





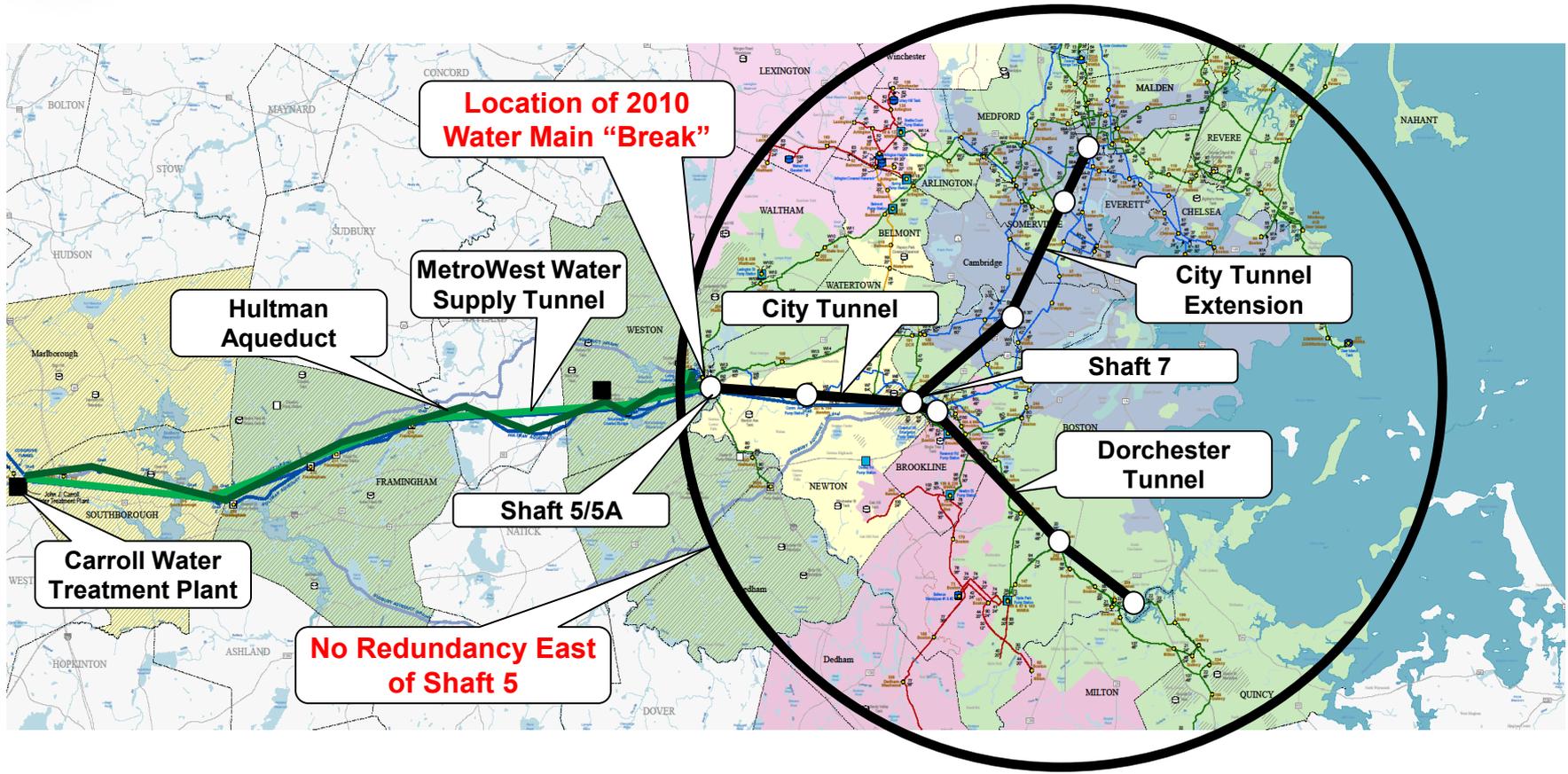
Metropolitan Water Tunnel Program

Update

May 24, 2023



Metropolitan Tunnel System Serves About 60 Percent of Water Demand in Metropolitan Area





Need for Repair

- The tunnels, valves, chambers & pipelines are between 50 – 75 years old

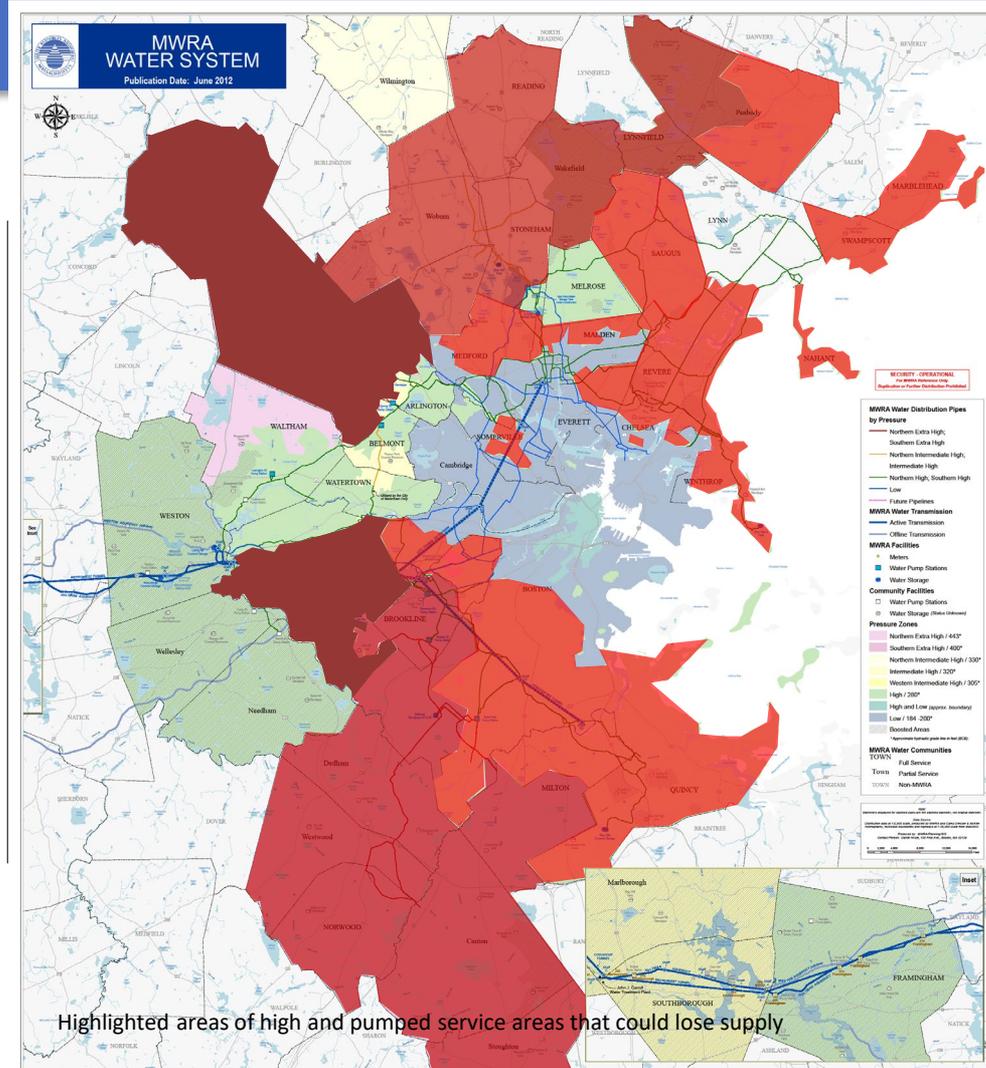


- Corrosion, inoperability, leakage, standing water; all impact reliability of the system
- Cannot shut down to repair/replace
- Severe service impacts if shut down necessary



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





Metropolitan Water Tunnel Program Goals

Protect Public Health, Provide Sanitation and Fire Protection

- Provide full redundancy for the Metropolitan Tunnel System:
 - Provide normal water service and fire protection when the existing tunnel system is out of service
 - Provide the ability to perform maintenance on existing tunnels year-round
 - Provide uninterrupted service in the event of an emergency shut down
 - Meet high day demand flow with no seasonal restrictions
 - Avoid activation of emergency reservoirs
 - Meet customer expectations for excellent water quality
- Result in no future boil orders!





Interim Improvements Underway

- Projects to:
 - Reduce risk of failure/breakdown
 - Improve access for emergency use
 - Improve response capabilities
- Nearly \$40M in projects completed or underway:
 - Top of shafts improvements (1 phase complete)
 - Commonwealth Avenue Pump Station improvements
 - WASM 3 Rehabilitation (1 phase nearly complete)
 - PRV improvements (nearly complete)
- Several projects being designed



Interim Improvements Underway





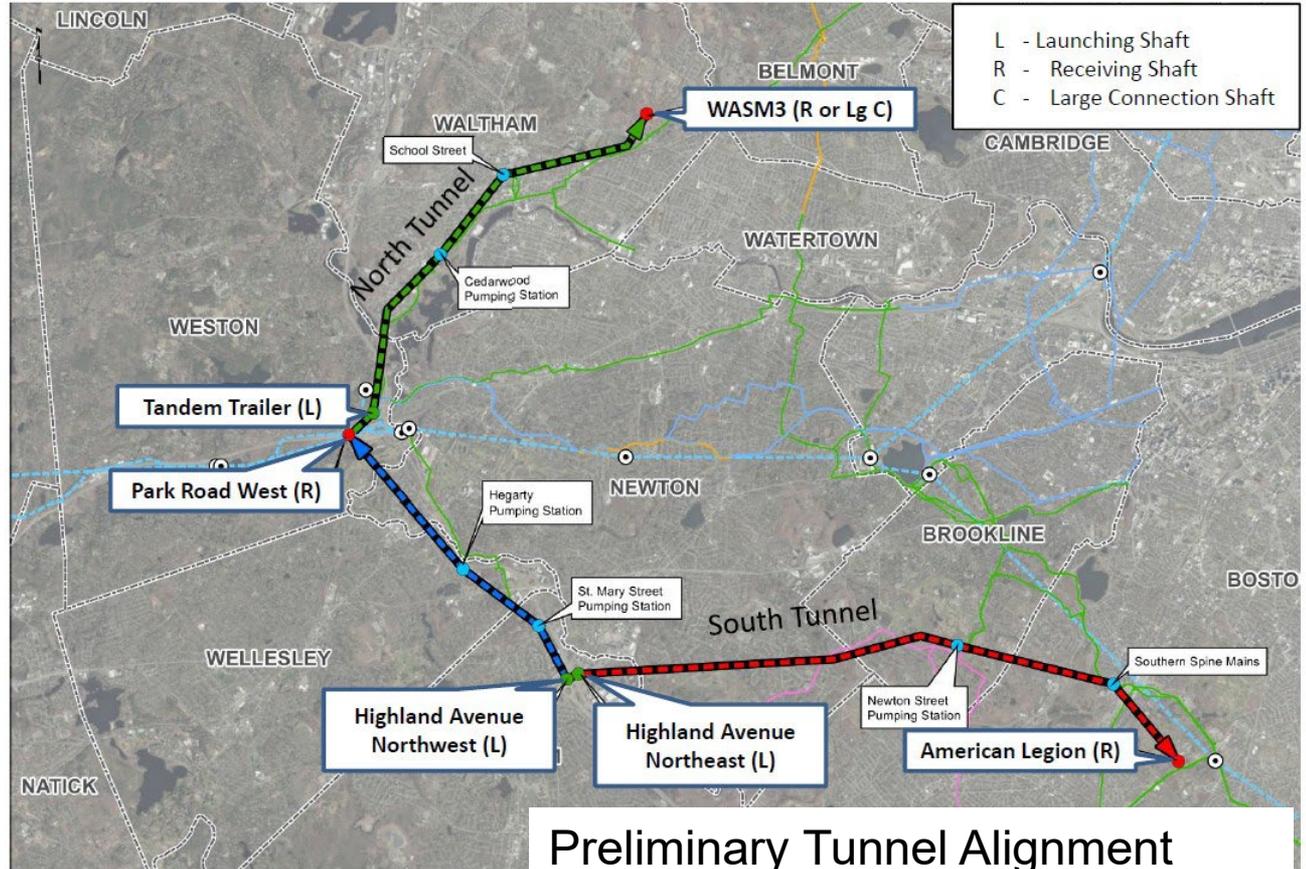
Metropolitan Water Tunnel Program

Construction Shaft Sites

- WASM3, Waltham
- I90/I95 Interchange, Weston
- Highland Ave/I95 Interchange, Needham
- American Legion, Boston

Connection Shaft Sites

- School St - Lexington St Pump Station, Waltham
- Cedarwood Pump Station, Waltham
- Hegarty Pump Station, Wellesley
- St. Mary Street Pump Station, Needham
- Newton Street Pump Station, Brookline
- Southern Spine Mains, Boston



Preliminary Tunnel Alignment
(DEIR Alternative 4)



Tunnel Program Schedule

- Overall Program Schedule
 - Preliminary Design is ongoing thru early Jan 2024
 - A large geotechnical investigation is about to start and run thru 2025
 - Targeting Final Design to start in mid 2024
 - Targeting first tunnel construction contract to bid in 2027
 - Program completion by 2040
- Current Design Status
 - Geotechnical investigations
 - Environmental Impact Reports
 - Preliminary Design Report
 - Establish contract packages
 - Refine Program cost and schedule (to be reflected in FY25 CIP)





Contracts

Awarded Contracts	Value	Duration	Dates
Program Support Services (PSS)	\$10,247,877	5 years, renew in 2024	May 2019- May 2024
Preliminary Design	\$15,692,527	3.5 years	July 2020 - January 2024
Geotechnical Support Services	\$12,789,889	3 years	January 2023 – January 2025
Rock Core Storage Facility	\$6,950,000 (base annual rent) + taxes and operating costs	10 years w/ option to renew	April 2023 – April 2033

Future Contracts	FY24 CIP (actuals TBD)	Duration	Dates
PSS Extension	\$3.5M & \$3.75M	Two 2 year extensions	2024 - 2028
Final Design & ESDC	\$114M	>10 years	Target NTP mid-late 2024
Construction Manager(s)	\$149M	>10 years	Target NTP mid 2026
Enabling Construction Contracts	TBD	TBD	TBD
2 or 3 Tunnel Construction Contracts	\$1.3B	5 to 8 years each (estimated)	Btwn 2027 - 2040
TBD	TBD	TBD	TBD



Design Status

- 1st Draft Preliminary Design Report and Drawings are done
- Currently undergoing reviews
 - MWRA Operations, Tunnel Dept, PSS/SME
 - Expert Review Panel
 - Optimization Workshop
- 1st Preliminary Bottom-up Cost Estimate is pending
- Final Design will start in 2024
- One Final Design contract
 - Maintain design consistency between construction packages
 - Better management of overall design schedule / flexibility





Status of Environmental Impact Reports

- ENF was submitted in March 2021
 - Certificate received in May 2021
- DEIR was submitted in October 2022
 - Certificate received in December 2022
- SDEIR plan to submit in summer 2023 } Unplanned
 - Respond to comments
 - Expand EJ and GHG analysis
 - Alternate North Tunnel end point
- FEIR plan to submit in late 2023/very early 2024
- Goal is to maintain overall Program schedule even with an additional EIR submittal



Alternate North Tunnel End Point

- Due to comments made by the City of Waltham on the DEIR regarding concerns over the preferred North Tunnel end point at Fernald Property, alternate end points for the North Tunnel were evaluated:
 - Lower Fernald Property (Waltham property)
 - 225 Beaver St (UMass property)
- Both alternate end points connect to WASM3
- Both end points will be included in the SDEIR
- The UMass shaft site will be the new preferred North Tunnel end point



Community and Stakeholder Outreach

- Met with all 10 communities in the original study area
- Ongoing meetings with Working Group - representative from each community
- Met with departments from key communities in which the tunnel will be constructed:
 - Town Management, Public Works, Public Safety/Fire Dept, Con-Com, etc.
- Met with key stakeholders:
 - EEA, MassDOT, DCR, UMass, DPH, DYS and DCAMM
- Met with numerous organizations, businesses and private property owners to coordinate field work
- Program Website <https://www.mwra.com/mwtp.html>
- Multiple Fact Sheets – translated into 4 languages
- Outreach will continue throughout design and construction



Program Finances

- Finance Division staff are continuously updated on progress and developments
- The Proposed CIP is updated in the Fall
- The Draft Final CIP is updated in the Spring



Program Finances continued

- The CIP data is integrated in to the CEB computer Model
- Based on amounts and timing of CIP expenditures, the Model creates borrowings and debt service schedules
- The debt service schedules are incorporated into the CEB
- Assessment amounts and rate of change each year are modeled
- Rate projections have incorporated the Tunnel project since first appearing in FY 2017



***Intermediate High Pipeline Improvements CP2,
Rehabilitation of Sections 24 and 25 Water Mains***

Watertown and Newton

May 24, 2023



Contract 6956 – Project Overview

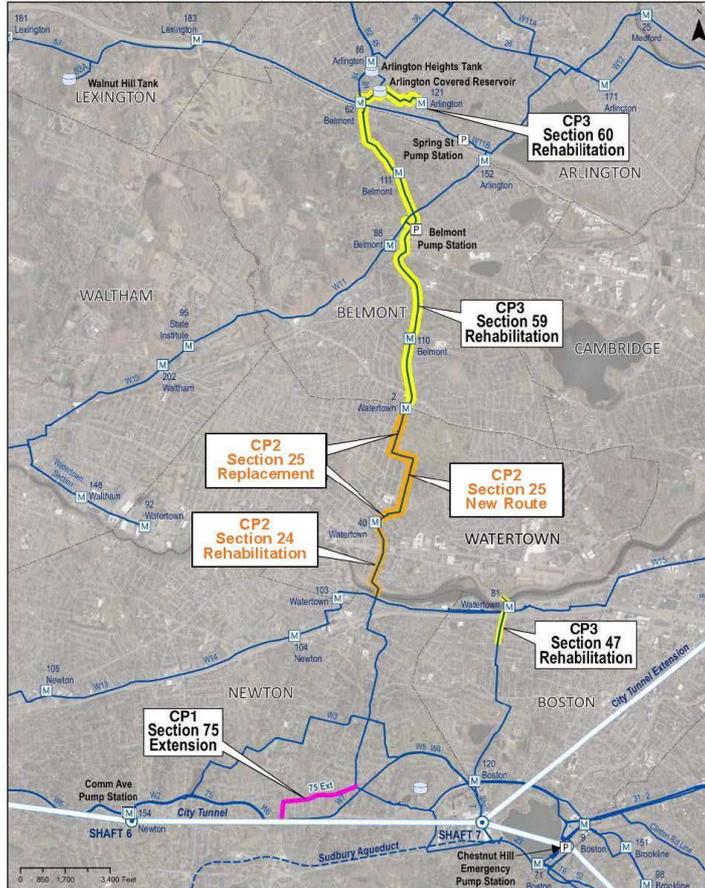


FIGURE 1: INTERMEDIATE HIGH PIPELINE IMPROVEMENTS - CONTRACT 6955

Existing Pipelines

Pipeline	Age (years)	Material	Diameter (inches)	Length
Section 24	127	Cast Iron	20	3,300
Section 25	126	Cast Iron	16	4,900

- 30 month construction period



Bids

Contractor	Bid Amount
Albanese D&S, Inc	\$18,673,000
<i>Engineer's Estimate</i>	<i>\$21,260,500</i>
RJV Construction Corp	\$23,625,000

- Staff recommend award to Albanese D&S, Inc



Resident Engineering and Inspection Services Proposals

Proposer	Proposed Cost
CDM Smith Inc.	\$1,902,278.71
<i>Engineer's Estimate</i>	<i>\$1,961,450.00</i>
WSP USA Inc.	\$2,417,708.47

- Staff recommend award to CDM Smith Inc.



Contract 6956

Contract 6956 includes:

- Cleaning and cement mortar lining
 - 3,300 LF of 20-inch Section 24 cast iron water main
- Installing, by open-cut,
 - 5,900 feet of 20-inch ductile iron Section 25 water main (hydraulic increase from 16-inch to 20-in). New Route avoiding lower Common Street requested by Watertown.
 - New valves and appurtenances (Sec 24 and 25)
 - Replacing Meter 40 and relocating and replacing Meter 2 (both serve Watertown) .
 - New PRV at Meter 40 for Intermediate High (HGL 320) to Southern High (HGL 280) service for redundant supply.
- Replacing/relocating various lengths of Watertown water, sewer and drain within new Sec 25 route along Russell Ave and Bellevue Road.
- * Pipe/fittings/valves for Mt Auburn St pre-purchased under Contract 6956A to complete work by April 15, 2024 ahead of MassDot roadway reconstruction project.



Utility Relocations

- Gas main relocation status:
 - Watertown:
 - Mt Auburn St - completed.
 - Irving St – 100ft at Mt Auburn St Completed (areas south do not impact contract)
 - Russell Ave – On-going, Completion - June 2023
 - Bellevue Ave – Completion - July 2023
 - Common St – Completion - Sept 2023
- Verizon relocation status:
 - Watertown: Mt Auburn St – Completion July/Aug 2023



***Extended Warranty, Service and
Maintenance
Sole Source Contract for
Deer Island Treatment Plant PICS***

May 24, 2023



Deer Island Process Instrumentation & Control System (PICS)

- PICS – Deer Island's SCADA system (Industrial Control System)
- Supplied by ABB, Inc.
- Provides plant-wide Monitoring, Automated Control & Alarming
- Among the most expensive of any wastewater plants in the United States.
 - 30,000 input/output points
 - 63 Distributed Processing Units cabinets
 - More than 1,000 Control Modules
- Estimated valued at \$52 million





Deer Island Process Instrumentation & Control System (PICS)

- Enables Deer Island to operate with minimum staffing
- Human-Machine Interface (Emerson), 4% of system
 - 3,000 graphical screens





Deer Island Process Instrumentation & Control System (PICS)

- Sole-Source Service and Maintenance Agreements - proprietary nature of the system
- Current contract \$1,220,469 vs. new proposed contract \$1,370,722 (12% increase)

Contract Components (3-years):

• Extended Warranty Service and On-Site Parts Inventory	\$431,185
– \$576,000 worth of parts (30% discount on average)	
• On-Site Support Services	\$587,169
– 600 hours over 3 years, including 96 emergency hours	
• Project Services	\$225,000
– Component upgrades or installations	
• Internet Subscription Service and Telephone Consultation Service	\$73,575
– Technical online and telephone support and troubleshooting	
• Software Maintenance Program	<u>\$53,793</u>
– All engineering software and module firmware updates	
Total =	\$1,370,722