

# **The Metropolitan District**

Stormwater & I/I Reduction Presentation March 16, 2017

# AGENDA

- Introductions/MDC Background
- CWP Background
- Consent Decree/SSO Program Discussion
- Private Inflow Discussion
- Program Benefits Inflow Removal
- Applicable Ordinances & Codes
- Program Needs

# THE MDC

The MDC is a nonprofit, specially chartered municipal corporation created by the Connecticut General Assembly in 1929. The MDC provides water, sewer and household hazardous waste collection services to its member municipalities -Bloomfield, East Hartford, Hartford, Newington, Rocky Hill, West Hartford, Wethersfield and Windsor.

In addition, under a series of special agreements, the District supplies treated water to portions of Glastonbury, South Windsor, Farmington, East Granby and Portland.



# MDC's Sewer

# System

- 4 water pollution control facilities (WPCF)
- ~1,200 miles of sewers

- Of the 1,200 miles of sewer, 187 miles are combined
- Hartford and a small portion of West Hartford



# **Overview of Presentation**

- **1.** Background What is the Clean Water Project?
- 2. Consent Decree/SSO Program Discussion
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# What is the Clean Water Project?

Aging infrastructure within the Metropolitan District (MDC) sewer service area contributes to over 1 billion gallons of combined stormwater and untreated wastewater overflowing into local streams and waterways each year.

- US EPA issued a consent decree (CD) requiring MDC to mitigate Sanitary Sewer • Overflows (SSOs);
- CT DEEP issued a consent order (CO) requiring MDC to mitigate Combined ٠ Sewer Overflows (CSOs)
- CTDEEP General Permit requiring Nitrogen removal to protect L. I. Sound •
- MDC's response: The Clean Water Project (CWP) •
  - 20+ year initiative to address the terms and conditions in the CD & CO
  - \$2+ billion towards CSO control in Hartford and SSO reduction in the Towns of Bloomfield, East Hartford, Newington, Rocky Hill, West Hartford, Wethersfield, and Windsor
  - Five component solution:
    - WPCF Treatment and Capacity Improvements
      Inflow and Infiltration Reduction

    - Sewer Separation
    - Storage Tunnels
    - **Interceptor Pipes**



# Clean Water Project (CWP) Goals

1. Reduce the CSOs to streams/rivers (Consent Order)

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- 2. Eliminate CSO outfalls to Wethersfield Cove & North Branch Park River (Consent Order)
- 3. Reduce Nitrogen discharged to CT River and L.I. Sound (General Permit)
- 4. Address sanitary sewer overflows (SSOs) outside of Hartford (Consent Decree)
  - SSOs are the main concern in the towns outside of Hartford

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# Wet Weather Flows

- On a Wet day...Peak flow from satellite member towns
   <u>EXCEEDS</u> the current system capacity at HWPCF. Doesn't even include CSO component from Hartford
- RHWPCF capacity also exceeded



# What happens when plant treatment capacity and sewer conveyance capacity are exceeded?

## Sanitary Sewer Overflows (SSOs)

### Sanitary Sewer Overflows

- Most of the District is a SSO community has both sanitary sewer pipes and storm drain pipes
- Not an issue in dry weather: sewage is collected and conveyed to a Water Pollution Control Facility (WPCF) for treatment
- Problems arise in wet weather (rain, snow melt) when storm water and groundwater enters the sewer system and exceeds capacity; at which point it can overflow (SSO) untreated
- SSOs may cause sewer backups into basements, rise out of manhole covers in the roads, or discharge to a local water body
- Structural SSO (SSSO) a designed diversion of wastewater in a separated sewer collection system intended to allow high wet-weather flows to exit the sewer system as a means of protecting upstream service connections and sewers. Typically, these flows are discharged to an open water body either through a dedicated outlet pipe or a connection to a storm drainage system.



#### SSO discharged from Manhole



SSO discharged from a structural overflow (SSSO)

# Where are the SSSOs located?

- 8 SSSOs Identified in CD:
- NM-1 (Windsor)
- CTS-2 (W. Hartford)
- **CTS-3** (W. Hartford)
- NTS-Hillcrest Ave. (W. Hartford)
- NTS-Hartford Avenue (Newington)
- Church St. (Wethersfield)
- Elm St. (Wethersfield)
- Goff Brook (Rocky Hill)



# **EPA Consent Decree for SSOs**

- DEEP/EPA approved plans identify control of flow from 25-year storm as "elimination"
- 8 SSSOs that must be "eliminated":
  - Within 5 years of EPA Approval of SSES Report (1/2018)
    - Windsor (NM-1) Gated Closed (February 2017)
    - Rocky Hill (Goff Brook) Goff Brook Closure (w/ gate & relief sewer) & RHWPCF Upgrade projects
    - Wethersfield (Elm Street, Church Street) Already gated closed
  - Within 10 years of EPA Approval of SSES Report (1/2023)
    - Newington (Hartford Avenue Gated closed) South Tunnel
    - West Hartford (Center Trunk Sewer to Trout Brook, Center Trunk Sewer to Talcott Street, Hillcrest Avenue) – South Tunnel

#### Summary of

### How is the MDC Moving Forward

- Actions to address SSO Consent Decree:
  - Addressing I/I in member towns
    - Mainline Rehabilitation (SSES)
  - SSO pilot study
  - Implementing various capacity improvements
    - RHWPCF and Outfall Upgrade
    - South Tunnel
    - Goff Brook Overflow Closure
    - NM-1 Closure
    - Additional I/I Reduction (Mainline & Private Property)
  - Implement and maintain CMOM Program

# Completed & Remaining I/I Work

Town (WPCF)	Total Sewer Pipe (LF)	Completed Sewer Main Lining (LF)	Remaining Sewer Main Lining (LF)	Active Contracts	Pending Contracts
Newington (HWPCF)	556,073	160,528	0	-	-
West Hartford (HWPCF)	1,007,896	338,440	184,624	-	2012-59
Windsor (HWPCF)	391,521	129,389	-	-	-
Wethersfield (RHWPCF)	484,191	160,375	6,681	2009-96A & 2014B-22	
Rocky Hill (RHWPCF)	282,726	15,372	6,627	2014B-22	
Totals	2,722,407	804,104	197,932	2	1

\* Completed work through end of August 2016

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# **SSO Pilot Study Results**

- Reduction analysis with best available seasonal data
  - Spring 2005 versus Spring 2014
  - Spring 2011 versus Spring 2014
- Flow (I/I) reduction findings
  - SSES implementation only
  - SSES plus lateral rehabilitation
  - SSES plus lateral replacement
  - SSES plus full mainline rehab (CIPP/MH/top hats) 25%
  - SSES plus comprehensive MH rehab
  - SSES plus private inflow removal

5-25% 20-50%

10%

5%

20-75%

# **Completed Private Inflow Projects**

- Windsor:
  - SSO Pilot Contract 2011-09 (55 Properties)
- West Hartford:
  - Four Mile Road Area Project (75 Properties)
  - Greenhurst Road Area Project (60-70 Properties)
    - Estimated Substantial Completion Date of September 2017
- Wethersfield:
  - SSO Pilot Contract 2011-48 (48 Properties)

# Four Mile Road Project

#### **Comprehensive** Approach

- Sewer main size increase ->
- Sewer lateral replacement ->
- Sewer lateral CIPP ->
- Private Inflow Removal ->

4,000 LF of 24" PVC sewer

- 1,000 LF @ 80 services
- 1,200 LF @ 50 services
- 50 residential homes (out of 75 identified)
- > 2,500 LF of 6" PVC collector drains (Public)
- 2,600 LF of 4-6" drain service (Private)
- > 50 new sump pumps and sump pits
- Drainage system improvements

#### Four Mile Road Results <u>Focused Project Area</u>

- Comprehensive approach in 40 acres
  - Represents 7% of total subarea (567 acres)
  - SSES implementation in remaining portion of subarea (not completed yet)
- Estimated 25% reduction in wet weather flows from comprehensive I/I removal in 7% of subarea
  - Spring 2005 versus spring 2014
  - No capacity limitations in project area since project completion

#### **Private Property Disconnection**



#### Private Property Inflow Removal







#### Private Property Inflow Removal







# **Property Restoration**

#### • <u>May</u> include:

- Tree/shrub replanting
- Lawn reseeding
- Fence reinstallation
- Sidewalk or walkway repair
- Driveway repair









# **Back Water Valve Program**

- The Backwater Valve Program separates the inflow and infiltration from your homes footing and foundation drains and roof leader connections to the sanitary sewer system.
- The sanitary sewer system is designed to handle sanitary waste only.
- By removing outside water sources from the sewer system, the potential of surcharging is reduced considerably during wet weather events.
- The removal of these connections is paramount to the reduction of surcharging and flooding events for the future.

# **Back Water Valve Program**

#### **Sewer Backup Prevention Program**

- Primary goal is educating customers on Sewer Back up protection through BWV assessment.
- MDC offers installations for our customers:
  - Replace Back Water Valves and combined sewer and storm systems
  - Cut and Cap BWV and install Sump Pumps eliminates infiltration into the sewer system
- Calls and appointments handled through Customer Service/Command Center (860-278-7850 ext. 3600)

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# Program Benefits – Inflow Removal:

- Property Owners:
  - Reduction in risk of sanitary sewer backups
- Member Towns:
  - Stormwater/Drainage Infrastructure Improvements
  - Alignment with areas in need of drainage improvements
- District:
  - Reduced "Clean Water" into Sewer/Transport and Treatment Cost Reduction
  - Increased Available Sewer Capacity
  - Cost Effective Solution
- Environment:
  - Reduction of SSOs results in a cleaner, healthier environment

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# **Applicable Ordinances & Codes**

- State of Connecticut:
  - Plumbing Code (Building Officials)
- Metropolitan District Sewer Ordinances:
  - Section S2l of the District's sewer ordinances, dated November 1, 1961
- Local Municipal (varies)
  - MDC assistance available for drafting local ordinances

## Intention of 2003 Plumbing Code

- Protect individual fixtures and branch lines with backwater devices while leaving the main sewer drain/stack unobstructed
- Allows devices above manhole frame level to drain during a backup event
- Limits flows through the BWV to reduce wear & tear/maintenance and risk of failure Through this code, it is the property owner's responsibility to provide protection for any areas beneath the ground level of your house (ie. Basement, cellar, recreational room)

# **Properly Protected Home**



### When Backup Protection is Needed



# MDC Sewer Ordinance(S2I)

Except as specifically provided with reference to some particular sewer, sanitary sewers shall be used only for the <u>conveyance and disposal of sanitary sewage</u> as defined in Section S1b(2) of this ordinance and for diluted, water-carried industrial wastes which are not objectionable as provided hereinafter. Except as specifically provided for some particular sewer or location, no sanitary sewer shall be used to receive and convey or dispose of any storm or surface water, subsoil drainage, any large continuous flow of water seeping into buildings or excavations from soils or other underground sources, flows of natural springs, or ground waters, surplus from flowing wells, the discharge from roofs, roof conductors, yard drains, street or highway drains.

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# **Program Needs:**

- Member Towns Support:
  - Outreach & Endorsement
    - Property owner cooperation
  - Design Reviews & Ownership of Stormwater Infrastructure
    - Future Drainage Plans
  - Inspection (Building Inspection during Construction)
  - Enforcement of Ordinances & Codes
    - Revisions to existing ordinances (if necessary)
  - Fund Sharing:
    - Permitting Costs
    - Police Costs
    - Stormwater Infrastructure Improvement Costs (joint projects)

# **Questions?**





General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4)



### Presented by:

\* Sally Keating, P.E.
 Manager
 Environment, Health, and Safety
 \* Craig Scott, P.E.
 Project Engineer
 Environment, Health, and Safety



### MS4 History

- \* 2004 DEEP issued MS4 permit
- \* 2009 Permit expired and extended "as is"
- \* July 2014 DEEP issued new draft permit
- December 2014 Public Hearing due to numerous comments
- \* 2015 There were over 15 Stakeholders meetings
- \* January 20, 2016 New MS4 permit issued by DEEP
- \* July 1, 2017 New Permit becomes effective



### Who is Required to Comply?

Connecticut 2010 Urbanized Area



All eight MDC member towns have been in the program since 2004.

### MS4

### Current Permit vs New Permit

#### **Current Permit**

- \* Issued 1 /09/2004
- Based on 2000 Census
- \* 113 Towns in Urbanized Areas
- Includes all 8 member towns
- \* Required to register with DEEP
- Develop Stormwater
   Management Plan
- Six Minimum Control Measures (BMP's – Best Management Practices)

- \* Effective 07/01/2017
- \* Based on 2010 Census
- \* 121 Towns in Urbanized Areas
- \* Includes all 8 member towns
- \* Required to register with DEEP
- Develop Stormwater Management Plan
- \* Six Minimum Control Measures (BMP's – Best Management Practices)



### Six Minimum Control Measures

- \* Public Education and Outreach
- \* Public Participation
- \* Illicit Discharge Detection/Elimination
- \* Construction Site Runoff Control
- \* Post-construction Stormwater Management
- \* Pollution Prevention/Good Housekeeping





## Current Permit vs New Permit Public Education and Outreach

#### Current Permit

 Requires information on the MS4 program to be available on Town website

- Requires information on the MS4 program to be available on Town website
- Requires additional outreach to communities on:
  - \* Pet waste
  - \* Use of fertilizers
  - \* Use of pesticides/herbicides
  - Impervious cover
  - \* Illicit Discharges
  - \* Proper disposal of waste





## Current Permit vs New Permit Public Participation

#### **Current Permit**

- Requires development of a public involvement/participation program
  - (Not very specific)

- Requires Municipality to public notice Stormwater Management Plan (SMP)
- \* SMP must be available for the public
- Annual Report shall be available for public comment
   45 days prior to submission to DEEP



#### MS4

#### Current Permit vs New Permit Illicit Discharge Detection and Elimination (IDDE)

#### Current Permit

- Identify, trace and eliminate non-stormwater discharges (not specific)
- Map all outfalls of 15" or greater

- Identify, trace and eliminate non-stormwater discharges
- Requires municipality to add legal authority to pursue IDDE
- More details on identifying IDDE
  - \* Develop procedures for IDDE
  - Recordkeeping
  - \* Map all stormwater outfalls





### Current Permit vs New Permit Construction Site Stormwater Runoff Control

#### **Current Permit**

 Implement and enforce stormwater runoff from post construction activities

- Implement and enforce stormwater runoff from post construction activities
- Requires municipality to add legal authority
- More details on identifying stormwater runoff control
  - \* Site Review and Inspections





### Current Permit vs New Permit Post Construction Site Runoff Control

#### **Current Permit**

- Implement and enforce stormwater runoff from construction activities
- For land disturbance of 1 acre or greater

- Implement and enforce stormwater runoff from construction activities
- \* For land disturbance of 1 acre or greater
- Requires municipality to add legal authority
  - Implement Runoff
     Reduction/Low Impact
     Development (LID) Measures
  - Work with development and redevelopment
  - \* Requirement for 40% DCIA



# MS4 New Permit Directly Connected Impervious Area (DCIA)

#### **Current Permit**

\* None

- Map DCIA for each outfall within the first 3 years
- Remove 1% DCIA in the 4<sup>th</sup> and 5<sup>th</sup> year of the permit



### Hartford



Impermeable ground cover and waterways in City of Hartford

Amounts of Impervious Cover within the City of Hartford





### West Hartford







Impermeable Ground Cover and Waterways in Town of West Hartford

## Newington



Amounts of Impervious Cover within the Town of Newington





Impermeable Ground Cover and Waterways in Town of Newington

# Rocky Hill







Impermeable Ground Cover and Waterways in Town of Rocky Hill

### Wethersfield



Amounts of Impervious Cover within the Town of Wethersfield





Impermeable Ground Cover and Waterways in Town of Wethersfield

### Windsor



Impermeable Ground Cover and Waterways in Town of Windsor

Amounts of Impervious Cover within the Town of Windsor





### East Hartford



Amounts of Impervious Cover within the Town of East Hartford





Impermeable Ground Cover and Waterways in Town of Windsor

### Bloomfield



Amounts of Impervious Cover within the Town of Bloomfield





Impermeable Ground Cover and Waterways in Town of Windsor



### Current Permit vs New Permit Pollution Prevention / Housekeeping

#### Current Permit

- Street sweeping all streets once per year
- Develop a program for cleaning catch basins

- Implement street sweeping based on classification of urbanized areas
- Develop a program for cleaning catch basins by inspecting volume collected in each catch basin
  - Establish program so no catch basin will be more than 50% full
- Snow Management Practices





### Current Permit vs New Permit Outfall Sampling

#### **Current Permit**

Sample 6 outfalls once per year

- \* Sample all outfalls for screening parameters
  - \* Nitrogen, Phosphorus, E-coli, Mercury
- Sample during dry and wet weather events
- Sample all outfalls in first three years of permit
- Prioritize 6 outfalls to continue sampling





### Current Permit vs New Permit Annual Report

#### **Current Permit**

- \* Summary of BMPs
- \* Due by January 1

- \* Summary of BMPs
- \* Due by April 1
- \* Much more detail required
- Annual Review fee \$375, but
  50% for municipalities \$187.50
- Must be submitted electronically to DEEP



### Deadlines



- \* By April 1, 2017:
  - \* Registration Form
  - Stormwater Management
     Plan (SMP), submitted or
     provide URL for plan on
     town website
  - \* Fee: \$625.00





- \* Basic Name and Phone Number Information
- \* Name of receiving stream(s), etc.
- Electronic map or paper copy showing boundaries and limits of storm system
- Assurance that Stormwater management plan is consistent with:
  - Endangered or Threatened Species
  - \* Aquifer Protection Regulations
  - Historic Preservation Statutes



### Registration, continued;

- For each of the Minimum Control Measures, detail:
  - \* Each BMP to be implemented
  - Person responsible for implementing each BMP
  - Date by which each BMP will be implemented
  - The measureable goal(s) by which each BMP will be evaluated





### Conclusion

The New MS4 Permit requires the towns to provide a greater focus on stormwater

## CT DEEP NEMO Program

- The Connecticut Department of Energy and Environmental Protection (DEEP) signed a five year agreement with Nonpoint Education for Municipal Officials (NEMO) for assistance to towns.
  - \* Sign up for their mailing list under MS4 Storm water Assistance Program





# Questions?