





# Establishing & Communicating Private Stormwater Control Measure O&M Requirements in the Charles River Watershed

Presented by Carly Quinn, PE & James Sherrard, PE – Woodard & Curran NEWEA Annual Conference January 29, 2025

# Agenda



Charles River TMDL and MS4 O&M Requirements



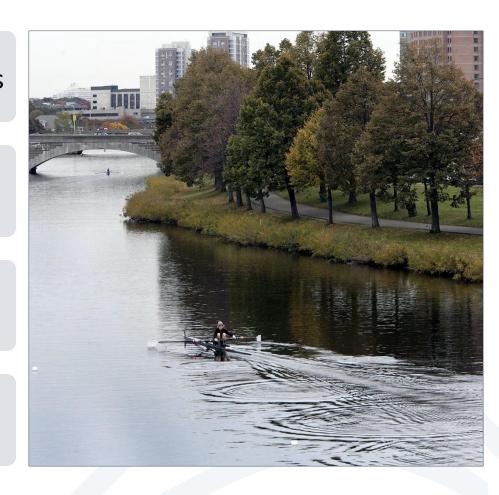
Program Roadmap



Program Implementation in 2 Communities



Key Takeaways & Next Steps



## **Charles River TMDL**

#### Nashua

Manchester

Lowell Gloucester

# Health Officials Warn Of Blue-Green Algae Bloom in Charles River

August 31, 2016 2:45 PM



Plains Paterson Yonkers



Norwich

New London

Keene



## Massachusetts MS4 General Permit

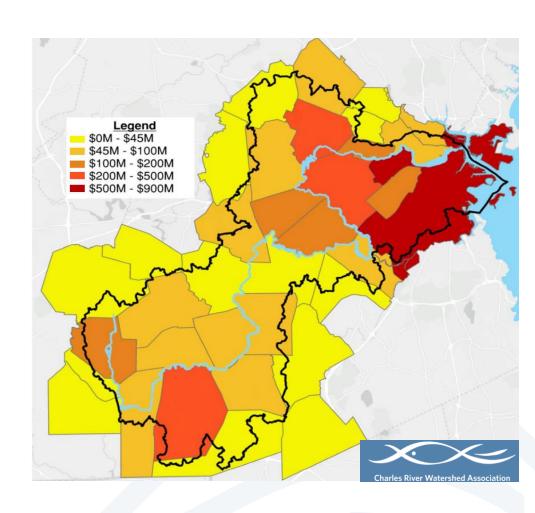
- ► The MA MS4 General Permit defines <u>precedent-setting</u> <u>stormwater phosphorus load reduction requirements</u> for 35 individual communities
- Phosphorus reductions range from 42 lb/yr to over 5,200 lb/year

Industry standard planning costs = \$50K - \$100K per lb of TP removed

**United States Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES)** 

GENERAL PERMITS FOR STORMWATER DISCHARGES FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS IN MASSACHUSETTS (as modified)

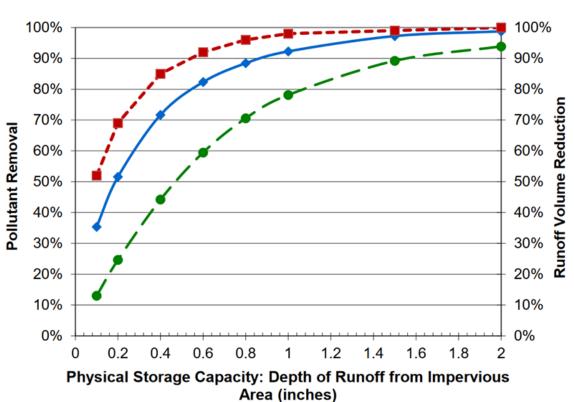
AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM



## How does this relate to O&M?

- Stormwater control measures (SCMs) reduce phosphorus in stormwater runoff
- ► TP reduction calculations are defined in the Permit
  - 1-ac. medium-density residential impervious = 2 lb/yr TP
  - Treat 1" runoff with an infiltration basin = about 1.8 lb/yr removed
- ► Achieve TP reduction credit through <u>properly</u> <u>maintained</u> (municipal or private) SCMs
- SCMs must be maintained to take credit

#### BMP Performance Curve: Surface Infiltration (Soil infiltration rate 0.17 in/hr) Long-Term Cumulative Load Reduction based on BMP Design Storage Capacity



## SCM 0&M Permit Requirements

- ► For each structural SCM being claimed for TP reduction credit:
  - Inspection and maintenance schedule
  - Responsible party for maintenance
  - Location
  - Date of last completed maintenance and inspection
  - Certification that all structural SCMs are being inspected and maintained according to the specified PCP O&M program. The certification statement shall be:



I certify under penalty of law that all source control and treatment Best Management Practices being claimed for phosphorus reduction credit have been inspected, maintained and repaired in accordance with manufacturer or design specification. I certify that, to the best of my knowledge, all Best Management Practices being claimed for a phosphorus reduction credit are performing as originally designed.

## Challenges

► How can a municipality meet these requirements and feel confident with the self-certification process for <u>private</u> SCMs?

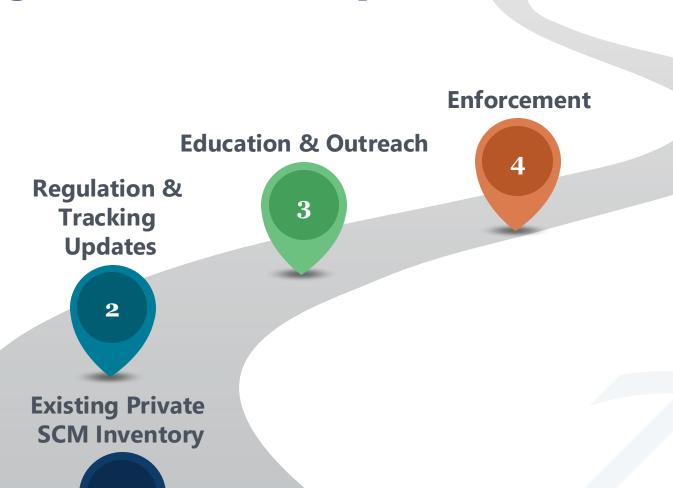
## **Authority**

- ► How can a municipality ensure private SCMs are operating as designed?
- ► Do municipalities have regulatory authority to enforce annual inspection and maintenance reporting?
- What happens if properties with private SCMs do not submit annual inspection/ maintenance reports?

### **Program**

- ► How can a municipality communicate O&M requirements to the public?
- ► How will the municipality track private SCM inspection and maintenance reports?
- Should the municipality develop an auditing program?

# **O&M Program Roadmap**



**Auditing** 

5



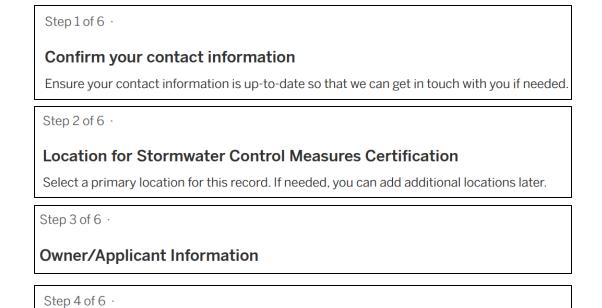
# **Regulation Updates**

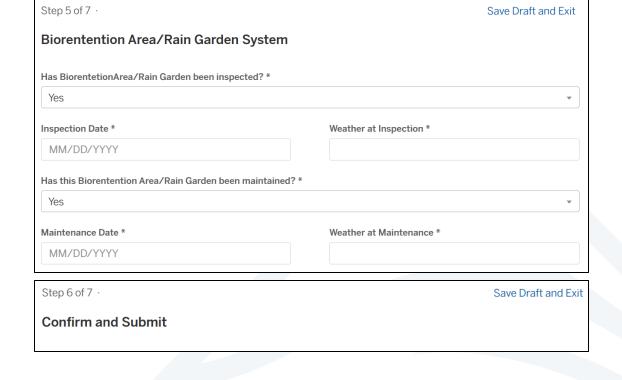
- Regulatory authority
  - Code/Regulation review and updates
  - Require annual O&M, reporting, and certification
  - Provide enforcement mechanisms, such as civil penalties or development/redevelopment prohibitions for non-compliance
  - Provide municipal authorization to inspect existing SCMs as part of the auditing process



## **Tracking Updates**

- Tracking
  - Automate as much as possible through interdepartmental software (OpenGov) and standard processes
  - Establish SCM Certification application for annual inspection and maintenance report submittal
  - Goal: property owner/manager independently submits O&M self-certification annually



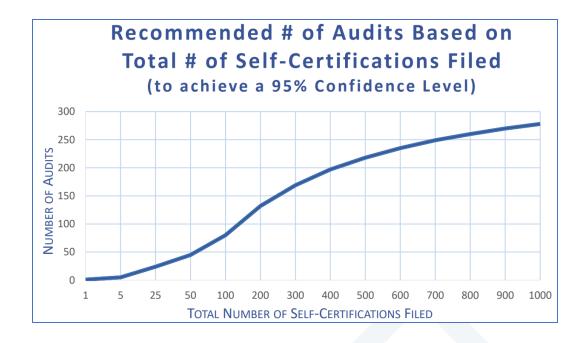




Number of Stormwater Control Measures

## **Annual Inspection Outreach and Auditing**

- ► Annual Inspection Submission, Reminder, and Outreach Schedule
  - Early-January Submission
  - Spring O&M Reminder
  - Late Fall Annual Submission Reminder
  - Mid-January Past Due Submission Outreach
  - Enforcement Notification
  - Auditing Outreach



- Auditing Program Based on EPA Guidance
  - Auditing is not a permit requirement, rather a reasonable assurance that systems are operating as designed.
  - To take place over a 5-year cycle.
  - For Municipalities with fewer than 50 SCM's, the EPA recommends inspecting all systems each 5-year cycle.
  - SCM audit selection should take into consideration size of treatment system and quality of annual submission submissions.



## **Education & Outreach**

- ► Provide answers to:
  - Why am I receiving this letter/brochure/training?
  - What is stormwater?
  - What am I required to do?
  - What happens if I don't do it?
  - How do I do it?
- ► Identify target audiences
- ► E&O Mechanisms
  - Outreach letters
  - Brochures, fact sheets, flyers, community newsletter
  - TV slides, website updates, social media posts
  - Community events, public meeting presentations
- Media is organized around key messages & brand
- ► How can we incentivize engagement?
  - Credit towards their stormwater utility fee
  - In person support



## **Brochure**

## **MAINTAINING** STORMWATER CONTROL **MEASURES (SCMS)**



## **WHAT IS STORMWATER?**

Stormwater is precipitation or snow melt that flows off land and impervious surfaces (driveways, sidewalks, buildings, etc.). In a natural landscape, stormwater is absorbed into soil or flows into a waterbody. However, increased development is creating more impervious surfaces, preventing infiltration of precipitation. When stormwater can't be infiltrated it flows downstream as runoff, picking up and transporting pollutants along the way.

#### TYPES OF POLLUTANTS FOUND IN STORMWATER









Waste





Household Waste

These pollutants flow untreated into waterbodies unless they are directed to a stormwater control measure. Stormwater Control Measures (SCMs) are treatment systems used to prevent or reduce the pollutants in runoff.

In addition to stormwater pollutants, runoff can also cause erosion, flooding, and changes

in water temperatures. Developed areas with a lot of impervious surfaces are prone to more stormwater runoff. and therefore water quality problems and drainage issues. SCMs can help alleviate these problems.

#### MS4 GENERAL PERMIT

The Town of Franklin, under the requirements of their United States Environmental Protection Agency (EPA) Municipal Separate Storm Sewer System (MS4) General Permit, must develop and implement a Phosphorus Control Plan (PCP) for its stormwater discharges into the Charles River Watershed. The permit requires Franklin to reduce approximately 2,220 lbs of phosphorus present in stormwater by 2038.

EVERY POUND OF PHOSPHORUS REMOVED FROM STORMWATER WILL SAVE FRANKLIN AND ITS TAXPAYERS \$50,000-\$100,000

In addition to maintaining their own Stormwater Control Measures, Franklin also manages pollutants in stormwater by maintaining catch basins, sweeping streets, and educating the public about how to improve stormwater quality.

TO LEARN MORE about the work Franklin is doing to improve water quality by keeping pollutants out of stormwater, preventing flooding and erosion, and managing stormwater, you can access the Stormwater Division website here: franklinma.gov/stormwater-division

MORE INFORMATION about EPA's MS4 General Permit can be found here: epa.gov/npdespermits/massachusetts-small-ms4-general-permit

#### >>>> WHAT ARE STORMWATER CONTROL MEASURES?

Physical treatment devices that are designed to capture and/or treat stormwater. Many structural controls rely on the vegetation and type of infiltrating soil to perform as intended by mimicking a natural system for nutrient removal and flood control.

#### >>> EXAMPLES OF SCMS

- » Dry detention basins
- » Infiltration basins
- » Wet ponds
- » Gravel/constructed wetlands
- » Porous Pavement
- » Vegetated swales
- » Rain gardens







**Dry Detention Basin** 



#### HOW YOU CAN HELP

EPA requires Franklin to certify that Stormwater Control Measures (SCMs) are being inspected and maintained properly to verify that they are removing phosphorus from stormwater. Franklin Stormwater Bylaws also require owners of SCMs to perform and document routine maintenance activities (ecode 360. com/10434353#10434382).

TO DO YOUR PART, please submit an annual inspection and maintenance report to the Franklin Department of Public Works by June 30 of each year. (scan QR code to submit)

TO LEARN MORE about maintenance activities and frequencies and to find the inspection forms, please scan the QR code below.

#### >>> TYPES OF MAINTENANCE AND FREQUENCIES

SCMs must be inspected and maintained to properly reduce pollutants. Some types of inspection and maintenance activities commonly implemented on SCM areas are listed below.

- » Mowing, Landscaping, & Vegetation Management
- » Debris & Litter Removal
- » Sediment Removal
- » Structure Integrity
- » Water Level Inspection

SCAN TO ACCESS SCM INSPECTION FORMS







## Letter

Dear Property Owner/Manager:

Our records show that there is a Stormwater Control Measure (SCM) located on your property. SCMs are areas like rain gardens, wet ponds, or underground infiltration chambers designed to control flooding and remove sediment and pollutants from stormwater runoff to improve water quality. Enclosed is a brochure with more information.

The SCM on your property helps protect our community's waterbodies, protects the Town's stormwater drainage infrastructure from flood damage, and helps the Town meet Environmental Protection Agency (EPA) requirements ultimately saving taxpayers money.

The Town is one of 34 communities in the Charles River Watershed required to work towards continuous environmental improvement and stewardship of our water resources. We are committed to a cleaner Charles River and are in the process of developing and implementing a long-term strategy for reducing pollution in the stormwater that leaves our community.

The Town is sending this letter to inform SCM owners of their obligation under Town Stormwater Regulations to inspect and maintain these important systems. As an SCM owner, you are required to submit annual inspection and maintenance certifications to the Town by January 1<sup>st</sup> of each year, documenting that work has been performed during the previous year to properly operate and maintain your SCM(s).

To assist SCM owners with this process, the Town is working with the engineering firm Woodard & Curran to meet with you and your facility management team. The goal of these meetings is to look at the SCM(s) on your property and discuss how to perform maintenance, inspection, and reporting activities. Woodard & Curran will attempt to contact you in the August/September timeframe to schedule a site visit. If you are not contacted by September 6<sup>th</sup>, please contact the Engineering Division.

Annual SCM inspection and maintenance certifications should be submitted on OpenGov, the Town's online permitting portal. The certification form can be found and submitted through the link and/or QR code attached to this letter. We can go through this together during the site visits if that is helpful.

Additional information about SCMs and your role in the maintenance, inspection, and reporting of them is included in the resource links accompanying this letter.



#### Resource Links:

 OpenGox Stormwater Control Measures Certification: https://lexingtonma.portal.opengov.com/categories/1081



OR Code:

 Volume 2, Chapter 2 of the Massachusetts Stormwater Handbook includes inspection and maintenance considerations for SCMs: <a href="https://www.mass.gov/doc/massachusetts-stormwater-handbook-vol-2-ch-2-stormwater-best-management-practices/download">https://www.mass.gov/doc/massachusetts-stormwater-best-management-practices/download</a>



OR Code:

EPA provides links to additional resources: <a href="https://www.epa.gov/G3/operation-and-maintenance-considerations-green-infrastructure">https://www.epa.gov/G3/operation-and-maintenance-considerations-green-infrastructure</a>



OR Code:

UNH Stormwater Center resources for select SCMs: <a href="https://extension.unh.edu/stormwater-center/maintenance">https://extension.unh.edu/stormwater-center/maintenance</a>



OR Code

## **Program Implementation: Case Studies**

### **Upper Charles Community**

- ► PCP Theme: Hundreds of private, old SCMs throughout a geographically large town
- ► O&M Program Implementation Plan:
  - Tracking updates
  - 2 E&O workshops advertised via letters and social media (website, TV, Facebook) plus recorded training published to Town website
- Pros: Reaches a broad audience with limited time investment
- Cons: Very limited engagement

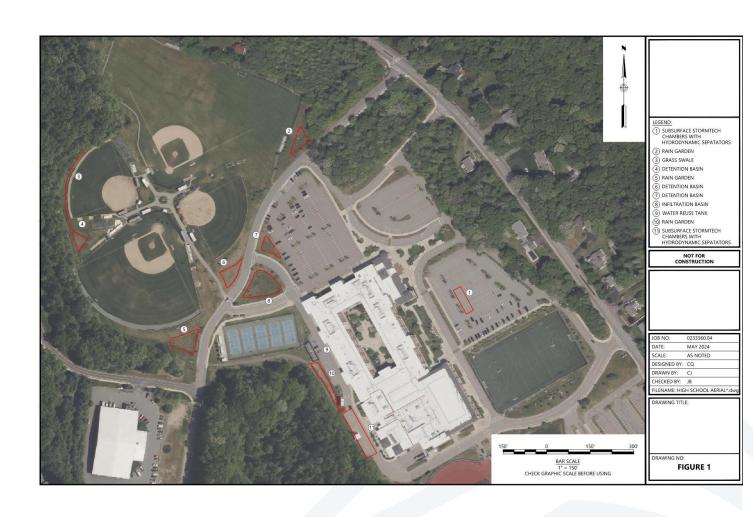
### **Lower Charles Community**

- ► PCP Theme: Dozens of private, newer SCMs within the CRW (about 1/3<sup>rd</sup> of the town)
- ► O&M Program Implementation Plan:
  - Tracking updates
  - Individual site visits scheduled directly with property owner/manager via phone calls & emails
- Pros: Very good engagement with multiple inspection/maintenance SCM certifications submitted through OpenGov form
- Cons: Time consuming



# **Upper Charles Community: Workshops**

- ► W&C and Town
  - Conducted 2 workshops:
    - 1 in-person presentation (Workshop #1)
    - 1 demonstration site visit (Workshop #2)
  - Prepared 1 recorded presentation for the Town website



# **Upper Charles Community: Workshops**

- ► Observation, Findings, & Results:
  - Very limited engagement from both workshops
    - Workshop #1 had ~10 attendees, and Workshop #2 had 0
  - Time spent on organizing, advertising, and conducting events

# Stormwater Treatment Structure Inspection and Maintenance Training Workshop #1

May 1, 2024 from 12:00pm – 1:30pm Council Chambers 2<sup>nd</sup> Floor, 355 East Central Street

Inspection and maintenance is required by Town Bylaw

Questions? (508) 553-5500 Pizza will be Provided



#### Stormwater Control Measure Inspection and Maintenance Workshop #1:

May 1, 2024 from 12:00 – 1:30 Council Chambers, Second Floor 355 East Central Street **Pizza Provided** 

Stormwater Control Measure Inspection and Maintenance Workshop #2:

May 2. 2024 - 10:00 - 11:30

218 Oak Street Field Workshop

Stormwater Control Measure inspection and maintenance is required by Town Bylaw.

Contact the Department of Public Works with any questions about these workshops at (508) 553-5500.

## SCM WORKSHOP #1

Second Floor
Council Chambers

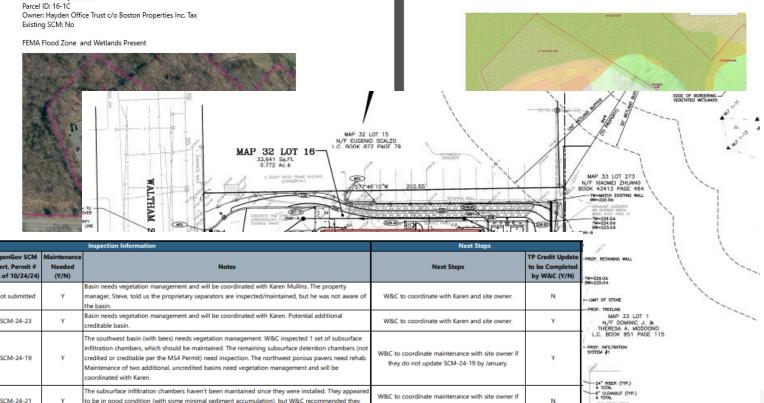


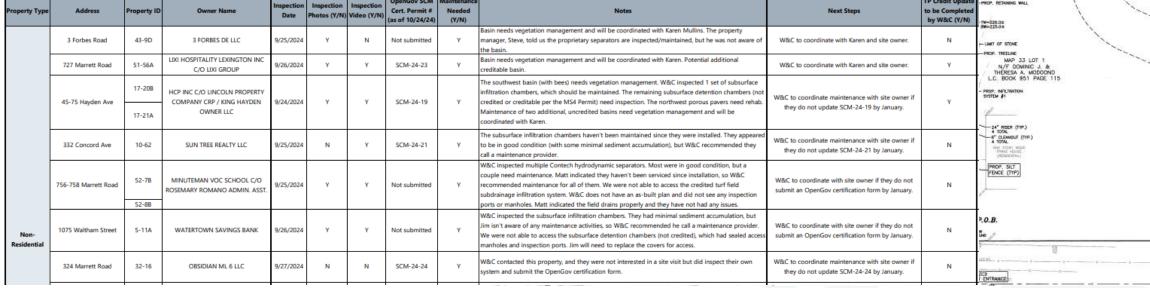


Lower Charles Community: Site Visits

Address: 33 Hayden Ave

- Desktop Analysis
- Existing Plan Review
- ► Field Visits
- Summary of Findings







# **Lower Charles Community: Site Visits**

- ► W&C and Town
  - Scheduled 45-90 minute site visit blocks at large properties (commercial, institutional, apartment/condo/senior living)
  - Conducted the SCM inspections with the property owner/manager to educate on what to look for
    - Pole camera utilized for subsurface systems
  - Completed the OpenGov SCM certification form with the property owner/manager in person during the site visit
  - Provided property owner/manager with a folder full of resources (letter, brochure, list of local maintenance providers)

Day	Time Block	Address	Contact Name for Site Visit	Contact Phone # for Site Visit	Contact Email for Site Visit
24-Sep	8-8:45am				
Tue	9-9:45am	453 Concord	David Peduto	781-258-0254 (Cell)	dpeduto@cotting.org
	10-10:45am	55 Watertown	Ted Tye	617-559-5050	tye@natdev.com
	11-11:45am	56 Watertown	Ted Tye	617-559-5050	tye@natdev.com
	LUNCH				
	1-1:45pm	45/55/65/75 Hayden	Ahad Choudhury	617-620-0474 (Cell)	achoudhury@lpc.com
	2-2:45pm	430 Concord Ave	Ray Lemieux	781-538-4534	rlemieux@artismgmt.com
	3-3:45pm	430 Concord Ave	Ray Lemieux	781-538-4534	rlemieux@artismgmt.com
	4pm	Grey Oaks Circle	Andre Klamas		andre.klamas@afkcons.com
			-		
25-Sep	8-8:45am	1050 Waltham Street	Jimmy Escobales	781-621-5918	jimmy.escobales@jll.com
Wed	9-9:45am	1010 Waltham Street	Mike Brennan	781-863-9660	mbrennan@brookhavenatlexington.org
	10-10:45am	1010 Waltham Street	Mike Brennan	781-863-9660	mbrennan@brookhavenatlexington.org
	11-11:45	3 Forbes Rd	Steve Barry	617-590-2742	srb@bulfinch.com
	12-12:45	332 Concord	Shuo Sun	617-803-1658	lexingtonma@goddardschools.com
	1-1:45pm	756-758 Marrett Rd	Matt MacLean	781-274-1035 (Cell is 781-879-5620)	mmaclean@minuteman.org
	2-2:45pm	187 Spring Street	Mark Lucier	781-825-1295	mlucier@ctdslexington.org
	3-3:45pm				
26-Sep	8-8:45am	1075 Waltham Street	Jim	781-572-4178	jiml@watertownsavings.com
Thur	9-9:45am	443 Lincoln St (Hobbs Brook Lane)	Ivan Gregoretti	240-753-0740	ivangreg@gmail.com
	10-10:45am				
	11-11:45am	1000 Main Campus Drive	Michael Smulski	978-320-7479	michael smulski@avalonbay.com
	LUNCH	1000 Main Campus Drive	Michael Smulski	978-320-7479	michael_smulski@avalonbay.com
	1-1:45pm	727 Marrett	Jon Mehlmann	781-761-1734	ionmehlmann@lixigroup.com
	2-2:45pm	Hold for talking to 341 Marrett Road			
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## **Lower Charles Community: Site Visits**

- ► Observations, Findings, & Results:
  - Many owners/managers didn't know about their SCM or annual requirements
  - Many other owners/managers already hire a maintenance company for semi-annual or annual inspection/maintenance but don't report results to the Town
  - Creditable SCMs: Accounted for some and removed some due to conservation restrictions
  - Of the ~80 properties credited for TP reduction, 19 were visited and 13 have completed the OpenGov SCM certification form
    (as of 1/20/2025)







# **Key Takeaways**



Develop a roadmap



Update regulations/tools to support the program



community/audience





## **Next Steps**

- ► Single-family residential O&M program
- ► Enforcement and auditing program components
- ► Draft MS4 & RDA permit implications
  - As parcels become permitted under RDA and removed from the MS4 system, those associated O&M requirements will be removed from the municipalities administrative load.
- Cost-benefit and program efficiencies



# **Questions?**



**James Sherrard, PE**james.sherrard@woodardcurran.com



Carly Quinn, PE cnquinn@woodardcurran.com

# Thank You!

