



# The Essential Service of Stormwater Management

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# Purpose of Today's Presentation and Discussion

- ✓ View stormwater management as a vital service.
- ✓ Consider stormwater in a new light. It is not just road drainage.
- ✓ Recognize the need for comprehensive and coordinated attention, budget and staff.
- ✓ Make the Merrimack Valley Stormwater Collaborative work for you.



# Essential Municipal Services




Photo credit: In NY Times, May 15, 2006,  
C.J. Gunther/European Pressphoto Agency

## Recycling Carts



Photo credit: Amanda Sabga, Staff Photo  
Eagle Tribune



METHUEN  
WATER  
DEPARTMENT

Water Treatment Plant  
25 Burnham Road  
978-983-8845

### 2016 Annual Drinking Water Quality Report

METHUEN WATER DEPARTMENT

PWS ID #3181000

#### To Our Customers

Dear Customer,  
We are pleased to present to you this year's Water Quality Report for the City of Methuen. The intent of this report is to inform you about your drinking water and provide you with all of the information available on Methuen's drinking water quality. We are happy to report that your drinking water meets all federal and

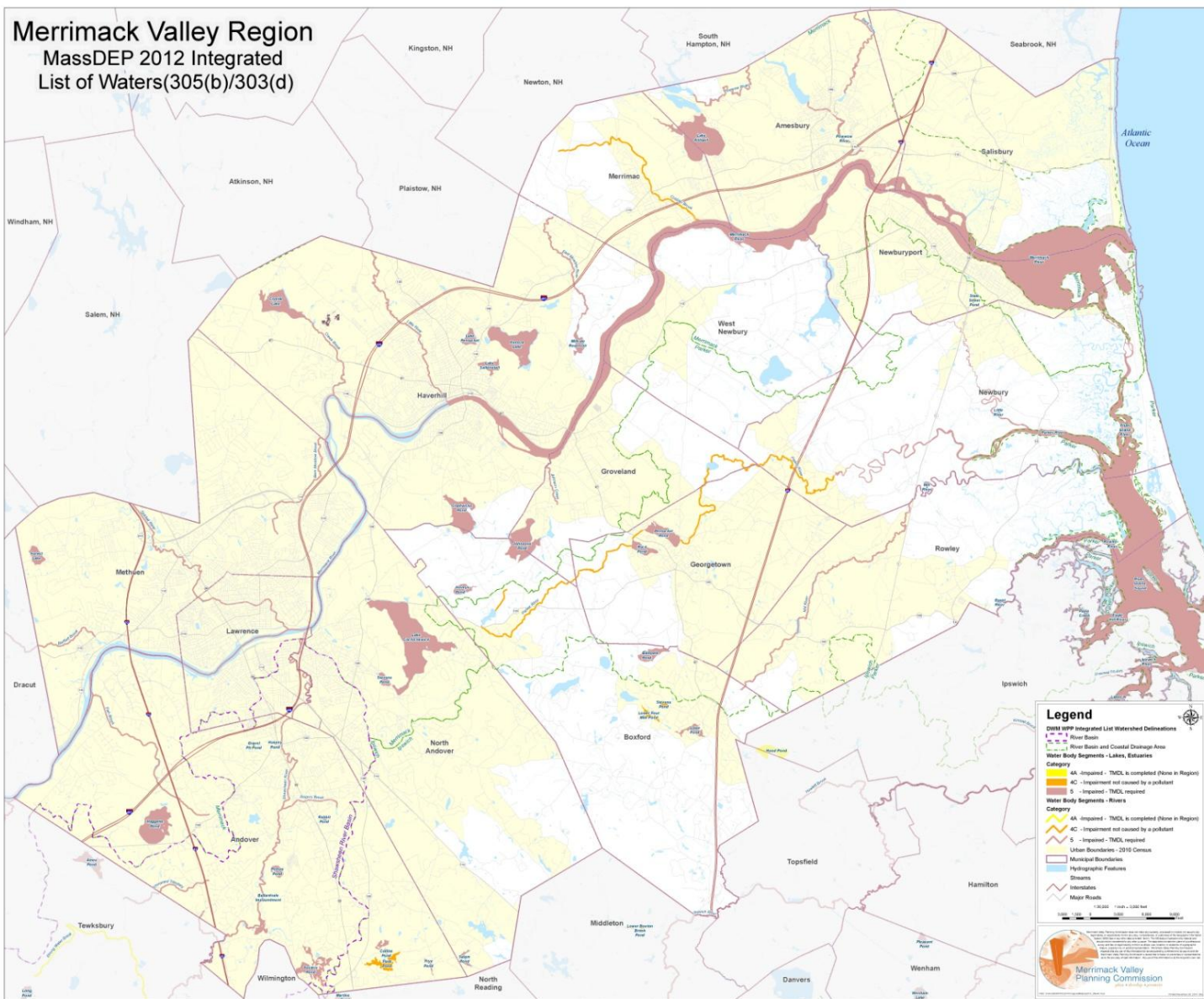


The Problem: Rain is clean... until it's not.  
Stormwater carries pollutants to our waters.





# Water Quality not Meeting Standards



# Stormwater: Leading Cause of Water Quality Impairments

**“Swimming Advisory Issued for Lake Attitash because of Bacteria”**  
(August 9, 2017, Newburyport Daily News)





# Stormwater causes Flooding/Erosion

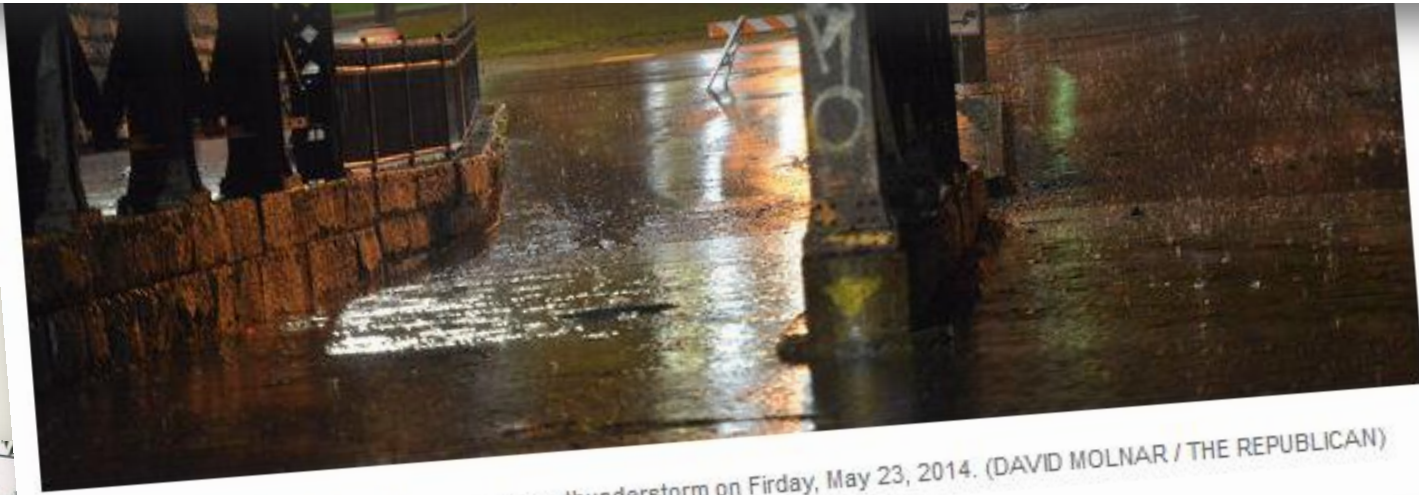


Photo credit: [LittleRiverBasin.org](http://LittleRiverBasin.org)

Photo credit: Jim Vaiknoras, Staff News,  
Newburyport Daily News.



# Sudden downpour soaks Pioneer Valley; Northampton, Chicopee, Holyoke deal with flooding



Street flooding on Mosier St. in Holyoke during a thunderstorm on Friday, May 23, 2014. (DAVID MOLNAR / THE REPUBLICAN)  
(David Molnar/ The Republican)

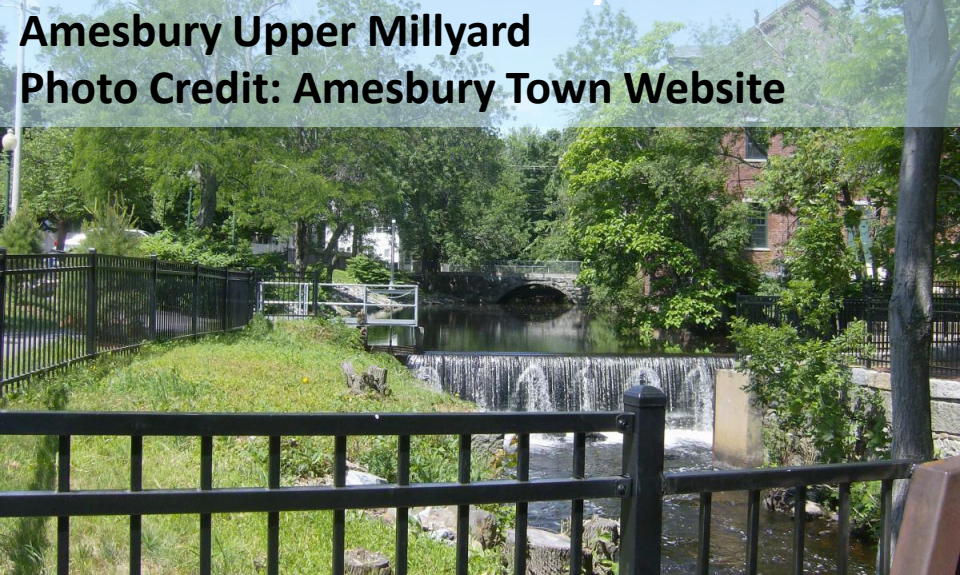




# Stormwater Impacts the Character and Economy of Your City/Town

**Amesbury Upper Millyard**

**Photo Credit: Amesbury Town Website**



**Spicket River Greenway, Lawrence**

**Photo Credit: EssexHeritage.org**

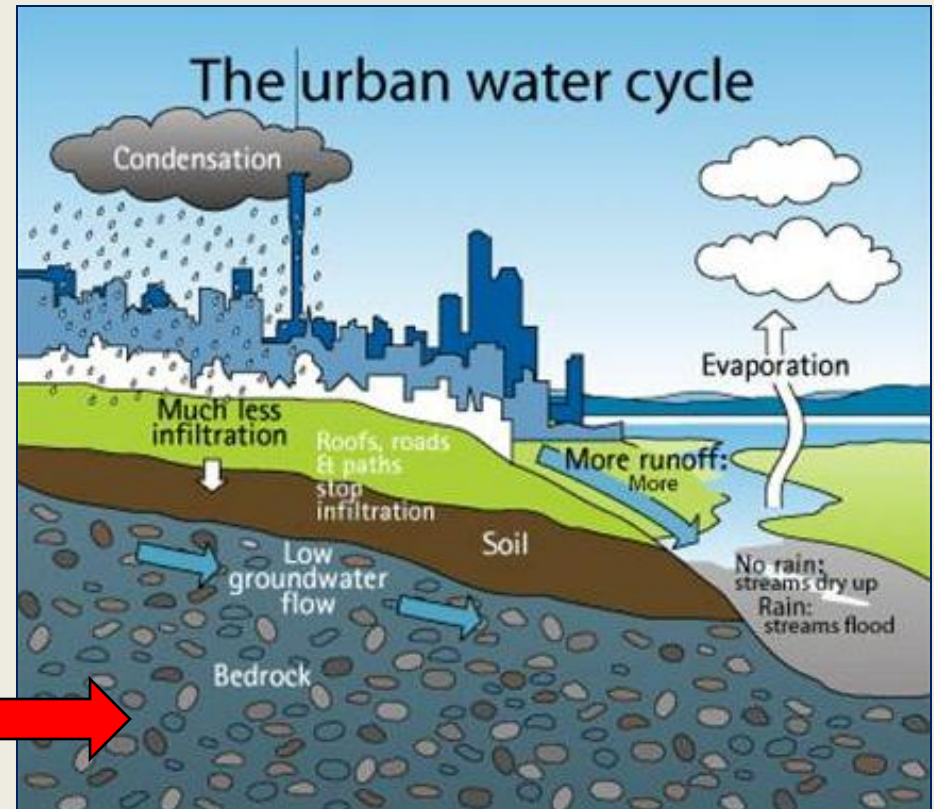
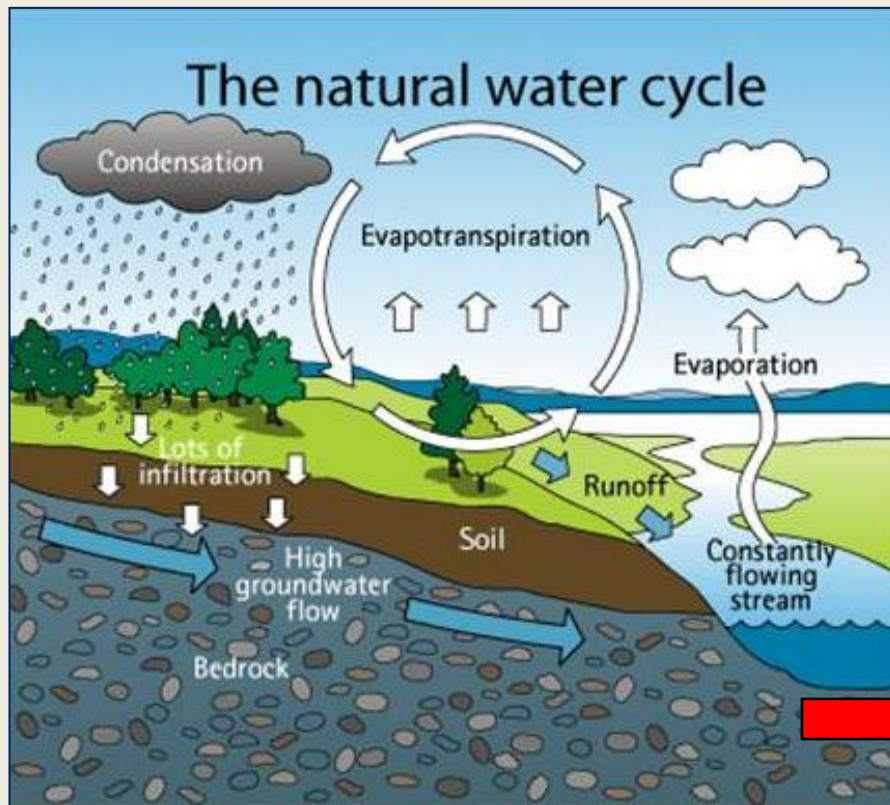


**Joppa Flats commercial clamming reopened (2014)**

**Photo Credit: Bryan Eaton, Daily News**



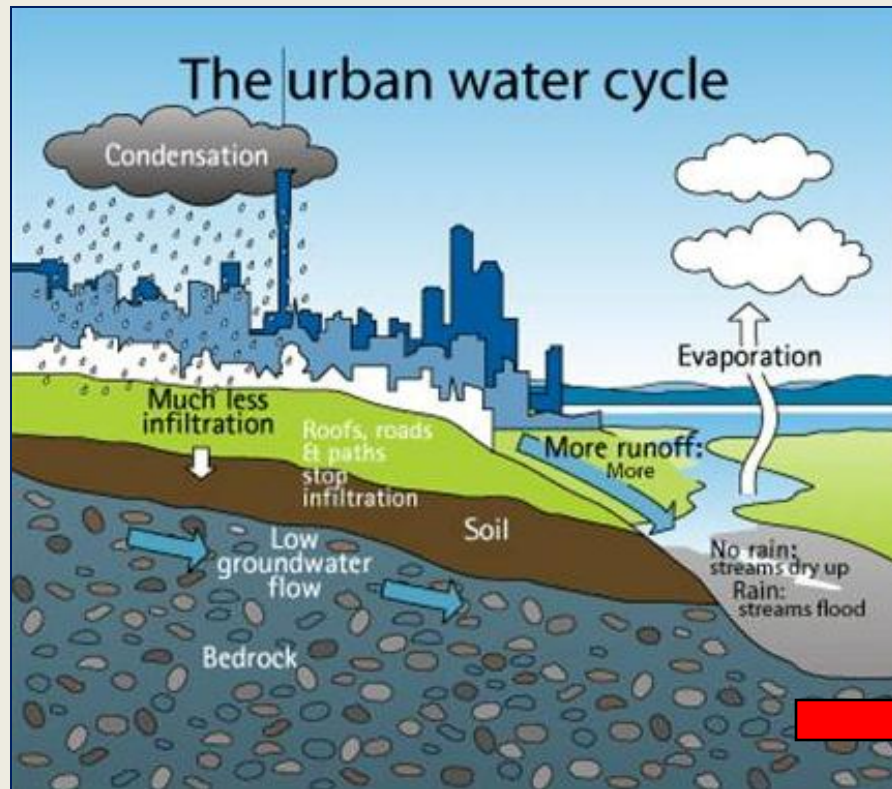
# Stormwater in the Water Cycle



Source: Clemson University



# Stormwater in the Water Cycle



Source: Clemson University



# What exactly is stormwater management?

- Keeping roadways free of water
- Keeping pollutants from roadways and other surfaces out of our groundwater and water bodies
- Avoiding flooding
- Protecting important habitats and water resources



# What does stormwater management look like?





# What Does it Mean to 'Manage' Stormwater?

## Stormwater Treatment Practices





# Saunders School Redevelopment in Lawrence



Before

# Road Design Pavement = Stormwater



Wide streets



After



Narrow streets,  
vegetated lots



# What are municipal stormwater management responsibilities?

1. Keep pollutants out of the stormwater system
2. Reduce flooding and erosion from flooding
3. O&M of the stormwater system
4. Maintain municipal facilities/properties
5. Respond to problems



# Range of Stormwater Management Activities

- Flood reduction/protection;
- Stream channel erosion protection/restoration;
- Street sweeping and catch basin cleaning;
- Culvert repairs;
- Improved stormwater planning/watershed management;
- Leaf litter pick-up/disposal
- Develop regulations/standards
- Project review/permitting
- Good housekeeping
- Public ed/outreach;
- Mapping of drainage network/BMPs;
- IDDE
- Site inspections;
- Construction of new capital facilities;
- Maintenance of existing and new stormwater practices
- Monitoring
- Enforcement
- Complaint hotline



# Existing development contributes to the municipal stormwater burden too





# Municipal stormwater management requires cooperation among departments





# Results: Cross-Cutting Benefits and Avoided Costs

## UrbanRiver Visions 2

An initiative of the Massachusetts Executive Office of Energy and Environmental Affairs  
(in partnership with the City of Haverhill)



Environmental efforts to protect riverfront areas through the program, as well as the creation of a riverfront master plan, are a priority for the City of Haverhill. The City of Haverhill is currently working on a riverfront master plan, which will be a key component of the City's overall urban development strategy. The plan will address the need for a riverfront master plan, which will be a key component of the City's overall urban development strategy. The plan will address the need for a riverfront master plan, which will be a key component of the City's overall urban development strategy.



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## Haverhill Charrette



### THE PLACE

The Haverhill Charrette study area for the riverfront development is located in the heart of the city, along the river. The study area is bounded by the river to the north and the city center to the south. The study area is bounded by the river to the north and the city center to the south. The study area is bounded by the river to the north and the city center to the south.

### A SHARED VISION

Over the course of the charrette, a shared vision for the riverfront development was developed. This vision includes the creation of a riverfront master plan, which will be a key component of the City's overall urban development strategy. The vision includes the creation of a riverfront master plan, which will be a key component of the City's overall urban development strategy. The vision includes the creation of a riverfront master plan, which will be a key component of the City's overall urban development strategy.



### ACTION PLAN

The charrette process resulted in the development of an action plan for the riverfront development. This plan includes the creation of a riverfront master plan, which will be a key component of the City's overall urban development strategy. The plan includes the creation of a riverfront master plan, which will be a key component of the City's overall urban development strategy. The plan includes the creation of a riverfront master plan, which will be a key component of the City's overall urban development strategy.

### THE CHARRETTE

The charrette was held in the Haverhill North Community Room on March 15, 2011. The charrette was held in the Haverhill North Community Room on March 15, 2011. The charrette was held in the Haverhill North Community Room on March 15, 2011.



### Morning Session

The morning session was held from 9:00 AM to 12:00 PM. The morning session was held from 9:00 AM to 12:00 PM. The morning session was held from 9:00 AM to 12:00 PM.

### Group A: Riverfront Development

This group focused on the development of the riverfront master plan. This group focused on the development of the riverfront master plan. This group focused on the development of the riverfront master plan.

### Afternoon Session

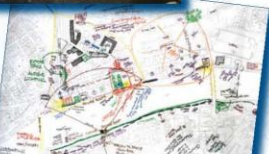
The afternoon session was held from 1:00 PM to 4:00 PM. The afternoon session was held from 1:00 PM to 4:00 PM. The afternoon session was held from 1:00 PM to 4:00 PM.

### Group B: Riverfront Development

This group focused on the development of the riverfront master plan. This group focused on the development of the riverfront master plan. This group focused on the development of the riverfront master plan.

### Group C: Riverfront Development

This group focused on the development of the riverfront master plan. This group focused on the development of the riverfront master plan. This group focused on the development of the riverfront master plan.



<http://plus.eagletribune.com/content/news/et/haverhillposter.pdf>



Photo credit: <https://theheartbeatofhaverhill.wordpress.com/2014/08/12/the-kayak-craze-in-haverhill/>



# Key elements of a successful stormwater management program

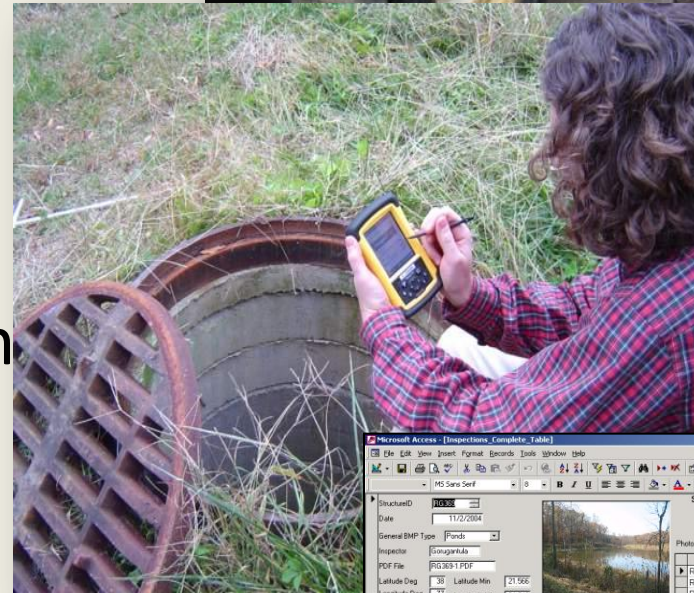
- Coordinator and coordination
- Tracking system to track inspections/ maintenance/ repairs/ infrastructure locations
- Equipment – e.g., vacuum sweeper, catch basin cleaner, landscaping equipment
- Labor and training (for O&M, inspections, repair, and retrofits)
- Stormwater engineering skills (project review, design)
- Regulatory standards in the local codes
- And.... Ongoing steady annual funding



# Stormwater Quiz

## Which of these are free?

- a) Infrastructure mapping
- b) Catch basin cleaning
- c) Drainage repairs
- d) Stormwater retrofits
- e) Illicit discharge detection and elimination
- f) Complaint hotline





**Microsoft Access - [Inspections Tables]**

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StructureID <b>Date</b>	11/2/2004		<b>Stormwater BMP Master Database</b> Stafford County, Virginia Stafford County Department of Code Administration						
General BMP Type	Ponds		Photo Filename						
Inspector	Jonguakula		<table border="1"> <thead> <tr> <th>Filename</th> </tr> </thead> <tbody> <tr> <td>RG369-1.JPG</td> </tr> <tr> <td>RG369-2.JPG</td> </tr> <tr> <td>RG369-3.JPG</td> </tr> <tr> <td>RG369-4.JPG</td> </tr> </tbody> </table>		Filename	RG369-1.JPG	RG369-2.JPG	RG369-3.JPG	RG369-4.JPG
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RG369-4.JPG									
PDF File	RG369-1.PDF								
Latitude Deg	38	Longitude Min	21.566						
Longitude Deg	77	Latitude Min	31.943						
Status:	Complete								
Location	Regional Pond #4								
Readied?	<input type="checkbox"/> Under Bldg								
Parcel Key	43213								
Parcel ID	4461 N								
LRSN	26540								
HUC	2000104								
Discharges To	Rocky Run Run								
Permit Number									
As-Built Plans?	<input checked="" type="checkbox"/> Maintenance Agreement?								
How Often Maintained?	See Agreement								
Access Treated	100%								
Condition	Good								
Comments/Notes:									

Ponds   Filtration   Infiltration   Manufactured/Underground   Miscellaneous   LID			
Pond Type	Accessibility	Emergency Spillway	Outfall Structure
<input type="checkbox"/> Wet Pond	<input type="checkbox"/> Inaccessible	<input type="checkbox"/> ES Ending	<input type="checkbox"/> Outfall Undersized
Pond Length (ft)	Dam Embankment	<input type="checkbox"/> ES Disturbed	<input type="checkbox"/> Outfall Separated
T 700	<input type="checkbox"/> No	<input type="checkbox"/> ES Non-Operational	<input type="checkbox"/> Outfall Channel
Pond Average Width (ft)	Trees	<input type="checkbox"/> No ES	<input type="checkbox"/> Channel Eroded
I 120	Shrubbery	<input type="checkbox"/> Riser	<input type="checkbox"/> Channel Everted
Sediment Depth (ft)	Scrub Bush	<input type="checkbox"/> Low-Flow Blocked	<input type="checkbox"/> Impoundment Area
BMP Depth (ft)	Inadequate Cover	<input type="checkbox"/> BMP Missing	<input type="checkbox"/> Large Debris
E 0.00	Erosion	<input type="checkbox"/> BMP Missing	<input type="checkbox"/> Unstability
Settlement	<input type="checkbox"/> Piping	<input type="checkbox"/> Rise Blocked	<input checked="" type="checkbox"/> No Riprap Buffer
Pond Water Depth (ft)	Buried Pipes	<input type="checkbox"/> Rise Damaged	<input type="checkbox"/> Shore Erosion
I 7	Surface Holes	<input type="checkbox"/> Principal Spillage	<input type="checkbox"/> Silt In
Pond Total Volume (cu ft)		<input type="checkbox"/> Flow Pipe Blocked	<input type="checkbox"/> Low-Flow Ditch Blocked
T 270400		<input type="checkbox"/> PSP Blocked	<input type="checkbox"/> Low-Flow Pipe Damage
		<input type="checkbox"/> PSP Joint Leaking	<input type="checkbox"/> Fowling Silt In
		<input type="checkbox"/> PSP Failure	
		<input type="checkbox"/> PSP Settlement	

# Survey Results – NE Stormwater Collaborative

- 2014, 408 respondents in New England, 56% in MA
- Specific budget items identified for stormwater:
  - Yes: 56%
  - No: 44%
- Of those with budget items:
  - 33%: could not estimate annual spending on compliance, operations, capital renewal and planning
  - 37%: annual budgets less than \$100,000



# The Big Funding Question

## **General Fund:**

- tax revenue, competitive pressures, variable

## **Grants:**

- limited, competitive, opportunistic

## **Bonds and Loans:**

- borrowed money, high admin burden

## **Permit Fees:**

- relatively small, unpredictable, no capital costs

## **Enterprise Fund/Service Fee/Utility:**

- dedicated sustainable funding source, equitable

# Funding Options

Sources of Funding	Capital Costs	O&M Costs
General Fund	Yes	Yes
Utility/Service Fee	Yes	Yes
Grants	Yes	No
Bonds	Yes	Yes
Loans	Yes	No
Fees for Permit Reviews and Inspections	No	Yes



# Other support mechanisms

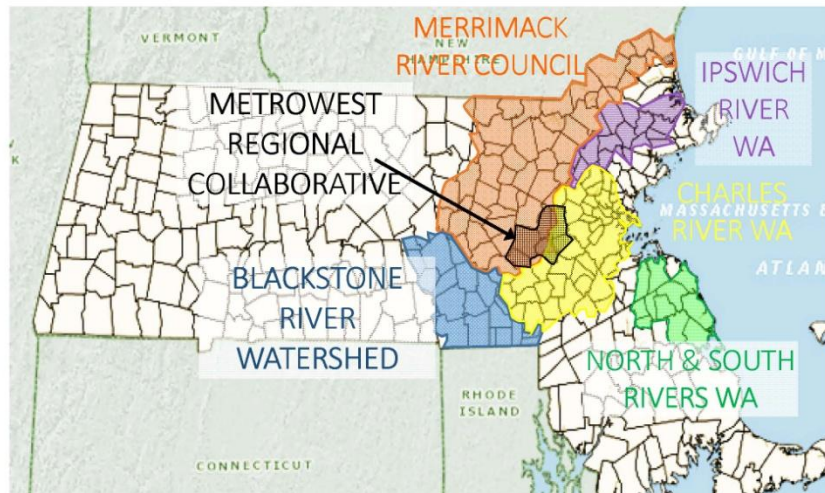
- Allocate/assign tasks across departments
- Interdepartmental stormwater workgroup
- Develop effective regulations and enforcement mechanisms
- Integrate stormwater improvements into other infrastructure repairs
- Make use of related grants – water quality, habitat restoration/protection, water supply protection, hazard mitigation, transportation, education, parks

# Other support – Regional Collaboration

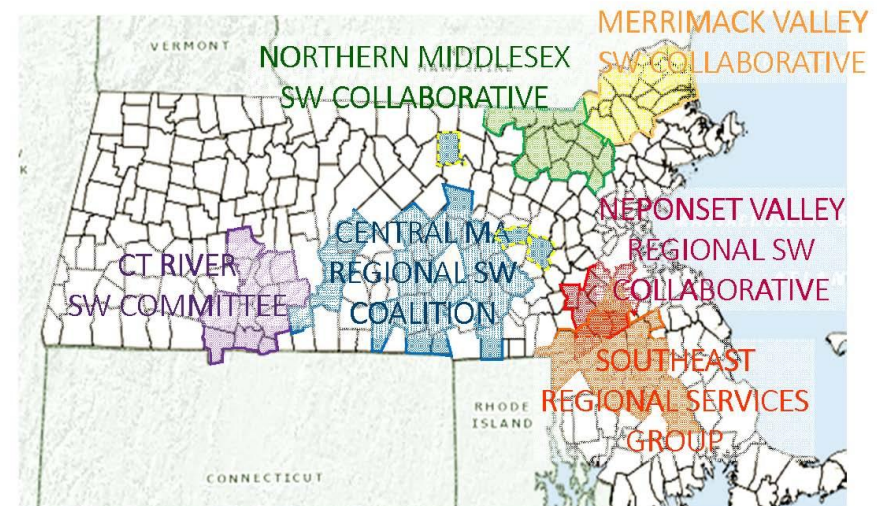


## Merrimack Valley Stormwater Collaborative

COMMUNITIES WORKING TOGETHER FOR A CLEANER ENVIRONMENT



**PARTNERS OF THE STATEWIDE STORMWATER COALITION**  
(not inclusive= always growing!)



**SIX MASSACHUSETTS STORMWATER COALITIONS=**  
**THE MA STATEWIDE STORMWATER COALITION**



# Benefits of a Stormwater Fee

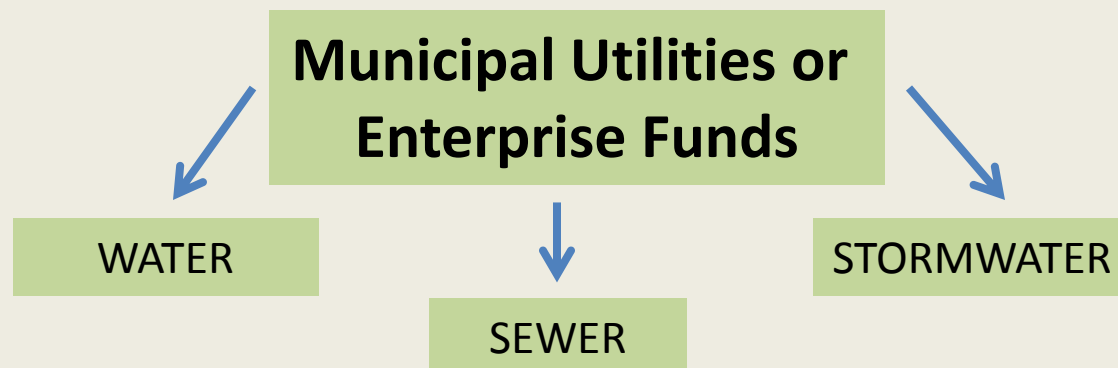
- Dedicated funding – doesn't compete with General Fund
- Allows manager to plan ahead
- Can provide greater level of funding (helps address deferred maintenance)
- Provides a way to adequately address existing development where stormwater is not managed

# Stormwater Utility Enabling Legislation

In Massachusetts there are two companion pieces of legislation that allow municipalities to set up an authority to manage stormwater and to charge utility fees for managing stormwater.

**MGL Chapter 83 Section 16** is relatively new enabling legislation that allows municipalities to set up a stormwater management utility and charge utility fees for managing stormwater.

**MGL Chapter 40 Section 1A** provides a definition of a district for the purpose of water pollution abatement, water, sewer, and/or other purposes.

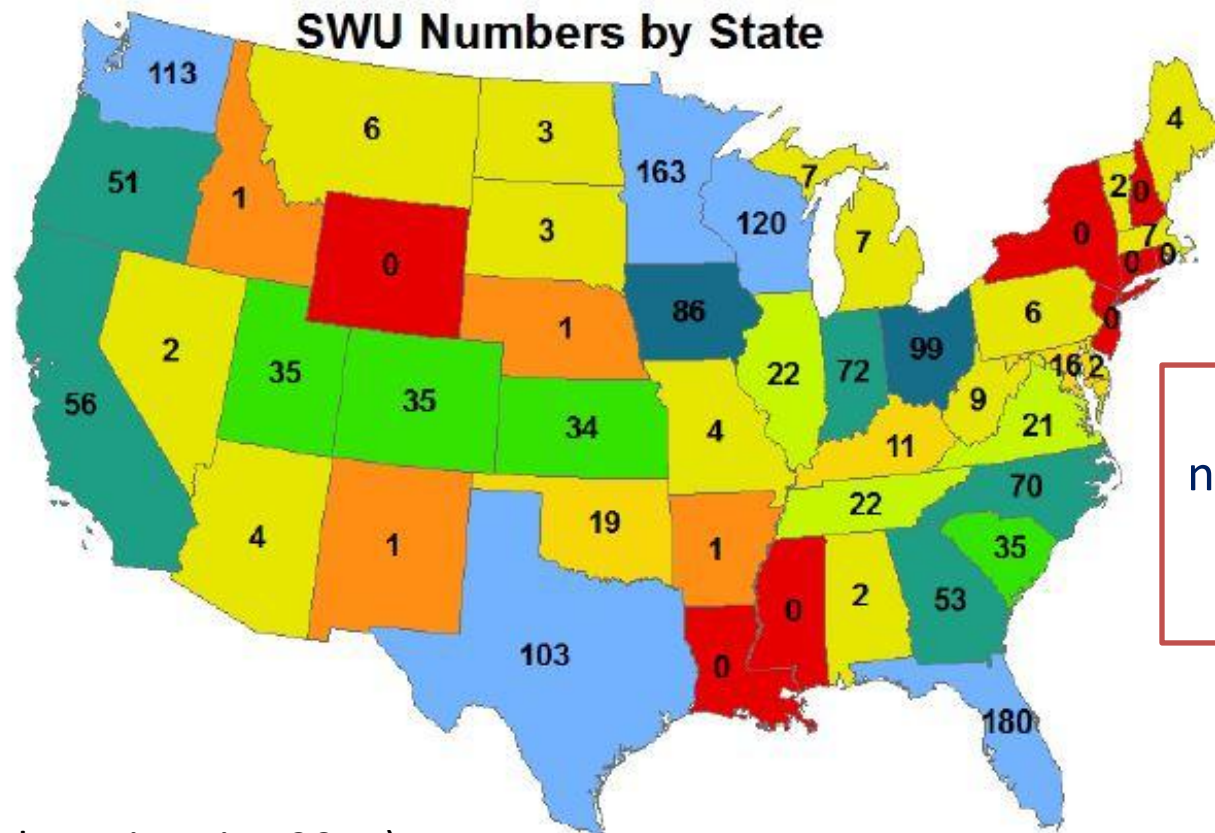




# Clear Winner...among stormwater guidance

## Stormwater Utility/Fee/Enterprise Fund

- Often recommended in stormwater resources
- Supported by EPA



Over 1500  
nationwide in US  
and Canada

# Don't Worry, You won't be the First

At least 9 Stormwater 'Utilities' Created in MA to date:

Town/City	Monthly Fee	Year Created	Pop
Chicopee	\$8.33	1998	54,653
Fall River	\$11.67	2008	91,938
Gloucester	\$4.42	2011	30,273
Newton	\$2.08	2006	83,829
Northampton	\$5.00	2014	28,592
Reading	\$3.33	2006	24,145
Westfield	\$0.00?	2010	41,094
Milton	\$2.15 - \$13.00	2016	27,000
Chelmsford	\$3.33	2017	32,171

and many more under consideration...

*Partial Info: (Western Kentucky University, 2014)*



# Give Stormwater the Attention it Deserves...



- Encourage your departments to work together
- Develop a comprehensive stormwater budget that reflects the actual needs and responsibilities across departments
- Recognize the complexity and important role of effective stormwater management
- Treat stormwater management as a critical municipal service

# Why? Because of the Many Benefits of Good Stormwater Management

- ✓ New perspective on stormwater
- ✓ Stormwater is a Resource
- ✓ Stormwater Management is an essential service
- ✓ Stormwater Management supports a community's ability to thrive
- ✓ And...there's another reason we haven't mentioned .....



# The Clean Water Act requirements!

- The 'NPDES MS4' General Permit
- Applies to urbanized areas
- Requires a municipal stormwater management program



# Massachusetts MS4 GP

- Six Minimum Control Measures:
  1. Public Education
  2. Public Involvement
  3. Illicit Discharge Detection & Elimination
  4. Construction Site Runoff
  5. Post-construction Stormwater Management
  6. Good Housekeeping/Pollution Prevention
- Specific Water Quality Requirements
  - Impaired Receiving Waters
    - With a TMDL
    - Without a TMDL
- Monitoring, Maintenance & Reporting



# Who typically gets the MS4 Permit Assignment?

- Public Works Director or Town Engineer



# Now you Know....

- Stormwater management is multidisciplinary
- Interdepartmental effort and coordination
- Ongoing dedicated funding needed
- Essential municipal service – give it the attention it warrants



# Stormwater management – Not just drainage anymore...

- Multi-disciplinary
- Essential for a healthy community



Public  
Education &  
Outreach  
Tools



Training  
Materials &  
Opportunities



Construction  
Runoff  
Control



Illicit  
Discharge  
Detection

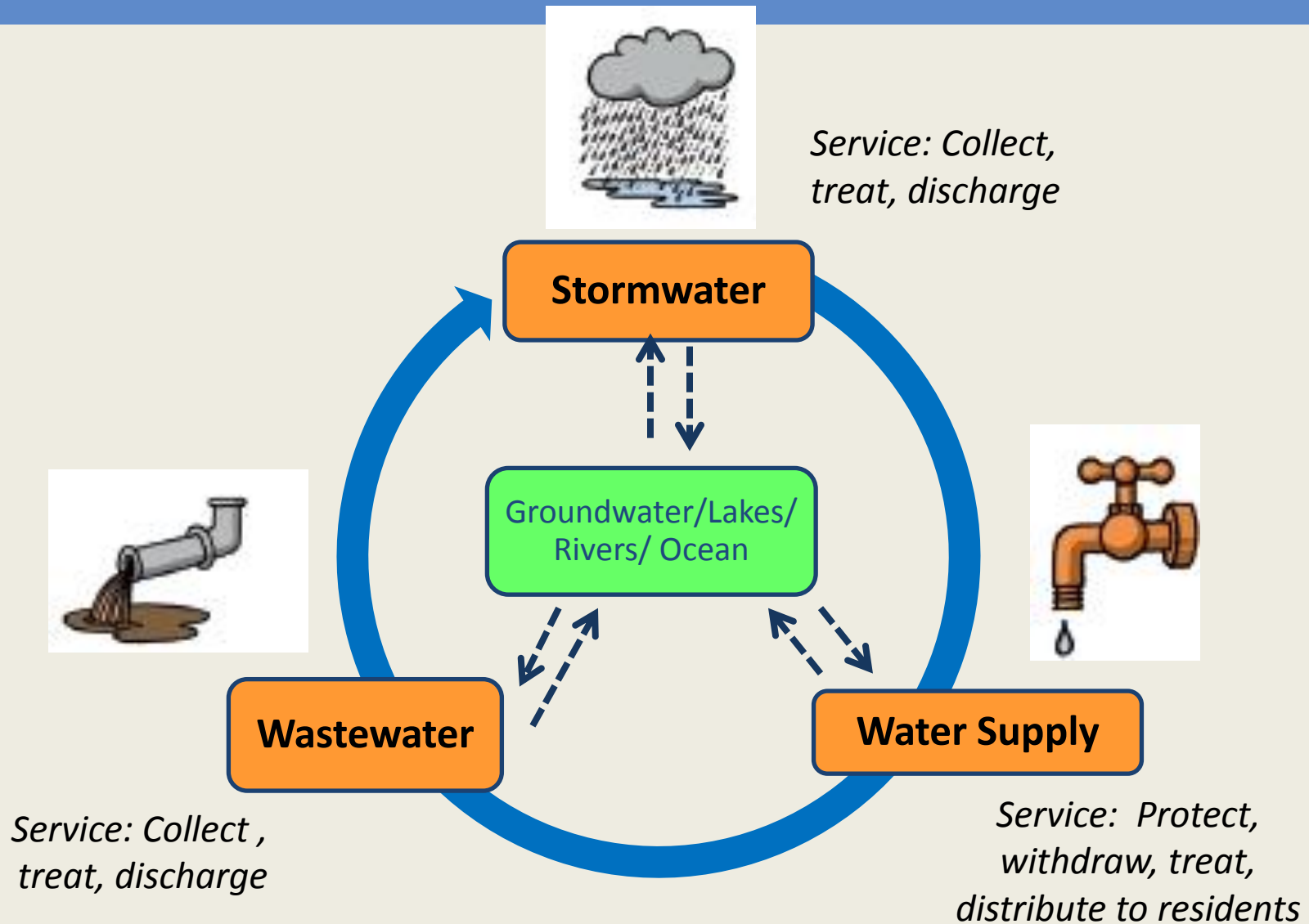


Model  
Regulations



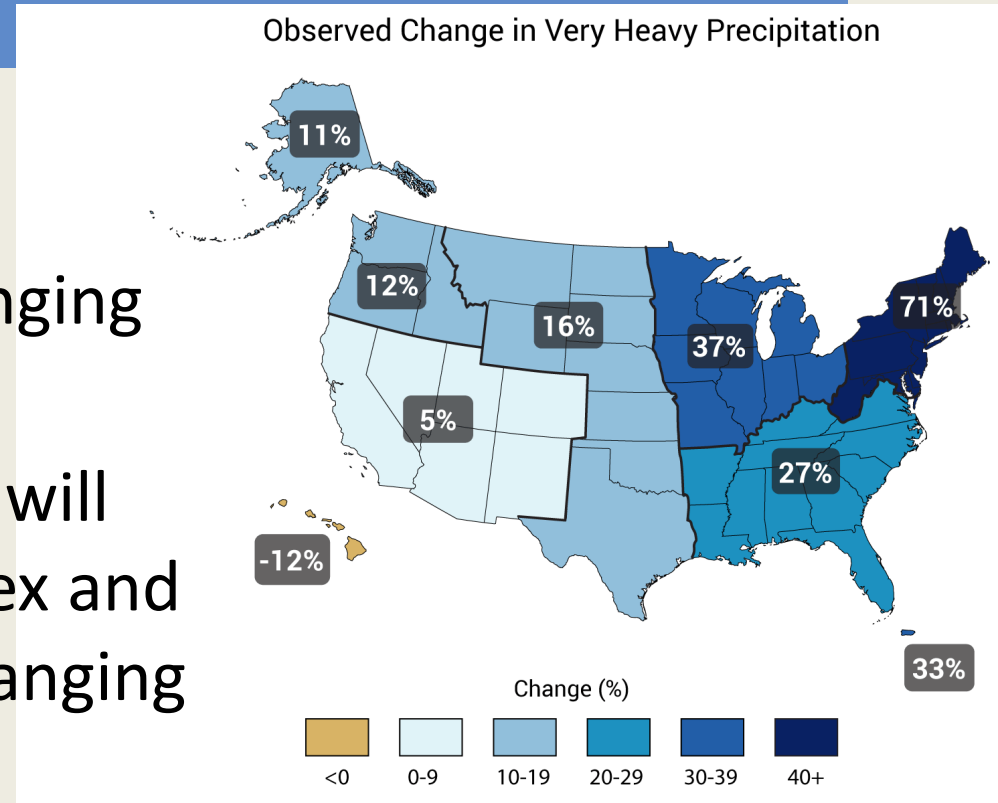
Best  
Management  
Practices

# The municipal water cycle



# And we haven't even mentioned this yet....

- Have you noticed the changing rainfall patterns...?
- Stormwater management will only become more complex and more important with a changing climate.
- More emergencies, greater importance of maintenance and pollution prevention





# Support your local stormwater managers



Stormwater management is an important service to your community. Don't underestimate it.

# Support your local stormwater managers

Thank you!

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