

Draft Combined Sewer Overflow Updated Long Term Control Plan

*File ID 25-1451 Officer's Communication
to City Council*

Infrastructure & Asset Management
23 October 2025

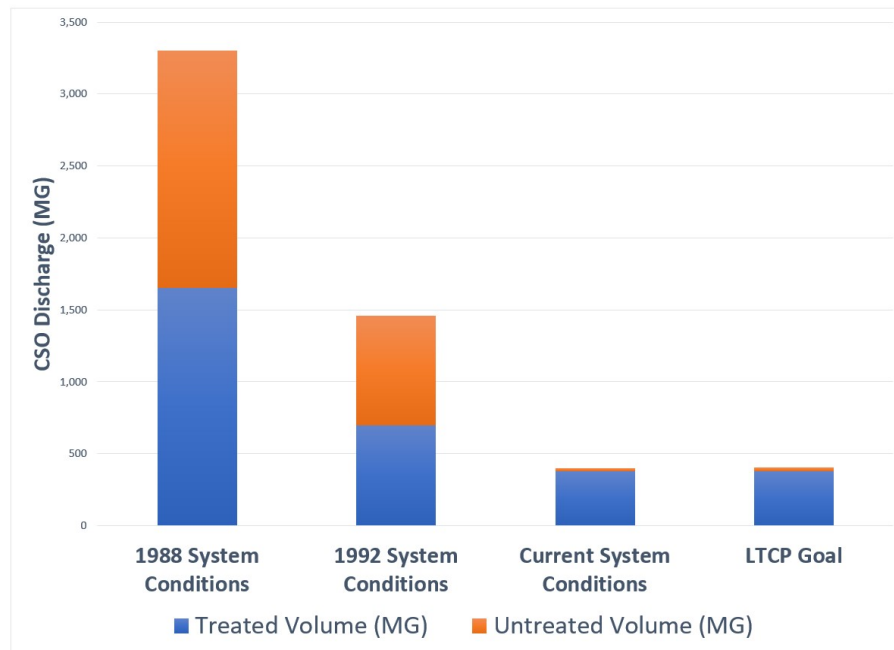


Presenter's Preamble

- This extended presentation deck, including supplemental slides (26 through 89), is provided to the Council as a reference document and to facilitate follow up discussions
- Many slides provide links to other presentations, videos, and resources for further information
- Much like the May 2025 Officer's Communication to the Council, even the presented slides (3 through 23) could be topics of prolonged discussion
- It is the presenter's intention to move very quickly through the slides and only provide the highest-level overview on each topic
- The presenter is happy to follow up on any of these topics in person or at subsequent meetings

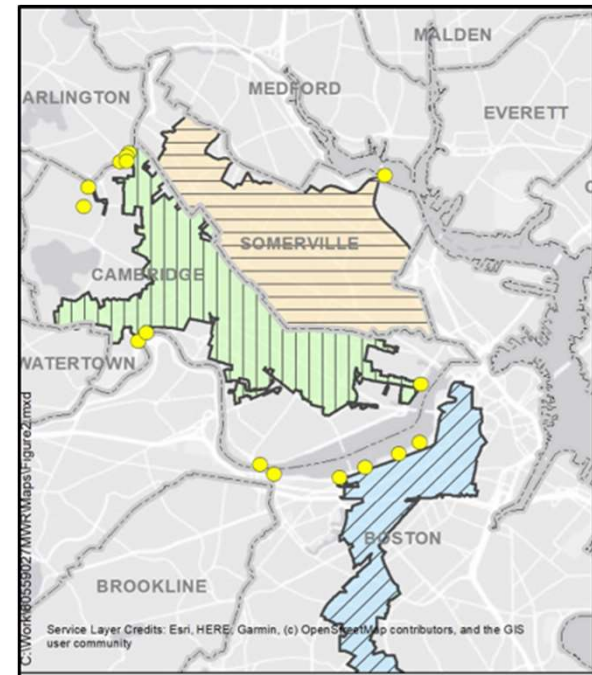
Formal regulatory process

Continuation of CSO control efforts



System Wide CSO Reduction Since the 1980s

**Annual discharge volume based on the prior Typical Year*



Variance Water Study Area

**Volumes consider climate change*

Formal regulatory process parties

Drafting & executing plan



City of Somerville
(Dewberry, CBI)



City of Cambridge
(Stantec, W&S)



**Massachusetts
Water Resources
Authority (MWRA)
(AECOM)**

Reviewing & approving plan



**Massachusetts
Department of
Environmental
Protection**

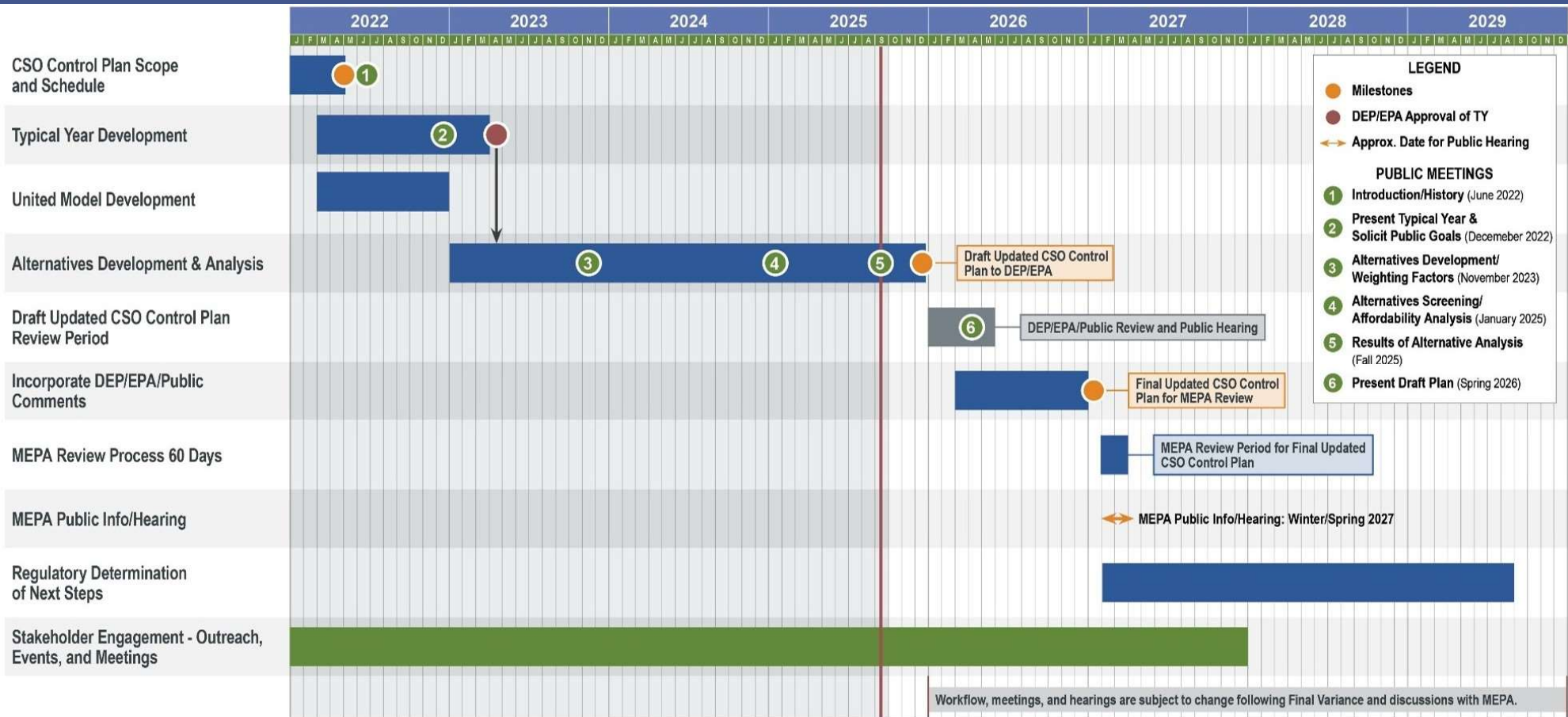


**US
Environmental
Protection
Agency**

Input & comments

- **Charles River Watershed Association**
- **Mystic River Watershed Association**
- **Save the Alewife Brook**
- **MWRA Advisory Board**
- **Neighboring cities & towns**
- **Various State agencies**
- **General public**

Formal Variance Water Schedule



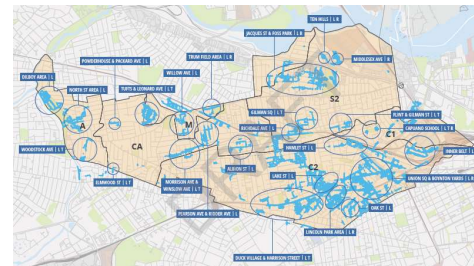
What it means for Somerville

- Legal (and moral) obligation to mitigate CSOs
- Federal/State Administrative Order will bind Sewer CIP for a generation



Photos by David Stoff & Ann McDonald / Save the Alewife Brook

- Will constrain future Capital Investments & operating budgets



Council action on this item

- Council approval not required for submission of plan to DEP/EPA
- However, plan will drive sewer CIP and rates for decades
- Therefore, plan will influence future Council actions on rates
- **Infrastructure & Asset Management would like a sense of the Council's position on the plan**

High level summary of process & conclusions

Supplemental Slides (24 through 87) provide support for Q/A

- Planning process
 - Community outreach & engagement
 - Tools for predicting CSO mitigation
 - Vocabulary: “Typical Year” and “Level of Control”
 - Alternatives, analysis & evaluation
- Eliminated alternative: Sewer separation
 - Upstream contributions & downstream constraints
 - Difficulties with & costs of sewer separation
- Eliminated alternative: 25-Year level of control
 - Large storms causes multiple system failures resulting in sanitary pollution
 - Other sources of pollution and Charles/Alewife/Mystic water quality
 - Scale & cost of CSO control
 - Limitations of the Variance Water plan compared to success stories nationally
 - Local efforts outside of the Variance Water plan to improve water quality
- Eliminated alternative: Lower level of control

Draft recommended plan

Cambridge, Somerville & MWRA technical team's
Goldilocks alternative

Proposed construction

3.AB Hybrid 2

Level of Control: 0 CSOs in 2050TY

Key Features	Storage:
	- Tanks: 2
	- Tunnel: 0
	- Microtunnel: 1.0 miles long
	Conveyance: 0.75 miles long
	Sewer Separation: 8 acres
	GSI: with separation/ other street excavation
	Land Acquisition: Yes
	Time to Complete: 13-18 years
	Preliminary Cost: \$340 Million

Legend:

- ◆ Combined Sewer System Facility
- ▲ CSO Outfall
- CSO Storage Tank
- ⬜ Sewer Separation
- ▬ CSO Storage Conduit
- ▬ Near-surface Conveyance

Alewife Brook
Pump Station

CAM401B and
SOM001A 2.3 MG
Microtunnel Storage
Conduit
9 ft diameter

CAM001
CAM401
CAM002

CAM001 8 Acres of
Sewer Separation

MWR003 1.5
MG Storage
Tank

CAM401A
Increased
Conveyance

CAM401A

CAM401A 1.5
MG Storage Tank

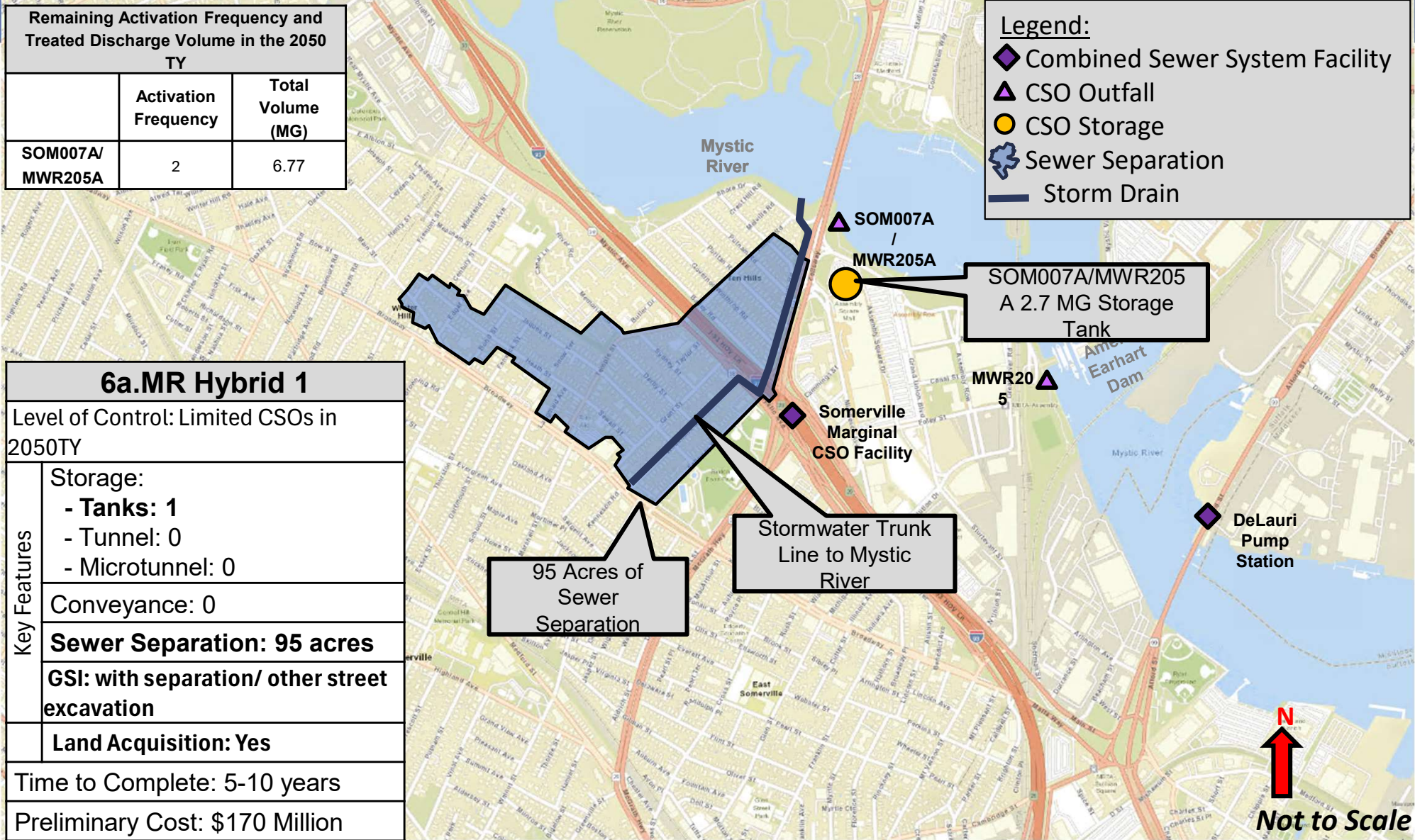
Fresh Pond

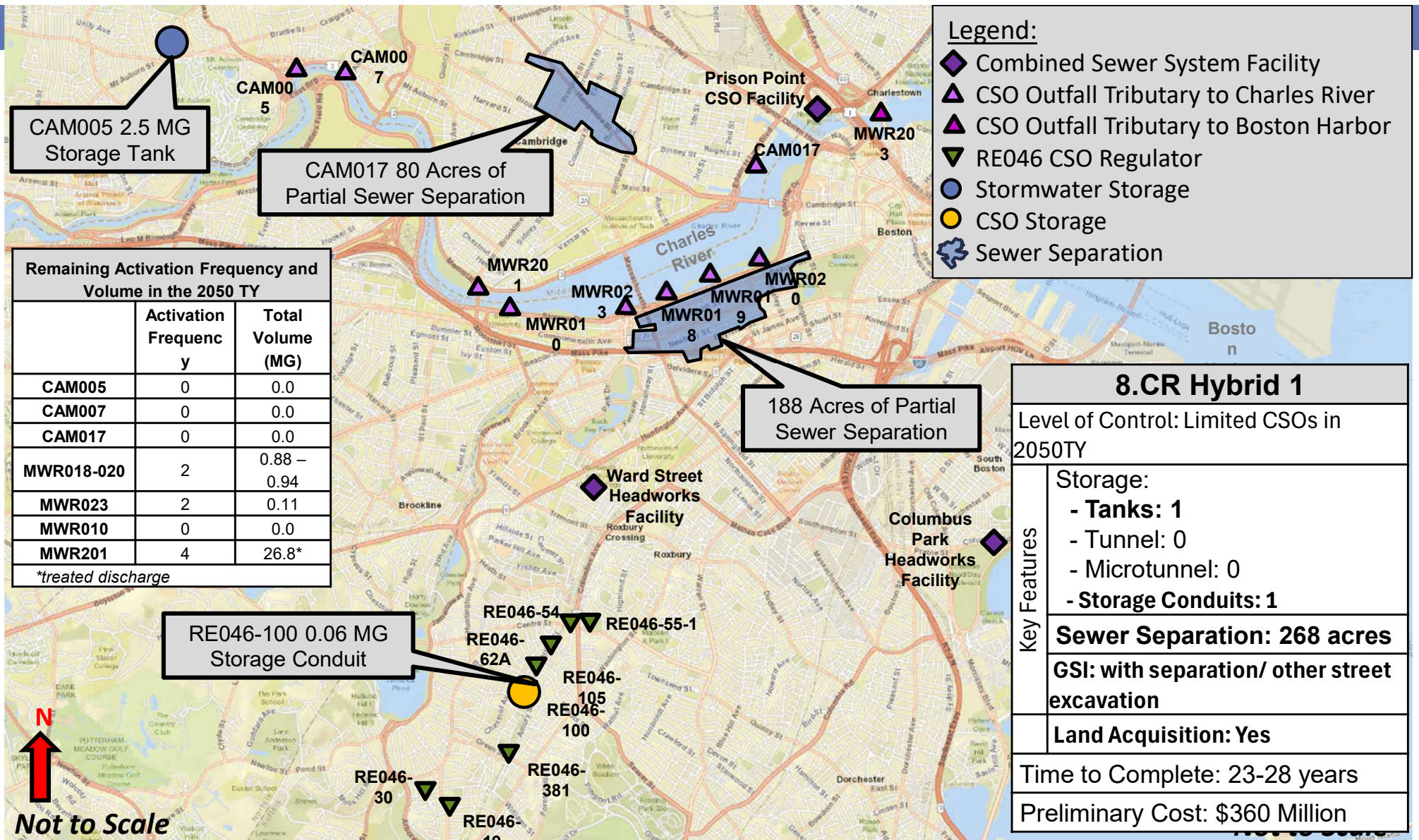


Not to Scale

Remaining Activation Frequency and Treated Discharge Volume in the 2050 TY		
	Activation Frequency	Total Volume (MG)
SOM007A/ MWR205A	2	6.77

6a.MR Hybrid 1	
Level of Control: Limited CSOs in 2050TY	
Key Features	Storage: - Tanks: 1 - Tunnel: 0 - Microtunnel: 0
	Conveyance: 0
	Sewer Separation: 95 acres
	GSI: with separation/ other street excavation
	Land Acquisition: Yes
Time to Complete: 5-10 years	
Preliminary Cost: \$170 Million	





Projected CSO elimination

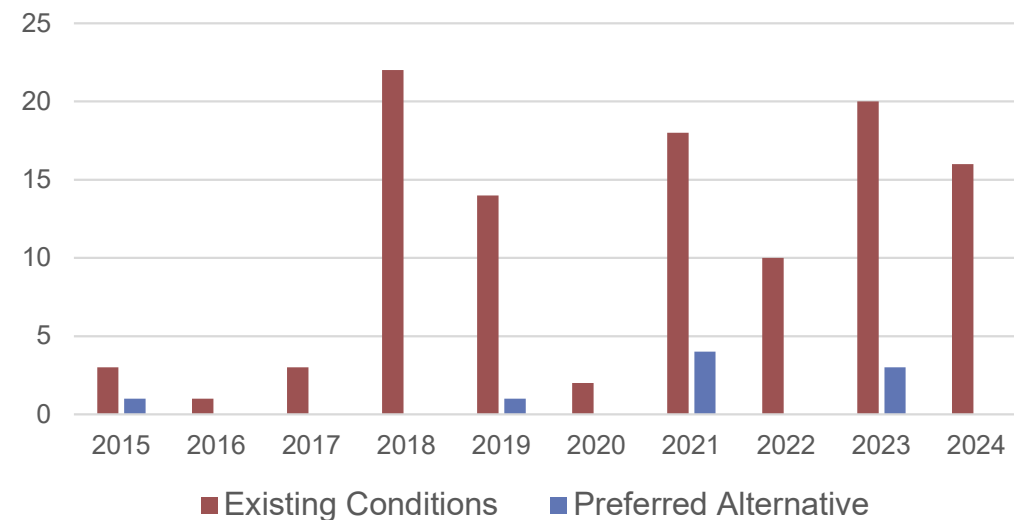
Plan performance – 2050 Typical Year

Receiving Water	Level of Control	Hydraulic Model Predictions 2050 TY			
		Activation Frequency		CSO Discharge Volume (MG)	
		Current Conditions	Recommended Plan	Current Conditions	Recommended Plan
Upper Mystic	1 – Limited CSOs in 2050 Typical Year	8	2	29.3	6.7 Treated
Alewife Brook	2 – Zero CSOs in 2050 Typical Year	13	0	20.9	0
Charles River	1 – Limited CSOs in 2050 Typical Year	6	4	38.4	1.2 Untreated 26.8 Treated

Plan performance – Historical record

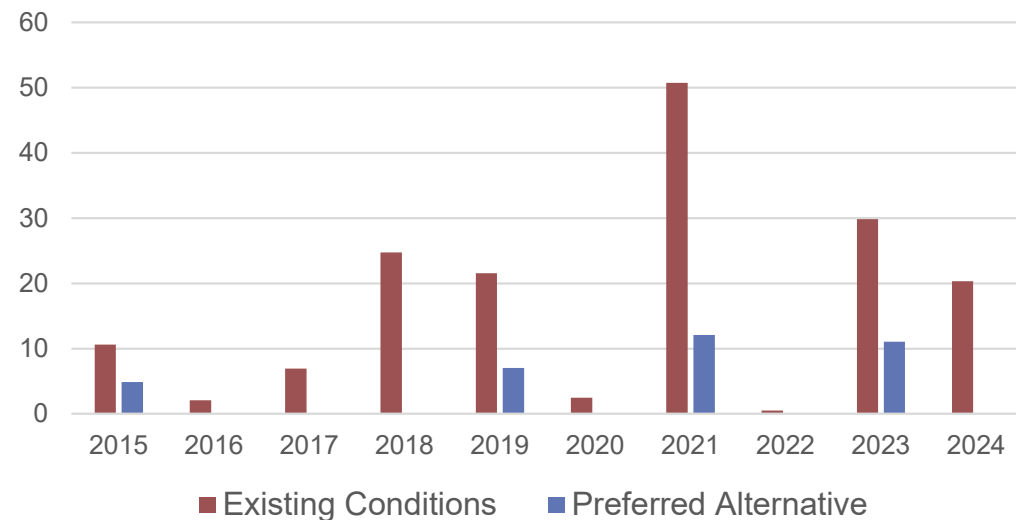
Alewife Brook

Number of Activations



92% reduction in activation frequency
(109 to 9 for 10-year period)

Volume of CSO (MG)



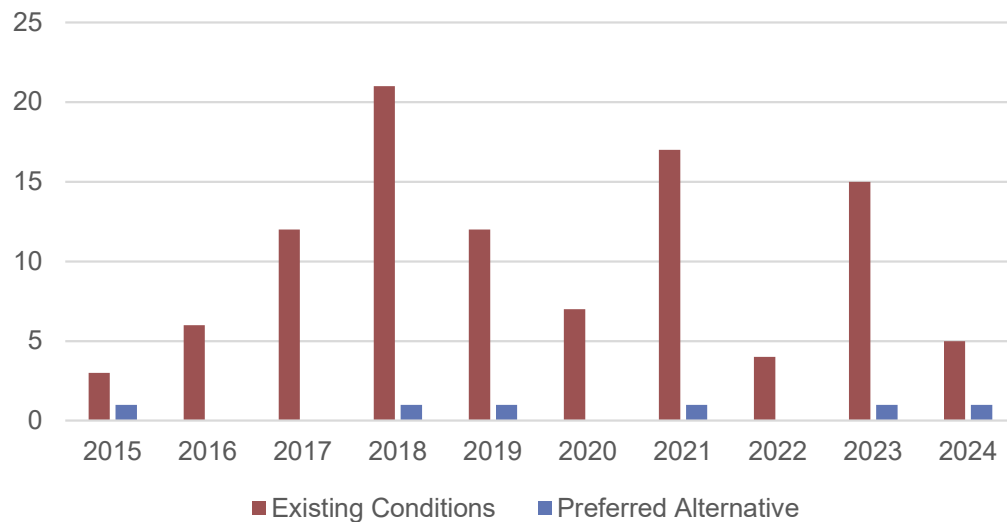
79% reduction in total volume
(170 to 35 MG for 10-year period)

Recorded/reported events at all 7 Alewife outfalls 1 Jan 2015 thru 31 Dec 2024 versus model results for recommended alternative for that rainfall record

Plan performance – Historical record

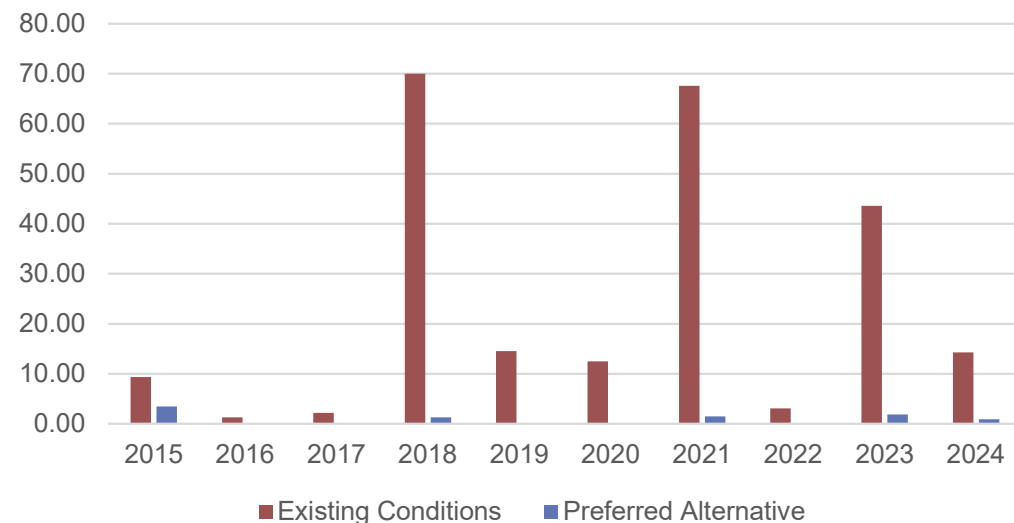
Mystic River upstream of dam

Number of Activations



94% reduction in activation frequency
(102 to 6 for 10-year period)

Volume of CSO (MG)



96% reduction in total volume
(239 to 9 MG for 10-year period)

Recorded/reported events at SOM007A outfall 1 Jan 2015 thru 31 Dec 2024 versus model results for recommended alternative for that rainfall record

Projected financial impact & Financial Capability Assessment (FCA)

Provisional FCA results

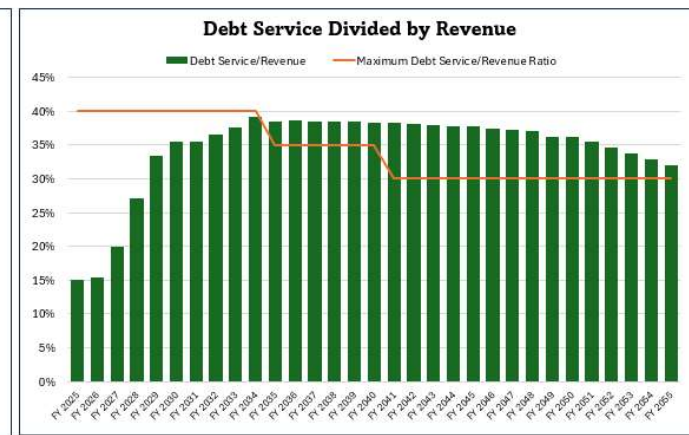
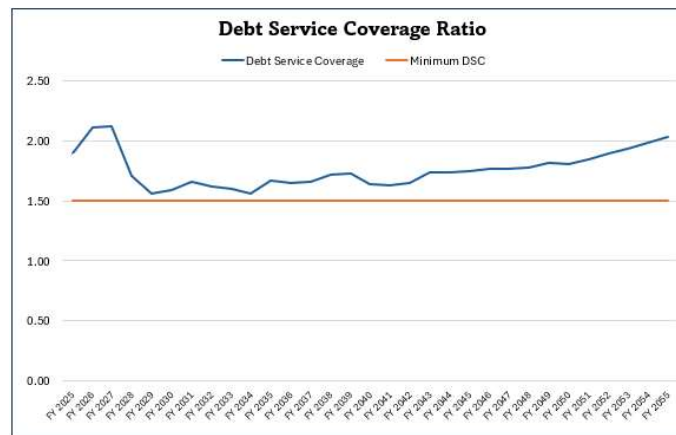
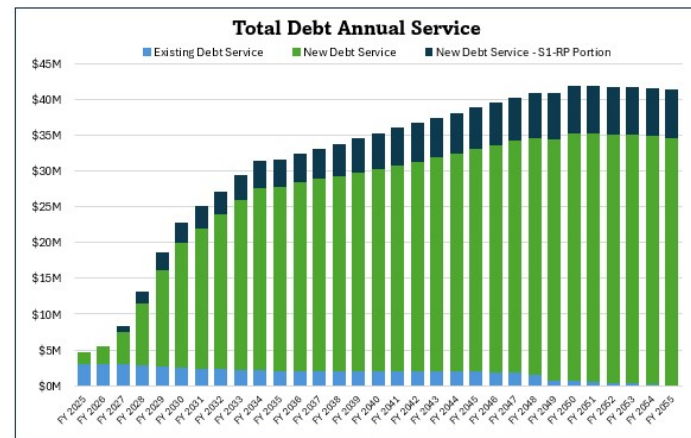
- Alt 1 Residential Indicator
 - Cost per Household = 1.34% MHI – Mid-Range Burden
- Alt 2 Residential Indicator
 - Mid-Range Burden FY2033 through FY2040
 - Low Burden before and after
- Alt 2 Lowest Quintile Residential Indicator
 - Low Burden FY2027 through FY2029
 - Mid-Range Burden FY2030 through end of projection
- **EPA methodology indicates Somerville has the financial capacity to undertake this plan on this schedule**

Note: At the time of this presentation, costs and allocations are being QA/QC'ed. FCA will be revised in November.

Provisional bill impacts: 208% increase from FY26 to FY55

Dashboard

	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036
Usage Rate Increase	12.0%	20.0%	15.0%	15.0%	15.0%	10.0%	5.0%	5.0%	2.0%	2.0%	2.0%
Balance Excess/Deficiency	\$ 16,293,191	\$ 24,433,561	\$ 31,759,034	\$ 36,706,503	\$ 24,211,545	\$ 14,456,825	\$ 9,680,613	\$ 5,212,712	\$ 656,941	\$ 4,796,173	\$ 6,039,416
Debt Service Coverage	2.11	2.12	1.70	1.55	1.59	1.66	1.62	1.60	1.56	1.67	1.65
Annual Bill SFR	\$851.70	\$998.04	\$1,129.75	\$1,281.21	\$1,455.39	\$1,588.93	\$1,662.37	\$1,739.49	\$1,771.88	\$1,804.92	\$1,838.62
Debt Service/Revenue	15.42%	19.86%	27.12%	33.45%	35.54%	35.55%	36.48%	37.56%	39.09%	38.46%	38.60%
Cash Funded CIP		\$ -	\$ -	\$ -	\$ 20,000,000	\$ 20,000,000	\$ 15,000,000	\$ 15,000,000	\$ 15,000,000	\$ 10,000,000	\$ 10,000,000
Debt Funded Project Costs		\$ 15,119,206	\$ 15,572,782	\$ 16,039,966	\$ 4,063,831	\$ 4,785,746	\$ 3,783,845	\$ 4,347,360	\$ 4,927,781	\$ 1,114,383	\$ 1,447,815



Note: At the time of this presentation, costs and allocations are being QA/QC'ed. MWRA rates will then be calculated, leading to refined Somerville rates. Rate projections will be revised in November.

Next steps

Variance Waters CSO LTCP Update

2025 Activities

- Presentations to MWRA Boards
- Finalize FCA
- Produce report
- Submit draft recommended plan to EPA and DEP by December 31, 2025



2026 Activities

- Public mtg #6 on draft recommended plan
- Public hearing and public comment period
- Additional outreach in affected communities
- Team reviews comments and modifies plan



2027 and Beyond

- Final plan submitted January 2027
- EPA and DEP review and set the plan for further CSO control
- Design of projects
- **Construction!**

FY2027 Water & Sewer Rates

- Long-term Capital Investment Plan requirements
 - DEP/EPA approval of January 2027 Final Plan will establish legally-enforceable CIP for next 20+ years
 - Somerville must also consider critical pipeline rehabilitation and flood mitigation components of CIP
- Future revenue requirements and enterprise fund health
 - Critical to maintain financial metrics (debt service coverage, debt service to revenue ratio, total debt, revenue vs. expenses) to maintain bond rating
 - Raise rates early to cash-fund future projects
- **Prepare for annual rate increases of 15% to 20% for next 4 to 5 years**

Questions / Supplemental Slide Index

- Planning process [Slide 27](#)
 - Community outreach & engagement [Slide 28](#)
 - Tools for predicting CSO mitigation [Slide 33](#)
 - Vocabulary: “Typical Year” and “Level of Control” [Slide 38](#)
 - Alternatives, analysis & evaluation [Slide 44, 48](#)
- Eliminated alternative: Sewer separation [Slide 53](#)
 - Upstream contributions & downstream constraints [Slide 54](#)
 - Difficulties with & costs of sewer separation [Slide 58](#)
- Eliminated alternative: 25-Year level of control [Slide 64](#)
 - Large storms causes multiple system failures resulting in sanitary pollution [Slide 65](#)
 - Other sources of pollution and Charles/Alewife/Mystic water quality [Slide 69](#)
 - Scale & cost of CSO control [Slide 72](#)
 - Limitations of the Variance Water plan compared to success stories nationally [Slide 77](#)
 - Local efforts outside of the Variance Water plan to improve water quality [Slide 84](#)
- Eliminated alternative: Lower level of control [Slide 88](#)

Council action on File ID 25-1451

- Straw poll
 - “Does the Council support the recommended plan as presented, including the proposed level of control and projected rate impacts?”
- Discussion
 - Statements in support or opposed
- Item
 - Place on file, or
 - Keep open for further discussion

Supplemental Slides

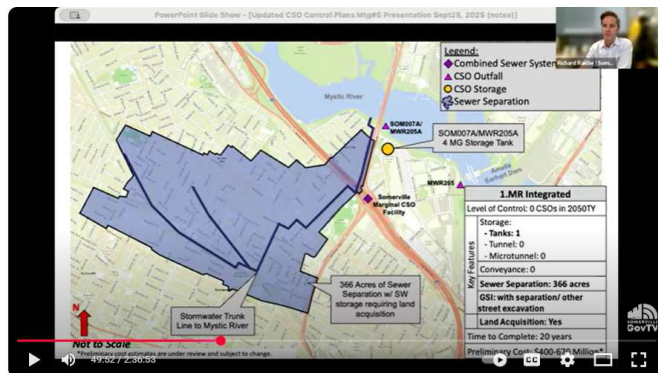
Planning process

Mechanics of drafting a recommended plan

Community outreach and engagement

Included in scope approved by DEP/EPA

CSO Plan Public Meetings



1. [CSO Control Plan Update - Public Mtg #1 June 29, 2022](#)
2. [CSO Public Mtg #2 - 12-15-22](#)
3. [Updated CSO Control Plan Public Meeting #3 Cambridge, Somerville, MWRA 11-15-23](#)
4. [Combined Sewer Overflow \(CSO\) Control Planning Update – January 2025](#)
5. [Updated Combined Sewer Overflow Control Plan Public Meeting 5 - September 25, 2025 – YouTube](#)
6. [Listening Session \(https://www.youtube.com/watch?v=k3jLXiODafg\)](https://www.youtube.com/watch?v=k3jLXiODafg)

CSO Plan Additional Engagement

- Monthly updates with DEP/EPA
- Workshops with CRWA, MyRWA & StAB
 - October 2023 in person – Tools, typical year, process
 - June 2024 in person – Alternatives development, mapping exercise
 - December 2024 virtual – Alternatives development, cost assumptions
 - September 2025 in person – Alternatives overview, evaluation criteria
- Asynchronous input through website and Menti polls
- Tabling at Civic Days and other events

City Council Presentations



City Council 22 May 2025 ID# 25-0966 –
CSOs, Updated LTCP, Examples &
Stormwater Billing Plan



City Council 13 March 2025 ID# 25-0510 –
Impacts of CSOs on Alewife Brook

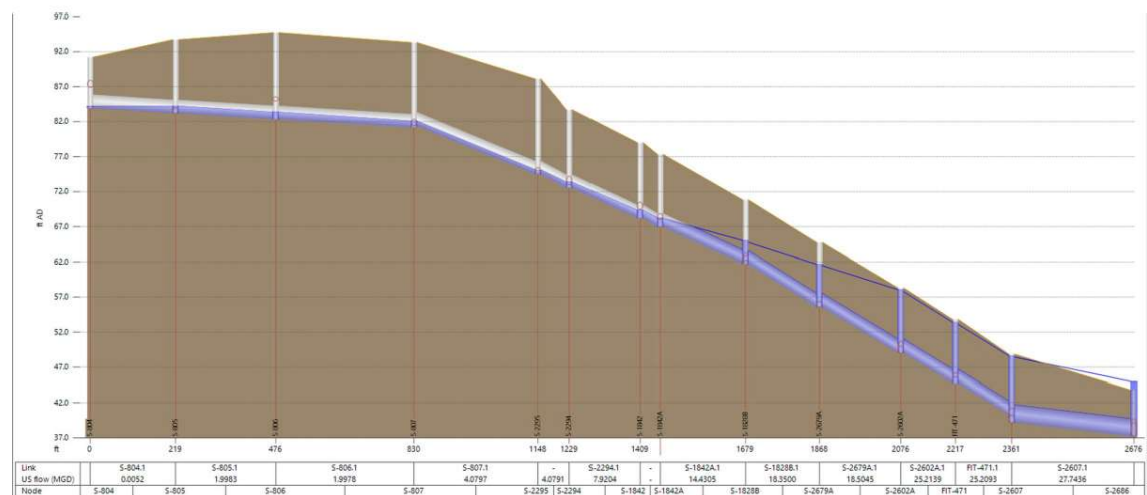
Additional Resources

- [Combined and Sanitary Sewer Overflow Control | City of Somerville](#)
- [Combined Sewer Overflow Control Planning Program - Joint efforts by Cambridge, MWRA, and Somerville | SomerVoice](#)
- [Save the Alewife Brook – environmental health is community health](#)
- [It's Time to Cut the Crap — Charles River Watershed Association](#)
- [Mystic River Watershed Association | MyRWA | Boston](#)

Tools for predicting CSO mitigation

Predicting CSO frequency and volumes for different size storms for current and future conditions

Hydraulic model of sewer system



The map displays the proposed MBTA Green Line Extension route through Cambridge and Allston. Key locations and features include:

- Locations:** Watertown, Meetinghouse Hill, Mount Auburn, Fresh Pond Reservation, Cambridge Central Square, Allston Village, and South End.
- Stations/Points of Interest:** CAM005, CAM007, CAM017, Cottage Farm MWR201, MWR010, MWR019, MWR023, and MWR020.
- Geographic Features:** Fresh Pond Reservation, Mount Auburn, and various parks and playgrounds.
- Infrastructure:** Major roads like I-90, I-93, and local streets such as Broadway, Harvard St, and Beacon St.
- Scale and Orientation:** A scale bar from 0 to 1 mile and a north arrow are included.

Typical Year, design storms, and climate change

Receiving Water	Future Baseline Condition Model Results						
	Activation Frequency		CSO Discharge Volume (MG)				
	Prior Typical Year	2050 Typical Year	Prior Typical Year	2050 Typical Year	2050 Largest Storm in the Typical Year (3.3 inches)	2050 5-year Storm (5.3 inches)	2050 25-year Storm (7.8 inches)
Charles River	3	6	7.9	38.4	16.6	65.5	120.6
Alewife Brook	8	13	9.9	20.9	4.84	20.9	40.1
Mystic River	2	8	1.3	29.3	10.5	17.4	27.2

The presentation from public meeting # 2 includes more details on climate change and precipitation simulations. The presentation from public meetings #3 and #4 includes details on resulting CSO frequency and volumes.

The presentation and recording is on the project webpage: <https://voice.somervillema.gov/joint-cso-planning>

Looking into the future to select a ‘Preferred Alternative’ – the 2050 Typical Year and 2050 Design Storms

- Selected the 2050 planning horizon for the CSO Control Plan (first in the nation!)
 - Developed the 2050 Typical Year (TY) as a rainfall series of 90 storms that range in intensity and duration
 - Identified 2050 design storms

24-hr Precipitation Depths (in)		
Return Period	NOAA Atlas 14 Baseline ¹	Cornell 2050 ^{2,3}
2-yr	3.3	4.0
5-yr	4.3	5.3
10-yr	5.2	6.4
25-yr	6.3	7.8
March 2010	6.2 (24-hr depth around the peak)	Total Depth: 10.3 in over 59 hours
Ida (Sept, 2021)	5.2	Total Depth: 5.2 in over 17 hours

REFERENCES

- Perica, S., Pavlovic, S., StLaurent, M., Trypaluk, C., Unruh, D., Martin, D. 2015. NOAA Atlas 14: Precipitation-Frequency Atlas of the United States; Volume 10 Version 3.0: Northeastern States. https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html
- Steinschneider, S., & Najibi, N. (2022). Observed and Projected Scaling of Daily Extreme Precipitation with Dew Point Temperature at Annual and Seasonal Scales across the Northeastern United States, Journal of Hydrometeorology, 23(3), 403-419. <https://journals.ametsoc.org/view/journals/hydr/23/3/JHM-D-21-0183.1.xml>
- Climate Resilience Design Standards & Guidelines. Climate Resilience Design Standards Tool. https://resilientma.org/rmat_home/designstandards/

“Level of Control”

Term used to describe how big a storm the system will handle

Four Levels of Control Being Evaluated

Receiving Water	Hydraulic Model Predictions				
	Activation Frequency	CSO Discharge Volume (MG)			
	2050 TY	2050 TY	2050 Largest Storm in TY	2050 5- year Storm	2050 25-year Storm
Upper Mystic	8	29.3	10.5	17.4	27.2
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Charles River	6	38.4	16.6	65.5	120.6

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Level 1: Significantly reducing CSO discharges from those predicted to occur in a 2050 Typical Year (“**Limited CSO in 2050 Typical Year**”)

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Level 1: Significantly reducing CSO discharges from those predicted to occur in a 2050 Typical Year (“**Limited CSO in 2050 Typical Year**”)

Level 2: No CSO in a 2050 Typical Year (“**0 CSOs in 2050 Typical Year**”)

Four Levels of Control Being Evaluated

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Level 1: Significantly reducing CSO discharges from those predicted to occur in a 2050 Typical Year (“**Limited CSO in 2050 Typical Year**”)

Level 2: No CSO in a 2050 Typical Year (“**0 CSOs in 2050 Typical Year**”)

Level 3: No CSO in a 2050 5-year, 24-hour design storm (“**0 CSOs in 2050 5-year storm**”)

Four Levels of Control Being Evaluated

Receiving Water	Hydraulic Model Predictions				
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Level 1: Significantly reducing CSO discharges from those predicted to occur in a 2050 Typical Year (“**Limited CSO in 2050 Typical Year**”)

Level 2: No CSO in a 2050 Typical Year (“**0 CSOs in 2050 Typical Year**”)

Level 3: No CSO in a 2050 5-year, 24-hour design storm (“**0 CSOs in 2050 5-year storm**”)

Level 4: No CSO in a 2050 25-year, 24-hour design storm (“**0 CSOs in 2050 25-year storm**”)

Alternatives

Envisioning ways to reconstruct the sewer systems

CSO Reduction and Elimination Tools



Sewer Separation



Regional Tunnel



Green Stormwater Infrastructure



Storage



Conveyance

The presentation from public meeting # 3 includes more details on each tool.

The presentation and recording is on the project webpage: <https://voice.somervillema.gov/joint-cso-planning>

Developing CSO Control Alternatives

What are CSO control alternatives?

A suite of CSO control tools that, in combination, meet a range of CSO reduction targets.

ALTERNATIVE 1



ALTERNATIVE 2



ALTERNATIVE 3



TOOLS ARE
THE BUILDING BLOCKS
FOR ALTERNATIVES.

The presentation from public meeting # 4 includes more details on building alternatives.

The presentation and recording is on the project webpage: <https://voice.somervillema.gov/joint-cso-planning>

39 Alternatives Under Consideration

Level of CSO Control	Number of Alternatives Under Consideration		
	Alewife Brook: 6 CSO Outfalls	Mystic River (Upper): 1 CSO Outfall	Charles River (Lower): 9 CSO Outfalls
Limited CSOs in the 2050 TY	2	3	2
0 CSOs in the 2050 TY	6	4	7
0 CSOs in the 2050 5-Year Storm	2	3	2
0 CSOs in the 2050 25-Year	2	3	2

The presentation from public meeting # 5 describes 37 alternatives.

The presentation and recording is on the project webpage: <https://voice.somervillema.gov/joint-cso-planning>

Analysis & Evaluation

Examining the relative pro's and con's of alternatives

Preferred Alternative Selection Considerations

- Level of CSO control
- Permitting uncertainty
- Site acquisition risks
- Capital Cost and Life Cycle Cost
- Timeline to implementation/CSO benefits
- Impact on priority, vulnerable, and environmental justice populations
- Benefits criteria

The presentation from public meeting # 5 provides details on the selection considerations.

The presentation and recording is on the project webpage: <https://voice.somervillema.gov/joint-cso-planning>

Benefits Criteria

Criteria Category	Evaluation Criterion
CSO Performance	Water quality impact; improve/reduce phosphorus loads
	Schedule: minimize duration to CSO reduction benefit
Construction	Minimize construction impacts
	• Impacts to public uses during construction • Neighborhood impacts during construction
	Minimize construction complexity/risk
	• Depth to excavation • Construction complexity
	Operation and maintenance/safety considerations
	Resiliency and adaptability
Operations, Maintenance & Resiliency	Opportunity to upgrade existing infrastructure
	Flooding: reduce sewer/stormwater flood risk
Community & Ancillary Benefits	Community co-benefits and long-term site impacts
	• Community co-benefits • Permanent impacts to public uses
	Impacts to non-variance CSOs

Stakeholder Input

- Reduce / eliminate CSOs and sanitary sewer overflows
- Improve ecosystem health
- Include near-term improvement to the Alewife
- Maximize nature-based solutions when possible
- Provide meaningful benefits to EJ communities and abutters
- Have a short construction timeline
- Reduce flooding and flood risk
- Are site-able
- Allow for increased recreation
- Rehabilitate sewer infrastructure
- Are coordinated with other municipal plans and goals
- *Minimize / Do not minimize neighborhood disruption during construction*
- *Prioritize / Do not prioritize cost and affordability to rate payers*

The presentation from public meeting # 5 provides details on the selection considerations.

The presentation and recording is on the project webpage: <https://voice.somervillema.gov/joint-cso-planning>

Scoring example

	Atlewife Brook					
WEIGHTED SCORES:	1. AB - Integrated Alternative	2. AB - Hybrid 1 Alternative	3. AB - Hybrid 2 Alternative	4. AB - Tunnel Alternative	5. AB - Tunnel + GSI Alternative	6. Sewer Separation
WS 1	228.4	265.0	244.7	205.6	215.2	248.9
WS 2	238.2	276.6	269.4	227.4	234.8	229.9
WS 3	230.2	249.0	268.6	237.5	231.3	157.8
WS 4	203.8	239.6	241.6	231.6	248.2	140.1
WS 5	251.3	287.1	299.1	281.6	305.7	193.6
WS 6	214.8	249.4	236.7	191.6	188.2	216.6
WS 7	207.4	239.7	219.6	183.5	182.7	224.2
WS 8	287.9	341.7	376.4	380.0	383.0	79.4
WS 9	214.8	249.4	236.7	191.6	188.2	216.6

	1. AB - Integrated Alternative	2. AB - Hybrid 1 Alternative	3. AB - Hybrid 2 Alternative	4. AB - Tunnel Alternative	5. AB - Tunnel + GSI Alternative	6. Sewer Separation
Preliminary Capital Cost (\$M)	521.3	382.7	303.6	590	617	1654
Timeline to Implementation	31y	20y	15	15-20	20	50+ years
Cost/MG controlled (\$/MG)	25.0	18.3	14.6	28.3	29.6	79.3
Components	0	Same	Same			
	CAM401A Storage (2.1 MG)	Int Alt Substituted: CAM401A Conveyance (600' 4400 LF) + Storage (1.5 MG)	Same			
	CAM401B Storage (0.4 MG)	SOM001A: 9' diam, 2900 LF Microtunnel (1.3 MG)	Hydr1 Substituted: CAM401B/ SOM001A: 9' diam, 5400 LF Microtunnel (2.3MG)	11' diam, 7600 LF	11' diam, 7600 LF	443 ac (SOM) + 438 ac (CAM) + treatment + flow attenuation
	SOM001A: 264 ac SS + inline throttles	Int Alt Substituted: SOM001A: 100 ac SS			29 imperv ac GSI	
	MWR003 Storage (0.5 MG)	Int Alt Substituted: MWR003 Storage (1.42 MG)	Same			
Total Score (Below the line)	21.48246908	24.93672731	23.67264728	19.15673981	18.82131661	21.65721003

[illegible]

Eliminated alternative: Sewer separation

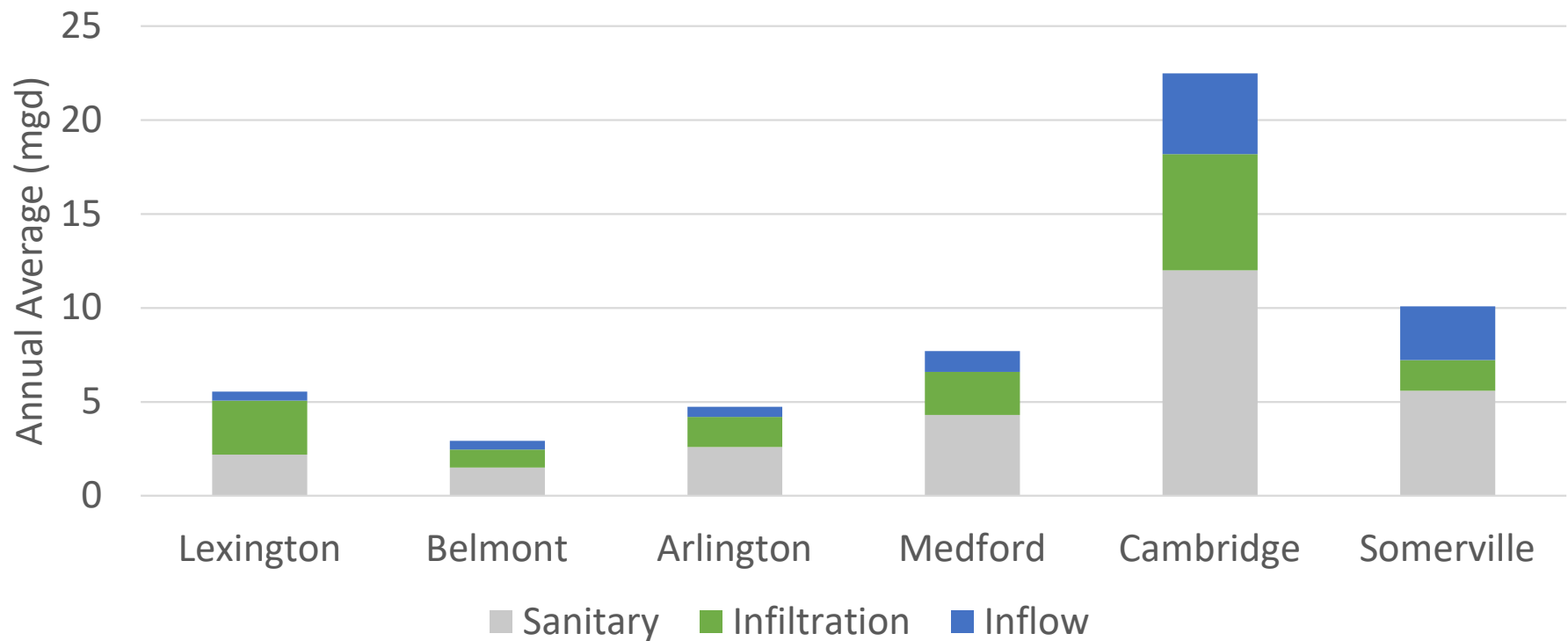
Full sewer separation seems like an obvious fix, why is that not the recommendation?

Sewer separation does not fully eliminate CSOs

Upstream contributions & downstream constraints create CSOs in any storm larger than the Typical Year

Infiltration and Inflow (I/I)

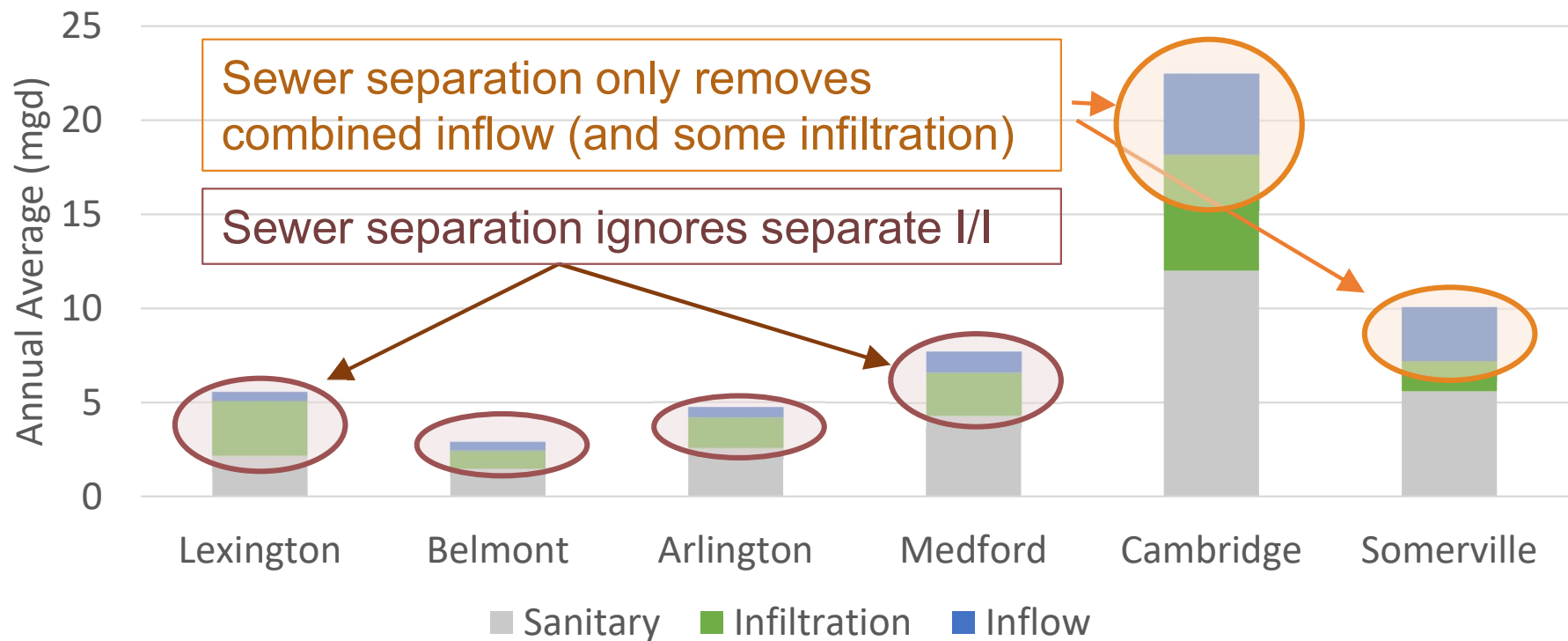
Estimated Area Flow Components



*Source: 2025 MWRA I/I Report page 107.

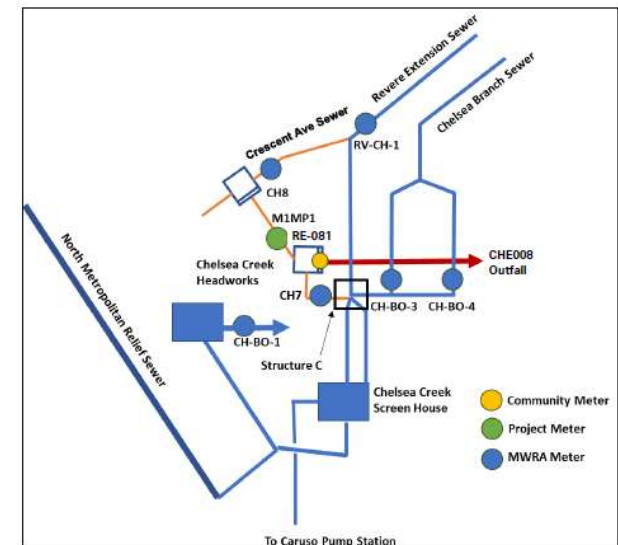
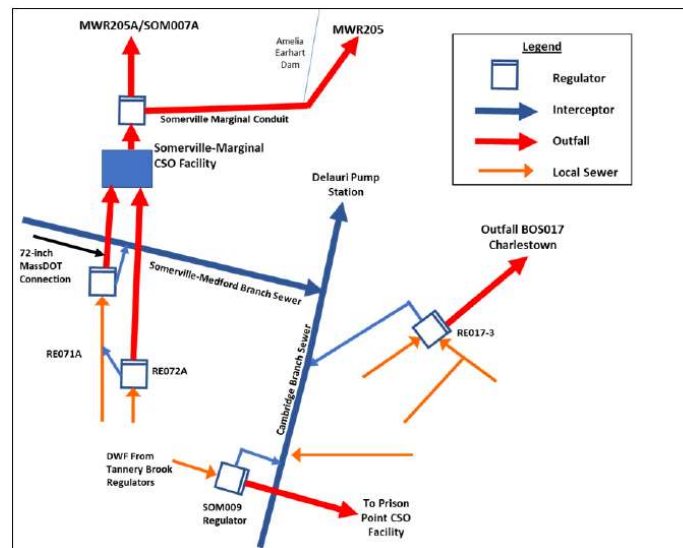
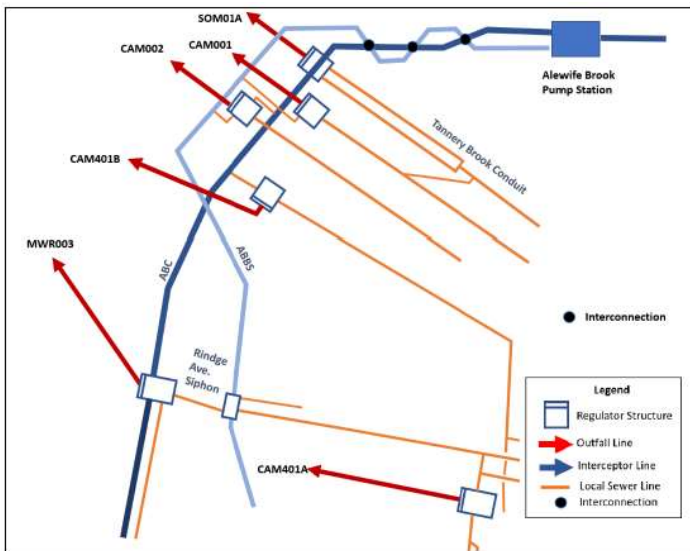
Infiltration and Inflow (I/I)

Estimated Area Flow Components



*Source: 2025 MWRA I/I Report page 107.

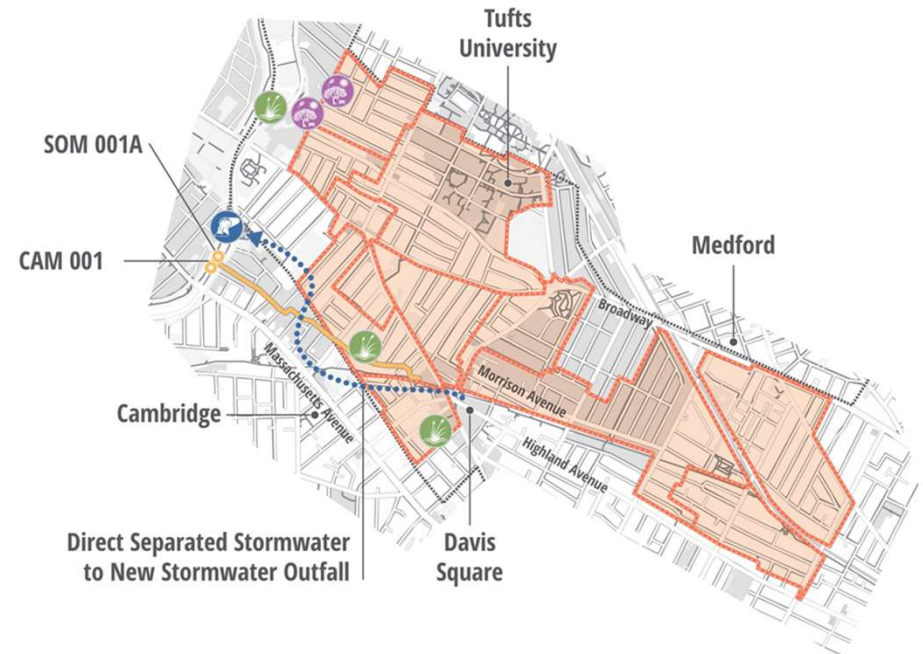
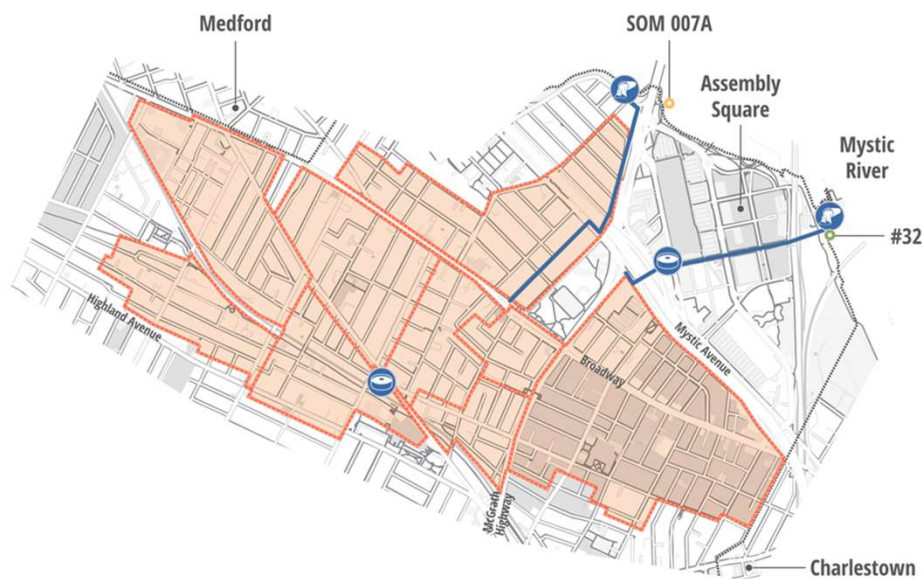
Regional system constraints



Sewer separation is very difficult to achieve

The region grew around pipes from the 19th Century, the replacement systems need to accommodate climate change, and outfalls must mitigate stormwater pollution.

Multiple new outfall pipes, stormwater storage tanks, pumping & treatment



Information on preliminary design Mystic River Outfall and Sewer Separation project: <https://voice.somervillema.gov/mystic-river-outfall>
Virtual community meeting 29 October 2025: https://us06web.zoom.us/webinar/register/WN_N2eQE99FRECRyJa6srkrqg#/registration

6.AB Sewer Separation
5.MR Sewer Separation
7.CR Sewer Separation

Level of Control: 0 CSOs in 2050TY

Key Features

Storage:

- Tanks: 0
- Tunnel: 0
- Microtunnel: 0

Conveyance: 0

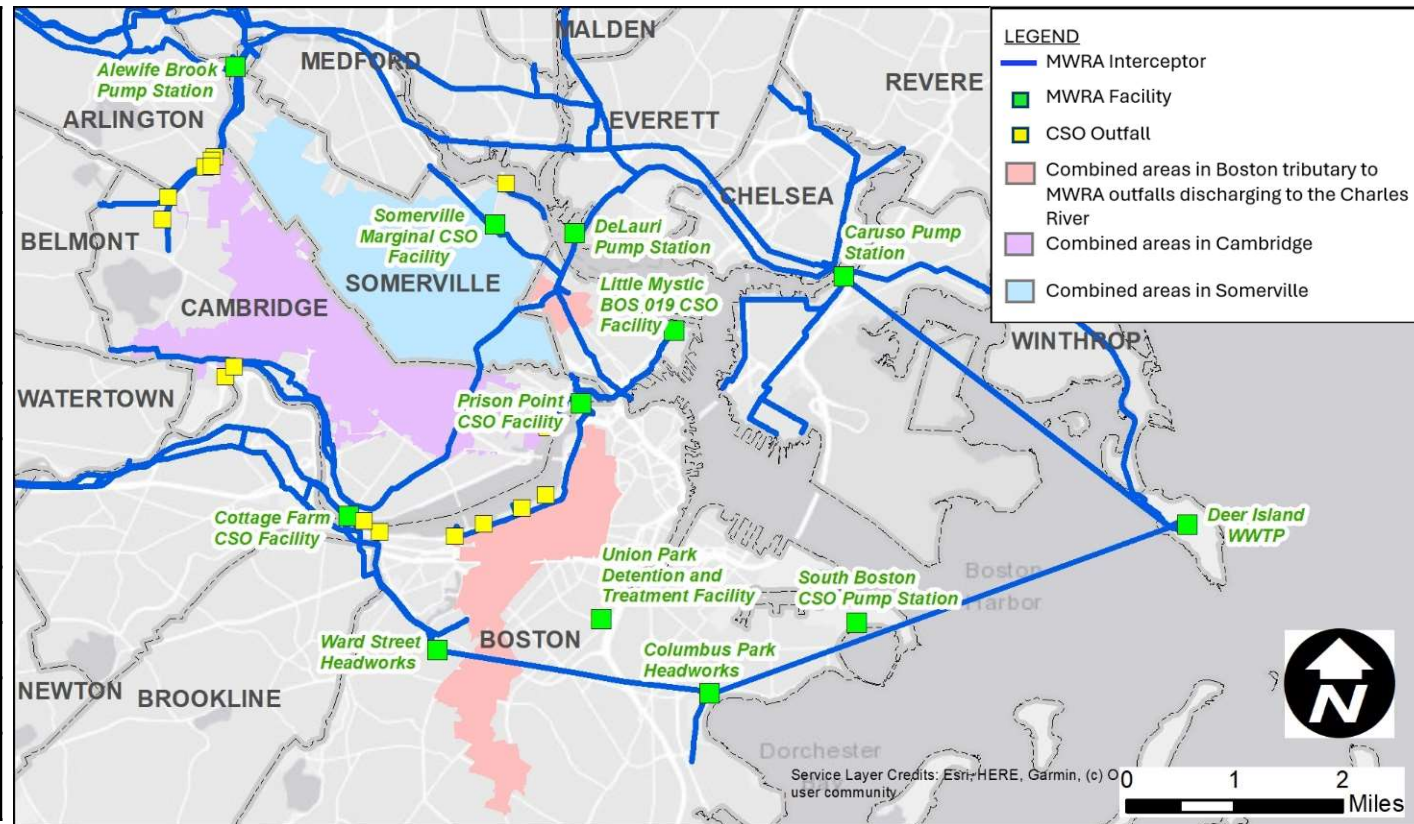
AB Sewer Separation: 900 acres
MR Sewer Separation: 690 acres
CRSewer Separation: 4,400 acres

GSI: with separation

Land Acquisition: Yes

Time to Complete: 50+ years

Preliminary Cost: \$6,840 Million



*Preliminary cost estimates are under review and subject to change.

- **Any storm greater than the largest storm in the 2050 TY storm produces CSOs!**



2024 FCA Guidance – Measure of Financial Burden

EPA has published guidance on how to complete an FCA and offers two alternative approaches

Alternative 1:

- ✓ The financial impact of current and proposed CSO controls on residential users
- ✓ “Snapshot in time” of current & projected system costs

Alternative 2:

- ✓ Long-term financial plan and rate model that evaluates the annual impacts of current and proposed CSO controls.
- ✓ Annual utility rate increases necessary to fund the plan
- ✓ Resulting annual residential customer bills

Provisional FCA results

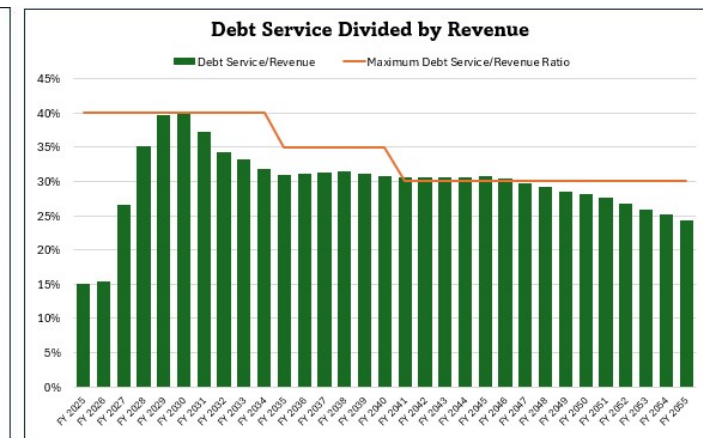
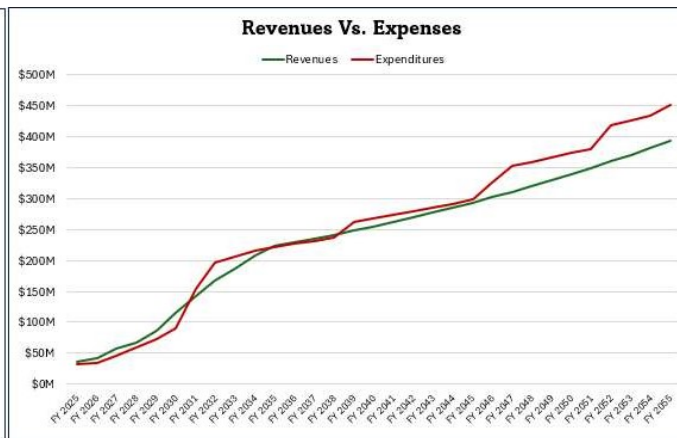
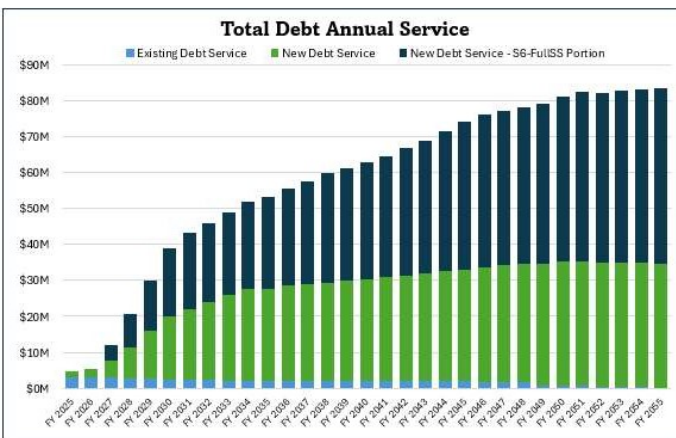
- Alt 1 Residential Indicator
 - Cost per Household = 4.52% MHI – High Burden
- Alt 2 Residential Indicator
 - Mid-Range Burden FY2029 through FY2033
 - High Burden starting in FY2034
- Alt 2 Lowest Quintile Residential Indicator
 - High Burden starting in FY2031
- **EPA methodology indicates Somerville does not have the financial capacity to undertake this plan on this schedule and would need more than 50 years to complete it**

Note: At the time of this presentation, costs and allocations are being QA/QC'ed. FCA will be revised in November.

Bill impacts: 673% increase from FY26 to FY55

Dashboard

	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036
Usage Rate Increase	12.0%	30.0%	30.0%	29.0%	29.0%	19.0%	15.0%	10.0%	10.0%	5.0%	3.0%
Balance Excess/Deficiency	\$ 16,293,191	\$ 26,656,046	\$ 34,243,369	\$ 47,697,330	\$ 72,556,918	\$ 60,397,348	\$ 31,270,018	\$ 11,452,378	\$ 3,726,979	\$ 5,262,677	\$ 6,733,895
Debt Service Coverage	2.11	1.75	1.59	1.63	1.79	2.02	2.25	2.37	2.53	2.66	2.64
Annual Bill SFR	\$851.70	\$1,071.21	\$1,356.57	\$1,715.18	\$2,177.78	\$2,568.76	\$2,936.07	\$3,217.68	\$3,527.45	\$3,697.82	\$3,805.16
Debt Service/Revenue	15.42%	26.52%	35.08%	39.71%	39.92%	37.26%	34.31%	33.13%	31.76%	30.97%	31.20%
Cash Funded CIP		\$ -	\$ -	\$ -	\$ -	\$ 50,000,000	\$ 80,000,000	\$ 80,000,000	\$ 80,000,000	\$ 80,000,000	\$ 80,000,000
Debt Funded Project Costs		\$ 81,811,963	\$ 84,266,322	\$ 86,794,312	\$ 89,398,141	\$ 42,080,085	\$ 14,842,488	\$ 17,687,762	\$ 20,618,395	\$ 23,636,947	\$ 26,746,055



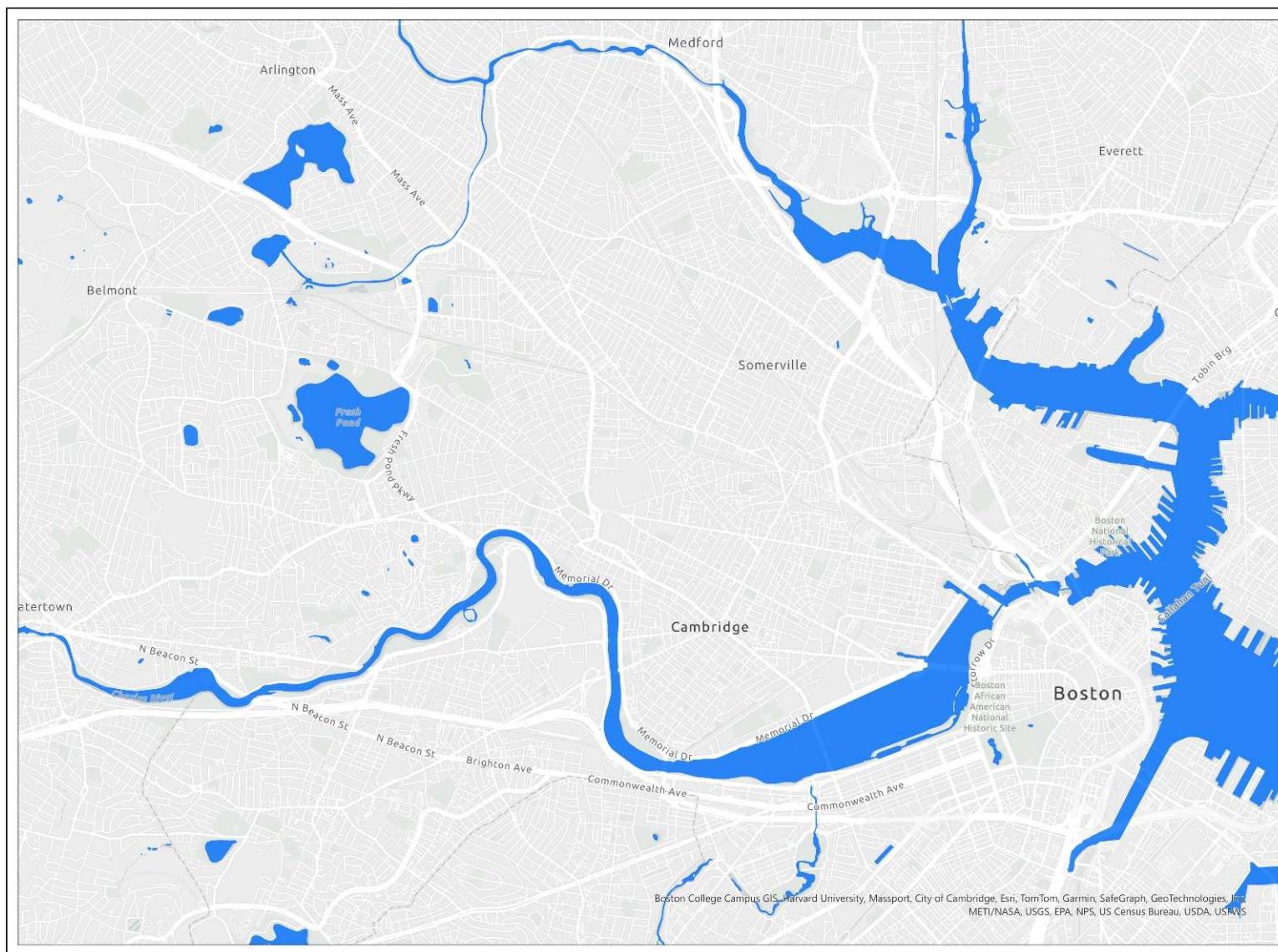
Note: At the time of this presentation, costs and allocations are being QA/QC'ed. Rate projections will be revised in November.

Eliminated alternative: 25-Year level of control

We're planning for the future, why not aim higher?

7.8 inches of rain in 24 hours breaks the system

Even with CSO mitigation to the 25-year level of control,
sanitary flows contaminate neighborhoods and
waterways

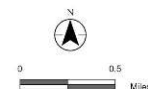


Title
Basemap

Client/Project
 Updated CSO Control Plan

Map Revised: September 2025

Project Location
 Greater Boston Area, MA



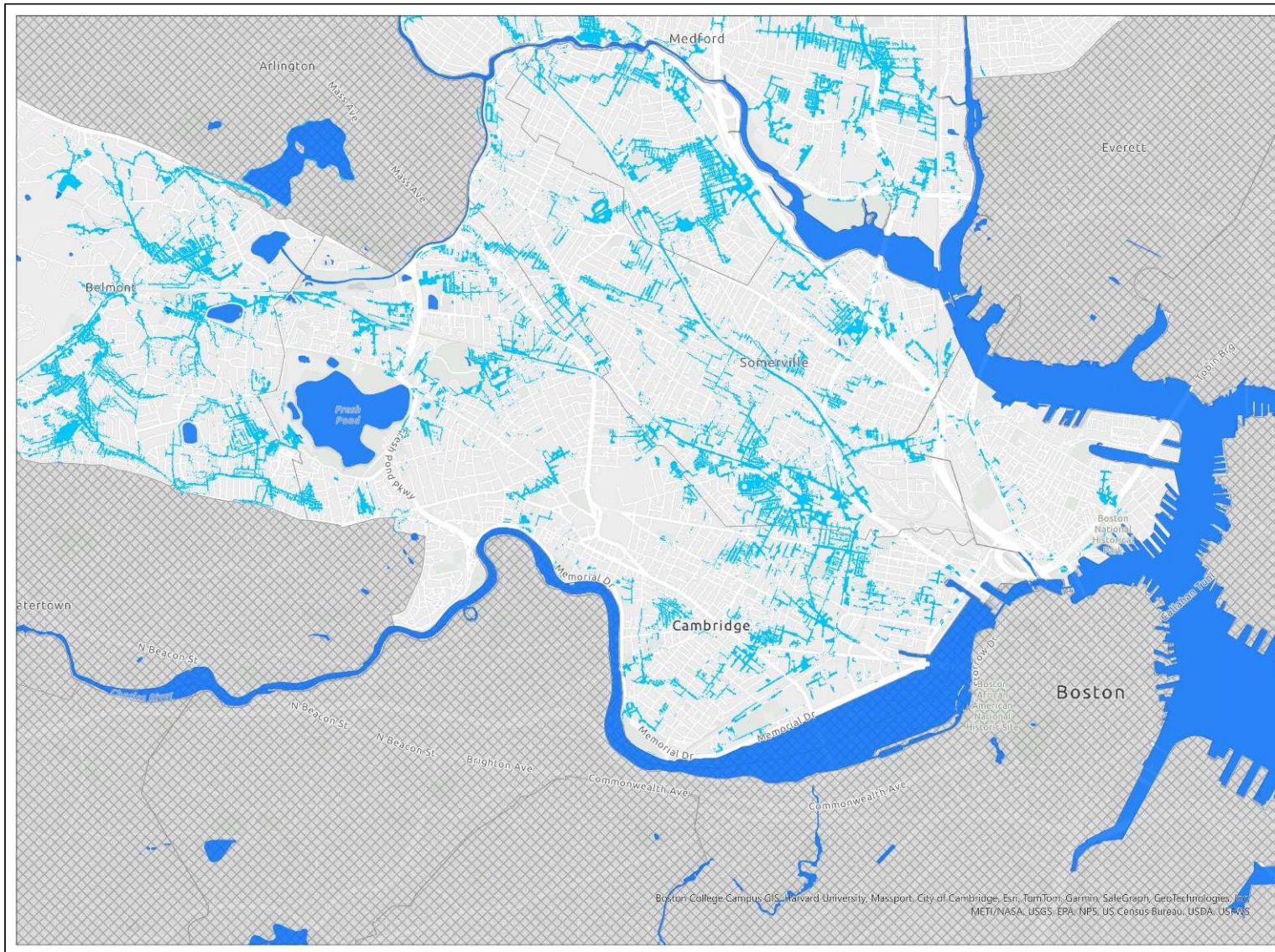
Legend

Permanent Water Body

Notes
 1. Coordinate System: NAD 1983 StatePlane
 Massachusetts Mainland FIPS 2001
 2. InfoWorks ICM model results overlaid onto regional
 DEM to determine depth of inundation

Boston College Campus GIS, Harvard University, Massport, City of Cambridge, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc.
 METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS



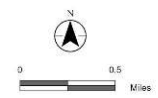


Title
Inland Flood Extents
25yr 2050 Event

Client/Project
 Updated CSO Control Plan

Map Revised: September 2025

Project Location
 Greater Boston Area, MA



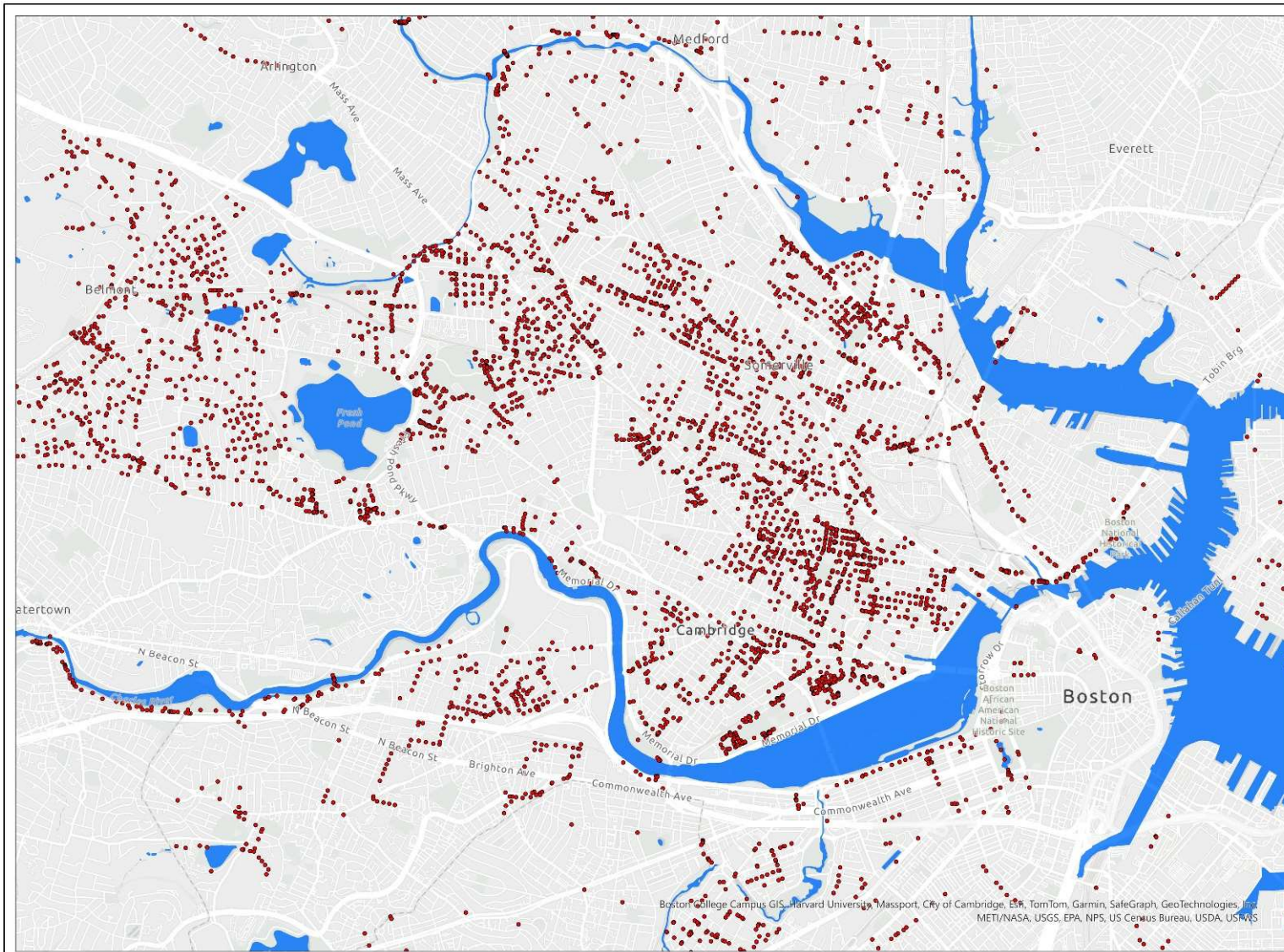
- Legend**
- 25yr Flood Extents
 - Permanent Water Body
- Model_Detail**
- Local Flood Model
 - MWRA Pipe Model

Notes

1. Coordinate System: NAD 1983 StatePlane Massachusetts Mainland FIPS 2001
2. InfoWorks ICM model results overlaid onto regional DEM to determine depth of inundation

Boston College Campus GIS, Harvard University, Massport, City of Cambridge, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USNWS



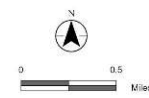


Title
Flooded Sewer / Drain MHs
25yr 2050 Event

Client/Project
 Updated CSO Control Plan

Map Revised: September 2025

Project Location
 Greater Boston Area, MA



Legend

- 25yr Flooded MH
- Permanent Water Body

Notes
 1. Coordinate System: NAD 1983 StatePlane
 Massachusetts Mainland FIPS 2001
 2. InfoWorks ICM model results overlaid onto regional
 DEM to determine depth of inundation

Boston College Campus GIS, Harvard University, Massport, City of Cambridge, ESRI, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc.
 METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS



Other sources of pollution

Example sources of pollution in our waterbodies

Dry weather	Stormwater	CSOs
• Illicit connections • Leaky sewer pipes • Wildlife and dog excrement • Decomposing leaves	• Pathogens (bacteria, viruses) • Oil and grease • Nutrients (Phosphorus, Nitrogen) • Trash • Others	• Pathogens (bacteria, viruses) • Oil and grease • Wipes • Nutrients (Phosphorus, Nitrogen) • Pharmaceuticals • Industrial waste • Others

These pollutants have negative impacts on water quality, environmental health, and public health.

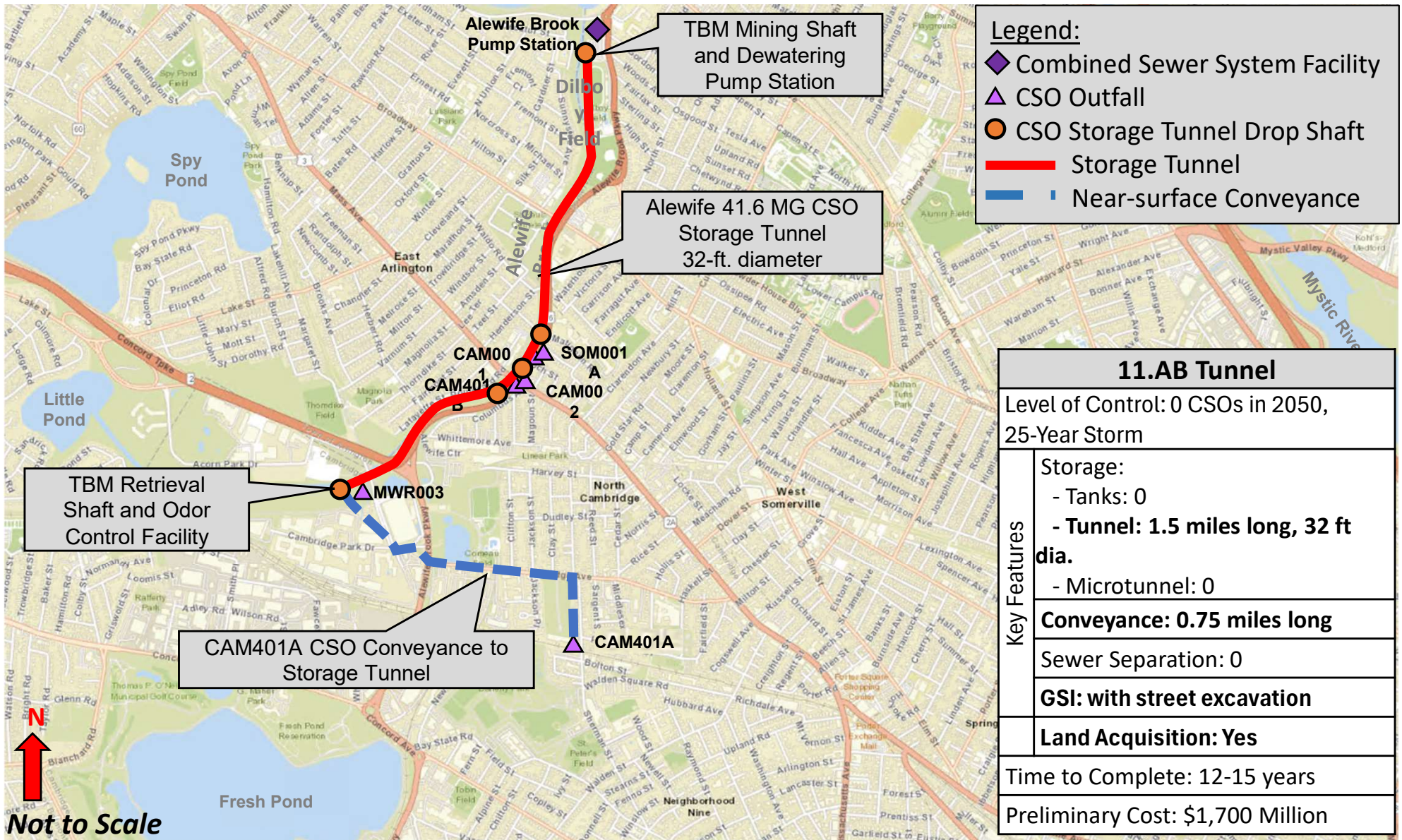
Eliminating CSOs alone does not result in swimmable and fishable waterbodies.

Water Quality model results

Percentage Time Entire Modeled River is in Compliance with Previous Single Sample Maximum Criterion

Model Run	<i>E. coli</i> (235#/100mL)				<i>Enterococcus</i> (61#/100mL)			
	All Sources	Non-CSO Sources	CSO Only	Stormwater Only	All Sources	Non-CSO Sources	CSO Only	Stormwater Only
Alewife Brook								
2050 Typical Year	36%	36%	99%	38%	35%	35%	99%	38%
Mystic River								
2050 Typical Year	45%	45%	96%	46%	30%	30%	95%	46%

CSO Projects for 25-Year level of control



12.MR Hybrid 1

Level of Control: 0 CSOs in 2050,
25-Year Storm

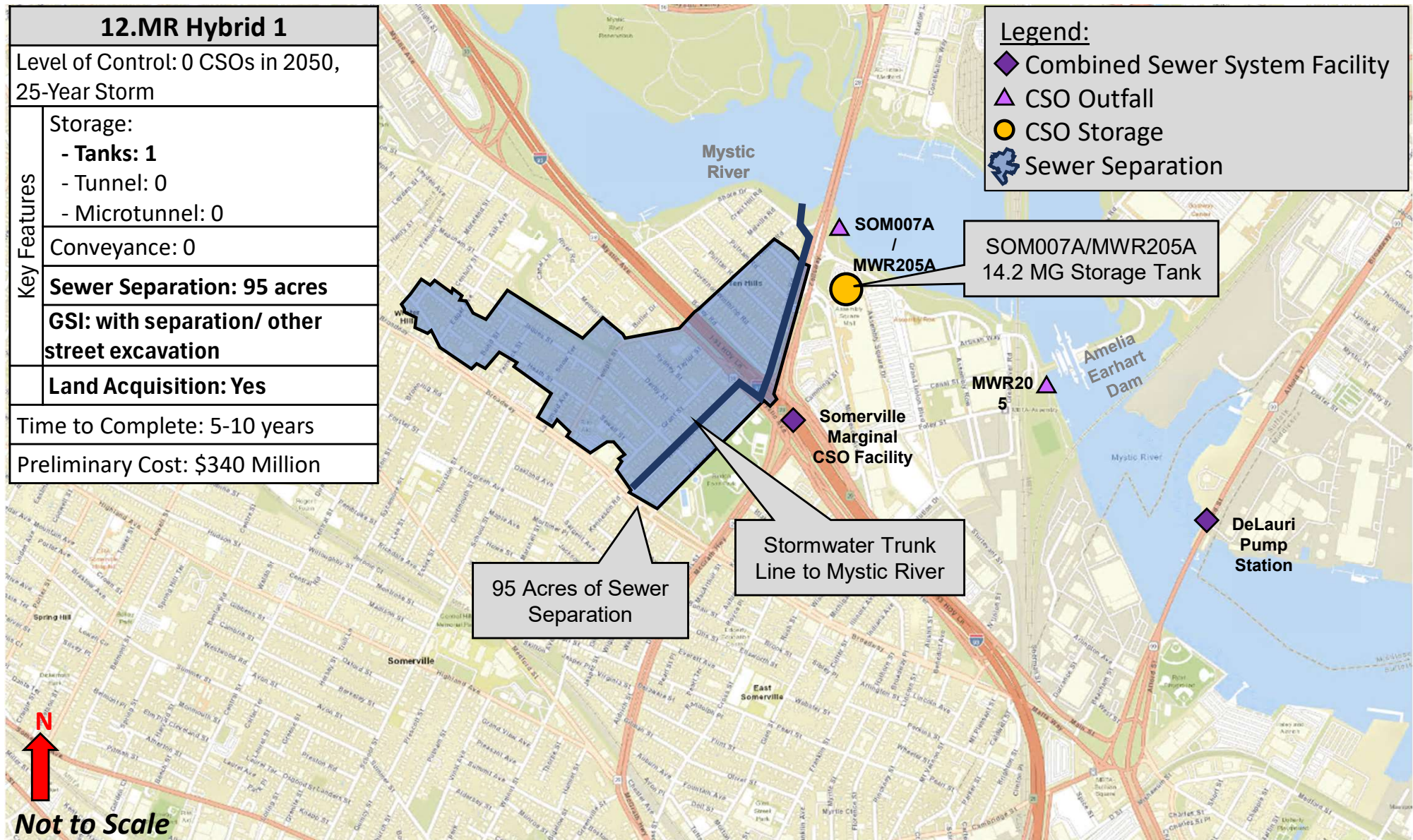
Key Features	Storage:
	- Tanks: 1
	- Tunnel: 0
	- Microtunnel: 0
	Conveyance: 0
Sewer Separation: 95 acres	GSI: with separation/ other street excavation
	Land Acquisition: Yes

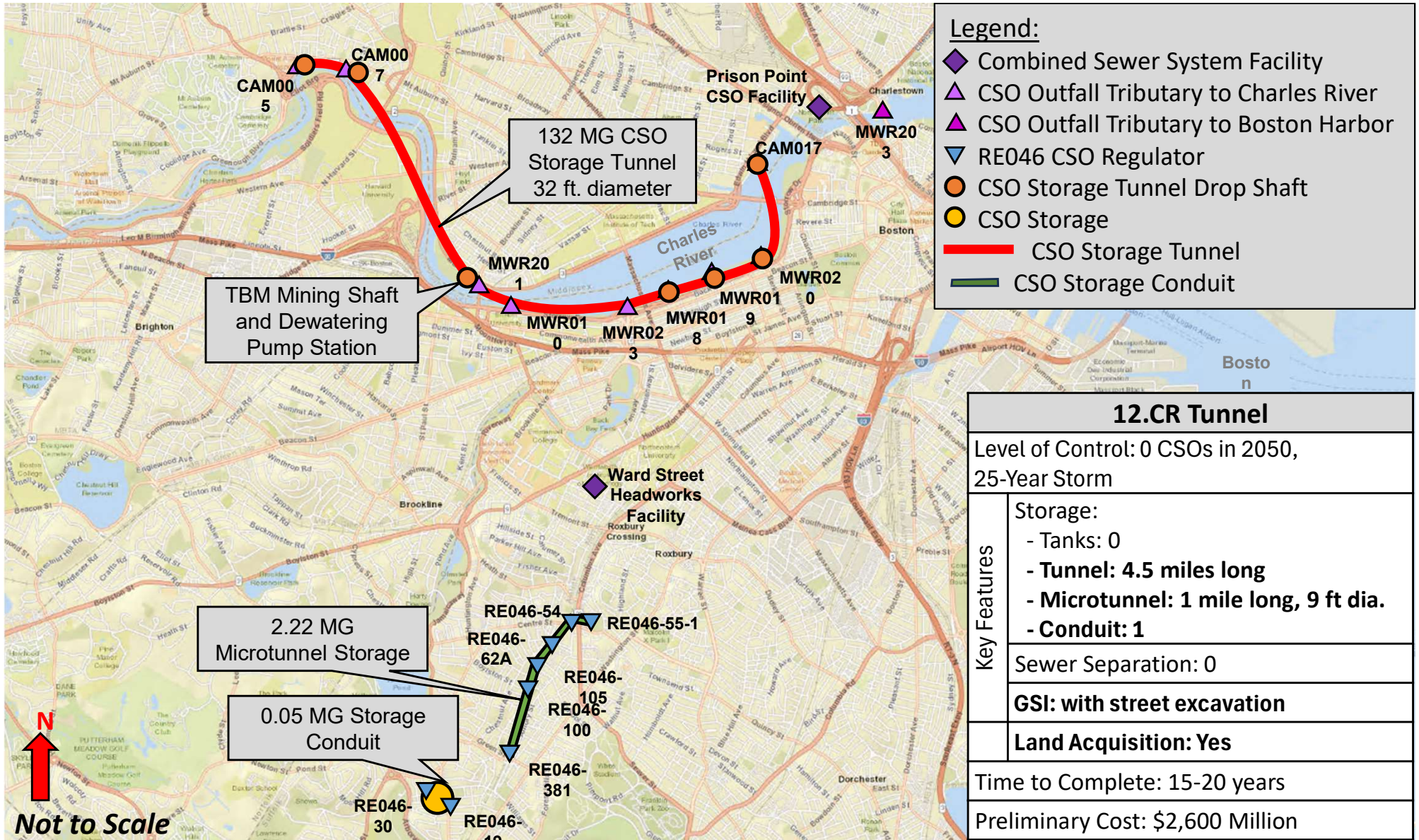
Time to Complete: 5-10 years

Preliminary Cost: \$340 Million

Legend:

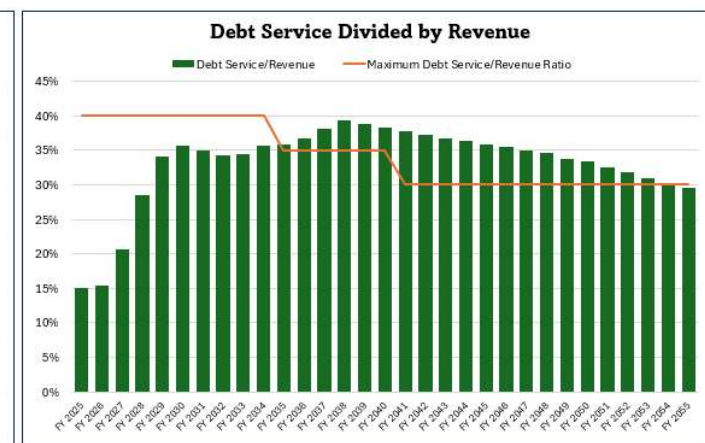
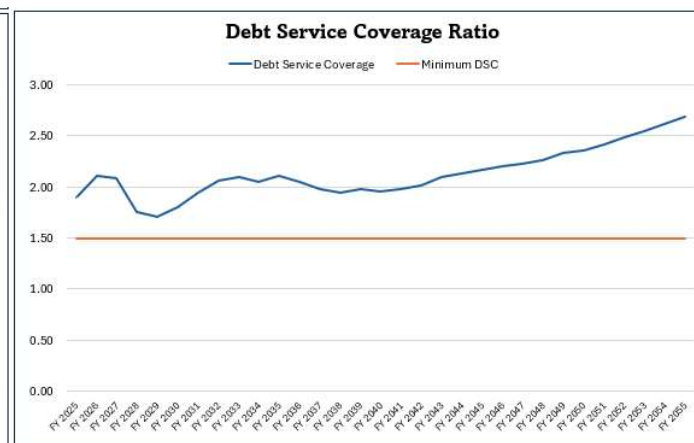
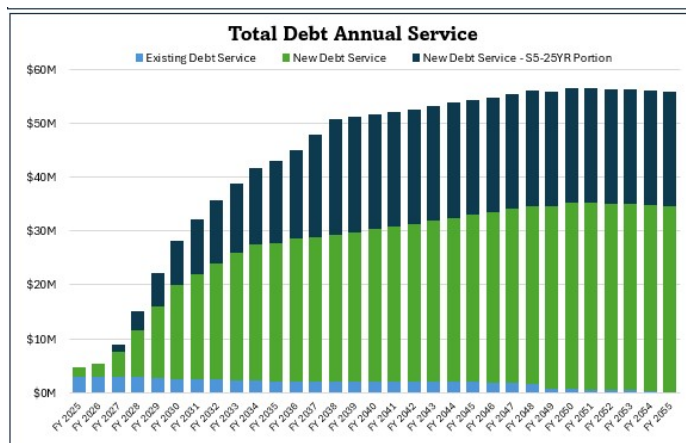
- ◆ Combined Sewer System Facility
- ▲ CSO Outfall
- CSO Storage
- ⚙ Sewer Separation





Bill impacts: 347% increase from FY26 to FY55

Dashboard	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036
Usage Rate Increase	N/A	12.0%	23.0%	23.0%	22.5%	22.0%	16.0%	13.5%	8.0%	3.0%	2.5%	2.0%
Balance Excess/Deficiency	\$ 10,686,098	\$ 16,293,191	\$ 1,124,577	\$ 253,001	\$ 392,989	\$ 2,001,801	\$ 4,071,708	\$ 10,409,732	\$ 6,070,403	\$ 2,755,596	\$ 3,386,967	\$ 869,548
Debt Service Coverage	1.90	2.11	2.08	1.76	1.70	1.80	1.94	2.06	2.10	2.05	2.11	2.04
Annual Bill SFR	\$817.59	\$851.70	\$1,019.99	\$1,226.99	\$1,476.06	\$1,774.39	\$2,039.10	\$2,298.18	\$2,472.43	\$2,543.00	\$2,603.58	\$2,653.25
Debt Service/Revenue	14.97%	15.42%	20.72%	28.57%	34.11%	35.68%	35.01%	34.27%	34.36%	35.62%	35.80%	36.70%
Cash Funded CIP			\$ 24,000,000	\$ 10,000,000	\$ 10,000,000	\$ 15,000,000	\$ 22,000,000	\$ 25,000,000	\$ 40,000,000	\$ 40,000,000	\$ 40,000,000	\$ 40,000,000
Debt Funded Project Costs			\$ 25,368,186	\$ 40,849,231	\$ 42,374,708	\$ 38,945,950	\$ 33,564,328	\$ 32,231,258	\$ 18,948,196	\$ 20,716,642	\$ 22,538,141	\$ 24,414,285



Still Mid-Range Burden for Somerville. Other MWRA communities TBD

Note: At the time of this presentation, costs and allocations are being QA/QC'ed. Rate projections will be revised in November.

Comparison to plans in other regions

If other cities can do it, why can't we?

- 9 square miles



City of Somerville, Massachusetts
Department of Infrastructure & Asset Management

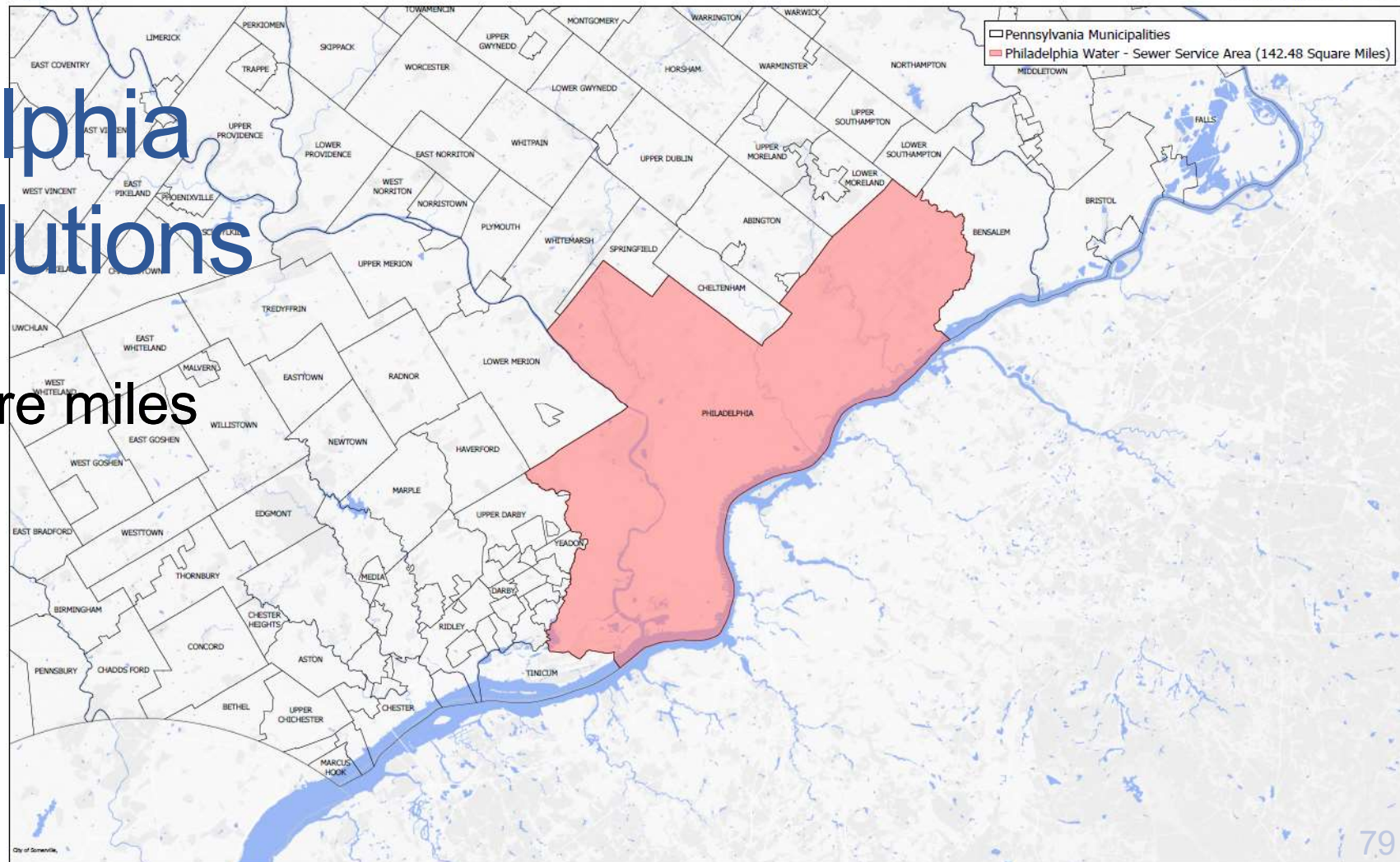
0 2 4 8 Miles



Philadelphia Water - Sewer Service Area
October, 2025 - Draft

Philadelphia GSI Solutions

- 143 square miles



Washington DC Stormwater Solutions

- 982 square miles

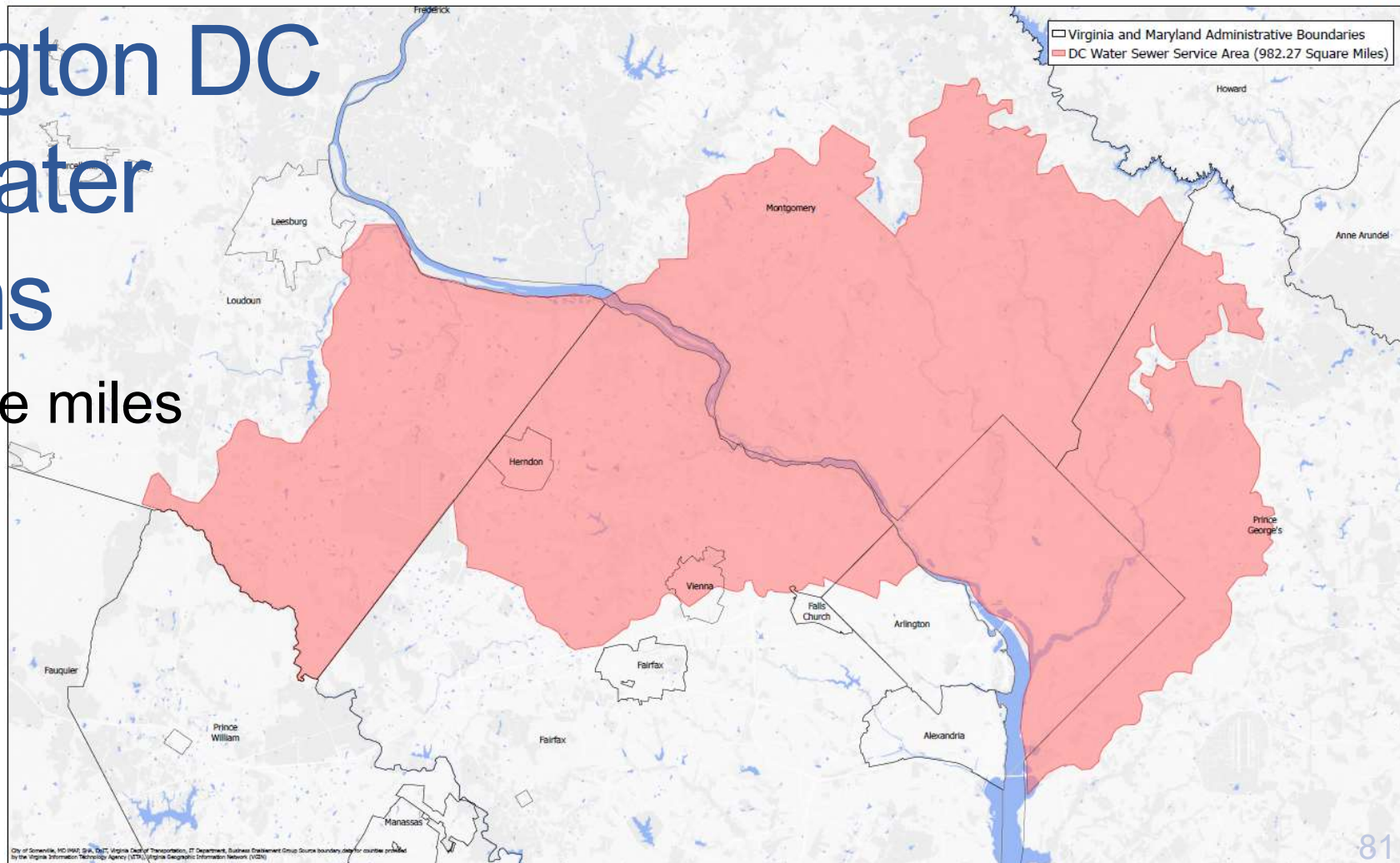


City of Somerville, Massachusetts
Department of Infrastructure & Asset Management

0 2 4 8
Miles



DC Water - Sewer Service Area
October, 2025 - Draft

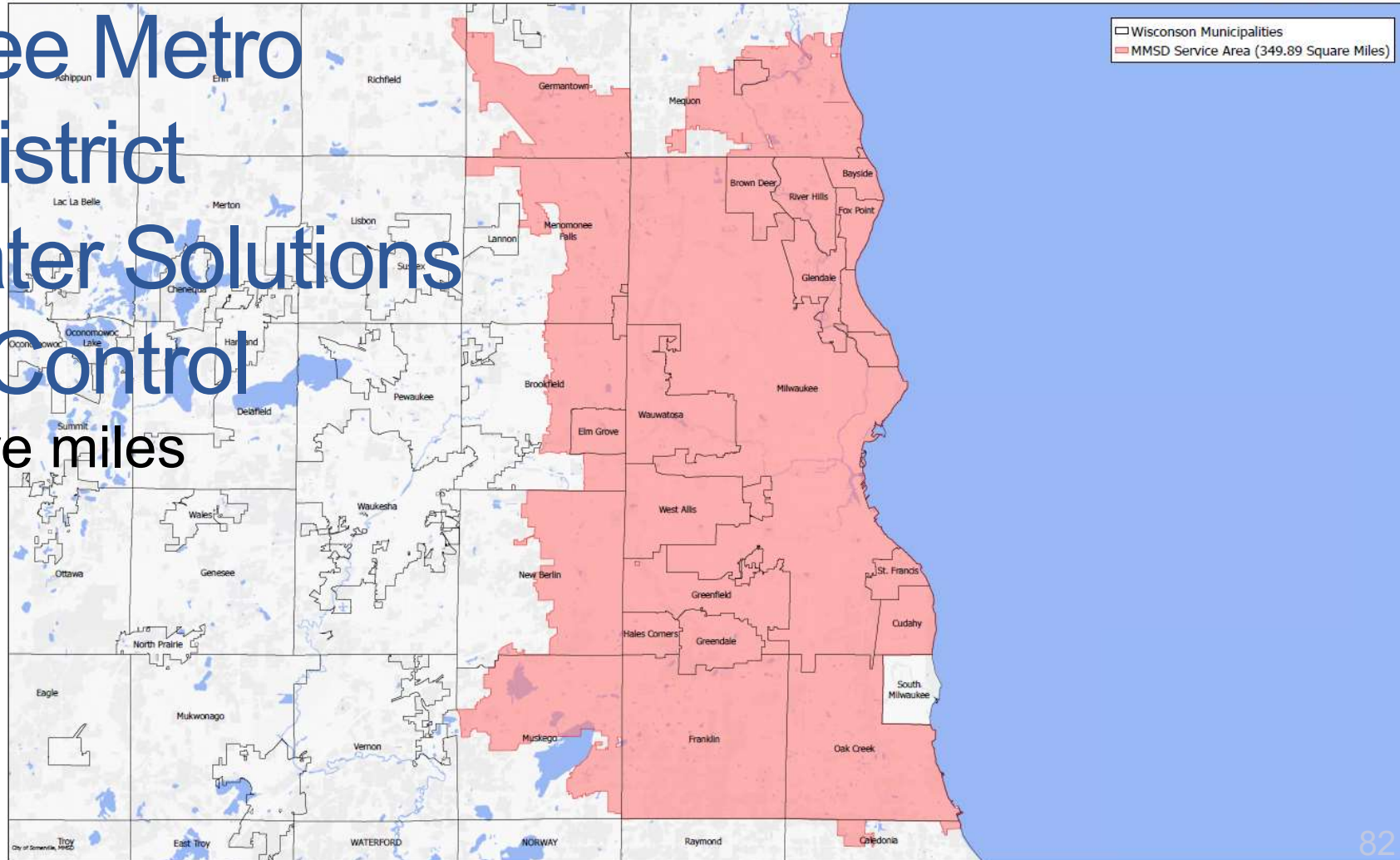


City of Somerville, MA (2020). Data: Virginia Dept. of Transportation, IT Department, Business Development Group. Source: boundary data for counties provided by the Virginia Information Technologies Agency (VITA), Virginia Geographic Information Network (VGIN).



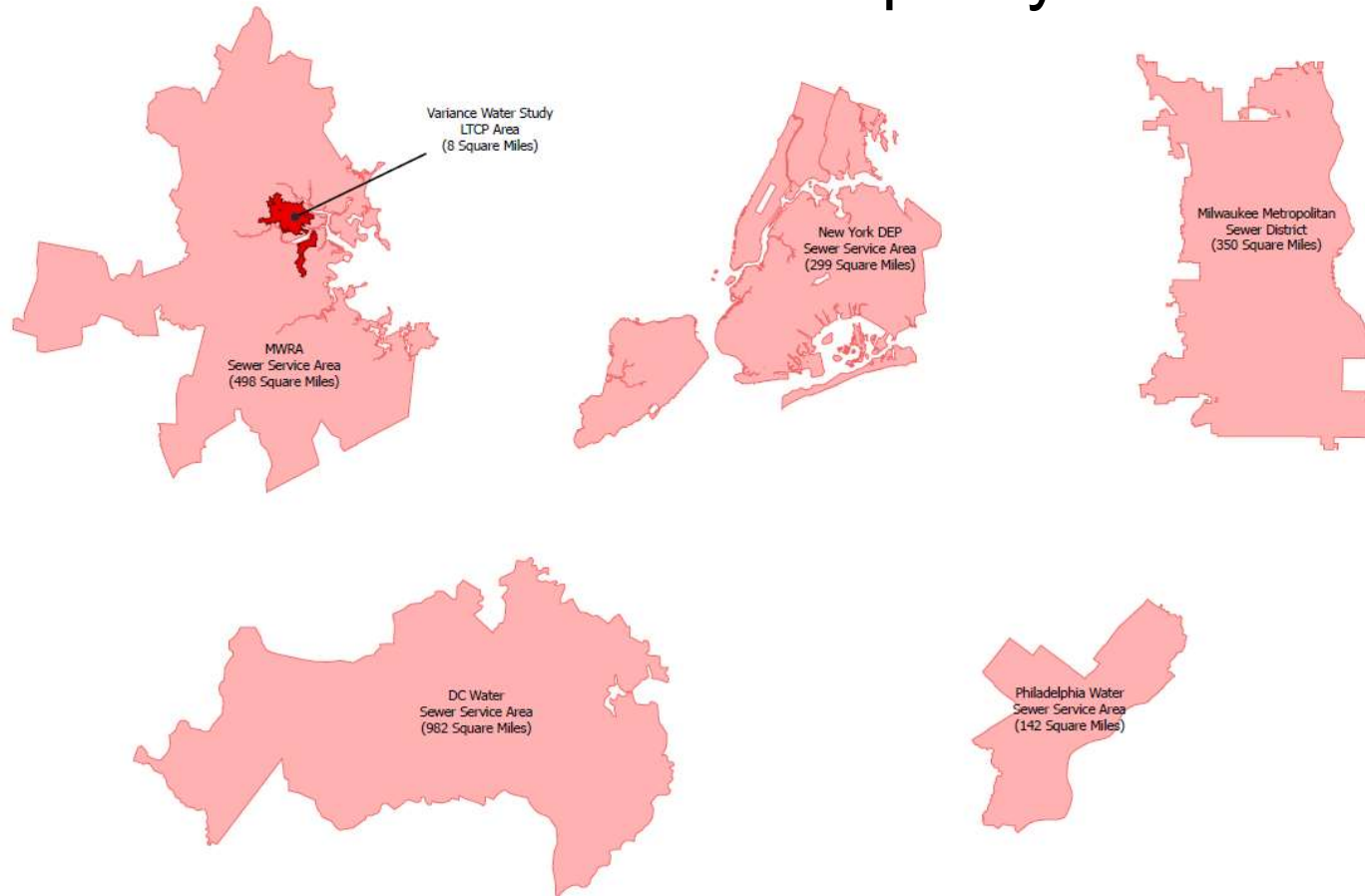
Milwaukee Metro Sewer District Stormwater Solutions & Flood Control

- 350 square miles



Responsibilities & opportunities

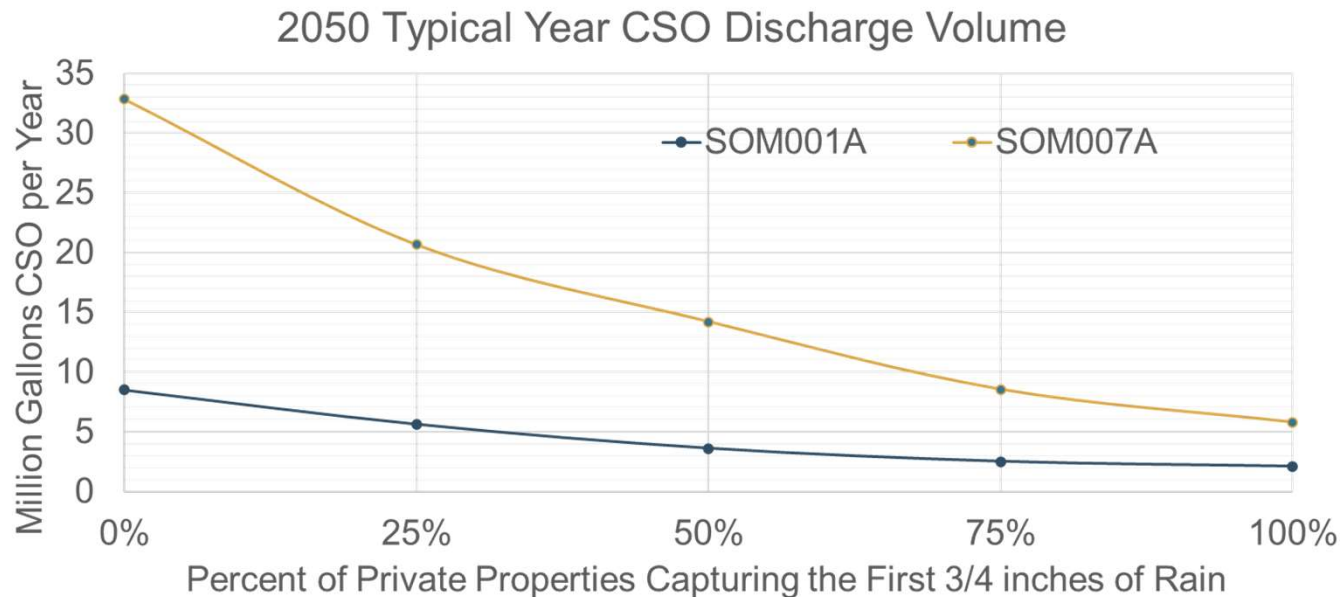
CSOs, stormwater & overall water quality



Efforts outside the Variance Waters CSO LTCP Update

Somerville Stormwater Fee & Credits

- Program is designed to incentivize on-site stormwater management



See City Council 22 May 2025 meeting ID# 25-0966 for details.

IAM-Engineering is working on public outreach materials. Please stay tuned.

Cambridge City Council

Policy Order 2025 #136

- Consider costs & benefits of meeting 2050 25-year level of control
- Update stormwater regulations for private development
- Public outreach on sewer/stormwater investments
- Create Combined Sewer Overflow Commission

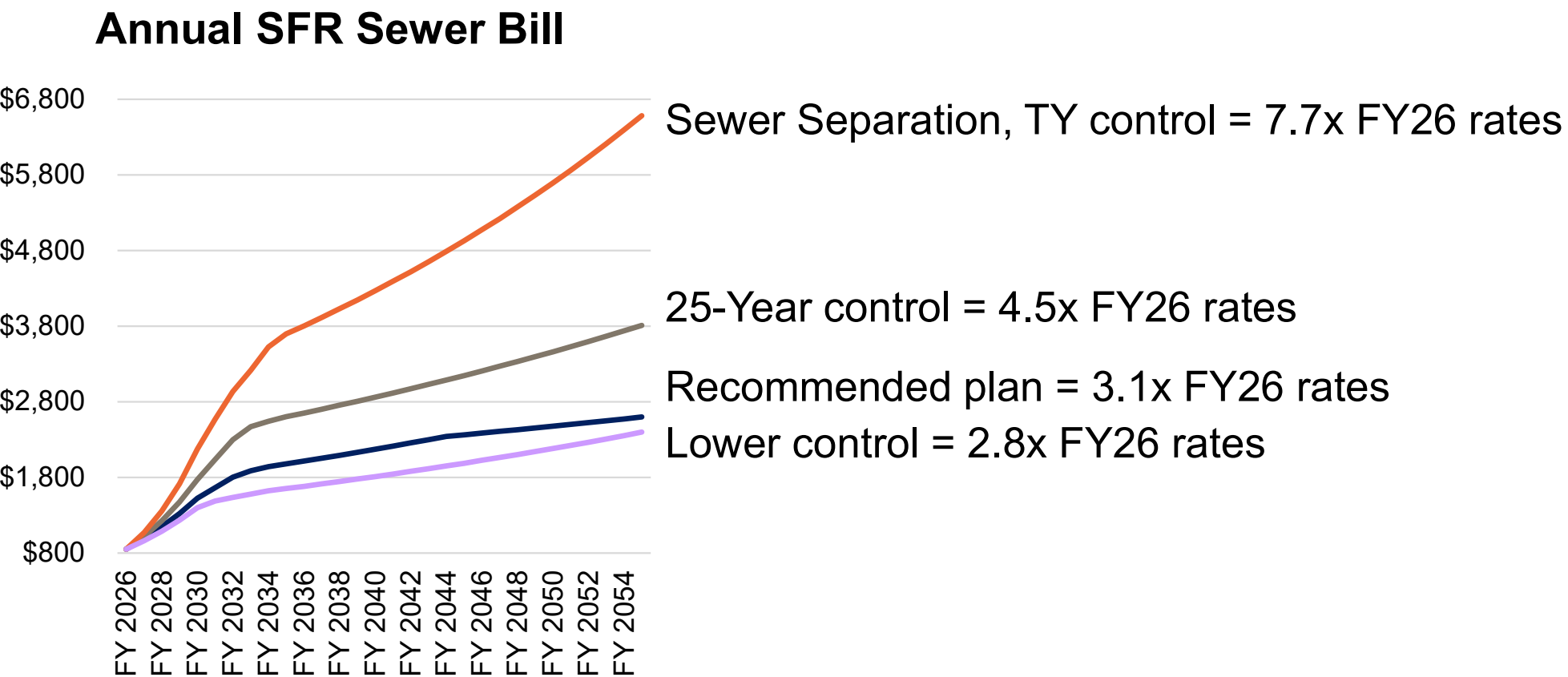
Pending legislation

- In Joint Committee on Environment and Natural Resources
 - S.608/H.1031 - An Act Relative to Combined Sewer Overflows
 - H.1046 – An Act to Eliminate Combined Sewer Overflows in Massachusetts Waterways
 - S.658/H.3938 – An Act Pertaining to Regional Resilience and Flood Protection Entities
- In Joint Committee on Housing
 - S.1014 – An Act to Provide Sewer & Water Rate Relief

Eliminated alternative: Lower level of control

Why not submit a modest mitigation plan that minimizes rate impacts?

Marginal cost savings do not justify discharge



Draft Combined Sewer Overflow Updated Long Term Control Plan

*File ID 25-1451 Officer's Communication
to City Council*

Infrastructure & Asset Management
23 October 2025

