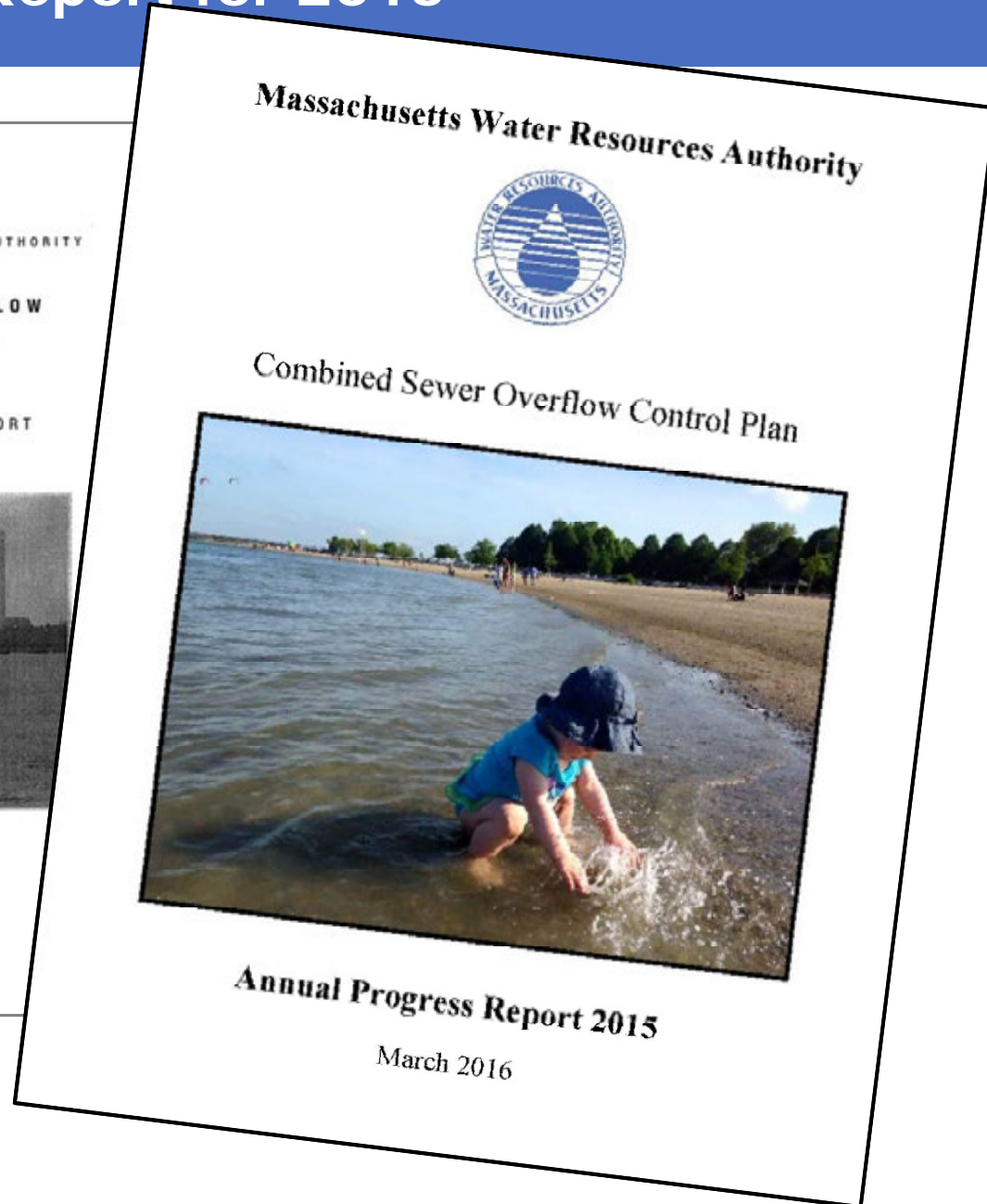
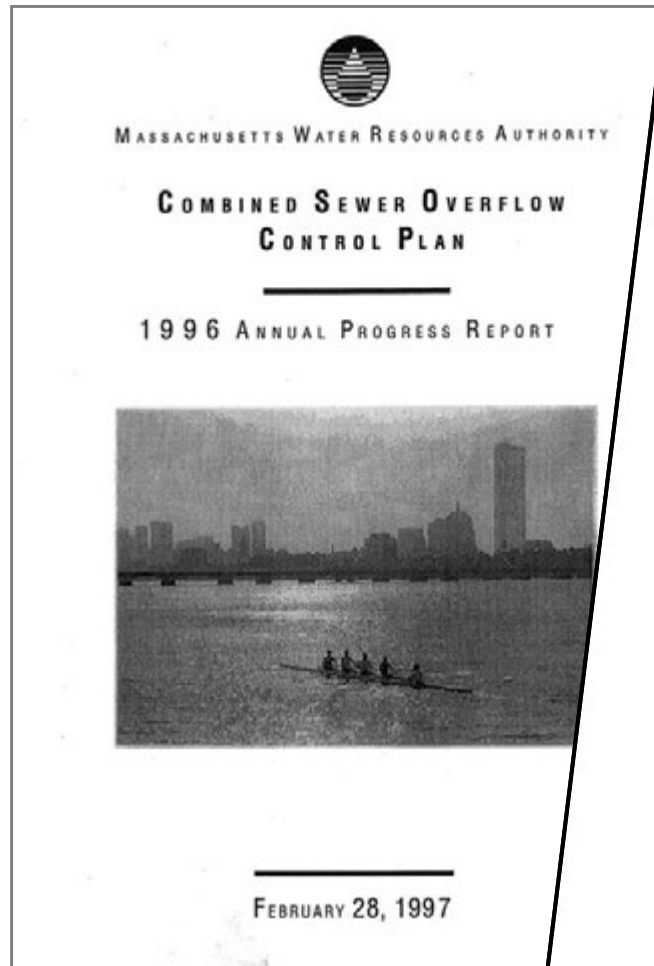




CSO Annual Report for 2015





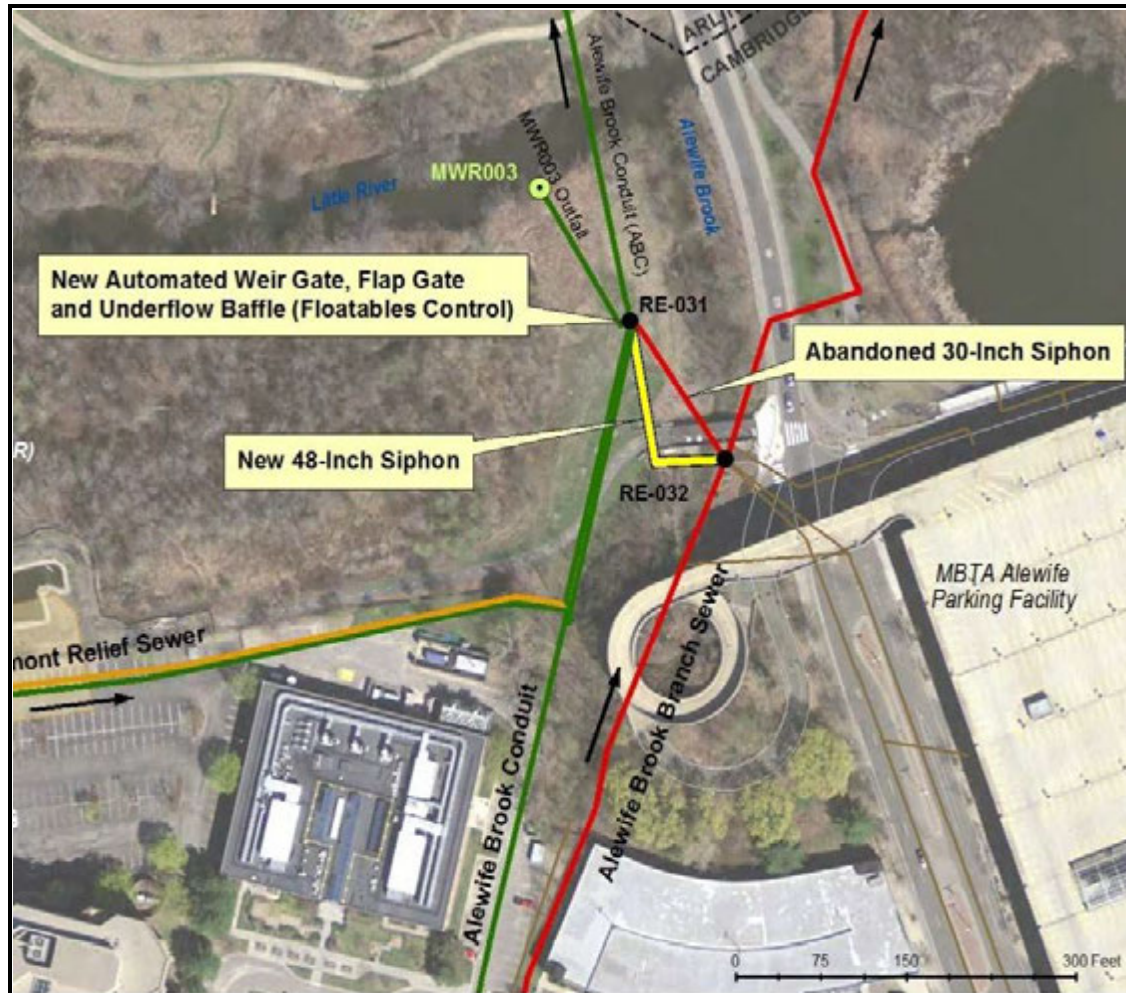
Last CSO Construction Milestones are Achieved

On January 1, 2015: 32 of the 35 Projects in MWRA's Long-Term CSO Control and Schedule Seven were complete. The last 3 CSO projects are now complete.

Last Construction Milestones	Achieved
Oct 2015 <i>MWRA to complete construction of control gate and floatables control at outfall MWR003, and MWRA Rindge Avenue Siphon relief.</i>	10/28/15
Dec 2015 <i>MWRA, in cooperation with BWSC, to complete construction of Reserved Channel sewer separation.</i> <i>MWRA, in cooperation with Cambridge, to complete construction of CAM004 sewer separation.</i>	12/11/15 12/23/15



33. MWR003 Gate, Floatables Control and Siphon Relief



Water Resource: Alewife Brook

\$3,763,000

CSO Outfalls:

MWR003
CAM004

Frequency of Discharge (typical year)

MWR003 before project: 1
MWR003 with project: 5
CAM004 before project: 63
CAM004 with project: Eliminated

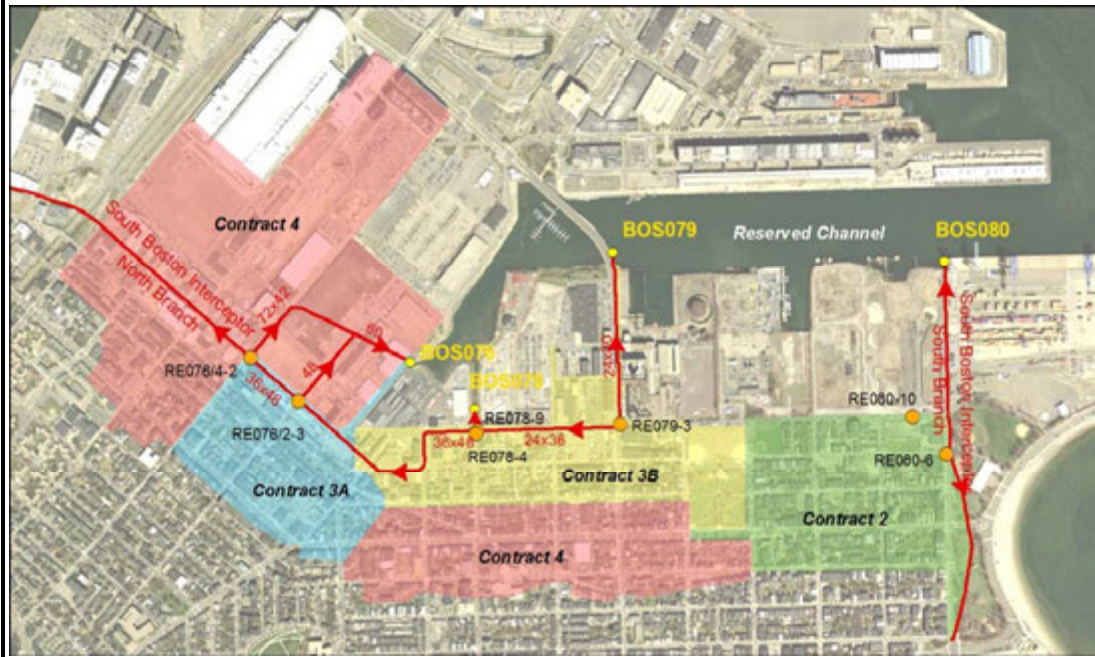
Annual Discharge Volume (typical year)

MWR003 before project: 0.06 mgal
MWR003 with project: 1.0 mgal
CAM004 before project: 24.1 mgal
CAM004 with project: Eliminated



34. Reserved Channel Sewer Separation - BWSC

BWSC installed 81,200 linear feet of new sewer and storm drain to separate 365-acre area of South Boston tributary to four CSO outfalls along the Reserved Channel.



Water Resource: Reserved Channel

\$70,559,000

CSO Outfalls:

BOS076, BOS078, BOS079, BOS080

Frequency of Discharge (typical year)

Before project: 37

With project: 3

Annual Discharge Volume (typical year)

Before project: 28 million gallons

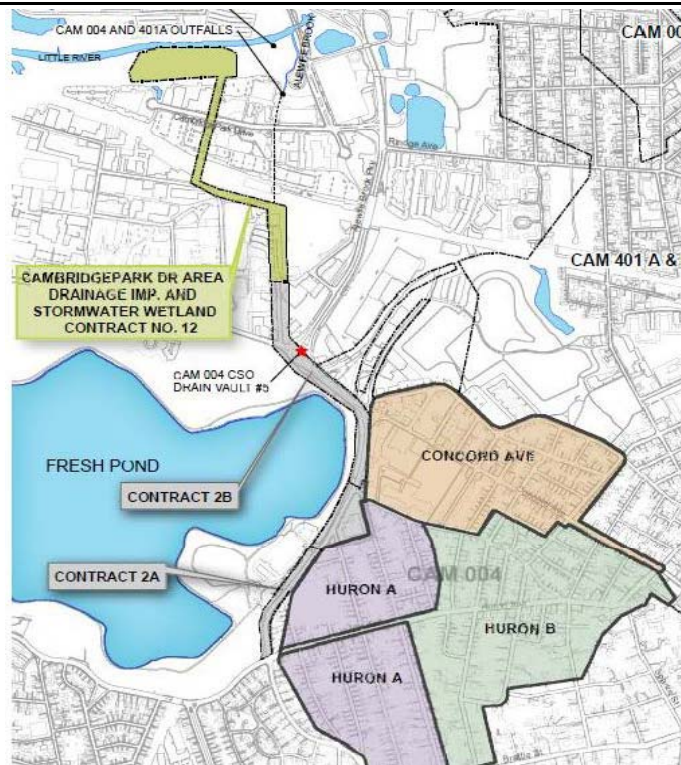
With project: 1.5 million gallons

CSO Reduction by Volume: 95%



35. CAM 004 Sewer Separation – Cambridge

City of Cambridge installed 55,300 linear feet of new or rehabilitated sewer and storm drain to separate a 211-acre area east of Fresh Pond Parkway. Closed Outfall CAM004.



Water Resource: Alewife Brook

\$100,000,000

\$54,000,000 (MWRA Share)

CSO Outfalls:

CAM004

Frequency of Discharge (typical year)

CAM004 before project: 63

CAM004 with project: Eliminated

Annual Discharge Volume (typical year)

CAM004 before project: 24.1 mgal

CAM004 with project: Eliminated



Long-Term CSO Control Plan Accomplishments

✓ **CSO reduction and water quality improvement every year since 1987.**

- Many outfalls closed by the communities in the late 1980's
- Elimination of dry weather overflows by 1990
- Completion of Deer Island transport upgrades by 1992
- >100 CSO system optimization measures 1993-97
- Construction of 35 CSO projects 1996-2015



✓ **181 CSO-related federal court milestones to date.**

- Completion of the last construction project in the Boston Harbor Case in December 2015.





Long-Term CSO Control Plan Accomplishments

35 CSO projects designed and constructed in 20 years (1996-2015)

125 contracts and agreements

- 82 construction
- 33 engineering
- 10 planning/tech. support

5 MWRA/CSO Community agreements totaling \$423 million

\$907 million capital investment by MWRA



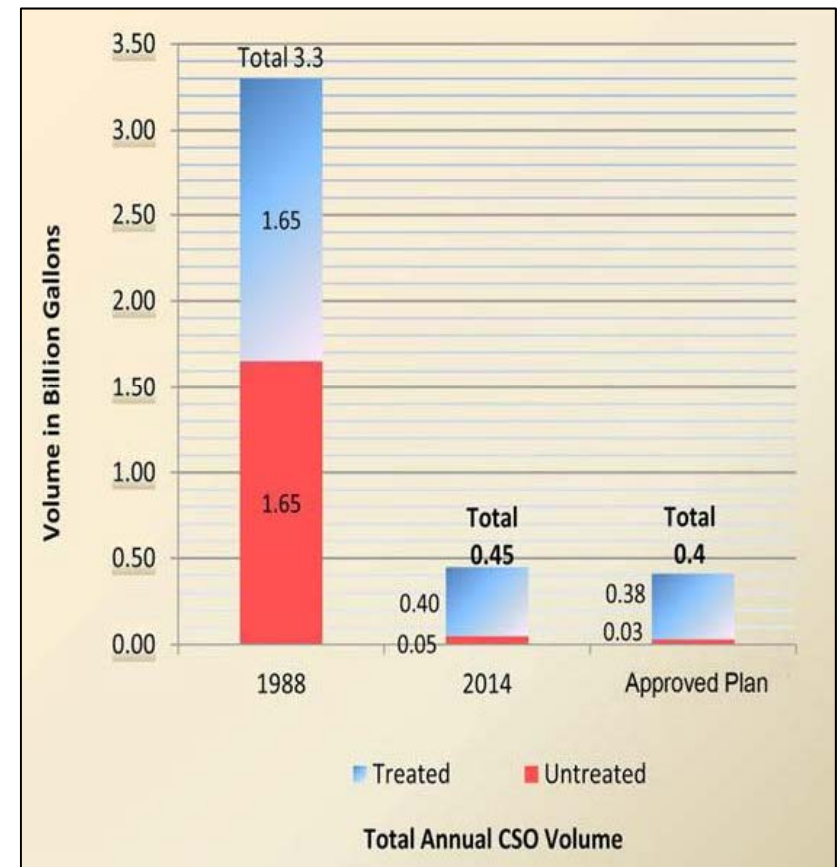


Long-Term CSO Control Plan Benefits

The LTCP brings 84 CSO outfalls into compliance:

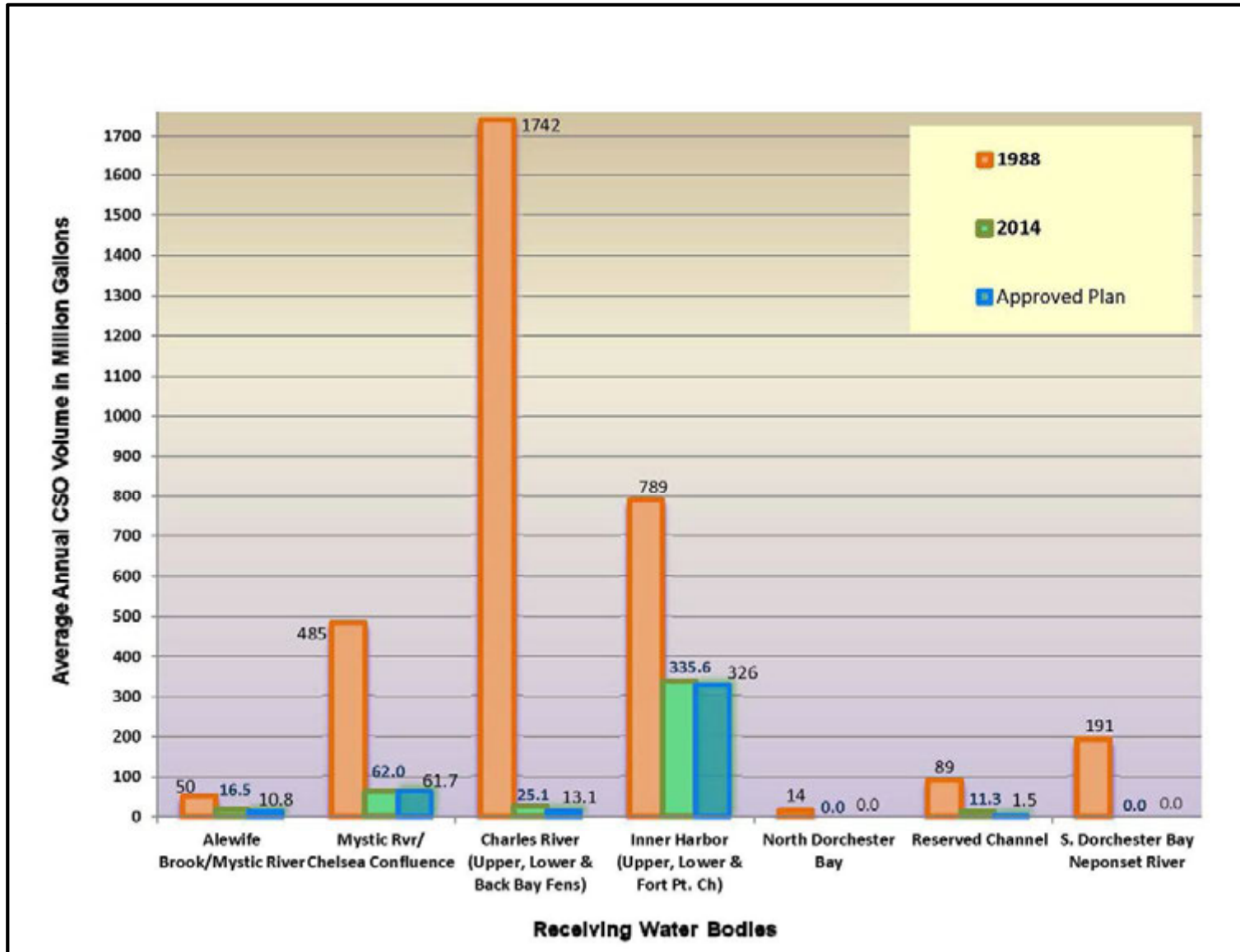
- 34 outfalls are closed to CSO discharges
- 5 outfalls along the South Boston beaches have 25-year storm level of control
- 4 outfalls have upgraded wet weather treatment (CSO facilities)
- Frequency and volume of discharge greatly reduced at remaining outfalls

Reduces system-wide CSO discharge volume in a typical year by 88%, with 93% of remaining volume treated at MWRA's CSO facilities.





CSO Reduction by Receiving Water



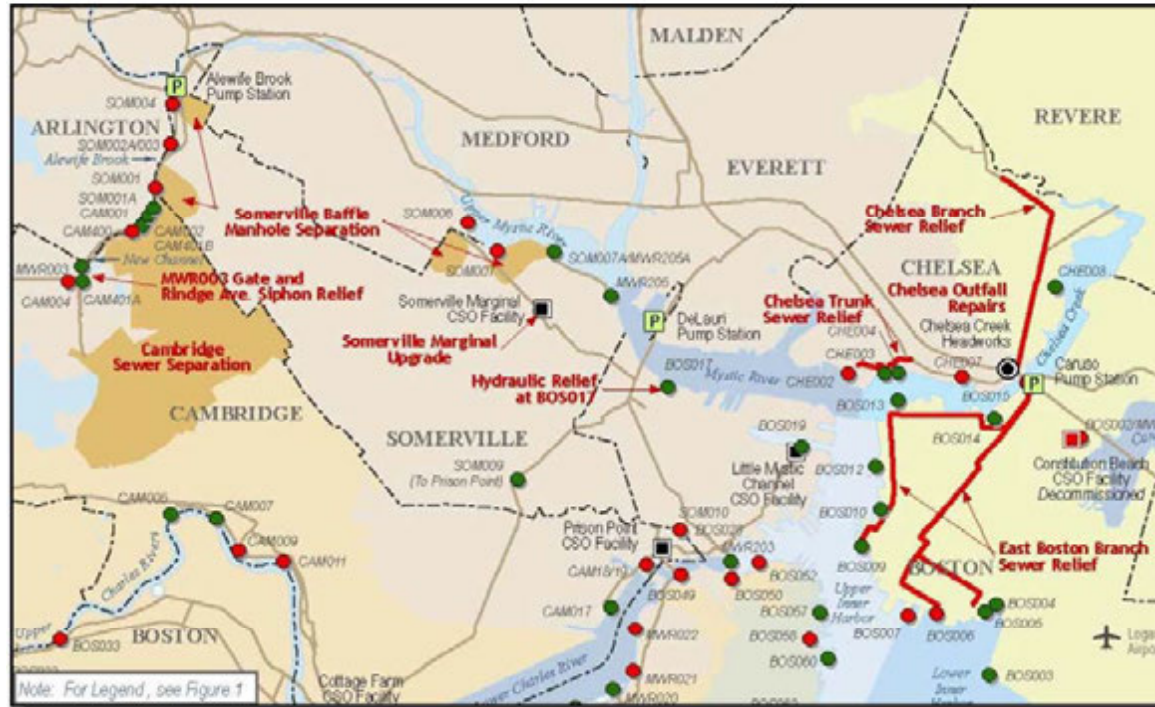


A Water Resource Focus





Focus on Water Resources (Alewife, Mystic and Chelsea)



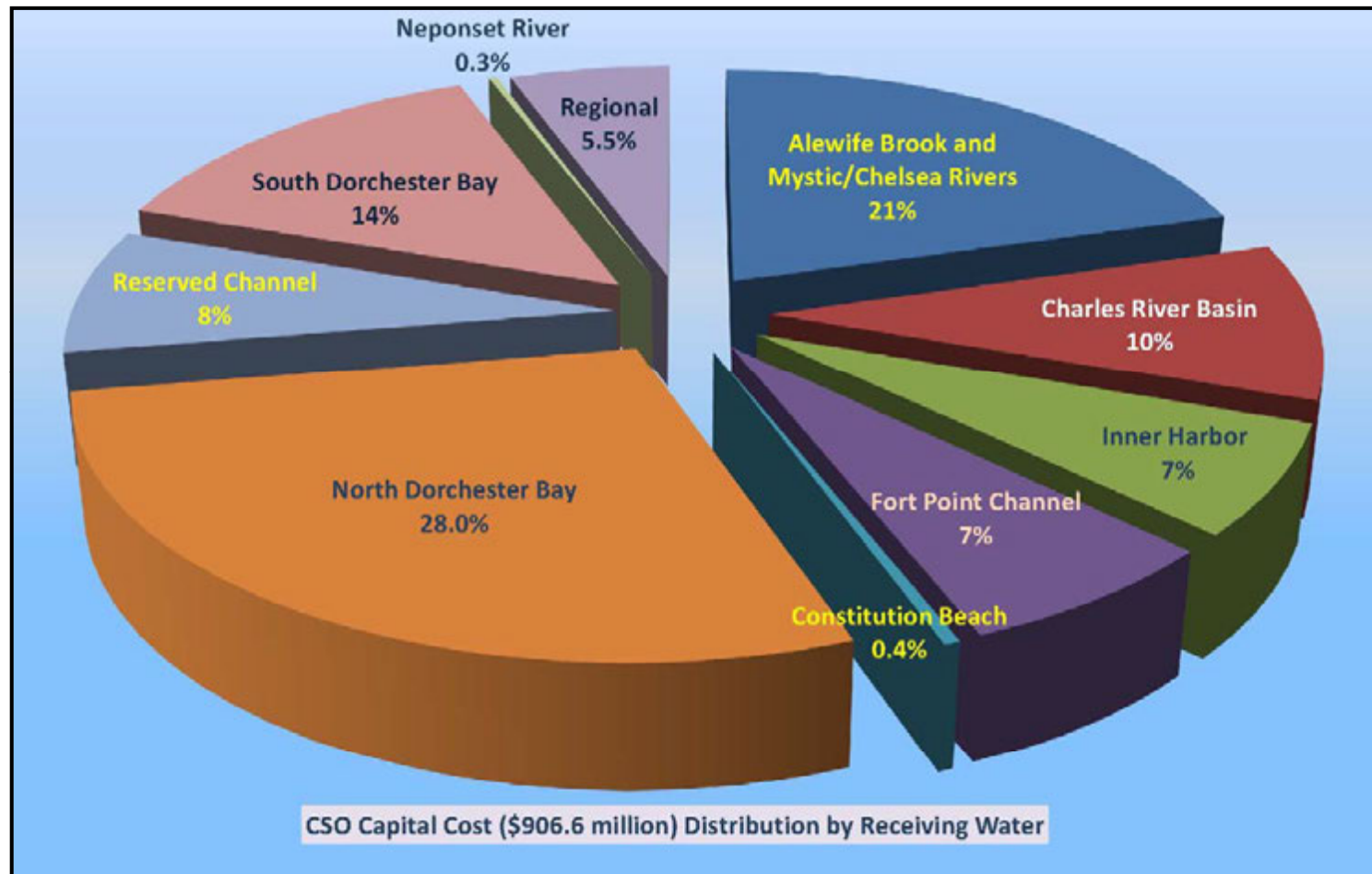
CSO projects for Alewife Brook (and their benefits) were not complete until December 2015

		CSO Outfalls	Typical Year		
			Frequency of Most Active Outfall	Total Discharge Volume (million gallons)	Treated Discharge Volume* (million gallons)
Alewife Brook/Upper Mystic River	1992	15	63	57.6	7.6 (13%)
	2014	8	10	15.7	1.8 (11%)
	LTCP	7	7	10.8	3.5 (32%)
Mystic/Chelsea Confluence	1992	9	76	186.0	120.4 (65%)
	2014	7	18*	60.2	59.5 (99%)
	LTCP	8**	39*	58.2	57.1 (98%)

* At Somerville Marginal CSO treatment facility (Upper Mystic: MWR205A; Mystic/Chelsea Confluence: MWR205)
 ** LTCP called for Outfall CHE002 to remain active. City of Chelsea permanently closed this outfall at the end of 2014.



CSO Cost by Receiving Water – Total \$906.6 Million



Does not include the >\$200M investment in the Deer Island transport system by the early 1990's, which greatly reduced CSO discharge, especially benefiting the Charles River.

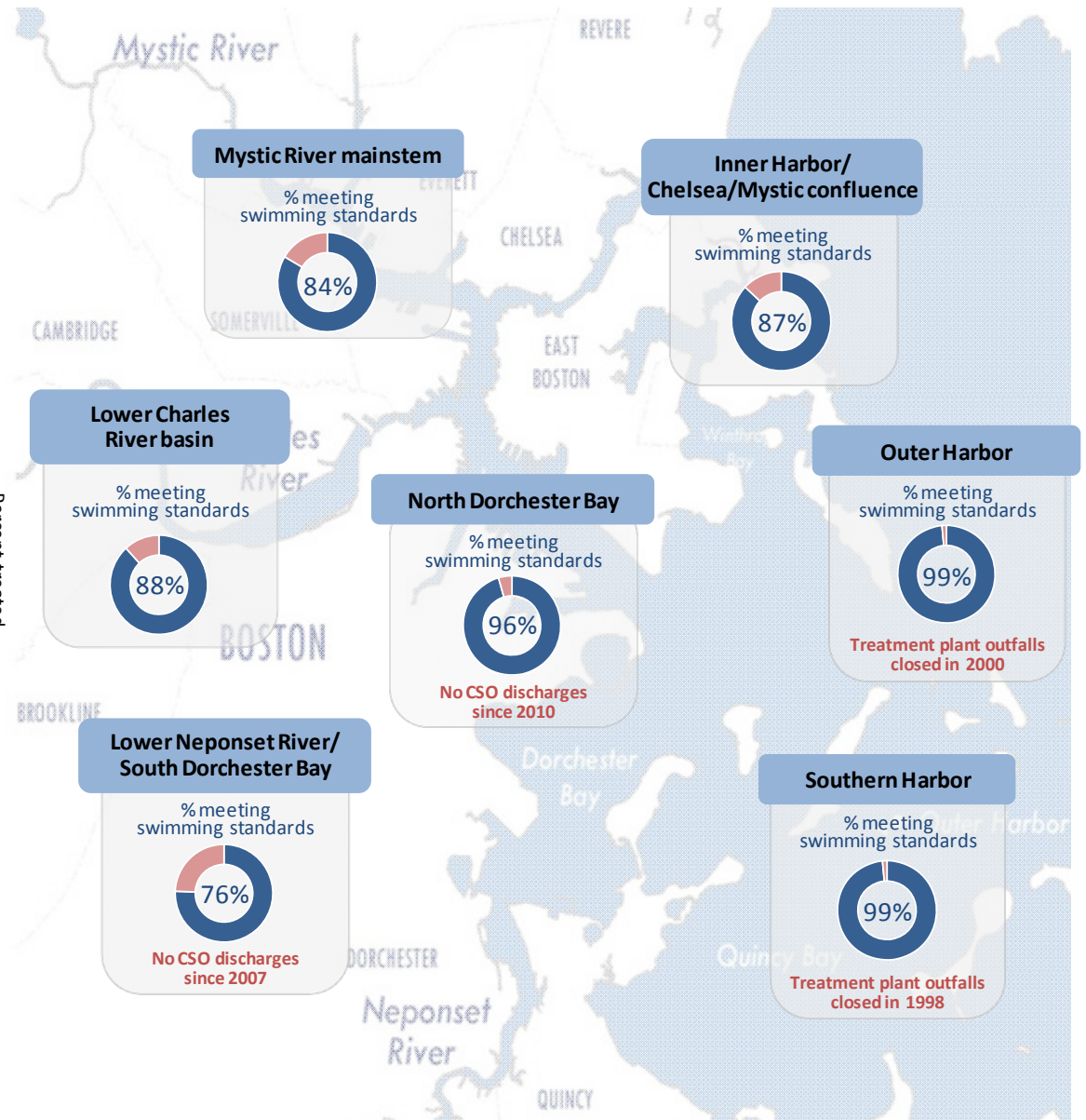
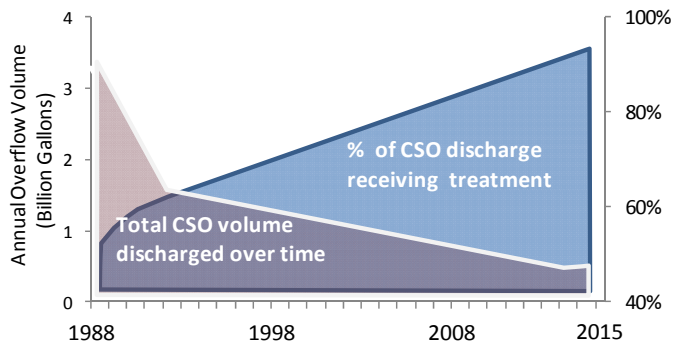
“Regional” includes area-wide planning and system optimization measures.

“Lower Charles River” includes the Back Bay Fens.



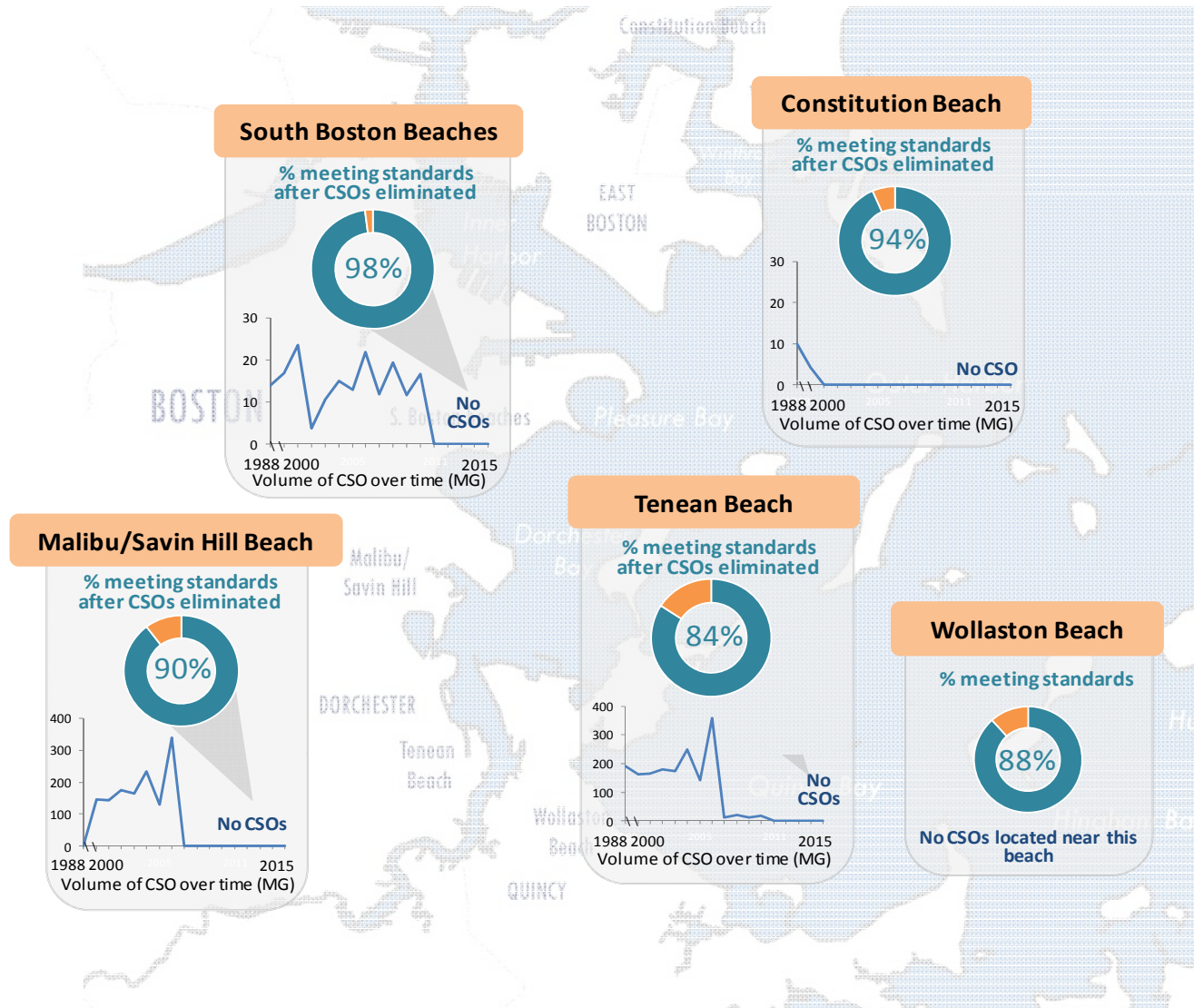
Current Water Quality in Boston Harbor and Its Tributaries: Compliance with Swimming Standards

Percent of samples meeting the *Enterococcus* swimming limit 104 counts/100mL for all weather conditions, 2010-2015 and change in CSO volume, in million gallons, 1988-2015.





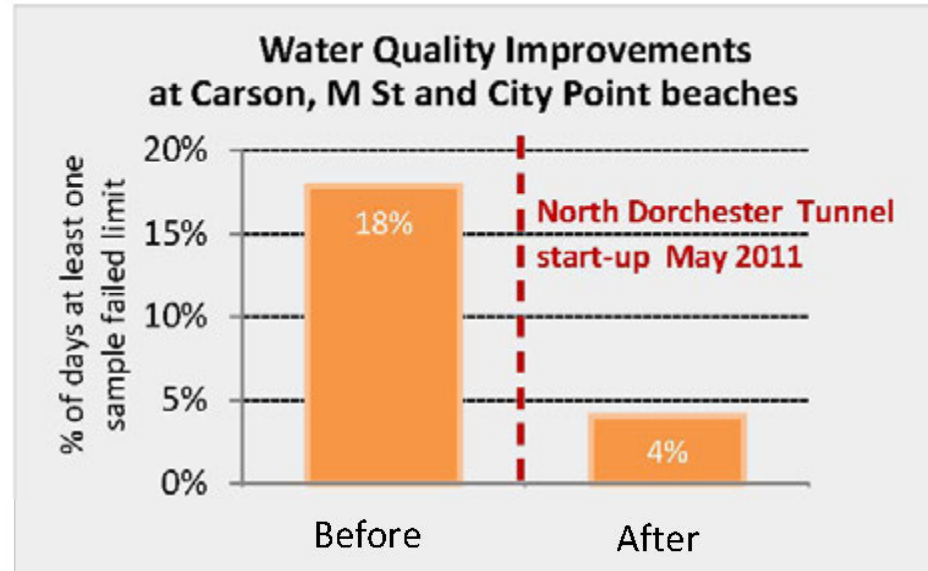
Current Water Quality at Boston Harbor Beaches: Compliance with Swimming Standards



Percent of samples meeting the *Enterococcus* swimming limit 104 counts/100mL for all weather conditions, 2010-2015 and change in CSO volumes near each beach, 1988-2015.



South Boston Beaches Meet Bacteria Limits on More Sampling Days

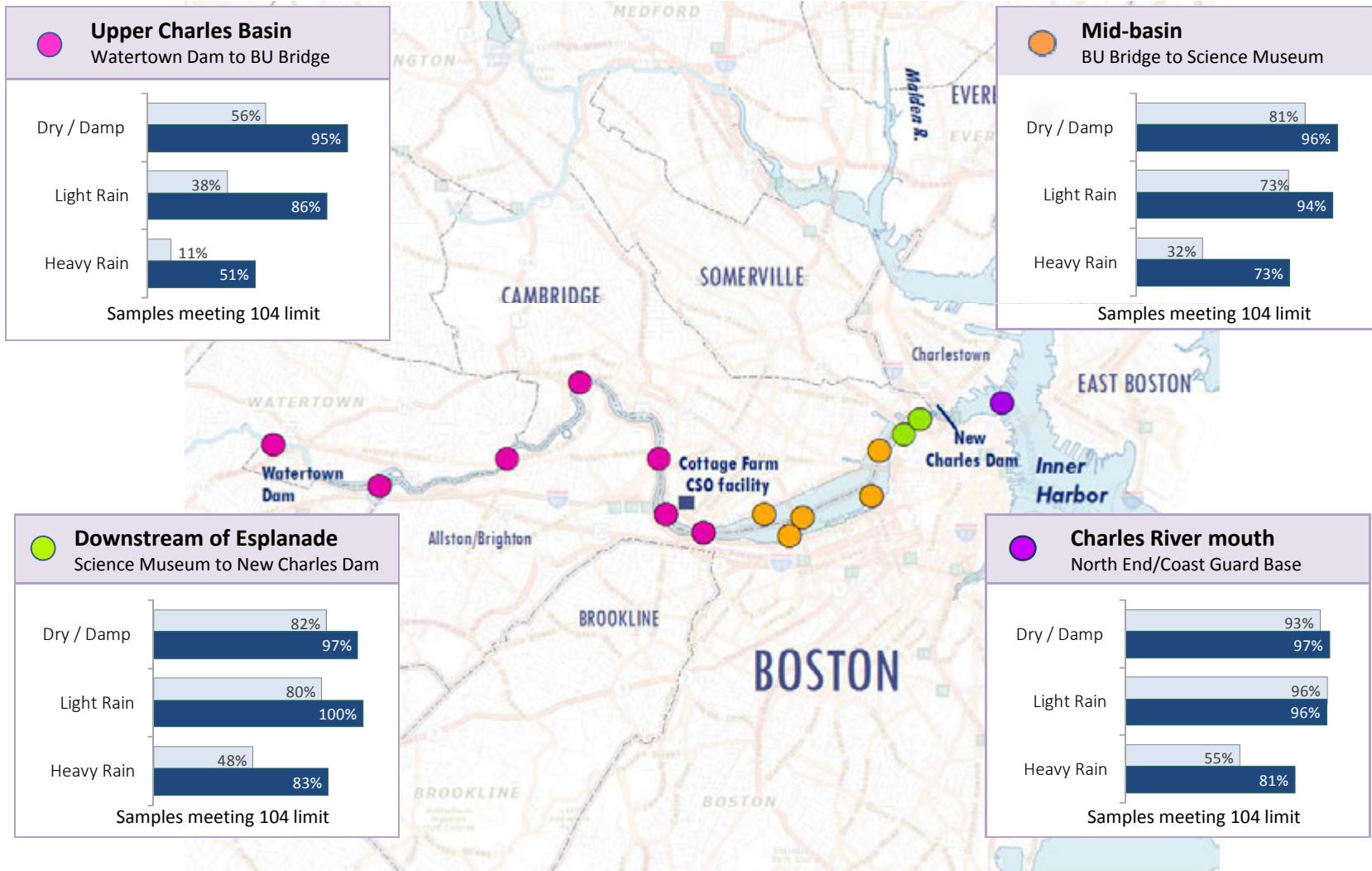


Results from DCR swimming season sampling were used to calculate the fraction of sampling days where at least one bacteria sample failed to meet the posting limit of 104 cfu/100 mL *Enterococcus* at South Boston beaches. Bar graph includes results for Carson, M St and City Point beaches for 2011-2015 swimming seasons.



Change in Lower Charles River Water Quality Over Time

Samples collected from: 1989-1997 2008-2015

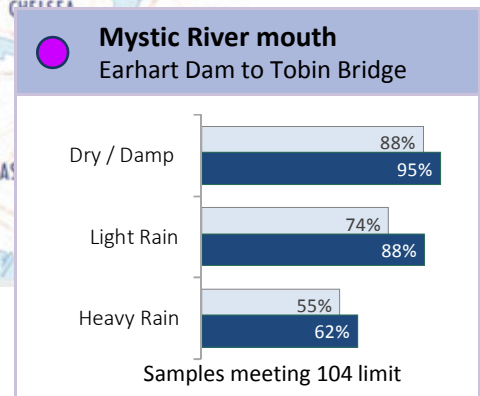
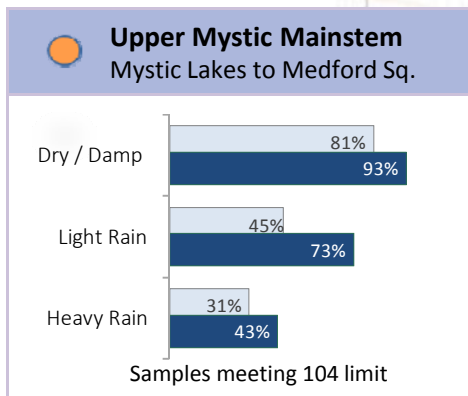
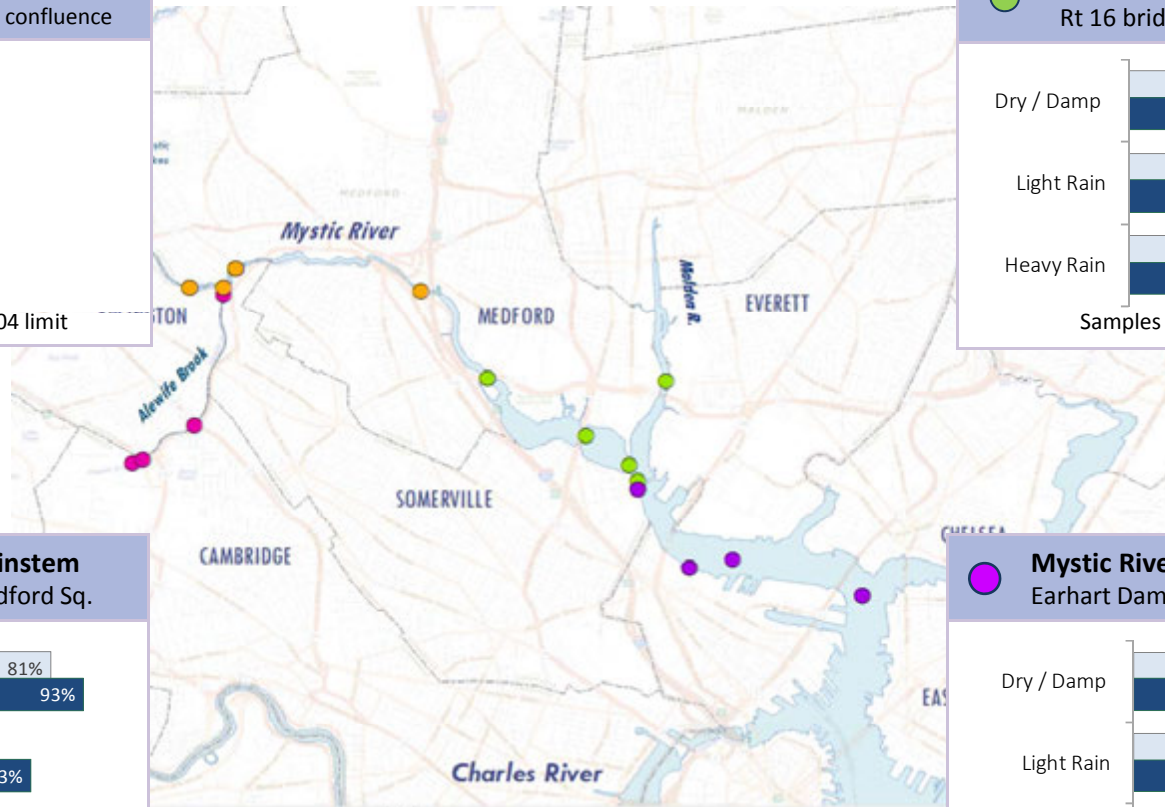
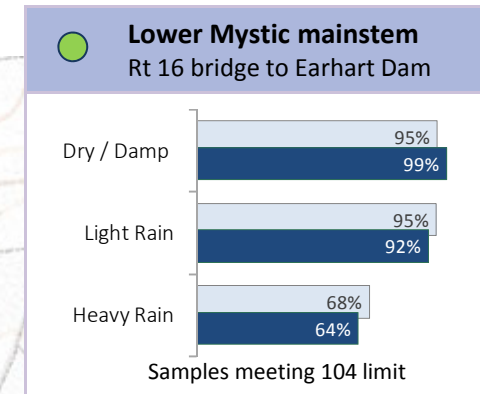
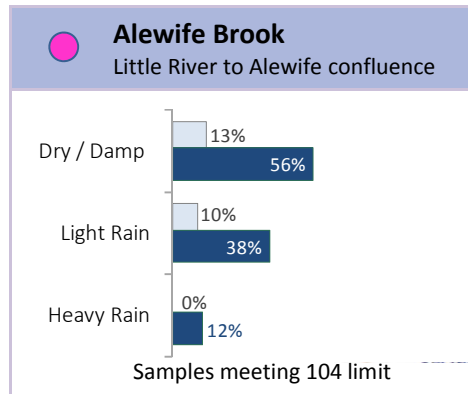


Dots are MWRA sampling locations. State swimming standards for *Enterococcus* single sample limit is 104 cfu/100 mL. Rainfall: Heavy Rain is at least 0.5 inches of rain in previous 48 hours; Light Rain is between 0.1 and 0.5 inches of rainfall in previous 48 hours. 2008 – 2015 period is considered current conditions, following substantial completion of infrastructure improvements. Data from intervening years (2000 – 2007) are excluded.



Change in Alewife Brook and Mystic River Water Quality Over Time

Samples collected from: ■ 1989-1997 ■ 2008-2015

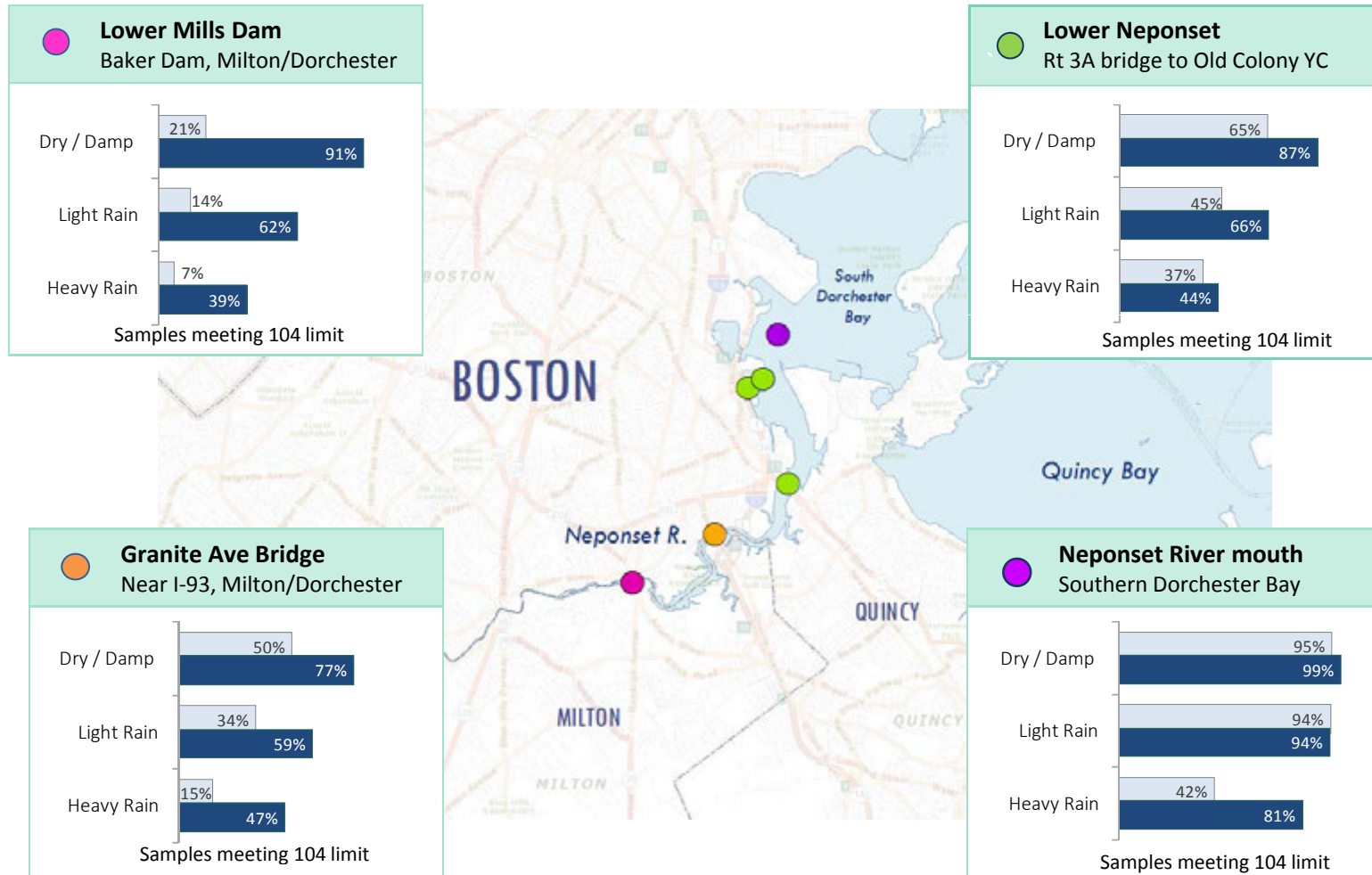


Dots are MWRA sampling locations. State swimming standards for *Enterococcus* single sample limit is 104 cfu/100 mL. Rainfall: Heavy Rain is at least 0.5 inches of rain in previous 48 hours; Light Rain is between 0.1 and 0.5 inches of rainfall in previous 48 hours. 2008 – 2015 period is considered current conditions, following substantial completion of infrastructure improvements. Data from intervening years (2000 – 2007) are excluded.



Change in Lower Neponset River Water Quality Over Time

Samples collected from: 1989-1997 2008-2015

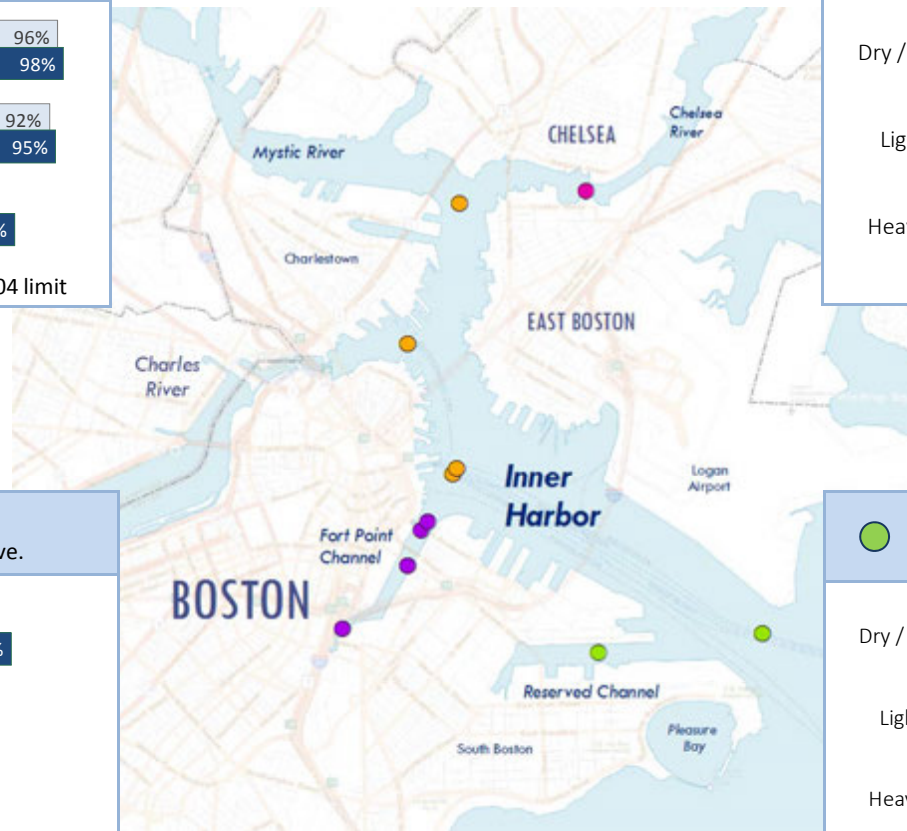
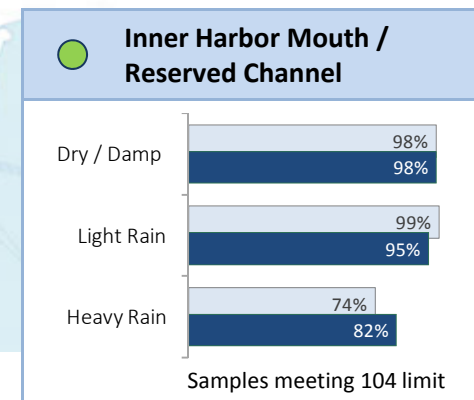
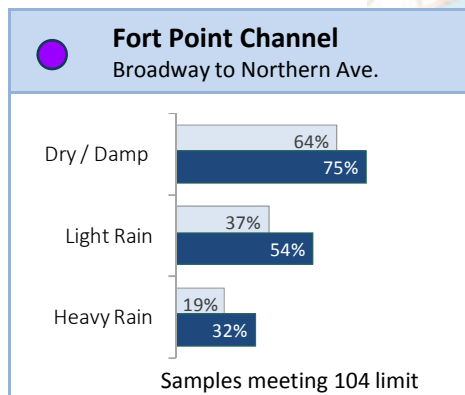
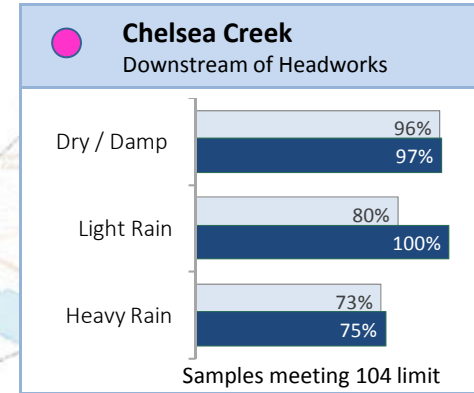
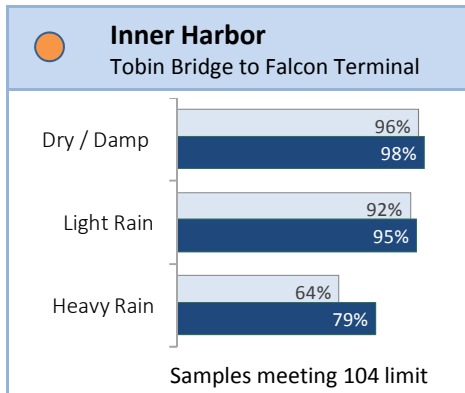


Dots are MWRA sampling locations. State swimming standards for *Enterococcus* single sample limit is 104 cfu/100 mL. Rainfall: Heavy Rain is at least 0.5 inches of rain in previous 48 hours; Light Rain is between 0.1 and 0.5 inches of rainfall in previous 48 hours. 2008 – 2014 period is considered current conditions, following substantial completion of infrastructure improvements. Data from intervening years (2000 – 2007) are excluded.



Change in Inner Harbor Water Quality Over Time

Samples collected from: 1989-1997 2008-2015

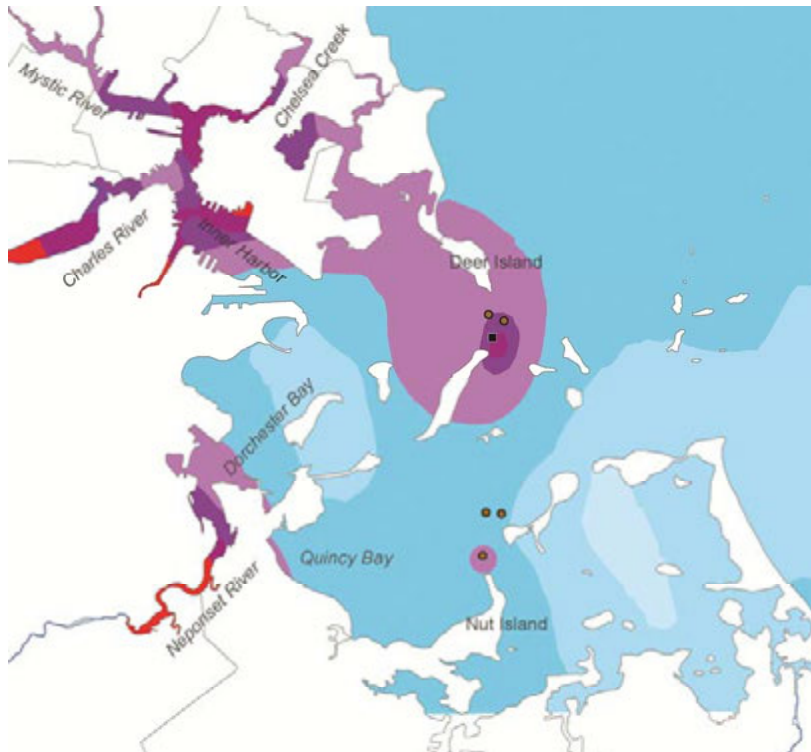


Dots are MWRA sampling locations. State swimming standards for *Enterococcus* single sample limit is 104 cfu/100 mL. Rainfall: Heavy Rain is at least 0.5 inches of rain in previous 48 hours; Light Rain is between 0.1 and 0.5 inches of rainfall in previous 48 hours. 2008 – 2015 period is considered current conditions, following substantial completion of infrastructure improvements. Data from intervening years (2000 – 2007) are excluded.

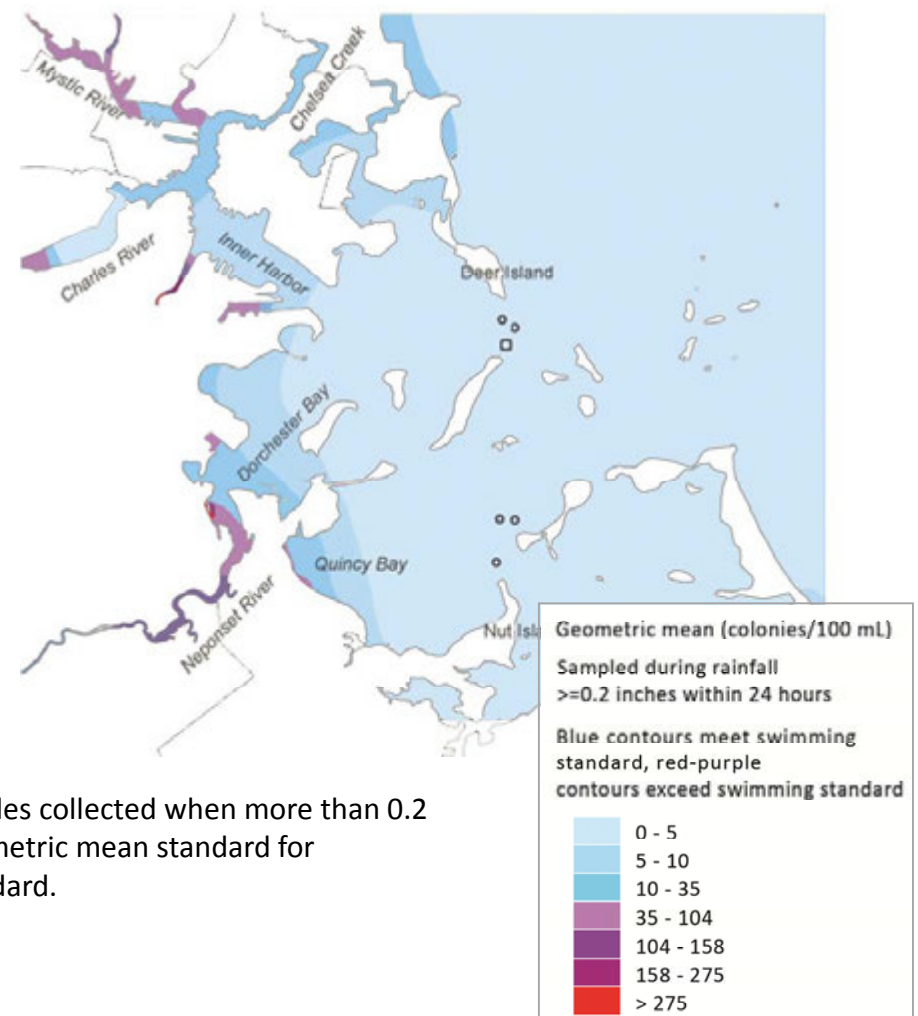


Change in Boston Harbor *Enterococcus* Bacteria in Wet Weather

Prior to Boston Harbor projects (1989-1991)



Most Boston Harbor projects complete (post-2007)



Contours show the geometric means of *Enterococcus* bacteria samples collected when more than 0.2 inches of rain fell in the previous day. Blue areas meet the EPA geometric mean standard for *Enterococcus* (35 cfu/100 mL) and red-purple areas exceed the standard.



MWRA CSO Capital Investment and Spending

Total capital cost (planning, design and construction): \$906.6 M

Spent thru Dec 2015: \$891.0 M

Remaining spending of \$15.6 M for:

- **Cambridge CAM004 surface restoration: \$9.7 M**
- **BWSC Reserved Channel project close-out and Dorchester inflow removal: \$3.8 M**
- **3-year CSO performance assessment thru 2020: \$2.0 M**



Remaining Federal Court Obligations

There are 184 CSO related milestones in Schedule Seven.

Three milestones are left:



March 2016: Submit CSO annual progress report (for 2015).

January 2018: Commence 3-year performance assessment.

December 2020: Submit results of 3-year performance assessment.



Remaining Federal Court Obligations

Remaining Schedule Seven Milestones	
Jan 2018	<i>MWRA to commence three-year performance assessment of its Long-Term CSO Control Plan. The assessment shall include post-construction monitoring in accordance with EPA's Combined Sewer Overflow (CSO) Policy, 59 Fed. Reg. 18688 (Apr. 19, 1994).</i>
Dec 2020	<i>MWRA to submit results of its three-year performance assessment of its Long-Term CSO Control Plan to the EPA and DEP. MWRA to demonstrate that it has achieved compliance with the levels of control (including as to frequency of CSO activation and as to volume of discharge) specified in its Long-Term CSO Control Plan.</i>

MWRA will continue to submit compliance progress reports to the Court, on a semi-annual basis (next report: June 2016).



The 2006 Agreement and Remaining Regulatory Matters

In April 2006, the Court approved a joint motion filed by DOJ, EPA and MWRA that formalized an agreement with EPA and DEP on MWRA's long-term control plan obligations. With this agreement:

- **MWRA added projects to elevate the level of control for the Charles River Basin, increasing CSO plan cost by \$37.4 million.**
- **EPA and DEP approved MWRA's revised recommended projects or schedules for the South Boston Beaches, Alewife Brook and East Boston.**
- **EPA and DEP agreed not to add any other CSO control requirements through 2020.**
- **DEP agreed to issue a series of 3-year CSO variance extensions for the Charles River Basin and Alewife Brook/Upper Mystic River through 2020, and EPA agreed to approve the extensions, limited to the requirements in the LTCP.**
- **EPA and DEP agreed that if MWRA demonstrates, by December 2020, that it has attained the levels of control in the approved plan, any further or future CSO control requirements would be the responsibility of each permittee, for its respective outfalls.**



CSO Compliance with State Water Quality Standards

Class B	Neponset River	CSO eliminated.
Class SB	North Dorchester Bay South Dorchester Bay Neponset River Constitution Beach	(25-year storm control for the South Boston beaches)
Class B_(CSO)	Back Bay Fens (Muddy River)	Min. 95% compliance with Class B.
Class SB_(CSO)	Upper and Lower Boston Inner Harbor Lower Mystic River/Chelsea Creek Reserved Channel Fort Point Channel	CSOs reduced/treated in accordance with approved the Long-Term Control Plan, providing >98% compliance
Class B (CSO Variance)	Alewife Brook/Upper Mystic River Charles River Basin	Class B standards sustained w/temporary allowance for CSO discharges as LTCP is implemented and verified (1998-2020) CSOs reduced/treated in accordance with approved Long-Term Control Plan With CSO performance assessment (2020), DEP to make determinations on long-term water quality standards and associated levels of CSO control



With completion of the CSO Control Plan:

- **All Boston Harbor Cleanup projects are complete and providing environmental benefit.**
- **181 of 184 CSO related court milestones are achieved.**
- **39 of 84 CSO outfalls are closed or have 25-year storm control.**
- **CSOs to sensitive use areas – beaches and shellfish beds – are eliminated (25-year storm control in South Boston).**
- **CSO discharge volume is reduced from 3.3 billion gallons in 1988 to 0.4 billion gallons (88% reduction).**
- **93% of remaining discharge volume is treated at MWRA's four CSO facilities.**



THE END

QUESTIONS?