



Modernizing our Sewer Systems: MWRA can get the job done!

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Charles River Watershed Association

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Mystic River Watershed Association

Promises made, but not kept

1949 - Last Charles River beach closed

1972 - Clean Water Act: “fishable, swimmable” rivers by 1983

1995 - EPA Clean Charles Initiative: “swimmable Charles” by 2005

2025 - Gov Healey Biodiversity Plan: “Significantly reduce or eliminate combined-sewer overflows”



August 2025

Contact with sewage MAKES YOU SICK

Waterborne Pathogens, Associated Illnesses, and the Wastes They're Found In

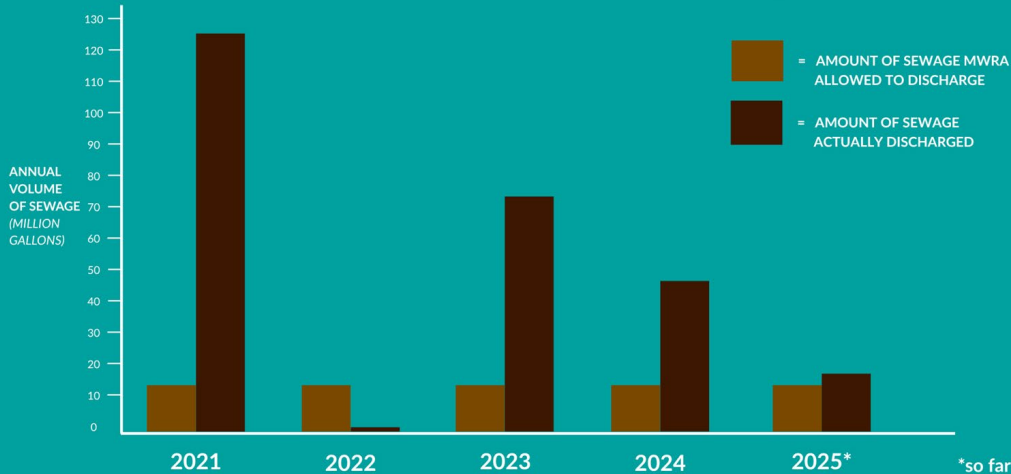
Pathogenic Agent	Acute Effects/Chronic or Ultimate Effects ⁶⁷	Wastes ⁶⁸
Bacteria:		
<i>Campylobacter jejuni</i>	Gastroenteritis/death from Guillain-Barré syndrome	Human/animal feces
<i>E. coli</i> (pathogenic or enterovirulent strains)	Gastroenteritis/ <i>E. coli</i> O157:H7, adults: death from thrombocytopenia; children: death from kidney failure	Domestic sewage
<i>Leptospira</i>	Leptospirosis	Animal urine
<i>Salmonella typhi</i>	Typhoid fever/reactive arthritis from certain strains	Domestic sewage
Other salmonella species	Various enteric fevers (often called paratyphoid), gastroenteritis, septicemia (generalized infections in which organisms multiply in the bloodstream)	Domestic sewage, animal wastes, food, compost
<i>Shigella dysenteriae</i> and other species	Bacillary dysentery	Human feces, domestic sewage
<i>Vibrio cholera</i>	Cholera/death	Domestic sewage, shellfish, saltwater
<i>Yersinia</i> spp.	Acute gastroenteritis (including diarrhea, abdominal pain)/reactive arthritis	Water, milk, mammalian alimentary canal
Viruses:		
Adenovirus	Respiratory and gastrointestinal infections	Domestic sewage
Astrovirus	Gastroenteritis	Domestic sewage
Calicivirus	Gastroenteritis	Domestic sewage
Coxsackievirus (some strains)	Various, including severe respiratory diseases, fevers, rashes, paralysis, aseptic meningitis, myocarditis	Domestic sewage
Echovirus	Various, similar to Coxsackievirus (evidence is not definitive, except in experimental animals)	Domestic sewage
Hepatitis A	Infectious hepatitis (liver malfunction); also may affect kidneys and spleen	Domestic sewage
Norwalk and Norwalk-like viruses	Gastroenteritis	Domestic sewage
Poliovirus	Poliomyelitis	Domestic sewage



This is a public health issue

Current situation: Vastly exceeding LTCP targets

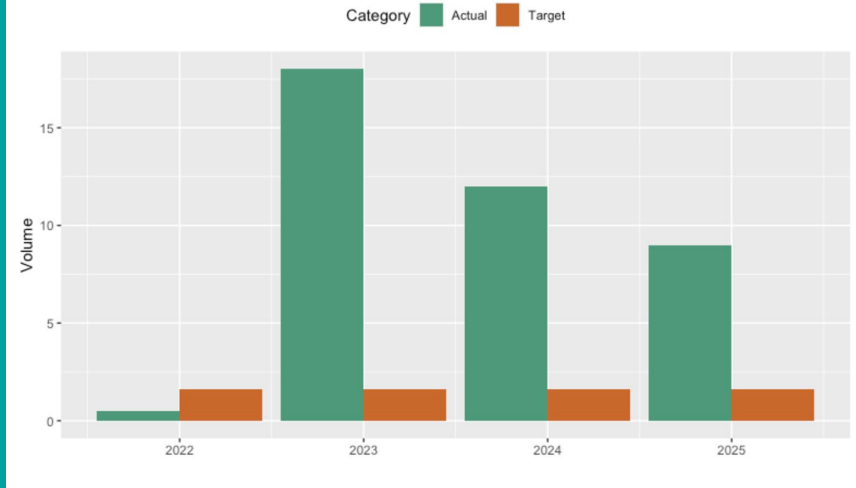
Sewage Pollution in the Charles River MWRA Permitted Amounts VS Reality



Charles River

>70 MG in 2023, TY Target 13 MG

Annual CSO Volumes at CAM401A, 2022 - 2025



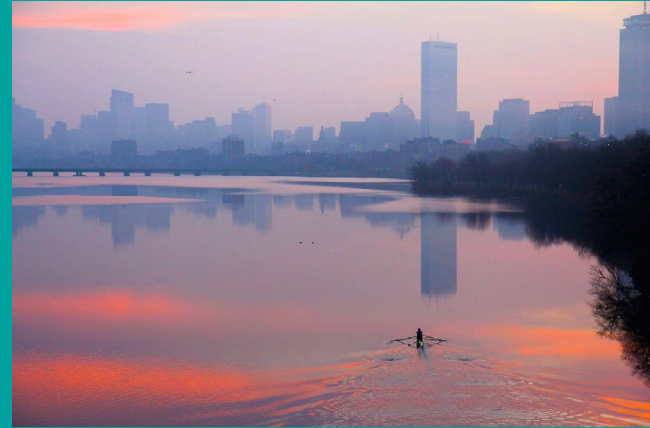
One Cambridge outfall on Alewife Brook

19 MG in 2023, TY Target 1.6 MG

The key decision in new LTCP: Level of control

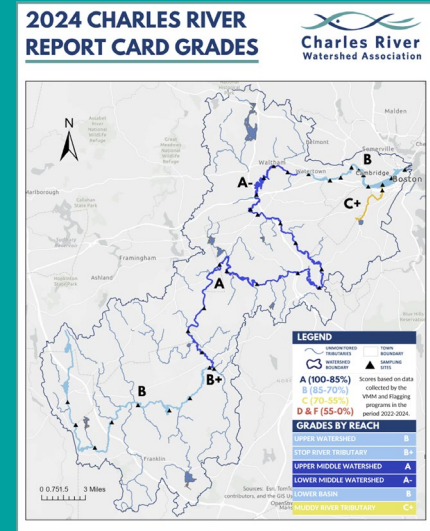
Updated Long Term Control Plan CSO Reduction /Elimination (“Level of Control”) Options:

- A. Some CSOs in the Typical Year **F**
- A. No CSOs in the Typical Year
- A. No CSOs in a 5-yr (large) storm
- A. No CSOs except in a (very large!) >25yr storm **A**
- A. CSOs fully eliminated primarily through sewer separation **A+**



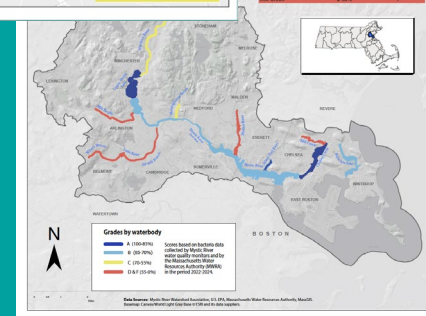
Water Quality Modeling Concerns and Omissions

- We acknowledge non-CSO sources of pollution
- But metrics used in MWRA WQ analysis do not capture the disproportionate impact of CSOs
 - Orders of magnitude difference in concentration
 - Days out of compliance ignores difference
 - Use of swimming standard
 - CSOs have many pollutants not in stormwater
- Stormwater is regulated and solutions are being invested in
- Requested nutrient modeling was not completed
- Inappropriate geographic scale used in Charles River modeling
- Claims that upstream areas are “dirty,” downstream not worth investing in



Mystic River WATERSHED ASSOCIATION

Waterbody	Percent Compliance	Grade
Upper Mystic Lake	93.0%	A
Lower Mystic Lake	93.0%	A
Charles River	90.0%	A
Mystic River East	84.0%	B+
Mystic River West	78.0%	B
Bellevue Hill	78.0%	B
Westgrove Brook	65.0%	C+
Algonquin River	56.0%	B
Walden Brook	53.0%	B-
Mill Brook	49.0%	D
Malden River	49.0%	D
Yield River	46.0%	D
Worm Brook	45.0%	D
Mill Creek	24.0%	F



System Modeling Result Concerns and Omissions

- “Zero CSOs in the Typical Year” **does NOT mean zero CSOs**
- The teams themselves predict CSOs in “greater than typical” years. We need a clearer picture of volumes for all scenarios to know if we are making progress.
- Actual CSO activation frequency **is driven by the frequency of extreme storms**, which are expected to increase with climate change
- Charles River target of ~13 MG in a typical year has resulted in overflows of:
 - >120 MG in 2021, >70 MG in 2023, >40 MG in 2024
- CAM401A target of ~1.6 MG in a typical year has resulted in overflows of:
 - 19 MG in 2023, 11MG in 2024, and 9MG in 2025

System Modeling Result Concerns and Omissions

The proposed plan **WILL** have CSOs in the future

For ex, under this plan, in a single storm that's expected every 5 years, 22 million gallons of **untreated** CSO would discharge in the Charles and 14 million of **untreated** CSO in Alewife Brook.

Outfall	2050 TY Baseline		2050TY Draft Recommended Plan ⁽¹⁾⁽²⁾		2050, 5-year ⁽³⁾ Baseline		2050, 5-year ⁽¹⁾⁽³⁾ Draft Recommended Plan		2050, 25-year ⁽³⁾ Baseline		2050, 25-year ⁽¹⁾⁽³⁾ Draft Recommended Plan	
	Activation Frequency	Volume (MG)	Activation Frequency	Volume (MG)	Activation Frequency	Volume (MG)	Activation Frequency	Volume (MG)	Activation Frequency	Volume (MG)	Activation Frequency	Volume (MG)
Alewife Brook												
Total	13	20.86	0	0.00	1	20.86	1	14.21	1	40.07	1	33.28
	Percent Volume Reduction 100%				Percent Volume Reduction 32%				Percent Volume Reduction 17%			
Upper Mystic River												
SOM007A/MWR205A (Treated)	8	29.31	0	0.00	1	17.42	1	5.95	1	27.17	1	15.62
	Percent Volume Reduction 100%				Percent Volume Reduction 66%				Percent Volume Reduction 43%			
Charles River												
Total (Untreated)	6	8.61	0	0.00	1	32.42	1	22.79	1	66.27	1	51.78
	Percent Untreated Volume Reduction 100%				Percent Untreated Volume Reduction 30%				Percent Untreated Volume Reduction 22%			
Total (Treated)	4	29.81	0	0.00	1	33.84	1	21.85	1	55.92	1	44.17
	Percent Treated Volume Reduction 100%				Percent Treated Volume Reduction 35%				Percent Treated Volume Reduction 21%			
Total Variance Waters												
Total	88.59		0.00		104.54		64.80		189.43		144.85	
	Percent Volume Reduction 100%				Percent Volume Reduction 38%				Percent Volume Reduction 24%			
Mystic/Chelsea Confluence (Non-Variance)												
MWR205 (Somerville Marginal Facility)	27	79.20	21	45.32	1	26.16	1	20.47	1	41.66	1	33.79
	Percent Volume Reduction 43%				Percent Volume Reduction 22%				Percent Volume Reduction 19%			
Upper Inner Harbor (Non-Variance)												
MWR203 (Prison Point)	20	386.90	20	337.02	1	91.92	1	87.46	1	141.73	1	134.08
	Percent Volume Reduction 13%				Percent Volume Reduction 5%				Percent Volume Reduction 5%			

Preferred Alternative Concerns and Omissions

- We need clear prediction of CSO activations and volumes in a typical 10-year period in 2050, for all the levels of control. Otherwise we can't compare the true benefits of the various plans.
- We need a clear explanation of why regional sewer separation is off the table
- Specifically, what would be the 10-year performance of regional sewer separation as a compared to the proposed alternative?
- All levels of control, including complete sewer separation, had the same “low impact” score in the Financial Capability Assessment. **Why are we not proposing to spend more?**

Ending CSOs in Affordable

Draft FCA Results for Each Level of Control – MWRA Share of Costs

#	Description		Regional FCA Results					Residential Indicator Results for Service Area Communities			Expanded FCA Matrix Results for Service Area Communities			Percentage of Total MWRA Service Area Households in Medium and High Impact Communities
	Alternative	Total Annual Typical Cost Per Household	Residential Indicator	FCI Score	LQPI Score	Expanded FCA Matrix Result	Recommended Implementation Schedule based on Expanded FCA Matrix Result	# with Low Impact	# with Medium Impact	# with High Impact	# with Low Impact	# with Medium Impact	# with High Impact	
0	Baseline (CIP)	\$1,003	0.89%	2.8	2.8	Low Impact	Normal Engineering/ Construction Schedule	30	13	0	36	6	1	44.7%
1	Breakpoint	\$1,025	0.91%	2.8	2.8	Low Impact	Normal Engineering/ Construction Schedule	30	13	0	36	6	1	44.7%
2	2050TY	\$1,053	0.94%	2.8	2.8	Low Impact	Normal Engineering/ Construction Schedule	29	14	0	36	6	1	44.7%
3	Sewer Separation	\$1,125	1.00%	2.8	2.8	Low Impact	Normal Engineering/ Construction Schedule	29	14	0	36	6	1	44.7%
4	2050 5-yr	\$1,116	0.99%	2.8	2.8	Low Impact	Normal Engineering/ Construction Schedule	29	14	0	36	6	1	44.7%
5	2050 25-yr	\$1,152	1.03%	2.8	2.8	Low Impact	Normal Engineering/ Construction Schedule	26	17	0	36	6	1	44.7%

1. FCI Score and LQPI Score are not impacted by project costs, so those scores remain the same for all alternatives.
2. Schedule lengths can vary from 10 to 25 years.
3. RI <1% = Low, 1-2%=mid range, >2%= high
4. FCI below 1.5 = weak, 1.5 to 2.5 = mid-range, >2.5 = strong
5. LQPI <1.5 = high impact, 1.5 to 2.5 = medium impact, >2.5 = low impact
6. See additional notes/limitations on next page

Financial
Capability
Assessment

ALL levels of control considered meet the EPA standard for low impact, with room to spare...

Including regional sewer separation.

Ending CSOs in Affordable

Projected Sewer System Household Charges

	<u>2029</u>		<u>2050</u>	
FY26 Base Rates	\$ 999	→	\$ 2,337	
0 CSOs 2050 Typical Year	\$ 999	→	\$ 2,380	+\$43
0 CSOs 2050 5-Year Storm	\$ 999	→	\$ 2,433	
0 CSOs 2050 25-Year Storm	\$ 999	→	\$ 2,462	+\$125

Historic Sewer System Household Charges

	<u>2002</u>		<u>2026</u>
Historical Household Charges	\$ 286	→	\$ 884

Asking rate payers to invest in an outdated polluting system that will require further upgrades is fiscally irresponsible when a better option is available at only \$82.

Green infrastructure should play a bigger role

NYC GREEN INFRASTRUCTURE

2021 Annual Report



“manage runoff from 10% of the impervious surfaces in combined sewer watersheds through detention and infiltration source controls.”

Full benefits of green infrastructure not being captured



A Triple Bottom Line Assessment of Traditional and Green Infrastructure Options for Controlling CSO Events in Philadelphia's Watersheds

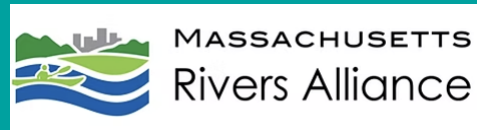
Final Report

Prepared for:

Howard M. Neukrug, Director, Office of Watersheds,
City of Philadelphia Water Department
under contract to Camp Dresser and McKee

The key finding of this report is that the green infrastructure approaches generate a broader and more valuable array of environmental, public health, and social benefits than do traditional CSO control strategies. Benefits of green infrastructure evaluated and monetized include: Improved recreation opportunities, increased property values, reduced heat -stress related fatalities, improved air and water quality, green jobs, reduced energy use, and reduced disruption due to construction and maintenance activities.

50+ organizations said NO to more sewage



Urban rivers are swimmable elsewhere

Portland OR, 2018



Paris, 2025

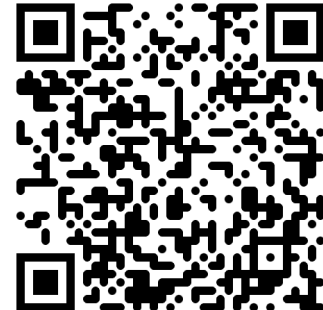
What value do we place on a clean Charles, Mystic and Alewife?



This is a once-in-a-generation opportunity to modernize greater Boston's infrastructure and ensure world-class rivers



MAKE A GIFT TO
SUPPORT OUR
WORK



SUBSCRIBE TO
OUR MONTHLY
NEWSLETTER

THANK YOU!
Questions?



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[@crwa.bsky.social](https://bsky.app/profile/crwa.social)



[@charlesriverwatershed](https://www.instagram.com/charlesriverwatershed)



[@Charles River Watershed Association](https://www.linkedin.com/company/Charles-River-Watershed-Association)



[@Charles River Watershed Association](https://www.facebook.com/CharlesRiverWatershedAssociation)



[@Charles River Watershed Association](https://www.youtube.com/CharlesRiverWatershedAssociation)

CSO “Elimination” in South Boston

North Dorchester Bay Storage Tunnel

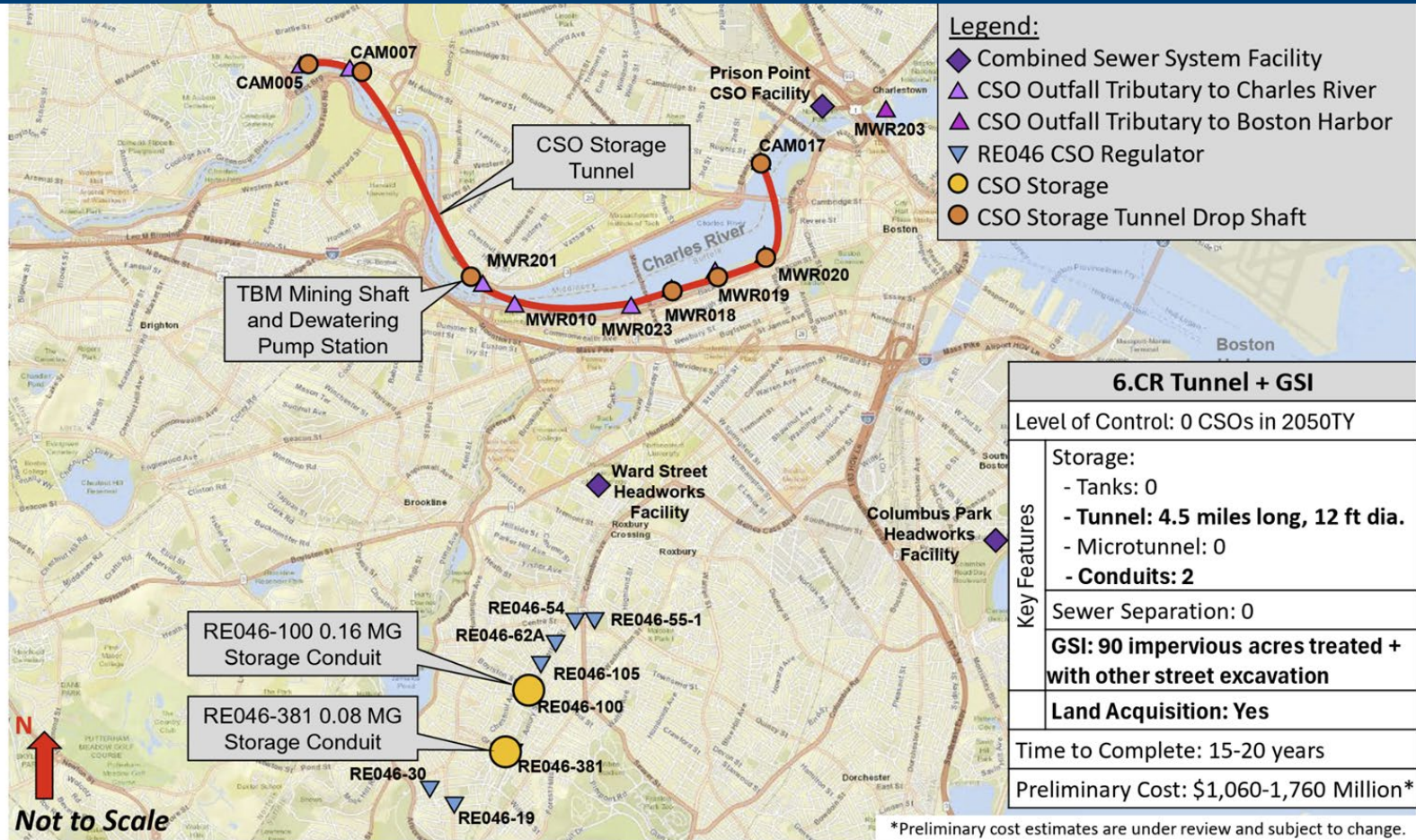
Year Completed 2013

Cost \$224.7 Million

Description Constructed a 10,832-ft., 17-ft. diameter soft-ground tunnel, drop shafts and CSO and stormwater diversion structures along outfalls BOS081-BOS087; 15-mgd tunnel dewatering pump station at Massport’s Conley Terminal; 24-inch force main; and below-ground tunnel ventilation and odor control facility at the upstream end of the tunnel.

Water Quality Benefits Eliminated CSO and separate stormwater discharges up to the 25-year storm and 5-year storm, respectively.





N

 Not to Scale

RE046-100 0.16 MG
 Storage Conduit

RE046-381 0.08 MG
 Storage Conduit

CSO Storage
 Tunnel

TBM Mining Shaft
 and Dewatering
 Pump Station

Ward Street
 Headworks
 Facility

Columbus Park
 Headworks
 Facility

Prison Point
 CSO Facility

CAM007

CAM005

CAM017

MWR203

MWR201

MWR019

MWR020

MWR010

MWR018

MWR023

RE046-54

RE046-62A

RE046-55-1

RE046-105

RE046-100

RE046-30

RE046-381

RE046-19