Falmouth Outfall Status Report

Presentation to West Falmouth Village Association

August 15, 2024

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Wastewater Superintendent

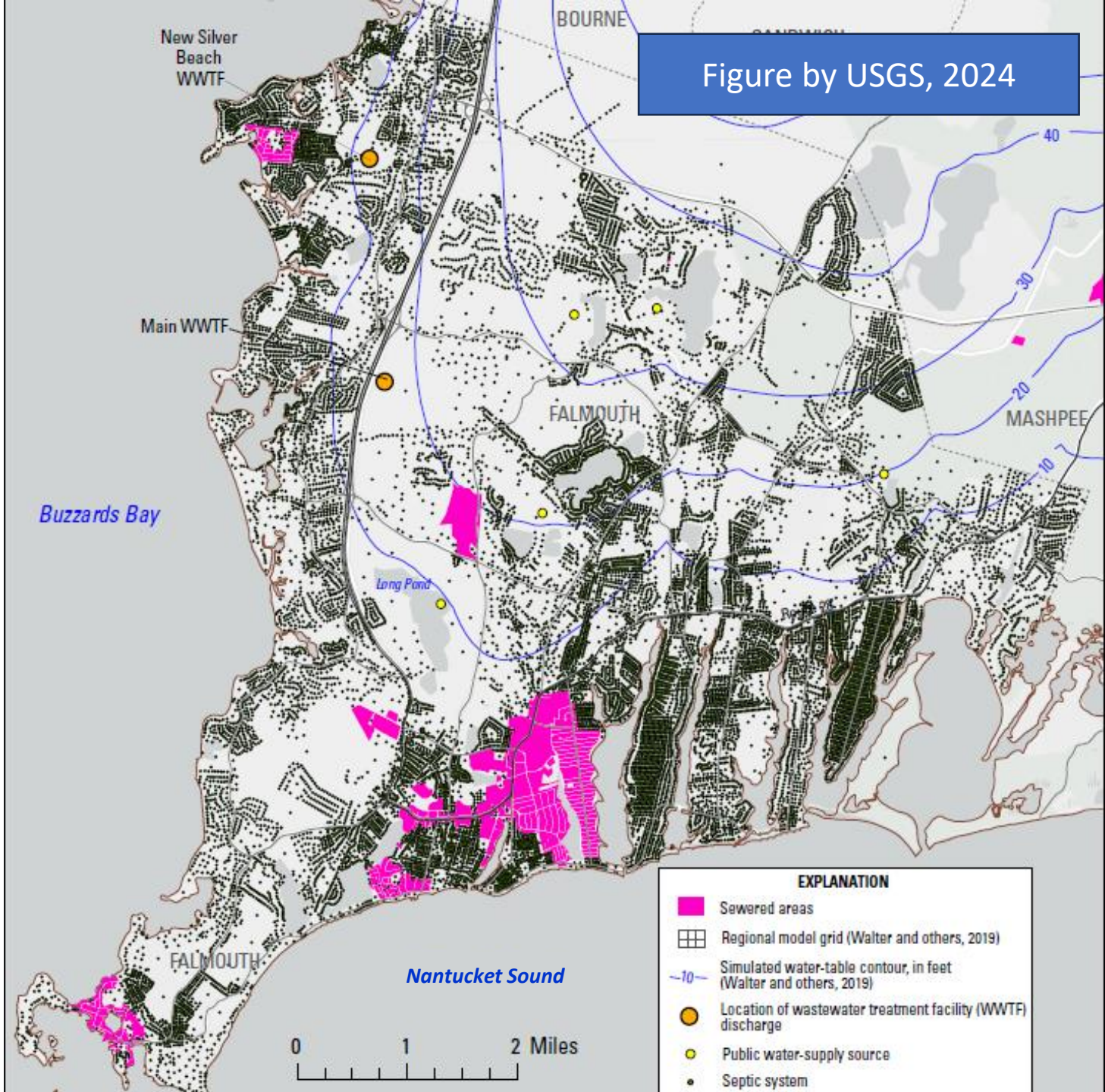
Reminder of Why We Need an Ocean Outfall

1. Many of our coastal ponds are severely degraded, primarily by nitrogen from septic systems

Perch Pond/Great Pond, June 29, 2022

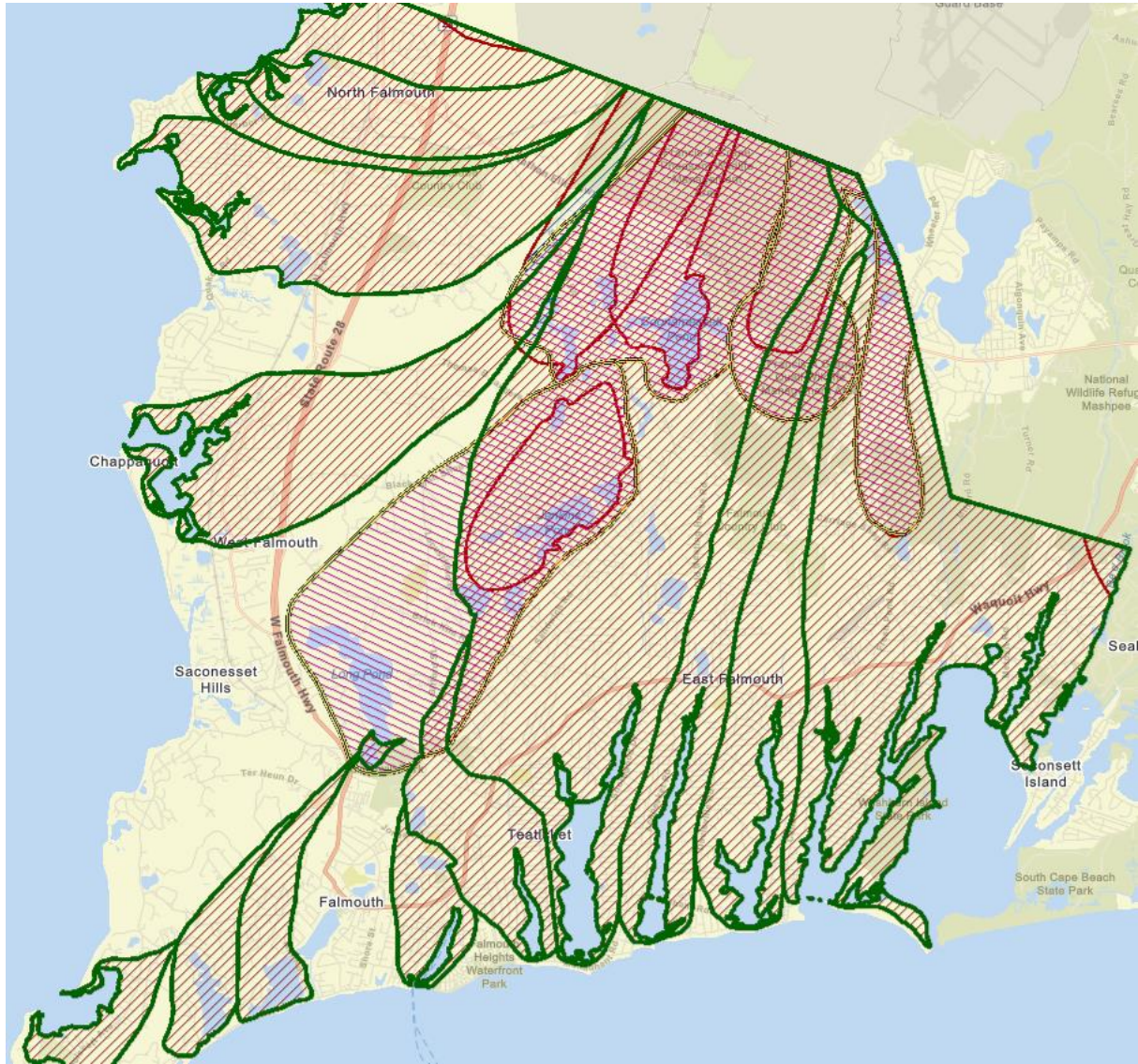
2. Sewers Will Be Necessary to Improve Water Quality

- Only ~ 11% of properties in Falmouth are presently sewered; rest of properties have septic systems
- Sewering is necessary in the most densely developed portions of many watersheds



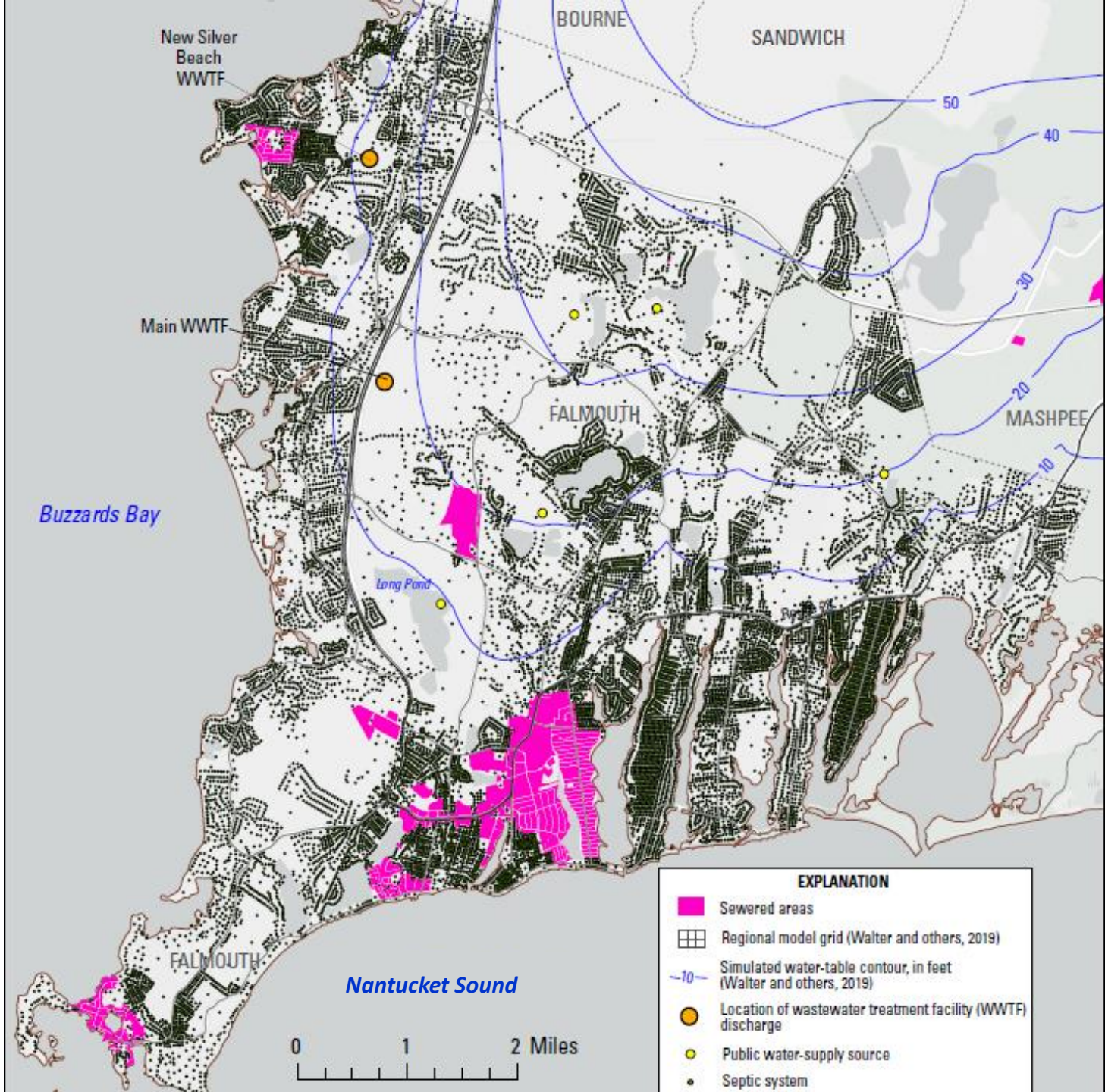
3. Discharge of Even Highly Treated Effluent To Land Puts Nitrogen Back in Watersheds to Coastal Ponds

- Town has been struggling with effluent discharge options since the 1970s
- **<u>Almost all land in Falmouth is upgradient of nitrogen sensitive estuaries</u>, freshwater ponds and/or water supplies.**



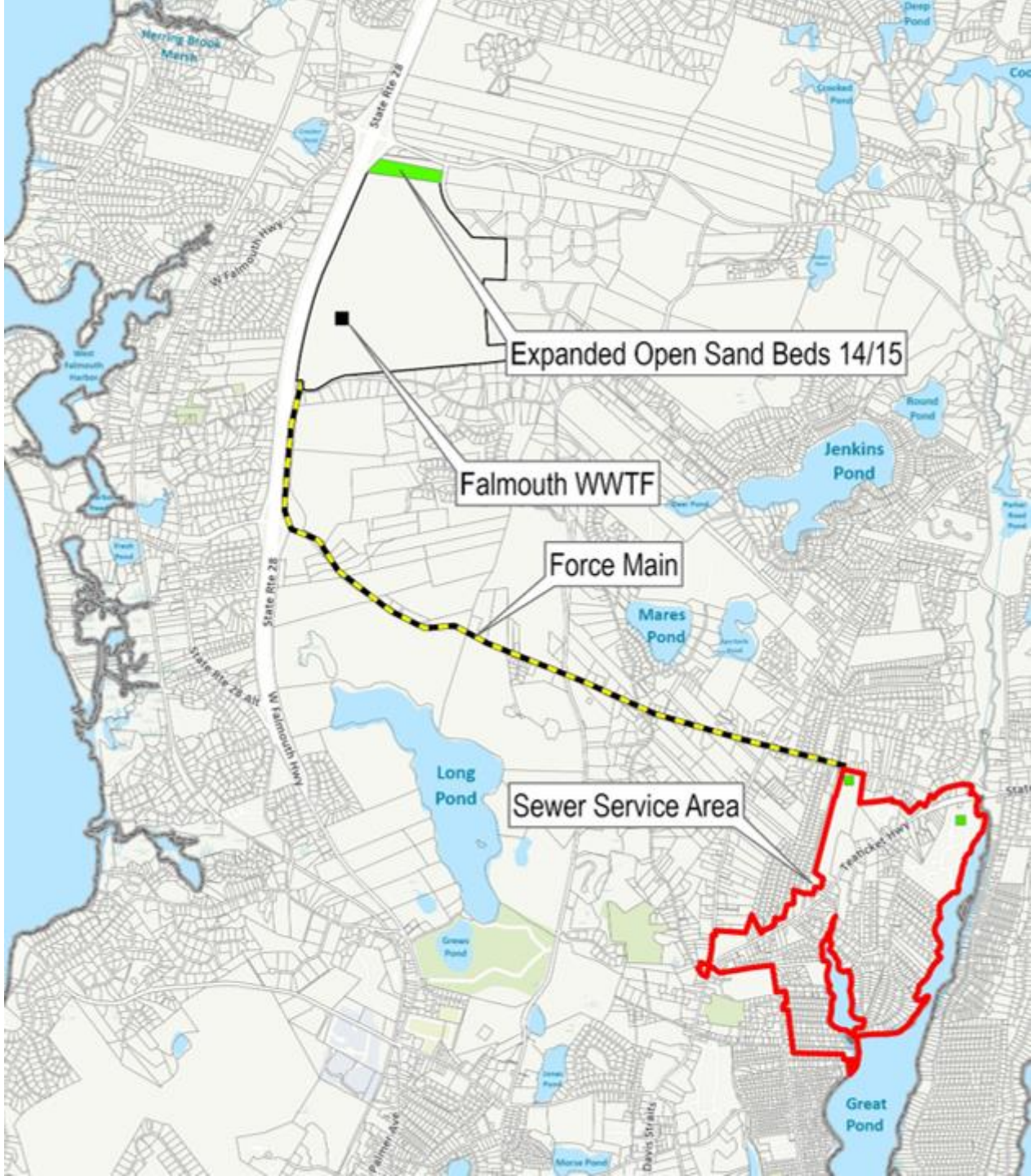
Outfall Solution

- Discharge beyond the sensitive estuaries to the Sound
- Sewering Falmouth's south coast, treating, and then discharging tertiary treated wastewater to an outfall will <u>reduce</u> the nitrogen currently flowing to Nantucket Sound
- But will take significant time to permit/design/construct



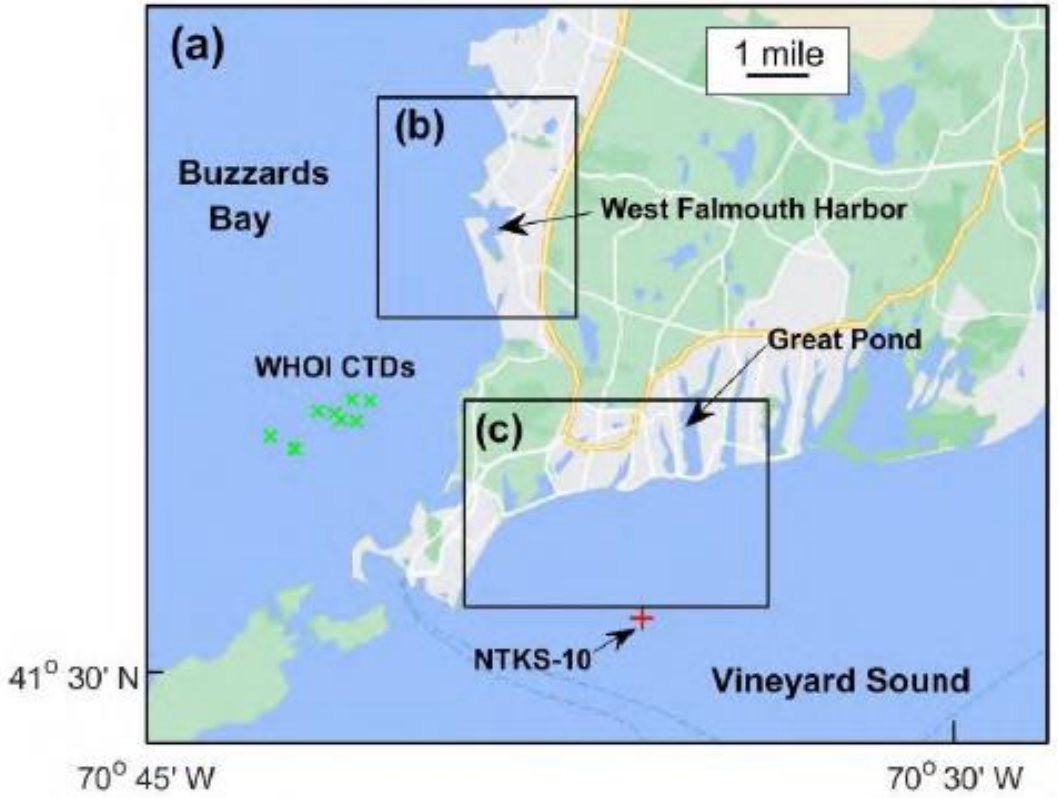
Interim Solution to Allow Progress While Town Pursues an Outfall

- Great Pond Phase 1 sewer project
- Design funded at November 2023 Town Meeting
- Design is 30-60% complete
- Construction funds ($60M) to be requested at April Town Meeting 2025
- Construction 2025-2026
- Sewers to be available in 2027



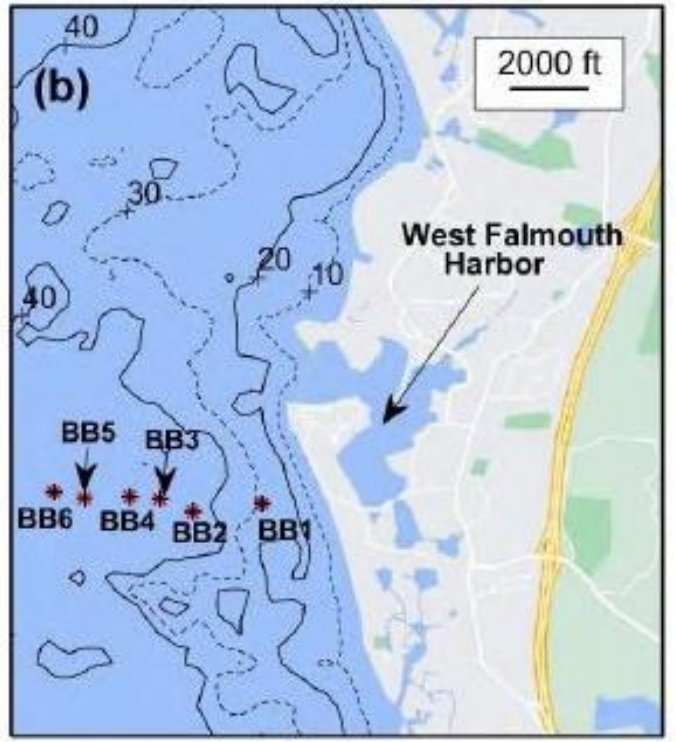
Summary of Outfall Evaluations Conducted 2022 - 2023

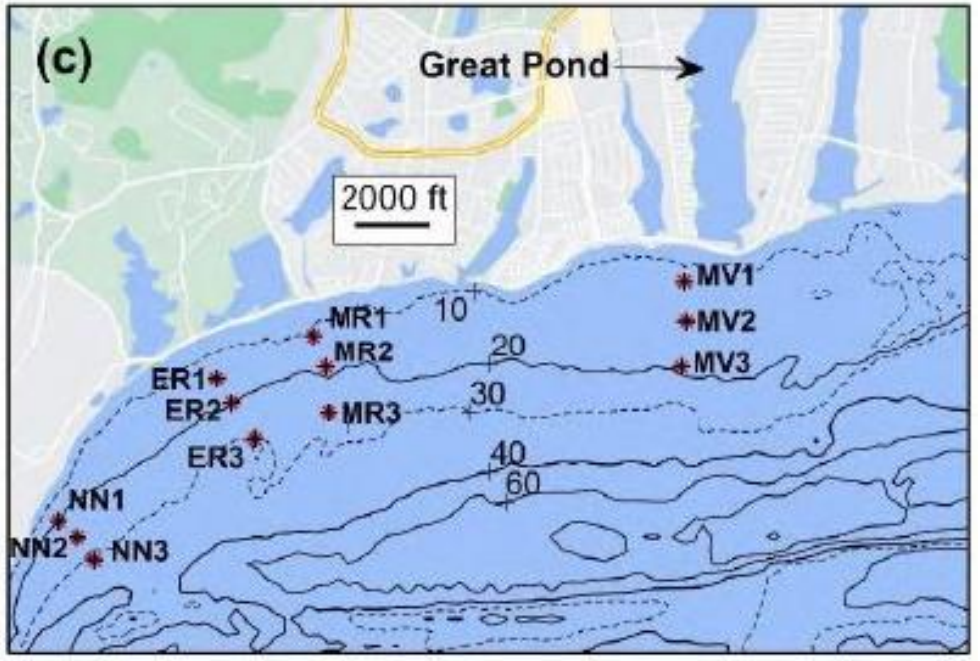
- Considered outfalls in Buzzards Bay and Nantucket Sound
- Determined we would install outfall by directional drilling
- Modeled dispersion at various locations and distances offshore
- Identified marine/eel grass resources
- Defined physical area needed for installation and pipe routing



2022- 2023 Hydrodynamic Modelling - Dispersion

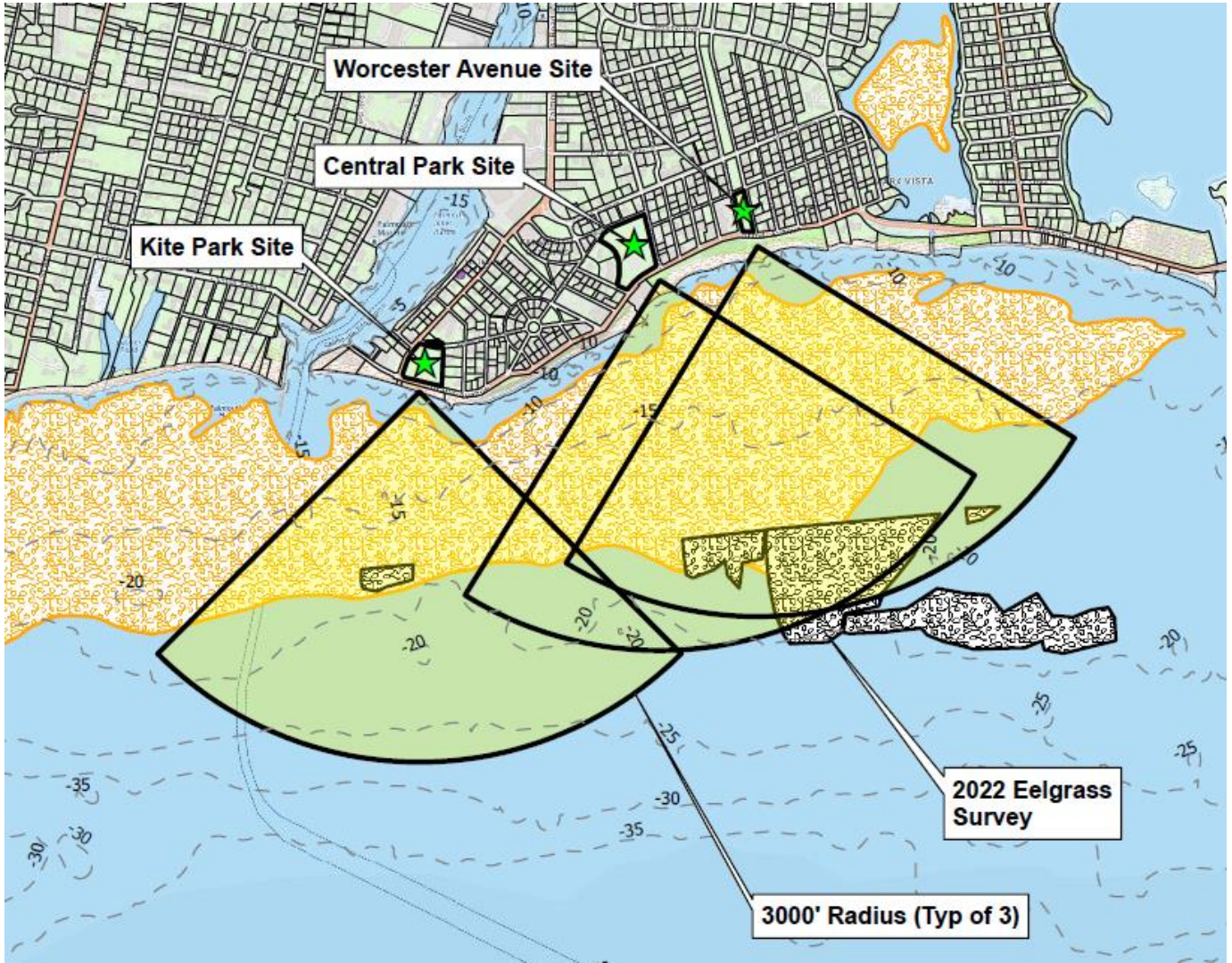
- Greater current and dispersion in Nantucket Sound than in Buzzards Bay.
- Primary criteria - effluent cannot impact beaches or estuaries.
- For Nantucket Sound locations, outfall needs to be 2,000 +/- feet offshore to meet this criteria.
- For Buzzards Bay locations, outfall needed to be 4,380 to 5,250 feet offshore.





Preferred Outfall Pipe Landfall Location: Kite Park

- Kite Park has the shortest distance from shore to 20 foot water depth (beyond eelgrass)
- Least cost to directionally drill



Outfall Construction Process

- A 200’ x 200’ drilling area
- Planning on Fall/Winter install
- Duration of drilling operation: approximately 3 months
- Duration of construction of force main from the WWTF to the outfall location: approximately 3 years

After Installation is Complete

- Restore Kite Park to pre-construction condition

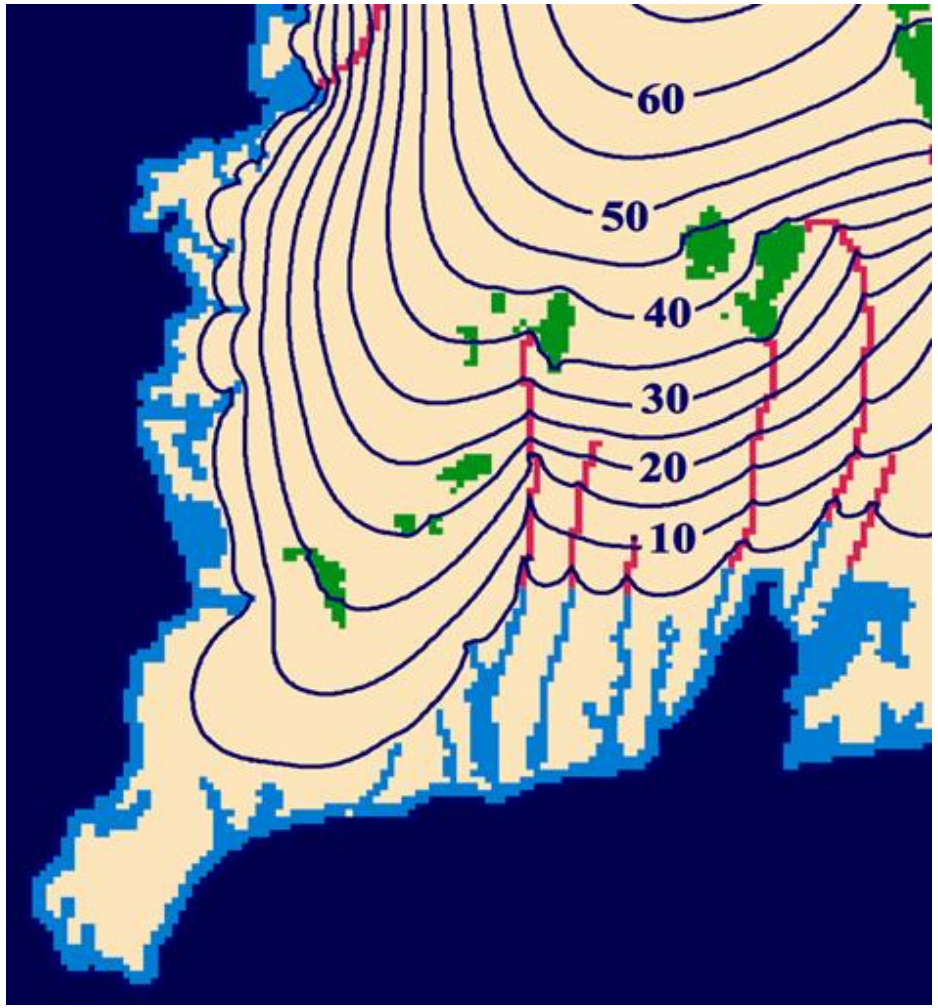
2024 -2025 Outfall Tasks

More detail on each on following slides

1. Complete evaluation of outfall impact, if any, on Sagamore lens
2. Obtain permits needed for marine borings then conduct borings
3. Confirm scope of environmental data collection and permitting requirements with regulators
4. Conduct 2-year baseline monitoring program in Nantucket Sound
5. Begin to apply for permits and prepare Draft Environmental Impact Report

1. Confirming that outfall will not adversely affect Sagamore Lens Aquifer

- Key evaluation. Ongoing, underway.
- USGS has recalibrated their Sagamore Model created in 2010 with recent water usage data
- Now they are modelling the effects of moving septic flow to treatment plant and then to outfall
- Draft conclusions expected by January 2025
- Ongoing monitoring by USGS on Maravista is providing useful data for evaluation.



Walter and Whelan, USGS

2. Conduct Soil Borings

Goal: characterize subsurface soils, for design and pricing of the outfall directional drilling operation

- Borings 6” diameter, 100’ deep
- 6 marine borings offshore; 1 boring in Kite Park
- Use jack-up barge offshore
- Estimated 1 month duration

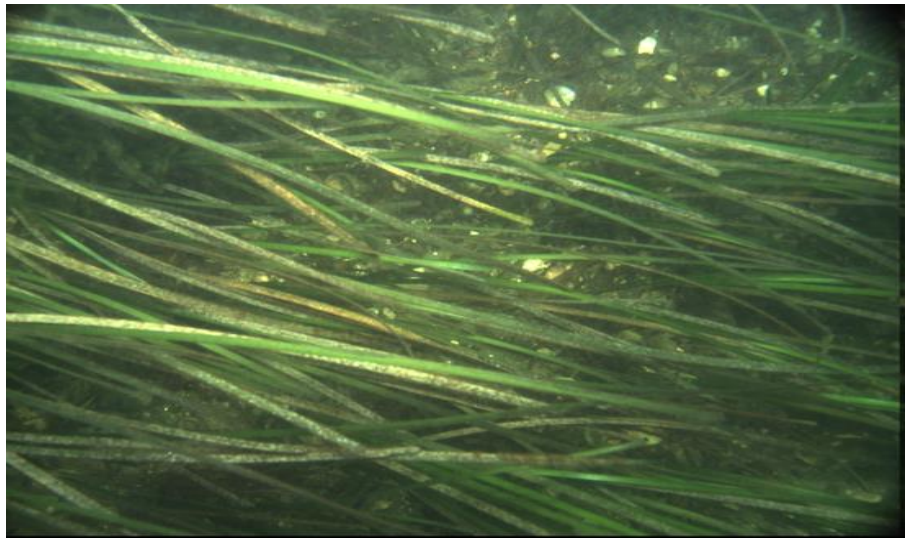
Planning for late 2024

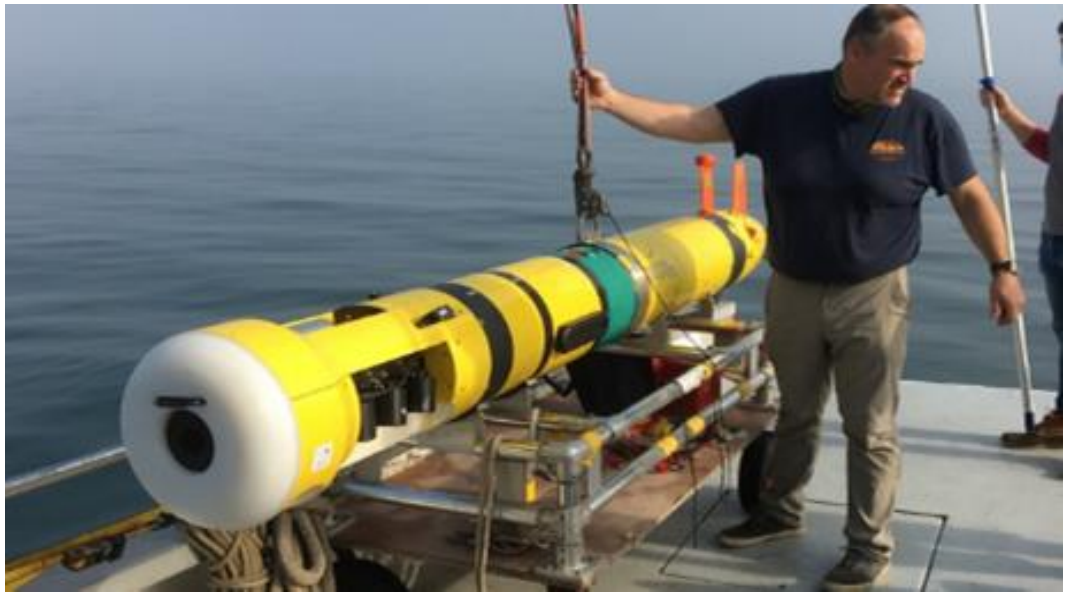
3. Confirm Scope of Environmental Data Collection and Permitting Requirements

- The state has no defined protocol for required environmental data collection for outfall permitting.
- Ongoing meetings with regulators to develop data collection and permitting plans: DEP, EPA, CZM, DMF, MEPA, USACE, DCR, etc.
- Department of Environmental Protection is taking a lead role.

4. Two-Year Baseline Monitoring Program in Nantucket Sound

- Water quality monitoring – dissolved oxygen, temperature, nutrients, etc
- Benthic sediments and infauna surveys – grain sizes, species identification
- Fisheries habitat assessment, including eelgrass surveys
- Fisheries data review





5. Begin to apply for permits and prepare Draft Environmental Impact Report

Anticipated Permits

- Underwater Archeological Resources
- National Pollutant Discharge Elimination System Permit
- Army Corps Individual Permit
- Public Waterfront Act (Chapter 91) Authorization
- Notice of Intent – Falmouth Conservation Commission / DEP
- Mass Coastal Zone Management Federal Consistency Review
- Cape Cod Commission Consistency Review
- Natural Heritage and Endangered Species Program Review
- National Marine Fisheries Review
- US Coast Guard Local Notice to Mariners

Current Outfall Schedule

- Complete environmental data gathering 2024, 2025
- Complete Draft Environmental Impact Report: late 2025 - early 2026
- Apply for and receive permits: 2024 - 2027
- Complete Final Environmental Impact Report and design outfall: 2028
- Construct outfall: 2029 – 2032
- Begin discharging to outfall in 2032; cease discharge to land at Main WWTF sand beds 1-15

Questions