**208 Area Wide Water Quality Management Plan Update**  
**Lower Cape Sub Regional Group**

**Meeting One**  
February 27, 2014 1:00 – 5:00 pm  
Chatham Community Center, 702 Main St., Chatham, MA 02633

**Meeting Goals:**  
- Identify regulatory, legal, and institutional challenges, constraints, and opportunities associated with the 208 Plan approach for water quality  
- Clarify the definition and components of an adaptive management plan that can be permitted

1:00 Welcome & Review of 208 Goals  
1:10 Process Overview, Meeting Overview and Goals, & Introductions  
1:30 Scenario Planning  
  - Use maps of technologies/approaches in one representative watershed to illuminate RLI and implementation discussions.  
2:00 Regulatory, Legal, and Institutional Interactions  
  - Presentation of existing permitting framework  
  - What are some of the hurdles and opportunities associated with permitting the above scenario?  
3:15 Break  
3:30 Implementation  
  - Presentation and discussion of adaptive management definition and graphic  
  - What components of an adaptive management plan are needed to achieve permit-ability and water quality goals?  
4:45 Public Comment  
5:00 Adjourn
Lower Cape Sub Regional Group

MEETING 2
# Standing Sub Regional Meeting Topics

<table>
<thead>
<tr>
<th>Mtg. 1</th>
<th>Mtg. 2</th>
<th>Mtg. 3</th>
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</thead>
<tbody>
<tr>
<td>Scenario Planning</td>
<td>Regulatory, Legal, Institutional</td>
<td>Implementation</td>
</tr>
<tr>
<td>One representative watershed</td>
<td>Challenges &amp; opportunities associated with permitting the watershed scenario</td>
<td>Adaptive management plans</td>
</tr>
<tr>
<td>All shared watersheds &amp; TBL model</td>
<td>Tools to support intermunicipal cooperation</td>
<td>Monitoring</td>
</tr>
<tr>
<td>Subregional scenarios &amp; TBL model</td>
<td>Structures for permitting</td>
<td>Financing &amp; affordability</td>
</tr>
</tbody>
</table>
Standing Sub Regional Meeting Topics

**Meeting 2 Goals:**

- Introduce the **Triple Bottom Line** analysis tool and its application to scenario planning.
- Identify key criteria for **successful collaboration** for shared watersheds and evaluate existing models against the criteria.
- Clarify the scope and charge of the **Ad Hoc Monitoring Committee** to meet permitting requirements and water quality goals.
- Visualize **monitoring** within an adaptive management approach.
Scenario Planning

LOWER CAPE
LOWER CAPE SUB-REGIONAL TRADITIONAL CENTRALIZED – INSIDE WATERSHED SOLUTIONS

Collecting parcels: 9,656 parcels
Miles of collection: 292 miles
Flow: 1,380,821 gallons per day
**LOWER CAPE SUB-REGIONAL TRADITIONAL**

50% Fertilizer/Stormwater Reduction

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collecting parcels:</td>
<td>7,544 parcels</td>
</tr>
<tr>
<td>Miles of collection:</td>
<td>231 miles</td>
</tr>
<tr>
<td>Flow:</td>
<td>1,071,017 gallons per day</td>
</tr>
</tbody>
</table>
LOWER CAPE SUB-REGIONAL TRADITIONAL
25% Removal for Non MEP Watersheds

Collecting parcels: 567 parcels
Miles of collection: 18 miles
Flow: 71,482 gallons per day
NAUSET MARSH
TRADITIONAL
CENTRALIZED – INSIDE WATERSHED SOLUTIONS

Collecting parcels: 1,627 parcels
Miles of collection: 58 miles
Flow: 267,396 gallons per day
**NAUSET MARSH TRADITIONAL**
50% Fertilizer/Stormwater Reduction

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<table>
<thead>
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</thead>
<tbody>
<tr>
<td>Collecting parcels:</td>
<td>1,225 parcels</td>
</tr>
<tr>
<td>Miles of collection:</td>
<td>48 miles</td>
</tr>
<tr>
<td>Flow:</td>
<td>213,358 gallons per day</td>
</tr>
</tbody>
</table>
### Nauset Marsh

**Traditional Centralized – Inside Watershed Solutions**

- **Collecting parcels:** Total 1,627 parcels
  - Orleans: 560
  - Eastham: 1,077

- **Miles of collection:** 58 miles

- **Flow:** 267,396 gpd
<table>
<thead>
<tr>
<th>Description</th>
<th>Total</th>
<th>Orleans</th>
<th>Eastham</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collecting parcels:</td>
<td>1,215 parcels</td>
<td>560</td>
<td>655</td>
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<tr>
<td>Miles of collection:</td>
<td>44 miles</td>
<td></td>
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<tr>
<td>Flow:</td>
<td>201,169 gpd</td>
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</table>
## Salt Pond

### Traditional

**Centralized – Inside Watershed Solutions**

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>Collecting parcels:</td>
<td>422 parcels</td>
</tr>
<tr>
<td>Miles of collection:</td>
<td>15 miles</td>
</tr>
<tr>
<td>Flow:</td>
<td>68,859 gpd</td>
</tr>
<tr>
<td>NAUSET MARSH NON-TRADITIONAL</td>
<td></td>
</tr>
<tr>
<td>-----------------------------</td>
<td></td>
</tr>
<tr>
<td>Saltwater &amp; Fert. Reduction 2</td>
<td>Aquaculture</td>
</tr>
<tr>
<td>Constructed Wetlands        3</td>
<td>PRBs</td>
</tr>
<tr>
<td>Fertigation Wells-Turf       3</td>
<td>Floating Constructed Wetlands</td>
</tr>
<tr>
<td>Fertigation Wells-Bogs       27</td>
<td>Ecotoilets</td>
</tr>
<tr>
<td>Dredging/ Inlet Widening     402</td>
<td>Ecotoilets-Public (people)</td>
</tr>
<tr>
<td>Habitat Restoration         60</td>
<td>I&amp;A</td>
</tr>
<tr>
<td>Surface Water Remediation 3</td>
<td>Enhanced I&amp;A</td>
</tr>
<tr>
<td>wetland</td>
<td></td>
</tr>
</tbody>
</table>

"Subregional Working Group - Lower Cape - Workshop 2"
NAUSET TRIPLE BOTTOM LINE ASSESSMENT

Community Goals
Please set watershed-wide thresholds for the performance factors below. All scenarios for the watershed will be scored against these thresholds.

<table>
<thead>
<tr>
<th></th>
<th>Development Buildout Timeframe</th>
<th>The estimated time when Development in the watershed will reach capacity as planned by current zoning</th>
<th>2033</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Min. % of TMDL Goal achieved in 20 years</td>
<td>The acceptable level of Nitrogen reduction for a viable scenario within a reasonable timeframe</td>
<td>49.7%</td>
</tr>
<tr>
<td>3</td>
<td>Max. % of MHI as 208 Plan Wastewater Management Fee</td>
<td>The acceptable burden on households measured as a % of Median Household Income (MHI)</td>
<td>7%</td>
</tr>
<tr>
<td>4</td>
<td>Max. average Capital Cost of On-Site Improvement per HH</td>
<td>The acceptable burden on households investing in 208 plan related on-site improvements</td>
<td>$14,000</td>
</tr>
<tr>
<td>5</td>
<td>Min. % of Properties in Watershed improving in Value</td>
<td>The minimum % of properties expected to gain in value due to 208 plan improvements</td>
<td>20%</td>
</tr>
<tr>
<td>6</td>
<td>Min. % of High Quality Habitat Created in Watershed</td>
<td>The minimum % of high quality habitat being added to the existing habitat areas with the watershed</td>
<td>1%</td>
</tr>
<tr>
<td>7</td>
<td>Min. % of GHG Emission Reduction from Wastewater sector</td>
<td>The minimum % reduction of GHG compared to 2002 levels from wastewater sector</td>
<td>4%</td>
</tr>
<tr>
<td>8</td>
<td>Min. % New Jobs Created in Watershed</td>
<td>The minimum % of new jobs created in the construction, maintenance and rate-payer sectors</td>
<td>2%</td>
</tr>
<tr>
<td>9</td>
<td>Min. Concentration Reduction of Phosphorous</td>
<td>The minimum amount of phosphorous concentration reduction in fresh water ponds (Kg/Acre/Yr)</td>
<td>18 Kg/SF</td>
</tr>
<tr>
<td>10</td>
<td>Min. % of TMDL Target Achievement in 20 Years</td>
<td>The minimum extent to which a scenario achieves TMDL target in a specific time frame</td>
<td>50%</td>
</tr>
<tr>
<td>11</td>
<td>Min. % Number of Property Gains Property Value</td>
<td>The minimum % of number of properties estimated to be increase in property value with the watershed</td>
<td>7%</td>
</tr>
<tr>
<td>12</td>
<td>Min. % Value of Property Gain Property Value</td>
<td>The minimum % of total property values of properties estimated to be increase in property value with the watershed</td>
<td>6%</td>
</tr>
<tr>
<td>13</td>
<td>Min Extent of Development Areas Best Suited For Growth</td>
<td>The minimum extent to which a Scenario guides development to areas best suited for growth</td>
<td>90%</td>
</tr>
</tbody>
</table>
SCENARIO 1: Maximizing Sewer Option
SCENARIO 1: Maximizing Sewer Option
SCENARIO 2 : Reduced Sewershed
SCENARIO 2: Reduced Sewershed
SCENARIO 3 : Alternate Technology

[Image of a dashboard with various data and maps related to environmental assessment and technology selection.]

The image shows a workshop presentation slide titled "SCENARIO 3 : Alternate Technology," featuring a Triple Bottom Line (TBL) Assessment Model with various inputs and outputs related to environmental, social, and financial sustainability. The slide includes a map titled "TECHNOLOGY APPLICATION MAP" and a table showing data on impacted properties, land area, and other metrics relevant to the scenario. The bottom right corner of the image has a label "COMMUNITY IMPACTS SUMMARY."
SCENARIO 3 : Alternate Technology
SCENARIO COMPARISONS

Criterion

<table>
<thead>
<tr>
<th>SOCIAL</th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>System Resilience</td>
<td>S1</td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td>E2</td>
<td></td>
</tr>
<tr>
<td>Ratepayer Distribution</td>
<td>S3</td>
<td></td>
</tr>
<tr>
<td>Tourism</td>
<td>T4</td>
<td></td>
</tr>
<tr>
<td>Property Values</td>
<td>R5</td>
<td></td>
</tr>
<tr>
<td>Tax Revenue</td>
<td>T6</td>
<td></td>
</tr>
<tr>
<td>LandUse Compatibility</td>
<td>S7</td>
<td></td>
</tr>
<tr>
<td>ENVIRONMENTAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marine Water Quality</td>
<td>E8</td>
<td></td>
</tr>
<tr>
<td>Fresh Water Quality</td>
<td>E9</td>
<td></td>
</tr>
<tr>
<td>Habitat</td>
<td>E10</td>
<td></td>
</tr>
<tr>
<td>Climate</td>
<td>E11</td>
<td></td>
</tr>
<tr>
<td>FINANCIAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Municipal Costs</td>
<td>P1</td>
<td></td>
</tr>
<tr>
<td>Debt Costs to System Users</td>
<td>P2</td>
<td></td>
</tr>
</tbody>
</table>

Strategy/Technology Distribution

| ENVIRONMENTAL |  |  |

COST & PERFORMANCE

<table>
<thead>
<tr>
<th>Nitrogen Reduction %</th>
<th></th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Scenario 1</td>
<td>47%</td>
<td></td>
</tr>
<tr>
<td>Scenario 2</td>
<td>43%</td>
<td></td>
</tr>
<tr>
<td>Scenario 3</td>
<td>34%</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Time to Reduce (years)</th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>Scenario 1</td>
<td>33.0</td>
<td></td>
</tr>
<tr>
<td>Scenario 2</td>
<td>25.0</td>
<td></td>
</tr>
<tr>
<td>Scenario 3</td>
<td>34.0</td>
<td></td>
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<table>
<thead>
<tr>
<th>Cost ($M)</th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>Scenario 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scenario 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scenario 3</td>
<td></td>
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COMMUNITY BENEFITS

<table>
<thead>
<tr>
<th>Quality Habitat Created (acres)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario 1</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Scenario 2</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Scenario 3</td>
<td>0.0</td>
<td></td>
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<table>
<thead>
<tr>
<th>GHG Reduced (MT CO2e/Yr)</th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Scenario 1</td>
<td>118.1</td>
<td></td>
</tr>
<tr>
<td>Scenario 2</td>
<td>94.9</td>
<td></td>
</tr>
<tr>
<td>Scenario 3</td>
<td>60.0</td>
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<thead>
<tr>
<th>N Reduction Risk Ratio on Sea Level Rise (%)</th>
<th></th>
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<tbody>
<tr>
<td>Scenario 1</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Scenario 2</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Scenario 3</td>
<td>0.0</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Properties Increase in Property Value (%)</th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Scenario 1</td>
<td>556</td>
<td></td>
</tr>
<tr>
<td>Scenario 2</td>
<td>551</td>
<td></td>
</tr>
<tr>
<td>Scenario 3</td>
<td>24</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>New Employment added (Jobs)</th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>Scenario 1</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>Scenario 2</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Scenario 3</td>
<td>83</td>
<td></td>
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<table>
<thead>
<tr>
<th>Additional Cost per Household ($/HH)</th>
<th></th>
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<tbody>
<tr>
<td>Scenario 1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Scenario 2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Scenario 3</td>
<td>0</td>
<td></td>
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</tbody>
</table>
Regulatory, Legal, Institutional
JURISDICTION OF THE PROBLEM

Nitrogen:
• Does not follow town boundaries

Watershed based approach:
• Look across entire watershed
• Identify cost-effective, environmentally effective plan to restore estuary
JURISDICTION OF THE SOLUTION

Multi-town collaboration

Shared actions by towns

Collaborative relationships
- Build successful intermunicipal relationships
- Begin with existing watersheds
REQUIREMENTS OF CLEAN WATER ACT / EPA

208 plan requirement:
• State must designate one or more waste management agency (WMA)

WMA must be able to:
• Carry out plan
• Manage waste treatment
• Design & construct new, existing works
• Accept/utilize grants
• Raise revenues
• Incur indebtedness
• Assure each town pays its costs
COLLABORATION CHALLENGES
FROM SUB-REGIONAL MEETING 1

Who decides?
Who pays?
Who manages?
COLLABORATION CHALLENGES

- Which solutions to implement and when and how to re-assess?
- Different levels of planning across towns (including approved CWMPs)
- Different town decision-making processes and publics
- Timeline required for building agreement
- Managing disagreement
Coordinating multiple town funding approval processes
Applying for and allocating off-Cape funding opportunities
Differences in willingness/abilities to pay
Assigning financial responsibility for: capital funding, operation and maintenance, monitoring, data management, reporting
Managing disagreement
COLLABORATION CHALLENGES

- Preparing the watershed plan for permitting
- Building, operating, maintaining, monitoring, and reporting
- Ultimate responsibility for water quality outcomes
- Managing disagreement
WHAT ARE WE MISSING?

WHAT ARE THE CHARACTERISTICS/CRITERIA OF A SUCCESSFUL COLLABORATION?
COLLABORATION MODELS
# Intermunicipal Agreements

**What is it?**

Written agreement between municipalities to perform services or activities

**Authority:**

M.G.L. c. 40 § 4A

**What it does:**

Allows towns to contract with each other/other government units (RPA, water/sewer com)

**Types:**

1. Formal contract
2. Joint service agreement
3. Service exchange arrangements

**Key Considerations:**

- Modified authority enables Board of Selectmen rather than Town Mtg.
- Max. 25 years
- Establishes maximum financial liability of parties
- Components:
  - Purpose, term of agreement
  - Method of financing
  - Responsibilities
  - Costs of services
  - Indemnification
  - Insurance
  - Alternative dispute resolution
  - Personnel property
ATTLEBORO - NORTH ATTLEBOROUGH

**The Situation:**
- Town and City have common borders
- Sewer services could be more efficiently provided by connecting neighborhoods in the Town to the City’s existing treatment facility and City neighborhoods to the Town’s facility

**Why the solution was chosen:**
- Mutually beneficial
- Allows the towns to contract with each other for specific geographic areas
ATTLEBORO - NORTH ATTLEBOROUGH

Who decides?
- Town of North Attleborough through its Board of Public Works
- City of Attleboro through its Mayor and Municipal Council

Who pays?
- Apportioned to the ratepayers in the City and Town on basis of their contributions

Who manages?
- Each town manages their treatment facility independently
- Both entities can review and reject proposed changes to the other’s infrastructure
What is it?
Shared service agreement

Authority:

What it does:
Authorizes DoD Secretary to enter into intergoverment support agreements with state/local governments

Examples:
Towns may seek to utilize capacity from wastewater facility on Joint Base Cape Cod

Key considerations:
- Must serve best interest of the state/local government and military
- Provides mutual benefits not achieved on own
- Benefit may be monetary or in-kind
- May be entered into on sole source basis
- May be for a term not to exceed 5 years
- Towns enter into partnership agreement with JBCC
NELLIS AIR FORCE BASE

Situation:
- Air Force was seeking to exchange underutilized assets in excess land
- City of North Las Vegas needed land to build a Water Reclamation Facility
- In exchange for leasing property, the Air Force received in-kind consideration in the form of a fitness center and water supply infrastructure

Why the solution was chosen:
- Mutual benefit to both Air Force and city
- Achieved a common purpose
- Enabled the city to build a 25 million gallon/day facility with ability to expand (double size) for future growth
NELLIS AIR FORCE BASE

Who decides?
- Strategic Asset Utilization Division, or CIU for Air Force negotiates agreement for Air Force
- Mayor of City of North Las Vegas for the city

Who pays?
- No money was exchanged
- In-kind benefit
- Exchange of Air Force’s excess land for receipt of use of fitness center and onsite infrastructure

Who manages?
- City of North Las Vegas built facilities in accordance with the lease agreement
INDEPENDENT WATER AND SEWER DISTRICTS

What is it?
Independent public instrumentality for establishing shared water/sewer systems

Authority:
M.G.L. c. 40N §§ 1-25

What it does:
One or more municipalities may join to form a regional water and sewer district

Requirement:
Town meeting vote required to establish/operate

Key considerations:
• Special unpaid district planning board for two or more towns forms to study advisability, construction and operating costs, methods of financing, issues report
• May submit proposed agreement for town meeting vote which shows:
  • Number, composition method of selection of members of board
  • Municipalities to be within district
  • Method of apportioning expenses
  • Terms by which town is admitted or separated from district
  • Detailed procedure for preparation/adoptions of budget
GREATER LAWRENCE SANITARY DISTRICT

The Situation:

• A 1963 report on Merrimack River pollution called for several facilities in key areas, including one for these four communities

Why the solution was chosen:

• A sewer district was among the recommendations in the 1963 report
GREATER LAWRENCE SANITARY DISTRICT

Who decides?
- Approved by Town Meeting and City Councils in each community

Who pays?
- Annual assessment to member communities, not users
  - Full bonding powers

Who manages?
- 7-member commission appointed on a population basis by member communities
WATER POLLUTION ABATEMENT DISTRICTS

What is it?
District designated by Mass DEP for one or more towns (or designated parts) established for the “prompt and efficient abatement of water pollution”

Key considerations:
- Adopt bylaws/regulations
- Acquire, dispose of and encumber real/personal property
- Construct, operate and maintain water pollution abatement facilities
- Apportion assessments on the member municipalities
- Issue bonds and notes, raise revenues to carry out the purposes of the district
- Member municipalities may then impose assessments on residents, corporations and other users in the district
- If town fails to pay its share, state may pay it for them out of other funds appropriated to that town

Authority:
Massachusetts Clean Waters Act (M.G.L. c. 21, §§28-30, 32, 35, 36).

What it does:
Creates district responsible for abatement plan

Types:
1. Town voted district
2. DEP voted district
UPPER BLACKSTONE WATER POLLUTION ABATEMENT DISTRICT

The Situation:
- Blackstone River was the recipient of industry toxins
- In 1968, the Legislature passed an emergency law for the immediate preservation of the public safety and welfare to create the Upper Blackstone Water Pollution Abatement District

Why the solution was chosen:
To enable the City of Worcester and the Towns of Auburn, Boylston, Holden, Leister, Millbury, Oxford, Paxton, Rutland, Shrewsbury and West Boylston to create a sewer district
UPPER BLACKSTONE WATER POLLUTION ABATEMENT DISTRICT

Who decides?
- City of Worcester by its City Council
- Towns of Auburn, Boylston, Holden, Leister, Millbury, Oxford, Paxton, Rutland, Shrewsbury and West Boylston by Town Meeting

Who pays?
- Apportioned among the city/towns on basis of their contributions to the flow entering the district’s facilities

Who manages?
- The District, which is governed by a Board comprised of one member from each district
INDEPENDENT PUBLIC AUTHORITY

What is it?
Could create separate legislative entity

Authority:
Mass. Legislature

What it could do:
Create construct that provides for funding mechanisms outside town meeting

What it could potentially do:
• Plan, build, finance, own and operate certain wastewater collection treatment, disposal and septage management assets and programs
• Research, develop, own and operate non-traditional wastewater treatment assets and programs
• Provide services for residential WW systems
• Plan and protect drinking water resources on Cape Cod through protection plans and policies
• Develop and enforce policies and procedures governing customer metering, billing and collection systems
MASSACHUSETTS WATER RESOURCES AUTHORITY (MWRA)

The Situation:

- Federal District Court in Massachusetts ruled that wastewater discharged into the Boston Harbor was in violation of the 1972 Federal Clean Water Act requirements.
- Court ordered MWRA to develop and implement a program to provide treatment of its wastewater as required by that law.

Why the solution was chosen:

In accordance with the court-ordered schedule, MWRA undertook a program of improvements to the wastewater collection and treatment facilities serving the metropolitan Boston area.
The Massachusetts Water Resources Authority (MWRA) was established by Chapter 372 of the Acts of 1984 to assume the duties and responsibilities of the Metropolitan District Commission’s Water and Sewer Division.

Who decides?
- The Massachusetts Water Resources Authority (MWRA) was established by Chapter 372 of the Acts of 1984 to assume the duties and responsibilities of the Metropolitan District Commission’s Water and Sewer Division.

Who pays?
- The Authority has its own powers to issue bonds and assessments to pay expenses.

Who manages?
- Board of Directors, consisting of 11 members, who are deemed to act on behalf of the independent authority to perform “an essential public function.”
### REGIONAL HEALTH DISTRICT

**What is it?**
Regional Board of Health

**Authority:**
M.G.L. c. 111 §27B

**What it does:**
Has all the powers and duties of boards of health/health department of a town
Includes wastewater regulatory powers of Board of Health

**Who may belong:**
One or more towns

### Key considerations:
- Can form by votes of two or more boards of health and their respective town meeting to delegate some/all of its legal authority to regional board
- Estimate budget each December, assessor then includes this amount in the tax levies each Board may order treasurer to pay town's share of cost/expense of the district
- Reimbursement from Commonwealth for “initial capital outlays”
- Subj. to appropriation – Requires matching funds from town
- HB 3822 – proposes removal of town meeting requirement
Quabbin Regional Health District

The Situation

• Quabbin Health District formed in response to issues occurring in Belchertown, Ware, and Pelham.
• Issues included a hazardous landfill, lack of oversight and consistency in providing required public health services, citizen complaints, septic issues, and concerns from MDPH and DEP around the communities’ inability to address state mandates.

Why the solution was chosen:
Joint effort by the towns to provide their town with quality public health professionals and services in response to problems.
Quabbin Regional Health District

Who decides?

- Established by town meeting vote by the towns of Belchertown, Ware and Pelham

Who pays?

- Towns of Belchertown, Ware and Pelham jointly

Who manages?

- Towns of Belchertown, Ware and Pelham jointly
HOW WELL DO EACH OF THESE MODELS MEET THE CRITERIA FOR EFFECTIVE COLLABORATION?

HOW WELL WOULD EACH OF THESE MODELS ADDRESS THE SITUATION ON THE LOWER CAPE AND CAPE COD?
COLLABORATION CHALLENGES
FROM SUB-REGIONAL MEETING 1

**Who decides?**
- Which solutions to implement and when and how to re-assess?
- Different levels of planning across towns (including approved CWMPs)
- Different town decision-making processes and publics
- Timeline required for building agreement
- Managing disagreement

**Who pays?**
- Coordinating multiple town funding approval processes
- Applying for and allocating off-Cape funding opportunities
- Differences in ability & willingness to pay
- Assigning responsibility for: capital funding, operation and maint., monitoring, data mgt., reporting
- Managing disagreement

**Who manages?**
- Preparing the watershed plan for permitting
- Building, operating, maintaining, monitoring, and reporting
- Ultimate responsibility for water quality outcomes
- Managing disagreement
Implementation

MONITORING
Mission:
To provide advice and guidance on appropriate monitoring protocols for technology efficiency and total maximum daily loads, while identifying a process for consolidating all available monitoring data in a central location and format.
Roles and Responsibilities:

- Establish performance monitoring protocols for technologies that may be a part of watershed permits in the future.
- Establish compliance monitoring protocols for meeting total maximum daily loads (TMDLs) in the water body.
- Establish process and structure for consolidating and cooperation of existing monitoring programs and data into a centralized location.
- Identify region-wide monitoring needs and develop proposals.
SECTION 208 AREA WIDE WATER QUALITY MANAGEMENT PLAN

MONITORING SUBCOMMITTEE

Invited Members:
DEP, EPA, Provincetown Center, WBNERR, Town Rep, Academics, SMAST, CCC, Institution/Agency
<table>
<thead>
<tr>
<th>Technology</th>
<th>Monitoring</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional Treatment</td>
<td>GWDP Influent/ Effluent WQ + quantity</td>
<td>Quarterly - three down &amp; one up gradient</td>
</tr>
<tr>
<td>Satellite Treatment Systems</td>
<td>GWDP Influent/ Effluent WQ + quantity</td>
<td>Quarterly - three down &amp; one up gradient</td>
</tr>
<tr>
<td>Cluster Treatment Systems</td>
<td>Board of Health performance monitoring similar but less rigorous than GWDP - varies based on conditions, groundwater monitoring may not be required</td>
<td>Varries</td>
</tr>
<tr>
<td>I/A Title 5 Systems</td>
<td>Influent/ Effluent WQ + quantity</td>
<td>Quarterly</td>
</tr>
<tr>
<td>Technology</td>
<td>Monitoring</td>
<td>Frequency</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>Constructed Wetlands</td>
<td>WQ samples inlet/outlet (N)</td>
<td>Monthly during growing season</td>
</tr>
<tr>
<td>Pond Dredging</td>
<td>WQ samples inlet/outlet of pond (N/P)</td>
<td>Quarterly</td>
</tr>
<tr>
<td>Salt Marsh Restoration</td>
<td>Area of restoration, wetland types (GIS and field confirmation)</td>
<td>Annually</td>
</tr>
<tr>
<td>Shellfish Bed Restoration</td>
<td>Area of restoration/density of shellfish/landings N content of shellfish Denitrification in benthic (N, DO) WQ samples (N)</td>
<td>Annually - composite 20 animals Annually - three locations Monthly during summer - three locations</td>
</tr>
<tr>
<td>Phytobuffer</td>
<td>WQ samples inlet/outlet (N)</td>
<td>Monthly during growing season</td>
</tr>
<tr>
<td>Fertigation Wells</td>
<td>Pumping volume/rate WQ samples (N)</td>
<td>Monthly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Monthly during summer</td>
</tr>
<tr>
<td>Shellfish Aquaculture</td>
<td>Annual landings from each grant N content in shellfish</td>
<td>Annually</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Annually - composite 20 animals</td>
</tr>
<tr>
<td>PRB</td>
<td>2 upgradient/2 downgradient wells – WQ samples (N, DO) Well in media - WQ samples (N, DO, N gas)</td>
<td>Quarterly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quarterly</td>
</tr>
<tr>
<td>Inlet Widening</td>
<td>Salinity measurements to confirm model WQ samples at sentinel station</td>
<td>Two tidal cycles</td>
</tr>
<tr>
<td>Eco Toilet Systems</td>
<td>Numbers/locations/types of installations WQ samples (N/P) - grey water</td>
<td>Running database</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quarterly - three locations per watershed</td>
</tr>
</tbody>
</table>
Adaptive Management

Selected Scenario: Alternative Technologies

- Fertilizer Management
- Const. Wetlands - GW
- Shellfish Aquaculture
- Inlet Widening
- IA Title 5 Systems
- Const. Wetlands - SW
- Stormwater BMPs
- Perm. React. Barrier
- Fertigation Wells
- Phytobuffer

Traditional Technologies

1. Priority Collection/ Sewer Areas
2. Supplemental Collection/ Sewer
3. Supplemental Collection/ Sewer

Embankment Water Quality
All materials and resources for the Lower Cape Sub Regional Group will be available on the Cape Cod Commission website:

http://watersheds.capecodcommission.org/index.php/watersheds/lower-cape
Lower Cape Sub Regional Group

MEETING 2
COLLABORATION CHALLENGES
FROM SUB-REGIONAL MEETING 1

Who decides?
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Who manages?
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Intermunicipal Agreements

Federal/Municipal public-public partnerships

Independent Water and Sewer Districts

Water Pollution Abatement Districts

Independent Authority

Regional Health District
### Intermunicipal Agreements
- **LENGTH OF AGREEMENT**: 25 years
- **ENABLING BODIES**: Boards of Selectmen
- **REQUIRES TOWN MEETING**: No*

*But agreement can be made subject to vote approval*

### Federal/Municipal Public-Public
- **LENGTH OF AGREEMENT**: 5 years
- **ENABLING BODIES**: Boards of Selectmen
- **REQUIRES TOWN MEETING**: No*

### Independent Water and Sewer Districts
- **LENGTH OF AGREEMENT**: No limit
- **ENABLING BODIES**: Town Meeting
- **REQUIRES TOWN MEETING**: Yes

### Water Pollution Abatement Districts
- **LENGTH OF AGREEMENT**: Dissolved by act of Legislature
- **ENABLING BODIES**: Boards of Selectmen
- **REQUIRES TOWN MEETING**: No*

### Independent Authority
- **LENGTH OF AGREEMENT**: Based on enabling legislation
- **ENABLING BODIES**: Requires new legislation
- **REQUIRES TOWN MEETING**: No*

### Regional Health District
- **LENGTH OF AGREEMENT**: No limit
  - Unless specified in the agreement
- **ENABLING BODIES**: Town Boards of Health and Town Meeting
- **REQUIRES TOWN MEETING**: Yes

* Town Meeting may be required appropriation of funds
CURRENT WATER RESOURCE MONITORING

- Groundwater Discharge Permits
- Center for Coastal Studies Stations
- Pleasant Bay Alliance Stations
- Massachusetts Estuaries Project Stations
- Coalition for Buzzards Bay Stations
- DEP Water Management Group Stations
- Ponds & Lakes Stewardship Ponds