



**CAPE COASTAL
CONFERENCE**

*Linking Science with Local
Solutions and Decision-Making*

Tackling Collaboration Challenges to Address Nitrogen Loading in Shared Watersheds

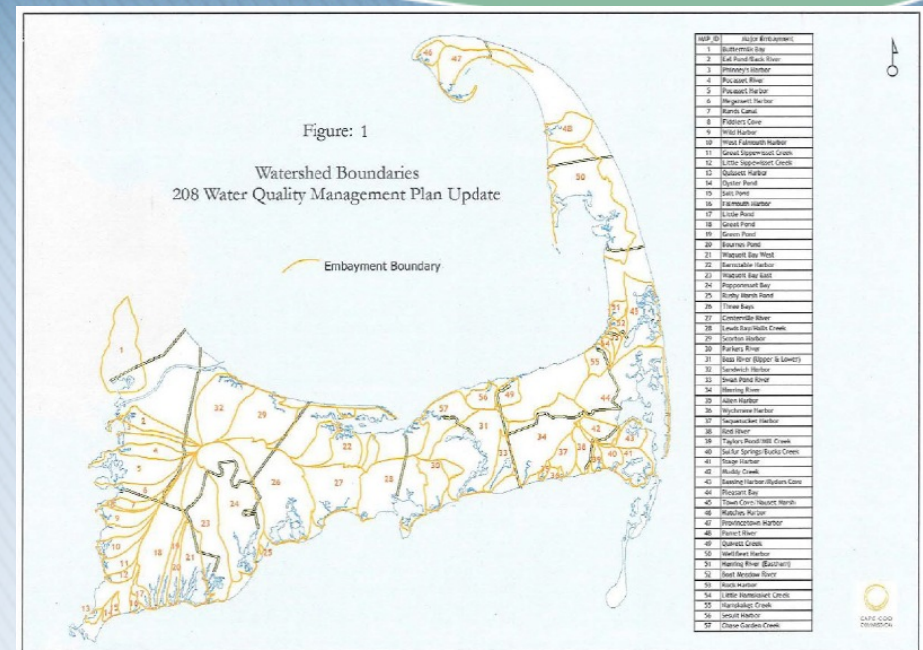
Presented By
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Outline

- Current situation
- Existing framework
- Challenges to collaboration
- Benefits of collaboration
- Concepts to enhance collaboration
- Questions & discussion

Current Situation

- Cape-wide
 - 53 watersheds to embayments
 - 46 watersheds in MEP
 - 30 shared watersheds
 - 15 towns



- Problem (nitrogen) is watershed-based
- Mechanisms to solve problems are municipal-based

Existing Framework

- Towns working through CWMPs on their own
- 2008 DEP Pilot Study for Inter-Municipal Watershed Planning
 - Popponesset Bay
 - Three Bays
 - Pleasant Bay

Inter-municipal Watershed Planning and TMDL Implementation to Restore Embayment Water Quality on Cape Cod:

Three Case Studies of Towns Sharing Coastal Watersheds



November 2008

Prepared for and submitted to:
The United States Environmental Protection Agency

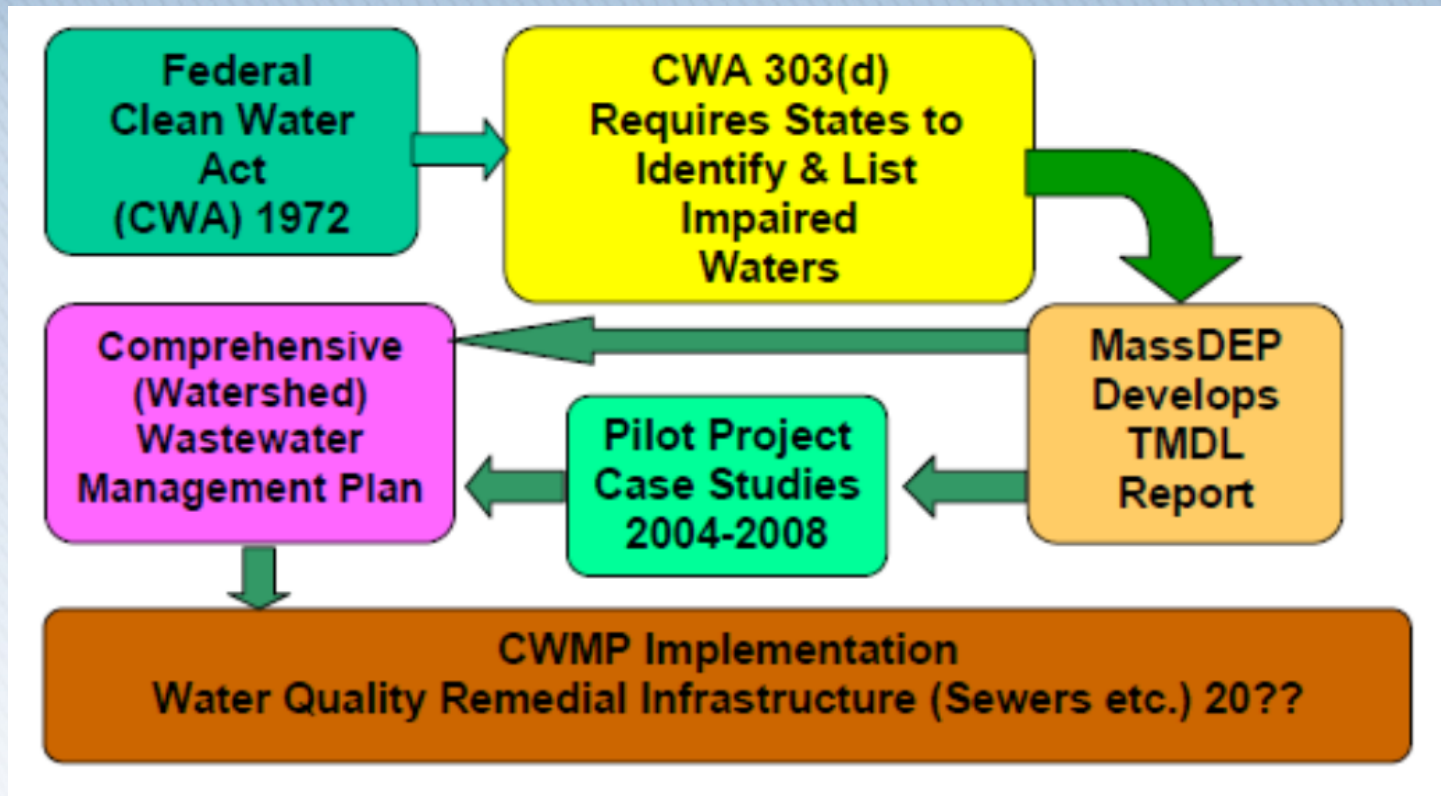


Massachusetts Department of
Environmental Protection



University of Massachusetts Dartmouth
School of Marine Science and Technology

Existing Framework



DEP Pilot Study Recommendations

- Many good recommendations:
 - Provide town-by-town breakdown of unattenuated and attenuated loads in MEP reports
 - Complete town-wide CWMPs
 - Complete watershed-based CWMPs
 - Evaluate multi-town watershed permits
 - Evaluate nitrogen trading
 - Establish criteria for when enforcement action would occur.
 - Accept innovative/demonstration projects

Challenges to Collaboration

- Lack of MEP reports and TMDLs
- Unclear allocation of responsibility
- No established timeline for progress
- Loss of independence and control
- Bad blood from past collaboration attempts
- Prioritizing local interests over watershed interests

Benefits of Collaboration

- Address problems on a watershed basis
- Needed to receive 0% interest loans
- Save money through:
 - Economies of scale
 - Proximity to treatment location
 - Proximity to coastal estuary
 - Putting sewers in most densely developed areas in watershed regardless of town
 - Access to more and better effluent disposal sites

Concepts for Enhancing Collaboration

1. Inter-Municipal Agreements
2. Wastewater Management Districts
3. Watershed Permitting
4. Nitrogen Trading
5. Watershed-Specific Regionalization Studies

1. Inter-municipal Agreements

- Legal agreements which allow municipalities to share costs, savings, risks and benefits of a project
 - Schools
 - Solid waste transfer stations
 - Water supply interconnections
 - Sewage and septage treatment
- Defines purpose, term, funding, dispute resolution, termination and dissolution provisions.

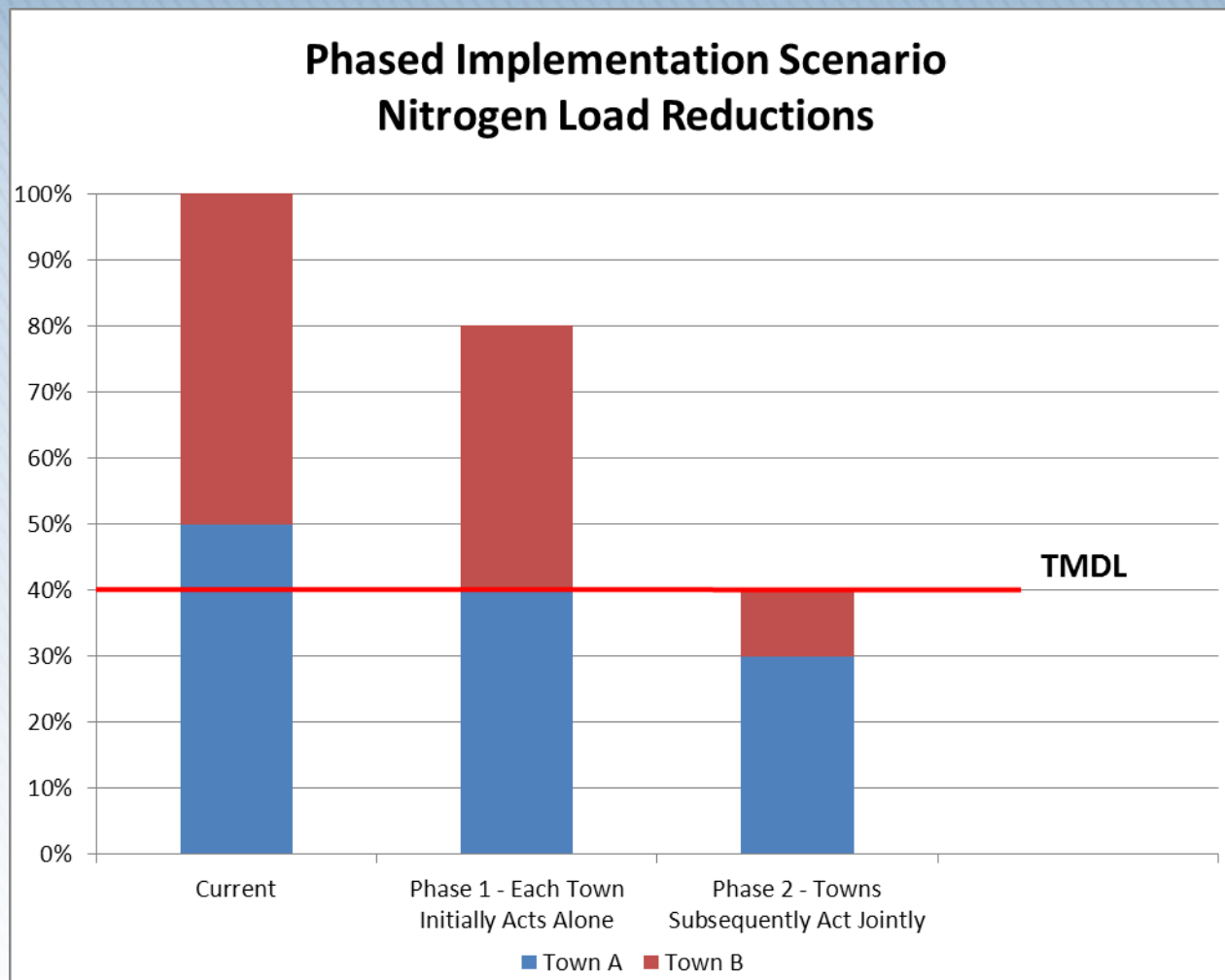
1. IMAs for Shared Watersheds

- Participants need to:
 - Have shared interests
 - Understand their allocation of responsibility
 - Understand their needs, options and costs
 - Have an engaged and informed stakeholder group
 - Receive equitable benefits

1. Suggested Principles for IMAs

- DEP assigns responsibility through the TMDL based on pro-rata impacts to estuary (*i.e., Attenuated Load*).
- Each Town commits to:
 - address its share of the load.
 - explore joint projects.
 - implement joint projects where it is mutually beneficial and cost-effective.
 - bring articles to its Town Meetings.
- IMA allows for innovation/demonstration projects and phased implementation.

1. Phased Implementation



➡ **TIME**

2. Wastewater Mgmt. Districts

- 2004 Barnstable County Tools Report
- One entity responsible for management in a watershed or collection of watersheds
- Represented by towns equally or in proportion to impact on watershed

**ENHANCING WASTEWATER MANAGEMENT
ON CAPE COD:
PLANNING, ADMINISTRATIVE
AND LEGAL TOOLS**

**Report
To
Barnstable County**

July 2004



2. Wastewater Mgmt. Districts

- Key issues
 - What will district be responsible for?
 - What will be the geographic area of the district?
 - How will the district funds its activities?
 - How will the district coordinate with town functions?
 - How will towns be represented in the district?
- Enactment by new special legislation or current provisions of MGL. Approval at town meetings. Process could take 1 year.

2. Wastewater Mgmt. Districts

Illustrative Examples in Tools Report

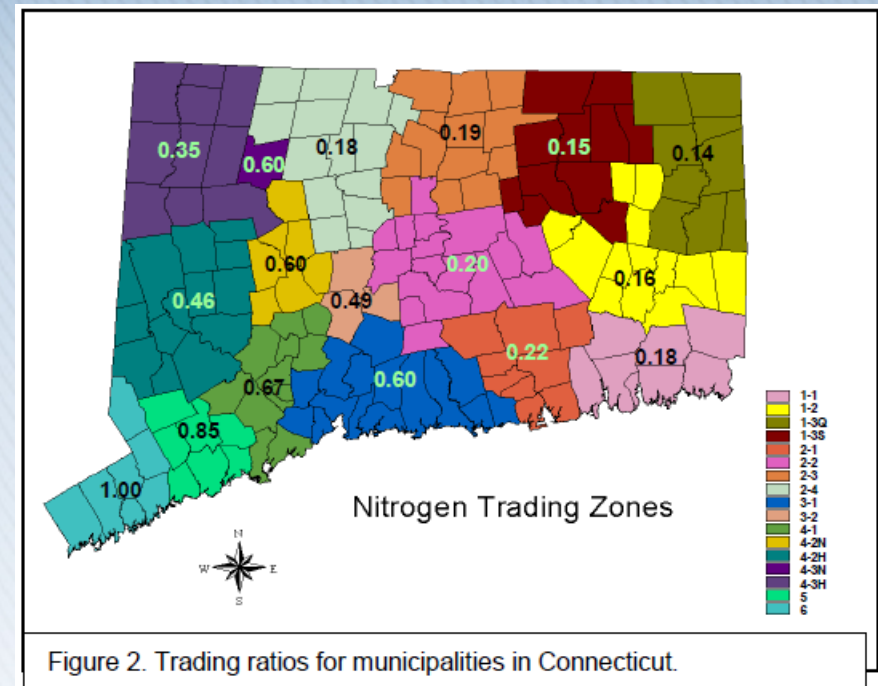
TABLE 5-2
RESPONSIBLE PARTIES: WATERSHED-BASED DISTRICT SPANNING 3 TOWNS
(NO CENTRALIZED FACILITIES)

Function	Individual On-Site Systems		Cluster Systems	Satellite Plants	Centralized Systems
	Title 5	Enhanced			
Planning	BOH, County, Property Owner	BOH, District, County, Property Owner	District	District	Not Applicable
Land Acquisition	Property Owner	District, Property Owner	District	District	Not Applicable
Permitting	Property Owner	District, Property Owner	District	District	Not Applicable
Design	Property Owner	District, Property Owner	District	District	Not Applicable
Construction	Property Owner	District	District	District	Not Applicable
Operation	Property Owner	District	District	District	Not Applicable
Monitoring	BOH, County, Property Owner	District	District	District	Not Applicable
Enforcement	Town, County, State	District	District	State	Not Applicable
Funding	Property Owner, County	District	District	District	Not Applicable

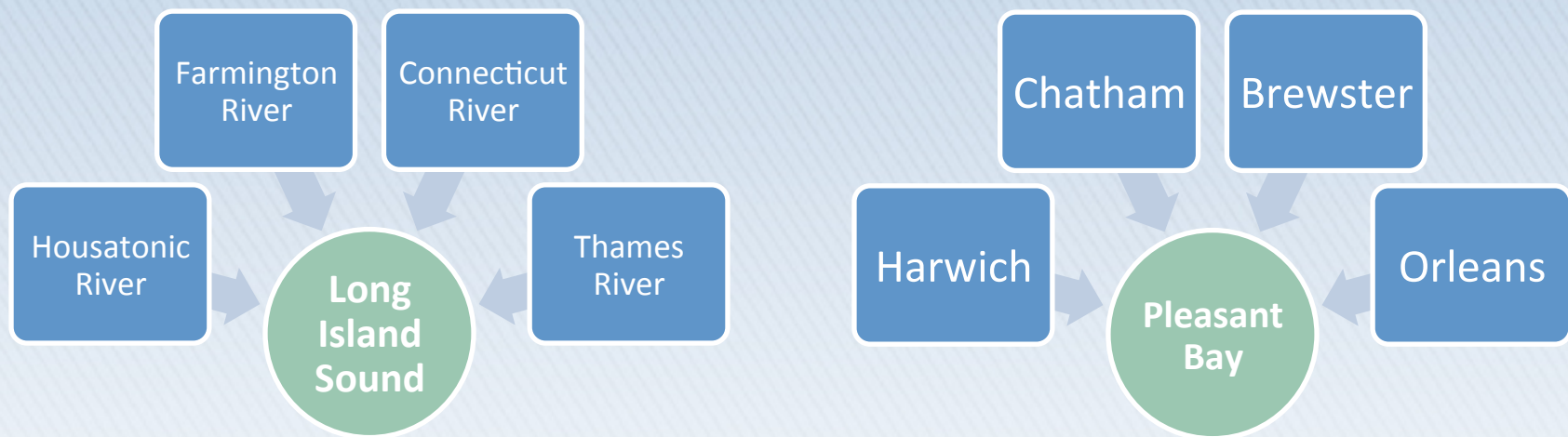
Note: Responsible party may hire one or more service providers to carry out given function (e.g., District could hire County to monitor performance of enhanced treatment systems).

3. Watershed Permitting

- Long Island Sound TMDL issued December 2000
 - Significant areas of hypoxia and anoxia in LI Sound
 - Required 58.5% TN removal
 - 7-phase implementation plan
 - 3 phases prior to TMDL
- Nitrogen General Permit issued to all POTWs
 - Annual load reductions
 - TMDL compliance by 2014
- Nitrogen Trading Program to incentivize upgrades



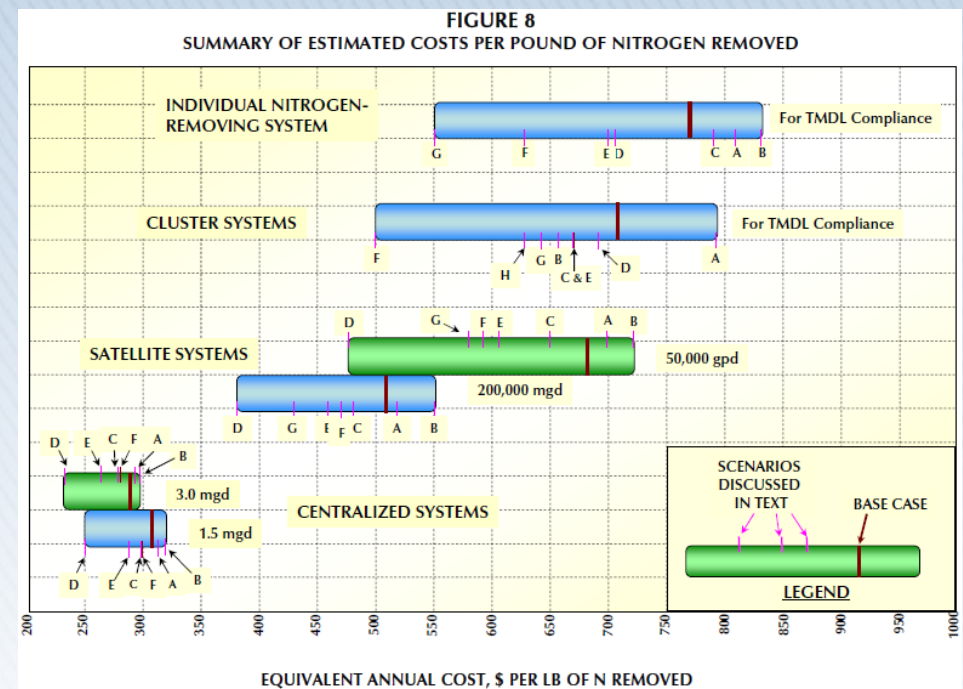
3. Watershed Permitting



Why can't this work on Cape Cod?

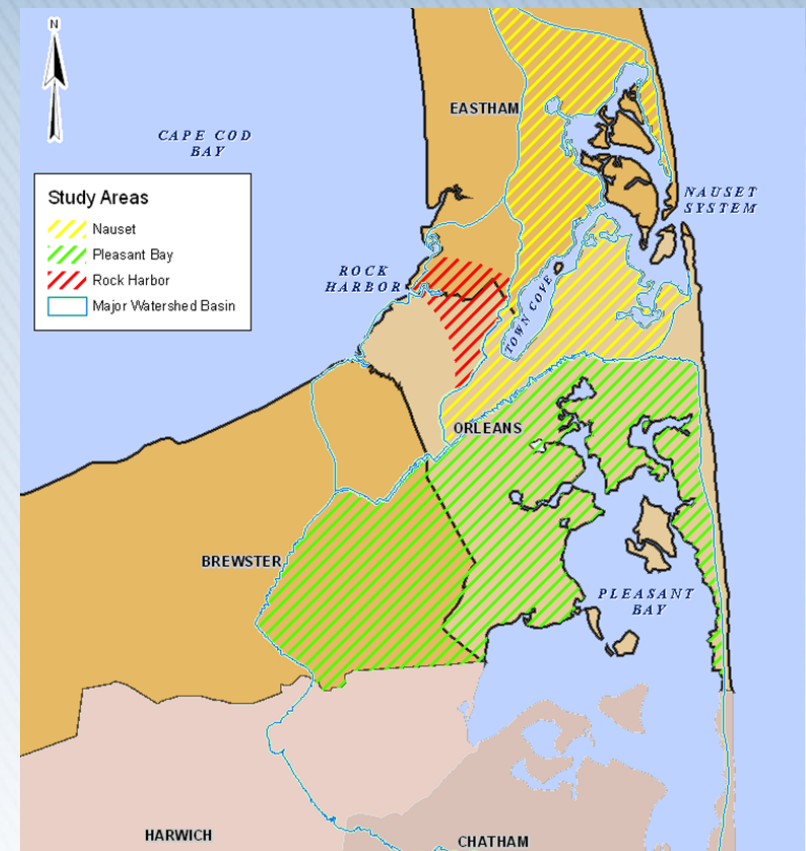
4. Nitrogen Trading

- Must have a supply and a demand
- What is the cost per pound of nitrogen removed?
- 2010 Barnstable County Cost Report
- Would allow for communities to choose how to address their share of the nitrogen load.



5. Watershed-Specific Regionalization Studies

- Orleans-Brewster-Eastham Regionalization Study
- Alternatives
 - Each town acts alone
 - 2-town joint solution
 - 3-town joint solution
- Allocation of Costs
 - 7 methods to allocate costs and savings
- Conclusions
 - Save 6% to 9% on Capital Cost
 - Save 18% to 25% on O&M
 - \$330 to \$430/lbNrem acting alone
 - \$300 to \$320/lbNrem acting jointly



5. Watershed-Specific Regionalization Studies

- 208 Plan Update will address watershed-specific regionalization studies Cape-wide.
- Elements to further enhance collaboration and progress:
 - Reviewing affordability and developing a detailed financing/funding plan to include grant funding
 - Defining the need (water quality improvement) and the benefits (job creation, tax base increase) for the general public

Closing Remarks

- Collaboration has been constrained due lack of concurrent information. Collaboration will be enhanced by a regulatory framework and completion of all MEP reports.
- IMAs are used often on Cape Cod and could play a significant role in collaboration.
- Wastewater management districts and watershed permitting/nitrogen trading should be explored in detail by DEP and/or CCC.
- The 208 Plan Update should significantly improve the ability to “turn the corner”.



Questions & Discussion

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