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

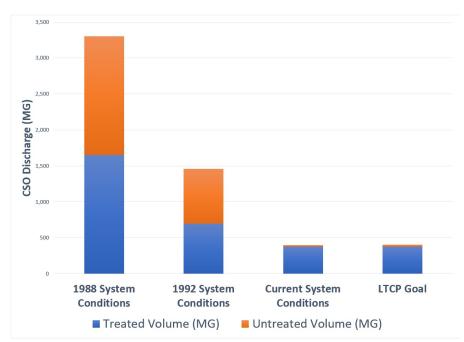


Presenter's Preamble

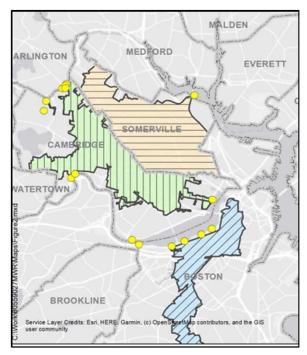
- This extended presentation deck, including supplemental slides (26 through 89), is provided to the Council as a reference document and to facilitate follow up discussions
- Many slides provide links to other presentations, videos, and resources for further information
- Much like the May 2025 Officer's 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



Variance Water Study Area *Volumes consider climate change

^{*}Annual discharge volume based on the prior Typical Year

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

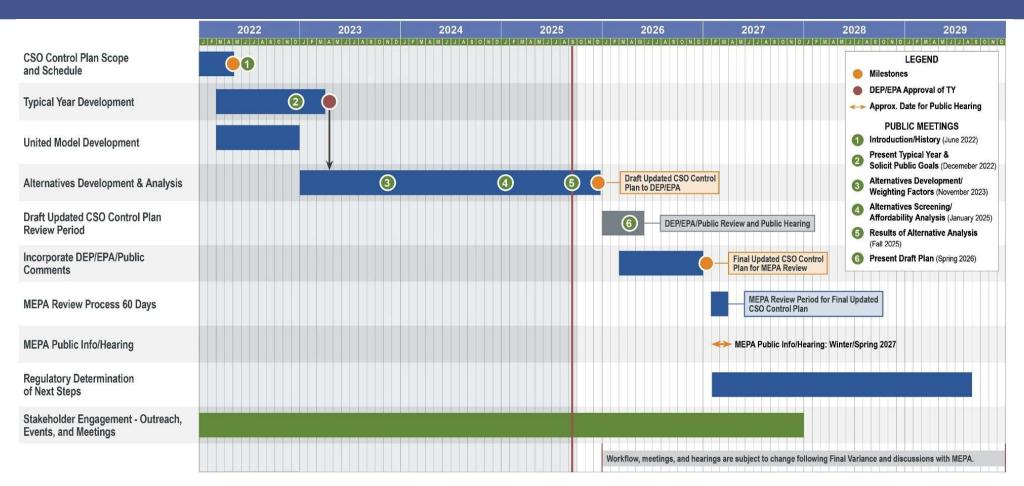


US Environmental Protection Agency

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

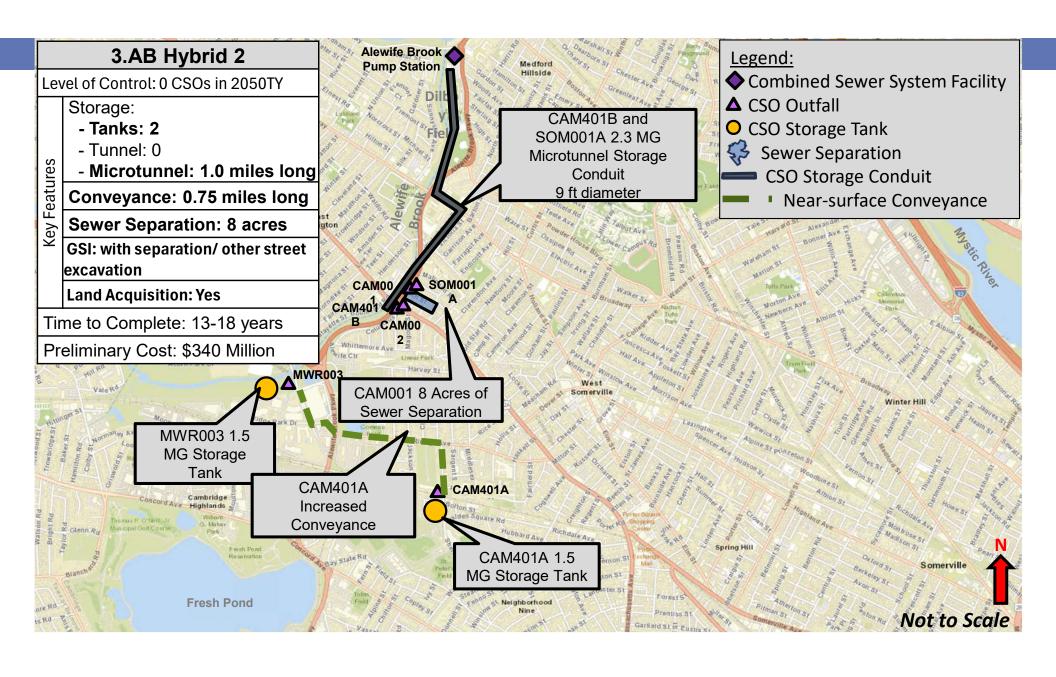
High level summary of process & conclusions Supplemental Slides (24 through 87) provide support for Q/A

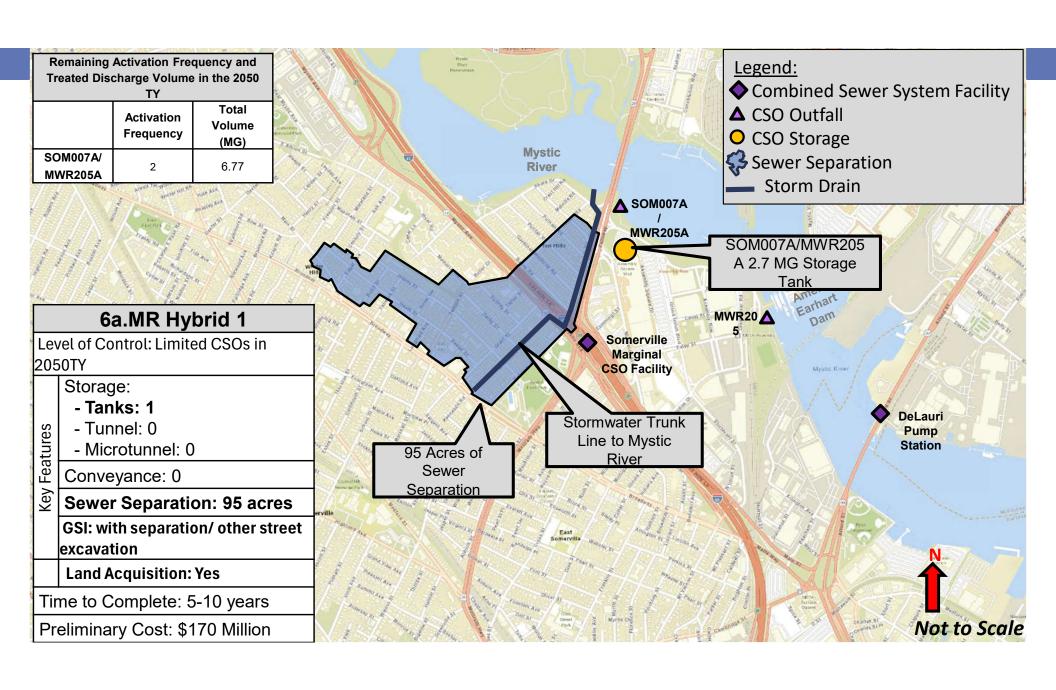
- Planning process
 - Community outreach & engagement
 - Tools for predicting CSO mitigation
 - Vocabulary: "Typical Year" and "Level of Control"
 - Alternatives, analysis & evaluation
- Eliminated alternative: Sewer separation
 - Upstream contributions & downstream constraints
 - Difficulties with & 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

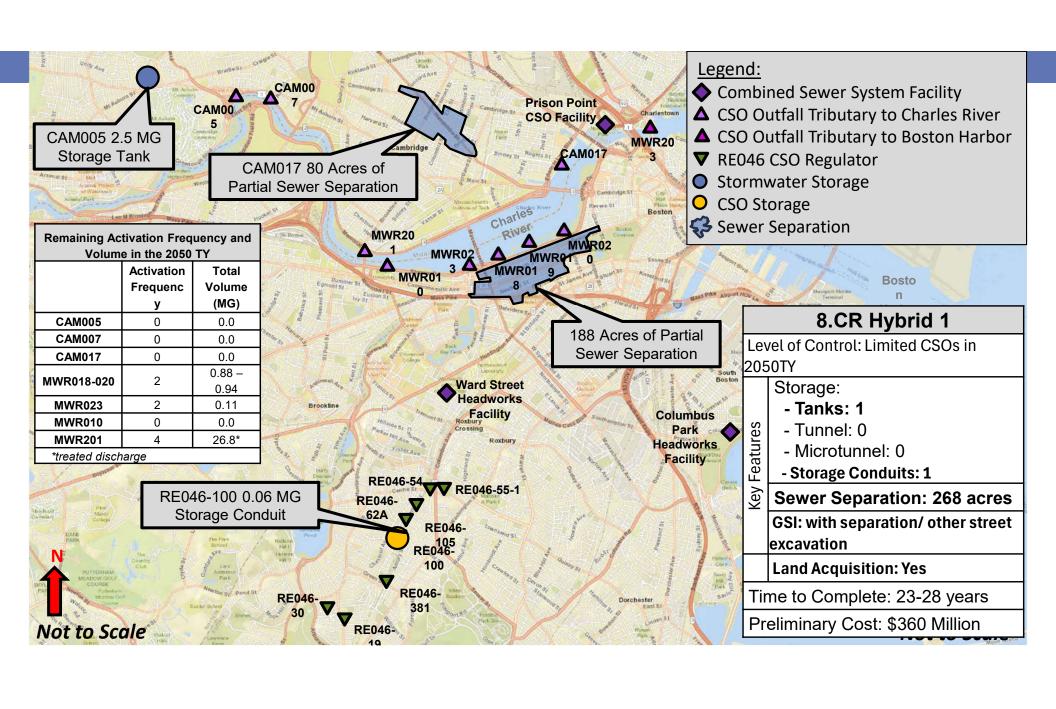
Draft recommended plan

Cambridge, Somerville & MWRA technical team's Goldilocks alternative

Proposed construction





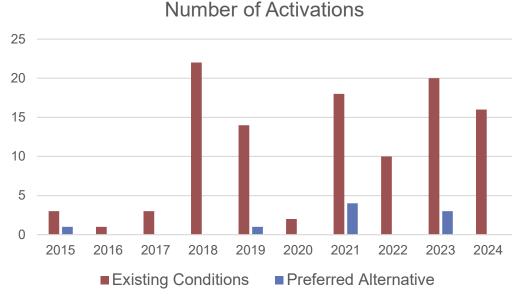


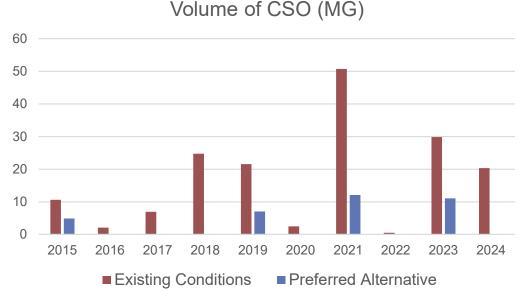
Projected CSO elimination

Plan performance – 2050 Typical Year

		Hydraulic Model Predictions 2050 TY					
		Activation	Frequency	CSO Discharge Volume (MG)			
		Current	Recommended	Current	Recommended		
Receiving Water	Level of Control	Conditions	Plan	Conditions	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





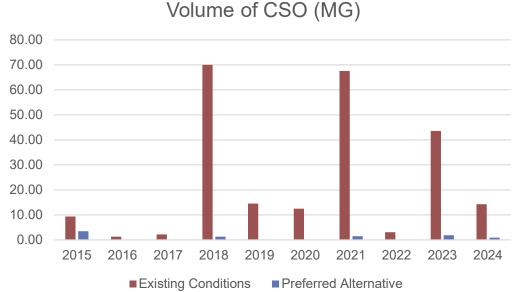
92% reduction in activation frequency (109 to 9 for 10-year period)

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





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

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

Projected financial impact & Financial Capability Assessment (FCA)

Provisional FCA results

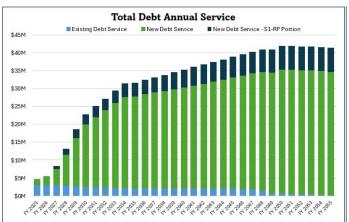
- Alt 1 Residential Indicator
 - Cost per Household = 1.34% MHI Mid-Range Burden
- Alt 2 Residential Indicator
 - Mid-Range Burden FY2033 through FY2040
 - Low Burden before and after
- Alt 2 Lowest Quintile Residential Indicator
 - Low Burden FY2027 through FY2029
 - Mid-Range Burden FY2030 through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

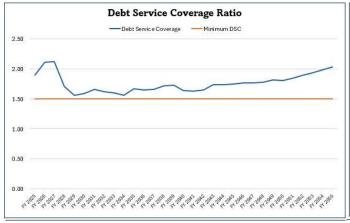
Provisional bill impacts: 208% increase from FY26 to FY55

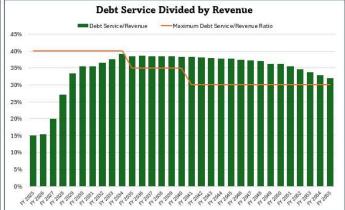
Dashboard

Usage Rate Increase
Balance Excess/Deficiency
Debt Service Coverage
Annual Bill SFR
Debt Service/Revenue
Cash Funded CIP
Debt Funded Project Costs

FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036
12.0%	20.0%	15.0%	15.0%	15.0%	10.0%	5.0%	5.0%	2.0%	2.0%	2.0%
\$ 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
2.11	2.12	1.70	1.55	1.59	1.66	1.62	1.60	1.56	1.67	1.65
\$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
15.42%	19.86%	27.12%	33.45%	35.54%	35.55%	36.48%	37.56%	39.09%	38.46%	38.60%
	\$ -	\$ -	\$ -	\$ 20,000,000	\$ 20,000,000	\$ 15,000,000	\$ 15,000,000	\$ 15,000,000	\$ 10,000,000	\$ 10,000,000
	\$ 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 legallyenforceable CIP for next 20+ years
 - Somerville ust 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





- CSO Control Plan Update Public Mtg #1 June 29, 2022
- 2. CSO Public Mtg #2 12-15-22
- 3. <u>Updated CSO Control Plan Public Meeting</u> #3 Cambridge, Somerville, MWRA 11-15-23
- 4. Combined Sewer Overflow (CSO) Control Planning Update January 2025
- 5. <u>Updated Combined Sewer Overflow Control</u>
 Plan Public Meeting 5 September 25, 2025

 <u>– YouTube</u>
- 6. <u>Listening Session</u>
 (https://www.youtube.com/watch?v=k3jLXiO
 Dafg)

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

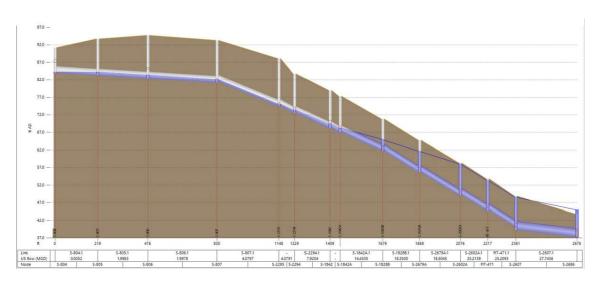
- Combined and Sanitary Sewer Overflow Control | City of Somerville
- Combined Sewer Overflow Control Planning Program Joint efforts by Cambridge, MWRA, and Somerville | SomerVoice
- Save the Alewife Brook environmental health is community health
- It's Time to Cut the Crap Charles River Watershed Association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

Tools for predicting CSO mitigation

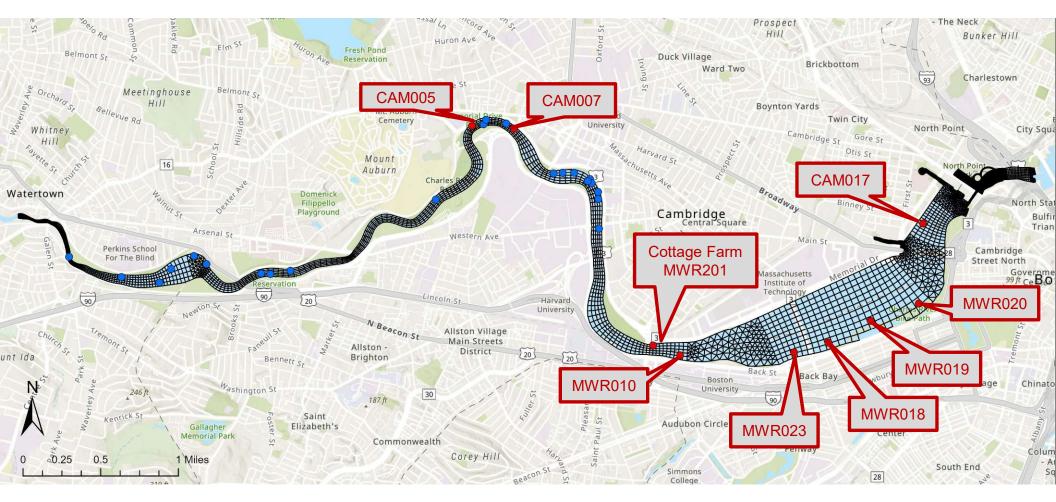
Predicting CSO frequency and volumes for different size storms for current and future conditions

Hydraulic model of sewer system





Water quality model of receiving waters



Typical Year, design storms, and climate change

	Future Baseline Condition Model Results								
Receiving Water	Activation Frequency		CSO Discharge Volume (MG)						
	Prior	2050 Typical Year	Prior Typical Year	2050 Typical Year	2050 Largest Storm	2050 5-year	2050 25-year		
	Typical				in the Typical Year	Storm	Storm		
	Year				(3.3 inches)	(5.3 inches)	(7.8 inches)		
Charles	3	6	7.9	38.4	16.6	65.5	120.6		
River	3	U	7.9	36.4	10.0	05.5	120.0		
Alewife	8	13	9.9	20.9	4.84	20.9	40.1		
Brook	٥	15	9.9	20.9	4.04	20.9	40.1		
Mystic	2	0	1 2	20.2	10 5	17.4	27.2		
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

^{1.} 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
2. 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.ametsoc.org/view/journals.ametsoc.org/view/journals.nml

"Level of Control"

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

		Hydraulic Model Predictions											
Receiving Water	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								
Alewife Brook	13	20.9	20.9 4.84 20.9		40.1								
Charles River	6	38.4 16.6 65.5 120											

		Hydraulic Model Predictions											
Receiving Water	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								
Alewife Brook	13	20.9	4.84	20.9	40.1								
Charles River	6	38.4	16.6	65.5	120.6								

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

	Hydraulic Model Predictions											
Receiving Water	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							
Alewife Brook	13	20.9	4.84	20.9	40.1							
Charles River	6	38.4	16.6	65.5	120.6							

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")

	Hydraulic Model Predictions											
Receiving Water	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							
Alewife Brook	13	20.9	20.9 4.84		40.1							
Charles River	6	38.4 16.6 65.5 1										

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")

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

		Hydraulic Model Predictions											
Receiving Water	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								
Alewife Brook	13	20.9	4.84	20.9	40.1								
Charles River	6	38.4	16.6	65.5	120.6								

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")

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, 24hour design storm ("0 CSOs in 2050 25year storm")

Alternatives

Envisioning ways to reconstruct the sewer systems

CSO Reduction and Elimination Tools



Sewer Separation



Storage



Regional Tunnel



Conveyance



Green Stormwater Infrastructure

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

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.



TOOLS ARE
THE BUILDING BLOCKS
FOR ALTERNATIVES.

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

39 Alternatives Under Consideration

	Number of Alter	rnatives Under	Consideration
Level of CSO Control	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.

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.

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

Scoring example

	Alewife Brook					
WEIGHTED SCORES:	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
WS1	228.4	265.0	244.7	205.6	215.2	248.9
WS2	238.2	276.6	269.4	227.4	234.8	229.9
WS3	230.2	249.0	268.6	237.5	231.3	157.8
WS4	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
WS6	214.8	249.4	236.7	191.6	188.2	216.6
WS7	207.4	239.7	219.6	183.5	182.7	224.2
WS8	287.9	341.7	376.4	380.0	383.0	79.4
WS9	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
	0 CAM401A Storage (2.1 MG)	Same Int At Substitute: CAM401A Conveyance (60" 4400 LF) + Storage (1.5 MG) SOM001A: 9' diam. 2900 LF	Same		11' diam, 7600	443 ac (SOM
Components	CAM401B Storage (0.4 MG) SOM001A: 264 ac SS + inline throttles	Microtunnel (1.3 MG)	Hybr1 Substitute: CAM401B/ SOM001A: 9' diam, 5400 LF Microtunnel (2.3MG)	11' diam, 7600 LF	LF 29 imperv ac GSI	438 ac (CAM treatment + f attenuation
	MWR003 Storage (0.5 MG)	Int Alt Substitute: MWR003 Storage (1.42 MG)	Same			
Total Score (Below the line)	21.48246908	24.93672731	23.67264728	19.15673981	18.82131661	21.6572100

		CHECH	Did Mai (Sal			MILITARIO	CAR SEE Speak	her Personal	principal					1			IT AND COLUMN TO THE SECOND CO.		NOON WYNESON, WESTIGN	Constitution (in	Saf spenie contro do cem	060
Note that a final of								S. de Colonies Statement				20	E AR HOUSE Abstracts			e di Tana kanana	3-6 Sept III.	-				
			CONST. Single (F) NO	Design Security Mb	cryston ind and trades deaths	Hartest Street Co.	(mail because	COME Department (fine) + controller	politicame CaRRES Charpes (8) SMILT) — Casp (2) SMILT)	Sign Decem Conscille Strongs (in let)		CHOCAL PLANTS	Sentent Sentent Harton Sense J. J.	Seed Servate	Carella Tropenion (St. or), i procedent	CAMPILL Company Set 1800 Py Single CT SEC	Open Section Corporate SCHOOL II dem Make II Newspared (1786)	100	Creat Hampine	17 days 790 67	Train Nation Street in EA	All and District All an
1	ies ettorous	- 8	8	- 8	- 8		1/36 v (08/11				10	8 - 8	- 8	nideledado.	5	8	V	- 0	11180×308079	introduce.	170/w.28011	September Different Sept. NEW Y
	Perman Galla Com AN	- 8	440	100	- 82	-0-			- 21	SCHOOL SECTION		100	-	181.5	SCHIEL .	0.00		-	Mile.	- 20	40	188
	to feet and	- 2		- 355	- 170	-	7		777			2012	-	2,7		-	-					-
	-		long im	(173), sale	OFFICE OFFI	100h)	Ü		done	160	SECTION OF THE PERSON OF THE P	COLUMN TO SERVICE SERV	(01)			freig	(SS), All South	(88)		MPhysicanae (201 7980)	MF surrename (SA NPS)	MONTHS PLUS
	Description for		-	10.00	Printer to the contract of the	1000				sen	Penaranana femala-tra pa (1)	we	Air			-	will	April		And Thickney String Settingstrap	Artificación (May Natiquatego um missor de (M)	interpret since (b)
PRINCIPAL INC.					Name and						No. of Contract	1.6K represe			•		į.	d. many				
			State	Constant Total	Cream In-	Hartest Street T	-	CANCEL Supporter Charge and State	hi di fanone Chillio Designate RC 800 Corlingo J. 1980	DOMEST CONCEST	to this seems	TOTAL TOTAL TRANSPORTER CONTRACTOR	Same Same Appendix Appendix	-	CONT Number	COMMON COMMON DE SECURIO Disease de la	Plant Research 1 III 400 (Gentler-Chris	-	One House	est foresterone	1 th base of	-
Deposits and	Control of the Contro						2.70		ji telet			A street, N	65	4.01		-	News and N		6,027	88	1	0
	LATE OF						2			100	40	85 - 69		- 1		8	83 - 33		- 4	14	4	31
Military in the ph	1.30.Mar pr 1.19 print a COCamorio 1.19 print a COCamorio									300	200	s s				55	0 0		114		AC 35910 0	
	Assign Fernande Iva. E. Salam Strategies and Assignment of additional strategy.	_ 0	- 0	- 2	- 2		2.75					9 9	- 0	2.75		S	0 0	- 0	- 3	2.5	2.25	1.5
Separate Sections of the Control of	2 bearing makes being a				8		3				Į.	s - %		3	9	8		8	3	1	-1	2
Support or Company Company Contraction	Topical jorned and all to report to registations (rate, disc) state, spring to track present conceptuation or part and paparase reported. Topical products	9					2.5					6 9		2.5		les .	8 8		2	18	3.5	1.
Manager Contraction	Family of terrodication	-					1							31					3	2	2.	2
September 1	C. Garbane manager of days: Xilon 3. Segret manager on Line No. 3. Segret manager on bath XXII	- 9	- 9	1 8	3		3			18	8	8 8	1 3	1	Ş	8	8 8	8	- 1	1	3	3
Semantic Semantic	E. Printing the complex regions of the complex and the complex						1							3					a	a	3	1
Comment of the last of the las	1 to an artificial Street and participal and a second separation of the control o	- 8	- 8	- 8	- 8		2			lä –	18	8 8	- 8	25	â	8	8 8	- 8	2.5	2	18	3
-	E Committee of the comm						1							3					- 13	1.8	1.96	+
Comments in page of females	New York and the Control of the				ı		3							9		Ü			3	- 1	1.8	5
Printing Passes STATE PASSES RELIEVED	Contribution marketists (programming into seast of Equatory) 1. Since instruction in particular contribution in the Edition of the Edition	- 3					0.0			20	200	× ×		0.0		Ž.			0.1	8.2	2	3
Company is booth and	Amprilations	- 3	- 3	- 23	- 8		2.25			18	45	8 8	- 6	2.25	8	8	8 8	- 8	2.25	1.5	2.25	3.60
	Description and the second secon						0.3				365	82 - 10		0.5			0. 2		0.5	i	3	3.3
Nonemark Impacts on Francisco	2. Deletion, materials promoted tested transiting publication	- 35					· Ł			10	103	2 3				8	e .		4	- 2	1.5	43
man the large (A)	District comments from a reflect of a part o						*:													.0	4	0
	Are not secured.	- 3	-	- 10	-		21.45	\leftarrow		1	1	-	-	24.94	_	100	200	-	23.67	10.16	18.82	21.66

Eliminated alternative: Sewer separation

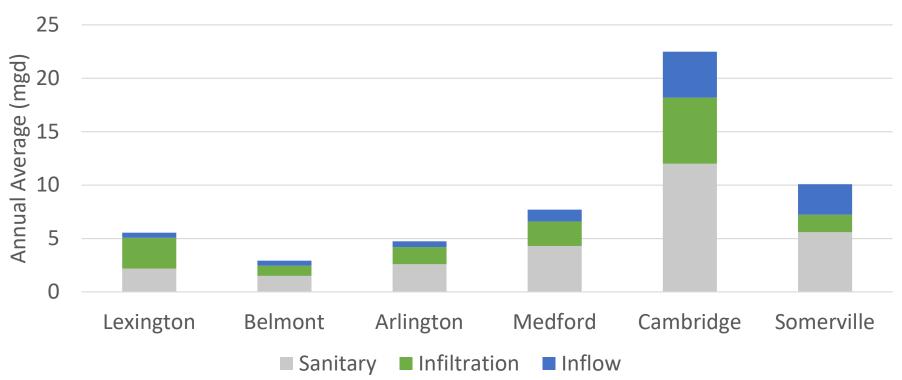
Full sewer separation seems like an obvious fix, why is that not the recommendation?

Sewer separation does not fully eliminate CSOs

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

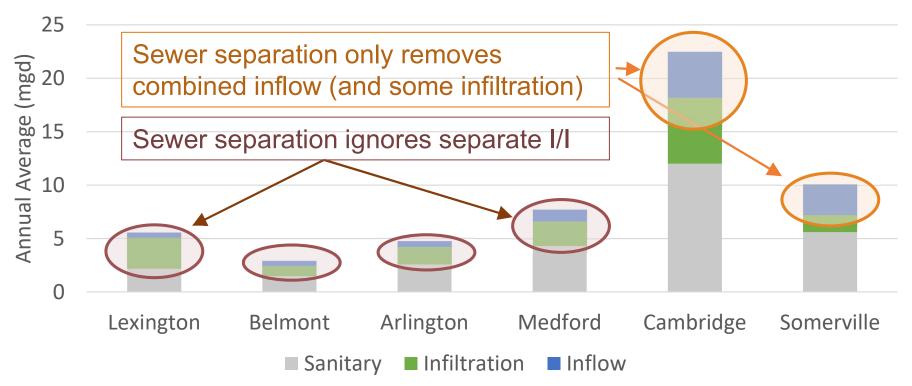
Infiltration and Inflow (I/I)

Estimated Area Flow Components

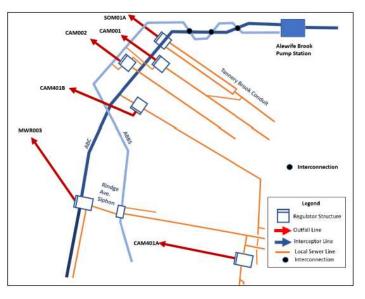


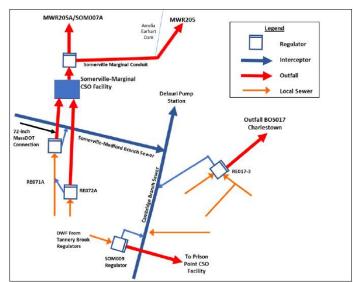
Infiltration and Inflow (I/I)

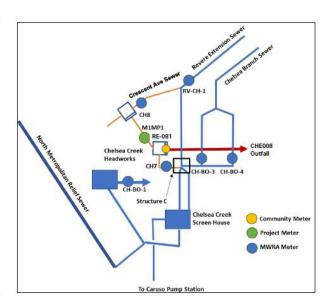
Estimated Area Flow Components



Regional system constraints



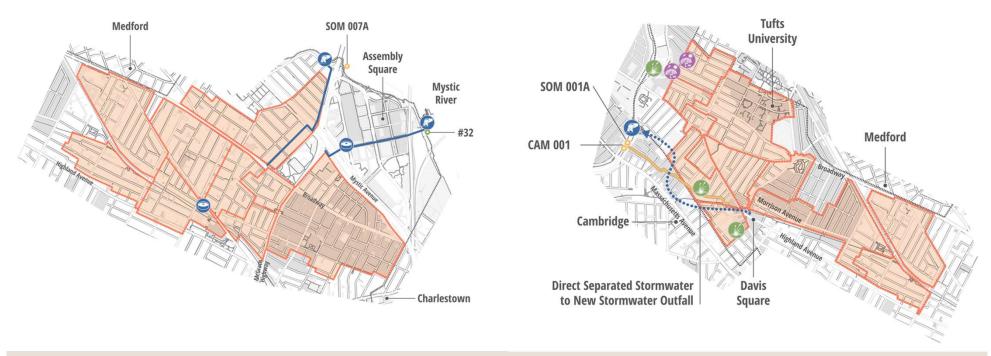




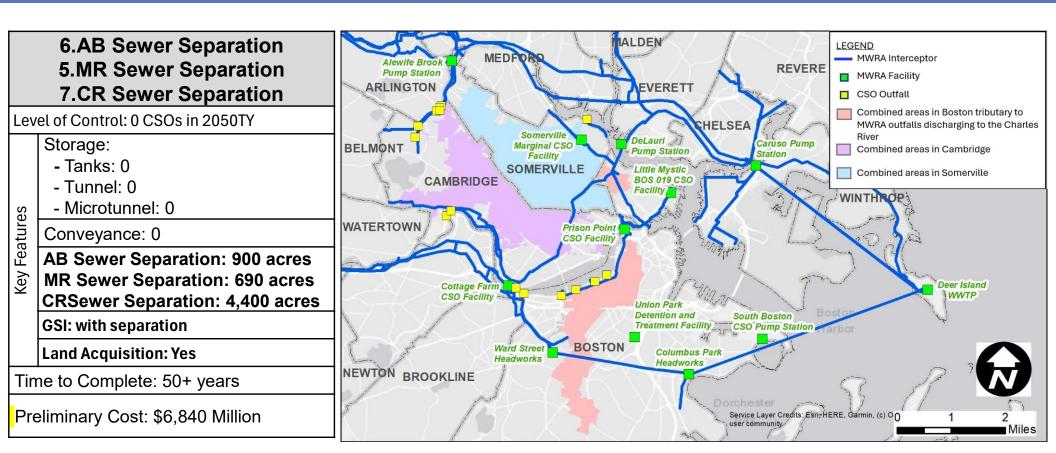
Sewer separation is very difficult to achieve

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



*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.

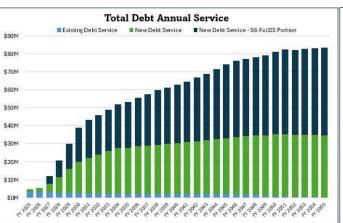
Bill impacts: 673% increase from FY26 to FY55

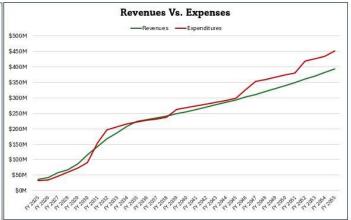
Usage Rate Increase
Balance Excess/Deficiency
Debt Service Coverage
Annual Bill SFR
Debt Service/Revenue
Cash Funded CIP

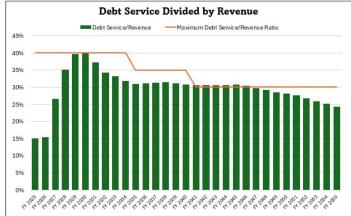
Debt Funded Project Costs

Dashboard

FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036
12.0%	30.0%	30.0%	29.0%	29.0%	19.0%	15.0%	10.0%	10.0%	5.0%	3.0%
		\$								
\$ 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
2.11	1.75	1.59	1.63	1.79	2.02	2.25	2.37	2.53	2.66	2.64
\$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
15.42%	26.52%	35.08%	39.71%	39.92%	37.26%	34.31%	33.13%	31.76%	30.97%	31.20%
	\$ -	\$ -	\$ -	\$ - \$	50,000,000 \$	80,000,000 \$	80,000,000 \$	80,000,000 \$	80,000,000 \$	80,000,000
		\$								
	\$ 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







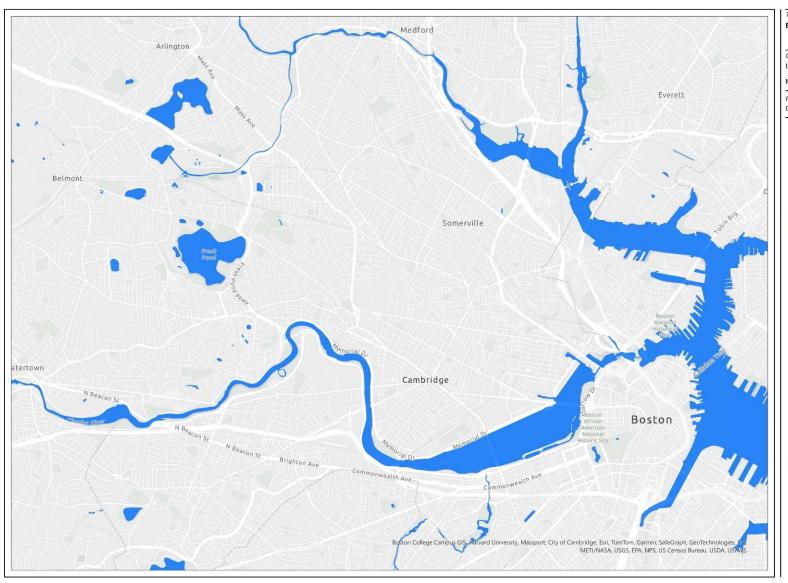
Note: At the time of this presentation, costs and allocations are being QA/QC'ed. Rate projections will be revised in November.

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

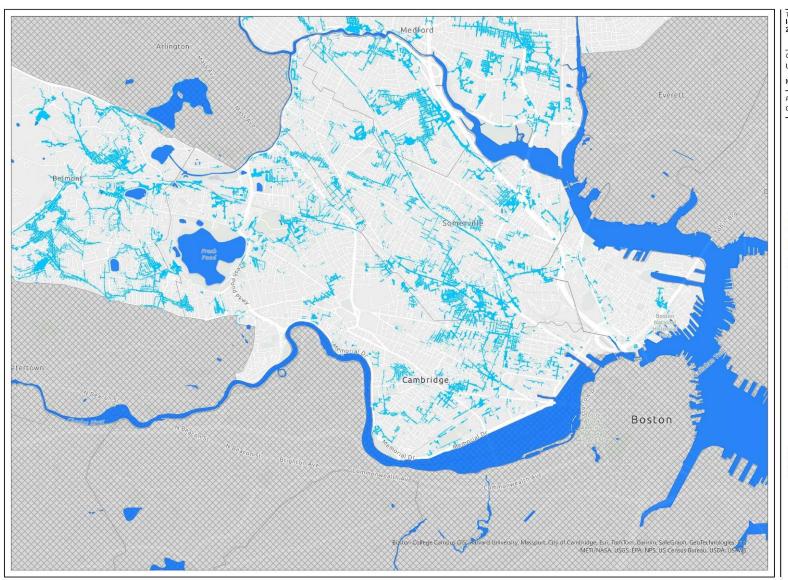


Legend

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





Title Inland Flood Extents 25yr 2050 Event

Client/Project
Updated CSO Control Plan
Map Revised: September 2025

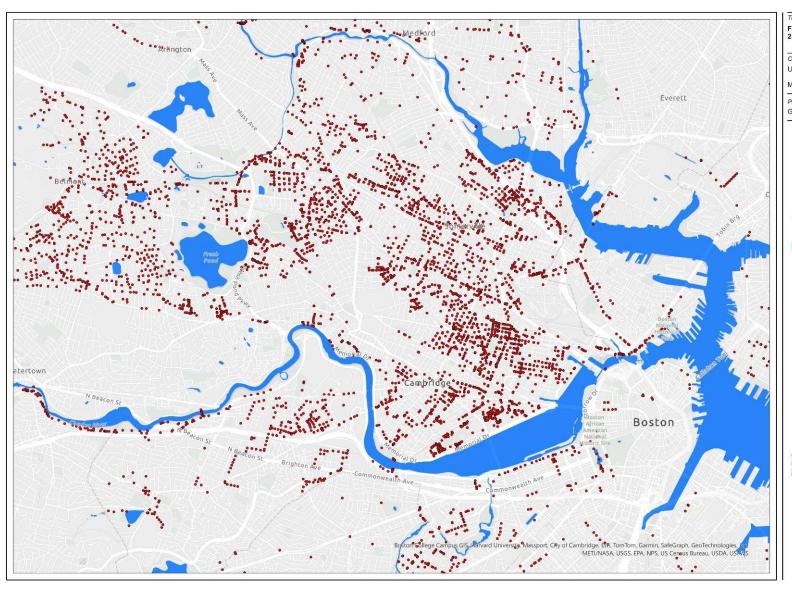
Project Location
Greater Boston Area, MA

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





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



Other sources of polution

Example sources of pollution in our waterbodies

Dry weather

- Illicit connections
- Leaky sewer pipes
- Wildlife and dog excrement
- Decomposing leaves

Stormwater

- Pathogens (bacteria, viruses)
- Oil and grease
- Nutrients (Phosphorus, Nitrogen)
- Trash
- Others

CSOs

- 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.

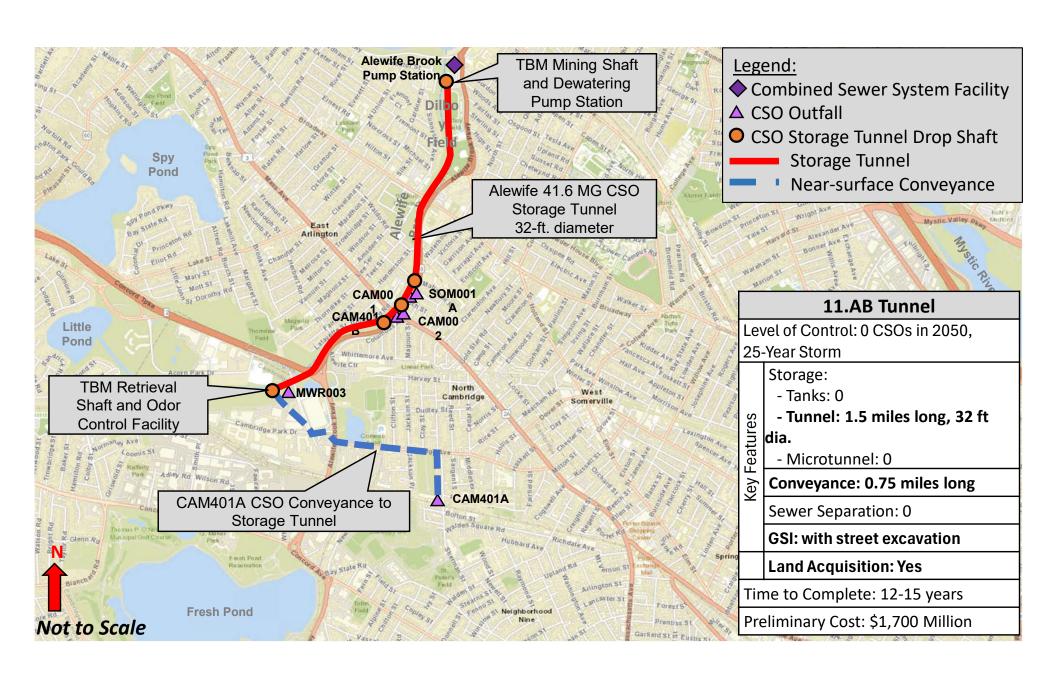
Eliminating CSOs alone does not result in swimmable and fishable waterbodies.

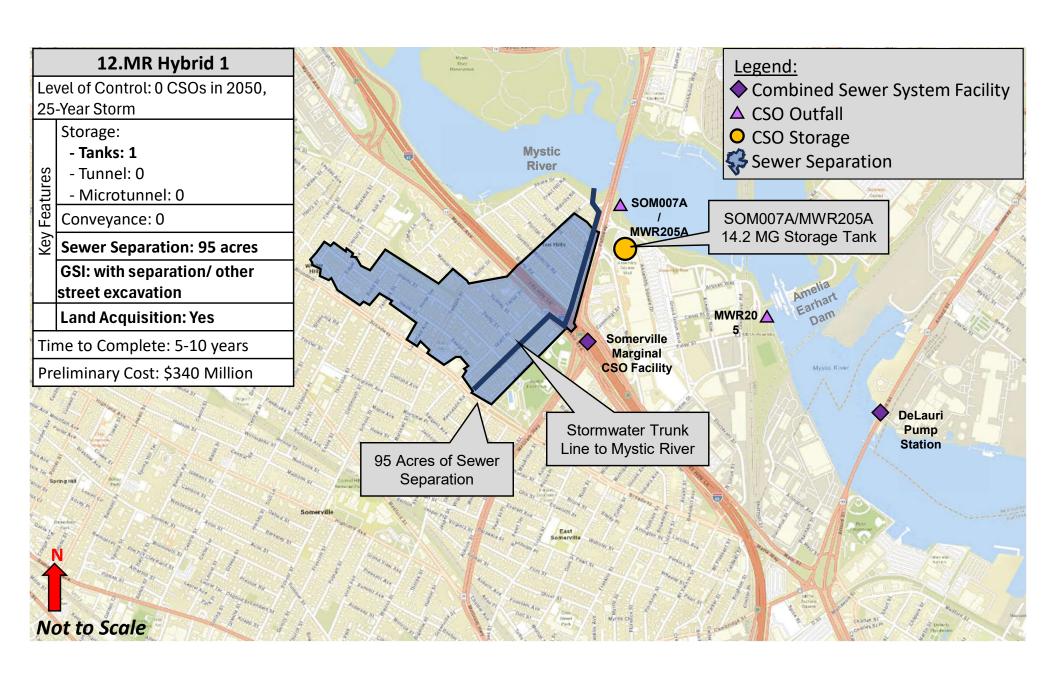
Water Quality model results

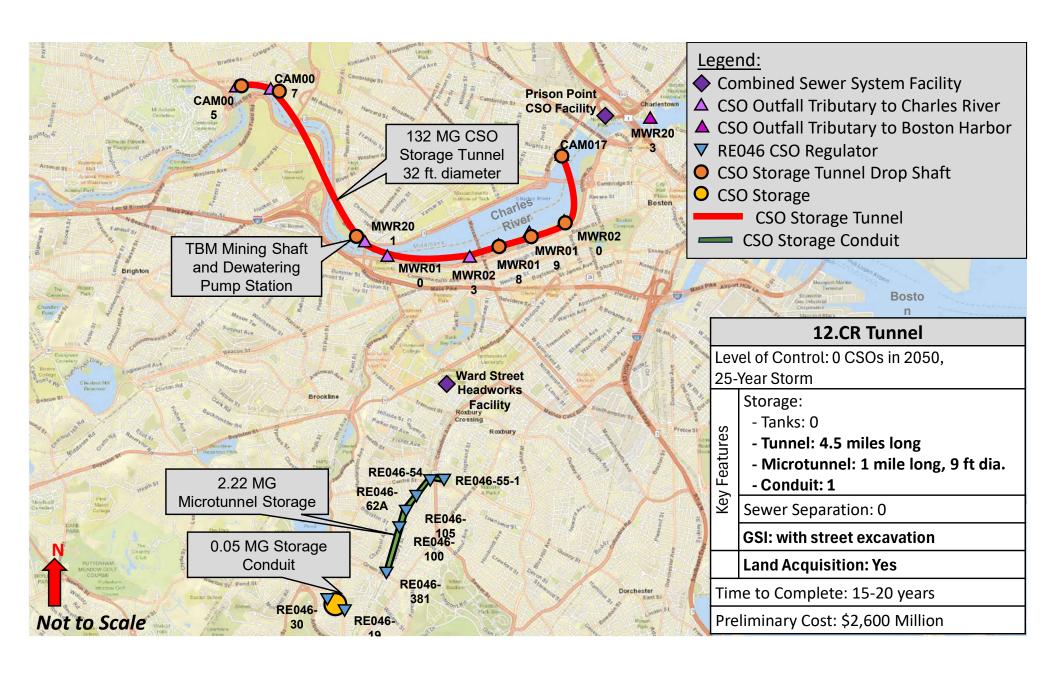
Percentage Time Entire Modeled River is in Compliance with Previous Single Sample Maximum Criterion

Model Run		E. coli (23	35#/100mL)		Enterococcus (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





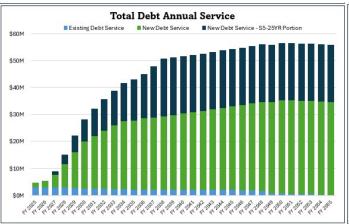


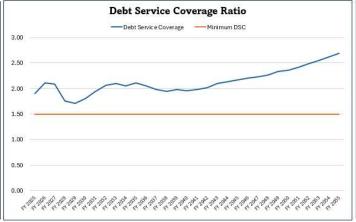
Bill impacts: 347% increase from FY26 to FY55

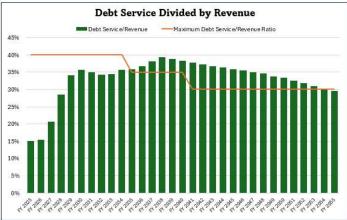
Dashboard

Usage Rate Increase
Balance Excess/Deficiency
Debt Service Coverage
Annual Bill SFR
Debt Service/Revenue
Cash Funded CIP
Debt Funded Project Costs

FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036
N/A	12.0%	23.0%	23.0%	22.5%	22.0%	16.0%	13.5%	8.0%	3.0%	2.5%	2.0%
\$ 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
1.90	2.11	2.08	1.76	1.70	1.80	1.94	2.06	2.10	2.05	2.11	2.04
\$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
14.97%	15.42%	20.72%	28.57%	34.11%	35.68%	35.01%	34.27%	34.36%	35.62%	35.80%	36.70%
		\$ 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
		\$ 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





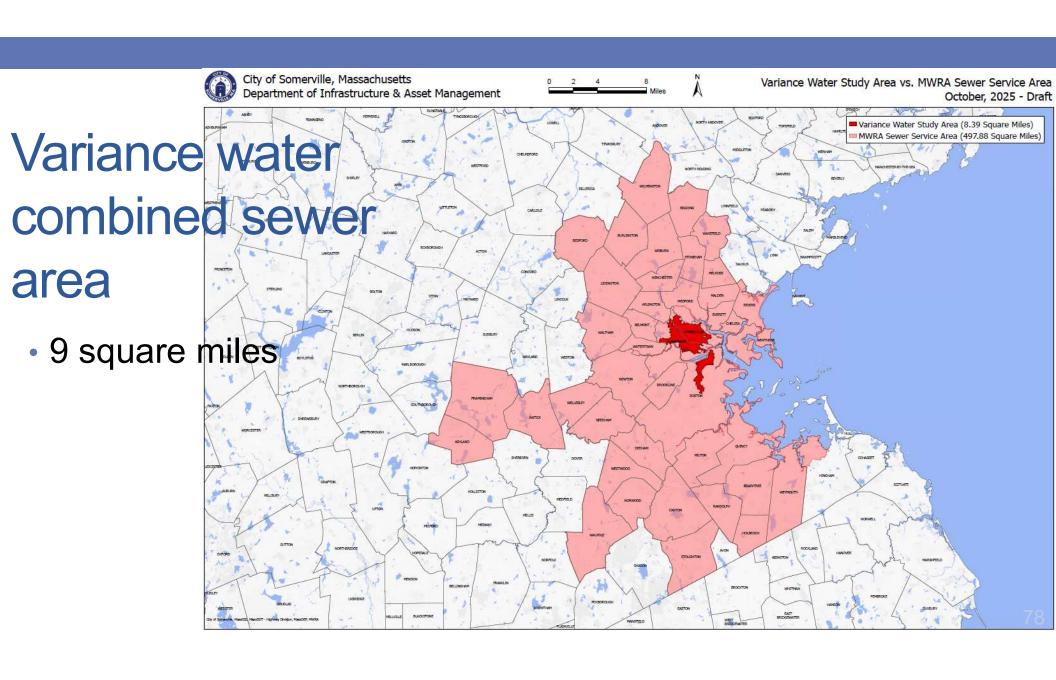


Still Mid-Range Burden for Somerville. Other MWRA communities TBD

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

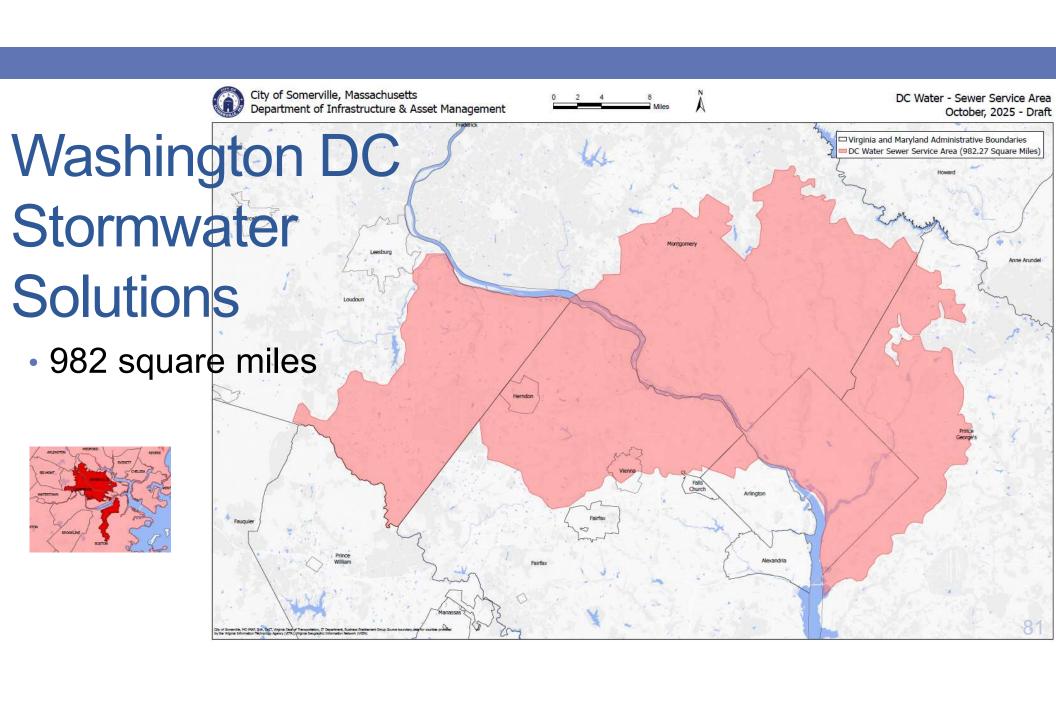
Comparison to plans in other regions

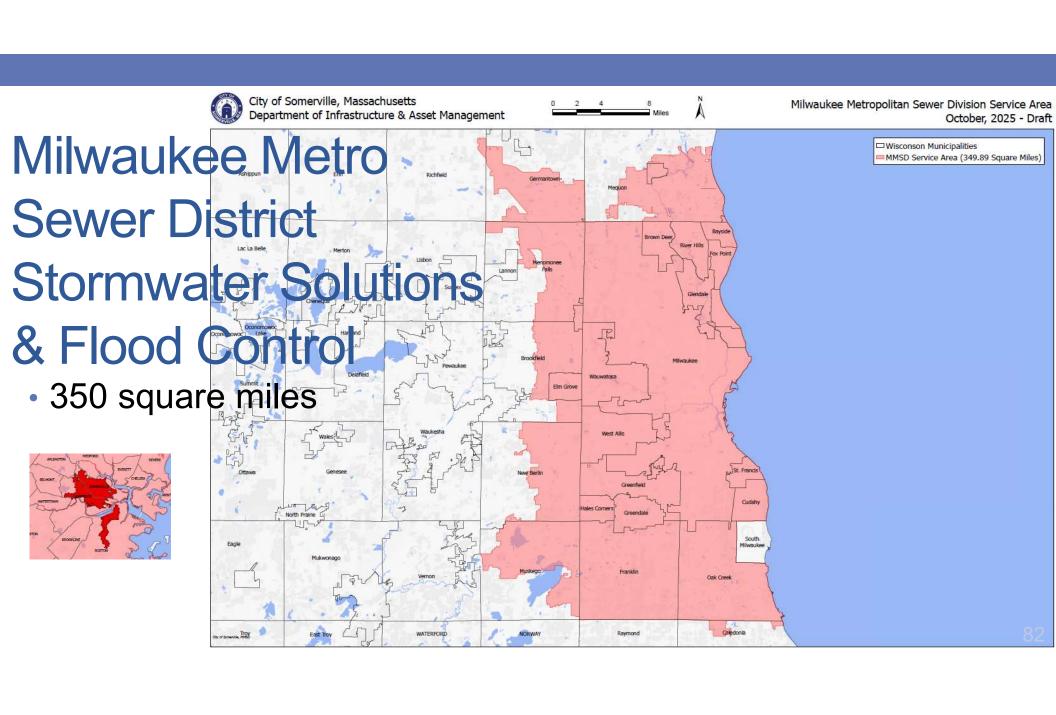
If other cities can do it, why can't we?











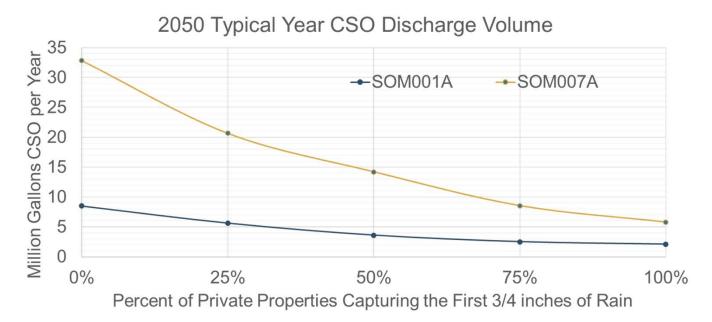
Responsibilities & opportunities CSOs, stormwater & overall water quality



Efforts outside the Variance Waters CSO LTCP Update

Somerville Stormwater Fee & Credits

Program is designed in 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

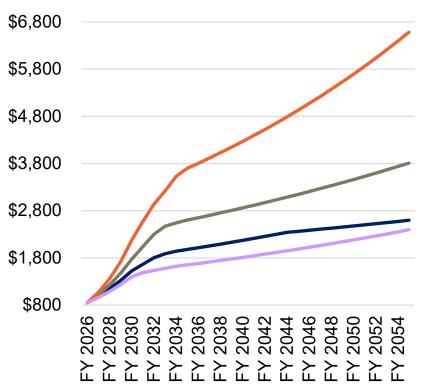
- In Joint Committee on Environment and Natural Resources
 - S.608/H.1031 An Act Relative to Combined Sewer Overflows
 - H.1046 An Act to Eliminate Combined Sewer Overflows in Massachusetts Waterways
 - S.658/H.3938 An Act Pertaining to Regional Resilience and Flood Protection Entities
- In Joint Committee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

Annual SFR Sewer Bill



Sewer Separation, TY control = 7.7x FY26 rates

25-Year control = 4.5x FY26 rates

Recommended plan = 3.1x FY26 rates

Lower control = 2.8x FY26 rates

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

