Metropolitan Water Tunnel Program

Town of Needham

Select Board Meeting

January 28, 2025

Agenda

- MWRA – Introduction
- Tunnel Program - Goals
- Tunnel Program - Update
  - Status
  - Schedule
- Informational Resources
- Questions?

Metropolitan Water Tunnel Program
Public Information Session

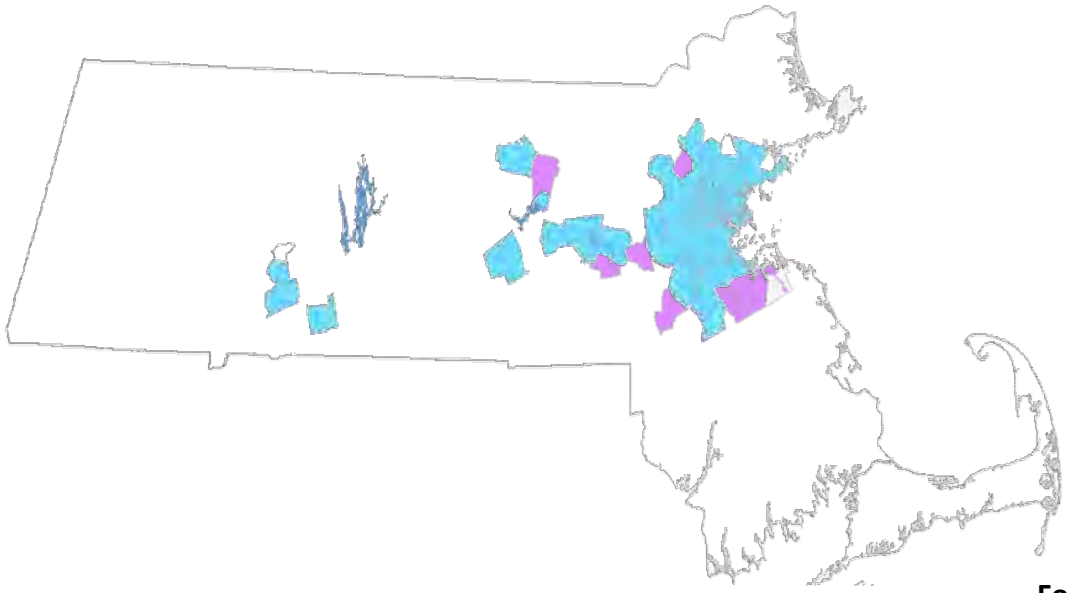
Wednesday, February 5th
7:00PM (Hall will open at 6:30PM)

James Hugh Powers Hall
Needham Town Hall
1471 Highland Ave, Needham, MA

MWRA – Who We Are…. What We Do …

The MWRA …

- provides wholesale water and wastewater services to over 3.1 million customers in 61 communities
- delivers an average of 200 million gallons per day to its water customers
- collects and treats an average of 350 million gallons of wastewater per day, with a peak capacity of 1.2 billion gallons



We have …

- 5 years of storage for water supply
- State of the art water treatment facility
- 102 miles of active transmission mains and tunnels (plus 43 miles on standby), including a number of deep rock pressure tunnels
- 284 miles of distribution mains with over 4,700 valves
- 12 pump stations and several covered storage tanks
- ~ 85% of our water is delivered by gravity

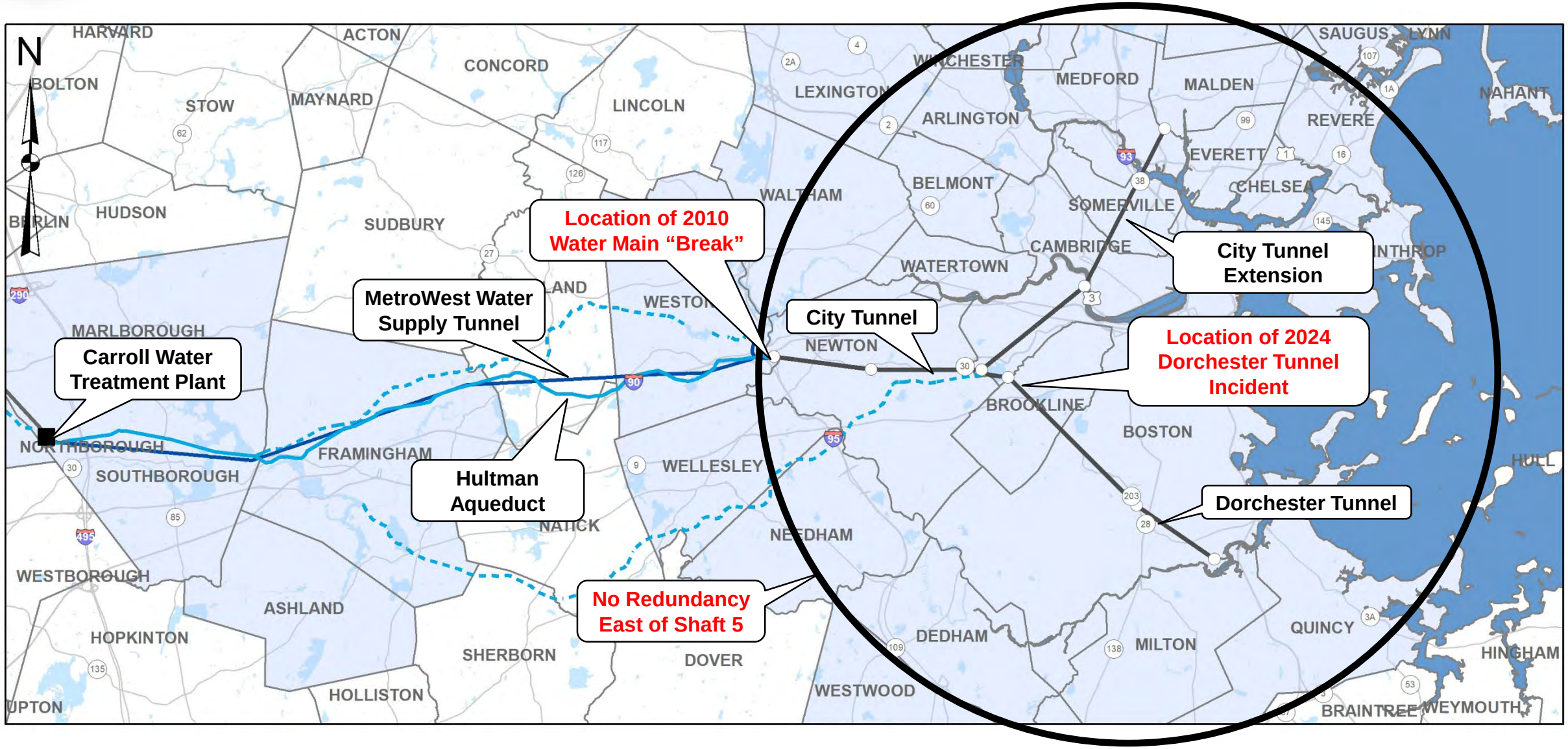
We Must….

- Deliver water to protect **public health**, provide **sanitation**, and **fire protection**

We Need to….

- Have the ability to swiftly respond to a disruption in service
- Maintain and rehabilitate surface piping, key valves and tunnels on a periodic basis

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



For discussion only

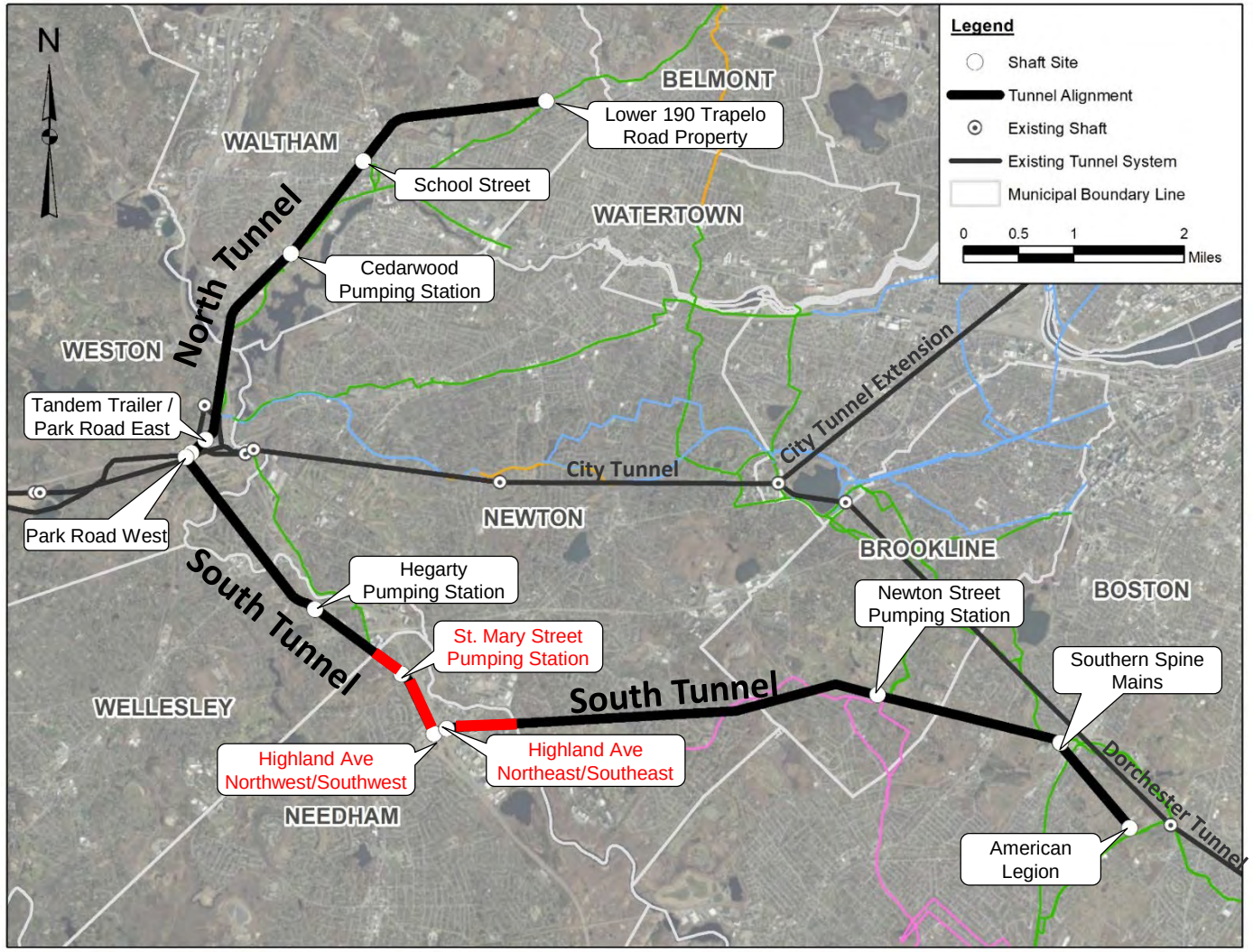
Metropolitan Water Tunnel Program - Goal

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

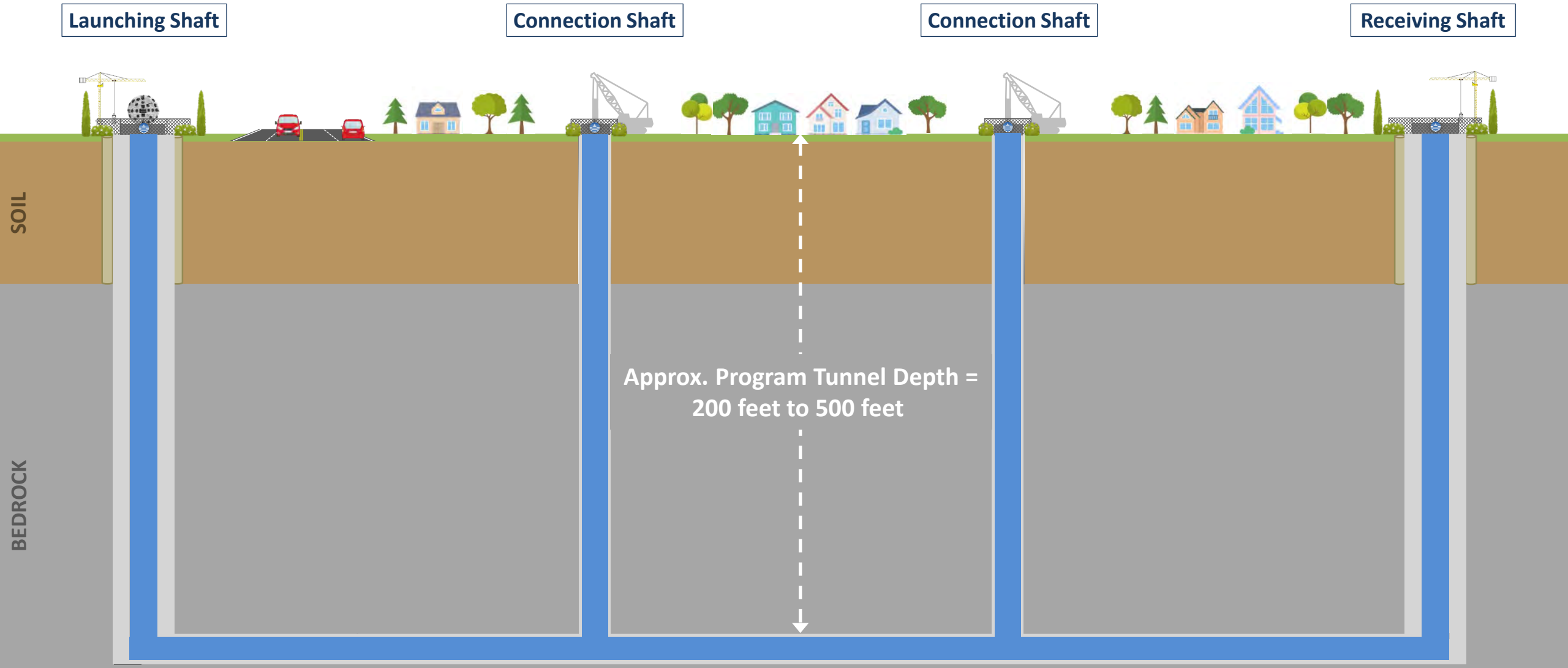
Metropolitan Water Tunnel Program - Overview

- ~15 miles of deep, hard rock, pressure water tunnels
- 13 Shaft Sites
- Tunnels will begin in Weston (I-90/I-95)
- North Tunnel - ~5 miles, ends in Waltham
- South Tunnel - ~10 miles, ends in Mattapan near American Legion Hwy
- Tunnel Construction anticipated between 2028 and 2040



For discussion only

Conceptual Construction Sequence



NOT TO SCALE

For discussion only

How Did We Get Here?

Early Concepts:

- Establish Program Goal = Full Redundancy
- Evaluated numerous tunnel and non-tunnel alternative
- Selected all tunnel alternative (maximize work underground, least impacts)

Preliminary Design & EIR – Performed in Parallel:

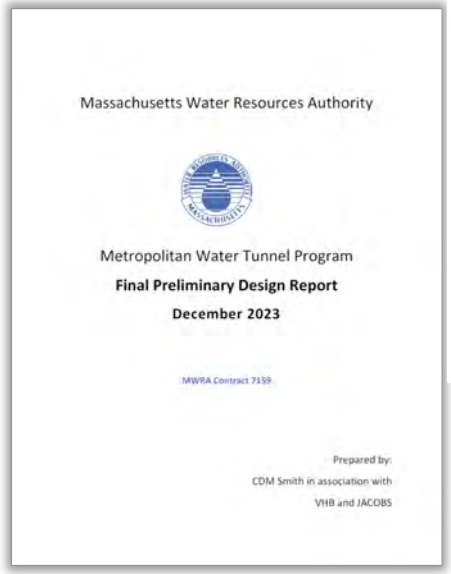
- Gather Stakeholder input, incorporate into environmental analysis and preliminary design
- Shaft site selection
  - Meet system hydraulic requirements
  - Provide sufficient space for construction and permanent infrastructure
- Establish tunnel alignment
  - Minimize overall tunnel length and avoid geo-hazards, when possible
  - Establish readily constructible tunnel segment lengths
- Avoid, minimize, and mitigate impacts to the environmental and communities to the maximum extent practicable

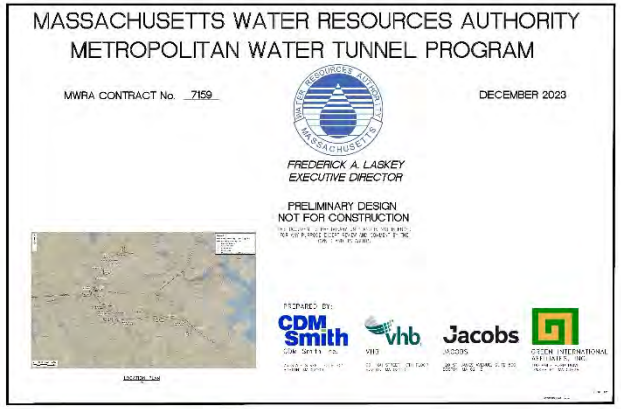
Preliminary Design

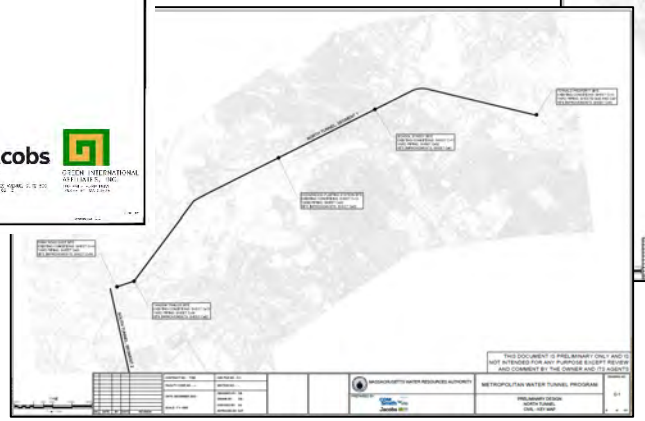
Early Concepts
Prelim. Design & EIR
Geotechnical Investigations
Final Design
Construction
Operations

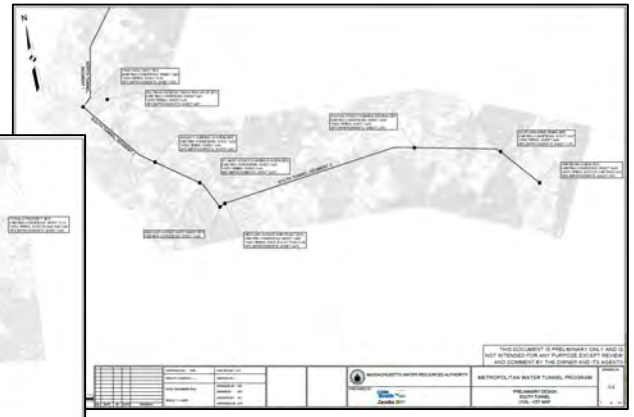
Preliminary Design (2020 – Early 2024) Complete ✓

- 15 miles of deep rock tunnel
- 100 Year Service Design Life
- Preliminary tunnel alignment and profile, valve chambers and surface pipeline connections
- Construction contract packaging and sequence approach
- Updated construction cost estimate and construction schedule









For discussion only

Environmental Review Documents

Early Concepts
Prelim. Design & EIR
Geotechnical Investigations
Final Design
Construction
Operations

MEPA filings and Environmental Impact Reports: Complete ✓

- Environmental Notification Form (ENF), March 2021
  - Certificate Issued May 2021
- Draft Environmental Impact Report (DEIR), October 2022
  - Certificate Issued December 2022
- Supplemental Draft Environmental Impact Report (SDEIR), July 2023
  - Certificate Issued September 2023
- Final Environmental Impact Report (FEIR), February 2024
  - Certificate Issued April 2024

Stakeholder Comments Were Addressed as Part of the Environmental Review Process

Documents are available on our website:
https://www.mwra.com/mwtp/resources.html#resources

Geotechnical Investigation

Early Concepts
Prelim. Design & EIR
Geotechnical Investigations
Final Design
Construction
Operations

- Phase 1, Preliminary Design/Environmental Impact Report (2020 – 2023) **Complete ✓**
- Phase 2, Geotechnical Support Services (2023 – Early 2026) **Ongoing**
- Phase 3, Final Design (2025 – 2028) **Up Next**

St Mary Street, Needham

Highland Circle, Needham


About MWRA's
Metropolitan Water Tunnel Program
Geotechnical Field Investigation

Distributed 12/4/2024

METROPOLITAN WATER TUNNEL PROGRAM

NOTICE TO ABUTTERS

NEEDHAM

The Massachusetts Water Resources Authority (MWRA) will be conducting field work to support a major water supply tunnel program in the Metropolitan Boston Area. The two proposed water tunnels will improve reliability for our water infrastructure and allow our aging existing water tunnel system to be rehabilitated without interrupting service.

As part of the design effort, MWRA has hired GEI-Delve Joint Venture and other firms to perform pavement cores, vacuum excavations, and test borings to study the existing geological conditions, as well as collecting subsurface soil samples. Observation wells may be installed within selected boreholes to measure groundwater levels.

The site activities will include establishing a work area around each boring location, to provide providing a working space for a drill rig, support trucks, and equipment. Erosion and sedimentation controls will be installed, as needed. At each of the boring locations, the work is estimated to take about 1 to 2 days to complete, including site set-up and breakdown. Upon completion of site activities, our crews will restore the work sites.

MWRA has planned for a total of six test borings along Fremont Street, Charles Street, Wexford Street, Arlington Road, and Brook Road in Needham. The work will be on the public roadways and not on any private property.

...ions, please contact:

...at the MWRA
... phone at (617) 963-9876

For discussion only

Outreach

Early Concepts
Prelim. Design & EIR
Geotechnical Investigations
Final Design
Construction
Operations

- Met with communities in the study area; established Working Groups with representatives from each community
- Numerous meetings with the 7 communities in which the tunnel will be constructed:
  - Town Management, Public Works, Public Safety/Fire, Conservation Commission, etc.
- Multiple meetings with key stakeholders and permit agencies
- Met with numerous organizations, businesses & private property owners to coordinate field work
- Met with several community interest groups
- Established a Website https://www.mwra.com/mwtp.html and email address (for questions) Tunnels.info@mwra.com
- Created multiple Fact Sheets – available in 4 languages
- Public Information Sessions **Starting in February!**

Outreach will continue throughout final design and construction

Public Information Session

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Public Information Session

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7:00PM (Hall will open at 6:30PM)

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1471 Highland Ave, Needham, MA

https://www.mwra.com/about-mwra/calendar

Highland Avenue Northwest and Northeast – Shaft Sites

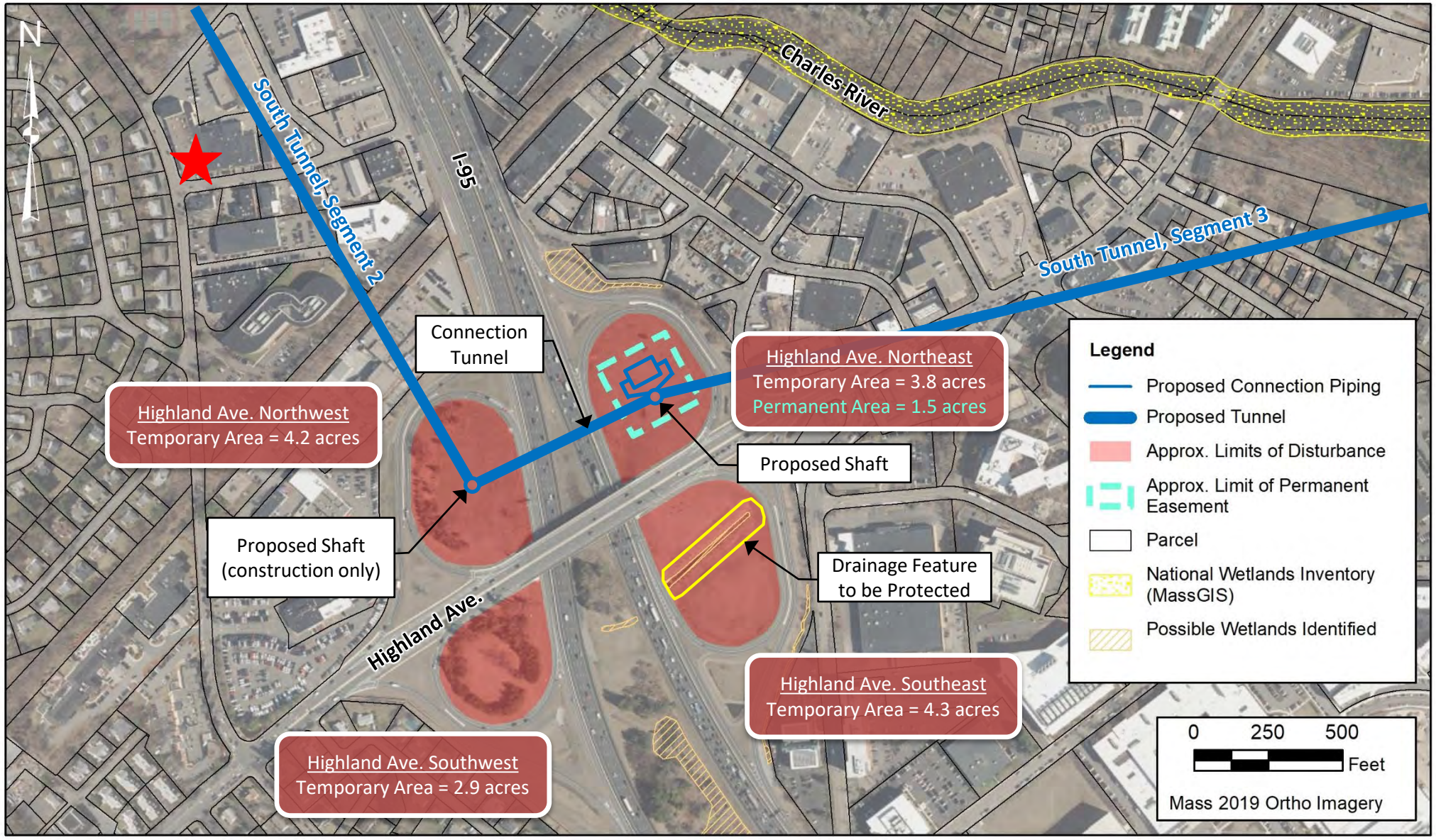
Site Purpose:

- Launch TBM from Northwest Cloverleaf to Weston
- Launch TBM from Northeast Cloverleaf to Mattapan
- Connector tunnel below I-95

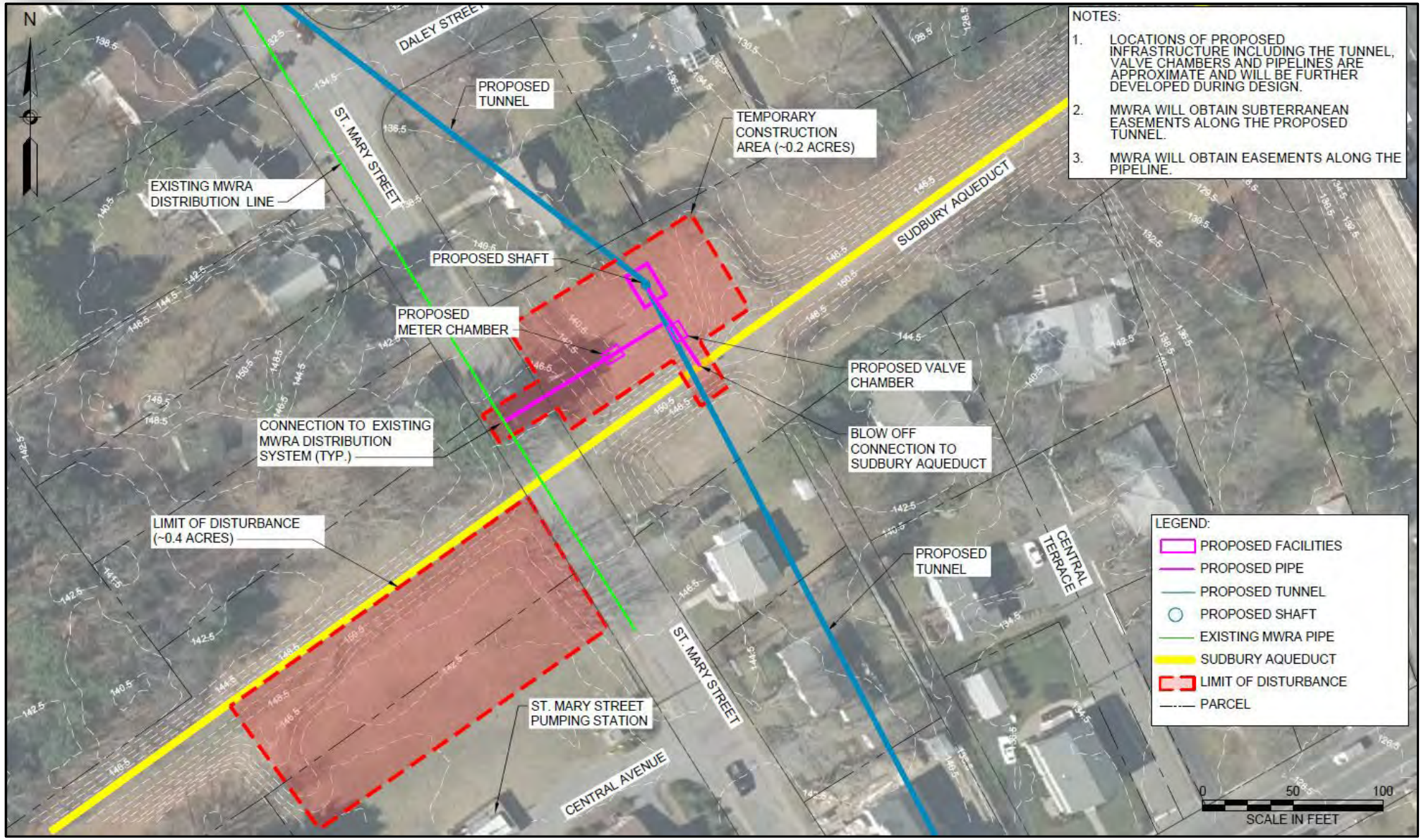
Site Characteristics:

- Coordination with MassDOT is ongoing
- Sites were previously used for construction staging

★ MWRA Tunnel Program Office (and Rock Core Storage Facility)



St Mary St Pumping Station – Connection Shaft



- Most work on MWRA property
- Limited in road work

For discussion only

Construction

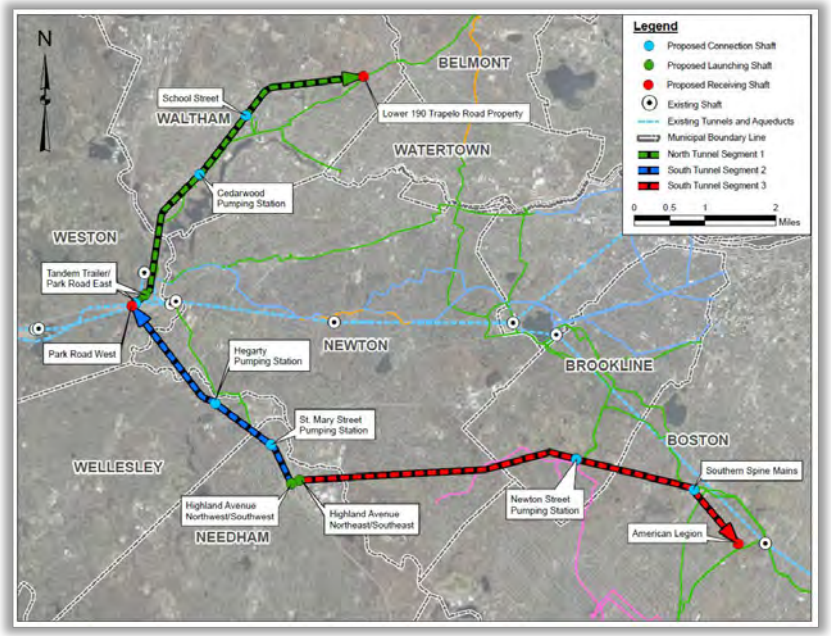
- Early Concepts
- Prelim. Design & EIR
- Geotechnical Investigations
- Final Design
- Construction
- Operations

Tunnel Construction:

- South Tunnel - 2028
- North Tunnel - 2029
- Complete by 2040

Early Enabling Construction Work: Target to begin 2026

- TBM Power Supply – by Eversource
- Needham Dewatering Drainage Line
- Lower 190 Trapelo Road Property - Building Demolition
- Tandem Trailer Parking Relocation



TBM Power Supply – by Eversource

Early Concepts
Prelim. Design & EIR
Geotechnical Investigations
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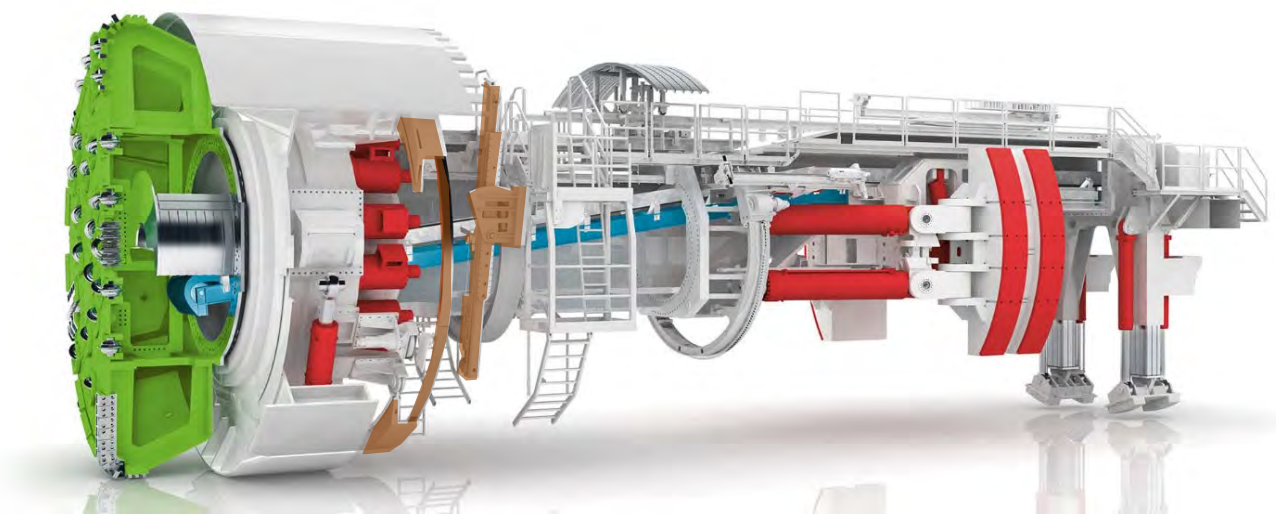
Construction
Operations

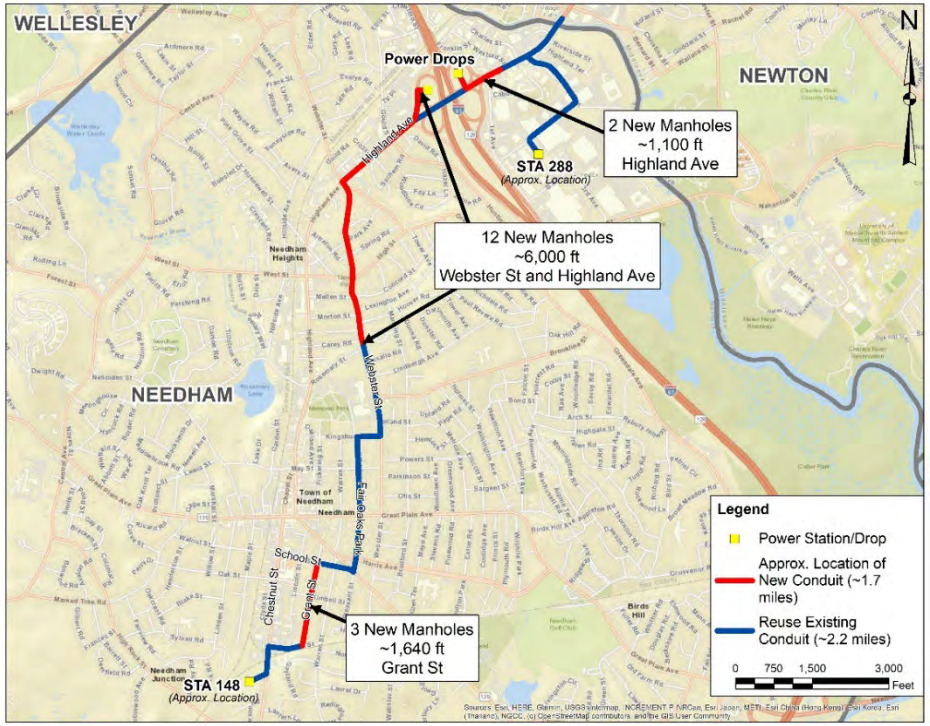
- The tunnel boring machines (TBMs) are very large machines and are powered by electricity
- There is not sufficient power supply in the Highland Ave area to support TBM operations
- MWRA is working with Eversource to bring a new power infrastructure to the launching shaft sites
- This new power infrastructure will remain after the Tunnel Program is complete



Source: www.herrenknecht.com

Highland Ave Launching Shaft Sites:

- ~1.7 miles of new duct bank & cable
- ~2.2 miles of reused duct bank & cable



Dewatering Drainage Pipeline

Early Concepts

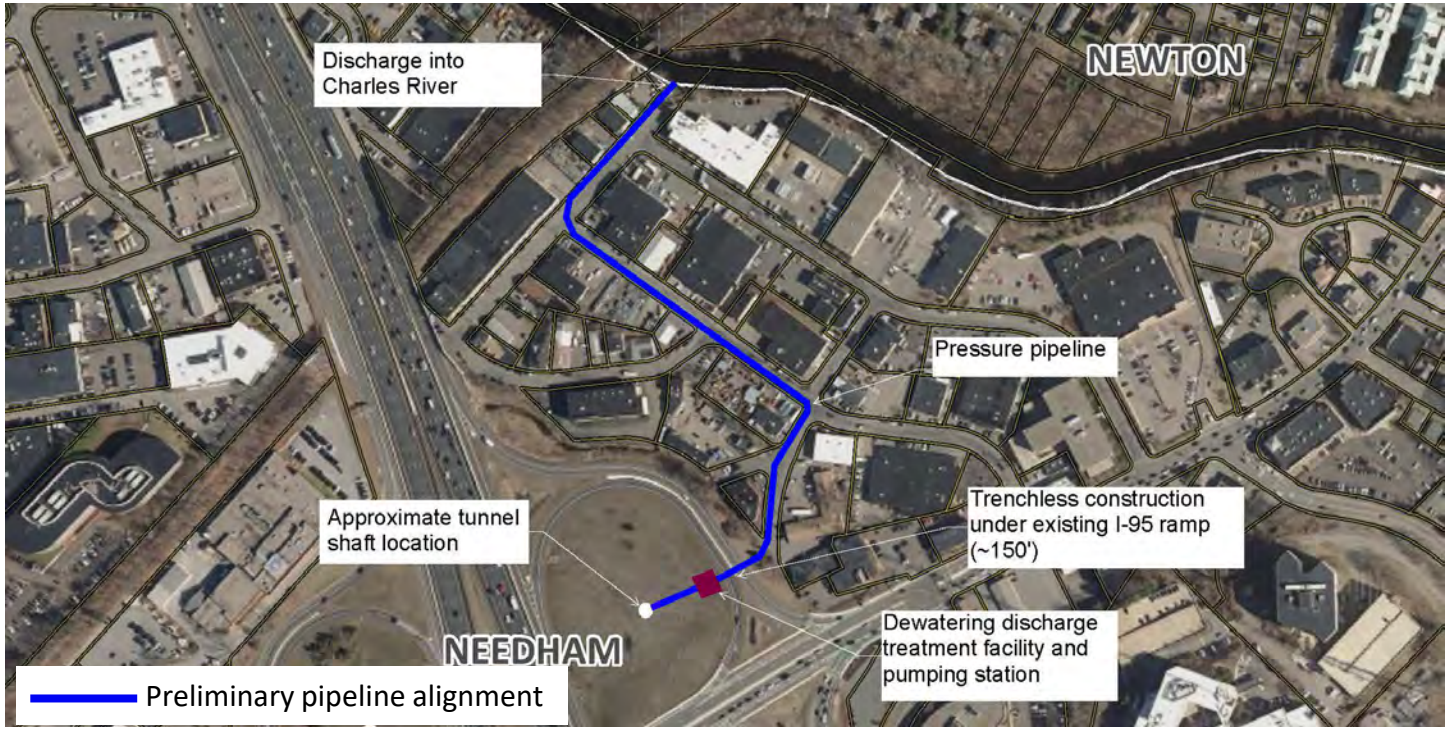
Prelim. Design & EIR

Geotechnical Investigations

Final Design

Construction

Operations



- Early enabling construction project
- New pipeline for construction dewatering and future unwatering of the south tunnel
- Requires a short trenchless crossing of an I-95 Ramp (within MassDOT ROW)
- New outfall to the Charles River

Tunnel Program – Current Schedule

- Preliminary Design & EIR: 2020 – 2024 **Complete ✓**
- Final Design: 2024 – 2029 **Ongoing**
- Eversource - Power Supply Construction: 2025 – 2029
- Early Enabling Projects Construction : 2026 – 2029
- Land Acquisition: 2021 – 2029 **Ongoing**
- South Tunnel Construction: 2028
- North Tunnel Construction: 2029
- New Tunnel System in Operation: by 2040

Launch Shaft Site

Early Concepts

Prelim. Design & EIR

Geotechnical Investigations

Final Design

Construction

Operations

MWWST Shaft 5A – During Construction

MWWST Shaft 5/5A – Post Construction

Permanent Infrastructure

- Early Concepts
- Prelim. Design & EIR
- Geotechnical Investigations
- Final Design
- Construction
- Operations

MWWST Wellesley St Connection Shaft, Weston

Permanent infrastructure is mostly below grade:

- Top of shaft structure and valve chamber (~2 ft above grade)
- Connection piping (all buried)

MWWST Shaft 5/5A, Weston

MWWST Shaft L, Framingham

MWWST Shaft E, Southborough

Emergency Response Coordination

Early Concepts
Prelim. Design & EIR
Geotechnical Investigations
Final Design
Construction
Operations

- Shafts are located in six (6) communities, tunnel alignment is beneath seven (7) communities
- Advance coordination is needed to ensure coordinated emergency response during construction
  - Uniqueness of the underground construction environment and its hazards
  - Anticipated role and responsibilities of the MWRA tunnel contractors and local Emergency Responders
    - Tunnel Contractors to provide all OSHA required tunnel rescue resources (2 teams)
    - Local Emergency Responders assume incident commend on the surface and, if needed, provide support underground (e.g. for extrication and medical care)
  - Training and equipment needed by the local Emergency Responders throughout tunnel construction
- Emergency response coordination needs to be tailored to each communities' capabilities and size
- MWRA resources will be provided to ready the local Emergency Responders
- **MWRA is working with local Emergency Responders to determine what resources will be needed**

Where to Find Information / How to Contact Us

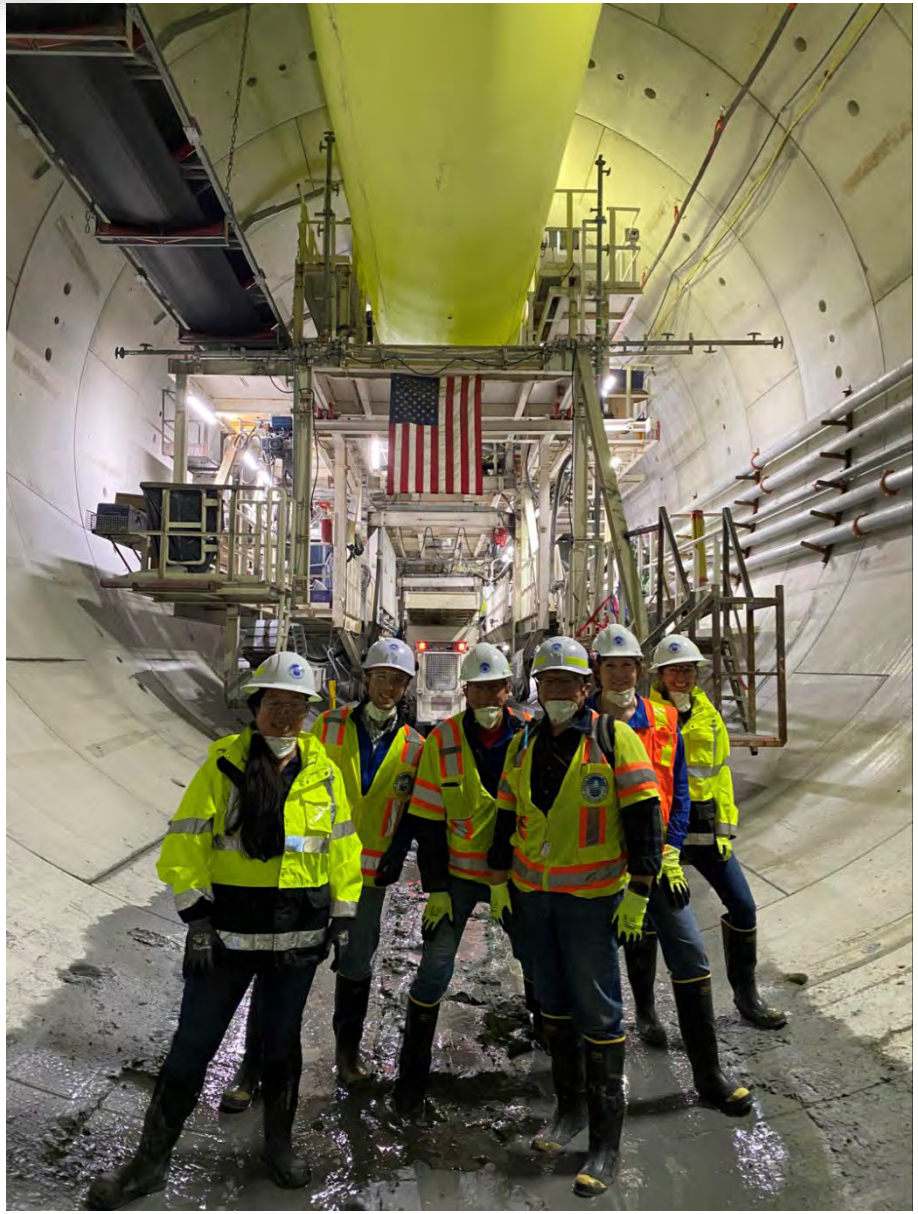
- Tunnel Program Website: https://www.mwra.com/mwtp.html
  - Program Information
  - Reports and other Documents
  - Meeting Agendas and Minutes

- Needham - Notices and Info: https://www.mwra.com/mwtp/resources.html#resources

- Program email address: Tunnels.info@mwra.com
  - Public inquiries and information requests

- Contact Us!
  - Carmine DeMaria, Community Relations Coordinator
  - 617-305-5725
  - Carmine.DeMaria@mwra.com

Metropolitan Water Tunnel Program



Thank You!