

# Preventing Stormwater Pollution

Municipal Separate Storm Sewer System (MS4) Permit Requirements

West Hartford,  
Connecticut

January 19, 2022



**CDM  
Smith**



**WEST  
HARTFORD**

# Content

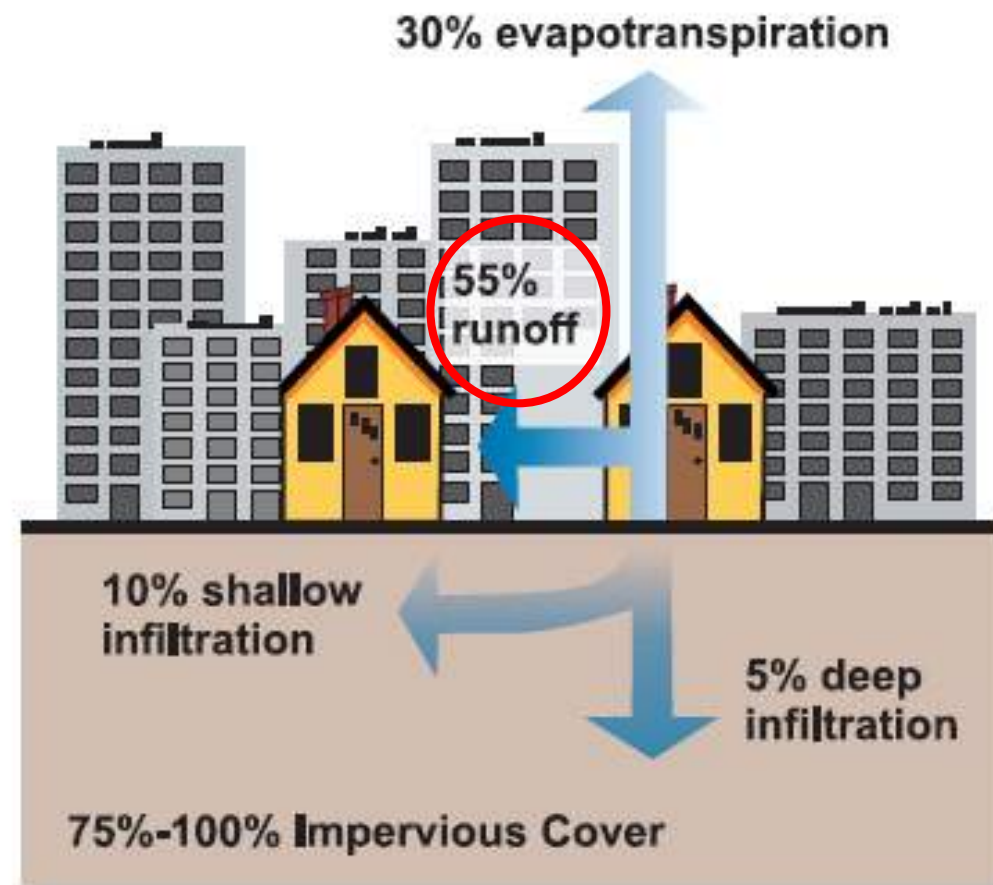
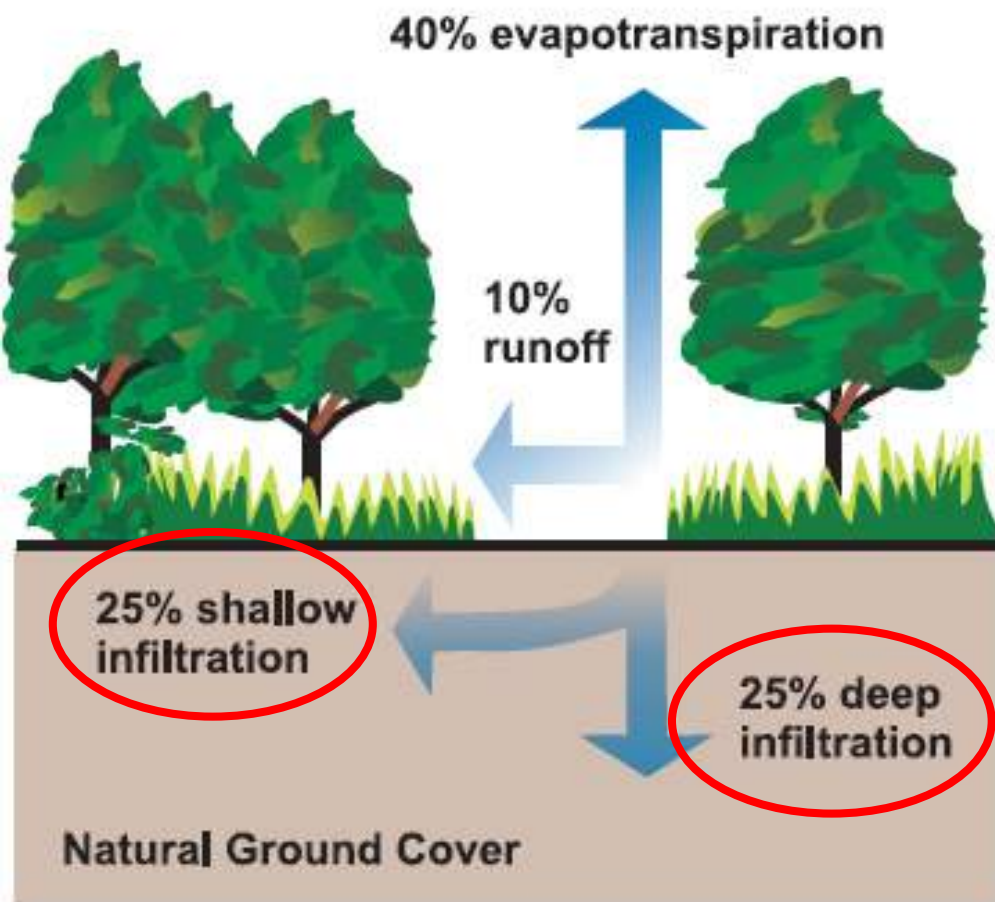
- Stormwater Pollution
- CT DEEP Municipal Separate Storm Sewer System (MS4) Permit
- Six Minimum Control Measures (MCM)





# Stormwater Pollution

# Natural Environment vs. Development



# Stormwater Pollution

Stormwater can pick up:

- Road sand and salt
- Construction site sediment
- Fertilizers and pesticides
- Animal waste
- Oil and grease
- Litter

Pollutants discharge to nearby waterbodies without treatment





# Municipal Operations that can Impact Stormwater Quality

- **Street Sweeping** - Collects sediment and prevents it from entering water bodies
- **Catch Basin Inspection & Cleaning** – Removes pollutants, prevents them from entering water bodies
- **Storm Drain and Street Repair/Maintenance**
- **Outfall Inspections** - Keeps storm drains operating properly
- **Municipal Facility Management**
- **Municipal Construction Projects** – Ensures proper sedimentation & erosion control measures
- **Landscape & Park Maintenance**
- **Stormwater BMP Maintenance**
- **Municipal Employee Training**



Picture Credits: Vacuum Truck Exchange, United Contractors, Mill City Times

# Municipal Stormwater Hotspots

Sites that produce high levels of stormwater pollutants and/or present a high risk for spills, leaks or illicit discharges



- Public Works Yards
- Vehicle/Equipment Storage
- Maintenance Yards
- Water and Wastewater Treatment Facilities
- Public Buildings
- Public Parks
- Public Golf Courses
- Public Swimming Pools



# CT DEEP Municipal Separate Storm Sewer System (MS4) Permit



# Connecticut Regulations

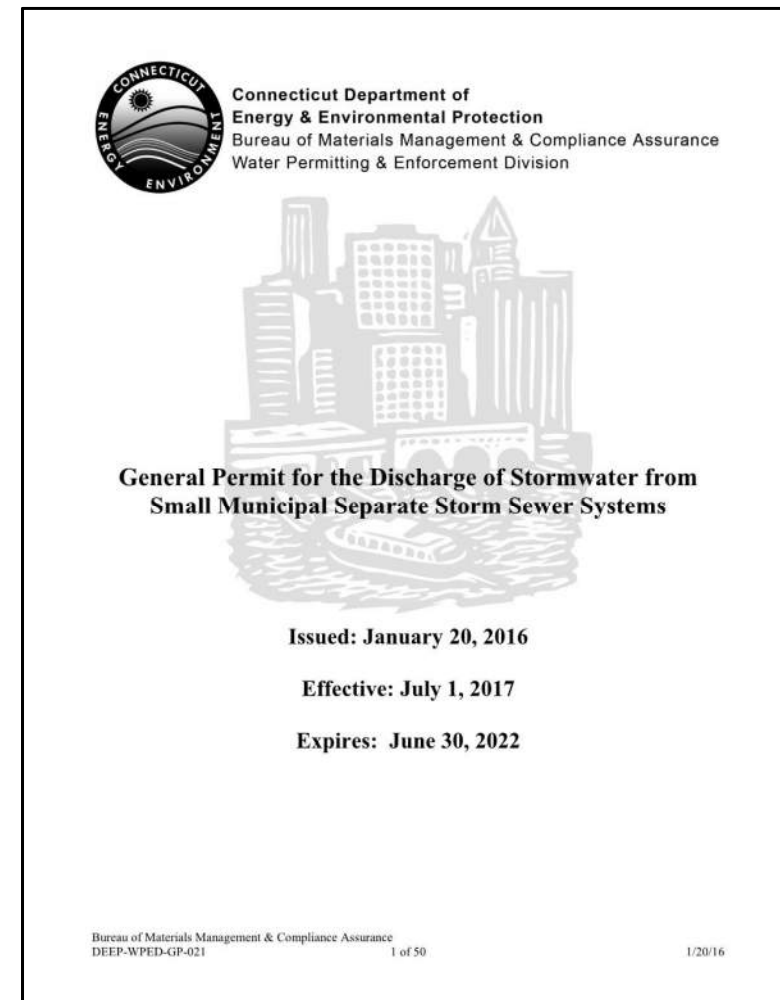
- 2002 Guidelines for Erosion and Sediment Control
- 2004 Small MS4 Permit
- 2004 Stormwater Quality Manual
- 2011 LID Appendix to the Stormwater Quality Manual
- **2017 MS4 General Permit – Effective July 1, 2017 Expires June 30, 2022**

## (6) Pollution Prevention/Good Housekeeping

The permittee shall implement an operations and maintenance program for permittee-owned or -operated MS4s that has a goal of preventing or reducing pollutant runoff and protecting water quality from all permittee-owned or -operated MS4s.








### (A) Employee Training

The existing 2004 MS4 permittees shall continue a formal employee training program to increase awareness of water quality related issues in management of its MS4.



# CT DEEP Municipal Separate Storm Sewer System (MS4) Permit

## Six Minimum Control Measures (MCM):

- 1  Public education and outreach
- 2  Public involvement/participation
- 3  Illicit discharge detection & elimination
- 4  Construction site stormwater runoff control
- 5  Post-construction stormwater management
- 6  Pollution prevention/good housekeeping
-  Wet Weather Monitoring



# MCM 1 – Public Education and Outreach

# Public Education and Outreach

## BMP 1-1 Implement Public Education Program

## BMP 1-2 Address Education/Outreach for Pollutants of Concern

- Develop Program
- Implement Program
- Evaluate Effectiveness
- Taylor Program

# Public Education and Outreach

## Stormwater Brochure

## CB Markings



## Stormwater Website

<https://www.westhartfordct.gov/town-departments/engineering/storm-water-management>

**Helpful Information**

Connecticut Department of Energy and Environmental Protection (DEEP)  
Stormwater Management:  
[http://www.ct.gov/deep/cwp/view.asp?a=2721&q=325702&deepNav\\_GID=1654%20](http://www.ct.gov/deep/cwp/view.asp?a=2721&q=325702&deepNav_GID=1654%20)

US Environmental Protection Agency (EPA)  
Greening EPA  
Stormwater Management:  
<https://www.epa.gov/greeningepa/epa-facility-stormwater-management>

US EPA National Pollutant Discharge Elimination System (NPDES)  
Stormwater Program:  
<https://www.epa.gov/npdes/npdes-stormwater-program>

**WEST HARTFORD CONNECTICUT**

This information pamphlet provided to you by:

**Town of West Hartford**

**Duane J. Martin, P.E.**  
Town Engineer  
[DuaneM@WestHartfordCT.gov](mailto:DuaneM@WestHartfordCT.gov)

**West Hartford Town Hall**  
Engineering Division  
50 South Main St, Room 204  
West Hartford, CT 06107  
(860) 561-7500

For more information go to:  
[www.westhartfordct.gov/stormwater](http://www.westhartfordct.gov/stormwater)

Graphics provided courtesy of: **CDM Smith**

**Town of West Hartford**

**Preventing Stormwater Pollution : Be Part of the Solution**





## MCM 2 – Public Participation

# Public Involvement/Participation

**BMP 2-1 Comply with Public Notice Requirements**

**BMP 2-2 Continue Stormwater Committee Meetings**



## MCM 3 – Illicit Discharge Detection and Elimination (IDDE)

# Illicit Discharge Detection and Elimination (IDDE) Program

**BMP 3-1 Develop Written IDDE Program**

**BMP 3-2 Develop Outfall Mapping**

**BMP 3-3 Develop Citizen Reporting Program**

**BMP 3-4 Establish Legal Authority**

**BMP 3-5 Develop Record Keeping**

**BMP 3-6 Address IDDE in Areas with Pollutants of Concern**

**BMP 3-7 Outfall Dry Weather Screening**

**BMP 3-8 Sanitary Sewer Overflows (SSO's) Inventory**

# IDDE Program

## Illicit Discharges

Any discharge to a MS4 that is not composed **entirely** of stormwater except the following non-stormwater discharges if they are document in the SMP:

- Uncontaminated groundwater
- Irrigation water
- Fire fighting activities (except training)
- Street wash water from sweeping
- Naturally occurring discharges such as rising groundwater, uncontaminated groundwater infiltration, springs, diverted stream flows, and flows form riparian habitats and wetlands

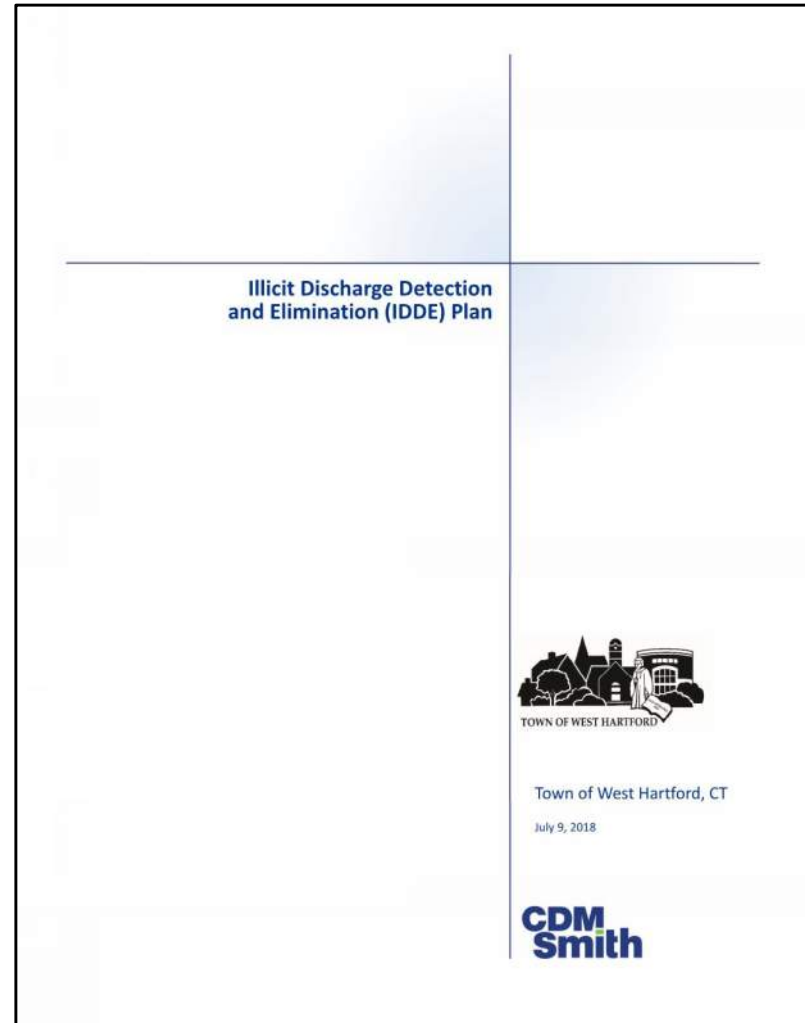


# IDDE Program

## Purpose & Goal: Identify Illicit Connections

### Developed IDDE Plan in 2018

- Dry weather outfall sampling
- Wet weather outfall sampling
- Resident and employee notifications
- Drainage system investigations
- Removal of illicit connections



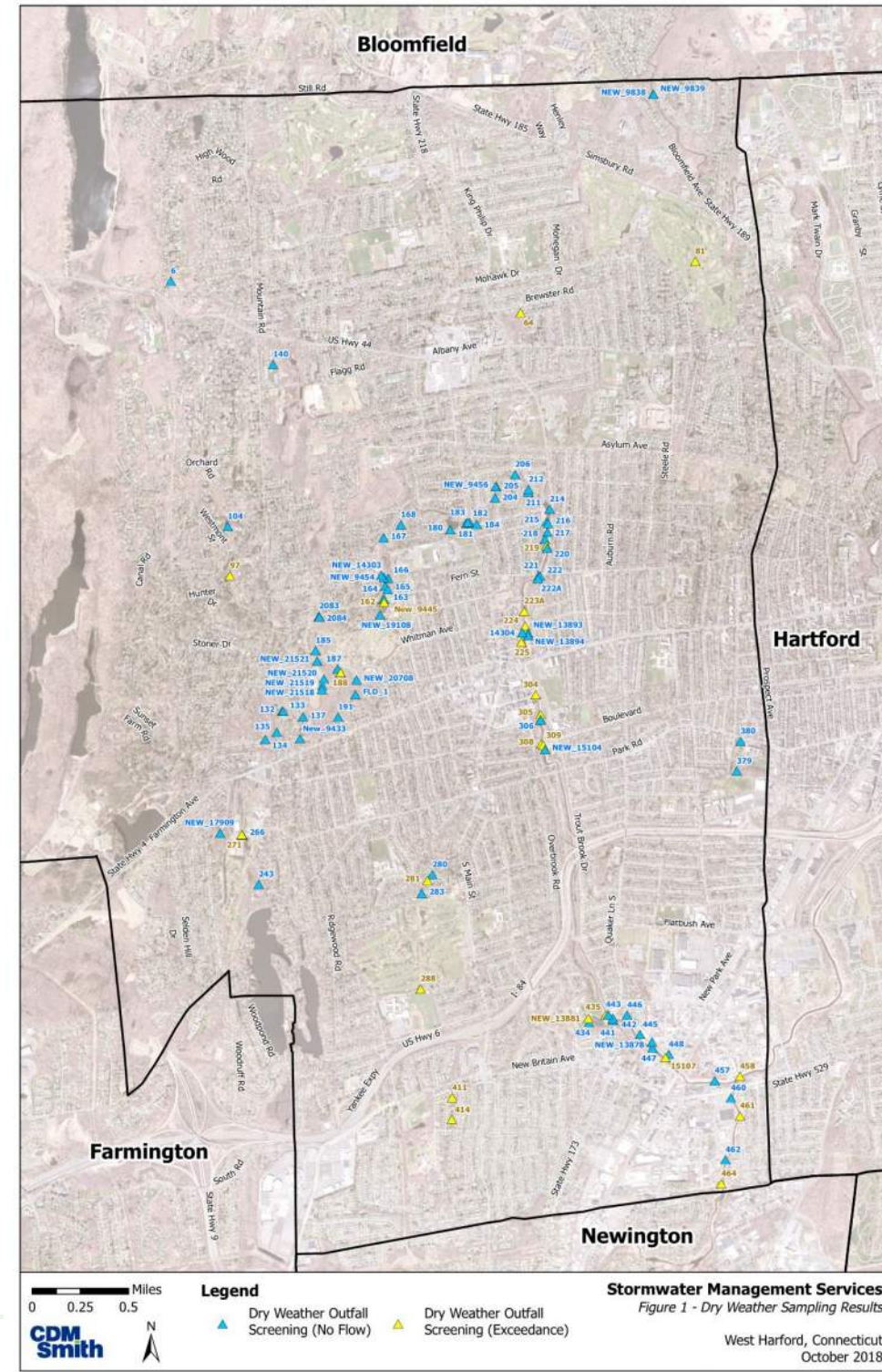
# Outfall Screening (BMP 3-7)

418 Outfalls

Dry Weather Inspections

Document conditions

Sample flow





# IDDE Investigations

- Conduct drainage system investigations
- Work up the system checking for flow and sampling for:
  - ✓ Temperature
  - ✓ pH
  - ✓ Conductivity
  - ✓ Ammonia
  - ✓ Surfactants
  - ✓ Chlorine
- Identified potential pipe segments:
  - ✓ CCTV inspection
  - ✓ Dye testing



# Recognize Illicit Discharges – Sanitary Sewer Overflows



**Definition:** A discharge of untreated sanitary wastewater from a municipal sanitary sewer

**Looks like:** Sanitary flow exiting a City sewer

**Caused by:** Blockage of sewer lines, I/I during rainfall, malfunctioning pump station, broken sewer line

# Example Situations



An uncovered dumpster is parked next to a catch basin



Suds/detergents are seen inside a catch basin during regular maintenance



A resident complains of a sewage smell in a nearby stream



A stream turns fluorescent green downstream of industrial facility

**Should it be reported as a potential illicit discharge?**

**Yes!**

**Yes!**

**Yes!**

**Yes!**





## MCM 4 – Construction Site Runoff Control

# Construction Site Runoff Control

**BMP 4-1 Implement & Enforce Land Use Regulations**

**BMP 4-2 Develop & Implement Interdepartmental Coordination**

**BMP 4-3 Review Site Plans for Stormwater Quality**

**BMP 4-4 Conduct Site Inspections**

**BMP 4-5 Implement Procedures for Public Comment**



# Construction Site Runoff Control

## BMP 4-1 Implement & Enforce Land Use Regulations

Town's Zoning Ordinance establishes legal authority for erosion and sediment control under Article 8

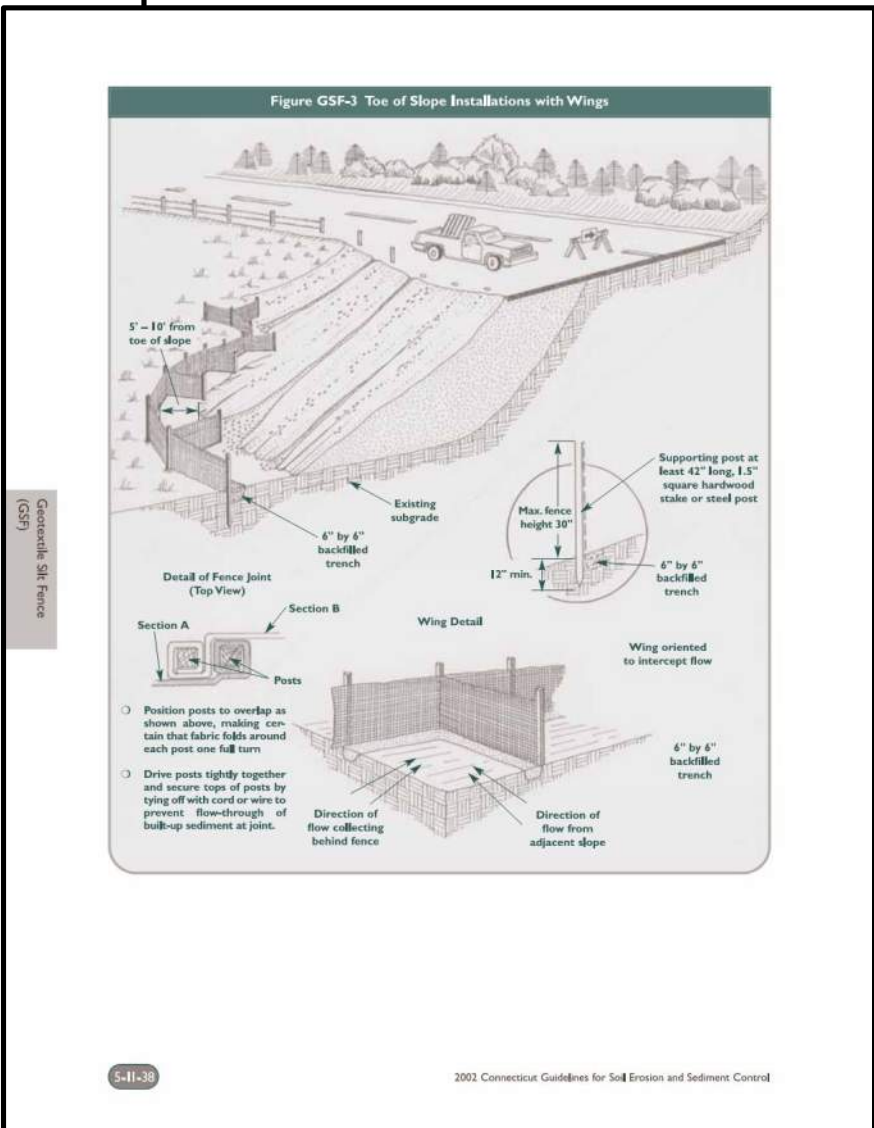
Zoning Ordinance outlines drainage requirements within floodplains (Section 177-8) and open space development (Section 177-13)

# CT DEEP Guidelines for Erosion and Sediment Control

## CT DEEP 2002 Manual

### Chapter 5 – Details

### Appendix A – Model Ordinances



# SE&SC Inspection Reports

## TOWN OF WEST HARTFORD SOIL EROSION & SEDIMENT CONTROL INSPECTION REPORT

Application No.	Project Address: 36 Ferncliff Drive	Date: 1.5.2022
Application Type IWW # 1118	S&E Site Inspection due to resident complaint	Weather: Drizzly
Location West Hartford, CT		Time: 2:30PM
Application Contact Information: Jason Levesque	Present At Site: Brittany MacGilpin, ZEO	

### Observations, Discussions, Test Results, Etc.

As required by the Town of West Hartford Inland Wetlands and Watercourses Agency approval dated March 2, 2020, S & E Control Erosion measures must be maintained and weekly reports provided to the Planning and Zoning Office. The Planning and Zoning Office received a resident complaint that the measures in place are in need of repair and that a stock pile of dirt is present near the Ferncliff Drive entrance.

A previous site visit and certification from the licensed engineer for the site confirmed the proper control measures were in place at the start of site disturbance, which can be found on file. However, at today's inspection there are areas on the property that control measures need to be reestablished and added. Please see requested action items below.

### Actions required:

- Please reestablish the construction entrance as per the approved plan. Please see page two of the attached plan for detail on how the construction entrance should be established.

(Continued)

### Construction Entrance



One Park  
27 Park Road  
Project No.: 140184201

## SESC OBSERVATION REPORT

SHEET 2 of 2  
29 December 2021



Condition of east side of site.



Condition of western side of site.



Inlet tops along Park Rd to be cleared.



Condition of temporary sediment trap in south of site



Prospect Ave. adjacent to site.



Construction entrance from Prospect Ave.



# Recognize Illicit Discharges - Construction



**Looks like:** Heavy sediment/turbidity, uncovered materials

**Other signs:** Brown or cloudy water, trash



**Caused by:** Improper construction controls



## MCM 5 – Post Construction Stormwater Management

# Post-Construction Stormwater

**BMP 5-1 Establish Low Impact Development (LID) Authority**

**BMP 5-2 Enforce LID**

**BMP 5-3 Implement Long-term Maintenance Plans**

**BMP 5-4 Directly Connected Impervious Area (DCIA) Mapping**

**BMP 5-5 Post Construction in Areas with Pollutants of Concern**

# Post-Construction Stormwater

## **BMP 5-1 Establish Low Impact Development (LID) Authority**

## **BMP 5-2 Enforce LID**

**Town's Subdivision Regulations require review of subdivision drainage system plans**

**Town's Plan of Conservation and Development provides guidance on what should be included in a stormwater management plan submission – includes implementation of BMP's and LID**

**Town's Zoning Ordinance should be modified to include legal authority for new and re-development to utilize the 2004 CT Stormwater Quality Manual (including updates)**

# Post-Construction Stormwater

## 2004 CT DEEP Stormwater Quality Manual

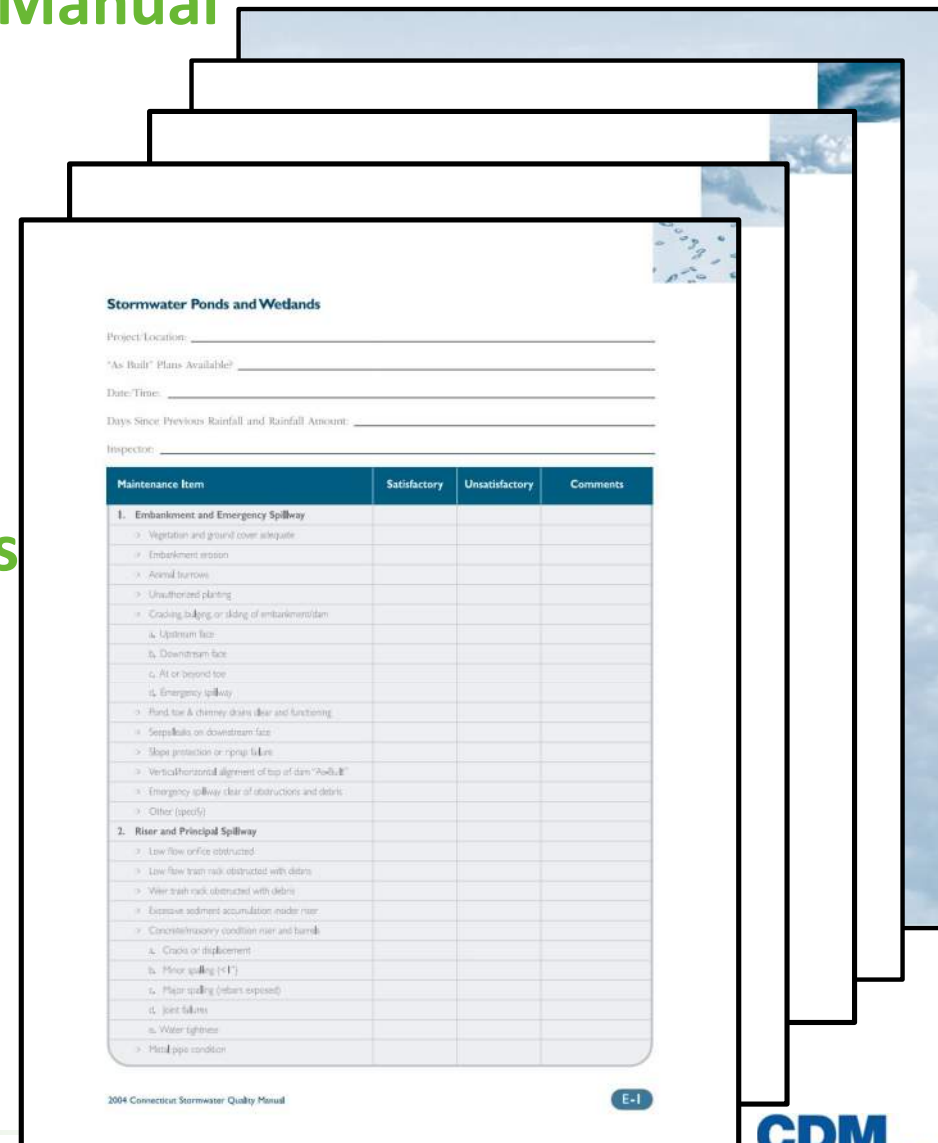
## 2011 LID Amendment

## Chapter 7 – Design Criteria

## Chapter 11 – BMP Design Examples

## Appendix D – Site Stormwater Management Plan Checklist

## Appendix E – Maintenance Inspection Checklists by BMP



**Stormwater Ponds and Wetlands**

Project/Location: \_\_\_\_\_

"As Built" Plans Available? \_\_\_\_\_

Date/Time: \_\_\_\_\_

Days Since Previous Rainfall and Rainfall Amount: \_\_\_\_\_

Inspector: \_\_\_\_\_

Maintenance Item	Satisfactory	Unsatisfactory	Comments
<b>1. Embankment and Emergency Spillway</b>			
→ Vegetation and ground cover adequate			
→ Embankment erosion			
→ Animal burrows			
→ Unauthorized planting			
→ Cracking, bulging, or sliding of embankment/dam			
→ a. Upstream face			
→ b. Downstream face			
→ c. At or beyond toe			
→ d. Emergency spillway			
→ Pond toe & chimney drains clear and functioning			
→ Seeps/drips on downstream face			
→ Slope protection or riprap failure			
→ Vertical/horizontal alignment of top of dam "As-Built"			
→ Emergency spillway clear of obstructions and debris			
→ Other (specify)			
<b>2. Riser and Principal Spillway</b>			
→ Low flow orifice obstructed			
→ Low flow trash rack obstructed with debris			
→ Vitr trash rack obstructed with debris			
→ Excessive sediment accumulation inside riser			
→ Concrete/masonry condition riser and barrel			
→ a. Cracks or displacement			
→ b. Minor spalling (<1")			
→ c. Major spalling (rebar exposed)			
→ d. Joint failures			
→ e. Water tightness			
→ Metal pipe condition			

2004 Connecticut Stormwater Quality Manual

E-1



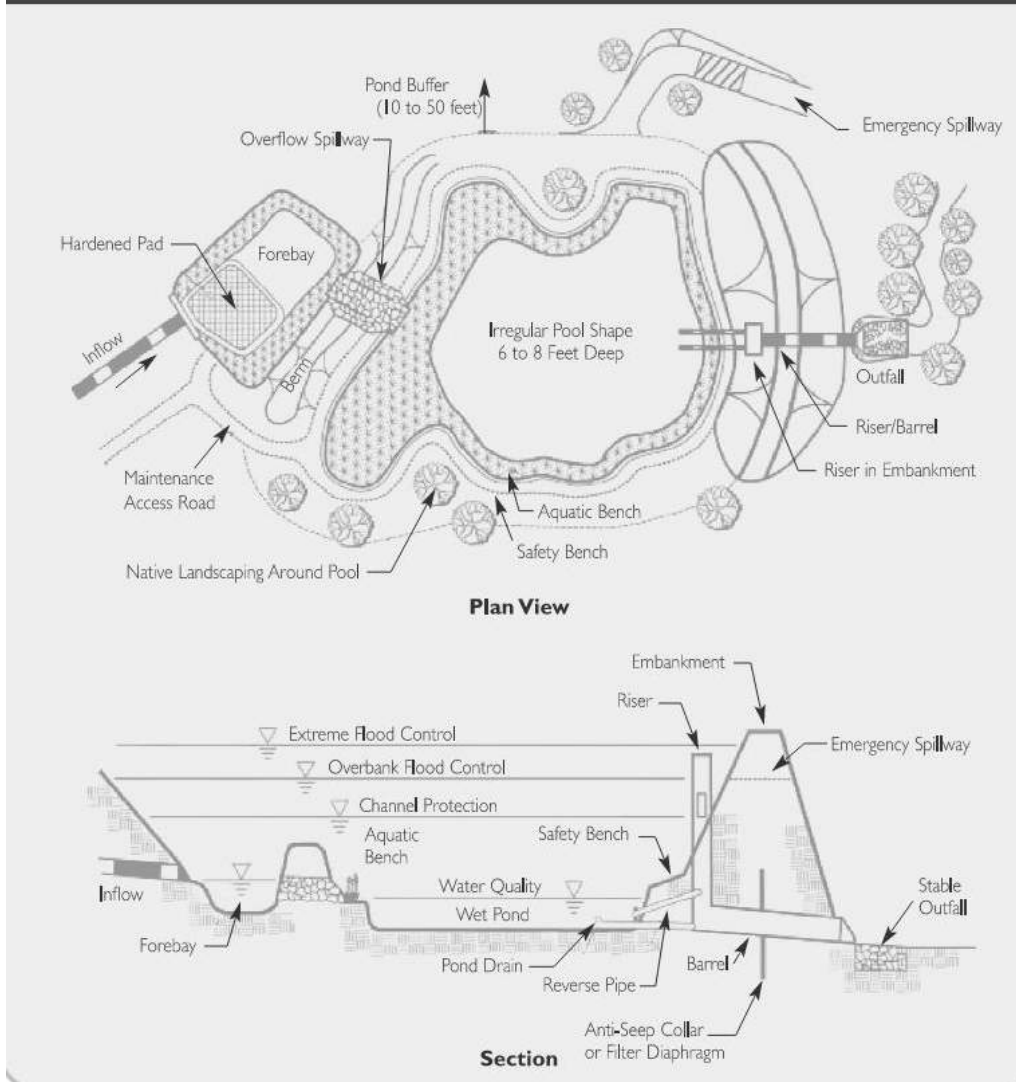
# Post-Construction Stormwater

## CT DEEP Manual – Design Guidelines

### West Hartford DCIA

- Baseline DCIA is 14.4% = 2,066 acres
- 2% reduction in DCIA is 41.3 acres
- 1% reduction in DCIA for future years is 20.7 acres

Figure 11-PI-1 Wet Pond

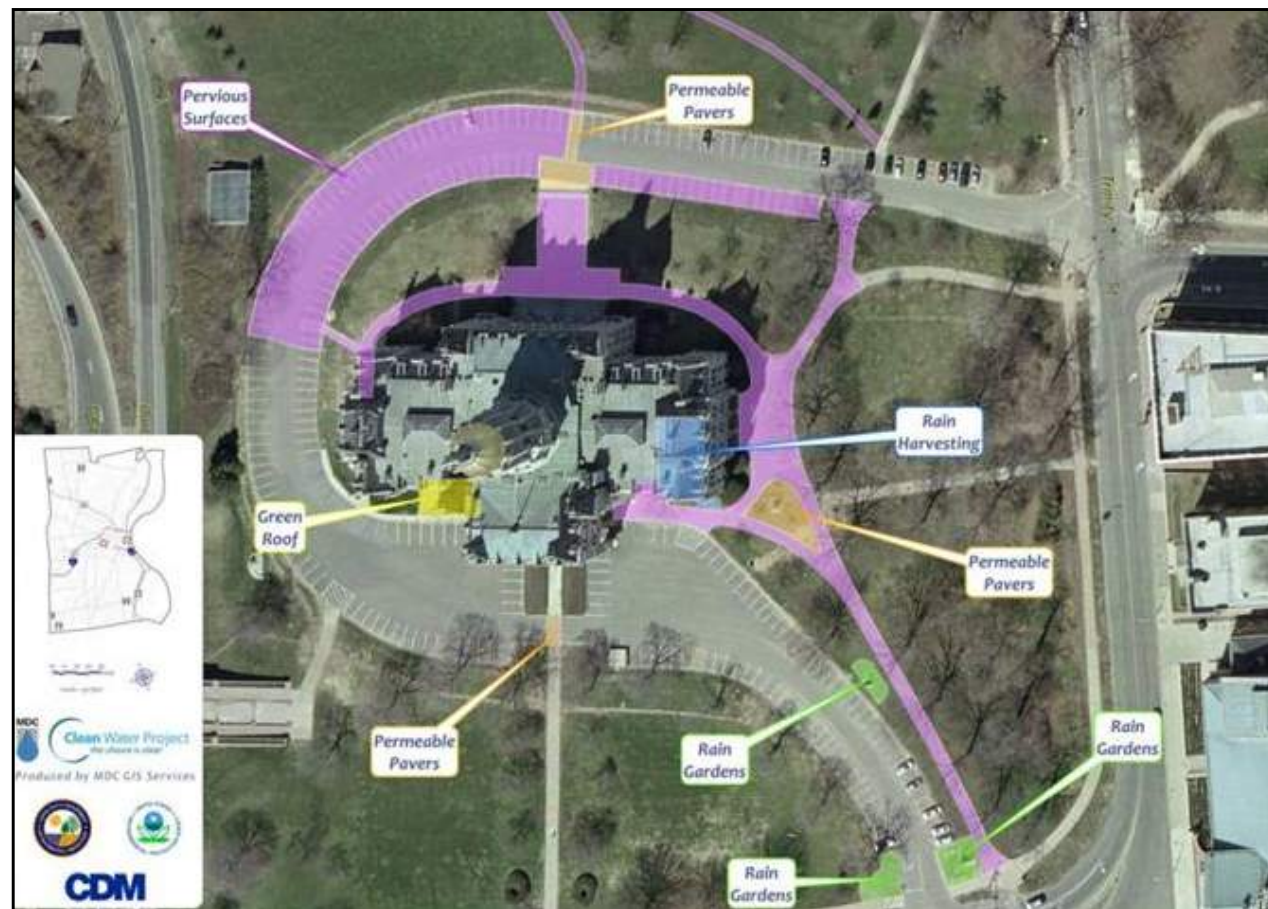


# Low Impact Development (LID)

Use of Stormwater Best Management Practices (BMP's) to reduce stormwater runoff

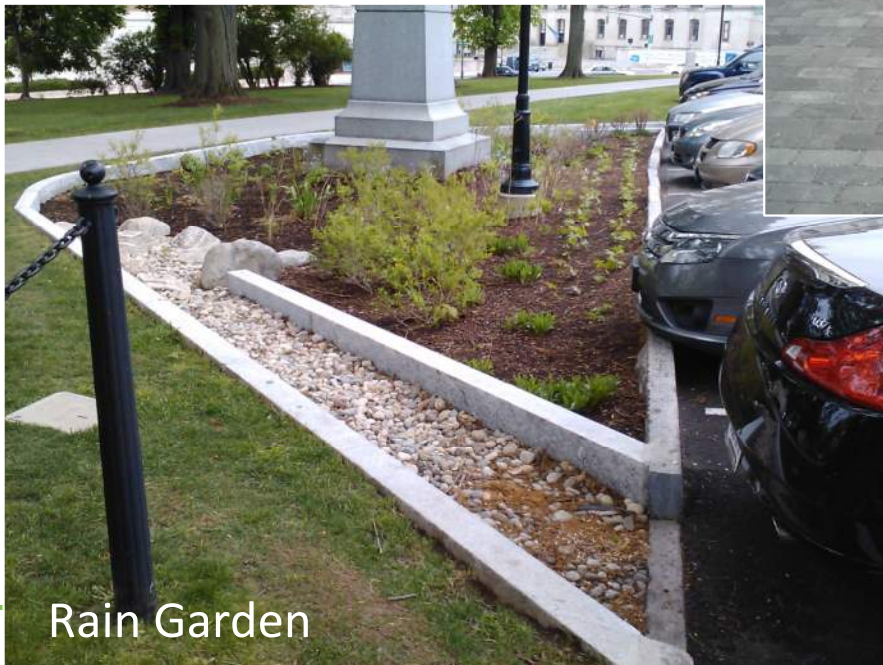
## Green Capitols Project

- Rain Garden
- Permeable Pavers
- Green Roof
- Pervious Pavement
- Rain Harvesting





# Green Capitols Project Photos





## MCM 6 – Pollution Prevention / Good Housekeeping



# Pollution Prevention/Good Housekeeping

**BMP 6-1 Develop & Implement Employee Training Program**

**BMP 6-2 Implement MS4 Property Operations Maintenance**

**BMP 6-3 Implement Coordination with Interconnected MS4's**

**BMP 6-4 Develop & Implement Source Control Program**

**BMP 6-5 Evaluate Measures for Discharges to Impaired Waters**

**BMP 6-6 Track Projects that Disconnect DCIA**

**BMP 6-7 Develop & Implement Infrastructure Repair Program**

**BMP 6-8 Develop & Implement Retrofit Projects**

**BMP 6-9 Develop & Implement Street Sweeping Program**

**BMP 6-10 Develop & Implement Catch Basin Cleaning Program**

**BMP 6-11 Develop & Implement Snow Management Practices**



# Good Housekeeping



Maintain regular sweeping and clean-up activities

Regularly pick up and dispose of garbage and waste material



Promptly clean up spilled materials to prevent pollution runoff



# Wet Weather Monitoring

# Wet Weather Monitoring

**BMP S-1 Outfall Screening**

**BMP S-2 Inventory and Mapping of Discharges to Impaired Waters**

**BMP S-3 Follow Up Investigations**

**BMP S-4 Annual Monitoring of Priority Outfalls**





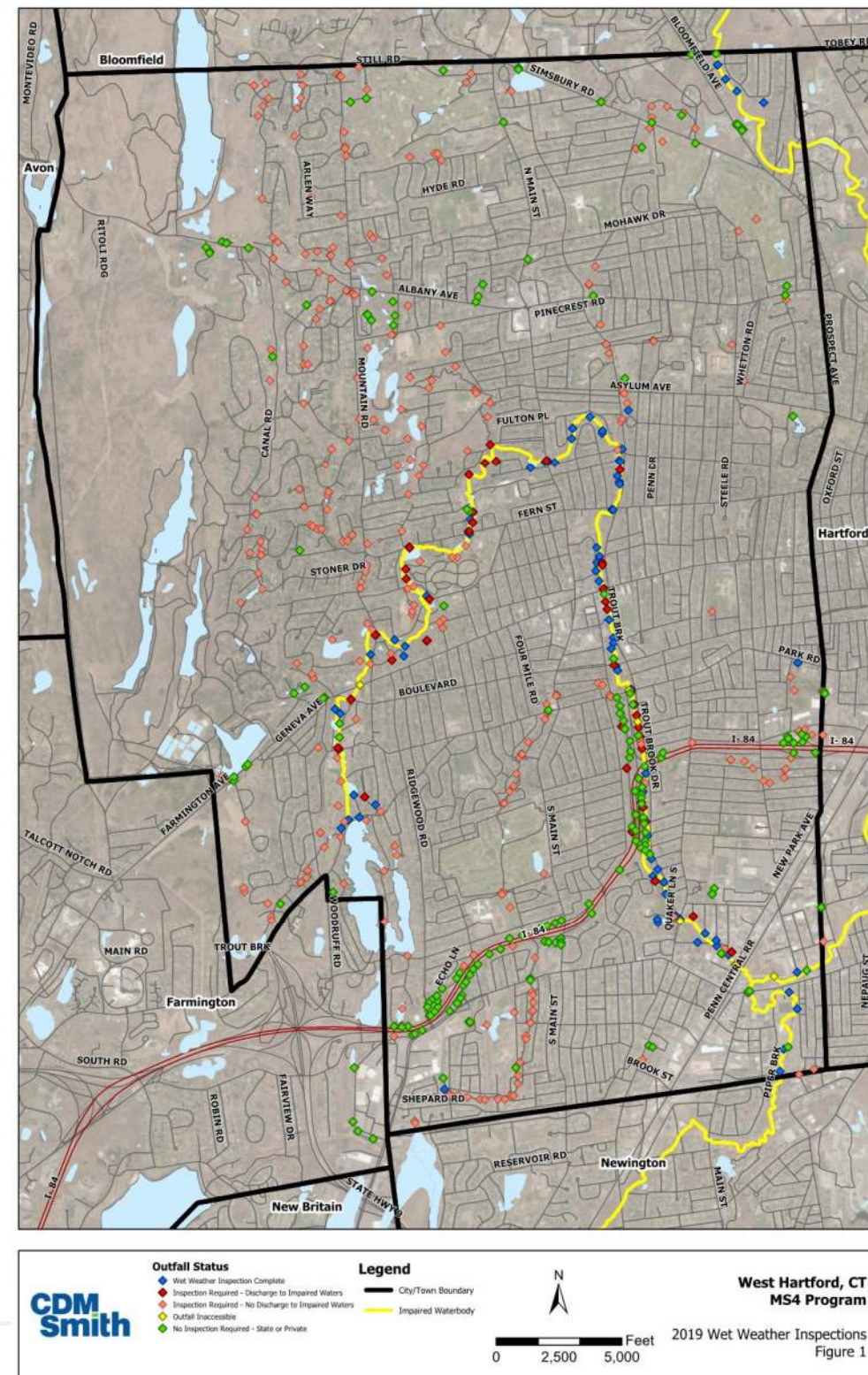
# Outfall Sampling

Wet weather inspections

Qualifying rain event

Testing for:

- Temperature
- pH
- Conductivity
- Ammonia
- Surfactants
- Chlorine
- Bacteria





## TP&Z and IWWA Focus



# DEEP MS4 Permit – IWWA and P&Z Assistance

## Six Minimum Control Measures (MCM):

1



Public education and outreach

2



Public involvement/participation

3



Illicit discharge detection & elimination

4



Construction site stormwater runoff control

5



Post-construction stormwater management

6



Pollution prevention/good housekeeping



Wet Weather Monitoring

# What can you do?



Report Illicit Discharges



Talk to Residents



Participate in the MS4 Programs



Educate Peers

# Questions?

## Contacts:

### Duane J. Martin, P.E.

Town Engineer / Acting Community  
Development Director  
Engineering Division / Department of  
Community Development  
860.561.7539

### Todd Dumais

Town Planner  
Department of Community Development  
Planning & Zoning Division  
860.561.7556

### Cindy Baumann, P.E.

Senior Project Manager  
CDM Smith  
401.457.0334



<https://www.westhartfordct.gov/town-departments/engineering/storm-water-management>