

## **Massachusetts Water Resources Authority**

# Metropolitan Water Tunnel Program

Program Update

MWRA Advisory Board



- Program Schedule
- Recent Activity
  - DEIR Submittal
  - Evaluation of Alternatives
  - Preferred Alternative
  - Draft Section 61 Findings
- Ongoing and Upcoming Contracts
- Where to Find Information / How to Contact Us





#### **Program Schedule**

- Overall Program Schedule
  - Currently in Preliminary Design thru early Jan 2024
  - Targeting beginning Final Design in mid 2024
  - Targeting bidding first tunnel contract in 2027
  - Program completion by 2040
- Preliminary Design Status
  - Evaluate tunnel alignment alternatives
  - Geotechnical investigations
  - Environmental Impact Reports
  - Preliminary Design Report
  - Establish contract packages
  - Refine Program cost and schedule

We are Here



## **Draft Environmental Impact Report**

- Submitted in October 2022
- Public comment period ends Dec 9, 2022 (extended)
- Certificate will be issued on Dec 16, 2022
- Includes:
  - Alternatives evaluation process and results
  - Prefered alternative + 2 backups
  - Details of proposed shaft sites (location, limits, purpose, duration, land needs, etc.)
  - Construction impacts at each site (traffic, noise, air quality, vibrations, water supply, wetlands impacts, etc.)
  - Proposed management of impacts (Section 61 Findings)
  - Stakeholder and community outreach
- www.mwra.com/mwtp/resources.html#docs



#### **Construction Shaft Sites**

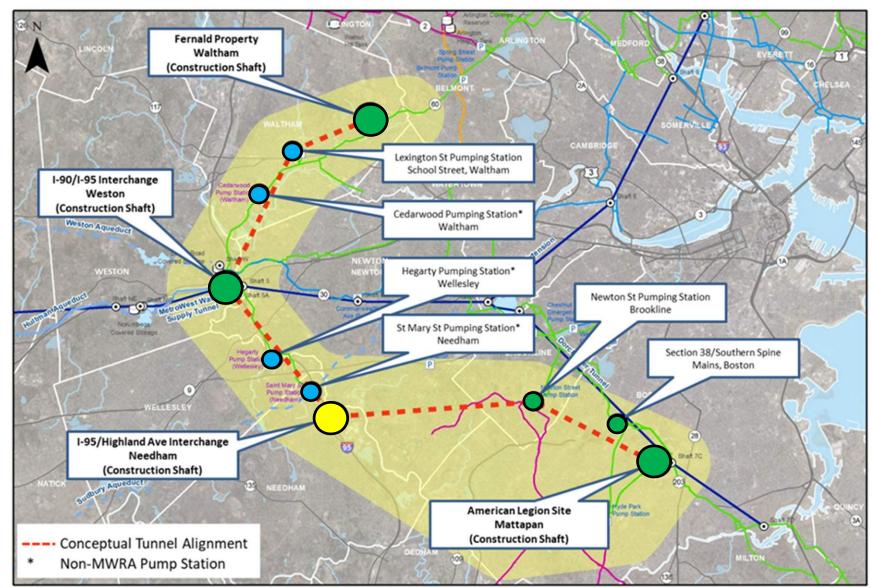
- Fernald Property, Waltham
- 190/195 Interchange, Weston
- Highland Ave/I95 Interchange, Needham
- American Legion, Mattapan

#### **Connection Shaft Sites**

- 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

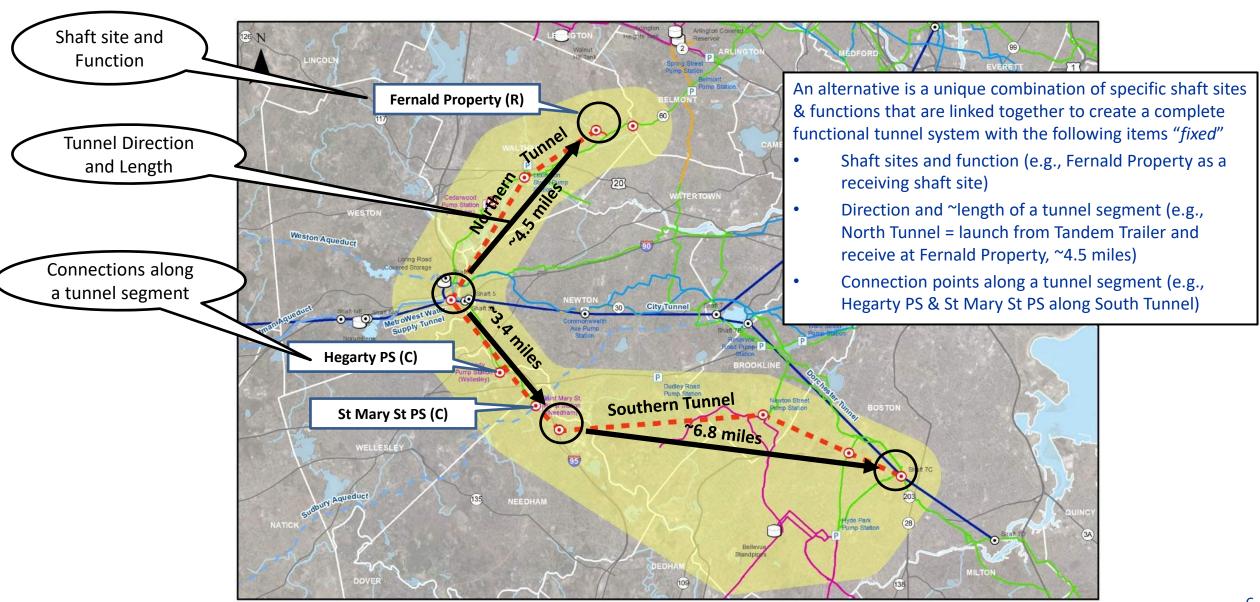
Final shaft locations subject to permits and real estate acquisition

- \* Non MWRA Pump Station
- Required Connection (required for system redundancy)
- Secondary Connection (provides local benefit)
- Construction Shaft (no connection)





### What is an "alternative"



For discussion only

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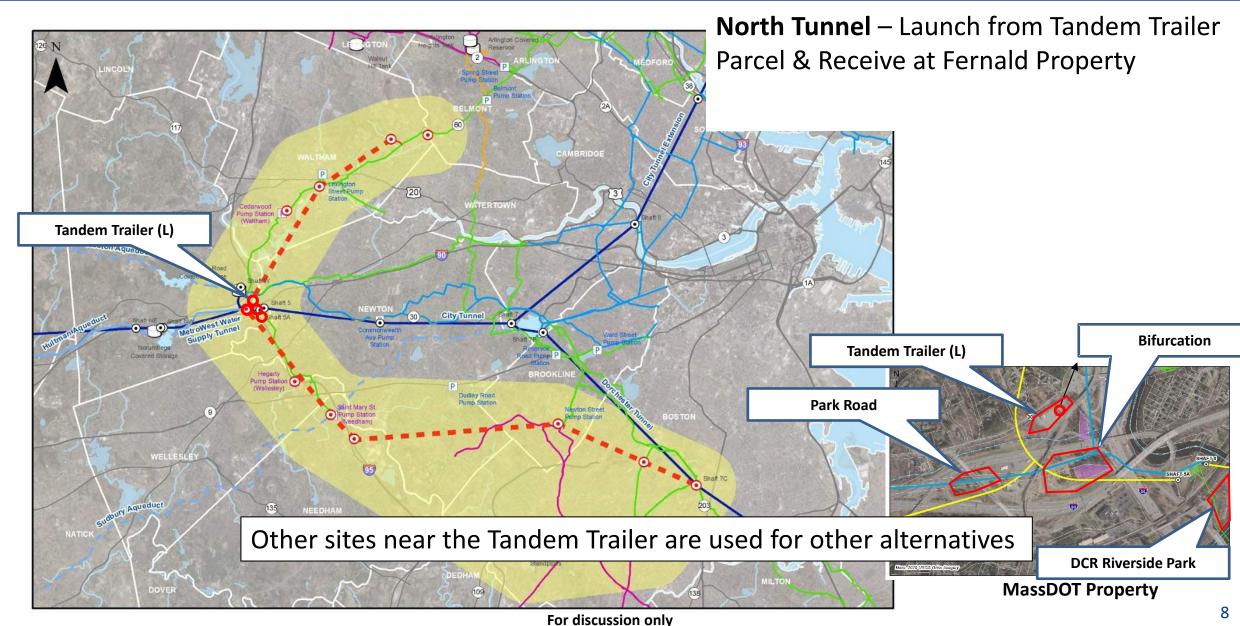


#### **How We Assembled Alternatives and Narrowed the Selection**

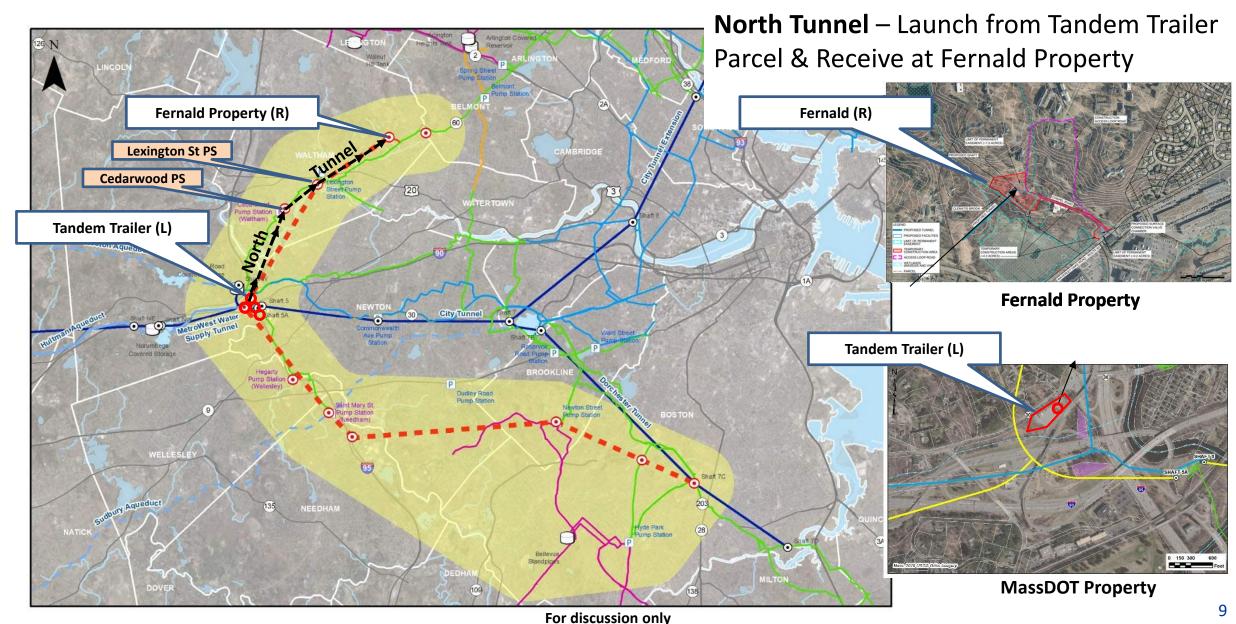
- Started with Two-Tunnel Concept (North and South Tunnels)
- > 30 alternatives:
  - Program study area, system hydraulics, connection points, possible shaft sites (undeveloped/suitable), link tunnel segments, etc.
- Narrowed to 10 alternatives:
  - Land availability, constructability, operations, environmental & social, reasonableness, etc. etc. etc.
- Reduce from 10 to 3 alternatives:
  - All 3 alternatives will be evaluated equally in the DEIR
- Select the preferred alternative:
  - Land availability, more constructability issues, contract packaging/interfaces, phasing, sequencing, schedule, in service, cost, etc.
  - Carried forward to preliminary design

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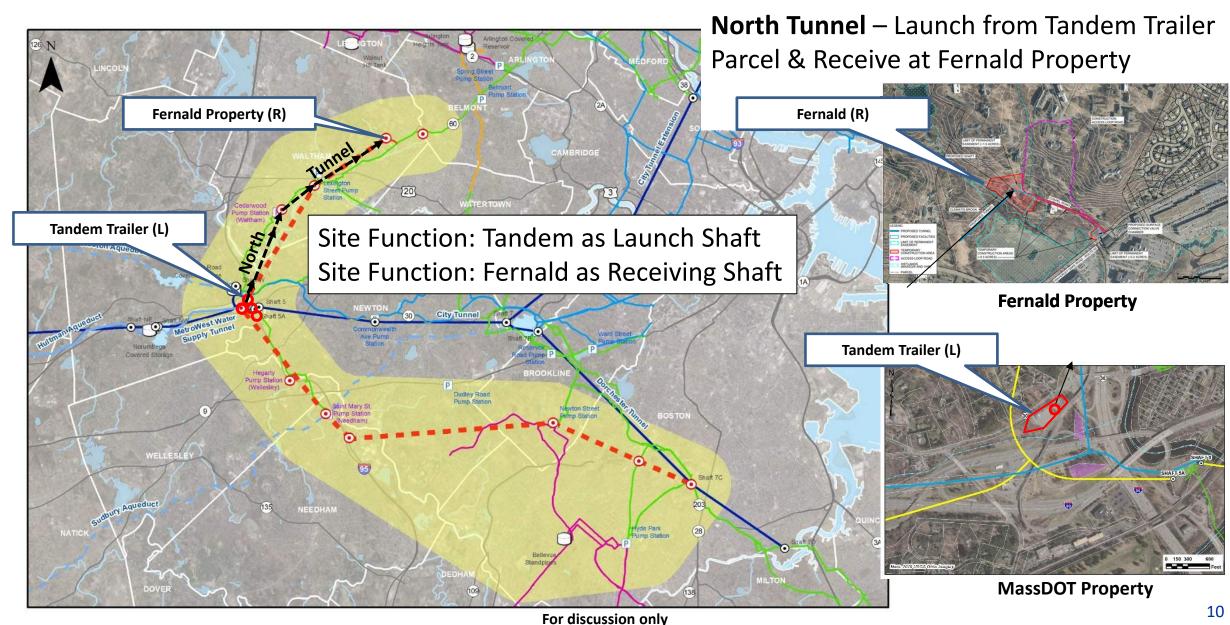




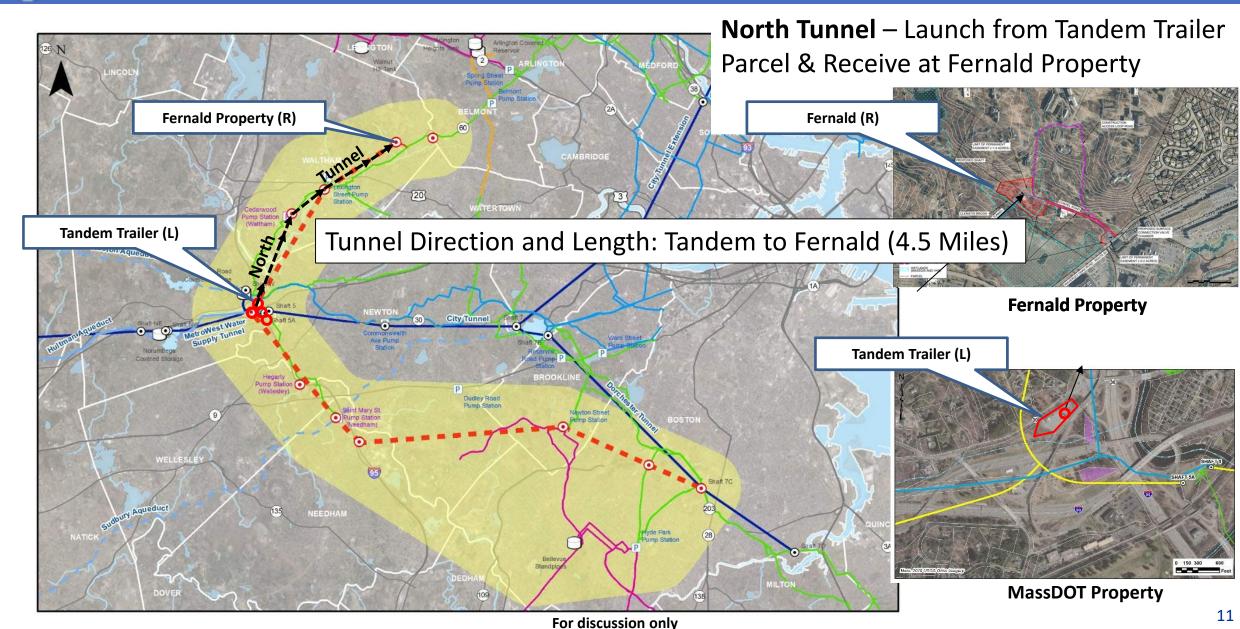




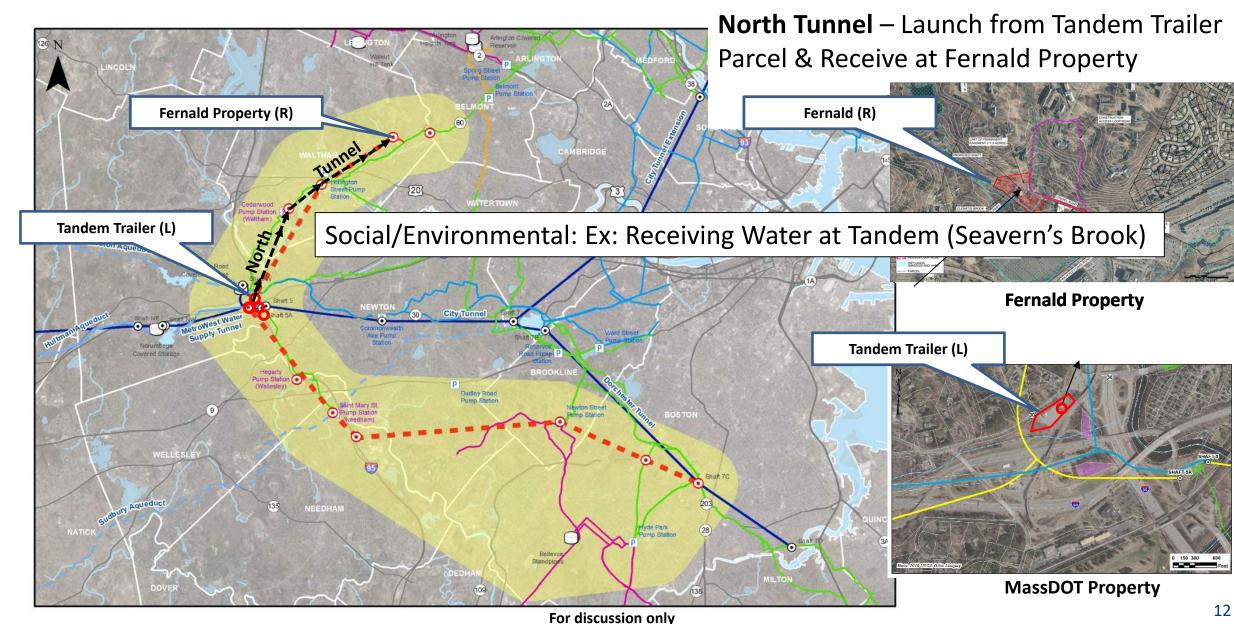




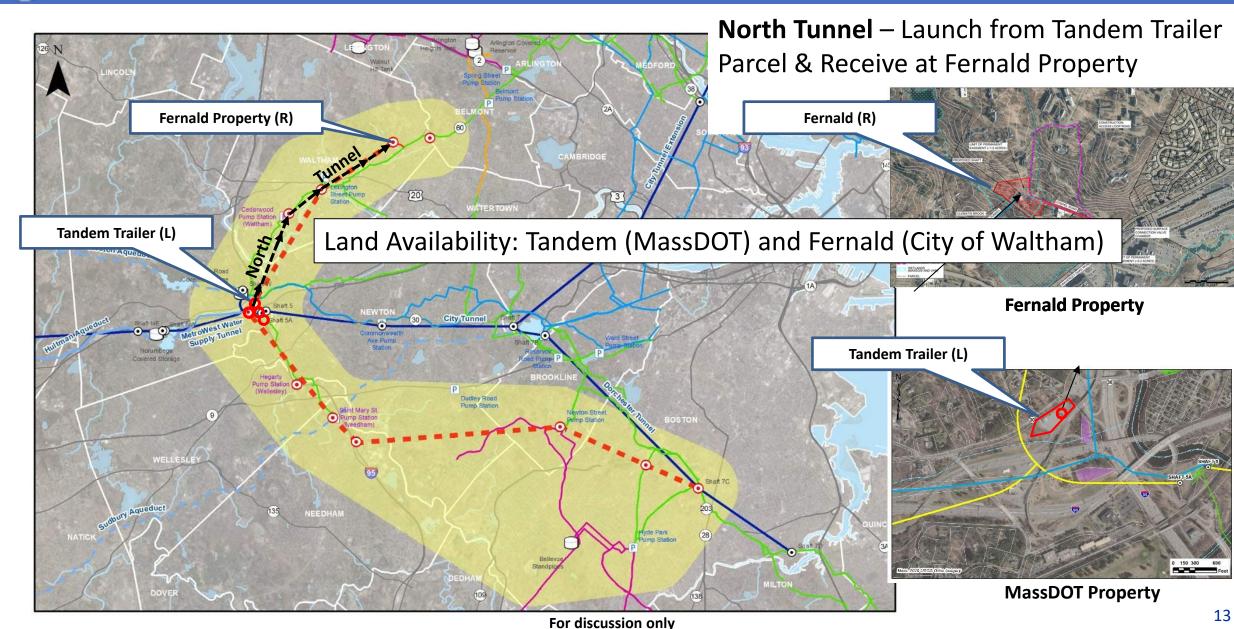






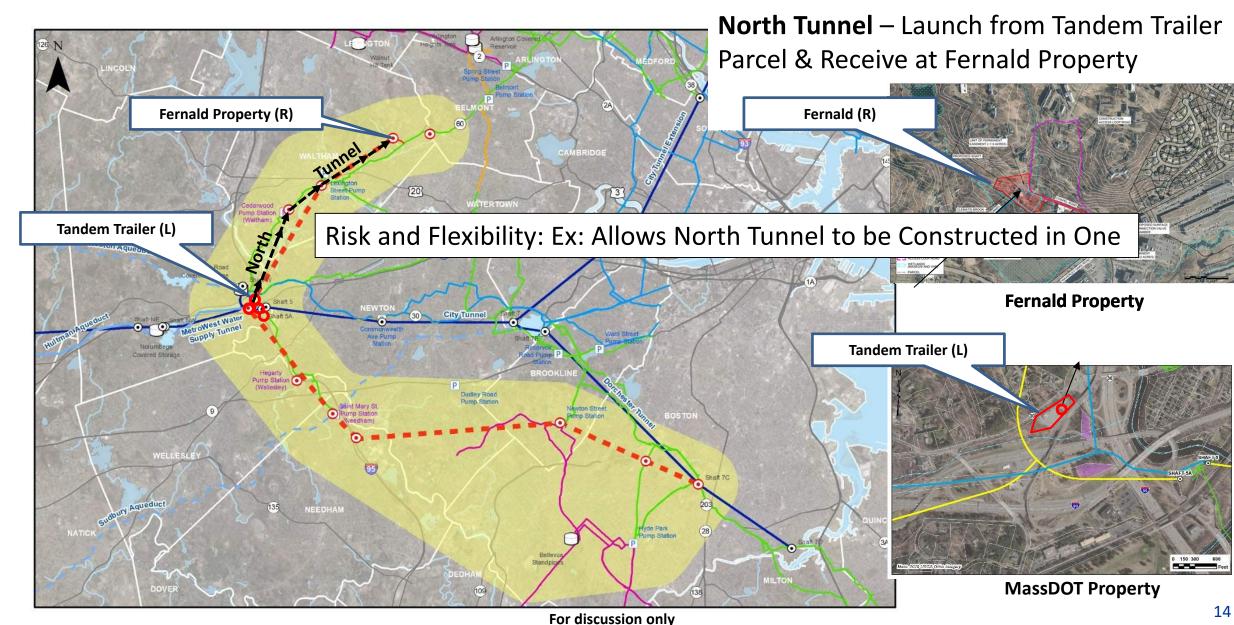




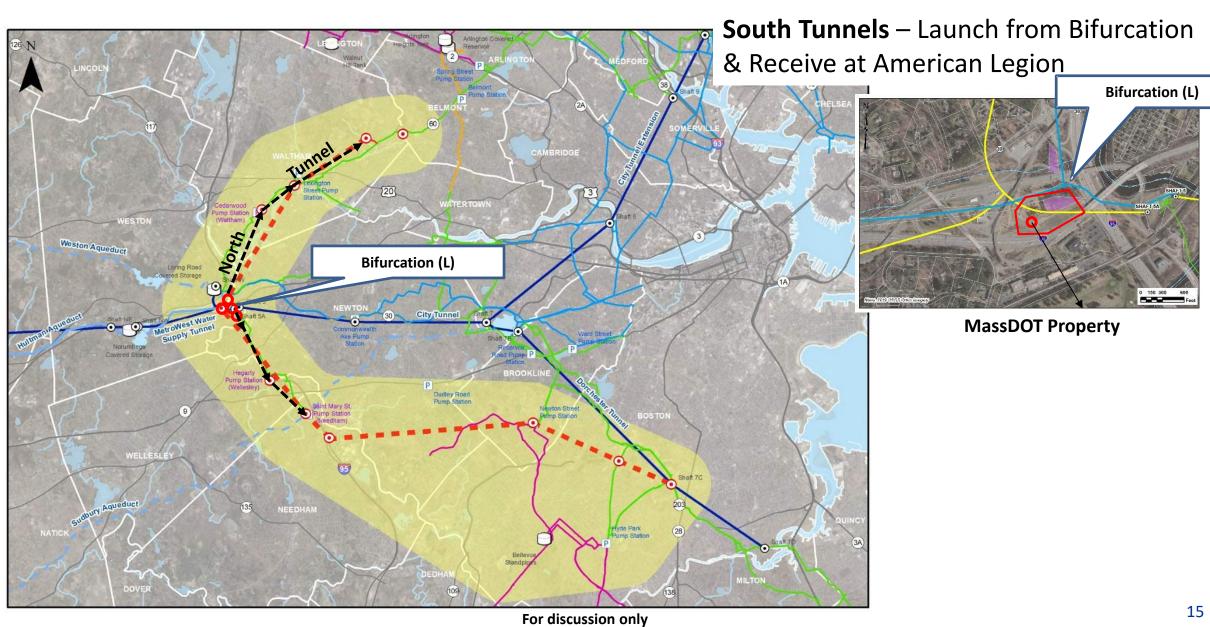


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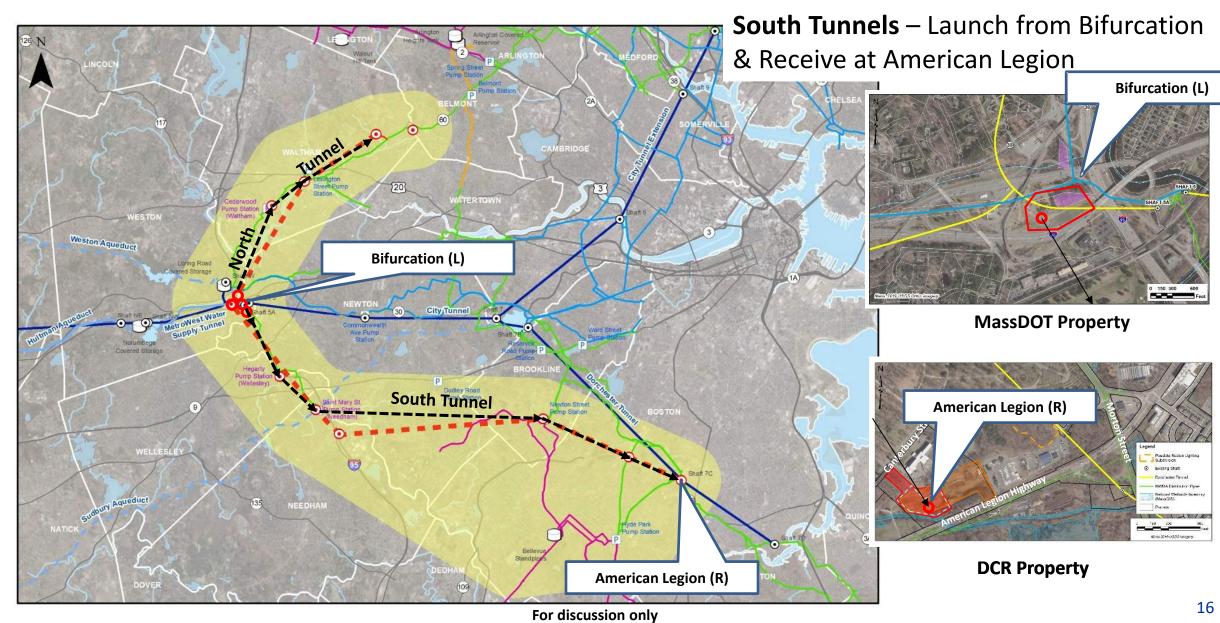




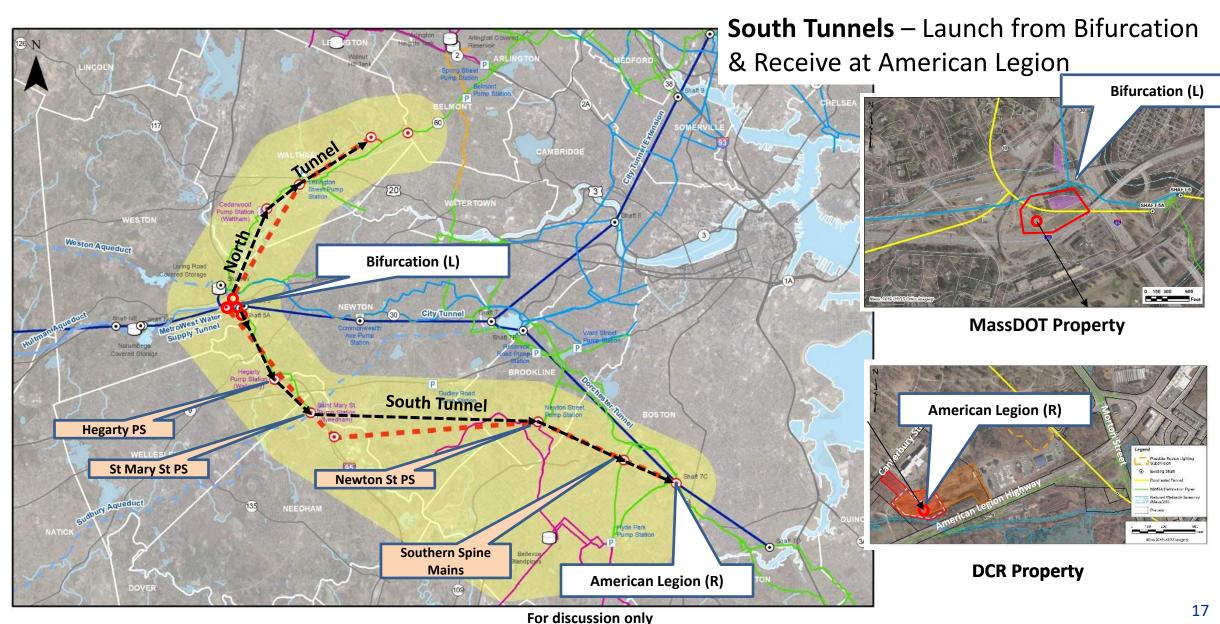




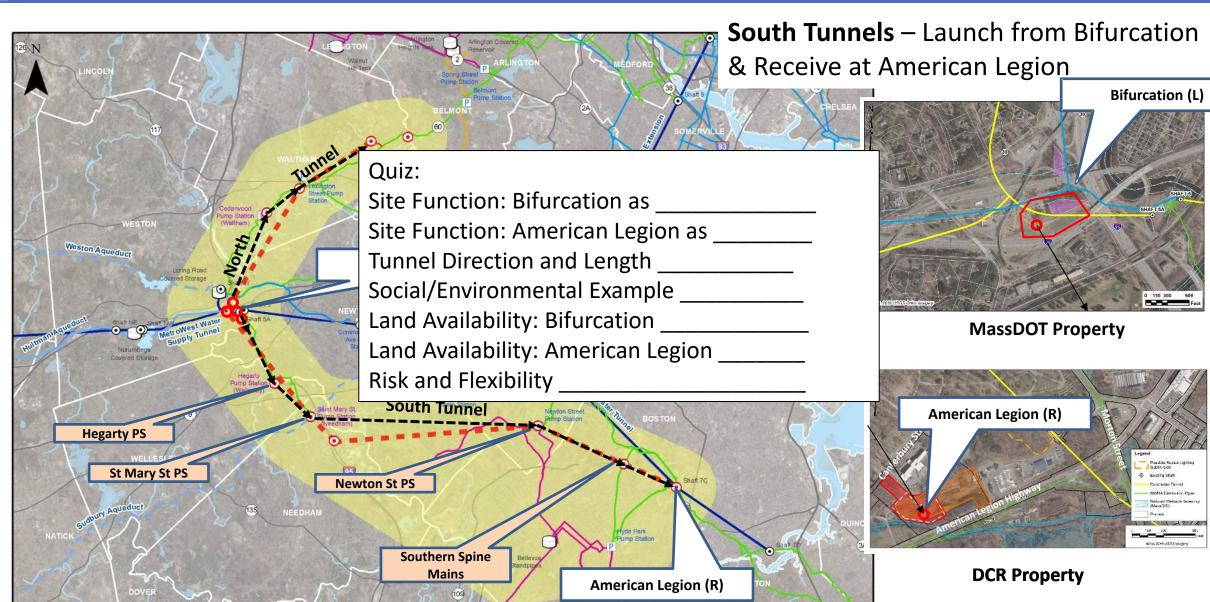








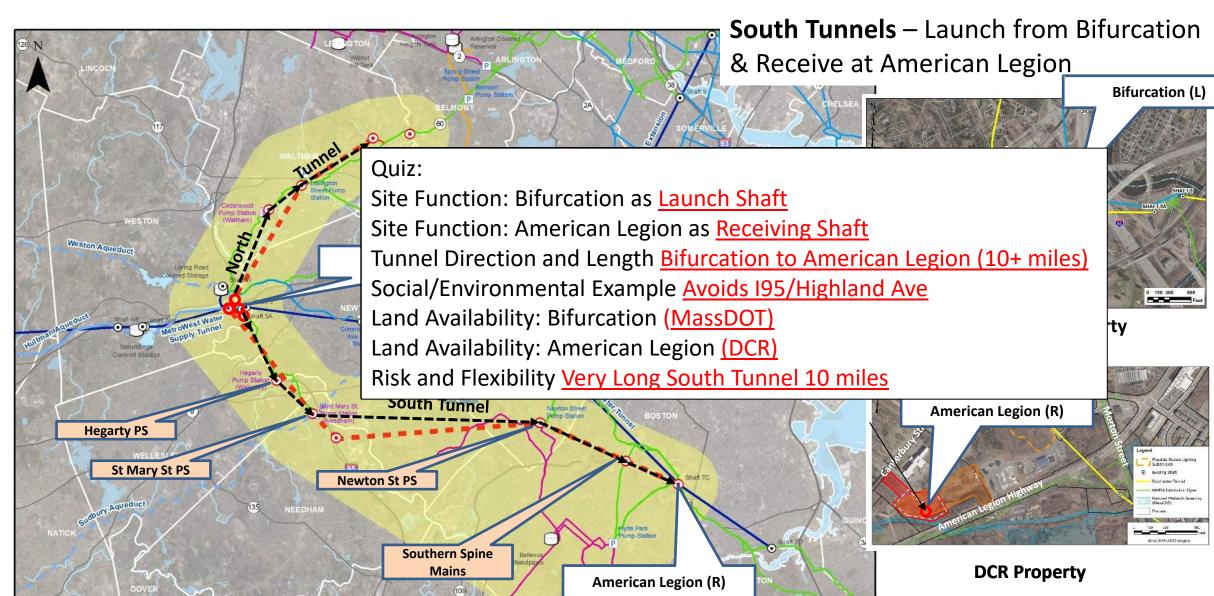




For discussion only

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For discussion only

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| Alternative   | Alternative | Alternative | Alternative  | Alternative | Alternative | Alternative | Alternative | Alternative | Alternative |
|---------------|-------------|-------------|--|-------------|-------------|-------------|-------------|-------------|-------------|
| 1             | 2           | 3           | 4  | 5           | 6           | 7           | 8           | 9           | 10          |
| Fernald       | Fernald     | Fernald     | Fernald  | Fernald     | Fernald     | Fernald     | Fernald     | Fernald     | Fernald     |
| Property      | Property    | Property    | Property   | Property    | Property    | Property    | Property    | Property    | Property    |
| <b>↑</b>      |             | <b>^</b>    | <b>^</b>   | <b>→</b>    | <b>^</b>    | <b>^</b>    | <b>^</b>    | <b>^</b>    | <b>^</b>    |
| Tandem        | •           | Tandem      | Tandem   | Tandem      | Tandem      | Tandem      | Tandem      |             | Park Road   |
| Trailer       | <b>↑</b>    | Trailer     | Trailer  | Trailer     | Trailer     | Trailer     | Trailer     | Bifurcation | West        |
|               |             |             |  |             |             |             |             |             |             |
|               |             |             | Park Road  |             |             |             | Riverside   |             | •           |
| Bifurcation   | Bifurcation | Bifurcation | West   | Bifurcation | Bifurcation | Bifurcation | Park        | Bifurcation | <b>↑</b>    |
|               | <b>↑</b>    | <b>→</b>    | <b>↑</b>   | <b>^</b>    | <b>*</b>    | 1           | <b>↑</b>    | <b>^</b>    |             |
|               | Highland    | Highland    | Highland   | Highland    | Highland    | Highland    | Highland    | Highland    | Highland    |
|               | Avenue      | Avenue      | Avenue   | Avenue      | Avenue      | Avenue      | Avenue      | Avenue      | Avenue      |
|               | NW          | NW          | NW   | NW          | NW          | NE          | NW          | NW          | NW          |
| <b>↓</b>      |             |             |  |             |             |             |             |             |             |
|               | Highland    | Highland    | Highland   | Highland    | Highland    | Highland    | Highland    | Highland    | Highland    |
|               | Avenue NE   | Avenue NE   | Avenue NE  | Avenue NE   | Avenue NE   | Avenue NE   | Avenue NE   | Avenue NE   | Avenue NE   |
|               | <b>→</b>    | <b>→</b>    | <b>→</b>   | <b>+</b>    | <b>1</b>    | <b>+</b>    | <b>→</b>    | <b>→</b>    | <b>→</b>    |
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| Alternative 1            | Alternative 2         | Alternative 3         | Alternative 4         | Alternative 5       | Alternative<br>6      | Alternative 7         | Alternative<br>8      | Alternative<br>9      | Alternative 10         |
|--------------------------|-----------------------|-----------------------|-----------------------|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|
| Fernald<br>Property      | Fernald<br>Property   | Fernald<br>Property   | Fernald<br>Property   | Fernald<br>Property | Fernald<br>Property   | Fernald<br>Property   | Fernald<br>Property   | Fernald<br>Property   | Fernald<br>Property    |
| <b>↑</b>                 |                       | <b>↑</b>              | <b>↑</b>              | <b>→</b>            | <b>↑</b>              | <b>↑</b>              | <b>↑</b>              | <b>↑</b>              | <b>^</b>               |
| Tandem<br>Trailer        | <b>↑</b>              | Tandem<br>Trailer     | Tandem<br>Trailer     | Tandem<br>Trailer   |                       | Long Sout             | h Tunnel (:           | 10 miles)             |                        |
|                          |                       |                       |                       |                     |                       |                       |                       |                       |                        |
| Difurcation              | Bifurcation           | Bifurcation           | Park Road             | Bifurcation         | Bifurcation           | Bifurcation           | Riverside<br>Park     | Bifurcation           | <b>↑</b>               |
|                          | <b>^</b>              | <b>+</b>              | <b>↑</b>              | <b>↑</b>            | <b>+</b>              | <b>↑</b>              | <b>→</b>              | <b>↑</b>              |                        |
|                          | Highland<br>Avenue    | Highland<br>Avenue    | Highland<br>Avenue    | Highland            | Highland              | Highland              | Highland<br>Avenue    | Highland              | Highland<br>Avenue     |
|                          | NW                    | NW                    | NW                    | Avenue<br>NW        | Avenue<br>NW          | Avenue<br>NE          | NW                    | Avenue<br>NW          | NW                     |
| 4                        | NW                    |                       |                       |                     |                       |                       |                       |                       |                        |
| <b>\</b>                 | NW Highland Avenue NE |                       |                       |                     |                       |                       |                       |                       |                        |
| •                        | Highland              | NW<br>Highland        | NW<br>Highland        | NW<br>Highland      | NW<br>Highland        | NE<br>Highland        | NW<br>Highland        | NW<br>Highland        | NW<br>Highland         |
| <b>↓</b> American Legion | Highland<br>Avenue NE | NW Highland Avenue NE | NW Highland Avenue NE | NW<br>Highland      | NW Highland Avenue NE | NE Highland Avenue NE | NW Highland Avenue NE | NW Highland Avenue NE | NW  Highland Avenue NE |



| Alternative 1       | Alternative              | Alternative 3            | Alternative<br>4         | Alternative 5            | Alternative 6            | Alternative 7            | Alternative<br>8         | Alternative<br>9         | Alternative<br>10        |
|---------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Fernald<br>Property | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      |
| <b>1</b>            |                          | <b>^</b>                 | <b>^</b>                 | <b>↓</b>                 | <b>^</b>                 | <b>↑</b>                 | <b>^</b>                 | <b>^</b>                 | <b>^</b>                 |
| Tandem<br>Trailer   | <b>↑</b>                 | Tandem<br>Trailer        | Tandem<br>Trailer        | Tandem                   | Use I                    | Bifurcation              | n as Launch              | n and Rece               | eive                     |
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| Difurcation         | Bifurcation              | Bifurcation              | Park Road<br>West        | Bifurcation              | Bifurcation              | Bifurcation              | Riverside<br>Park        | Bifurcation              | <b>↑</b>                 |
|                     | ↑                        | <b>→</b>                 | <b>↑</b>                 | <b>↑</b>                 | <b>+</b>                 | <b>↑</b>                 | <b>→</b>                 | <b>^</b>                 |                          |
|                     | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NE | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW |
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|                     | Highland<br>Avenue NE    |
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| American            | American                 | American                 | American                 | American                 | American                 | American                 | American                 | American                 | American                 |
| Legion              | Legion                   | Legion                   | Legion                   | Legion                   | Legion                   | Legion                   | Legion                   | Legion                   | Legion                   |



| Alternative 1       | Alternative              | Alternative 3            | Alternative<br>4         | Alternative 5            | Alternative 6            | Alternative 7            | Alternative<br>8         | Alternative<br>9         | Alternative 10           |
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| Fernald<br>Property | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      |
| <b>↑</b>            |                          | <b>↑</b>                 | <b>^</b>                 | <b>→</b>                 | <b>^</b>                 | <b>^</b>                 | <b>^</b>                 | <b>^</b>                 | <b>^</b>                 |
| Tandem<br>Trailer   | <b>↑</b>                 | Tandem<br>Trailer        | Tandem<br>Trailer        | Tandem<br>Trailer        | U                        | lse Bifurca              | tion as La               | unch Only                |                          |
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| Difurcation         | Bifurcation              | Bifurcation              | Park Posit               | Bifurcation              | Bifurcation              | Bifurcation              | Riverside<br>Park        | Bifurcation              | <b>↑</b>                 |
|                     | ↑                        | <b>4</b>                 | <b>↑</b>                 | <b>^</b>                 | <b>+</b>                 | <b>↑</b>                 | <b>→</b>                 | <b>^</b>                 |                          |
|                     | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NE | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW |
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| \ <i> </i>          | Highland<br>Avenue NE    |
|                     |                          | _                        |                          | •                        | •                        | •                        | •                        | •                        | •                        |
| American            | Avenue NE                | Avenue NE                | Avenue NE                | •                        | Avenue NE                |



| Alternative 1       | Alternative              | Alternative 3            | Alternative<br>4         | Alternative 5            | Alternative 6            | Alternative 7            | Alternative<br>8         | Alternative<br>9         | Alternative 10           |
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| Fernald<br>Property | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      |
| <b>1</b>            |                          | <b>^</b>                 | <b>^</b>                 | <b>↓</b>                 | <b>^</b>                 | <b>^</b>                 | <b>^</b>                 | <b>^</b>                 | <b>^</b>                 |
| Tandem<br>Trailer   | <b>↑</b>                 | Tandem<br>Trailer        | Tandem<br>Trailer        | Tandem<br>Trailer        |                          | Use Par                  | k Rd as Re               | ceiving                  |                          |
|                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| Difurcation         | Bifurcation              | Bifurcation              | Park Road<br>West        | ытиrcation               | Bifurcation              | Bifurcation              | Riverside<br>Park        | Bifurcation              | <b>↑</b>                 |
|                     | <b>↑</b>                 | <b>+</b>                 | <b>↑</b>                 | <b>^</b>                 | <b>+</b>                 | <b>↑</b>                 | <b>→</b>                 | <b></b>                  |                          |
|                     | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NE | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW |
| . ↓                 |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|                     | Highland<br>Avenue NE    |
|                     | <b>→</b>                 | <b>→</b>                 | <b>→</b>                 | <b>\</b>                 | <b>^</b>                 | <b>→</b>                 | <b>→</b>                 | <b>→</b>                 | <b>→</b>                 |
| American            | American                 | American                 | American                 | American                 | American                 | American                 | American                 | American                 | American                 |
| Legion              | Legion                   | Legion                   | Legion                   | Legion                   | Legion                   | Legion                   | Legion                   | Legion                   | Legion                   |



| Alternative 1       | Alternative              | Alternative 3            | Alternative<br>4         | Alternative                  | Alternative 6            | Alternative 7            | Alternative<br>8         | Alternative<br>9         | Alternative 10           |
|---------------------|--------------------------|--------------------------|--------------------------|------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Fernald<br>Property | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property          | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      |
| <b>↑</b>            |                          | <b>^</b>                 | <b>^</b>                 | $\setminus$ $\downarrow$ $/$ |                          | <b>^</b>                 | <b>^</b>                 | <b>^</b>                 | <b>↑</b>                 |
| Tandem<br>Trailer   | <b>↑</b>                 | Tandem<br>Trailer        | Tandem<br>Trailer        | Tandem<br>Trailer            | O                        | ne to look               | at Fernald               | l as Launcl              | 1                        |
|                     |                          |                          |                          |                              |                          |                          |                          |                          |                          |
| Difurcation         | Bifurcation              | Bifurcation              | Park Road<br>West        | Bifurcation                  | Bifurcation              | Bifurcation              | Riverside<br>Park        | Bifurcation              | <b>↑</b>                 |
|                     | <b>↑</b>                 | <b>→</b>                 | <b>↑</b>                 | <b>↑</b>                     | <b>+</b>                 | 1                        | <b></b>                  | <b>↑</b>                 |                          |
|                     | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW     | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NE | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW |
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|                     | Highland<br>Avenue NE    | Highland<br>Avenue NE    | Highland<br>Avenue NE    | Highland<br>Avenue NE        | Highland<br>Avenue NE    | Highland<br>Avenue NE    | Highland<br>Avenue NE    | Highland<br>Avenue NE    | Highland<br>Avenue NE    |
|                     | <b>→</b>                 | <b>→</b>                 | <b>→</b>                 | <b>+</b>                     | <b>↑</b>                 | <b>→</b>                 | <b>→</b>                 | <b>→</b>                 | <b>→</b>                 |
| American            | American                 | American                 | American                 | American                     | American                 | American                 | American                 | American                 | American                 |
| Legion              | Legion                   | Legion                   | Legion                   | Legion                       | Legion                   | Legion                   | Legion                   | Legion                   | Legion                   |



| Alternative | Alternative | Alternative | Alternative | Alternative                           | Alternative | Alternative | Alternative | Alternative | Alternative |
|-------------|-------------|-------------|-------------|---------------------------------------|-------------|-------------|-------------|-------------|-------------|
| 1           |             | 3           | 4           |                                       | 6           | 7           | 8           | 9           | 10          |
| Fernald     | Fernald     | Fernald     | Fernald     | Fernald \                             | Fernald     | Fernald     | Fernald     | Fernald     | Fernald     |
| Property    | Property    | Property    | Property    | Property                              | Property    | Property    | Property    | Property    | Property    |
| <b>↑</b>    |             | <b>^</b>    | <b>^</b>    | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ | <b>^</b>    | <b>^</b>    | <b>^</b>    | <b>^</b>    | <b>^</b>    |
| One to      |             | manian la   |             |                                       | Tandem      | Tandem      | Tandem      |             | Park Road   |
| Une to      | look at A   | merican Le  | egion as La | auncn                                 | Trailer     | Trailer     | Trailer     | Bifurcation | West        |
|             |             |             |             |                                       |             |             |             |             |             |
|             |             |             | P           |                                       |             |             | Riverside   |             | _           |
| Fifurcation | Bifurcation | Bifurcation | W           | rcation                               | Bifurcation | Bifurcation | Park        | Bifurcation | <b>↑</b>    |
|             | <b>↑</b>    | <b>→</b>    | <b>↑</b>    | •                                     | <b>→</b>    | <b>↑</b>    | <b></b>     | <b>^</b>    |             |
| \           | Highland    | Highland    | Highland    | nd                                    | Highland    | Highland    | Highland    | Highland    | Highland    |
|             | Avenue      | Avenue      | Avenue      | 1                                     | Avenue      | Avenue      | Avenue      | Avenue      | Avenue      |
|             | NW          | NW          | NW          |                                       | NW          | NE          | NW          | NW          | NW          |
| . ↓         |             |             |             |                                       |             |             |             |             |             |
|             | Highland    | Highland    | Highland    | Highland                              | Highland    | Highland    | Highland    | Highland    | Highland    |
| <b> </b>    | Avenue NE   | Avenue NE   | Avenue NE   | Avenue NE                             | venue NE    | Avenue NE   | Avenue NE   | Avenue NE   | Avenue NE   |
|             | <b>→</b>    | <b>+</b>    | <b>→</b>    | <b>\</b>                              | 1           | <b>+</b>    | <b>→</b>    | <b>→</b>    | <b>→</b>    |
| American    | American    | American    | American    | American                              | American    | American    | American    | American    | American    |
| Legion      | Legion      | Legion      | Legion      | Legion                                | Legion      | Legion      | Legion      | Legion      | Legion      |



| Alternative<br>1    | Alternative              | Alternative 3            | Alternative 4            | Alternative  | Alternative 6         | Alternative 7            | Alternative<br>8         | Alternative<br>9         | Alternative 10           |
|---------------------|--------------------------|--------------------------|--------------------------|--|-----------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Fernald<br>Property | Fernald                  | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property  | Fernald<br>Property   | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      |
| <b>^</b>            |                          | <b>↑</b>                 | <b>↑</b>                 | $\backslash$   | <b>↑</b>              | <b>↑</b>                 | <b>↑</b>                 | <b>↑</b>                 | <b>↑</b>                 |
| Use I               | 95/Highla                | nd NE as L<br>lirections | aunch in t               | wo   | Tandem<br>Trailer     | Tandem<br>Trailer        | Tandem<br>Trailer        | Bifurcation              | Park Road<br>West        |
| Bifurcation         | Bifurcation              | Bifurcation              | Pan.<br>West             | Non-   | Bifurcation           | Bifurcation              | Riverside<br>Park        | Bifurcation              | <b>↑</b>                 |
| \                   | <b>↑</b>                 | <b>↓</b>                 | <b>↑</b>                 | The state of the s | <b>*</b>              | <b>1</b>                 | <b>1</b>                 | <b>↑</b>                 |                          |
|                     | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW   | Avenu<br>NW           | Highland<br>Avenue<br>NE | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW |
| <b>↓</b>            |                          |                          |                          |  |                       |                          |                          |                          |                          |
|                     | Highland<br>Avenue NE    | Highland<br>Avenue NE    | Highland<br>Avenue NE    | Highland<br>Avenue NE  | Highland<br>Avenue NE | Highland<br>Avenue NE    | Highland<br>Avenue NE    | Highland<br>Avenue NE    | Highland<br>Avenue NE    |
| /                   | <b>+</b>                 | <b>→</b>                 | <b>+</b>                 | <b>\</b>   | <b>1</b>              | *                        | <b>\</b>                 | <b>→</b>                 | <b>→</b>                 |
|                     |                          |                          |                          |  | 17                    |                          |                          |                          |                          |
| American            | American                 | American                 | American                 | American   | American              | American                 | American                 | American                 | American                 |



| Alternative 1       | Alternative              | Alternative 3            | Alternative<br>4         | Alternative                           | Alternative 6            | Alternative 7            | Alternative<br>8         | Alternative<br>9         | Alternative<br>10        |
|---------------------|--------------------------|--------------------------|--------------------------|---------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Fernald<br>Property | Fernald                  | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property                   | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      | Fernald<br>Property      |
| <b>↑</b>            |                          | <b>↑</b>                 |                          | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ | <b>^</b>                 |                          | <b>^</b>                 |                          |                          |
| l                   | Use Rivers               | ide Park a               | s Receive                |                                       | Tandem<br>Trailer        | Tandem<br>Trailer        | Tandem<br>Trailer        | Bifurcation              | Park Road<br>West        |
|                     |                          |                          |                          |                                       |                          |                          |                          |                          |                          |
| Bifurcation         | Bifurcation              | Bifurcation              | Park Road<br>West        | Bifurcation                           | Bifurcation              | Sifurcation              | Riverside<br>Park        | Bifurcation              | <b>↑</b>                 |
|                     | ↑ ↑                      | <b>+</b>                 | <b>↑</b>                 | <b>^</b>                              | <b>+</b>                 | <b>↑</b>                 | $\rightarrow$            | <b></b>                  |                          |
|                     | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW              | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NE | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW | Highland<br>Avenue<br>NW |
| . ↓                 |                          |                          |                          |                                       |                          |                          |                          |                          |                          |
|                     | Highland<br>Avenue NE    | Highland<br>Avenue NE    | Highland<br>Avenue NE    | Highland<br>Avenue NE                 | Highland<br>Avenue NE    | Highland<br>Avenue NE    | Highland<br>Avenue NE    | Highland<br>Avenue NE    | Highland<br>Avenue NE    |
|                     | <b>\</b>                 | <b>→</b>                 | <b>→</b>                 | <b>+</b>                              | 1                        | <b>*</b>                 | <b>→</b>                 | <b>→</b>                 | <b>→</b>                 |
| American            | American                 | American                 | American                 | American                              | American                 | American                 | American                 | American                 | American                 |
| Legion              | Legion                   | Legion                   | Legion                   | Legion                                | Legion                   | Legion                   | Legion                   | Legion                   | Legion                   |



| Alternative | Alternative | Alternative | Alternative  | Alternative | Alternative | Alternative | Alternative        | Alternative | Alternative |
|-------------|-------------|-------------|--------------|-------------|-------------|-------------|--------------------|-------------|-------------|
| 1           | 2           | 3           | 4            | 5           | 6           | 7           | 8                  | 9           | 10          |
| Fernald     | Fernald     | Fernald     | Fernald      | Fernald     | Fernald     | Fernald     | Fernald            | Fernald     | Fernald     |
| Property    | Property    | Property    | Property     | Property    | Property    | Property    | Property           | Property    | Property    |
| Llso Rif    | urcation a  | s Two Sha   | fts /Racaiv  | ve and      | <b>^</b>    | <b>↑</b>    | <b>↑</b>           | <b>(</b>    | <b>^</b>    |
| O3E DII     |             |             | its (iteceiv | e and       | Tandem      | Tandem      | Tandem             |             | Park Road   |
|             |             | Launch )    |              |             |             | Trailer     | Trailer            | Bifurcation | West        |
|             |             |             |              |             |             |             |                    |             |             |
|             |             |             | Park Road    |             |             |             | Riverside          | \           | <b>^</b>    |
| Bifurcation | Bifurcation | Bifurcation | West         | Bifurcation | Bifurcation | Bifurcation | Park               | Bifurcation | Т           |
|             | <b></b>     | <b>→</b>    | <b>↑</b>     | <b>~</b>    | <b>→</b>    | <b>↑</b>    | $\Big) \leftarrow$ | <b>(</b>    |             |
| \           | Highland    | Highland    | Highland     | Highland    | Highland    | Highland    | Highland           | Highland    | Highland    |
|             | Avenue      | Avenue      | Avenue       | Avenue      | Avenue      | Avenue      | Avenue             | Avenue      | Avenue      |
|             | NW          | NW          | NW           | NW          | NW          | NE          | NW                 | NW          | NW          |
| . ↓         |             |             |              |             |             |             |                    |             |             |
|             | Highland    | Highland    | Highland     | Highland    | Highland    | Highland    | Highland           | Highland    | Highland    |
| <b>/</b>    | Avenue NE   | Avenue NE   | Avenue NE    | Avenue NE   | Avenue NE   | Avenue NE   | Avenue NE          | Avenue NE   | Avenue NE   |
|             | <b>→</b>    | <b>\</b>    | <b>→</b>     | <b>\</b>    | <b>1</b>    | <b>W</b>    | <b>V</b>           | <b>→</b>    | <b>→</b>    |
| American    | American    | American    | American     | American    | American    | American    | American           | American    | American    |
| Legion      | Legion      | Legion      | Legion       | Legion      | Legion      | Legion      | Legion             | Legion      | Legion      |



| Alternative | Alternative | Alternative | Alternative  | Alternative              | Alternative | Alternative | Alternative         | Alternative | Alternative |
|-------------|-------------|-------------|--------------|--------------------------|-------------|-------------|---------------------|-------------|-------------|
| 1           | 2           | 3           | 4            | -5                       | 6           | 7           | 8                   | 9           | 10          |
| Fernald     | Fernald     | Fernald     | Fernald      | Fernald                  | Fernald     | Fernald     | Fernald             | Fernald     | Fernald     |
| Property    | Property    | Property    | Property     | Property                 | Property    | Property    | Property            | Property    | Property    |
| <b>↑</b>    |             | <b>↑</b>    | <b>^</b>     | $\setminus$ $\downarrow$ | <b>^</b>    | <b>↑</b>    | <b>^</b>            | <b>(</b>    | <b>↑</b>    |
|             | ong Tunno   | l from 195  | /Lighland    |                          | Tandem      | Tandem      | Tandem              |             | Park Road   |
| L'          | ong runne   | 1110111195  | / nigilialiu |                          | Trailer     | Trailer     | Trailer             | Bifurcation | West        |
|             |             |             |              |                          |             |             |                     |             |             |
|             |             |             | Park Road    |                          |             |             | Riverside           |             | _           |
| Bifurcation | Bifurcation | Bifurcation | West         | Bifurcation              | Bifurcation | Bifurcation | Park                | Bifurcation | <b>1</b>    |
|             | <b>↑</b>    | <b>\</b>    | <b>↑</b>     | <b>↑</b>                 | <b>→</b>    | <b>↑</b>    | $\bigg) \leftarrow$ | <b>\</b>    |             |
| 1/          | Highland    | Highland    | Highland     | Highland                 | Highland    | Highland    | Highland            | Highland    | Highland    |
|             | Avenue      | Avenue      | Avenue       | Avenue                   | Avenue      | Avenue      | Avenue              | Avenue      | Avenue      |
|             | NW          | NW          | NW           | NW                       | NW          | NE          | NW                  | NW          | NW          |
| 4           |             |             |              |                          |             |             |                     |             |             |
| 1           | Highland    | Highland    | Highland     | Highland                 | Highland    | Highland    | Highland            | Highland    | Highland    |
| \           | Avenue NE   | Avenue NE   | Avenue NE    | Avenue NE                | Avenue NE   | Avenue NE   | Avenue NE           | Avenue NE   | Avenue NE   |
|             | <b>→</b>    | <b>\</b>    | <b>→</b>     | •                        | <b>1</b>    | <b>*</b>    | <b>\</b>            | <b>→</b>    | <b>→</b>    |
| American    | American    | American    | American     | American                 | American    | American    | American            | American    | American    |
| Legion      | Legion      | Legion      | Legion       | Legion                   | Legion      | Legion      | Legion              | Legion      | Legion      |



| Alternative         | Alternative | Alternative |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------------|-------------|-------------|
| 1           | 2           | 3           | 4           | 5           | 6           | 7           | 8                   | 9           | 10          |
| Fernald             | Fernald     | Fernald     |
| Property            | Property    | Property    |
| <b>↑</b>    |             | <b>^</b>    | <b>^</b>    | <b>\</b>    | <b>^</b>    | <b>^</b>    | <b>^</b>            | <b>(</b>    | <b>↑</b>    |
| Tandem      | <b>^</b>    | Tandem      | Tandem      | Tandem      | Tandem      | Tandem      | Tandem              |             | Park Road   |
| Trailer     |             | Trailer     | Trailer     | Trailer     | Trailer     | Trailer     | Trailer             | Bifurcation | West        |
|             |             |             |             |             |             |             |                     |             |             |
|             |             |             | Park Road   |             |             |             | Riverside           |             | <b>^</b>    |
| Difurcation | Bifurcation | Bifurcation | West        | Bifurcation | Bifurcation | Bifurcation | Park                | Bifurcation | ' /         |
|             | <b>↑</b>    | <b>\</b>    | <b>↑</b>    | <b>^</b>    | <b>→</b>    | <b>1</b>    | $\bigg) \leftarrow$ | <b>+</b>    |             |
| 1/          | Highland            | Highland    | Highland    |
| 1/          | Avenue              | Avenue      | Avenue      |
|             | NW          | NW          | NW          | NW          | NW          | NE          | NW                  | NW          | NW          |
| . ↓         |             |             |             |             |             |             |                     |             |             |
| 1           | Highland            | Highland    | Highland    |
| \           | Avenue NE           | Avenue NE   | Avenue NE   |
|             | <b>→</b>    | <b>+</b>    | <b>→</b>    | <b>\</b>    | <b>1</b>    | <b>*</b>    | <b>→</b>            | <b>→</b>    | <b>→</b>    |
| American            | American    | American    |
| Legion              | Legion      | Legion      |



## **Alternatives Evaluation Process – Cont.**

#### **Alternatives Comparison**

| Alternative                     | 1             | 2                     | 3                      | 4                        | 5                      | 6                      | 7                      | 8                       | 9                     | 10                      |
|---------------------------------|---------------|-----------------------|------------------------|--------------------------|------------------------|------------------------|------------------------|-------------------------|-----------------------|-------------------------|
| Tunnel Alignment (1)            | TT>FE<br>B>AL | NW>FE<br>(B)<br>NE>AL | TT>FE<br>B>NW<br>NE>AL | TT>FE<br>NW>PRW<br>NE>AL | FE>TT<br>NW>B<br>NE>AL | TT>FE<br>B>NW<br>AL>NE | TT>FE<br>NE>B<br>NE>AL | TT>FE<br>NW>RP<br>NE>AL | B>FE<br>NW>B<br>NE>AL | NW>FE<br>(PRW)<br>NE>AL |
| Constructability / Engineering  | 0             | 0                     |                        | •                        |                        |                        |                        |                         | 0                     | 0                       |
| Land Availability               | 0             | 0                     | 0                      | 0                        | •                      | •                      | 0                      | 0                       | 0                     | •                       |
| Environmental                   | 0             | 0                     | 0                      | •                        | 0                      | 0                      | 0                      |                         | 0                     | •                       |
| Social / Community              |               |                       | 0                      | 0                        | •                      |                        | 0                      |                         | 0                     | •                       |
| Operations                      |               |                       |                        |                          |                        |                        |                        |                         |                       | •                       |
| Cost (2)                        | 0             | 0                     | 0                      | 0                        | 0                      | 0                      | 0                      | 0                       | 0                     | 0                       |
| Schedule (tunnel(s) in service) |               | 0                     | •                      |                          |                        |                        |                        |                         |                       | 0                       |
| Retain Alternative              | N             | N                     | Υ                      | Υ                        | N                      | N                      | N                      | N                       | N                     | Υ                       |

<sup>(1) &</sup>lt;u>Site Abbreviations</u>: TT – Tandem Trailer; FE – Fernald Property; B – Bifurcation; NW – Highland Avenue Northwest; NE – Highland Avenue Northeast; AL – American Legion; RP – Riverside Park;

PRW – Park Road West; (B) or (PRW) indicates Large Connection Shaft in that tunnel segment: > indicates tunnel mining direction

<sup>(2)</sup> Construction cost only for the differential in capital construction costs among the alternatives.



## **Three Shortlisted Alternatives**

#### The three shortlisted alternatives are:

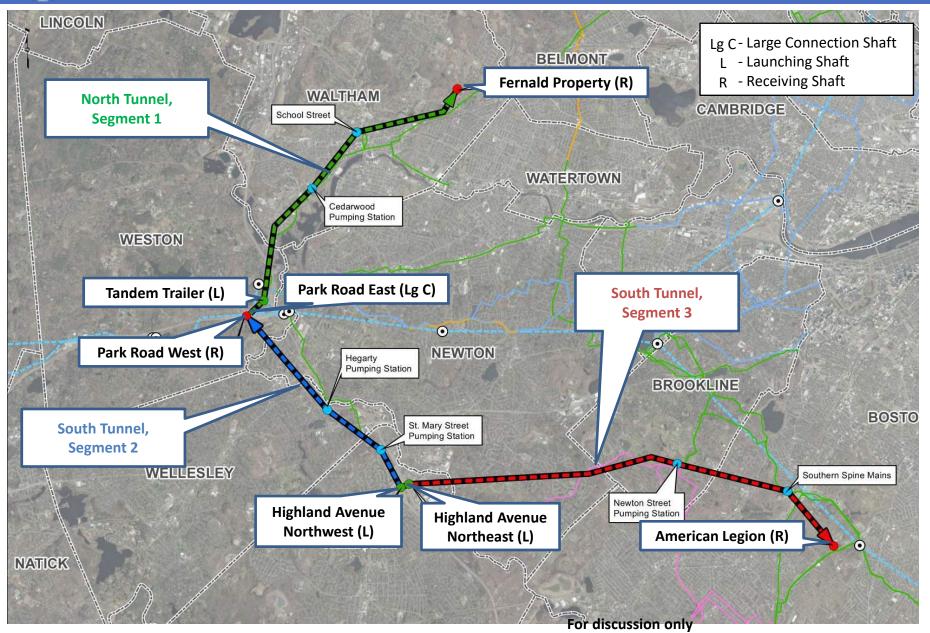
- Alternative 4 Preferred
- Alternative 3
- Alternative 10



For discussion only



#### **Preferred Alternative**



#### **Preferred Alternative Includes:**

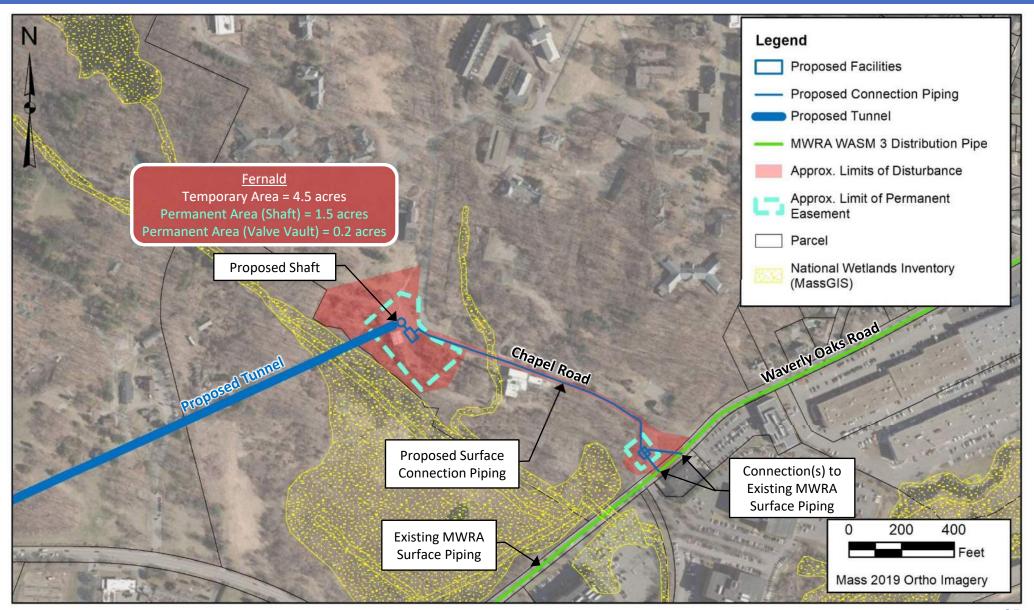
- 14.7 miles to deep rock tunnel
- 3 launching shaft sites
- 3 receiving shaft sites
- 1 large connection shaft site
- 6 connection shaft sites
- 3 tunnel segments
  - Segment 1 = tunnel from Weston (Tandem Trailer)
     ~4.5 miles to Waltham (Fernald Property)
  - Segment 2 = tunnel from Needham (Highland Ave NW) ~3.4 miles to Weston (Park Road W)
  - Segment 3 = tunnel from Needham (Highland Ave NE)
     ~6.8 miles to Mattapan (American Legion)
- Tunnel system will operate as 2 tunnels (North Tunnel & South Tunnel)



## **Fernald Property**

#### **Site Characteristics:**

- Owned by City of Waltham
- Wetlands Present
- Historic properties
- MCP sites
- Previously disturbed

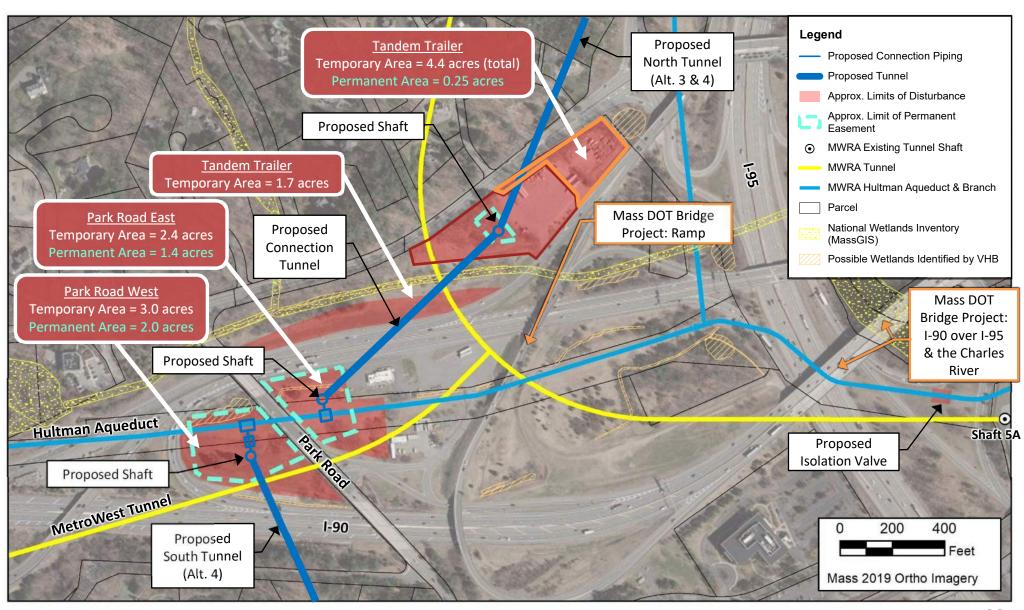




## I-90 / I-95 Interchange

#### **Site Characteristics:**

- Owned by MassDOT and MWRA
- Wetlands Present
- Previously disturbed, portions paved
- MWRA Hultman Aqueduct

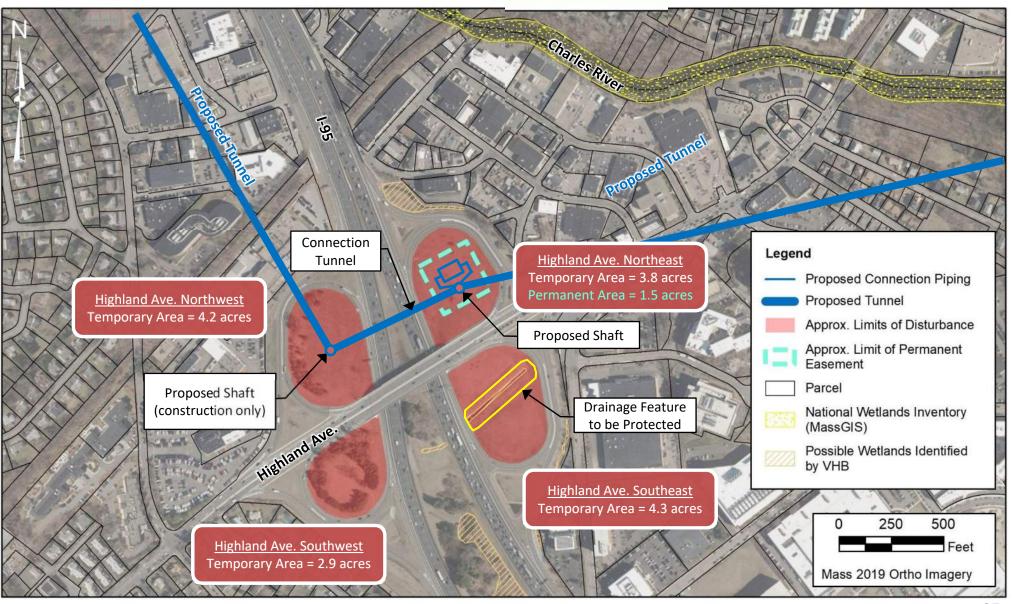




### **Highland Avenue Northwest or Northeast**

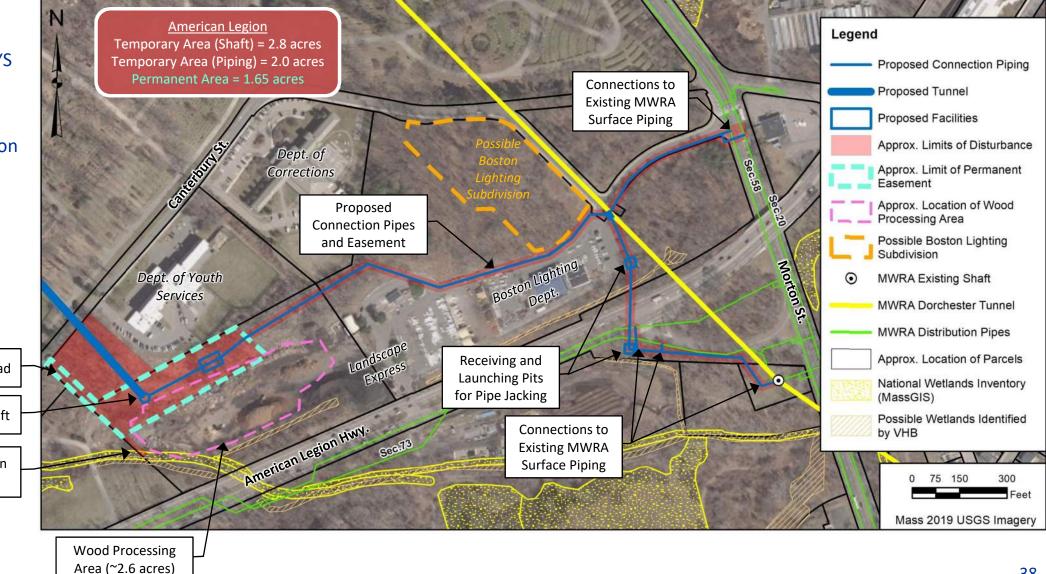
#### **Site Characteristics:**

- Owned by MassDOT
- Wetlands Present
- Previously used for construction staging



#### **Site Characteristics:**

- Owned by DCR and DYS
- **Wetlands Present**
- Article 97 Required
- Commercial business on site



For discussion only

**Construction Access Road** 

**Proposed Receiving Shaft** 

**Temporary Construction Dewatering Discharge** 

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### **Alignment Shortlist - Connection Shafts (North Tunnel)**

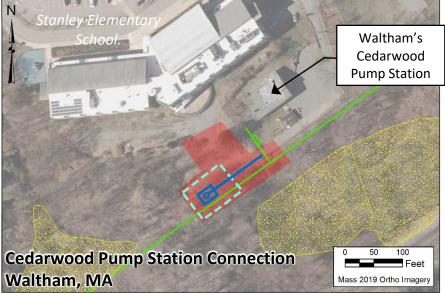
#### **School Street:**

- Owned by MWRA
- Previously a restaurant parking lot, all paved

#### **Cedarwood PS:**

- Owned by City of Waltham
- Behind elementary school and pump station







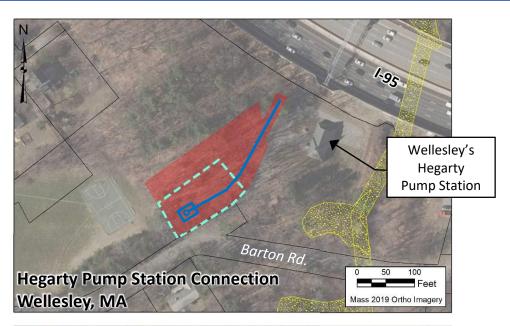
## **Alignment Shortlist - Connection Shafts (South Tunnel)**

### **Hegarty PS:**

- Owned by Town of Wellesley
- Potential Article 97

#### **St Mary Street PS:**

- MWRA's Sudbury Aqueduct Easement
- Pump Station Owned by Town of Needham







### **Alignment Shortlist - Connection Shafts (South Tunnel)**

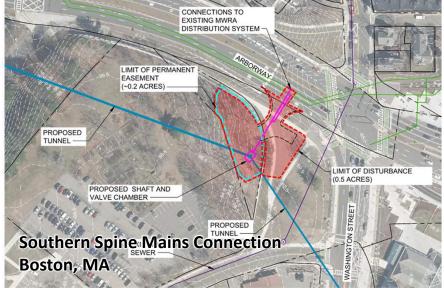
#### **Newton Street PS:**

- Owned by MWRA
- Existing pump station in operation

### **Southern Spine Mains:**

Controlled by DCR adjacent to Mass DPH

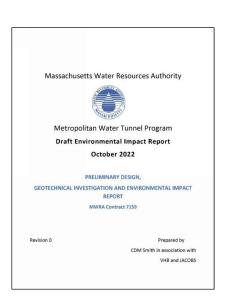






### **Potential Construction Impacts & Planned Management**

- Construction activity (amount and duration) and potential impacts will vary between shaft sites based on function & phase of construction
- Not all tunnel segments & shaft sites will be active at the same time
- Some sites (i.e., connection shaft sites) will have least and infrequent activity
- Some sites (i.e., launching shaft sites) will have the most activity
- Potential impacts include
  - Traffic
  - Water supply
  - Noise and vibrations
- Details are presented in the DEIR, Chapter 7 (Draft Section 61 Findings)



www.mwra.com/mwtp/resources.html#docs



### **Traffic & Water Supply**

- Traffic increases will be most noticeable near launching shaft sites at shift change
- Less traffic is expected near receiving shaft site and least near connection shaft sites
- Adjustments to existing traffic signals or new traffic signals will help limit these impacts
- Haul routes and hauling hours will be established, no exceptions
- Police details and flaggers will be used to keep everyone moving
- Wheel wash and street sweeping will help keep areas clean
  - Tunnel construction will not impact the existing MWRA water tunnels
  - There are no public water supply wells close to the new tunnel alignment
  - Prior to construction any private wells near the tunnel alignment will be checked and monitored during construction
  - During construction water levels along the tunnel alignment will be monitored
  - The construction the contractor will limit groundwater inflow into the tunnel
  - A water supply contingency plan will be put in place, just in case



### **Noise & Vibrations**

- Noise levels will vary by shaft site, function, and phase of construction
- Launch shaft site ~ 24/7 once TBM excavation begins
- Receiving shaft site Mostly daytime work, some nighttime work
- Connection shaft site Day time work, no night work planned
- Noise level criteria will be set & monitored during construction
- Permanent condition will not increase noise levels above existing
  - Construction methods will be adjusted to control vibrations, where needed
  - No blasting for connection shaft construction, use drilling methods
  - Rock removal for launch/receiving shafts will be done via controlled blasting
  - Max vibration criteria will be set & vibration monitoring will occur to protect nearby homes/businesses/infrastructure
  - Close coordination with local Fire Department, Emergency Personal, and MassDOT



# Other Topics To be Worked Out - Not Included in the DEIR

Other Community related topics not detailed in the DEIR:

- Connections to community systems
  - Cedarwood PS, Waltham
  - Hegarty PS, Wellesley
  - St Mary St PS, Needham
- Emergency Egress & Fire Rescue

- Thru preliminary and final design, we plan to work with your community to address these topics, and others, in full
- MWRA would like to eventually execute a MOA with each City/Town in which the tunnel will be constructed to address....
- MOA's will be in compliance with MWRA guidelines & practices



## **Ongoing and Upcoming Contracts**

- Program Support Services and Preliminary Design Engineering contracts are both ongoing
- Core Storage Facility
  - Board of Directors approved the lease of a new facility in Needham
  - Planning for late winter/early spring move in
- Geotechnical Support Services (2023 2025)
  - Currently in procurement phase
  - ~40 deep borings over ~3 years
  - Targeting Jan 2023 NTP
- Final Design Engineer
  - Targeting mid 2024 NTP
  - Currently conducting industry outreach
- **Construction Manager** 
  - Targeting NTP in 2026



### Where to Find Information / How to Contact Us

- https://www.mwra.com/mwtp.html
  - Program documents (ENF, DEIR)
  - Meeting notices, agendas, presentations, minutes

- Contact Us
  - Carmine DeMaria, Community Relations Coordinator
  - **–** 617-305-5725
  - Carmine.DeMaria@mwra.com
  - Tunnels.info@mwra.com



# **Questions/Comments?**



Thank you for your support!