



# Massachusetts Water Resources Authority

*Presentation to*

The logo for ACEC (Association of Coastal and Estuarine Scientists) features the letters "ACEC" in a bold, blue, serif font. Above the letters is a yellow, curved line that arches over the text. Below the letters is a faint, light blue reflection of the text.

**ACEC**

***MWRA Update***

**Frederick A. Laskey  
Executive Director**

**April 6, 2017**



## ***A Little Perspective***



## Violation Of The Clean Water Act

- In 1982 and 1983, civil suits were filed against the MDC and other state agencies claiming that the Massachusetts Clean Waters Act had been violated as a result of discharges of untreated and partially treated sewage from Nut and Deer Islands





# Two Obsolete Wastewater Treatment Plants





# Raw Sewage Pouring Into Boston Harbor Daily





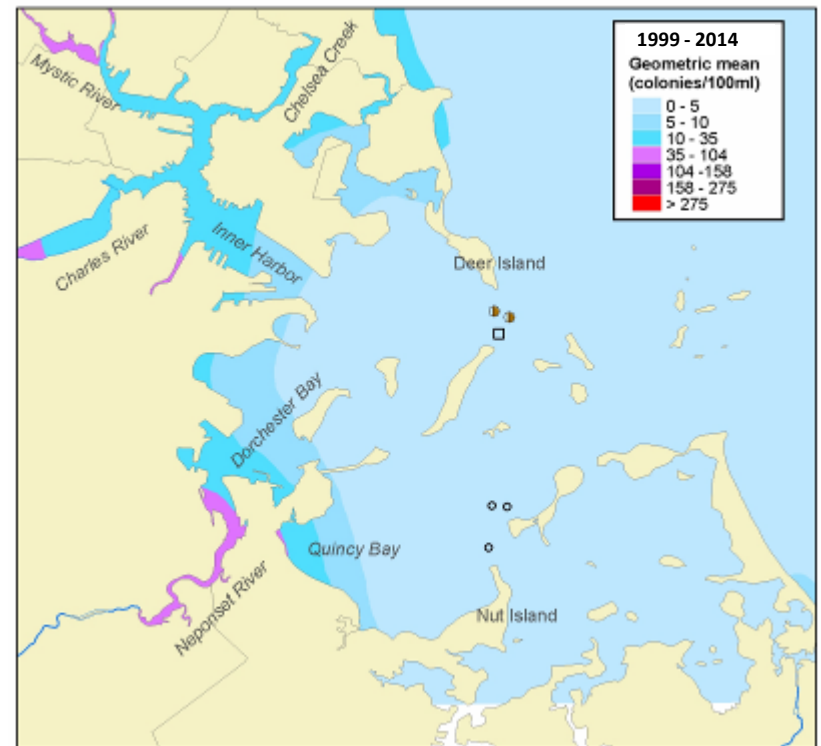
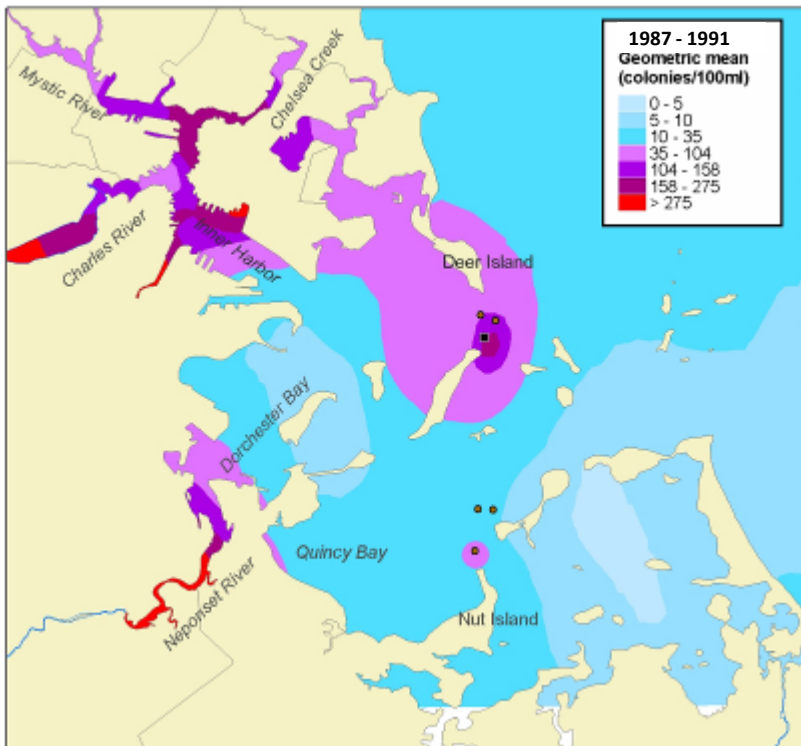
THE HARBOR.



# Dramatic Improvements In Water Quality – Even In Wet Weather

1987-1998 (Before Secondary Treatment and South System transfer)

1999 - 2014 (After Secondary Treatment and New Outfall)



Average *Enterococcus* counts in Boston Harbor in wet weather

***The lighter the blue, the better***



# Deer Island Received Its 5th Platinum Award

No permit violations for 9 years in a row!







# Charles River Gets High Marks

- In its latest annual report card, the EPA has given the Charles River a grade of B+ for water quality





# Boston Now Has Some Of The Cleanest Urban Beaches In The Country

## The Boston Globe

Michael Levenson - Globe Staff | May 23, 2015

### Report gives Boston-area beaches high marks

Says Boston region's waters are cleaner than Waikiki's

88 percent of the time in 2014.



On the national stage, the report found South Boston's beaches had cleaner water than the beaches in Virginia Beach, Va., Coney Island, N.Y., Santa Monica Beach, Calif., and, yes, Waikiki and South Beach. The finding was based on comparable water quality testing data taken between 2012 and 2014 by local officials in those states and then reported to the Environmental Protection Agency.

"These beaches [in the Boston-area], from best to worst, are significantly better than they were 20 years ago, and they're significantly better than most of the urban beaches in the country," said Bruce Berman, director of strategy, communications and programs at Save the Harbor/Save the Bay. "We should be really proud."

*Beach-goers at Revere, and in many places elsewhere in the state, enjoy clean water,*



# Boston's Waterfront Is The Region's Fastest Growing Zip Code





# "Best Drinking Water" In The Country

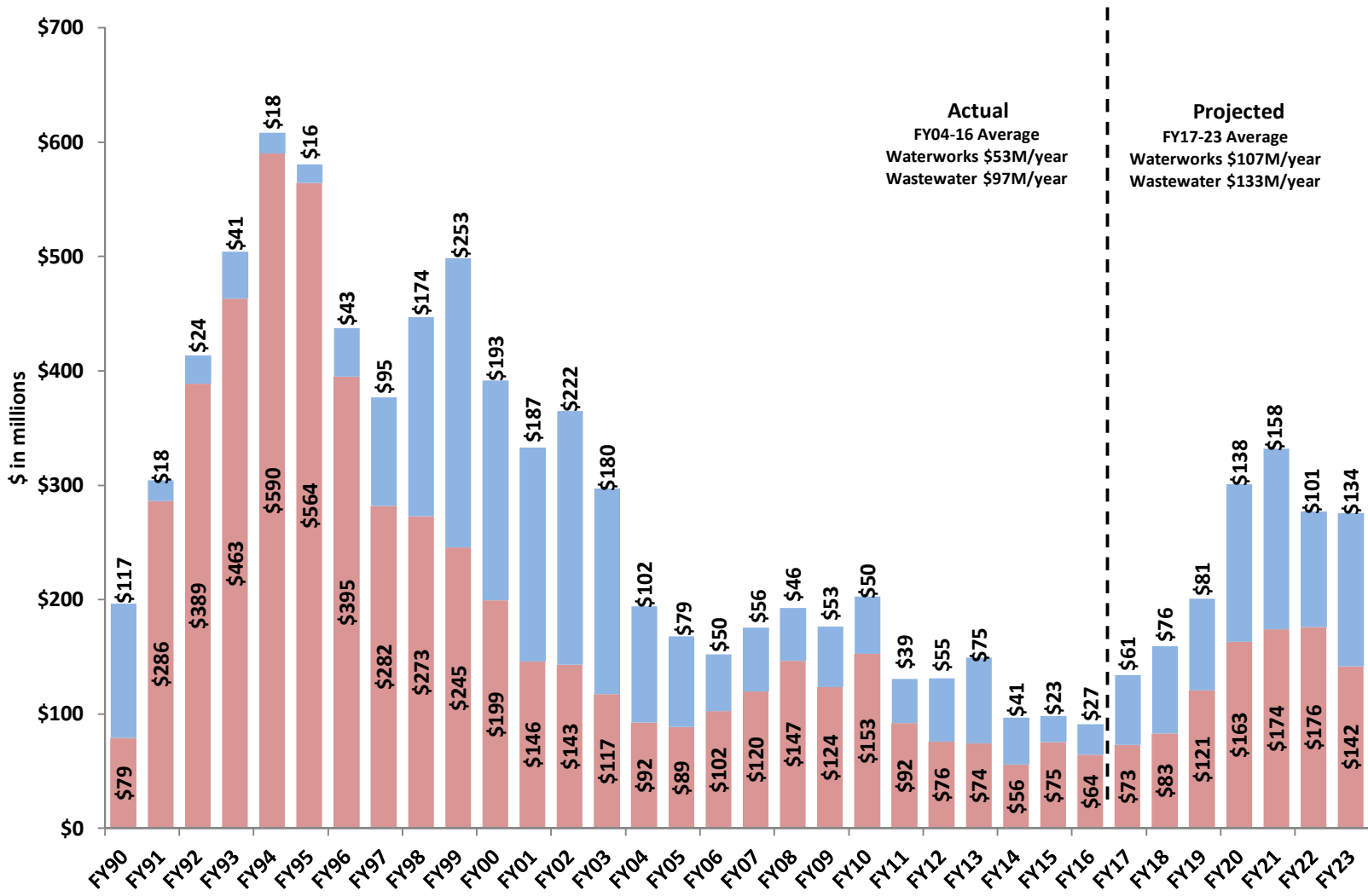




## ***What's New***



# MWRA Has A Robust Capital Program Over the Next Several Years



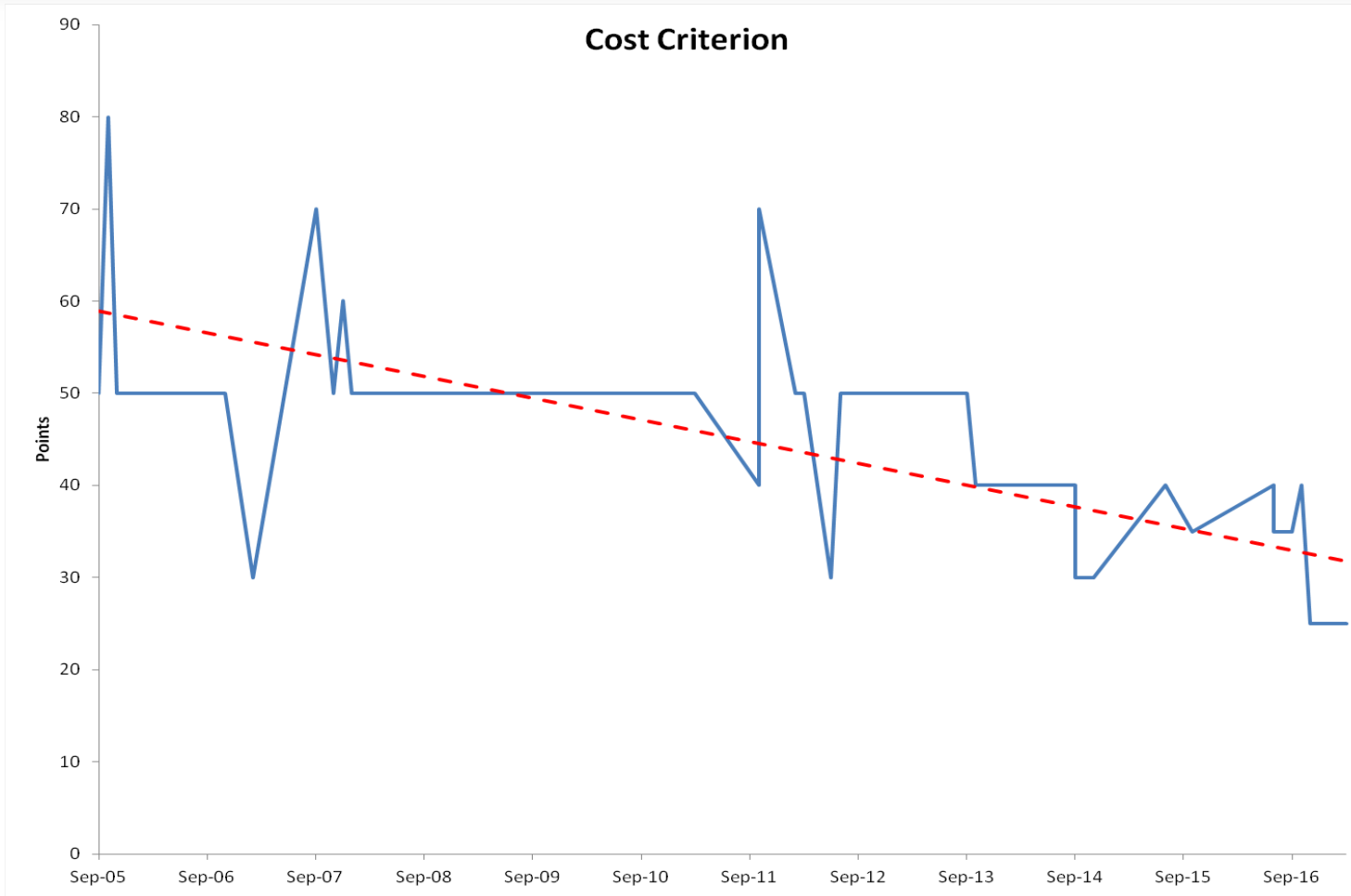


## Recent Change to MWRA's Procurement Process

- Direct Labor Cap has been increased from \$47/hour to \$75/hour



# Cost Criterion Trending Downward



- Recent procurements have had 20 – 25 points for the cost criterion

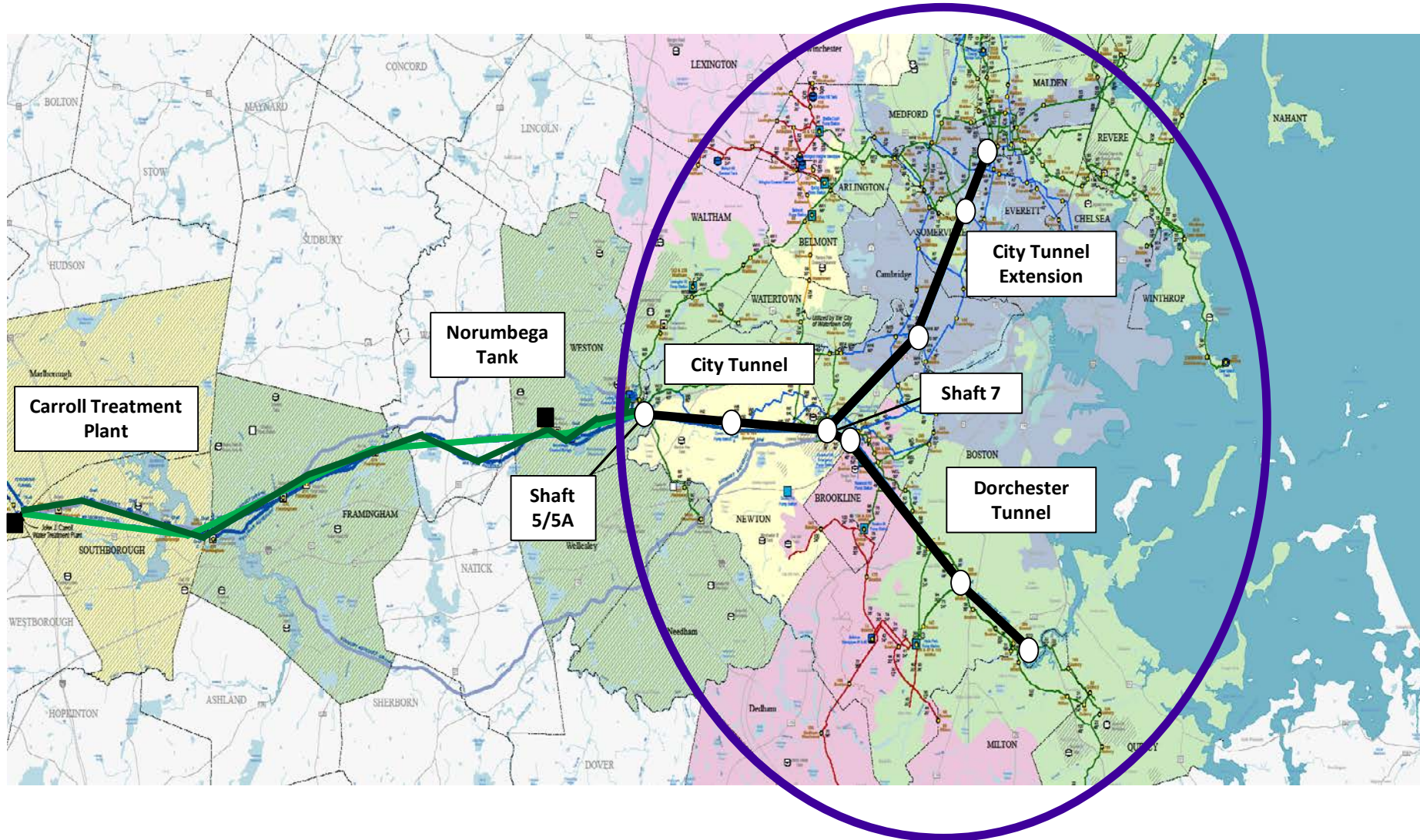




# *Metropolitan Tunnel Redundancy*



# Redundancy For The Metropolitan Tunnel System





# Condition of Metropolitan Tunnel System

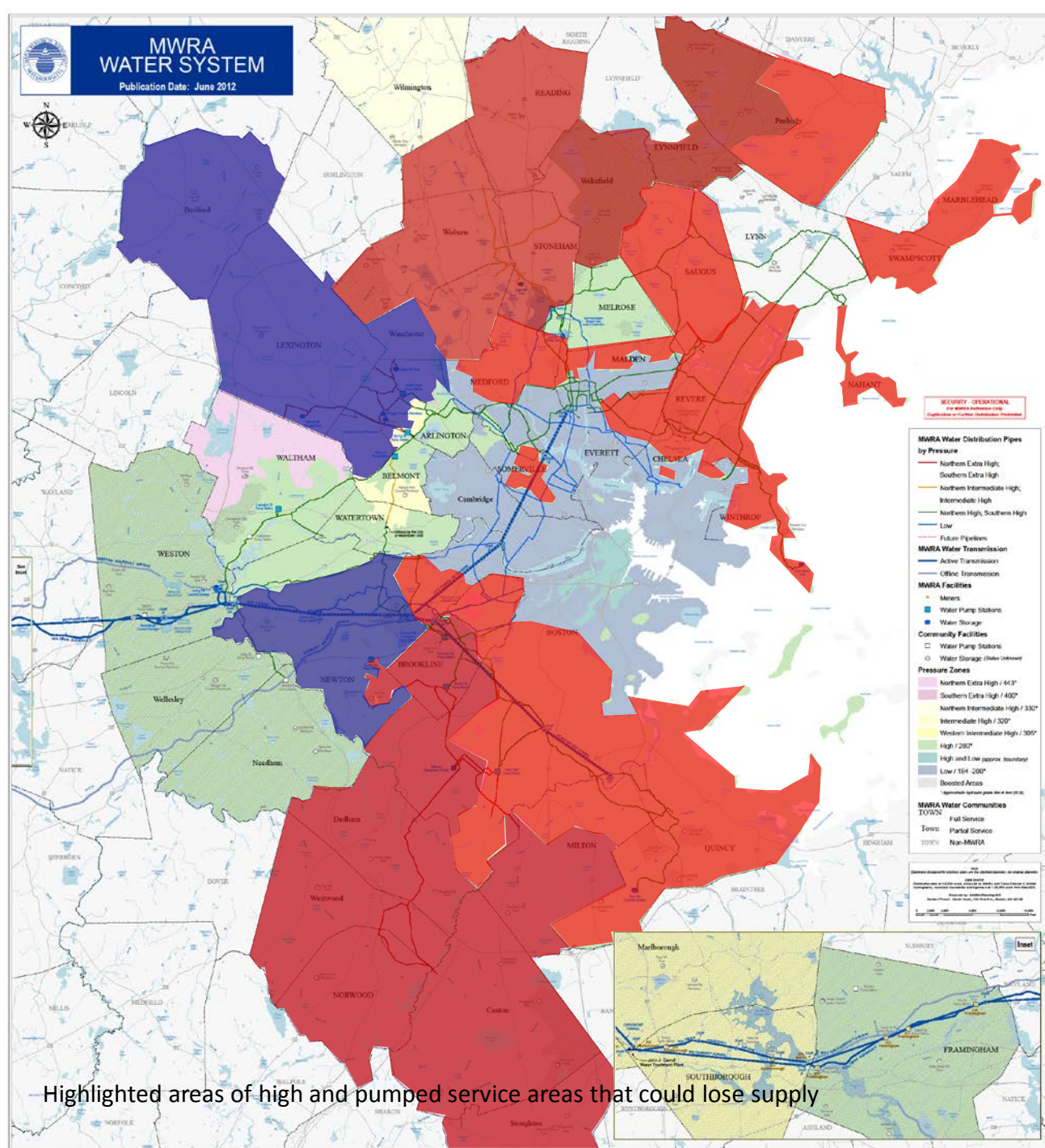
- Tunnel system:
  - Concrete-lined deep rock tunnels
  - Steel and concrete vertical shafts
  - Surface pipe, valves and appurtenances
- Little maintenance required for tunnels and shafts. **Little risk of failure**
- **Pipe, valves and appurtenances need maintenance, replacement, rehabilitation**





# Wide-Spread Impact

- Sudden shut down of Metropolitan Tunnel system
- Loss of supply to high service areas
- Pumped Service Areas lose supply as tanks empty
- Whole system would be on boil order





# Preferred Alternative for Long-Term Redundancy

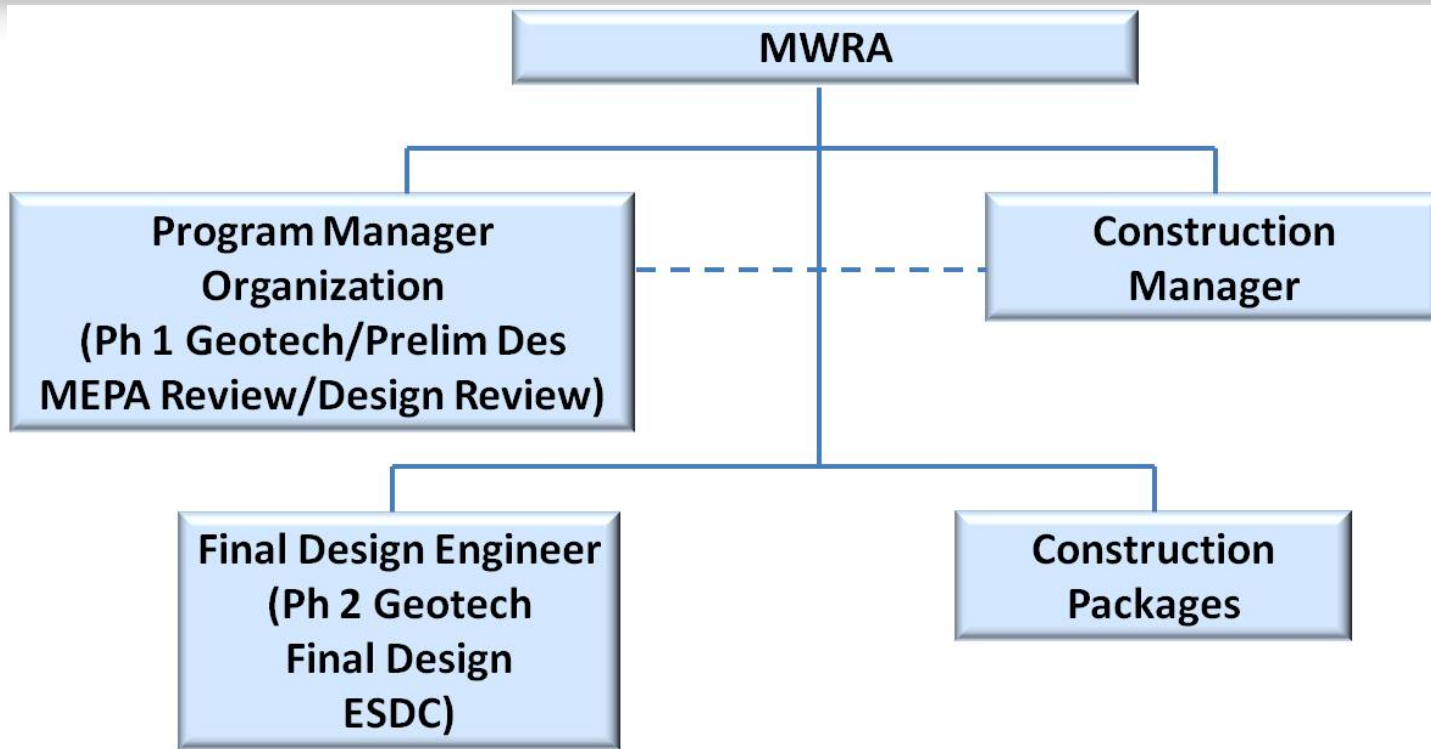
- Midpoint of Construction Cost: \$1.470 billion
- Time to Complete: ~17 years
- Tunnels begin in the Mass Pike/Route 128 vicinity
- Northern Tunnel - 4.5 miles, ends in Waltham/Belmont area
- Southern Tunnel - 9.5 miles, ends in Mattapan







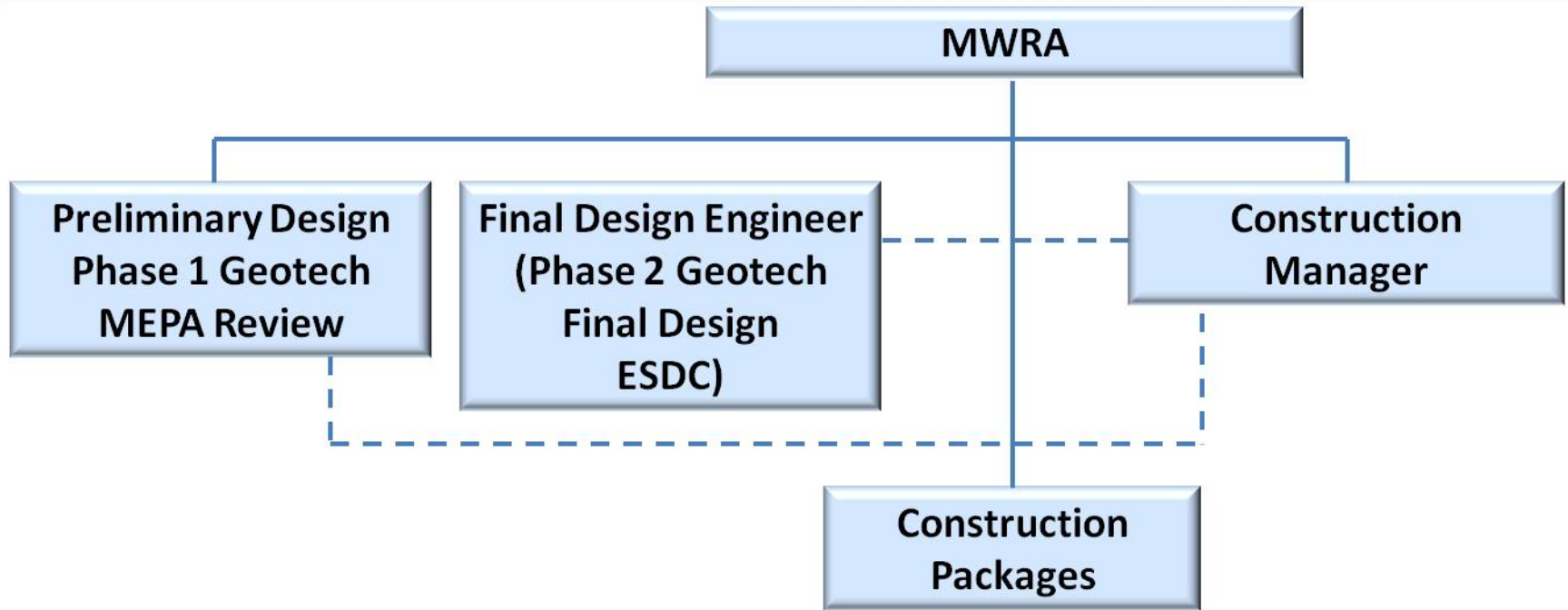
# Currently Evaluating Program Management Options



ID	Task Name	Start	Finish	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	
1	Metropolitan Tunnel Redundancy	Fri 3/9/18	Wed 12/5/35		[Blue bar spanning from 2018 to 2035]																		
2	Program Manager Organization	Fri 3/9/18	Wed 12/5/35		[Blue bar spanning from 2018 to 2035]																		
3	Final Design/ESDC	Wed 3/18/20	Thu 11/22/35			[Blue bar spanning from 2020 to 2035]																	
4	Construction Management	Wed 3/18/20	Thu 11/22/35			[Blue bar spanning from 2020 to 2035]																	
5	Construction - North	Fri 3/31/23	Fri 10/26/29				[Blue bar spanning from 2023 to 2029]																
6	Construction - South	Thu 4/4/24	Thu 11/22/35							[Blue bar spanning from 2024 to 2035]													



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1	<b>Metropolitan Tunnel Redundancy</b>	<b>Fri 3/9/18</b>	<b>Thu 11/22/35</b>		[Gantt bar spanning from 2018 to 2035]																												
2	Preliminary Design/Geotech/MEPA Review	Fri 3/9/18	Tue 3/17/20		[Gantt bar from 2018 to 2020]																												
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## Next Steps

- Our goal is to have the first RFP on the street by the fall
- Any firm that wants to come in and talk about their experience – not on specific project details – should do so by end of May
- We will be convening an independent expert panel to review plans and advise us



# MWRA has Accelerated Pipeline Projects

\$84 million in accelerated projects is in addition to \$899 million in projects regularly scheduled in the CIP over the next five years:

	Cost (millions)	Award Date
• Section 80 pipe replacement, Weston	\$ 1.8	Oct 2016
• Southern Extra High CP-1, Boston	\$11.7	May 2016
• Reading Extension Sewer Rehabilitation	\$ 4.4	Mar 2017
• Section 14 Relocation, Malden	\$ 1.0	Jun 2017
• Gen Edwards Bridge Pipe Removal, Revere/Lynn	\$ 0.6	Sep 2017
• Sections 23, 24 & 47, Newton/Brighton	\$ 8.1	Jul 2018
• Peabody Connection, Lynnfield	\$ 9.4	Feb 2019
• Water Sec 50 & 57/Sewer Sec 20, Medford	\$22.3	May 2019
• Section 89 Replacement, Stoneham/Woburn	\$16.0	Jan 2020
• Gen Edwards Bridge Pipe Replacement	\$ 8.3	Apr 2020
• Planning has begun for rehabilitation of the Cambridge Branch Sewer and the North Metropolitan Trunk Sewer		

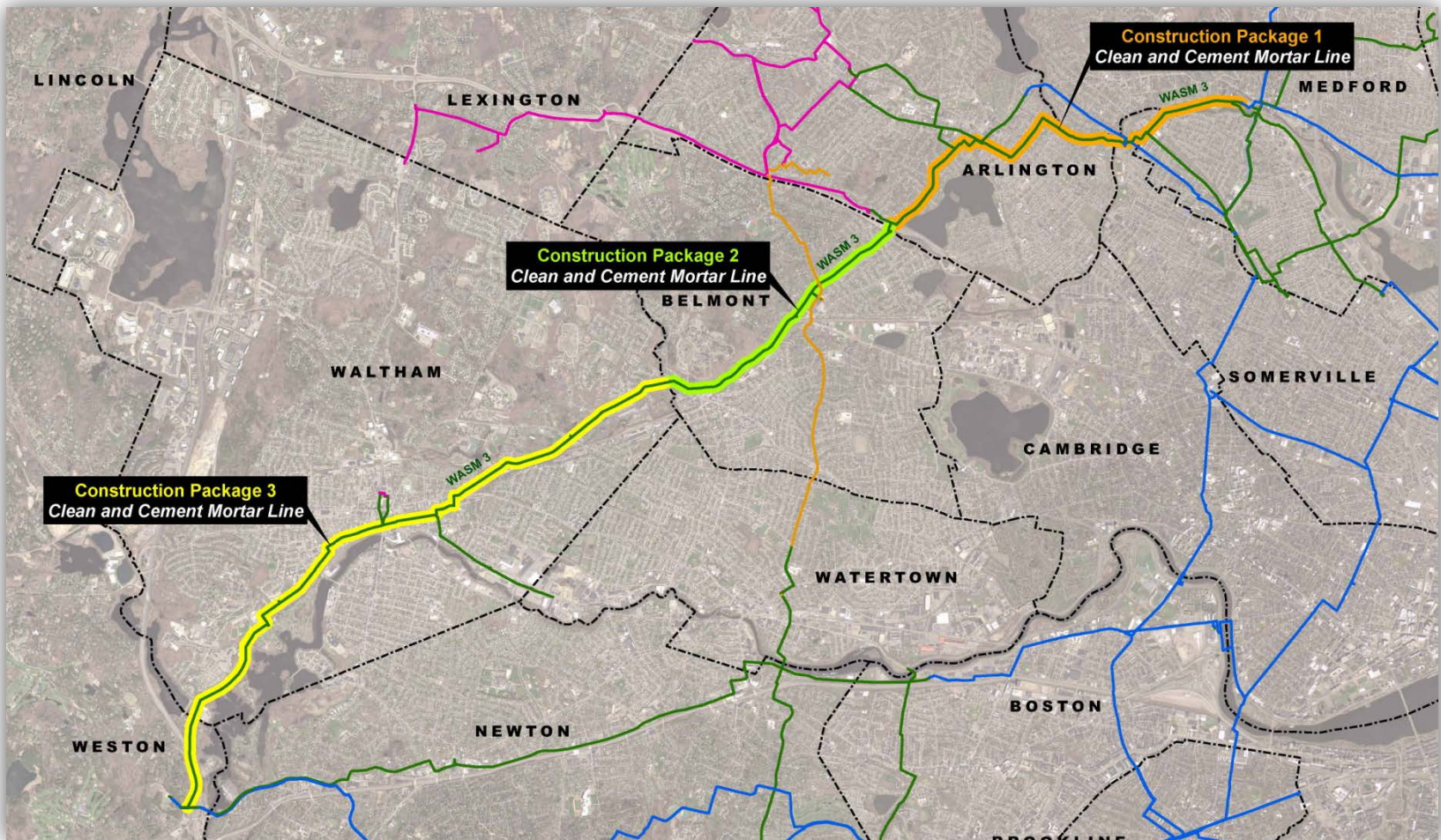


## ***On-Going Projects***



# Weston Aqueduct Supply Main 3 Improvements: Stantec

- Boring program to begin in May
- First construction NTP July 2019





# Section 56 General Edwards Bridge Crossing Feasibility Study: Weston & Sampson

RFP: April 2017

Estimated Contract: \$500,000





# Deer Island Gravity Thickener Complex Rehabilitation: AECOM

- Deer Island Technical Assistance Contract
- Construction NTP October 2017

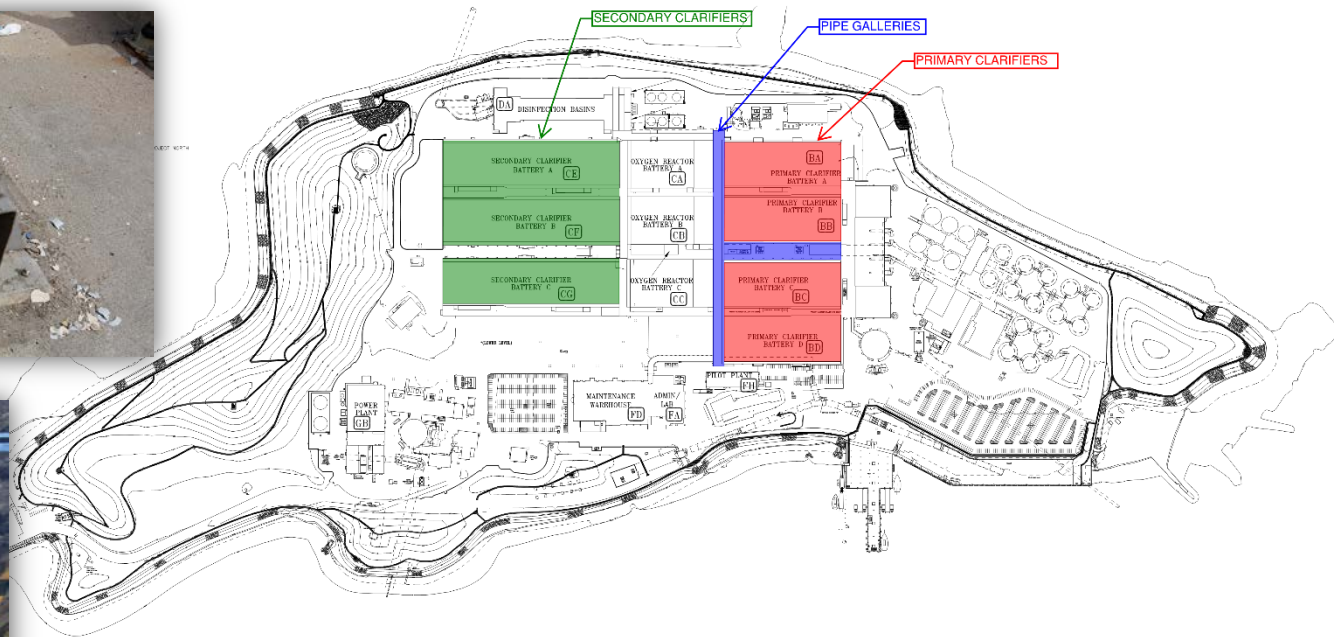




# Deer Island Clarifier Rehabilitation – Phase 2: CDM Smith



Awarded September 2014  
Phase 1 rehab completed  
60% design under review





# Sections 4, 5, 6, and 186 Study: Hazen & Sawyer



- Awarded February 2017
- Site walk completed

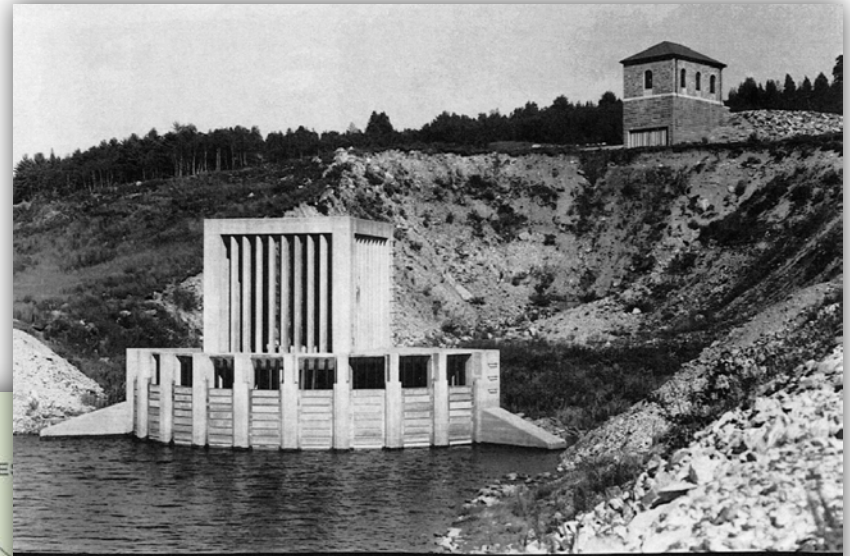






# Shaft 12 Isolation Gate Design: Arcadis

- Awarded February 2017
- Diver program to begin in May
- Construction NTP July 2018



*Looking Easterly at Lower Intake and Headhouse at Shaft #12 ~ Cont. 20 ~ 9-14-39 ~ Photo Pike ~ (20)*





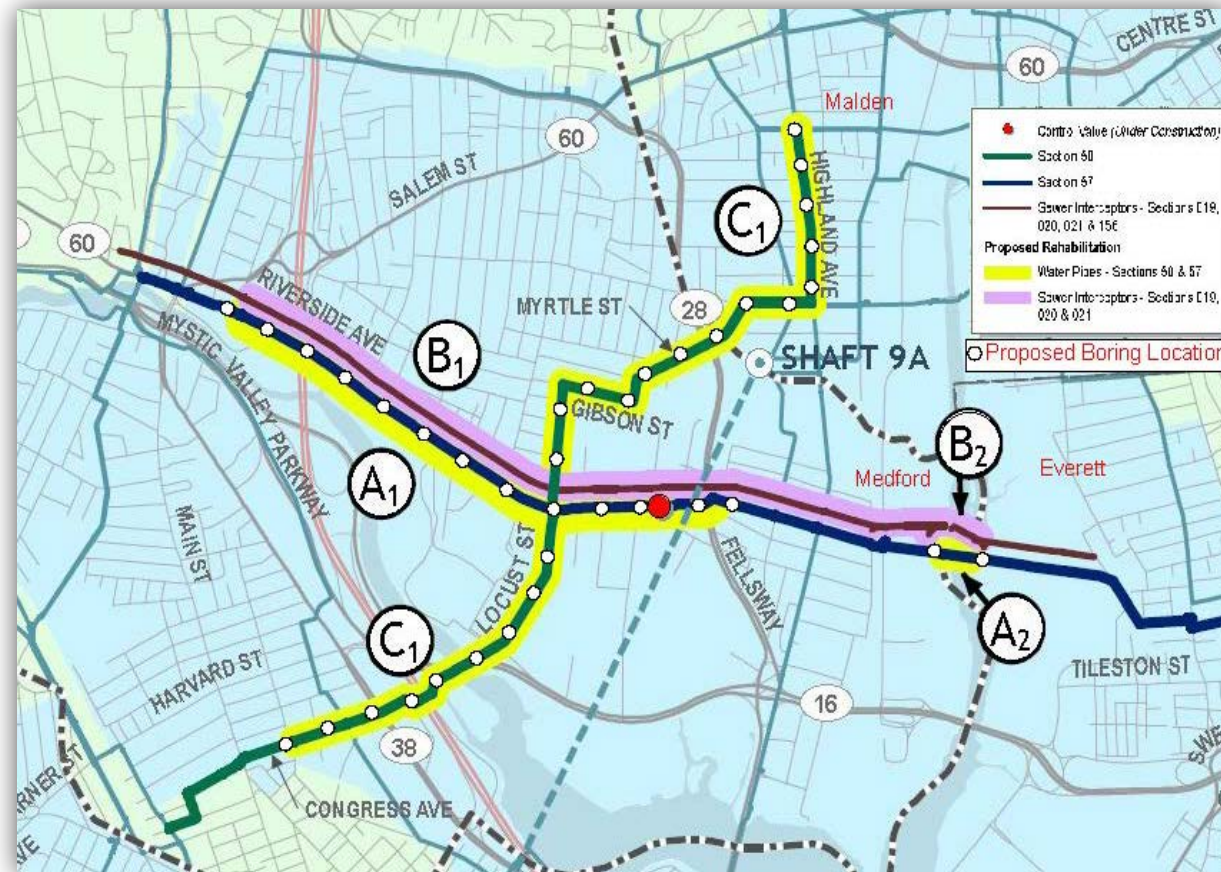
## ***Upcoming Design Contracts***



# Water Sections 50 & 57 and Sewer Sections 19, 20 & 21 Rehabilitation – Medford

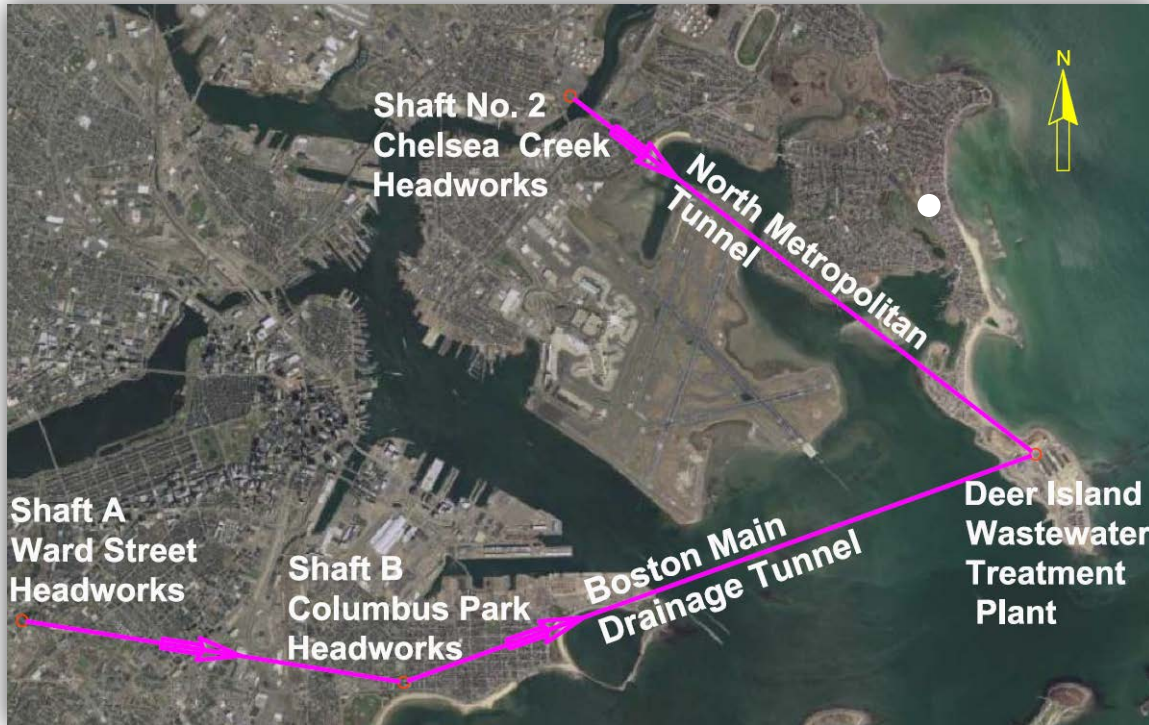
RFP on the street

\$5.7 million





# Headworks Effluent Shaft Study



RFP: May 2017  
Estimated Contract: \$500,000

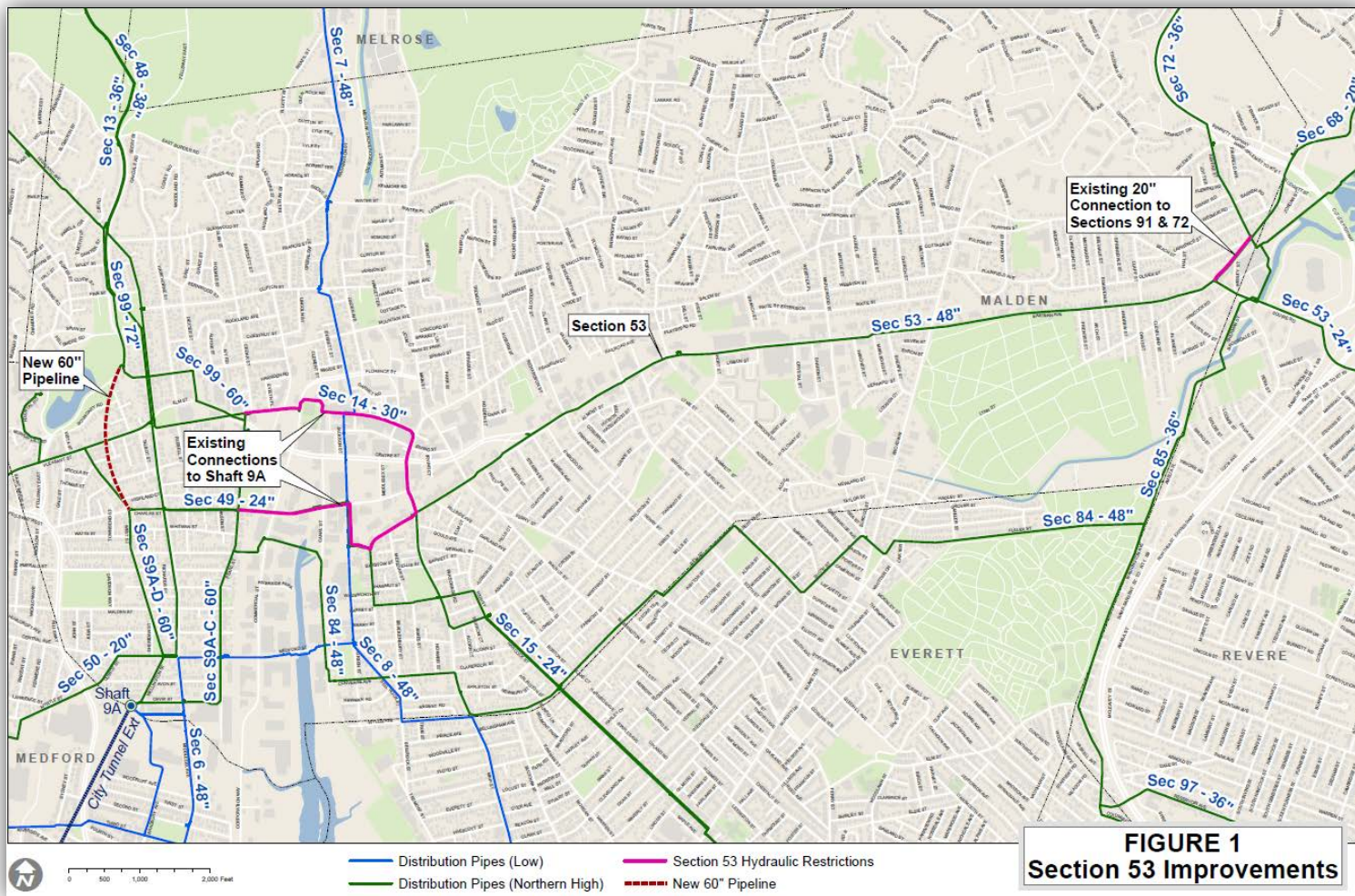




# Northern High Service – Section 53 Revere and Malden Pipeline Improvements

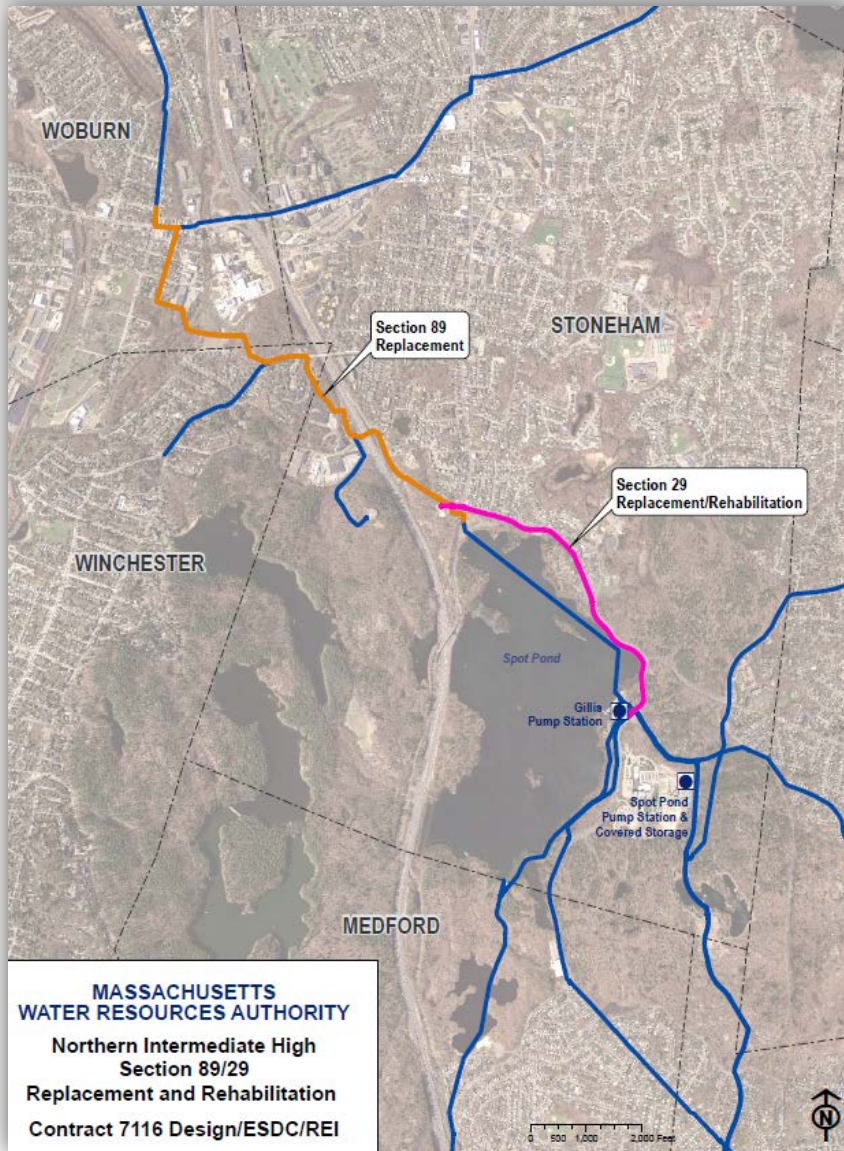
RFP: August 2017

Estimated Contract: \$5.2 million





# Northern Intermediate High – Sections 29 and 89 Rehabilitation



- RFP: July 2017
- \$3.2 million



# Nut Island Headworks Mechanical and Electrical Upgrades

- RFP: August 2017
- \$1.5 million





# Deer Island Digester and Storage Tank Rehab

- RFP: January 2018
- \$2.5 million







# Upcoming Design Contracts

<b>Project</b>	<b>RFP</b>	<b>Estimated Contract Amount (\$000s)</b>
Deer Island Eastern Seawall Design - 1	Apr-17	\$671
Headworks Effluent Shaft - Study	May-17	\$500
Fuel Oil Tank Replacement Design	Jun-17	\$1,529
Northern Intermediate High Section 89 & 29 Rehabilitation - Design	Jul-17	\$3,200
Steel Tank Repainting - Design	Jul-17	\$800
Interceptor Renewal 5 Milton - Design Construction Administration/Resident Inspection	Jul-17	\$2,000
Mill Cove Siphon Sluice Gates - Design	Aug-17	\$788
Northern High Service - Revere & Malden Pipeline Improvements	Aug-17	\$5,200
Winsor Power and Quabbin Aqueduct Surface Facilities	Aug-17	\$3,580
Quabbin Administration Building Rehabilitation Conceptual Design	Aug-17	\$200



# Upcoming Design Contracts

Project	RFP	Estimated Contract Amount (\$000s)
Nut Island Mechanical and Electrical Upgrades Design/Construction Administration/Resident Engineer Inspection	Aug-17	\$1,570
Wiggins Term Pump Station Design	Sep-17	\$509
Braintree-Weymouth Improvements - Design/Construction Services/Resident Inspection	Sep-17	\$800
Pump Stations and CSO Facilities Condition Assessment	Sep-17	\$3,255
Deer Island South System Pump Station VFD Replacements - Design	Oct-17	\$4,800
New Connect Mains-Shaft 7 to WASM 3 - Replace Sect 25, 75, 59,60 Design/Construction Administration/Resident Inspection	Oct-17	\$3,000
Carroll Water Treatment Plant - Technical Assistance 9	Oct-17	\$563
Carroll Water Treatment Plant - Technical Assistance 10	Oct-17	\$563
Section 80 Rehabilitation Design/Construction Administration/Resident Inspection	Nov-17	\$2,053
Tops of Shafts Interim Improvements Design/ Construction Administration/Resident Inspection	Jan-18	\$10,415



# Upcoming Design Contracts

Project	RFP	Estimated Contract Amount (\$000s)
Metropolitan Tunnel Redundancy - Conceptual Design Environmental Impact Report	TBD	\$7,550
Residuals Facility Upgrades - Design	Jan-18	\$2,000
Deer Island Digester & Storage Tank Rehab Design/Engineering Services During Construction	Jan-18	\$3,000
Deer Island Clarifier Rehab Phase 2 - Resident Engineer Inspection	Jan-18	\$2,500
Northern High Service - Section 56 Replacement/Saugus Design Construction Administration/Resident Inspection	Jan-18	\$2,000
Sudbury/Weston Aqueduct - Ash Street Sluice Gates - Design	Mar-18	\$350
Deer Island Old Administration Building Design/Engineering Services	Apr-18	\$150
Siphon Structure Rehabilitation Design/Construction Services/Resident Inspection	Apr-18	\$1,429
Framingham Extension Sewer/Framingham Extension Relief Sewer Biofilters - Design	Apr-18	\$1,122
System-wide Odor Control - Study	Apr-18	\$1,000

