clippings and leaves at City-owned lands. Clippings shall be composted or otherwise appropriately disposed. Clippings will not enter the MS4 system or waters of the state.

(ii) Pet waste management

City will identify locations where inappropriate pet waste management practices are immediately apparent and pose a threat to receiving water quality due to proximity and potential for direct conveyance of waste to its storm system and waters. In such areas, City will, implement targeted management efforts such as public education and enforcement (e.g. increased patrol for violators).

In City-owned recreational areas where dog walking is allowed, City will install educational signage, pet waste baggies, and disposal receptacles (or require carry-out).

City will document its efforts in its annual reports. City should consider including information regarding the scope and extent of its education, compliance, and enforcement efforts (including the number of violations pursued and fines levied or other enforcement taken).

(iii) Waterfowl management

City will identify lands where waterfowl congregate and feeding by the public occurs.

To raise awareness regarding the water quality impacts, City will install signage or use other targeted techniques to educate the public about the detrimental impacts of feeding waterfowl (including the resulting feces deposition) and discourage such feeding practices.

City will also implement practices that discourage the undesirable congregation of waterfowl in these areas, or otherwise isolate the direct drainage from these areas away from its storm system and waters.

(iv) City Buildings and facilities (schools under the jurisdiction of City, City offices, police and fire stations, pools, parking garages and other City-owned or operated buildings or utilities)

City will:

- evaluate the use, storage, and disposal of both petroleum and non-petroleum products and ensure, through employee training, that those responsible for handling these products know proper procedures;
- ensure that Spill Prevention Plans are in place, if applicable, and coordinate with the fire department as necessary;
- develop management procedures for dumpsters and other waste management equipment;
- sweep parking lots and keep areas surrounding the facilities clean to minimize runoff of pollutants;
- ensure that all interior building floor drains are not connected to the MS4 and are appropriately permitted.

(v) Vehicles and Equipment

City will

- establish procedures for the storage of City-owned or -operated vehicles;
- require vehicles with fluid leaks to be stored indoors or in contained areas until repaired;
- evaluate fueling areas owned by City and used by City owned or -operated vehicles and if possible, place fueling areas under cover in order to minimize exposure;
- establish procedures to ensure that vehicle wash waters are not discharged to the municipal storm sewer system or to surface waters;
- ensure any interior floor drains are appropriately permitted.

(vi) Leaf Management

City will establish and implement procedures to minimize or prevent the deposition of leaves in catch basins, streets, parking lots, driveways, sidewalks or other paved surfaces that discharge to the MS4. Such procedures shall also apply to leaves collected by City.

6.3 Implement coordination with interconnected MS4s

City will coordinate with operators of interconnected MS4s (such as neighboring municipalities, institutions and DOT) regarding the contribution of potential pollutants from the storm sewer systems, contributing land use areas and stormwater control measures in the respective MS4s. This same coordination shall be conducted regarding operation and maintenance procedures utilized in the respective systems.

6.4 Develop and implement a program to control other sources of pollutants to the MS4

City will develop and implement a program to control the contribution of pollutants to its MS4 from commercial, industrial, municipal, institutional or other facilities, not otherwise authorized by a CT DEEP stormwater permit.

6.5 Evaluate additional measures for discharges to impaired waters

(i) For waters for which Nitrogen or Phosphorus is a Stormwater Pollutant of Concern:

On City-owned or -operated lands, the City shall implement a turf management practices and procedures policy which includes, but is not limited to, procedures for proper fertilizer application and the planting of native plant materials to lessen the amount of turf area requiring mowing and the application of chemicals. Each Annual Report will discuss the actions taken to implement this policy with an estimate of fertilizer and turf reduction.

(ii) For waters for which Bacteria is a Stormwater Pollutant of Concern:

On City-owned or -operated lands with a high potential to contribute bacteria (such as dog parks, parks with open water, sites with failing septic systems), City will develop, fund, implement, and prioritize a retrofit or source management program to correct the problem(s) within a specific timeframe. Each Annual Report will identify problem areas for which a retrofit or source management program were developed, the location of the closest outfall monitored in accordance with Section 6(i), the cost of such retrofit or program, and the anticipated pollutant reduction. On City-owned or -operated lands, prohibit the feeding of geese or waterfowl and implement a program to manage geese and waterfowl populations. Each Annual Report will discuss the actions taken to implement this program.

6.6 Track projects the disconnect DCIA

City will annually track the total acreage of Directly Connected Impervious Area (DCIA) that is disconnected from the MS4 as a result of redevelopment or retrofit projects within the City. For each retrofit/redevelopment project, the City will document the amount of existing DCIA that is disconnected. The total amount of disconnected DCIA will be reported each year in the Annual Report. Starting on July 1, 2021, The City's goal will be to reduce 1% of its total DCIA acreage per year to the maximum extent possible. City will provide updates on this goal in its annual

report. City will also incorporate all DCIA disconnections which occurred in the City since July 1, 2012 towards meeting this goal.

6.7 Develop and implement an infrastructure repair, rehabilitation and retrofit program

The City will begin a program to identify MS4 structures to repair, rehabilitate, or upgrade to reduce or eliminate the discharge of pollutants into water bodies. This program will be responsive to new information on outfalls discharging pollutants, impaired waters, inspections, or observations made during outfall mapping under the IDDE section of this plan. Information from historical records, physical inspections, CCTV inspection/cleaning activities, and resident complaints will be relied upon to identify MS4 structures subject to evaluation for repair and rehabilitation.

6.8 Develop and implement plan to identify and prioritize retrofit projects

City will develop a Retrofit Project Plan to identify and prioritize potential DCIA disconnection projects. City properties to consider will include schools, libraries, City Hall, Senior Center, public housing complexes, public works facilities, public parks, recreation facilities, and emergency services facilities. Prioritization will be based on several factors, including whether the project lies within one of the MS4 priority areas (urbanized area, DCIA > 11%, discharge to impaired waters). City will include in its annual report for the third year of the permit (2020-2021) its identification and prioritization process, a rationale for the selection of projects to be implemented, and the total acres of DCIA to be disconnected upon implementation. The implementation of projects in this plan will begin by June 30, 2022.

6.9 Develop and implement street sweeping program

City will implement a program to provide for regular inspection and maintenance of City-owned or -operated streets, parking areas and other MS4 infrastructure. The City's current street sweeping program is managed by the Highway Department. The program has the goal of sweeping the City's 216 miles of roadways and parking lots at least once per year. Streets and lots in the downtown area of the city are swept more frequently as special events require. The City currently owns one street sweeper and utilizes the services of private contractors when funding is available.

City will establish and implement procedures for sweeping City-owned or operated streets and parking lots. All streets and parking lots within the MS4 Priority Areas will be inspected, swept and/or cleaned (as necessary) at least once per year in the spring following the cessation of winter maintenance activities (i.e. sanding, deicing, etc.). The procedures shall also include more frequent inspections, cleaning and/or sweeping of targeted areas determined by City to have increased pollutant potential based on the presence of active construction activity or other potential pollutant sources. City will identify such potential pollutant sources based upon surface inspections, catch basin cleaning or inspection results, land use, winter road deicing and/or sand application, impaired or TMDL waters or other relevant factors as determined by City. If wet dust suppression is conducted, the use of water will be minimized such that a discharge of excess water to surface waters and/or the storm sewer system does not occur.

For streets and parking lots outside the MS4 Priority Areas, including any rural uncurbed streets and parking lots with no catch basins, City will either meet the minimum frequencies above, or develop and implement an inspection, documentation and targeted sweeping and/or cleaning plan for those areas by June 30, 2018 and submit such plan with its year one Annual Report. For new and redeveloped municipal parking lots, City will

evaluate options for reducing stormwater runoff to surface waters and/or the storm sewer system by the installing pervious pavements and/or other measures to promote sheet flow of stormwater.

- a. City will ensure the proper disposal of street sweepings in accordance with DEEP policies, guidance and regulations. Sweepings shall not be discharged back into the storm drain system and/or surface waters.
- b. City will document results of its sweeping program in its annual reports including: a summary of inspection results, curb miles swept, dates of cleaning, volume or mass of material collected, and method(s) of reuse or disposal. City will also include documentation of any alternate sweeping plan for rural uncurbed streets and any runoff reduction measures implemented.

6.10 Develop and implement catch basin cleaning program

City will conduct routine cleaning of all catch basins and track catch basin inspection observations. Utilizing information compiled through its inventory of catch basins, operational staff and public complaints, City will optimize routine cleaning frequencies for particular structures or catchment areas as follows to maintain acceptable sediment removal efficiencies:

- a. Inspect all City-owned catch basins within MS4 Priority Areas at least once by June 30, 2020. Catch basins outside the MS4 Priority Areas shall be inspected by June 30, 2022.
- b. Prioritize inspection and maintenance for City-owned catch basins located near impaired waters and construction activities (roadway construction, residential, commercial, or industrial development or redevelopment). City will clean catch basins in such areas more frequently if inspection and maintenance activities indicate excessive sediment or debris loadings.
- c. Establish a schedule such that the frequency of routine cleaning will ensure that no catch basin at any time will be more than fifty (50) percent full. A catch basin sump is more than 50 percent full if the contents within the sump exceed one half the distance between the bottom interior of the catch basin to the invert of the deepest outlet of the catch basin.
- d. If a catch basin sump is more than fifty (50) percent full during two consecutive routine inspections/cleaning events, City will document that finding, investigate the contributing drainage area for sources of excessive sediment loading, and to the maximum extent practicable, abate contributing sources. City will describe any actions taken in its Annual Report.
- e. City will detail its plan for optimizing catch basin cleaning, inspection plans, and its schedule for gathering information to develop the optimization plan in its first annual report. Documentation shall include metrics and other information used to reach the determination that the established plan for cleaning and maintenance is optimal for the MS4. City will keep a log of catch basins cleaned or inspected.
- f. City will report in each Annual Report the total number of catch basins, number inspected, number cleaned, the total volume or mass of material removed from all catch basins and, if practicable, the volume or mass of material removed from each catch basin draining to water quality limited waters.

6.11 Develop and implement snow management practices

(i) Deicing Material Management

City will develop and implement standard operating practices for the use, handling, storage, application, and disposal of deicing products such as salt and sand to minimize exposure to stormwater; consider means to minimize the use and optimize the application of chloride-based or other salts or deicing product (while maintaining public safety) and consider opportunities for use of alternative materials; for any exterior containers of liquid deicing materials installed after July 1, 2017, City will provide secondary containment of at least 110% of

the largest container or 10% of the total volume of all containers, whichever is larger, without overflow from the containment area.

(ii) Snow and Ice Control Practices

City will implement and refine its standard operating practices regarding its snow and ice control to minimize the discharge of sand, anti-icing or de-icing chemicals and other pollutants (while maintaining public safety).

City will establish goals for the optimization of sand and/or chemical application rates through the use, where practicable, of automated application equipment (e.g. zero-velocity spreaders), anti-icing and pre-wetting techniques, implementation of pavement management systems, and alternate chemicals.

City will maintain records of the application of sand, anti-icing and/or de-icing chemicals to document the reduction of chemicals to meet established goals.

City will ensure the proper training for deicing applications for municipal employees, institutional staff, or private contractors on lands and easements for which it is responsible for maintenance.

City will manage and dispose of snow accumulations in accordance with DEEP's Best Management Practices for Disposal of Snow Accumulations from Roadways and Parking Lots, revised 2/4/11 and as amended (see link at: www.ct.gov/deep/stormwater).

In its Annual Report, City will document results of its snow removal program including, at a minimum: the type of staff training conducted on application methods and equipment, type(s) of deicing materials used; lane-miles treated; total amount of each deicing material used; type(s) of deicing equipment used; any changes in deicing practices (and the reasons for the change); and snow disposal methods.

6.12 Interconnected MS4s

City will coordinate with operators of interconnected MS4s (such as neighboring municipalities, institutions and DOT) regarding the contribution of potential pollutants from the storm sewer systems, contributing land use areas and stormwater control measures in the respective MS4s. This same coordination will be conducted regarding operation and maintenance procedures utilized in the respective systems.

6.13 Sources contributing pollutants to the MS4

City will develop and implement a program to control the contribution of pollutants to its MS4 from commercial, industrial, municipal, institutional or other facilities, not otherwise authorized by permit issued pursuant to Sections 22a-430 or 22a-430b of the Connecticut General Statutes.

6.14 Additional measures for discharges to impaired waters (with or without a TMDL)

(i) For waters for which Nitrogen or Phosphorus is a Stormwater Pollutant of Concern:

On City-owned or -operated lands, City will implement a turf management practices and procedures policy which includes, but is not limited to, procedures for proper fertilizer application and the planting of native plant materials to lessen the amount of turf area requiring mowing and the application of chemicals. Annual Reports will discuss the actions taken to implement this policy with an estimate of fertilizer and turf reduction.

(ii) For waters for which Bacteria is a Stormwater Pollutant of Concern;

On City-owned or -operated lands with a high potential to contribute bacteria (such as dog parks, parks with open water, sites with failing septic systems), City will develop, fund, implement, and prioritize a retrofit or source management program to correct the problem(s) within a specific timeframe. Annual Reports will identify problem areas for which a retrofit or source management program were developed, the location of the closest outfall monitored in accordance with Section 6(i), the cost of such retrofit or program, and the anticipated pollutant reduction. On City-owned or -operated lands, City will prohibit the feeding of geese or waterfowl and implement a program to manage geese and waterfowl populations. Annual Reports will discuss the actions taken to implement this program.

Pollution prevention/ good housekeeping schedule

BMP	Lead department / individual	Month / year of implementation	Measurable goal
Develop/implement formal employee training program	Director of Public Works	July 1, 2017	Conduct annual training
Implement MS4 property and operations maintenance	Director of Public Works	July 1, 2017	Inspect assets and assess conditions to develop program
Implement coordination with interconnected MS4s	Director of Public Works	July 1, 2017	Meet with relevant MS4s and the CT DOT
Develop/implement program to control other sources of pollutants to MS4	Director of Public Works	July 1, 2017	Develop an asset management program
Evaluate additional measures for discharges to impaired waters	Director of Public Works	July 1, 2017	Develop a city-wide plan a that addresses pollutants and discharges Annually track the total acreage of DCIA that is disconnected from the MS4
Track projects the disconnect DCIA	Director of Public Works	July 1, 2017	CCTV the drainage system, investigate flooding-prone areas to develop program
Develop/implement infrastructure repair/rehab program	Director of Public Works	July 1, 2017	Inspect assets and assess conditions to develop program
Develop/implement plan to identify/prioritize retrofit projects	Director of Public Works	July 1, 2020	Sweep all parking lots and streets at least once per year
Develop/implement street sweeping program	Director of Public Works	July 1, 2017	Track catch basin cleaning and develop a schedule
Develop/implement catch basin cleaning program	Director of Public Works	July 1, 2017	Work on reducing salt use
Develop/implement snow management practices	Director of Public Works	July 1, 2017	Develop an asset management program
Sources contributing pollutants to the MS4	Director of Public Works	July 1, 2018	Implement turf management practices and identify retrofits where needed
Additional measures for discharges to impaired waters (with or without a TMDL)	Director of Public Works	July 1, 2020	

Outfall Monitoring

The City will monitor and investigate all MS4 outfalls that discharge to impaired waterbodies by the end of the permit term. Using the outfall inventory developed under the IDDE minimum control measure, City will identify which outfalls discharge to impaired waters and screen them for the specific impairments.

Once half of all outfalls discharging to impaired waterbodies have been screened, the 6 outfalls contributing the highest level of pollutants will be identified and screened on an annual basis.

Based on the screening results, City will investigate the drainage areas of outfalls that are contributing to the impairment. The investigations may consider land use or development patterns, business or commercial activities, industrial activities, DCIA, natural contributors, MS4 maintenance issues, residential activities, or anything else potentially contributing to the source of the impairment.

Based on results of the drainage area investigations, City will implement measures to address sources of the impairments including the specific impaired waters provisions described within the permit control measures.

Plan Amendments

City will amend the SMP whenever:

- (1) there is a change which has the potential to cause pollution of the waters of the state; or
- (2) the actions required by the Plan fail to prevent pollution of the waters of the state or fail to otherwise comply with any other provision of this general permit; or
- (3) the Commissioner requests modification of the Plan.

Stormwater Management Plan Signatures


"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/

Title

Date

Principal Executive Officer


Principal plan preparer

Regional Manager
Title

2/12/18
Date

Stormwater Management Plan Engineering Certification

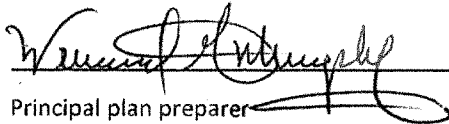
"I hereby certify that I am a qualified professional engineer, as defined in the General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems. I am making this certification in connection with a registration under such general permit, submitted to the Commissioner by the City of Shelton for an activity located at or within the City of Shelton. I have personally examined and am familiar with the information that provides the basis for this certification, including but not limited to all information described in Section 3(b)(9)(A) of such general permit, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining such information, that the information upon which this certification is based is true, accurate and complete to the best of my knowledge and belief. I certify, based on my review of all information described in Section 3(b)(9)(A) of such general permit and on the standard of care for such projects, that I have made an affirmative determination in accordance with Section 3(b)(9)(B) of this general permit. I understand that this certification is part of a registration submitted in accordance with Section 22a-430b of Connecticut General Statutes and is subject to the requirements and responsibilities for a qualified professional in such statute. I also understand that knowingly making any false statement in this certification may be punishable as a criminal offense, including the possibility of fine and imprisonment, under section 53a-157b of the Connecticut General Statutes and any other applicable law."


Qualified Professional
CITY ENGINEER

Title

2/14/2018

Date


Principal plan preparer

William G. Murphy, P.E.

Title

Regional Office Manager

Date

02-12-18