



Presentation to

MWRA Board of Directors

***Dorchester Tunnel Drilling Incident
and Response***

October 23, 2024



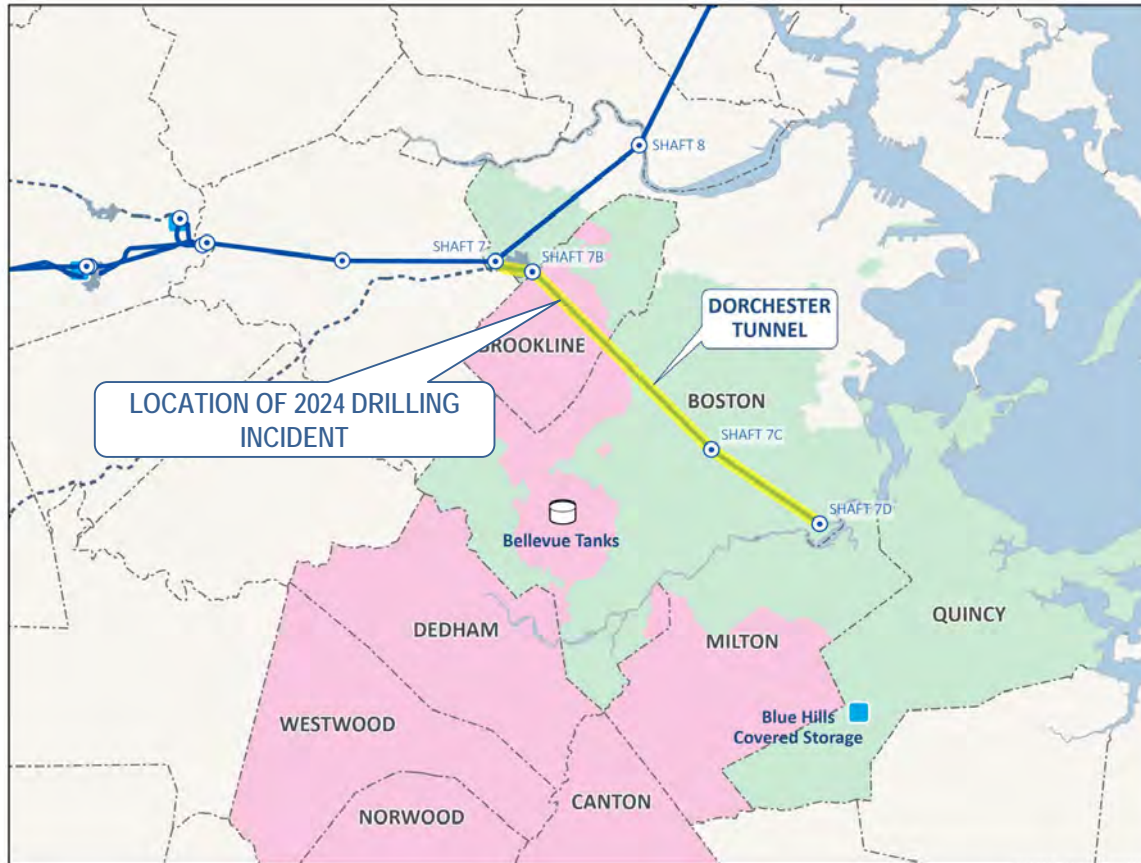
Dorchester Tunnel Drilling Incident

Wednesday October 9th 3:35 pm
Brookline notified OCC that a geothermal contractor drilled into the Dorchester Tunnel at 130 Willard Road





Impacted Area





Emergency Operations Center





Drilling Incident Site Conditions





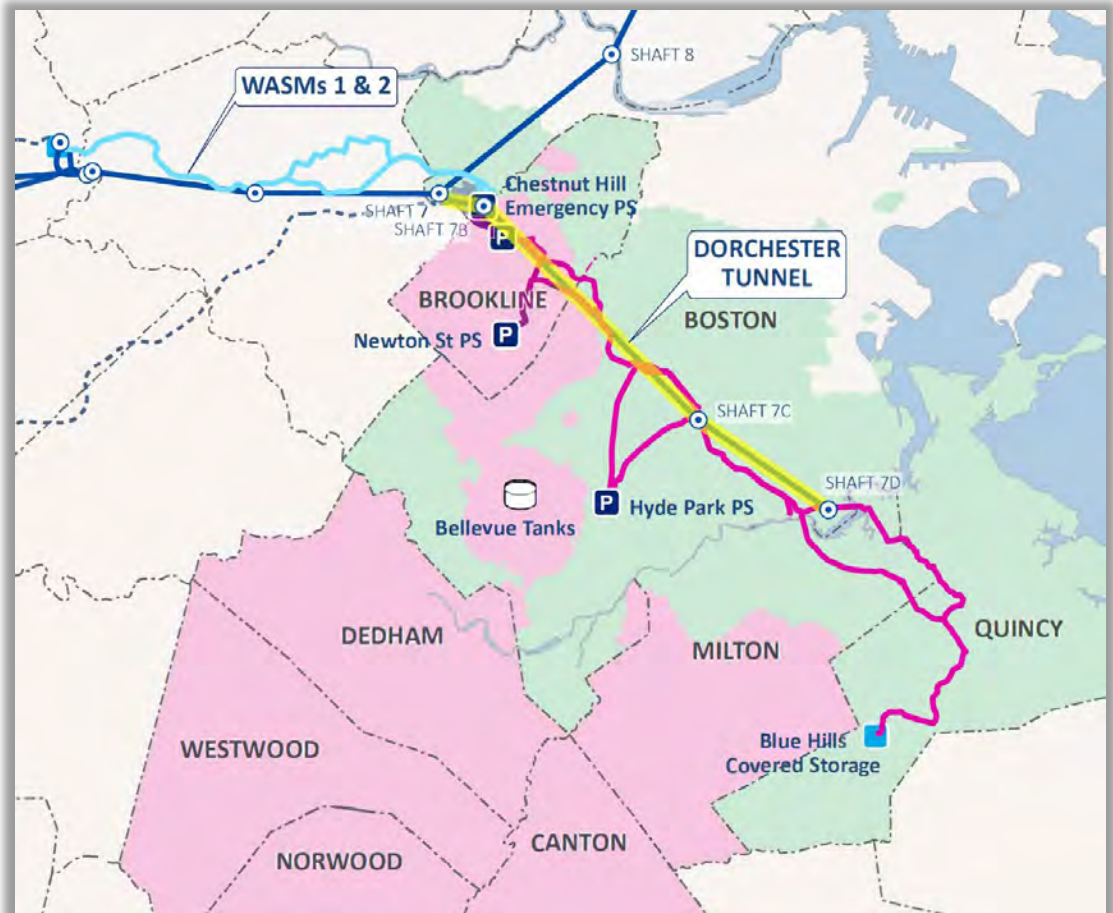
Chestnut Hill Pump Station





Reconfiguration of System – Dorchester Tunnel Isolation

- Configure Boston Low system to provide supply to Chestnut Hill PS
- Isolate Dorchester Tunnel
- Activate Chestnut Hill PS
- Southern Spine Mains to provide supply to SHS /SEHS
- Maintain storage at Blue Hills Tanks





Reconfiguration of System – Dorchester Tunnel Isolation



Shaft 7B Access

Chestnut Hill
Emergency PS





Reconfiguration of System – Dorchester Tunnel Isolation

27 Valves Operated
throughout
Southern System





Reconfiguration of System – Dorchester Tunnel Isolation





Operation of Chestnut Hill Pump Station

Great risk of
pressure swings

- Adjusted Surge Relief Valves
- Throttled Discharge Valves
- Installed Hydrant Reliefs
- Constant monitoring of system pressures





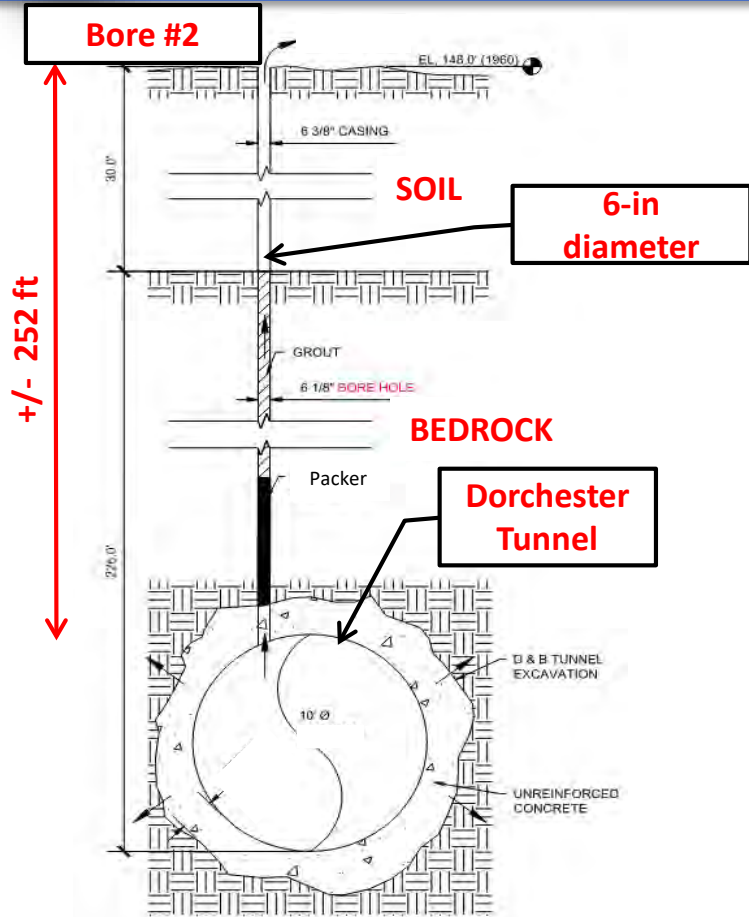
Controlling Tunnel Pressure

Blow-off at
Shaft 7C





Repair Team – Day 1 (Wednesday Evening)



Repair *Concept*:

- Inflatable “packer” placed at bottom of hole
- Cement grout backfill above

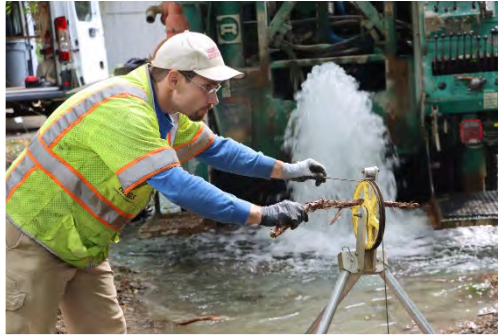
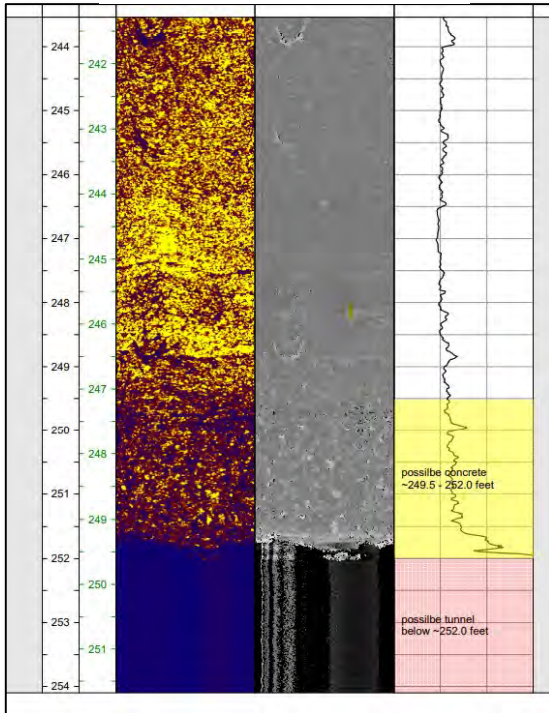




Repair Team – Day 2 Geophysics (Thursday evening)

Final data and logs were delivered to MWRA the morning of Day 3 (1:09 AM!)

Borehole #2 Image

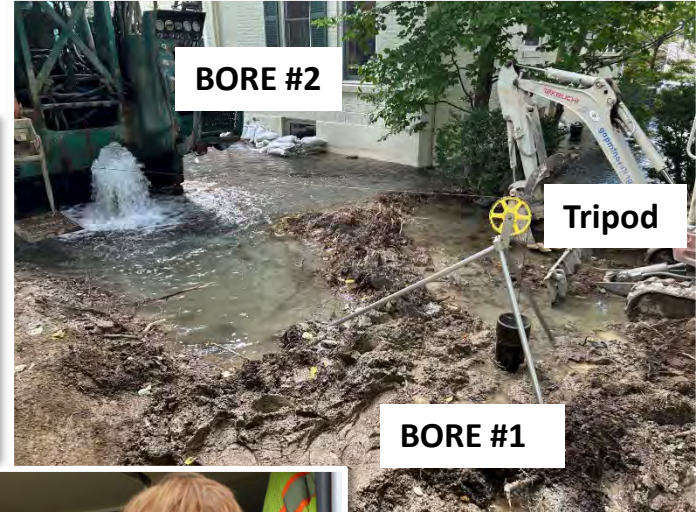


Bedrock

Concrete
Tunnel Lining
(~1.5-2 ft thick)

Tunnel Crown
(~252 ft)

Dorchester
Tunnel
(Void)



BORE #1



HRGS
HAGER-RICHTER GEOSCIENCE



Repair Team – Day 3 (Friday morning) Mobilization

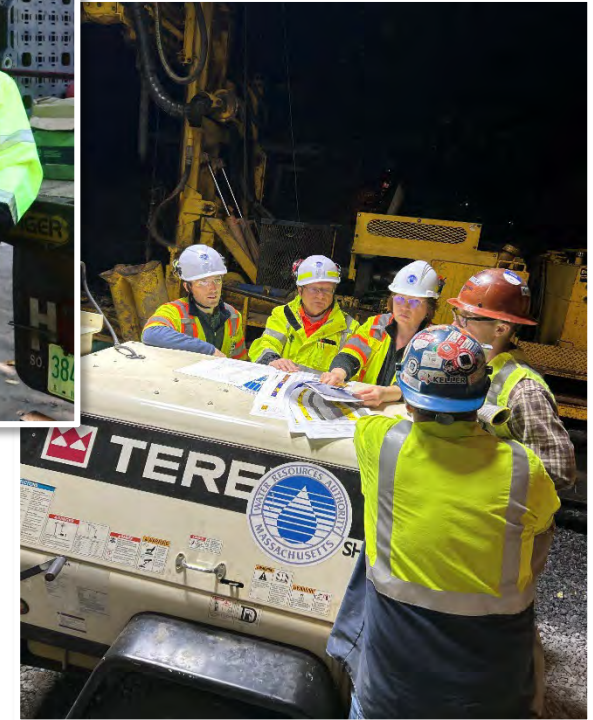




Repair Team – Day 3 (Friday afternoon) Pre Packer Install

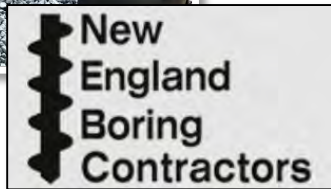


Prior to setting the packer and grouting the holes, we held a technical briefing with all involved staff...
no mistakes allowed!





Repair Team – Day 3 (Friday afternoon) Packer Install



“Packer” is a rubberized membrane inflated with nitrogen that seals the borehole above the Tunnel
Placed in a zone of solid bedrock (238 to 240 ft below grade)





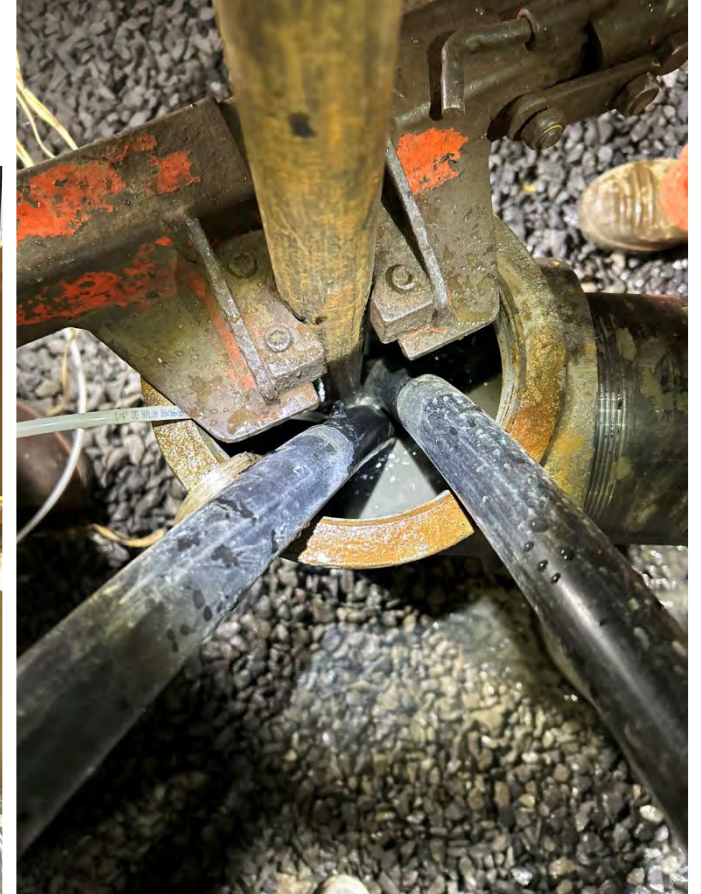
Repair Team – Day 3 (Friday PM) Grouting

“Tremie” is a grouting method that pumps a continuous column of cement grout from the bottom of the borehole up to ground surface, filling all voids





Repair Team – Day 4 (Saturday Morning) Success!





Continuous System Monitoring

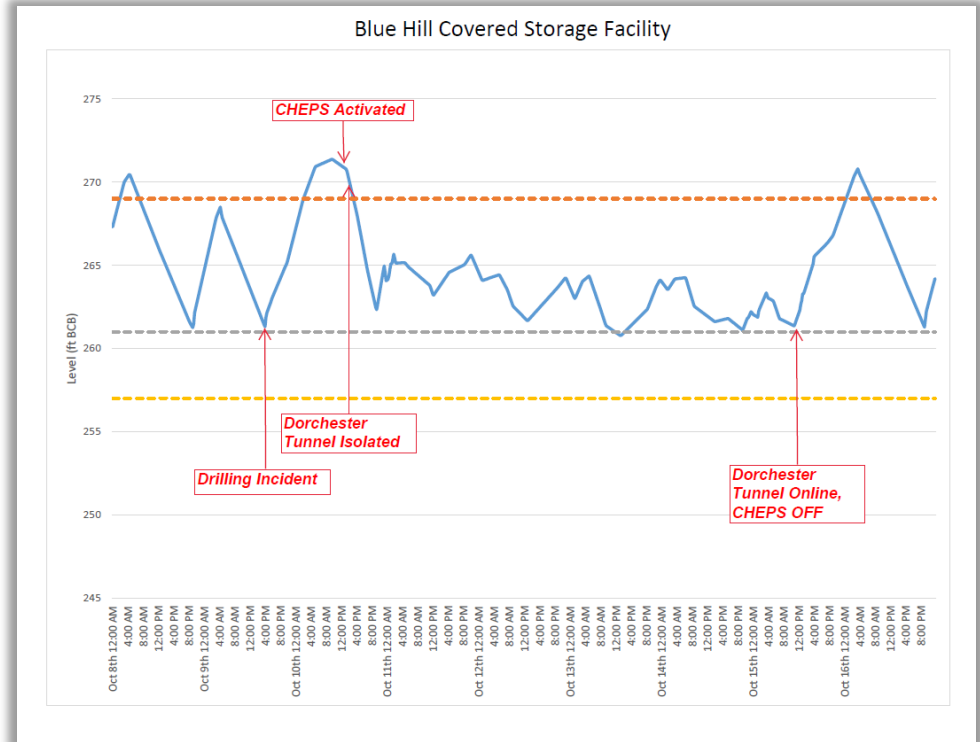
- 24/7 monitoring in OCC/EOC





Continued System Operations

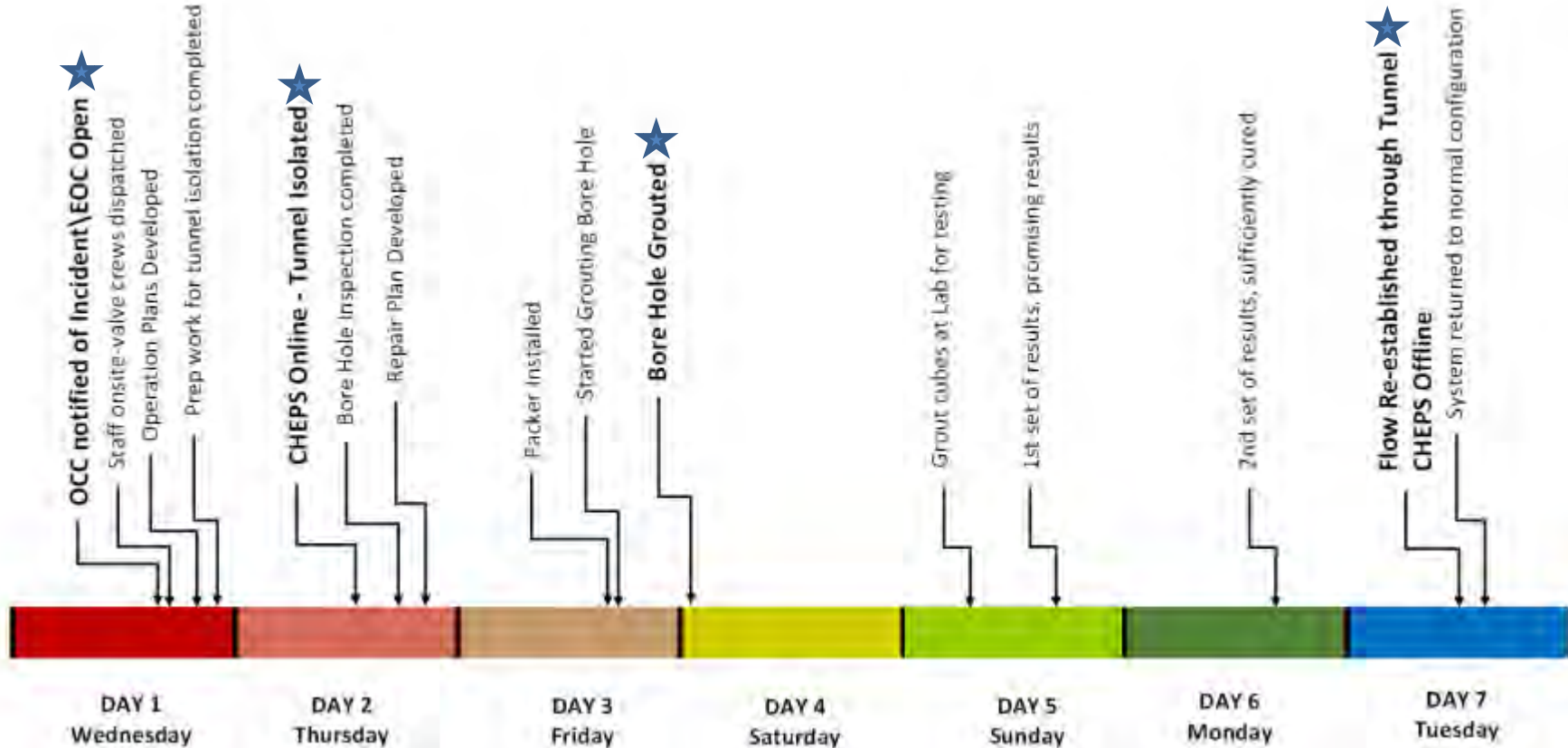
- 1st Night: Breaks in Boston and Brookline
- 2nd Night: One Break in Brighton
- 3rd Night: No Breaks





Incident Timeline

Continuous Operation of Pump Station from 12:50 pm Oct 10th to 1:10 pm Oct 15th , ~ 120 hrs





Dorchester Tunnel Drilling Incident

Questions?







Presentation to

MWRA Board of Directors

***Metropolitan Water Tunnel Program
Final Design Engineering Services
Contract 7556***

October 23, 2024



Final Design Engineering Services (7556) Scope of Work

- Contract is to be awarded for a term of 15 years
- Design Phase Services (first 5 years)
 - Basis of Design reports
 - Final phase of subsurface investigations and other field work
 - Complete design of two tunnel construction packages (North and South)
 - Complete design of three early enabling works construction packages
 - Cost estimating and construction scheduling
 - Risk management and quality management
 - Assistance with land acquisition, MOU's, outreach, and pre-procurement
 - Assistance during bidding
 - Engineer-of-Record for all designs for the Tunnel Program
 - ESDC for three early enabling works construction packages
- ESDC for Tunnel Construction (~10 years) by amendment, which will required additional Board approval



Two Step Procurement Process

- RFQ - Shortlisted three teams
 - Delve Underground
 - Mott MacDonald
 - WSP

- RFP - Proposal were evaluated based on multiple evaluation criteria
 - Cost (20 points)
 - Qualifications/Key Personnel (20 points)
 - Technical Approach (20 points)
 - Capacity/Organization/Management (20 points)
 - Relevant Experience/Past Performance (15 points)
 - MBE/WBE Participation (5 points)



Scope Of Work & Request For Proposal

- Provided a detailed SOW to all proposers
 - Set clear expectations, enable transparency and long term management
- Provided significant existing Tunnel Program documents for proposers to review
- Set contract milestones for:
 - Execution of enabling packages prior to tunnel construction bidding
 - Start South Tunnel construction in 2028
- Required each proposer submit the following as part of their proposal:
 - 25 Key Personnel to ensure a complete team
 - Full explanation of their management structure/approach
 - Detailed technical approach
 - Identification of subconsultants and subcontractors including MBE/WBE participation
 - Detailed cost estimate for design phase
 - Key financial parameters for ESDC phase (overhead rate and %fee)



Selection Committee Proposal Evaluation

- Reviewed all 3 proposals in detail
- Asked for clarifications from all 3 proposers
- Interviewed each team
- Use established evaluation criteria to score and rank the proposals

Proposer	Total Final Score	Ranking
WSP	431.85	1
Mott	383.00	2
Delve	341.55	3



Cost Proposal Summary

Proposer	Proposed Cost (Loaded Labor & Direct Costs)	Proposed Level of Effort (Hours)
WSP	\$93,605,158	307,348
Mott	\$88,606,894 ¹	311,148
Delve	\$80,342,423	259,579
Staff Estimate	\$77,800,000	222,051

¹ Two required cost items were not included in the original proposal response that would increase the Proposed Cost by approximately \$2 million.

- Professional services contract with a not to exceed amount
- Cost plus percentage fee compensation
- No initial lump sum or guaranteed minimum contract amount
- Compensation will be for actual work performed in accordance with contract terms



First Ranked, WSP Team

- Best overall plan to complete the SOW and meet the milestone schedule
- Demonstrated best approach to integrate MWRA Operations requirements
- Highest participation of much needed technical experts
- Lowest overall overhead rate/indirect cost rate (ICR) for the design phase
- Lowest proposed overhead rate/ICR for ESDC phase
- Best value

- Selection Committee recommends award of Contract 7556 to WSP USA, Inc.







Presentation to

MWRA Board of Directors
Contract 7457
Section 101 Pipeline Extension
Change Order 6

October 23, 2024



7457: Section 101 Pipeline Extension Ledge Removal





7457: Section 101 Pipeline Extension Boulder Removal





7457: Section 101 Pipeline Extension Pre-drilling Ledge





7457: Section 101 Pipeline Extension Large Diameter Water Services





7457: Section 101 Pipeline Extension Large Diameter Water Services





Presentation to

MWRA Board of Directors

Contract 6956

Rehabilitation of Sections 24 & 25 Water Mains

Watertown & Newton

Change Order 5

October 23, 2024



6956: Rehabilitation of Sections 24 and 25 Water Mains Soil Disposal





6956: Rehabilitation of Sections 24 and 25 Water Mains Cured-In-Place Pipe Liner for 8-inch Sewer on Common Street





6956: Rehabilitation of Sections 24 and 25 Water Mains Replacing 15-inch Vitrified Clay Drain on Common Street





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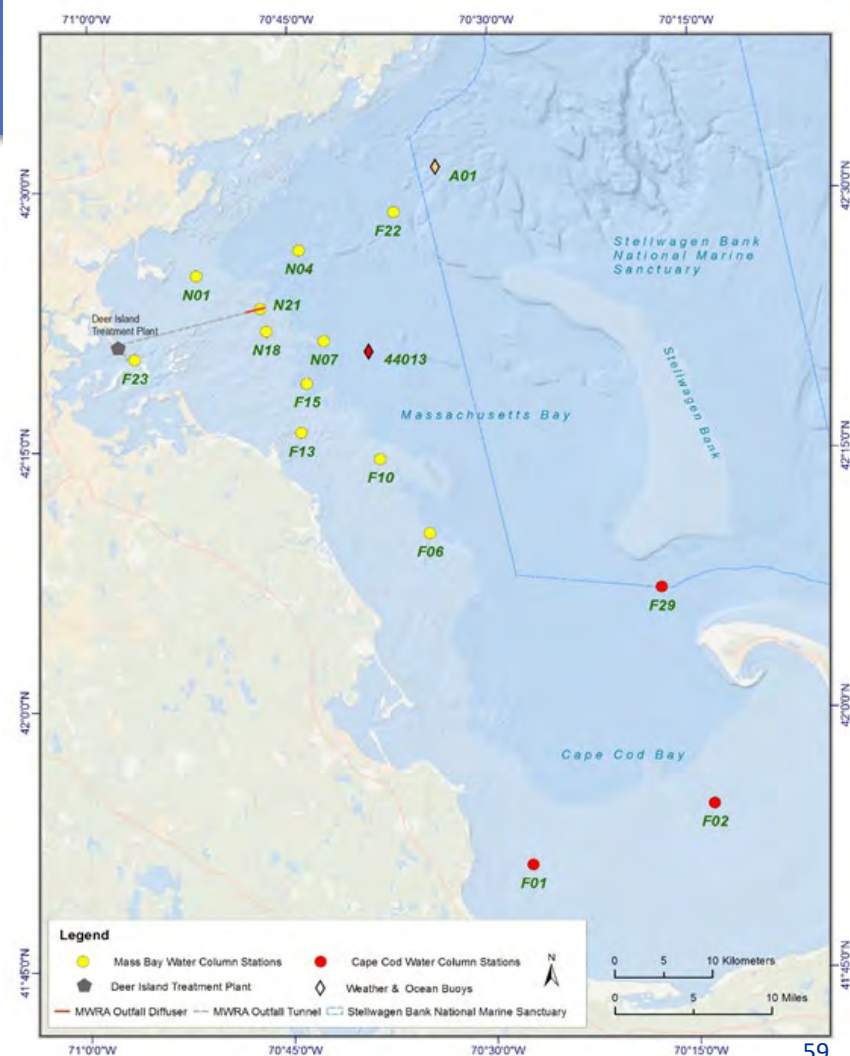
***MWRA's Outfall Monitoring Overview
2023 Results***

October 23, 2024



MWRA Ambient Monitoring

- Annual report due November 15. Why?
 - Moving discharge from Harbor to Bay in 2000 caused environmental concerns
 - Comprehensive monitoring program for water column and sea floor
- Monitoring requirements reduced from original; data consistently shows no adverse impacts
- EPA 'OMSAP' panel reviews the results



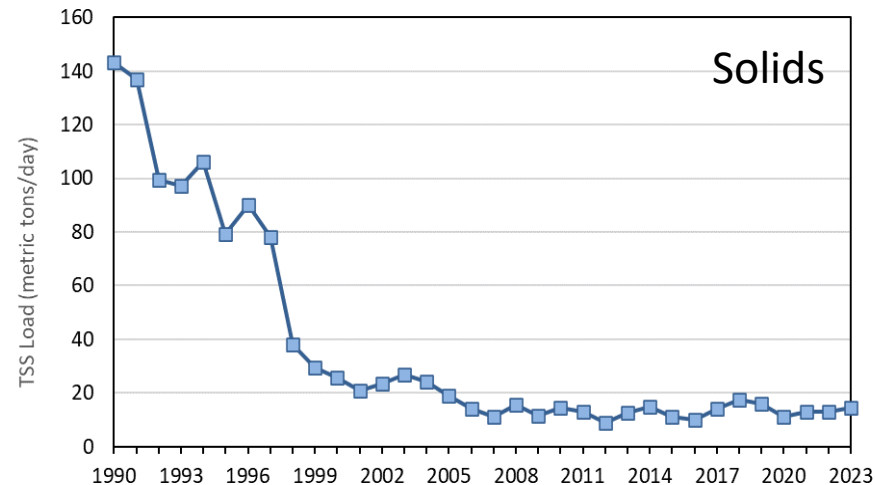
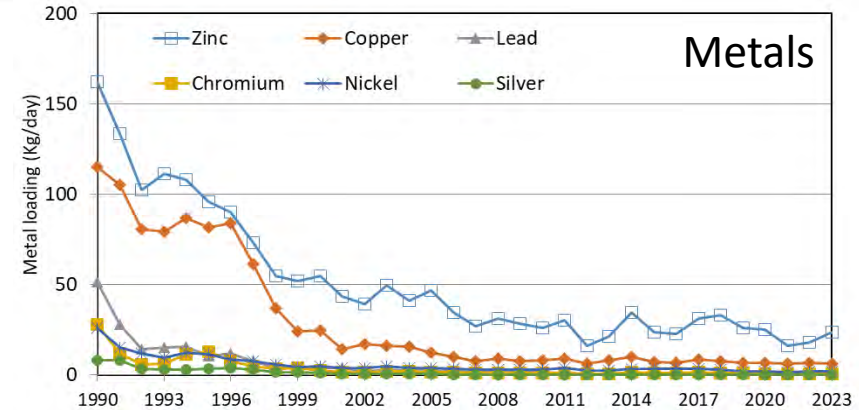
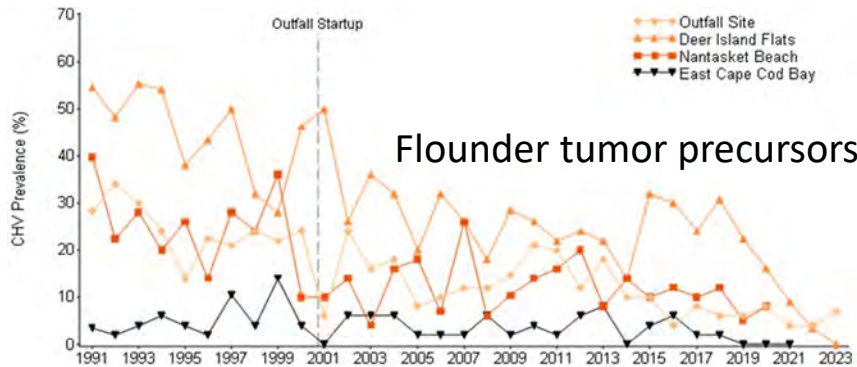
DITP awarded a Platinum 17 award from NACWA, signifying zero NPDES permit violations in 17 years!





2023 data continue to show minimal environmental impact

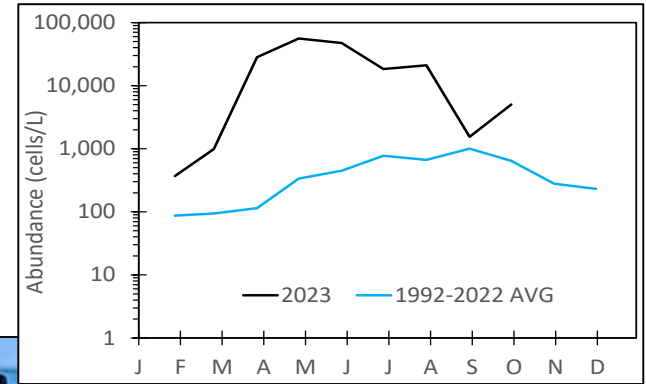
- Effluent metals and solids remain low
- Seafloor and flounder sampling occurs once a year
 - No negative impacts on seafloor life from the outfall
 - Flounder tumor precursors have declined and are at very low levels



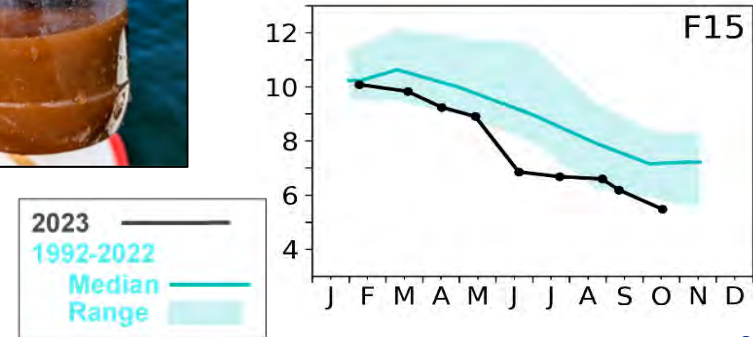


2023 *Triplos muelleri* bloom

- Plankton sampled 9 times a year
- Unprecedented *Triplos muelleri* bloom throughout the summer and early fall
- *T. muelleri* is not a harmful, nuisance, or invasive algae species
- The bloom was a regional occurrence, observed from Maine to Martha's Vineyard
- Likely contributed to low dissolved oxygen observed in 2023



Bottom Dissolved Oxygen





Contingency Plan threshold exceedances: 2023

Thresholds designed to signal changes from pre-outfall conditions; not to warn of imminent environmental harm.

- Caution-level:
 - Annual and summer chlorophyll concentrations
 - Stellwagen Basin dissolved oxygen concentration (Jul. and Sept.)
- Warning-level:
 - Nearfield dissolved oxygen concentration (Oct.)
 - Stellwagen Basin dissolved oxygen percent saturation (Jul. and Sept.)
- Conditions were not detrimental to aquatic life; they were not 'hypoxic' or 'anoxic'
- Outfall not believed linked to exceedances. Exceedances may be due to region-wide, long term trends and the *Tripos muelleri* bloom



Video From Outfall Diffuser: July 2023





Presentation to

MWRA Board of Directors

*Hayes Pump Station Rehabilitation
Construction Contract 7375*

October 23, 2024



Project Location





Major Project Components

- Equipment requiring replacement given age and reliability
 - Facility flow control gates
 - Screens and grinders
 - Wastewater pumps and motors
 - SCADA equipment
 - Odor control system
 - Electrical equipment/emergency generator
- Required for code compliance
 - HVAC and plumbing improvements
 - Architectural and fire system improvements
- Site drainage improvements
- Bypass pump system to operate during construction



Contract 7375 Work



Influent gate



Screen/grinder



Pumps



Procurement Results

Contractor	Bid Amount
Waterline Industries Corporation	\$25,559,181*
<i>Engineer's Estimate</i>	<i>\$28,479,025</i>
WES Construction Corporation	\$29,649,000

*Bid adjusted to reflect lowest qualified Fire Protection Filed Sub-Bid

Construction contract duration 36 months

Staff recommends award to Waterline Industries Corporation



Presentation to

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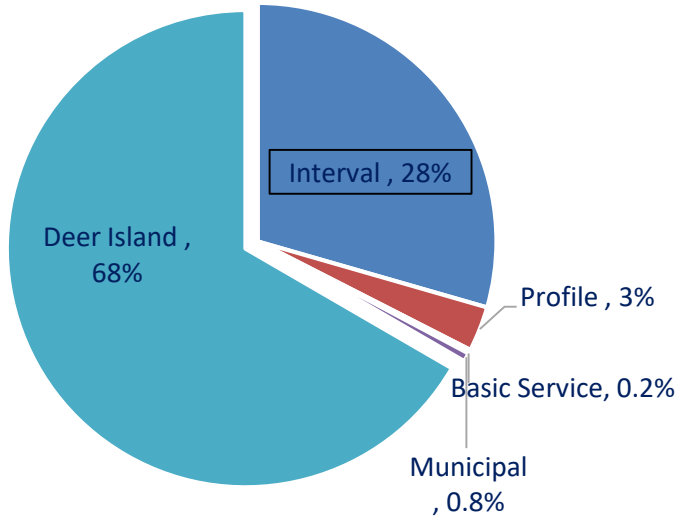
***Purchase and Supply of Electricity for
MWRA Interval Accounts***

October 23, 2024

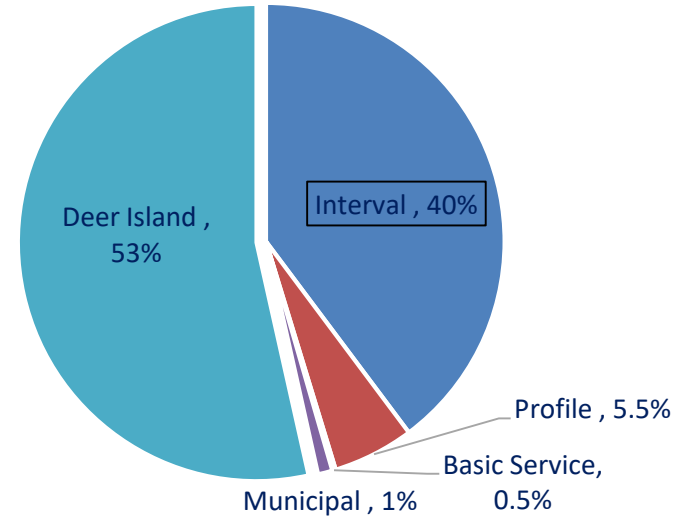


MWRA Electricity Contracts Overview

% Total MWRA Load (156M kWh/yr)



% Total MWRA Budget (\$24M)





Market Monitoring with Indicative Pricing

DITP ELECTRICITY BLOCK + INDEX INDICATIVE PRICING

