Planning for the Future: Exploring the Feasibility of Expanding MWRA's Regional Water System

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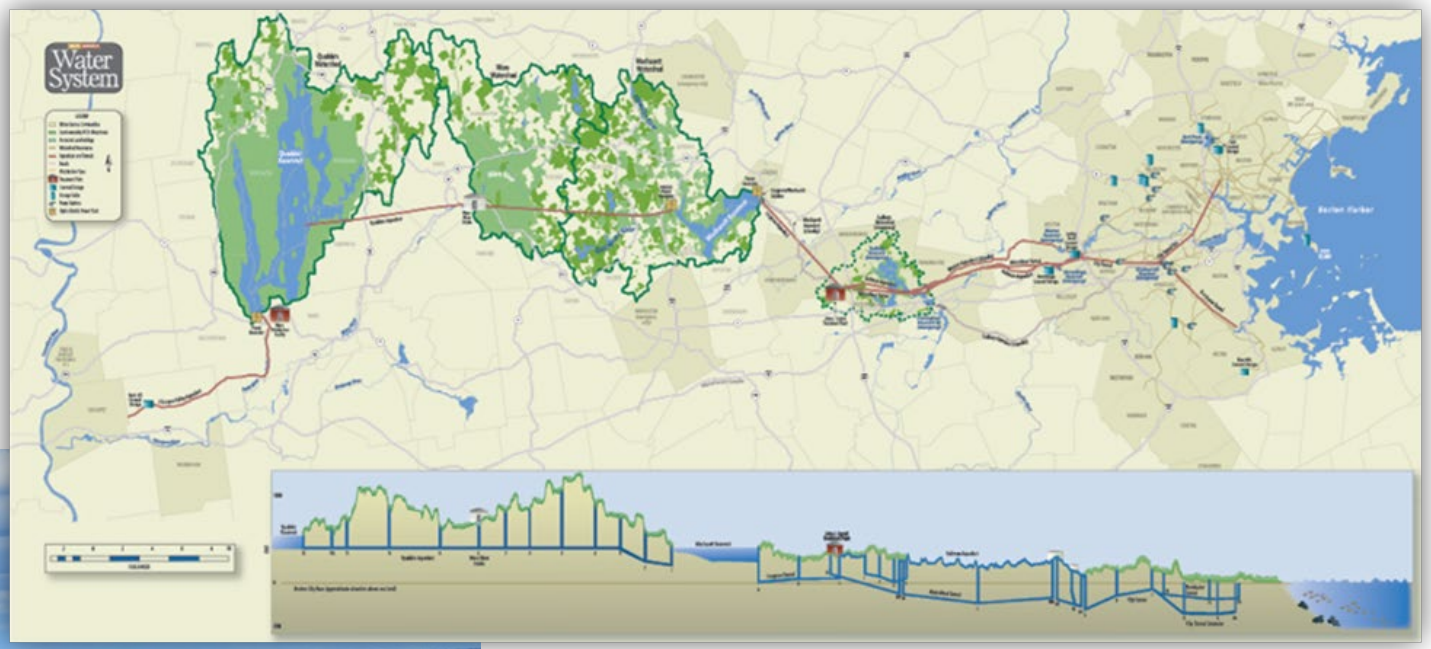
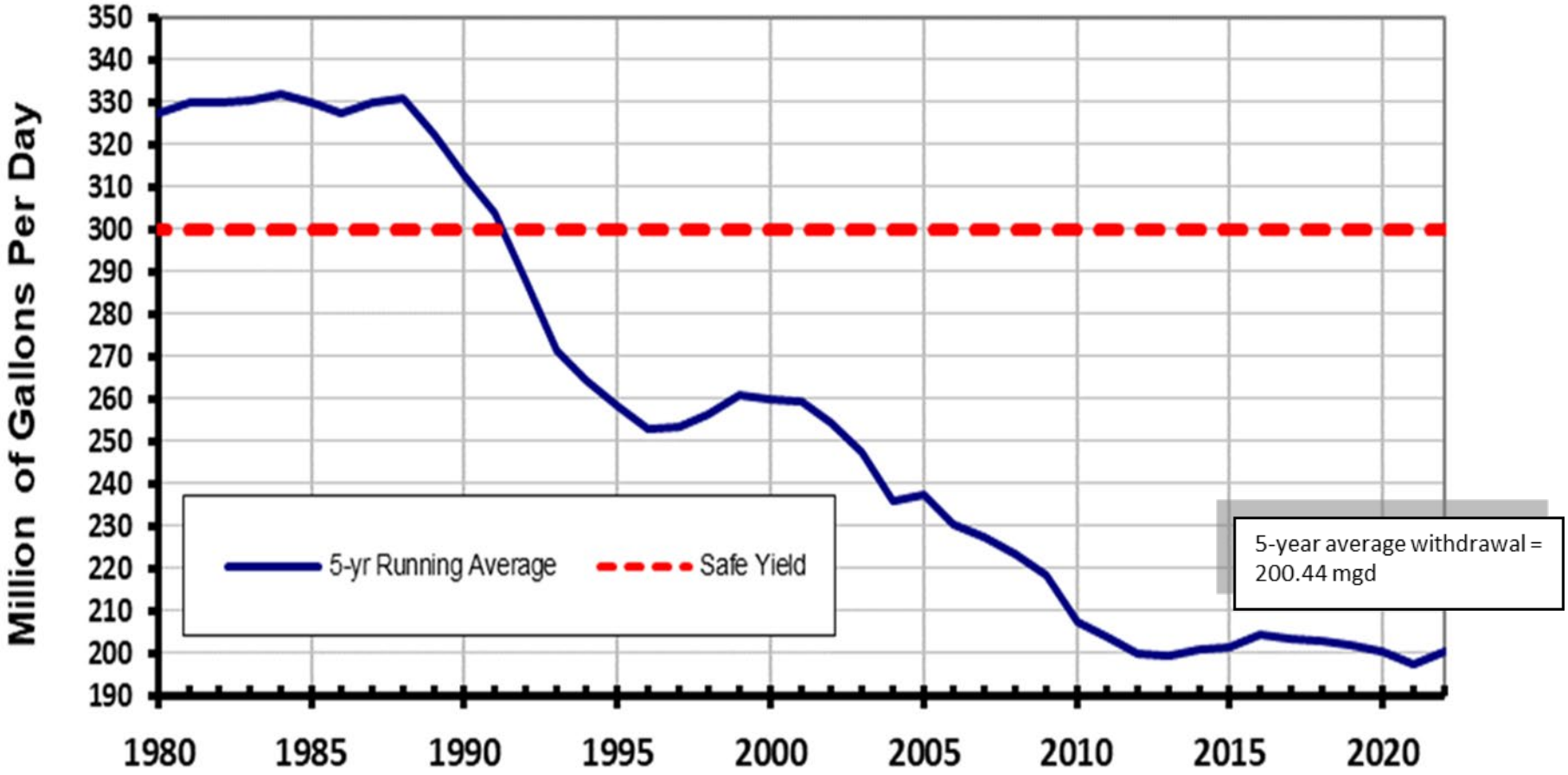
MWRA Water System

MWRA provides an average of 200 million gallons per day to over 2.5 million customers in 53 communities, with a peak demand of 350 million gallons.



Reservoir Withdrawals from 1980 to 2022

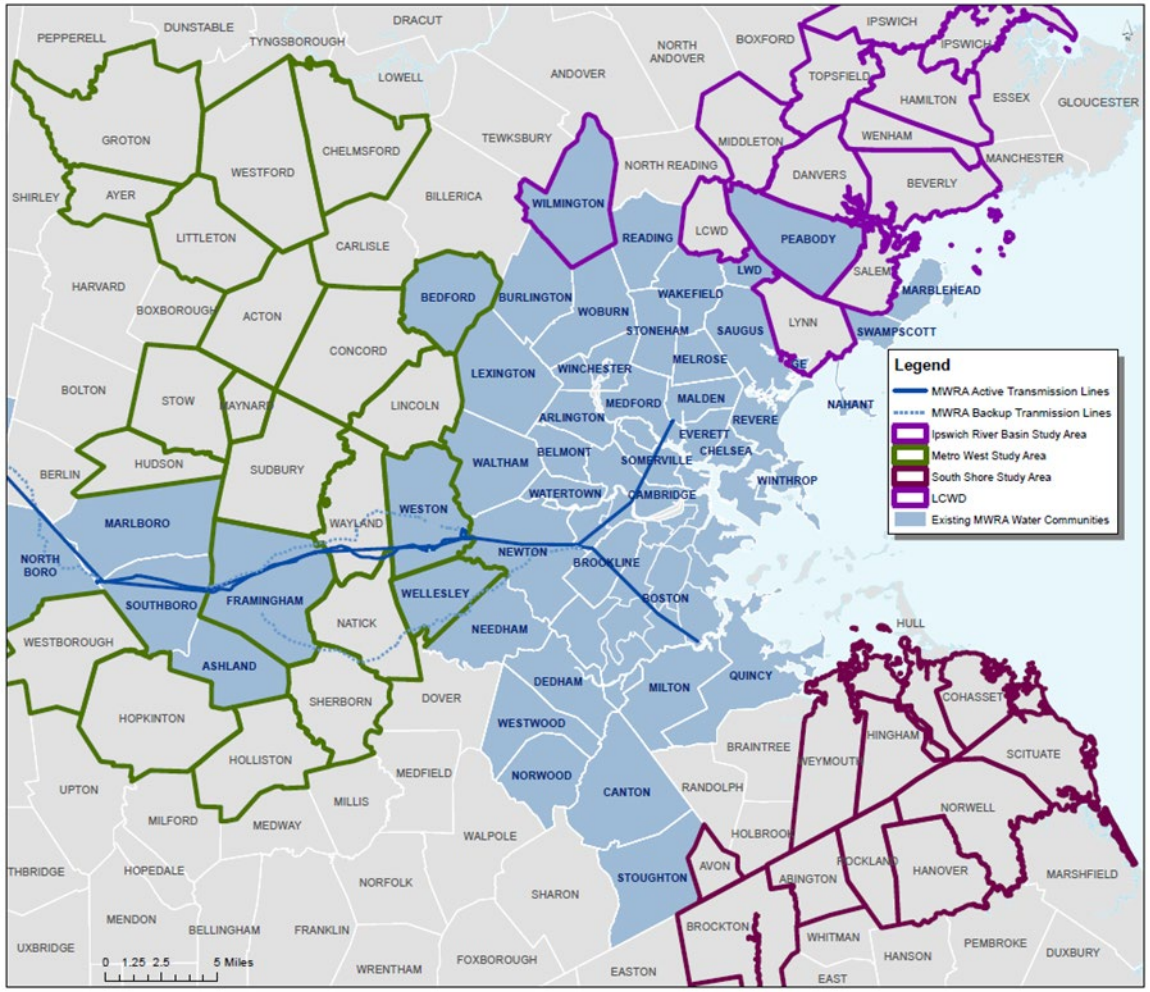


MWRA's Capacity to Provide Additional Water

- Safe Yield = **300 MGD**
  - Amount of water MWRA's source reservoirs, the Quabbin and Wachusett, can safely provide even during periods of extended drought
- Average 5-year reservoir withdrawals (2013-2018)= **203 MGD**
- Conservative growth for increased population and employment = **29 MGD**
- Additional demand from existing partial and emergency users = **17 MGD**
- Conservative Estimate of Future Use = **249 MGD**
- Available supply for new communities = **51 MGD** (average or ≈ 76.5 MDG on a maximum demand day)

MWRA System Expansion Feasibility Study Areas

- Ipswich River Basin (12 Communities, Demand ≈ 42.1 MGD*)
- South Shore (10 Communities, Demand ≈ 40.5 MGD*)
- Metro West (22 Communities, New Demand ≈ 45.3 MGD*)



Notes:
*MGD= Million Gallons per Day

Demands are Maximum Daily Demands (MDD)

Goals of Ipswich River Basin Study

- Planning Level Study
- Requested by the Baker-Polito Administration
- Question: Is connecting to MWRA's Regional Water System Feasible?
  - Could MWRA transport water to these communities?
  - How would communities connect?
  - How much would a connection cost?
  - How long would it take to make these connections?
- Additional work would be required for any community to connect to MWRA

Study Assumptions, Costs, and Schedules

- **Study Assumptions** Communities included in scenarios would be fully-served by MWRA to the greatest extent possible
  - Assumed new connection to MWRA's system, no "wheeling" from one system to another
  - Pipe sizing requires assessment based on maximum daily demands (MDD), not average day demands (ADD)
- **Costs:**
  - September 2022 and estimated 2027 dollars
  - Conceptual, contingencies added to all line items and total cost
  - Infrastructure costs vary significantly based on size
- **Schedule:**
  - Variable, based on size and location of pipe
  - Estimates are included with each option

Example of the installation of a 60 inch MWRA pipeline. Picture taken in Arlington.

Potential MWRA Expansion to Ipswich River Basin

- **Communities Included in Study:**
  - Beverly, Danvers, Hamilton, Ipswich, Lynn, Lynnfield Center Water District, Middleton, Peabody, Salem, Topsfield, Wenham, Wilmington
- **Three options considered**
  - Option #1: Fully serving all Ipswich River Basin Communities
  - Based on existing distribution system capacity:
    - Option #2: Provide water to Peabody and Salem
    - Option #3: Provide water to Danvers/Middleton, Hamilton, Ipswich, Wenham, Topsfield

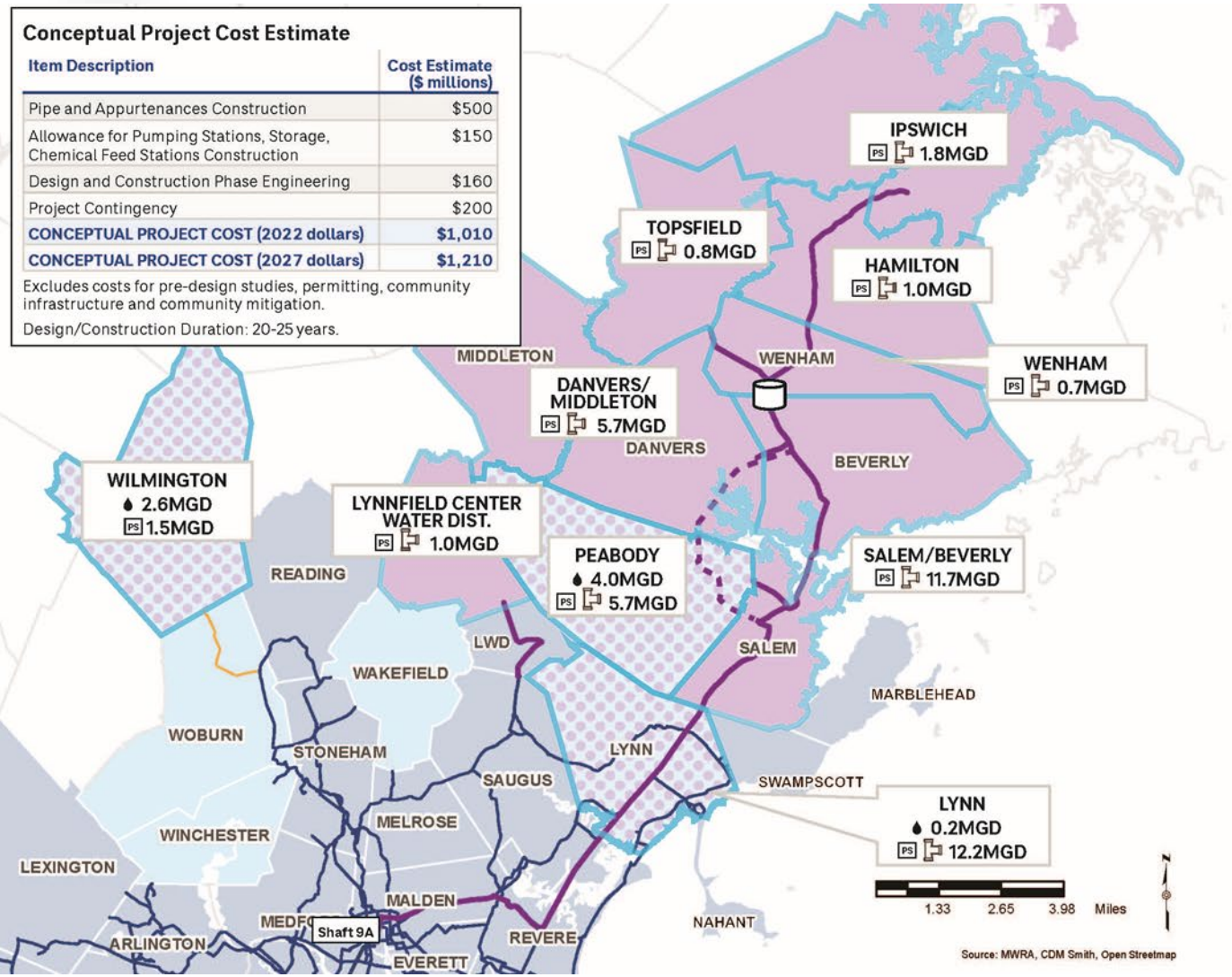
Option #1: Fully Serving the Ipswich River Basin Communities

Conceptual Project Cost Estimate

Item Description	Cost Estimate ($ millions)
Pipe and Appurtenances Construction	$500
Allowance for Pumping Stations, Storage, Chemical Feed Stations Construction	$150
Design and Construction Phase Engineering	$160
Project Contingency	$200
CONCEPTUAL PROJECT COST (2022 dollars)	**$1,010**
CONCEPTUAL PROJECT COST (2027 dollars)	**$1,210**

Excludes costs for pre-design studies, permitting, community infrastructure and community mitigation.

Design/Construction Duration: 20-25 years.



Option for Full 42.1 MGD Northern Expansion

Full Maximum Day Demand

LEGEND

- Study Community
- Study Community (partially MWRA served)
- MWRA Member Community
- MWRA Partially Served Community
- Expanded MWRA Service Area
- Existing Community Connection to MWRA
- Existing MWRA system
- Proposed Pipe Route
- Option to avoid harbor crossing
- Proposed Community Pipe Connection
- Proposed Community Pump Station
- Existing MWRA Service Volume
- Proposed MWRA Storage (approx.)

Note: Maximum Daily Demand is based on 2019 or 2020 Annual Statistical Reports.

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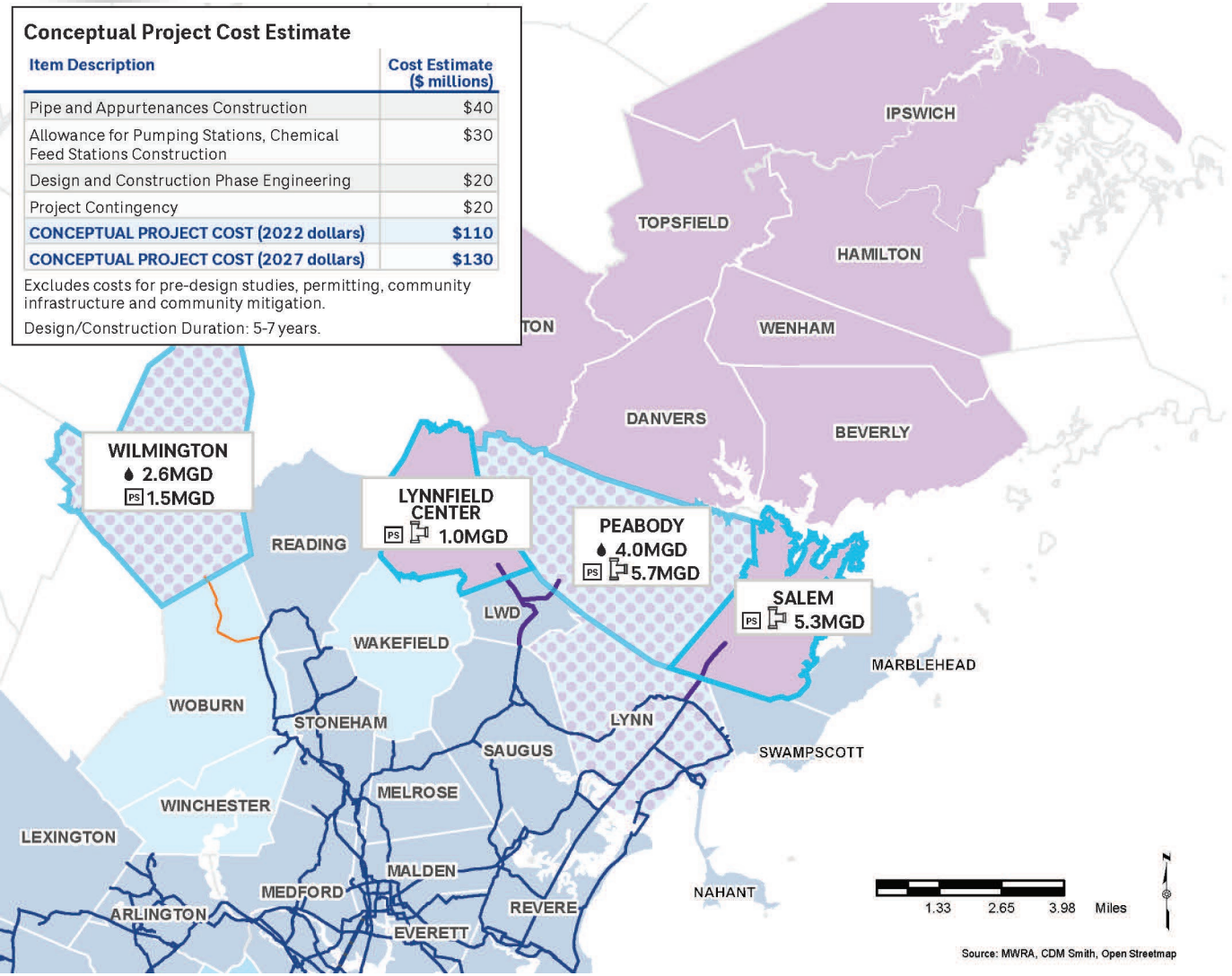
Option #2: Provide Water to Peabody and Salem

Conceptual Project Cost Estimate

Item Description	Cost Estimate ($ millions)
Pipe and Appurtenances Construction	$40
Allowance for Pumping Stations, Chemical Feed Stations Construction	$30
Design and Construction Phase Engineering	$20
Project Contingency	$20
CONCEPTUAL PROJECT COST (2022 dollars)	**$110**
CONCEPTUAL PROJECT COST (2027 dollars)	**$130**

Excludes costs for pre-design studies, permitting, community infrastructure and community mitigation.

Design/Construction Duration: 5-7 years.



Option for 13.5 MGD Northern Expansion

LEGEND

- Study Community
- Study Community (partially MWRA served)
- MWRA Member Community
- MWRA Partially Served Community
- Expanded MWRA Service Area
- Existing Community Connection to MWRA
- Existing MWRA system
- Proposed Pipe Route
- Proposed Community Pipe Connection
- Proposed Community Pump Station
- Existing MWRA Service Volume

Note: Maximum Daily Demand is based on 2019 or 2020 Annual Statistical Reports.

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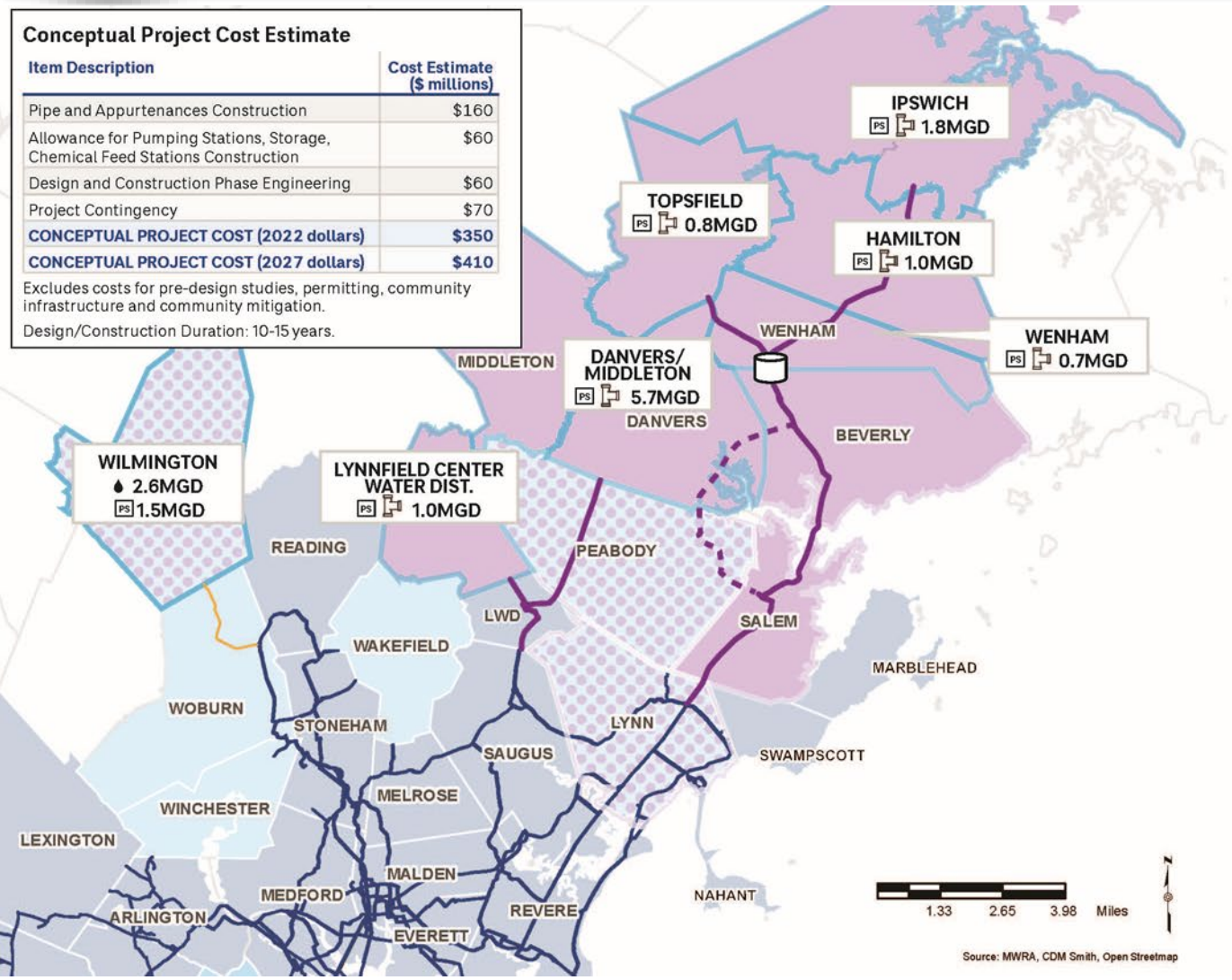
Option #3: Provide water to Danvers/Middleton, Hamilton, Ipswich, Wenham, Topsfield

Conceptual Project Cost Estimate

Item Description	Cost Estimate ($ millions)
Pipe and Appurtenances Construction	$160
Allowance for Pumping Stations, Storage, Chemical Feed Stations Construction	$60
Design and Construction Phase Engineering	$60
Project Contingency	$70
CONCEPTUAL PROJECT COST (2022 dollars)	**$350**
CONCEPTUAL PROJECT COST (2027 dollars)	**$410**

Excludes costs for pre-design studies, permitting, community infrastructure and community mitigation.

Design/Construction Duration: 10-15 years.



Option for 12.5 MGD Northern Expansion

LEGEND

- Study Community
- Study Community (partially MWRA served)
- MWRA Member Community
- MWRA Partially Served Community
- Expanded MWRA Service Area
- Existing Community Connection to MWRA
- Existing MWRA system
- Proposed Pipe Route
- Option to avoid harbor crossing
- Proposed Community Pipe Connection
- Proposed Community Pump Station
- Existing MWRA Service Volume
- Proposed MWRA Storage (approx.)

Note: Maximum Daily Demand is based on 2019 or 2020 Annual Statistical Reports.

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Study Update and Next Steps

- **Ipswich River Basin Study: Complete**
  - **https://www.mwra.com/02org/html/expansion.html**

- **MWRA's Board of Directors Waived MWRA's Entrance Fee**
  - Up to 20 MGD for new communities seeking admission
  - Must have water quality or quantity issues, or need additional water for economic development
  - Must complete MWRA Admission process by December 31, 2027 (does not require completed connection to MWRA's system)

- **Next Steps:**
  - Outreach to Legislators, Communities, and Regional Organizations
  - Funding Opportunities?