Stormwater Drainage and Compliance

MS4 101

TODAY'S AGENDA

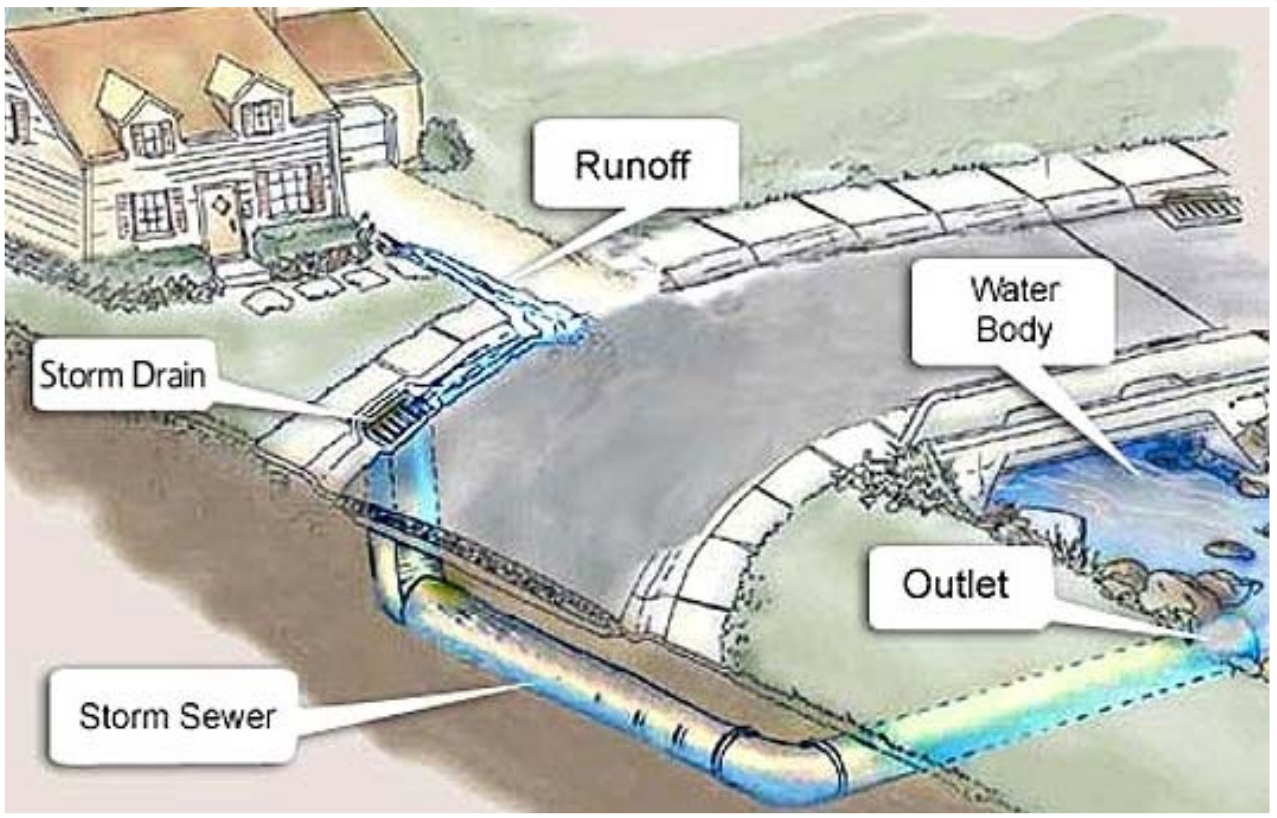
- ✓ Why Does This Matter?
- ✓ What is the NPDES MS4 Permit?
- ✓ What are Impending Requirements?
- ✓ What's the Plan?

CLEAN WATER
IS EVERYBODY'S BUSINESS

Why Are We Here?

- MS4 General Permit in MA reissued in 2016 and effective **July** 1, 2018
- Federal Clean Water Act permit requires multi-faceted municipal implementation – Planning, Operations, Engineering, GIS-Information Technology, Communications – We Need Everyone's Help!
- What are the obligations?
- What is our PLAN?

Municipal Drainage System 101



Unintended Consequences of Effective Drainage

- Unfortunately, drainage systems also carry pollutants like oil, fertilizers, sediment and trash.
- Rainwater that falls on paved streets, lawns, parking lots and sidewalks becomes polluted stormwater.

Polluted Stormwater is a Problem

- Polluted stormwater runoff is one of the largest remaining sources of pollution for the Nation's waters.
- Polluted stormwater is "only increasing source of water pollution in many watersheds".

  – Seth Brown, Water Environment Federation Stormwater Program Director

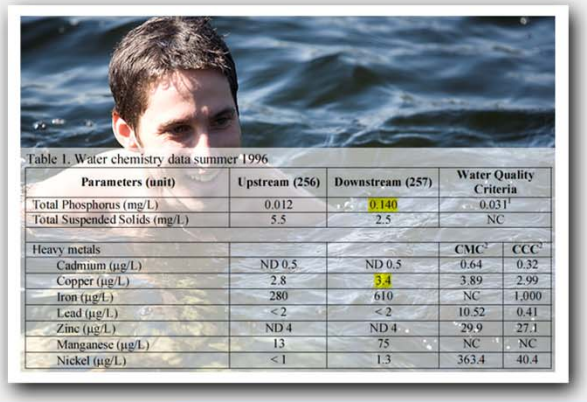


Table 1. Water chemistry data summer 1996

Parameters (unit)	Upstream (256)	Downstream (257)	Water Quality Criteria	
Total Phosphorus (mg/L)	0.012	0.140	0.031[1]	
Total Suspended Solids (mg/L)	5.5	2.5	NC	
Heavy metals			CMC[2]	CCC[2]
Cadmium (µg/L)	ND 0.5	ND 0.5	0.64	0.32
Copper (µg/L)	2.8	3.4	3.89	2.99
Iron (µg/L)	280	610	NC	1,000
Lead (µg/L)	< 2	< 2	10.52	0.41
Zinc (µg/L)	ND 4	ND 4	29.9	27.1
Manganese (µg/L)	13	75	NC	NC
Nickel (µg/L)	< 1	1.3	363.4	40.4

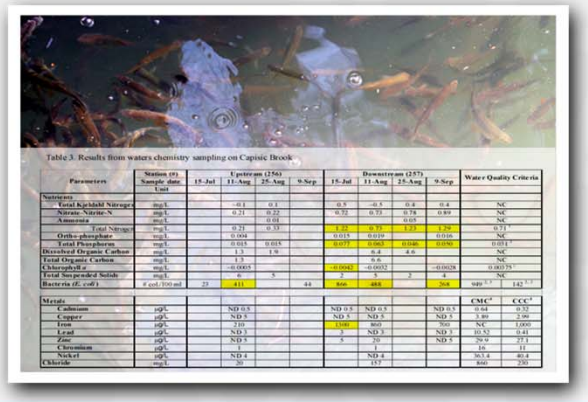


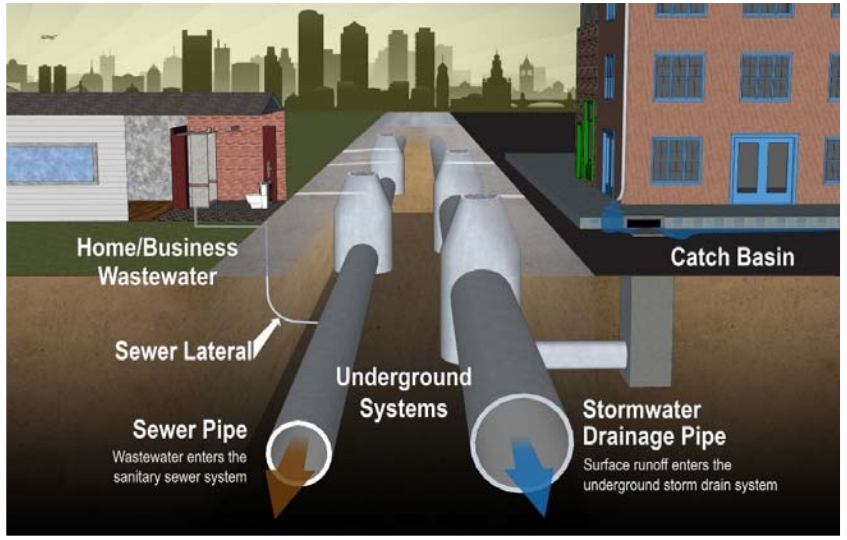
Table 3. Results from waters chemistry sampling on Capisic Brook

Parameters	Station (#)	Upstream (256)			Downstream (257)				Water Quality Criteria	
	Sample date	15-Jul	11-Aug	25-Aug	9-Sep	15-Jul	11-Aug	25-Aug	9-Sep	
	Unit									
Nutrients										
Total Kjeldahl Nitrogen	mg/L		<0.1	0.1		0.5	<0.5	0.4	0.4	NC
Nitrate-Nitrite-N	mg/L		0.21	0.22		0.72	0.73	0.78	0.89	NC
Ammonia	mg/L			0.01				0.05		NC
Total Nitrogen	mg/L		0.71	0.73		1.22	0.73	1.22	1.29	0.71
Ortho-phosphate	mg/L		0.004			0.015	0.019		0.016	NC
Total Phosphorus	mg/L		0.013	0.015		0.077	0.063	0.046	0.050	0.031
Dissolved Organic Carbon	mg/L		1.3	1.9			0.4	4.6		NC
Total Organic Carbon	mg/L		1.3				0.6			NC
Chlorophyll a	mg/L		<0.0005			<0.0042	<0.0052		<0.0028	0.00275
Total Suspended Solids	mg/L		6	5		2	5	2	4	NC
Bacteria (E. coli)	# col./100 ml	22	411		44	866	488		268	949 [1,3] / 142 [1,3]
Metals										
Cadmium	ug/L		ND 0.5			ND 0.5	ND 0.5		ND 0.5	0.64 / 0.32
Copper	ug/L		ND 5			ND 5	ND 5		ND 5	3.89 / 2.99
Iron	ug/L		210			1200	800		700	NC / 1,000
Lead	ug/L		ND 3			3	ND 3		ND 3	10.52 / 0.41
Zinc	ug/L		ND 5			5	20		ND 5	29.9 / 27.1
Chromium	ug/L		1				1			16 / 11
Nickel	ug/L		ND 4				ND 4			363.4 / 40.4
Chloride	mg/L		20				157			860 / 230

What is an MS4?

A Municipal Separate Storm Sewer System is:

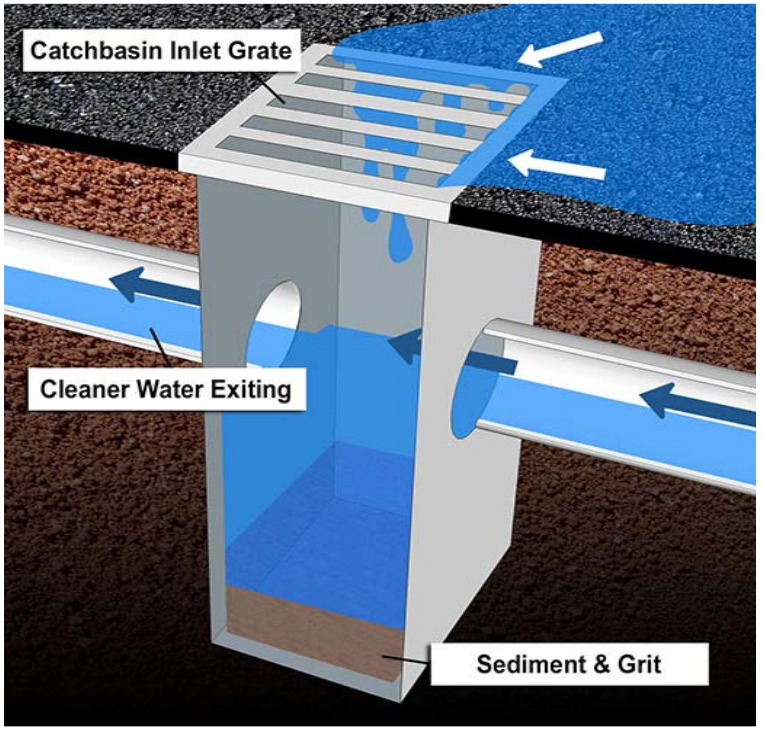
- A conveyance or system of conveyances owned by a state, city, town, or other public entity that discharges to waters of the U.S and is:
  - Designed or used for collecting or conveying stormwater
  - Not a combined sewer
  - Not part of a publicly-owned treatment works



Sudbury's MS4

Drainage System Facts:

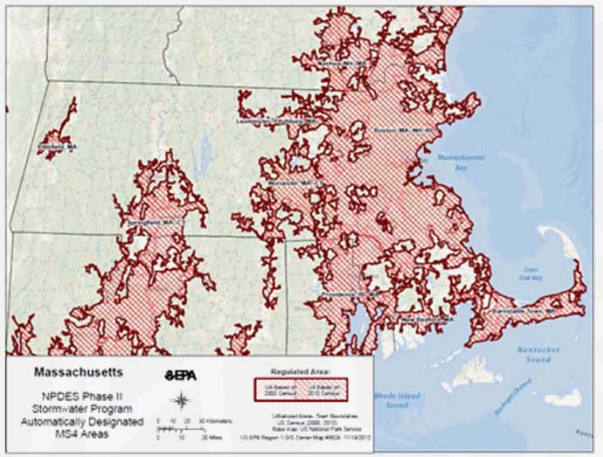
- ~60 Miles of Stormwater Drainage Pipe
- ~3000 Catchbasins (public and private)
- ~1800 Manholes (public and private)
- ~450 Stormwater Discharge Points
- ~100 Culverts
- Ditches and Swales as well…



What is the MS4 General Permit?

Clean Water Act requires EPA to regulate any discharges from the MS4

- 1987 Clean Water Act Amendments
- The MS4 general permit is based on development density and population and most municipalities in eastern MA are regulated
- In most states, the state administers this permit – MA is EPA regulated
- Every five years a new permit is drafted and issued (in theory)
- Each permittee (city) is required to develop and submit a 5-Year Stormwater Plan consistent with the general permit



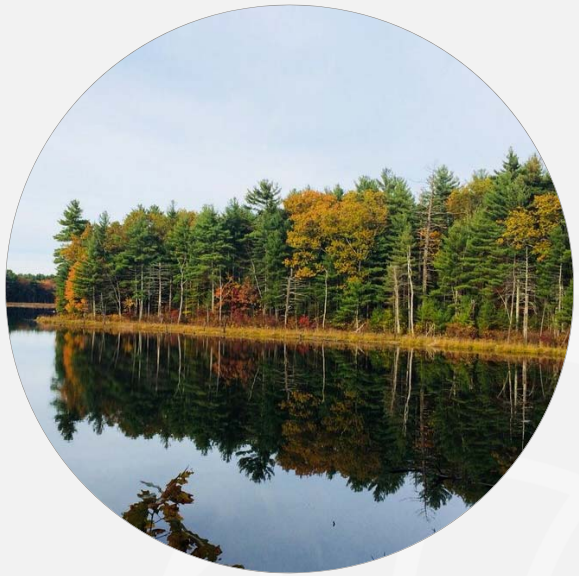
Consequences for Failure to Comply with MS4 Permit

Enforcement Action

- Notice of Violation, fines, or other penalties
- Consent Order
- Prosecution

Permit Termination or Revocation

- Permit Modification
- Stricter Permit Limits
- Denial of Permit Renewal

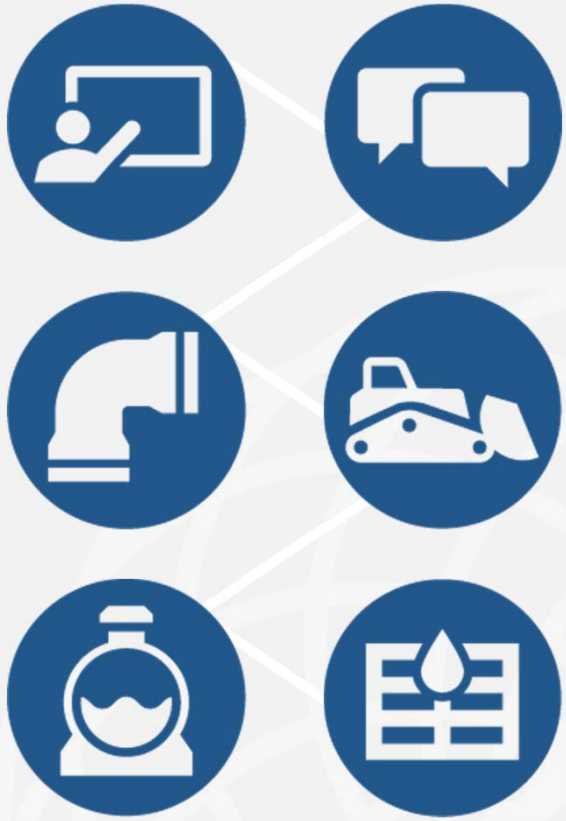


Jeopardized Public Health, Safety and Environment

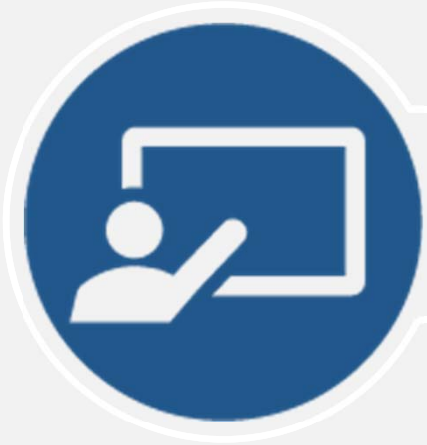
Municipal Stormwater Compliance

Six Primary Control Measures

1. Public Education
2. Public Involvement
3. Illicit Discharge Detection and Elimination
4. Construction Site Runoff Control
5. Post-Construction Stormwater Management
6. Good Housekeeping and Pollution Prevention

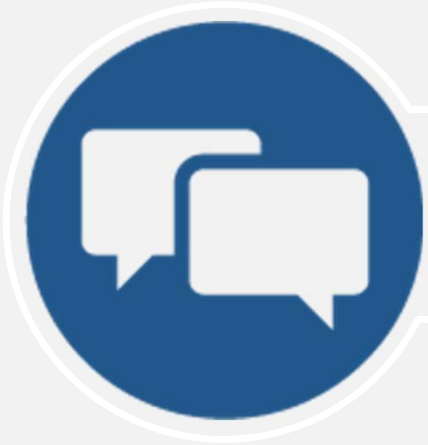


Public Education



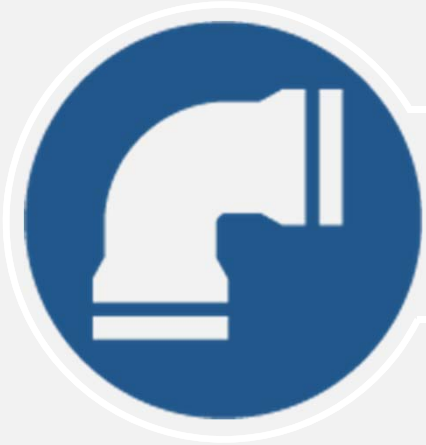
Implement public education programs to help the community understand its role in keeping water clean.

Public Involvement



Engage the public in decision-making throughout the program.

Illicit Discharge Detection and Elimination



Find and fix failing septic systems or sewers that might be connected to the drainage system.

What are Illicit Discharges?

"any discharge to a MS4 that is not composed entirely of stormwater"

Indirect Discharge

May come from a variety of sources

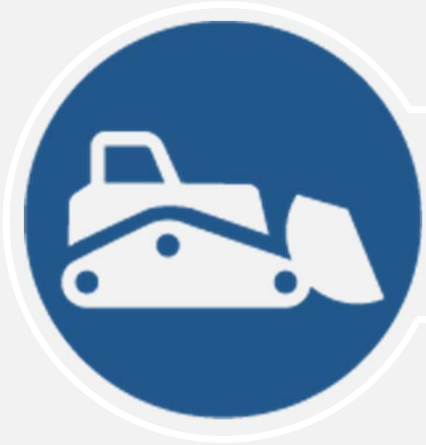
- Failed septic system
- Hazardous waste spills
- Leaky sewer line
- Grass clippings, leaf litter, pet waste or other solid material dumped into MS4

Direct Connection

A non-stormwater pipe connected to the Drainage System

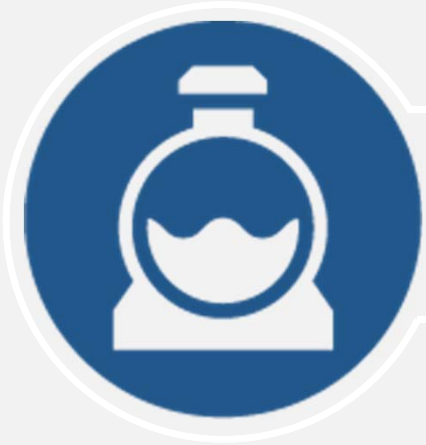
- Washing machine
- Sewer Lateral

Construction Site Runoff Control



Ensure that construction projects do not pollute runoff with sediments and debris.

Post-Construction Stormwater Management



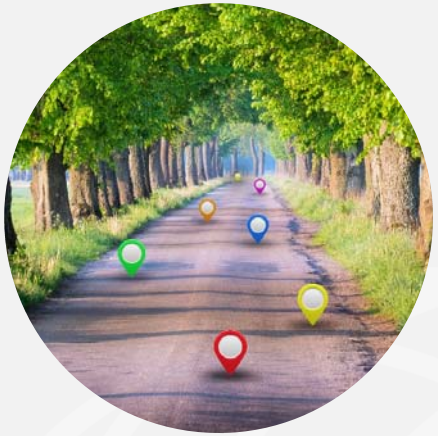
Ensure that new development and redevelopment control and treat runoff before it leaves private property.

Good Housekeeping and Pollution Prevention

Engage in municipal best practices such as cleaning drainage systems, sweeping streets, and ensuring municipal activities like vehicle washing and lawn maintenance do not contribute to pollution.

Obtaining MS4 GP Coverage: 2018-2019 Timeline

- Evaluated the special eligibility requirements
  - Endangered species
  - Historic structures
- Submitted Notice of Intent (NOI) 90 days after "effective date of permit" – September 29, 2018
  - "Soft" program plan required to be submitted within NOI
  - Authorized by EPA to discharge stormwater – February 2019
- Developed and implementing the Stormwater Management Program plan (SWMP)



Sudbury's Stormwater Program Management Plan (SWMP)

Required by the EPA in Year 1 of the new permit and available for public comment.

Includes:

1. An Overview of the Stormwater Program
2. Water Quality Standards of Local Receiving Waters
3. Summary of Required Actions and Timeline for Completion
4. Responsible Parties
5. References to Associated Program Plans, Manuals and Other Ancillary Program Information as required in the MS4 General Permit

What's Next?


Navigating the MS4 General Permit can be a challenge...
Here's a simple plan for the first year.
July 1, 2018
· MS4 General Permit Effective Date
By September 29, 2018
· Submit Notice of Intent
IMPLEMENT January - June 2019
· Conduct IDDE program training focused on outfall screening
· Consider technology support for programs
· Workshop the construction/post-construction program manual with planning, building & construction team
· Consider operations programs (CB cleaning, street sweeping) and standards of practice
PLAN July - September 2018
· Consider 5-year program compliance plan
· Meet with municipal leadership & staff to workshop permit obligations
· Review municipally owned MS4 outfalls
DOCUMENT September - January 2019
· Develop written Illicit Discharge Detection & Elimination (IDDE) program manual
· Develop written construction/post-construction program manual

What's Next?


...And Permit Year 2
September 29, 2019
· Permit Year 1 Annual Report
IMPLEMENT Winter 2020
· Develop SWPPP & SPCC for DPW Garage and Transfer Station
IMPLEMENT Summer/Fall 2019
· Initiate IDDE Screening and Investigation
· Conduct Municipal Facility Inventory and Clean Water Best Practices (Written O&M Policies & Standards) - Inclusive of Impaired Water Provisions
· Initiate Ordinance Revision Process
· Refine & Update Stormwater Drainage System GIS Database
REVIEW Spring 2020
· Are SWMP Program milestones complete? How are we tracking compliance?
· Evaluate Workflow processes
· Conduct Staff trainings

Questions / Discussion

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