

# **STORMWATER MANAGEMENT IN CT: MS4 TASKS AND TOOLS**

CAFM Conference  
November 14, 2022

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CT NEMO

# MS4 BACKGROUND

- Clean Water Act: 1972

- MS4 Phase 1: 1990

- MS4 Phase 2: 1999

- **Revised CT MS4 Permit: 2017**



Connecticut Department of  
Energy & Environmental Protection  
Bureau of Materials Management & Compliance Assurance  
Water Permitting & Enforcement Division



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

Issued: January 20, 2016

Effective: July 1, 2017

Expires: June 30, 2022

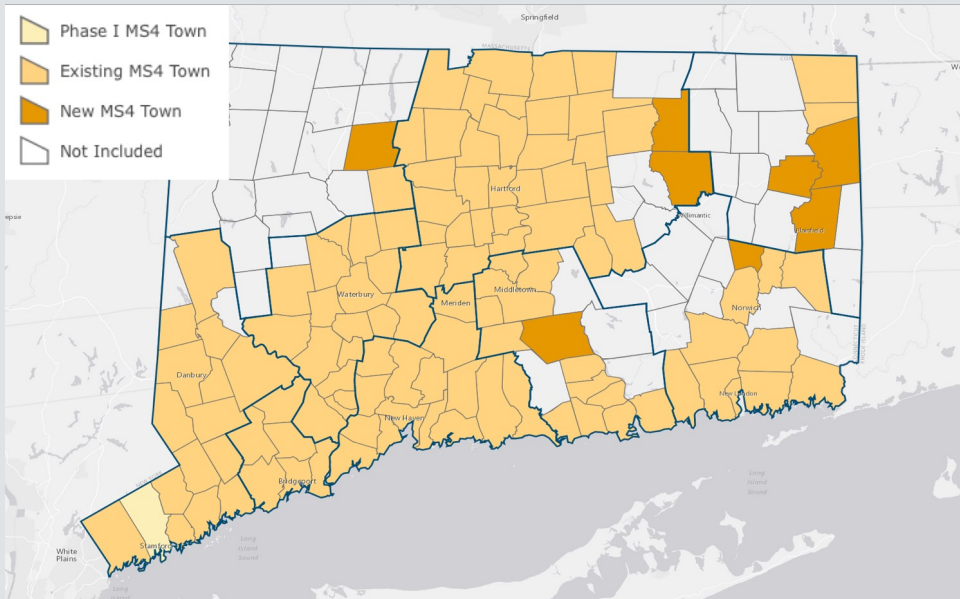
Bureau of Materials Management & Compliance Assurance  
DEEP-WPED-GP-021 1 of 50

1/20/16

From 17 to 68 pages

# MS4 PERMIT TASKS (THE BIG ONES)

121 / 169 towns



• 6 minimum control measures + impaired waters monitoring

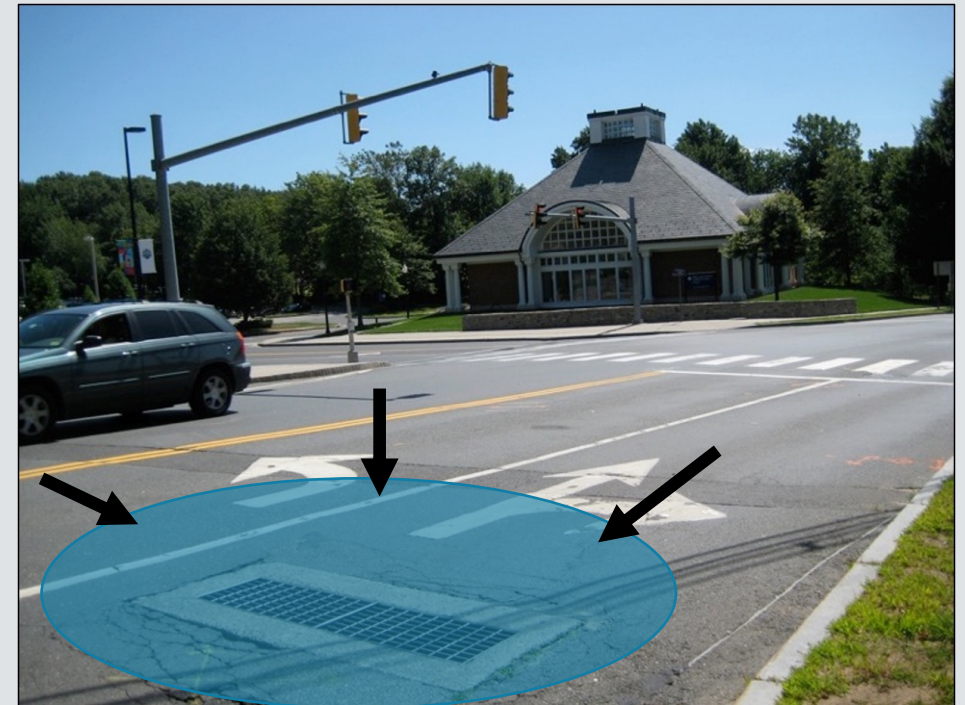
- Dry & wet weather monitoring
- Stormwater system mapping
- Investigate and eliminate illicit (non-stormwater) discharges
- Municipal operations – catch basin cleaning, etc.
- Promote/encourage/require LID in regulations
- Disconnect impervious cover
- Education of staff & public
- Annual reporting
- = \$\$\$\$

## 5: POST CONSTRUCTION STORMWATER MANAGEMENT

A quick overview / reminder:

- **D**irectly **C**onected **I**mpervious **A**rea (DCIA):

Impervious area which drains stormwater runoff into catch basins or directly into waterbodies



# DCIA DISCONNECTION

A quick overview / reminder:

- Disconnecting DCIA:

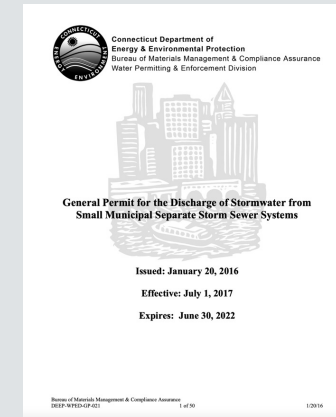
When the minimum amount of the  
"Water Quality Volume" is retained on  
site = **infiltrate 1<sup>st</sup> inch**



# DCIA DISCONNECTION

What the permit requires:

- Create plan to disconnect 2% of DCIA by 2022
  - 5 year lookback (2012)
- Disconnect 1% annually after that
- Track and Report progress in Annual Report



## 5.3 Post-Construction Stormwater Management reporting metrics

For details on this requirement, visit <https://nemo.uconn.edu/ms4/tasks/post-construction.htm>. Scroll down to the DCIA section.

Metrics	
Baseline (2012) Directly Connected Impervious Area (DCIA)	acres
DCIA disconnected (redevelopment plus retrofits)	acres this year / acres total
Retrofit projects completed	#
DCIA disconnected	% this year / % total since 2012
Estimated cost of retrofits	\$
Detention or retention ponds identified	# this year /# total

10

LM

Looney, Mary

The DCIA calculation shall be based upon the criteria available through the DEEP stormwater webpage ([www.ct.gov/deep/municipalstormwater](http://www.ct.gov/deep/municipalstormwater)) and the precise methodology and assumptions shall be described in the permittee's Plan and initial annual report. Each annual report shall document the progress of this task until its completion (pg. 30)





## GREEN STORMWATER INFRASTRUCTURE

- Natural method to absorb stormwater runoff
- Acts as a filter to prevent pollutants from entering waterways
- Pre-development hydrology
- Rain gardens, tree box filters, pervious pavement, rain barrels, pervious pavement, etc.

# RAIN GARDENS / BIORETENTION






# RAIN GARDENS / BIORETENTION

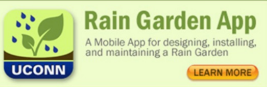
## Rain Garden Website and App

Stormwater ▾ Green Stormwater Infrastructure ▾ Projects ▾ About NEMO ▾ UConn CLEAR



### Rain Gardens

A Design Guide for Connecticut & New England Homeowners



**Rain Garden App**  
A Mobile App for designing, installing, and maintaining a Rain Garden  
[LEARN MORE](#)


### What is a Rain Garden?

Rain gardens are shallow depressions in the landscape that typically include plants and a mulch layer or ground cover. In addition to providing increased groundwater recharge, they are expected to provide pollutant treatment. Pollutant treatment in rain gardens has been attributed to adsorption, decomposition, ion exchange, and volatilization (Prince George's County Bioretention Manual, 2002). Rain gardens can be used in residential settings to accept runoff from a roof or other impervious surface. In a commercial setting, bioretention areas are similar to rain gardens, but are often larger, and have an engineered design.

### Why a Rain Garden?

Every time it rains, water runs off impervious surfaces such as roofs, driveways, roads and parking lots, collecting pollutants along the way. This runoff has been cited by the United States Environmental Protection Agency as a major source of pollution to our nation's waterways. By building a rain garden at your home, you can reduce the amount of pollutants that leave your yard and enter nearby lakes, streams and ponds.

### Rain Garden Growing Season Video



Rain Garden 2014 Growing Season at UConn Extension Ce...  
Share

**Contact**

**Phone:** 860-345-4511

**E-mail:** [nemo.uconn.edu](mailto:nemo.uconn.edu)

Can I Build a Rain Garden? +

Environmental Benefits +

They are Easy to Create +

They are Attractive +

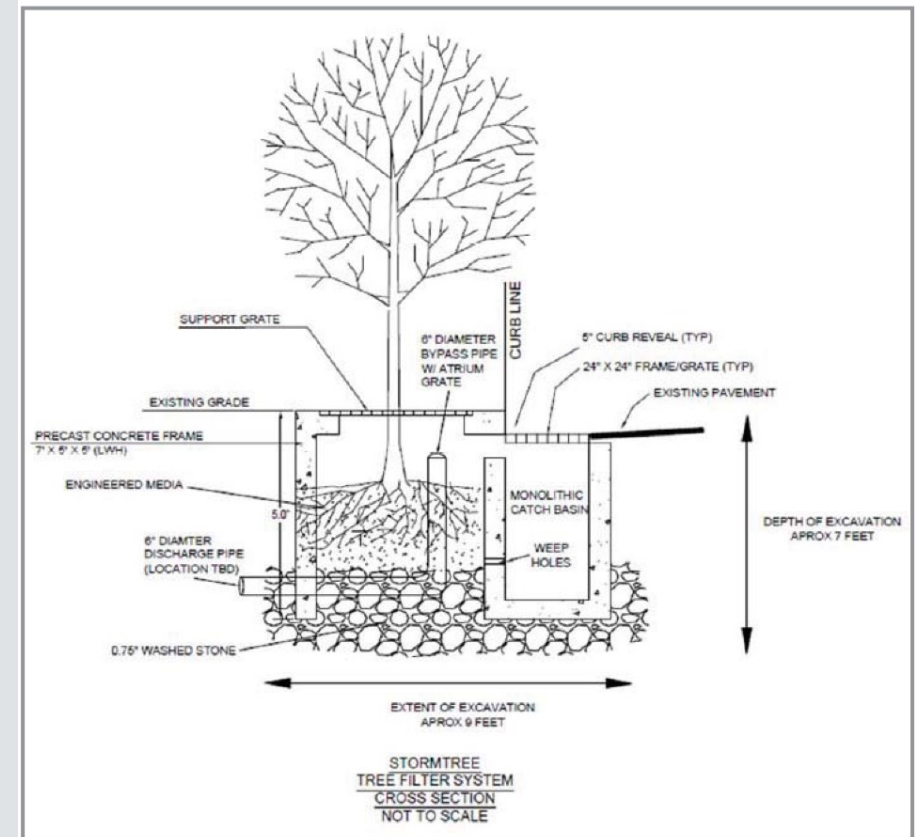


**NEMO**

nemo.uconn.edu/ms4/tasks/  
post-construction



# TREE BOX FILTERS





# PERVIOUS PAVEMENT

## UConn Storrs



## COLCHESTER, CT

- Legal Authorities to promote LID for developers
- Colchester: Updated zoning regulations
  - No more than 75% of parking lots can be made up of impervious cover
    - Conserving the natural, pervious surfaces already on site, such as trees and green spaces
    - Pervious materials for parking stall surfaces, overflow parking, and snow storage space
- More than 10 new private installations of pervious paving
- 3 projects for local schools in the works



# RESOURCES

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Stormwater			
LID Guide			
- The Practice			
what LID is and			
LID Design			
- Tree well des			
- 15'x 5' Bioswa			
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- Simsbury des			
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• Zoning			

A Guide to Meeting the MS4 Post-construction Legal Authority Requirements	
We compiled example regulatory language / mechanisms to help towns and institutions get started in meeting the legal authority requirements in the CT MS4 General Permit Section 6(a)(5)(A) and (B) – also known as the post-construction legal authority requirement.	
This is one of the more complex sections of the permit and towns are sure to implement this requirement in many ways. The example regulatory language that follows may be adapted to fit the particular needs and circumstances in each town and by no means is any of this required to be used. <b>Finally, the resources we're providing don't constitute legal advice. Please be sure to consult your lawyer!</b>	
What are the requirements?	
In a nutshell, the post construction legal authority requires (to the maximum extent practicable) that MS4 towns and institutions establish a legal authority that:	
1. Requires developers and contractors to default to using LID practices in their projects and prioritize LID over other municipal requirements or guidance. If LID isn't feasible on a particular site, the developer / contractor must explain why LID can't be used in their application to the town. <b>The Runoff Reduction Checklist can be used or adapted to review projects for compliance with this requirement.</b>	
2. Set the following minimum stormwater retention standards: a. Water Quality Volume (WQV) for sites with less than 40% DCIA b. ½ the WQV for sites with more than 40% DCIA  <b>The Stormwater Retention regulatory language example below can be adapted and used to add this requirement to town regulations.</b>	
3. If the relevant stormwater retention volume cannot be achieved, then two options are offered: a. Whatever remaining volume that cannot be retained may instead be retained by an off-site mitigation project; <b>See example regulatory language in the Off-site Mitigation regulatory language section below.</b>	

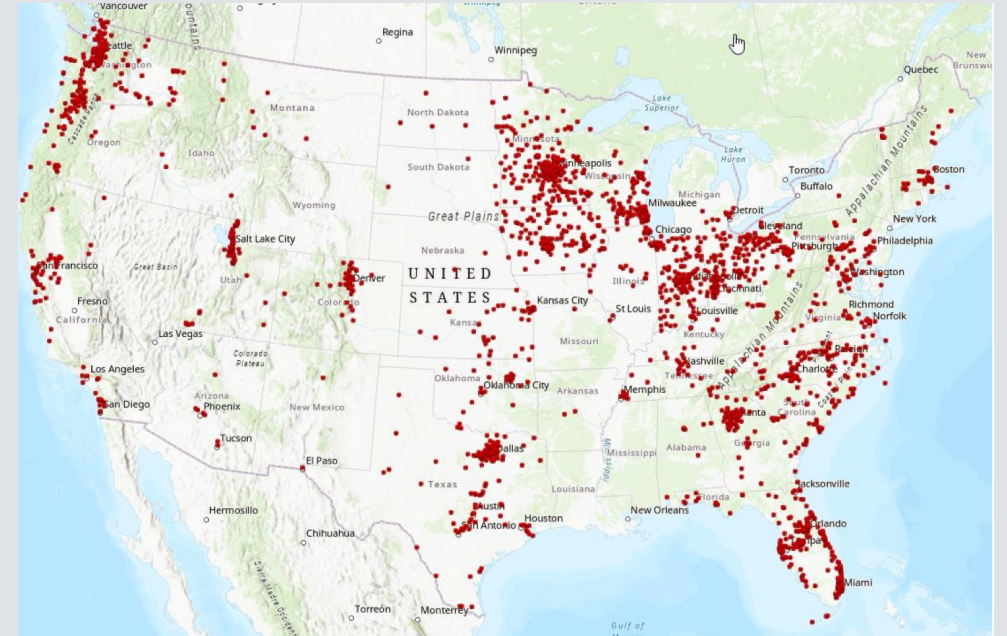
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cts on NW and SW corner			
to RGs			
r Park; western half drains			
LID upgrade			
dewalk; paid for by owner			
re reduction			
hall renovation, see file			
y required LID to treat 75%			
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## MS4 PERMIT REISSUANCE

- **Current permit "expired" June 30, 2022**
  - DEEP encourages towns to continue with compliance
  - Extension of current permit expected by end of this year
    - No re-registration
  - Permit update to be released next year or once 2020 census data is available
    - Not expecting huge changes, but maybe more towns and expanded monitoring
  - For towns in compliance, biggest costs will be related to disconnecting IC
    - Continual 1% disconnection annually

# CONSIDERING A STORMWATER UTILITY

- As of 2021, all towns now have authority to set up a stormwater utility
- Like any public utility – charge fee (based on IC) for use of stormwater system
  - Stable and equitable
- Over 2000 nationwide
  - Ranging from small communities to large metropolitan areas
    - Median population: 16,569
- 2 in CT



Credit: Dr. Warren Campbell, Western Kentucky University

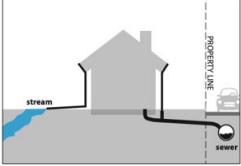
# FUNDING: STORMWATER UTILITIES

- Raleigh, NC
  - Stormwater utility: 2004
  - Fall 2021: 1,700 sq. ft. Bioretention area
    - Six trees and more than 750 plants
    - 6 lbs Nitrogen + 109 lbs suspended solids
  - October 2022: GSI plan
    - Work with private developers
    - Dedicated maintenance program
    - GSI in regulations and city planning reports






# FUNDING: STORMWATER UTILITIES




**Off your property to a street, drainage ditch, sewer, stream or other location**  
⊘ **Does not count toward discount**

These are examples of places rain goes after it leaves your roof if it does not soak into the ground into your property. Only rain runoff that safely soaks into the ground on your property counts toward the Clean River Rewards discount. However, you may still get a partial discount if some of your rain runoff goes off your property and some safely soaks into the ground on your property.



**Drywells, French drains or soakage trenches**  
✓ **Counts toward discount**


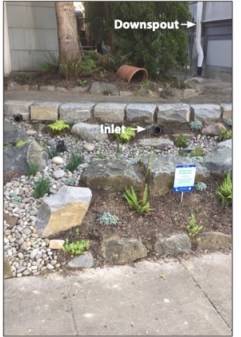
Drywells, French drains and soakage trenches are buried underground. They can collect rain from your roof and let it slowly soak into the ground on your property.



**Swale, lawn, garden or landscaped area**  
✓ **Counts toward discount**


These are places rain runoff can soak into the ground on your property through an extension attached to the end of a downspout.

To stay safe and be eligible for discount the rain must discharge at least 6 feet away from a basement, 2 feet away from a crawl space or slab foundation, 5 feet from the neighbors' property line, and 3 feet from the public sidewalk. Make sure there is enough space for the water to soak into the ground. The area of the ground receiving the water must be at least 10% of the area of the roof that is draining to it. Also, make sure the water drains away from your house, but don't send it down steep slopes.



Downspout →  
Inlet

ENVIRONMENTAL SERVICES  
CITY OF PORTLAND  
working for clean rivers



- Credit System as incentives
- Portland, Oregon
  - Stormwater utility: 2013
- Credits for all property types
  - Residential = up to 100% for properly managing stormwater runoff from rooftops
  - Dry wells and french drains, lawns and rain gardens, rain barrels, and eco-roofs



# FUNDING: STORMWATER UTILITIES



## Stormwater Utilities

[Stormwater Utilities](#) [Fee Systems](#) [Credits](#) [Stormwater Utility Webinar Series](#) [Resources](#)

### What is a Stormwater Utility?

Governor Lamont's Climate Bill, [House Bill 6441](#), passed in July of 2021, allows for Connecticut Municipalities to be able to implement Stormwater Utilities. Stormwater utilities are fees which generate direct, stable funding for stormwater management. They are often labelled as a fair and equitable source of funding as the fee is not based on property tax, but on impervious cover, allowing all properties, even tax-exempt properties, to contribute to the stormwater fund. On the boxes below, you can find a breakdown of the essentials of House Bill 6441:

#### THE STORMWATER UTILITY WEBINAR SERIES

Quick Find:

[Who has one?](#)

[Utilities in Action](#)

[Find Out More](#)

Who can Implement a Stormwater Utility?



Purpose of the Utility



Establishing a Fee



Stormwater Utility Budgets



Unpaid Fees



Enforcement



Collaboration on Stormwater Utilities



Website with breakdown of what stormwater utilities are, fee systems, credits systems, and more



## South Burlington Vermont Stormwater Utility

[www.sburstormwater.com](http://www.sburstormwater.com)

May 4, 2022

Presentation by:

David P. Wheeler, Stormwater Superintendent  
South Burlington Department of Public Works



Stormwater Utility Webinar Series ft. Vermont,  
New Hampshire, and Western Kentucky University

## Stormwater Utilities and MS4 Compliance Examples from across the country



Stormwater utilities are fees which generate direct and stable funding for stormwater management. Stormwater utilities function the same as other utilities, such as water and sewerage. Just as residents pay a fee for how much water they use to fund the drinking water services within their area, stormwater utilities charge residents and property owners on the amount of impervious cover on their property to fund the management needed to prevent and mitigate stormwater pollution and its adverse effects. Impervious cover charges allow for all properties, including those which are tax-exempt, to contribute to the stormwater fund, making for an equitable and fair fee. These funds can be used for various aspects of stormwater management, such as infrastructure repair, green infrastructure implementation, catch basin cleaning, and more, most of which are requirements of the Municipal Separate Storm Sewer System (MS4) permit.

The National Pollutant Discharge Elimination System permit, including the MS4 permit, is currently implemented in 46 states across the country. Stormwater utilities have been implemented within 41 states. And with the passing of Governor Lamont's Climate Bill in May of 2021, Connecticut municipalities have the opportunity to carry out their own stormwater utilities. These utilities are not dependent on geographic area or population size. Locations have ranged from Los Angeles, California, with a population of over 4 million to Indian Creek Village, Florida, with a population of 88 people. Even though stormwater utilities come in all shapes and sizes, they all address stormwater pollution and help achieve compliance with MS4 requirements.



Figure 1: Map of the United States with location of stormwater utilities, 2021

### CONTACT

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<https://nemo.uconn.edu/ms4/>

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Stormwater Utility and  
MS4 Compliance Factsheet

[nemo.uconn.edu/stormwater-utilities](http://nemo.uconn.edu/stormwater-utilities)

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*Mission: provide information and assistance to land use decision makers and other audiences in support of better land use decisions, healthier natural resources, and more resilient communities*

**Mary Looney**

*Municipal Stormwater Educator  
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