



Town of

Orleans
Massachusetts

Orleans Water Quality Advisory Panel

Stakeholder Workshop

January 20, 2016

Agenda

- ❖ Approval of Meeting Minutes of December 2, 2016
- ❖ Tri-Town Septage Plant Transition Status Update
- ❖ Financial Plan Update
- ❖ Adaptive Management Update: Monitoring and Modeling Plan
- ❖ Collection, Treatment and Disposal Systems Update
- ❖ Downtown Planning Study Update
- ❖ NT Technology Demonstration Projects: Breakout Groups
- ❖ Public Information Activities



TTSTP Transition Status Update

1. Tri-Town District IMA and Permit expire on December 31, 2016
2. Three Towns have voted not to fund interim improvements estimated at ~\$1,000,000 for a 5-year extended life
3. Last septage deliveries will be accepted on approximately October 31, 2016 (tentative):
 - Decommissioning and demolition scope of work and engineer's estimate being prepared by AECOM
 - Due to staffing uncertainty earlier closure or reduction of septage service may be required



TTSTP Transition Status Update (cont.)

4. Delay of demolition not recommended because:
- Potential savings of \$200,000 to \$400,000 eroded by costs of “mothballing” existing facility (e.g. security, surveillance, residual costs for utilities, insurance)
 - Demolition cost will increase due to inflation and will be a “sunk cost” if new WWTF is not built by Orleans
 - Need to renegotiate and extend the IMA



TTSTP Transition Plan Status Update (cont.)

5. Partial demolition and use as Transfer Station not recommended because:
 - Significant costs to allow transfer operations remain (e.g. safety repairs, realignment of pipes and pumps, minimum staffing requirements, re-permitting)
 - Added cost of septage transfer to hauler and cost of station eliminates cost benefit
 - No legal authority for Orleans to operate transfer station until plant is decommissioned and demolished in ~two years
 - Would need to renegotiate and extend IMA
 - Septage haulers will return to using the new WWTF for economic reasons

6. Orleans and Brewster have funds in place for demolition design; Eastham will need a vote at TM in May 2016



TTSTP Transition Plan Status Update (cont.)

7. Towns vote to proceed with demolition design at 2016 TMs
 - Benefit to voting to proceed to design and demolition simultaneously in 2016/2017 may be beneficial

8. OWQAP Consensus Plan remains as agreed:
 - Orleans and regional septage need remains
 - New septage facilities at new WWTF to be “right-sized” based on market, septage management plan, regional study, etc.
 - Net septage revenue to new facility remains substantial



TTSTP Transition Plan Status Update (cont.)

- Incentive exists to carefully expedite construction of new wastewater/septage plant. Inflation costs for new WWTF over next two years will be substantial.
- Site assignment for WWTF by DEP remains in place (to be confirmed in writing)
- Various types of Public–Private partnerships to be evaluated



Financial Plan Update

Objectives

- ❖ Updated Cost Estimates
- ❖ Fair, Value-based Cost Allocation Plan
- ❖ Affordability and Cost Impact Provisions
- ❖ Consideration of Public-Private Partnership Options

Tasks

- ❖ Define Cost and Revenue Components
- ❖ Define User Categories
- ❖ Allocate Costs by User Category and Value
- ❖ Define Financing Options
- ❖ Pursue Grant, Debt-Forgiveness options
- ❖ Test and Optimize Scenarios, Evaluate Affordability



Financial Plan Update (cont.)

Treatment Types	Type of Cost		Revenue Sources **	Users	Outputs
	Capital	Operating *			
Tri-Town WWTF	Capital Costs ***		Special Assessment	Sewered Commercial	Rate Scenarios By Customer Category
	Septic Capital Costs ***		Special Assessment	Sewered Residential	Parcel Specific
	Disposal Costs		Special Assessment		
	Connection Costs		Connection Fee		
		O, M, M & R Costs	User Charge		
Meetinghouse Pond WWTF	Capital Costs ***		Special Assessment	Sewered Residential	Rate Scenarios By Customer Category
	Disposal Costs		Special Assessment		Parcel Specific
	Connection Costs		Connection Fee		
			O, M, M & R Costs	User Charge	
Non Traditional	Capital Costs ***		Special Assessment	Nitrogen Sensitive Non Sewer	Rate Scenarios By Customer Category
	Connection Costs		Connection Fee		Average Parcel
			O, M, M & R Costs	User Charge	
				Management Fee	
On site Septic	Capital Costs		Management Fee	Non Nitrogen Non Sewer	Rate Scenarios By Customer Category
			O, M, M & R Costs	Management Fee	Average Parcel
Notes:	* O = Operations; M = Maintenance; M= Monitoring; and R = Replacement				
	** General Revenues - Taxes, Grants and Loan Forgiveness				
	*** Planning, Design and Construction Capital Costs				



Financial Plan Update (cont.)

Inputs

- ❖ Project Cost
- ❖ Annual O&M Cost
- ❖ Replacement Cost
- ❖ Annual Monitoring Cost

[Input Sheet](#)

Example Model Run

[Model](#)



Adaptive Management Update Monitoring and Modeling Plan

- ❖ Review of Historic Monitoring/Modeling Program
- ❖ Development of Integrated, Long-Term Monitoring/Modeling Plan - Gap Analyses
 - Baseline Monitoring
 - Continuing Waterbody Monitoring
 - Non-Structural Technology Performance Monitoring
 - MEP Study Update Monitoring
 - MEP Model Update and Implementation Analysis
 - Stormwater and Fertilizer Program Monitoring
 - AMP Workshop Being Planned
- ❖ Continuing Adaptation of the Program, as Appropriate
- ❖ Adaptive Management Workshop
 - Part 1 - February 9, 2016
 - Part 2 - February 10, 2016



Collection, Treatment and Disposal Systems Update

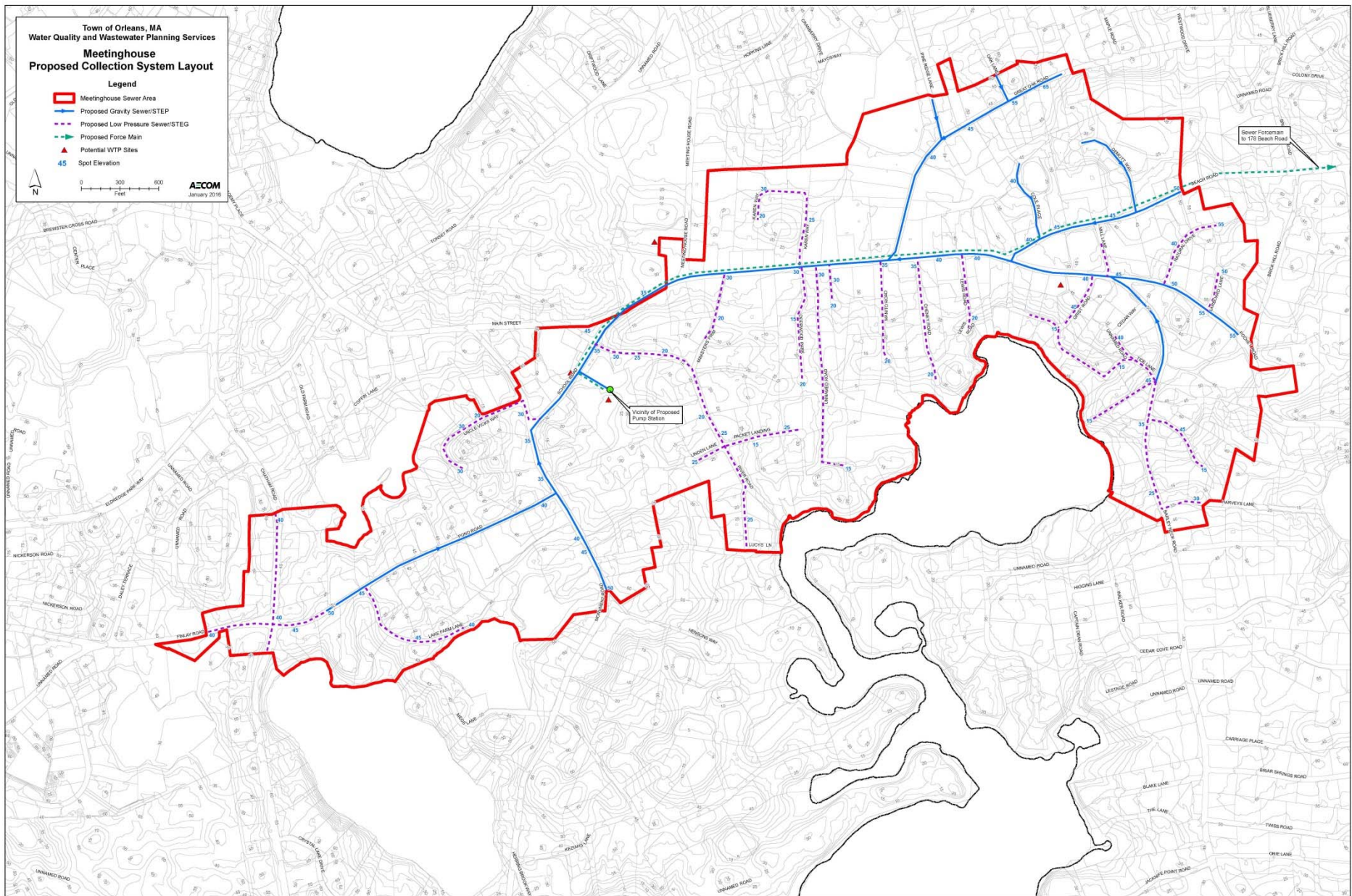
Collection Systems Types

- ❖ Gravity Sewers
- ❖ Low Pressure Sewers
- ❖ Vacuum Sewers
- ❖ Septic Tank Effluent Pumping
- ❖ Septic Tank Effluent Gravity

Tasks

- ❖ Identify Evaluation Criteria
- ❖ Prepare Preliminary System Layouts
- ❖ Perform Evaluation
- ❖ Prepare Cost Estimate (Project, O&M, Replacement and Monitoring)





Collection, Treatment and Disposal Systems Update (cont.)

Proposed Locations

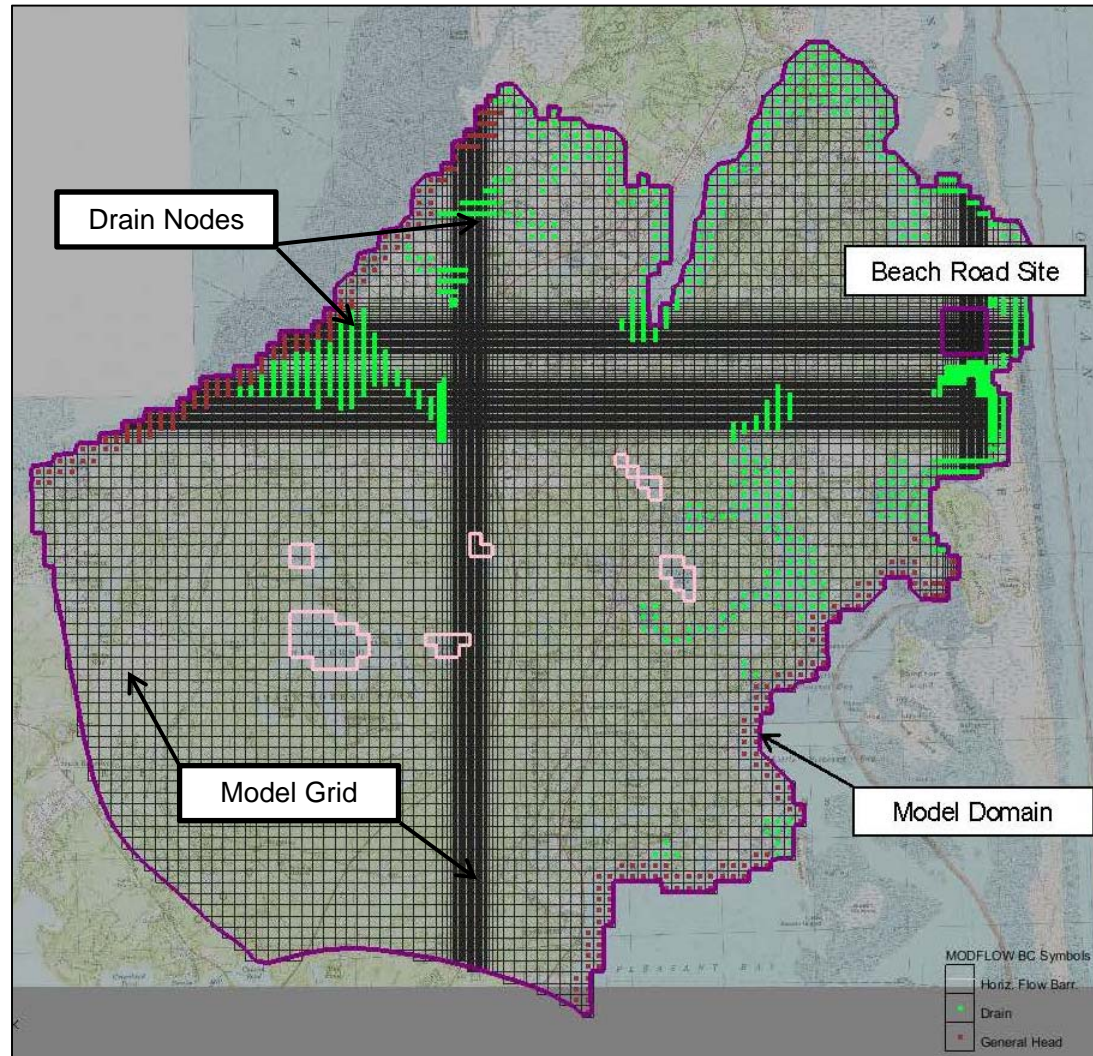
- ❖ Tri-Town - Parcels 1/1A
(Replacement of Route 6 -
Interchange 12 Cloverleaf)
 - Downtown Area
- ❖ 223 Beach Road
 - Meetinghouse Pond Area

Tasks

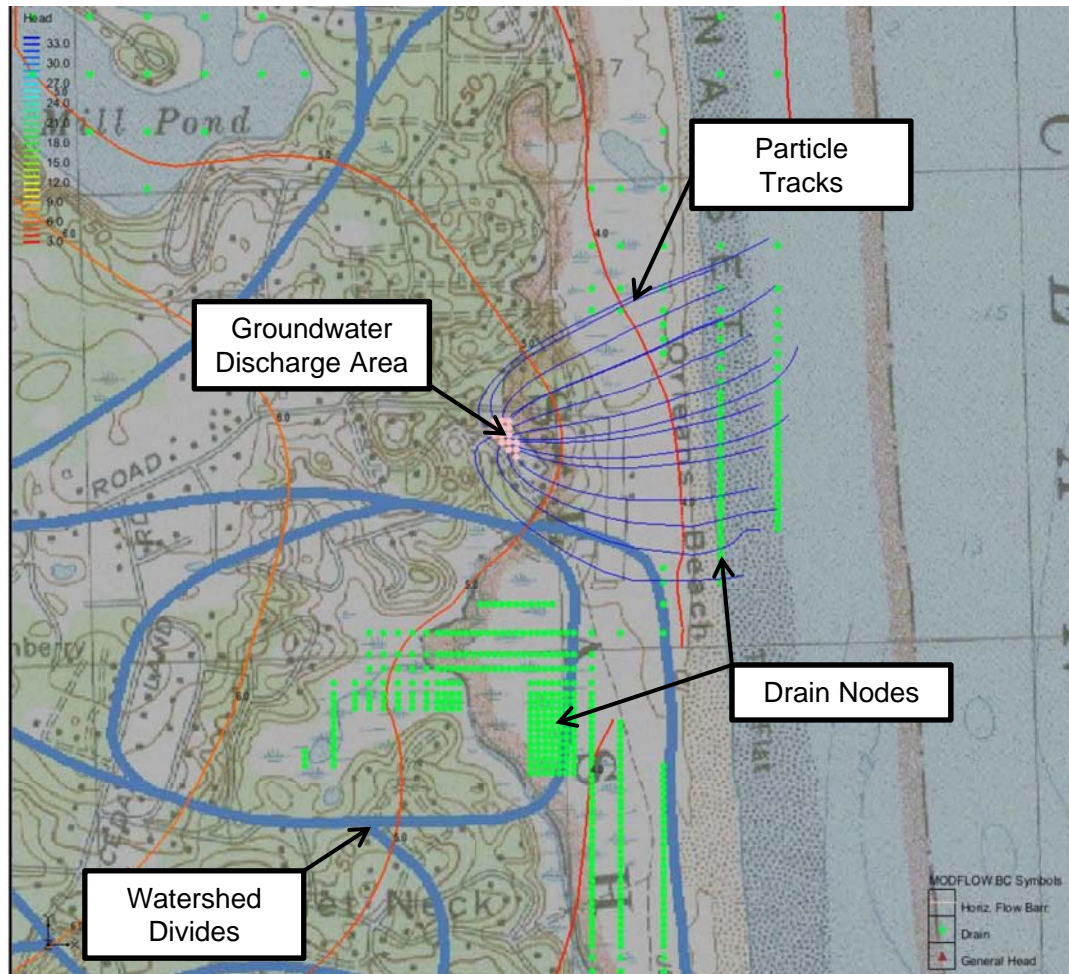
- ❖ Hydrogeologic Site Evaluation
 - Proposed Scope Submitted to MassDEP
 - Install Monitoring Wells
 - Test Pit Investigation
 - Soils and Slug Testing and Data Analysis
 - Baseline Water Quality Analysis
 - Estimate of High Water Table
 - Perform Model Simulations
 - Estimate Groundwater Mounding
- ❖ Coordination with MassDEP
- ❖ Schedule and Conclusions



Collection, Treatment and Disposal Systems Update (cont.)

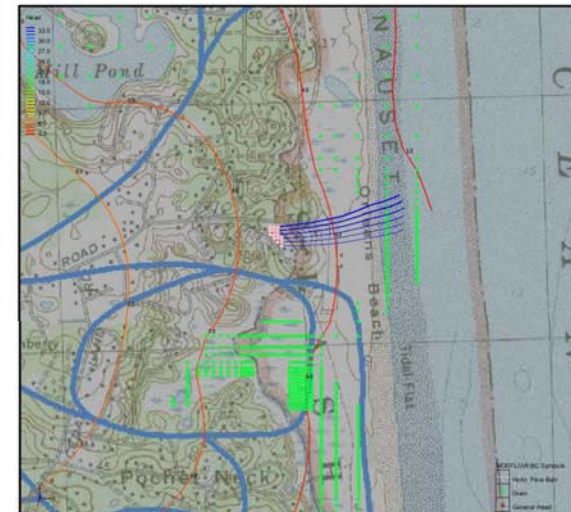


Collection, Treatment and Disposal Systems Update (cont.)



223 Beach Road
Preliminary Simulation
of Subsurface Disposal
at 200,000 gpd

Baseline Case, No Discharge



Downtown Planning Study Update

Tasks

- ❖ Review Previous Studies
- ❖ Conduct Economic/Market Analysis
- ❖ Conduct 1st Workshop to Confirm Vision
- ❖ Confirm Current Development Conditions
- ❖ Develop Future Buildout Scenarios (high, low and medium growth)
- ❖ Conduct 2nd Workshop

Planning Status

- ❖ Workshop #1 Confirmed Town Center (TC) and Village Center (VC) Visions
 - Comprehensive Plan (2006)
 - Village Center (2009)
 - Others
- ❖ Development Conditions and Trends Verified in VC and TC
- ❖ Identify/Confirm Recommendations to Strengthen Downtown
- ❖ Select Future Growth Scenario to Predict WW Flows/Loads



Downtown Planning Study Update (cont.)

- ❖ Summary/Key Takeaways from 1st Downtown Planning Workshop Held on December 15, 2016
 - Most Agreed with TC and VC Vision Statements but Suggested Some Minor Improvements
 - All Agreed that Higher Year-Round Residential Density in VC is Desired
 - Most Agreed that Retail/Restaurants on First Floor in VC was Appropriate but Requested Guidelines for Retail vs Professional Establishments (hours of operation, etc.)
 - All Agreed Having Destination “Anchor” or “Magnet Use” (educational institutions, movie theater, etc.) Would be Desirable and Help Draw People to TC/VC Year-Round



Downtown Planning Study Update (cont.)

❖ Summary/Key Takeaways (cont.)

- All Agreed that Attracting Year-Round Residents and Possibly Providing a Mix of Housing Types (senior, workforce, etc.) would Strengthen the Viability of the Downtown and Village Center
- All Agreed that having Greater Dining Options (sidewalk cafes, etc.) and Retail/Professional with More Walk-In Trade would Add Vibrancy to the Village Center; Consistent Guidelines are Needed (setbacks, etc.)
- All Agreed for the Need to Provide Support to Sustain Year-Round Business
- Some Recommended Addressing Parking Limitations with Creative Approaches



Downtown Planning Study Update (cont.)

- ❖ Conduct the 2nd Downtown Planning Workshop on February 4, 2016
- ❖ Proposed Agenda
 - Welcome and Introductions (5 min)
 - Purpose of Workshop (10 min)
 - Review of Input from 1st Workshop (15 min)
 - Overview of Downtown Growth Scenarios (10 min)
 - Review of Buildout Scenario Results (20 min)
 - Q&A Discussion (30 min)
 - Next Steps (10 min)
 - Wrap Up (15 min)



Non-Traditional Technologies Demonstration Project Task Progress

Technology

- ❖ Aquaculture/Shellfish Propagation
- ❖ Floating Constructed Wetlands
- ❖ Permeable Reactive Barriers

Tasks

- ❖ Identify Possible Sites
- ❖ Conduct Preliminary Field Survey
- ❖ Assemble Base Data
- ❖ Establish Criteria For Site Evaluations
- ❖ Evaluate and Select Site(s)
- ❖ Prepare for/Conduct for PRB Field Investigations



Non-Traditional Technologies Demonstration Project Task Progress (cont.)

❖ Breakout Groups

- Aquaculture/Shellfish Propagation: Nauset Room
- Floating Constructed Wetlands: Tonset Room
- Permeable Reactive Barriers: Namequoit Room

❖ Agenda for Each Breakout will Include

- Technology Overview
- Review Siting Criteria
- Review Potential Sites
- Review Application of Site Criteria
- Identify Recommended Sites
- Next Steps





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Non-Traditional Technologies Breakout Groups

Aquaculture/Shellfish Propagation
Nauset Room

Floating Constructed Wetlands
Tonset Room

Permeable Reactive Barriers
Namequoit Room

Aquaculture/Shellfish Propagation Demo and Full Scale Siting Evaluation Criteria

❖ Site Suitability

- Available Growing Area/Adequacy of Acreage
- Water Quality Indicators
- Disease/Predation
- Ease of Access
- Aesthetic Impacts
- Representativeness of the Site (Transferability)
- Use Conflicts
- Ability to Co-Locate with other Non-Traditional Technologies

❖ Permitting

- Abutter Compatibility
- Wild Harvest Conflicts
- Grow-Out to Harvest Size
- Permittability

❖ Project Evaluation

- Expected Survival
- Overall Likelihood of Monitoring Plan to Yield Quantified Results

❖ Other/Overriding Considerations



Aquaculture/Shellfish Propagation Locations Evaluated

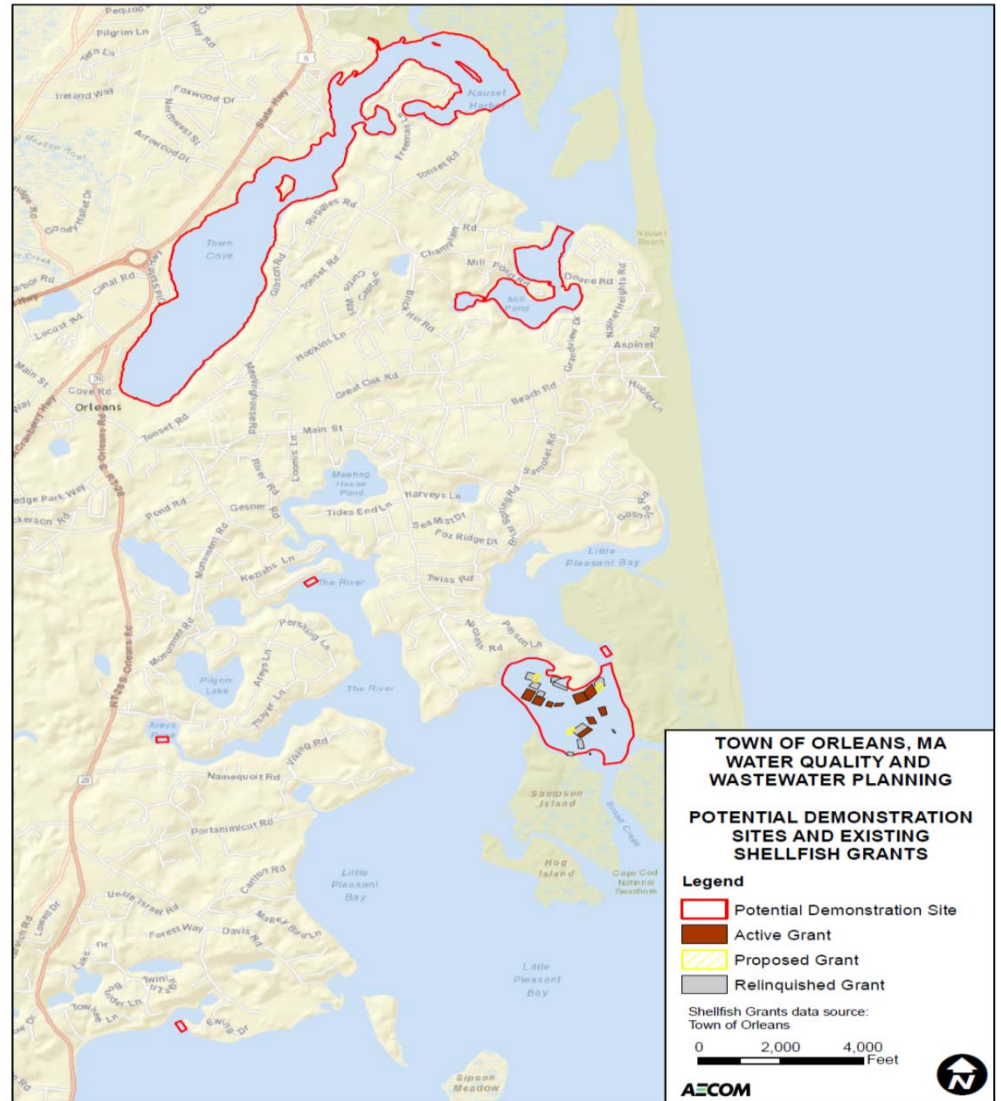
- ❖ Little Pleasant Bay (Existing Aquaculture Grants, Oysters and Quahogs)
- ❖ Quanset Pond (Oyster Reef)
- ❖ Pochet (Oyster Reef)
- ❖ Arey's Pond (Oyster Singles in Floating Bags)
- ❖ Town Cove (Quahog Propagation)
- ❖ Mill Pond (Quahog Propagation)
- ❖ Lower River (Oyster Singles in Floating Bags)



Aquaculture/Shellfish Propagation Top Ranked Locations

❖ Pleasant Bay

- Quanset Pond
- Little Pleasant Bay (existing grant areas)



FCW Demo and Full Scale Siting Evaluation Criteria

- ❖ Use Conflicts
- ❖ Utility/Infrastructure Conflicts
- ❖ Utility/Infrastructure Benefits
- ❖ Ease of Access
- ❖ Transferable Results
- ❖ Land Ownership
- ❖ Depth of Surface Water
- ❖ Overall Likelihood of Monitoring Plan to Yield Quantified Results



FCW Locations Evaluated

- ❖ Lonnie's Pond
- ❖ Namequoit River
- ❖ Paw Wah Pond
- ❖ Pochet Neck
- ❖ Quanset Pond



FCW Top Ranked Locations

- ❖ Lonnie's Pond
- ❖ Quanset Pond



PRB Demo and Full Scale Siting Evaluation Criteria

❖ Site Suitability

- Depth to Groundwater
- Groundwater Nitrogen Profile (concentration/depth)
- Groundwater Flow Direction and Velocity

❖ Permitting

- Potential Regulatory Concerns
- Site Use

❖ Project Evaluation

- PRB Nitrogen Removal Efficiency
- Accessible Well Locations

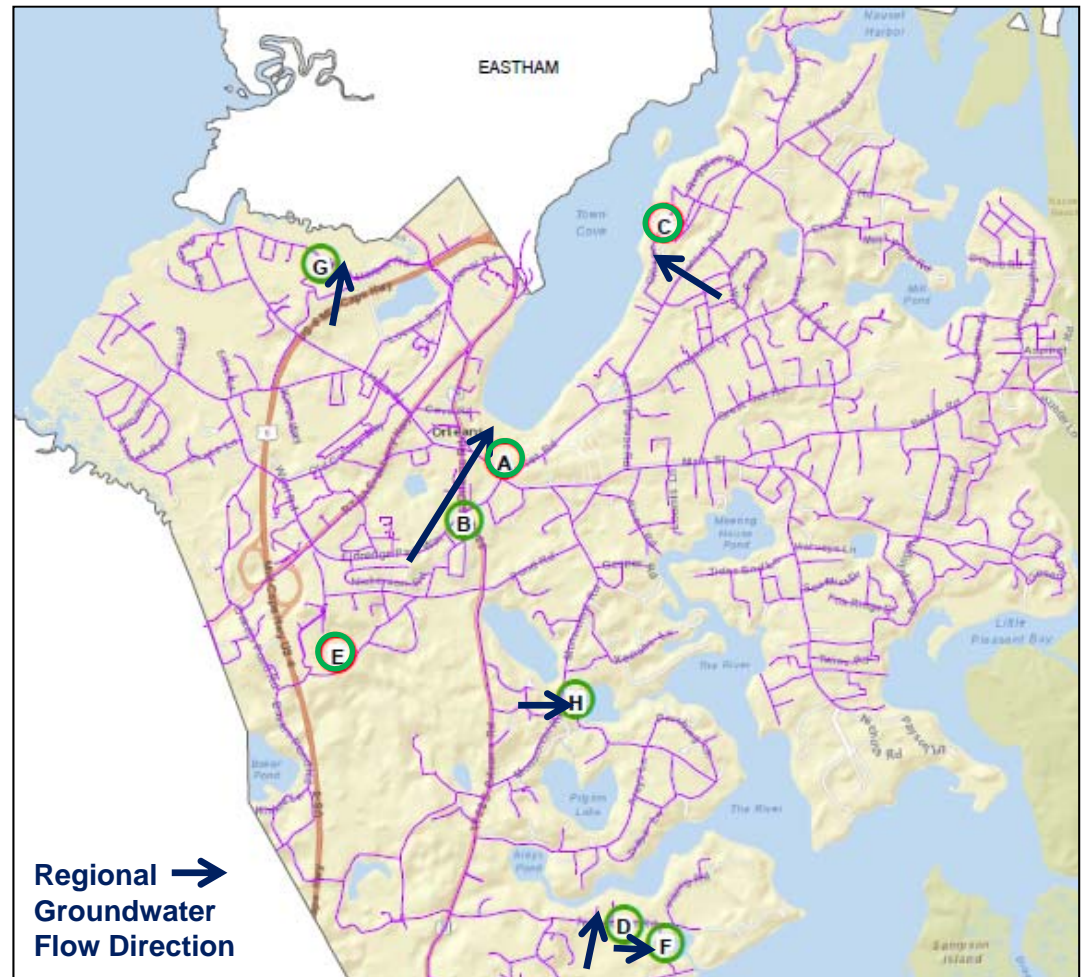
❖ Other/Overriding Considerations

- Potential for Watershed/Estuary Impacts
- Potential for Full Scale Implementation



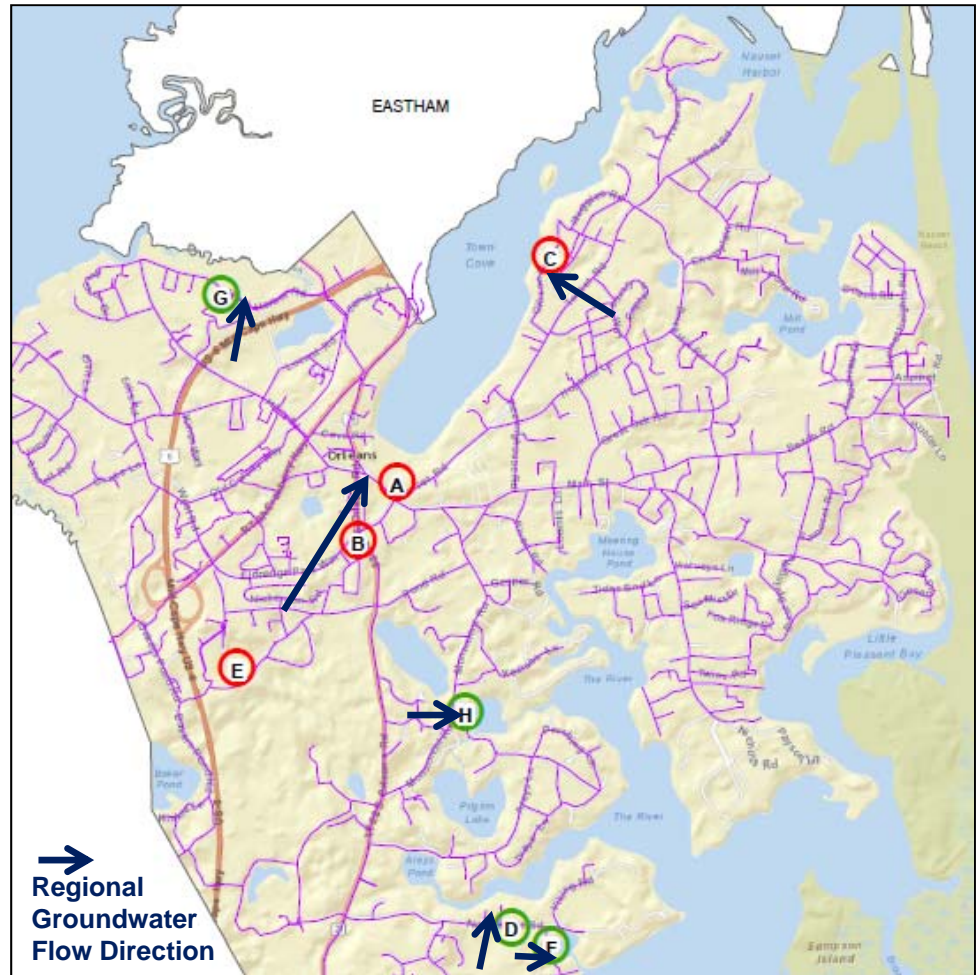
PRB Locations Evaluated

- A. Main Street and Tonset Road (Main Street)
- B. South Orleans Road at Tonset/Eldredge Parkway (Route 28 site)
- C. Town Cove Gibson Road
- D. Namequoit Road
- E. Town Landfill
- F. Paw Wah Pond
- G. Rock Harbor Road Area
- H. Kescayo Gansett Pond (Lonnie's Pond)



PRB Top Ranked Locations

- A. Main Street and Tonset Road (Main Street)
- B. South Orleans Road at Tonset/Eldredge Parkway (Route 28 site)
- C. Town Cove Gibson Road
- D. Town Landfill



Public Information Activities

- ❖ 2nd Downtown Planning Workshop
 - February 4, 2016, 6:30 pm to 8:30 pm
 - Council on Aging at 150 Rock Harbor Road

- ❖ Adaptive Management Workshop
 - Part 1 - February 9, 2016, 1:00 pm to 4:00 pm
 - Part 2 - February 10, 2016, 8:30 am to Noon
 - Town Hall at 19 School Road

- ❖ Design-Build and Public–Private Partnerships (P3s) BOS Workshop
 - February 10, 2016, 6:30 pm to 8:30 pm
 - Town Hall at 19 School Road



Public Information Activities (cont.)

- ❖ OWQAP Workshop
 - February 17, 2016, 9:00 am to Noon
 - Town Hall at 19 School Road

- ❖ Public Information Program Summary Report
 - OWQAP
 - Constituents

- ❖ Others?





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Thank You