



TOWN OF

WILBRAHAM MASSACHUSETTS

# **SEWER vs. STORMWATER**

**Our Fight to Keep them Apart**

**2013 MUNICIPAL EMPLOYEE TRAINING**

# SEWER

Infiltration and inflow (I/I) accounts for an average of 40-60% the sewer flow conveyed by sanitary sewers



# STORMWATER

The discharge of polluted stormwater  
is a leading cause of impairment  
in US water bodies



# SEWER & STORMWATER

Sewer and stormwater flows can intermingle to cause even greater problems



# WHY DO WE CARE?

## Sewer

- I/I uses up pipe capacity
- Causes Sanitary Sewer Overflows (SSOs)
- Costs money to transport and treat
- Adds wear and tear on system components



## Stormwater

- Pollutants conveyed to local water bodies
- Endangers public health
- Threatens natural resources

# WHY ME?

## Everyone Can Make A Difference

Sewer: I/I removal and SSO/exfiltration prevention

Drain: identification/removal of illicit discharges

Roadway: minimizing salt/sand use

Engineering: design/construction standards & inspection

Parks & recreation: minimizing fertilizers/pesticides

Schools: pollution prevention/good housekeeping

Department heads: budgets/personnel/equipment

Municipal officials: planning/financing

# NO REALLY, WHY ME?

## Regulatory Requirements

- 2003 NPDES Stormwater Permit: pollution prevention/good housekeeping training
- “2014” NPDES Stormwater Permit: pollution prevention/good housekeeping, stormwater pollution prevention plans, and illicit discharge detection & elimination training

# WHY ME?

## Why Require Training?

So that municipal employees will:

*Examine and alter their actions*

*Observe and report pollutant sources*

# DEFINITIONS

- **Infiltration** – Groundwater that enters the sewer system

Defective pipes, open joints, manholes, service connections

- **Inflow** – Rainwater and surface runoff that enters a sanitary sewer system

Catch basins, cross connections between sewer and drainage systems, manhole covers, sump pumps and clean-outs, driveway drains, roof leaders, french drains tied into sewers

# DEFINITIONS

- **Sanitary Sewer Overflow** – Any unpermitted discharge of wastewater exiting from a sanitary or combined sewer system



**Sewer Manhole Overflows  
Overflows at Pump Stations  
Back-ups into Buildings**

**NOTE: All SSOs must be reported to the  
EPA and the MADEP within 24 hours,  
followed by submission of a  
written report within five days**

# DEFINITIONS

- **Runoff** – precipitation, snowmelt, or irrigation that runs off the land into streams, or other surface water



- **Point Source** – a stationary location or fixed facility such as an industry or municipality that discharges through pipes, or another single identifiable source

# DEFINITIONS

- **Non-Point Source** – pollution that occurs when water runs over land into streams or other surface water collecting pollutants



Soil  
Salt  
Grease  
Oil  
Antifreeze  
Gasoline  
Paint  
Fertilizer  
Pesticides  
Litter

# DEFINITIONS

- **Illicit Discharge (Direct)** - The discharge of pollutants or polluted stormwater directly to drainage infrastructure

Direct sewer connections

Sewer to drain cross connection

Sanitary sewer overflows (SSOs)

Floor drains

Illegal dumping

Outside washing

Leaky dumpsters

# DEFINITIONS

- **Illicit Discharge (Indirect)** – The passing of pollutants into drainage infrastructure through structural defects or open joints

Exfiltrating sewers

Failing septic systems

Contaminated soils or groundwater

# SEWER

- Keeping Stormwater Out  
I/I Identification & Removal



- Keeping Wastewater In  
SSO Prevention

# SSO PREVENTION

- **Typical Causes for SSOs**

47% = Pipeline debris/blockages:

Roots

Wet weather events

Debris

Fats, Oils, and Grease (FOG)

26% = Infiltration/Inflow

10% = Collapses/failure/system age

10% = Mechanical/electrical failures

5% = Vandalism

2% = Downstream capacity



# STORMWATER

- Getting/Keeping Stormwater In  
Flood Prevention
- Keeping Wastewater Out  
Illicit Discharge Detection & Elimination (IDDE)



# STORMWATER PERMIT

## NPDES General Permit for Small

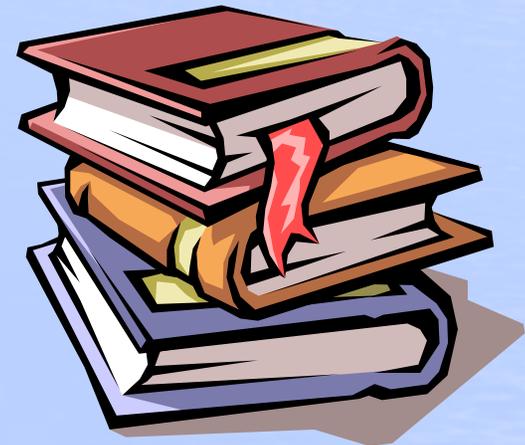
## Municipal Separate Storm Sewer Systems (MS4s)

- Initial permit issued in May 2003
- Five-year permit cycle expired in May 2008
- 2003 permit in effect until a new permit is issued
- New MA draft permit issued February 2010
- Second NH Draft re-noticed March 2013
- Second MA draft to re-notice end of 2013?
- New MA permit effective spring 2014?

# STORMWATER PERMIT

## 2003 Permit Versus “2014” Permit

- Greater accountability
- More detailed requirements for BMPs
- More stringent timeframes for BMP implementation
- Documentation in writing
- Increased Annual Report submission requirements



# “2014” PERMIT EXPECTATIONS

## **Same Six Minimum Control Measures**

1. Public education & outreach
2. Public participation & involvement
3. Construction site runoff control
4. Post-construction runoff control
5. Illicit discharge detection & elimination (IDDE)
6. Pollution prevention & good housekeeping

# “2014” PERMIT EXPECTATIONS

## Same “Procedural” Requirements

- **File Notice of Intent (NOI) to seek coverage**  
within 90 days of effective date of permit
- **Endangered / threatened species review**  
with NOI
- **Historic properties review**  
with NOI
- **Written Stormwater Management Plan (SWMP)**  
within 1 year of effective date of permit
- **Update BMPs**  
within 1 year, but really needed for NOI with 90 days

# “2014” PERMIT EXPECTATIONS

## Some New Additions

- NOI to be put out for Public Comment by the EPA
- Municipal facilities inventory  
within 6 months of effective date of permit
- SSO Inventory  
within 120 days of effective date of permit
- Discharges to Impaired Waters  
substantial new requirements
- Illicit Discharge Detection & Elimination (IDDE)  
substantial new requirements

# “2014” PERMIT EXPECTATIONS

## Impaired Waters With an Approved TMDL

- TMDL = Total Maximum Daily Load
- Defines acceptable pollutant load for water body
- Requires percent reduction of pollutant by MS4
- Must sample outfalls & interconnections for all pollutants of concern (in addition to other required parameters)

# “2014” PERMIT EXPECTATIONS

## Impaired Waters Without a TMDL

- Water Quality Response Plan (WQRP)
  - Does outfall cause or contribute to impairment?
  - Identify additional BMPs to reduce pollutant of concern
  - Implement BMPs to reduce pollutant of concern
- Must sample outfalls & interconnections for all pollutants of concern (in addition to other required parameters)

# “2014” PERMIT EXPECTATIONS

## Public Education & Outreach

- Eight targeted messages
- Four specified audiences
  - Residents
  - Business / institutional / commercial
  - Industry
  - Developers



## Public Participation/Involvement

- Public notice requirements
- Public input/review on Stormwater Management Program (SWMP)

# “2014” PERMIT EXPECTATIONS

## **Construction Site Runoff Control (CSRC)**

- “Construction site stormwater runoff control”
- Written procedures for site plan review, inspection, & enforcement

## **Post-Construction Runoff Control (PCRC)**

- “Post-construction stormwater management”
- Low Impact Development/Green Practices
- Required submission of as-built & long-term BMP maintenance plans
- Impervious area estimates

# “2014” PERMIT EXPECTATIONS

## Illicit Discharge Detection & Elimination (IDDE)

- Written IDDE Plan
- Drainage mapping (all infrastructure)
- Delineation & ranking of drainage catchments
- Outfall / interconnection inventory & screening
- Required IDDE field investigations
- Time limits for finding & fixing illicit discharges
- **Municipal employee training**

# IDDE PROGRAM

## But I'm Just a ... What Can I Do?

- **Know** – learn what to look for (attend training)
- **Observe** – pay attention to what you see
- **Document** – write down observations and take photographs
- **Report** – forward findings to those responsible for illicit discharge elimination
- **Educate** – pass on your IDDE knowledge to others

# IDENTIFYING ILLICITS

## Signs of an Illicit Discharge



Dry-Weather Flow

Gray/White Color or Growth

# IDENTIFYING ILLICITS

## Signs of an Illicit Discharge



Wastewater Solids



Odor



Color or Turbidity

# IDENTIFYING ILLICITS

## Under-Drains & Common Manholes

Know What They Are  
Know What to Look For



Under-Drain



Common Manhole

# IDENTIFYING ILLICITS

## Sewer/Drain Cross Connections



Direct Sewer  
Connection to Drain

Sewer Broken to  
Allow Overflow to Drain



# IDENTIFYING ILLICITS

## Sanitary Sewer Overflows

Know where they occur

Know where they end up



# IDENTIFYING ILLICITS

## Leaky Dumpsters (Public or Private)



# IDENTIFYING ILLICITS

## Illegal Dumping



# IDENTIFYING ILLICITS

## Field Investigations

Examples



Outfall  
Monitoring



Dyed-Water  
Testing

Segment Isolation

# “2014” PERMIT EXPECTATIONS

## Pollution Prevention/Good Housekeeping

- Written O&M Procedures
- Required street, lot, and sidewalk sweeping
- Required catch basin inspection/cleaning
- Development of SWPPPs
- **SWPPP training**



# POLLUTION PREVENTION / GOOD HOUSEKEEPING

## Types of Municipal Operations that could Cause Pollution

- Winter snow/ice operations & materials storage
- Fertilizers/pesticides/cuttings from care of parks, cemeteries & open spaces
- Vehicle washing & maintenance
- Improper chemical use/storage/disposal



# POLLUTION PREVENTION / GOOD HOUSEKEEPING

## Types of Municipal Operations that could Prevent Pollution

- Curbside & public rubbish collection/disposal
- Hazardous waste collection/disposal
- Drainage infrastructure  
inspection/cleaning/maintenance
- Street, municipal lot, and sidewalk sweeping
- Proper materials management

# POLLUTION PREVENTION / GOOD HOUSEKEEPING

## Vehicle & Equipment Maintenance



- Conduct maintenance work indoors
- Identify & capture vehicle fluid leaks
- Confine vehicle washing to appropriate areas
- Use steam cleaning/pressure washing if possible
- Use water-based cleaning systems (not solvents)

# POLLUTION PREVENTION / GOOD HOUSEKEEPING

## Materials Management

- Control storage/inventory/disposal
- Identify hazardous substances
- Use secondary containment
- Label all containers
- Promptly transfer used materials to recycling/disposal containers
- Maintain organized/clean work space



# POLLUTION PREVENTION/ GOOD HOUSEKEEPING

## Stockpiles & Storage

- Cover sand and salt piles
- Locate storage piles out of 100-year flood plain
- Keep door of salt/sand storage shed closed
- Sweep spilled salt/sand back into building
- Know proper procedures for storage/disposal of sand, spoils, sediment, floatables, & other debris



# POLLUTION PREVENTION / GOOD HOUSEKEEPING

## Chemical Application

- Minimize salt/sand use (calibrate spreaders)
- Use fertilizers/pesticides only where necessary
- Choose natural rather than chemical products
- Properly label/store/dispose of chemicals



# POLLUTION PREVENTION / GOOD HOUSEKEEPING



## Site Drainage

- Be aware of catch basins and other drainage
- Update facility piping schematics
- Maintain oil/water separators
- Do not dump liquid waste down floor drains, sinks, or outdoor drainage inlets

# POLLUTION PREVENTION / GOOD HOUSEKEEPING



## Materials Collection / Recycling

- Ensure appropriate control over products accepted
- Provide appropriate storage
- Cover collection areas

# POLLUTION PREVENTION / GOOD HOUSEKEEPING

## General Good Housekeeping

- Store equipment in appropriate locations
- Maintain outdoor areas
- Sweep lots as needed
- Inspect sites for pollutant sources & take corrective action



# POLLUTION PREVENTION / GOOD HOUSEKEEPING

## Anticipated NEW Permit Requirements

- **Inventory of municipal facilities**  
Parks & open space; buildings/facilities; vehicles/equipment  
within 6 months
- **Written O&M procedures for municipal activities**  
within 1 year
- **Sweeping of streets / municipal lots**  
once per year after winter operations
- **Proper storage of street sweepings required prior  
to disposal/reuse**

# POLLUTION PREVENTION / GOOD HOUSEKEEPING

## Anticipated NEW Permit Requirements

- Catch basins:
  - No sump >50% full
  - More frequent inspection required in areas of construction
  - If sump >50% full on two consecutive inspections, initiate source investigation
  - Tracking / reporting of inspection, cleaning, & material removed



# POLLUTION PREVENTION / GOOD HOUSEKEEPING

## Anticipated NEW Permit Requirements

- Stormwater Pollution Prevention Plans (SWPPP)
  - Maintenance garages
  - Public works facilities
  - Transfer stations
  - Other waste handling facilities
- Implemented within 2 years
- Training “regularly”; recommended annually
- Quarterly site inspections; one must be when stormwater is discharging



**LET'S REVIEW**

# WHY ARE WE HERE?

Educate municipal employees so that they will:

*Examine and alter their actions*

*Observe and report pollutant sources*

And ultimately help reduce stormwater pollution

# SEWER vs. STORMWATER

## WAYS TO KEEP THEM APART

### **Sewers:**

- Systematic cleaning and inspection
- FOG / “flushables” reduction
- Capacity assessment
- I/I identification and removal
- Recognize sewer/drain cross connections
- Long-term capital improvement plan

# SEWER vs. STORMWATER

## WAYS TO KEEP THEM APART

### **Stormwater:**

- Prevent SSOs
- Recognize sewer/drain cross connections
- Recognize and report illicit discharges
- Practice pollution prevention/good housekeeping

SEWER vs. STORMWATER

You Can Make a  
Difference!!!