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BARNSTABLE, MASSACHUSETTS 02630

(508) 362-3828 • Fax (508) 362-3136 • www.capecodcommission.org



CAPE COD
COMMISSION

Agenda

**Section 208 Area-Wide Water Quality Management Plan Update
Stakeholder Meeting 1
July 14, 2013
4pm
Upper Cape
Mashpee Public Library**

1. Introduction
2. 208 Area-Wide Water Quality Management Plan Introductions
3. Watershed Planning Process
4. Questions
5. Workshop Breakout

If you are deaf or hard of hearing or are a person with a disability who requires an accommodation, contact the Cape Cod Commission at 508-362-3828 or TTY 508-362-5885.



Section 208

Area-Wide Water Quality Management Plan Update

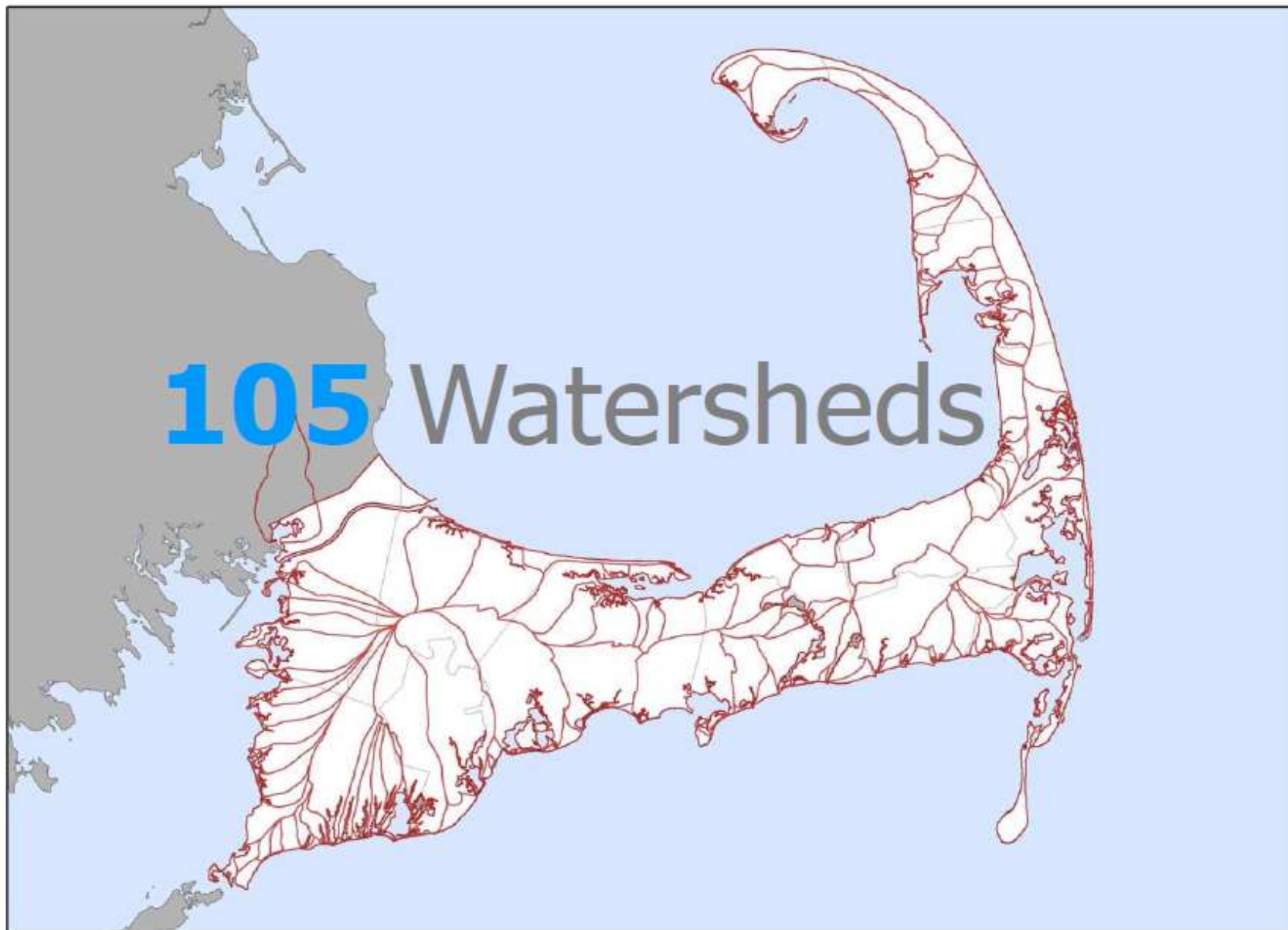
Upper Cape Area

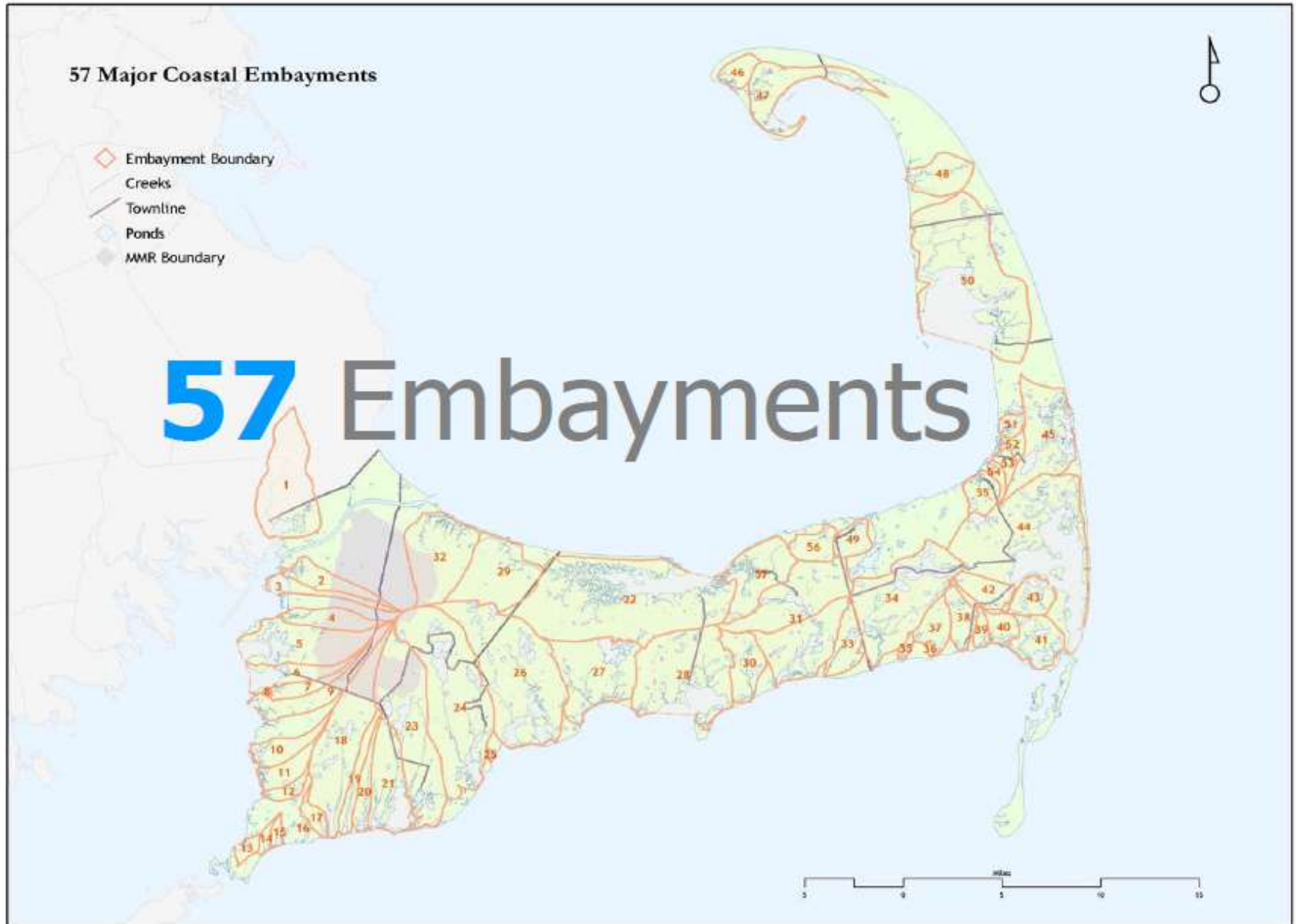


CAPE COD
COMMISSION

Why Are We Here?







1 Sole Source Aquifer



NO Single Solution

No "silver bullet"
to fit multiple
needs:

**Traditional Gray
Infrastructure**

AND

**Green Infrastructure &
Alternative Approaches**

STRATEGIES:

Site Scale

"Subregional Meetings: 208 Update Introduction Meeting"

Neighborhood

Watershed

Cape-Wide

SOURCES: NITROGEN POLLUTION



- Septic System Title 5
- Innovative Septic Title **IA**
- Toilets: Urine Diversion
- Toilets: Composting
- Toilets: Packaging
- Low Flow Fixtures
- Grey Water Reuse
- Eco-Machines **EM**
- Wetlands: Vertical S
- Phyto-buffer: S
- Permeable React Bar. **PRB**

DISCHARGE

SECONDARY, TERTIARY & DISCHARGE

- Sewers
- Satelite Treatment
- Cluster Treatment

- Eco-Machines **EM**
- Wetlands: Surface Flow
- Wetlands: Vertical LG
- Phyto-irrigation

- Sewers
- Centralized Treatment
- Culvert Widening
- Dredging

- Phyto-buffer: LG
- Permeable React Bar **PRB**
- Shellfish Aquaculture
- Seaweed Farming
- Eco-Restorer/
Floating Wetland
- Nutrient Harvesting Gabi **[N-P]**

- Biofiltration Strips
- Green Roofs

- Wetlands: Surface Flow
- Wetlands: Vertical LG

- Septic: Regulation
- Toilets: Regulation
- H2O Reuse: Regulation
- Low-Flow Fixtures: Reg
- Growth Management
- Alt. Discharge Options

- Landscape Guidelines
- Fertilizer Policies
- Mun. Maintenance Regs

PREVENTION REDUCTION REMEDIATION

Stakeholder Engagement

CAPE-WIDE

Advisory Board
Communications Strategy
Communications Campaign
Benchmarking & Assessing
Program Branding

Regulatory
Coordination

Technical Advisory
Committee

WATERSHED

Stakeholder Communication
Workshop Facilitation
Capacity Building
Watershed Status Portal

watersheds.capecodcommission.org

Project Team

Consultants:

AECOM, Consensus Building Institute
Emerson College, Engagement Game Lab,
Offshoots Productive Landscapes

Staff:

Cape Cod Commission

Advisory Board

June 18th – First Meeting

Members:

Robert Churchill Churchill Associates

Robert Lawton former Yarmouth Town Administrator

Wendy Northcross CEO of the Cape Cod Chamber of Commerce

Sheila Vanderhoef Eastham Town Administrator

Virginia Valiela Member- Falmouth Water Quality Mngmt Committee

Robin Wilkins former Town of Harwich Selectman

Regulatory, Legal & Institutional Work Group

Members:

Cape Cod Commission

MassDEP

U.S. EPA

U.S. Army Corps of Engineers

Financial/Regulatory Goals

Work with state and federal partners for:

- Regulatory flexibility
- Funding supporting 50% of capital costs

New Tools/Resources

The Commission is developing a set of innovative tools to assist with decision making.

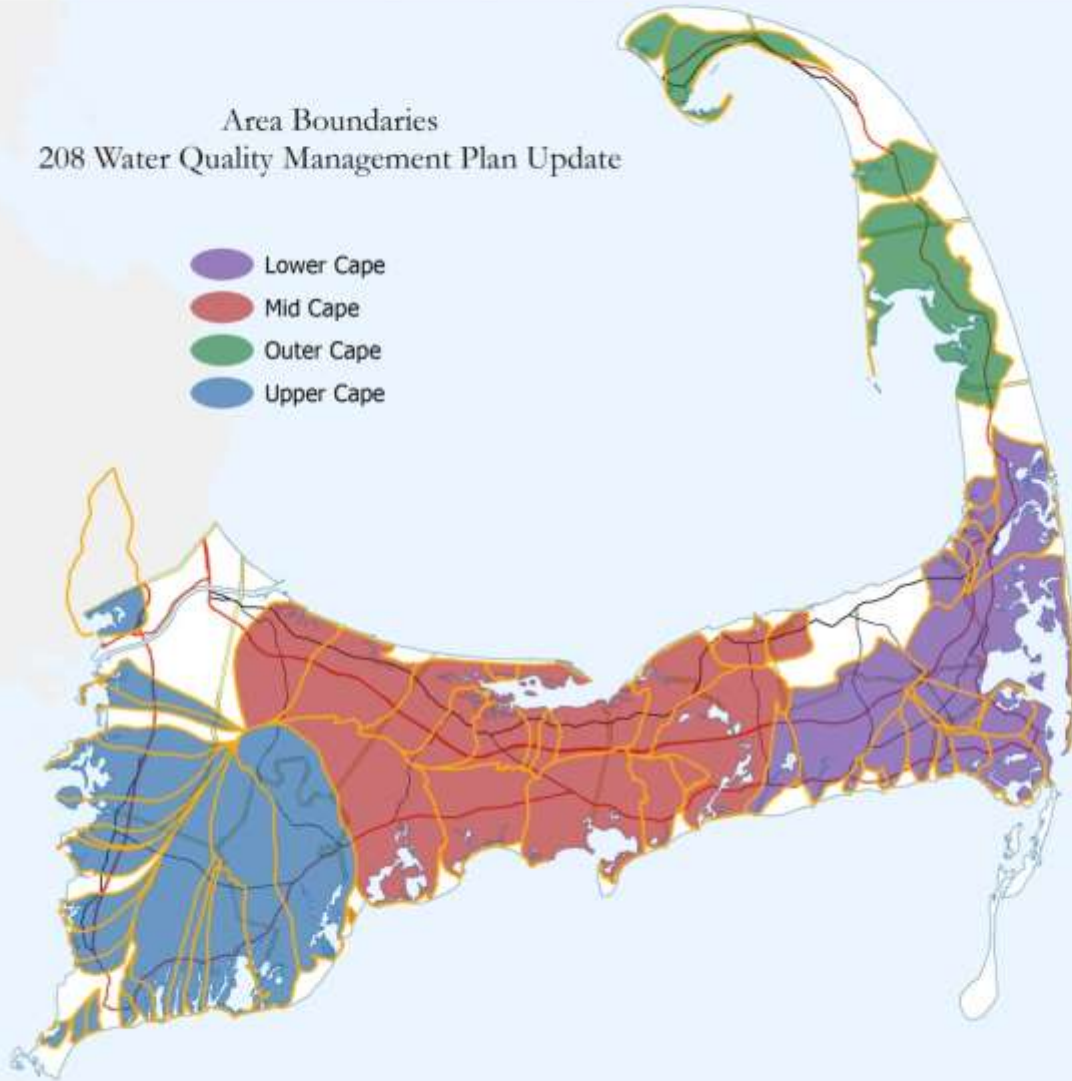
- Watershed MVP
- Systems Dynamics Model
- Green Infrastructure Site Selection Process
- Game-based Planning

Upper Cape Area Manager

Marie Cannon, AECOM

Area Boundaries
208 Water Quality Management Plan Update

- Lower Cape
- Mid Cape
- Outer Cape
- Upper Cape



SECTION 208 WATER QUALITY PLAN UPDATE



Upper Cape Area



Bourne

Sandwich

Buzzards Bay Group

SHARED BY: Falmouth, Bourne, Sandwich

Embayment Watersheds:

- BUTTERMILK BAY – Bourne
- PHINNEY'S HARBOR/BACK RIVER – Bourne, Sandwich
- POCASSET RIVER – Bourne, Sandwich
- POCASSET HARBOR – Bourne, Sandwich
- MEGANSETT HARBOR – Bourne, Falmouth, Sandwich
- SANDS CANAL/TIDDLE COVE – Bourne, Falmouth, Sandwich
- WILD HARBOR – Bourne, Falmouth, Sandwich
- WEST FALMOUTH HARBOR – Falmouth
- GREAT SIPPWISSET CREEK – Falmouth
- LITTLE SIPPWISSET MARSH – Falmouth

Direct Ocean Discharge

Falmouth Wastewater Treatment Plant

Falmouth

Woods Hole Group

SHARED BY: Falmouth

Embayment Watersheds:

- QUSETT HARBOR – Falmouth
- OYSTER POND – Falmouth
- SALT POND – Falmouth

Falmouth Fingers Group

SHARED BY: Falmouth, Sandwich

Embayment Watersheds:

- FALMOUTH INNER HARBOR – Falmouth
- LITTLE POND – Falmouth
- GREAT POND – Falmouth, Sandwich
- GREEN POND – Falmouth
- SOURNES POND – Falmouth

Waquoit Bay & Popponesset Bay

SHARED BY: Barnstable, Falmouth, Mashpee, Sandwich

Embayment Watersheds:

- WAQUOIT BAY – Falmouth, Mashpee, Sandwich
- POPPONWESSET BAY – Barnstable, Mashpee, Sandwich

Mashpee



Watershed Groups & Subwatersheds

WAQUOIT BAY & POPPONESSET

SHARED BY: Barnstable, Falmouth, Mashpee, Sandwich

Embayment Watersheds:

- **WAQUOIT BAY** – Falmouth, Mashpee, Sandwich
- **POPPONESSET BAY** – Barnstable, Mashpee, Sandwich

BUZZARDS BAY GROUP

SHARED BY: Falmouth, Bourne, Sandwich

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- **POCASSET HARBOR** – Bourne, Sandwich
- **MEGANSETT HARBOR** – Bourne, Falmouth, Sandwich
- **RANDS CANAL/FIDDLER COVE** – Bourne, Falmouth, Sandwich
- **WILD HARBOR** – Bourne, Falmouth, Sandwich
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- **GREAT SIPPEWISSET CREEK** – Falmouth
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FALMOUTH FINGERS GROUP

SHARED BY: Falmouth, Sandwich

Embayment Watersheds:

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- **LITTLE POND** – Falmouth
- **GREAT POND** – Falmouth, Sandwich
- **GREEN POND** – Falmouth
- **BOURNES POND** – Falmouth

WOODS HOLE GROUP

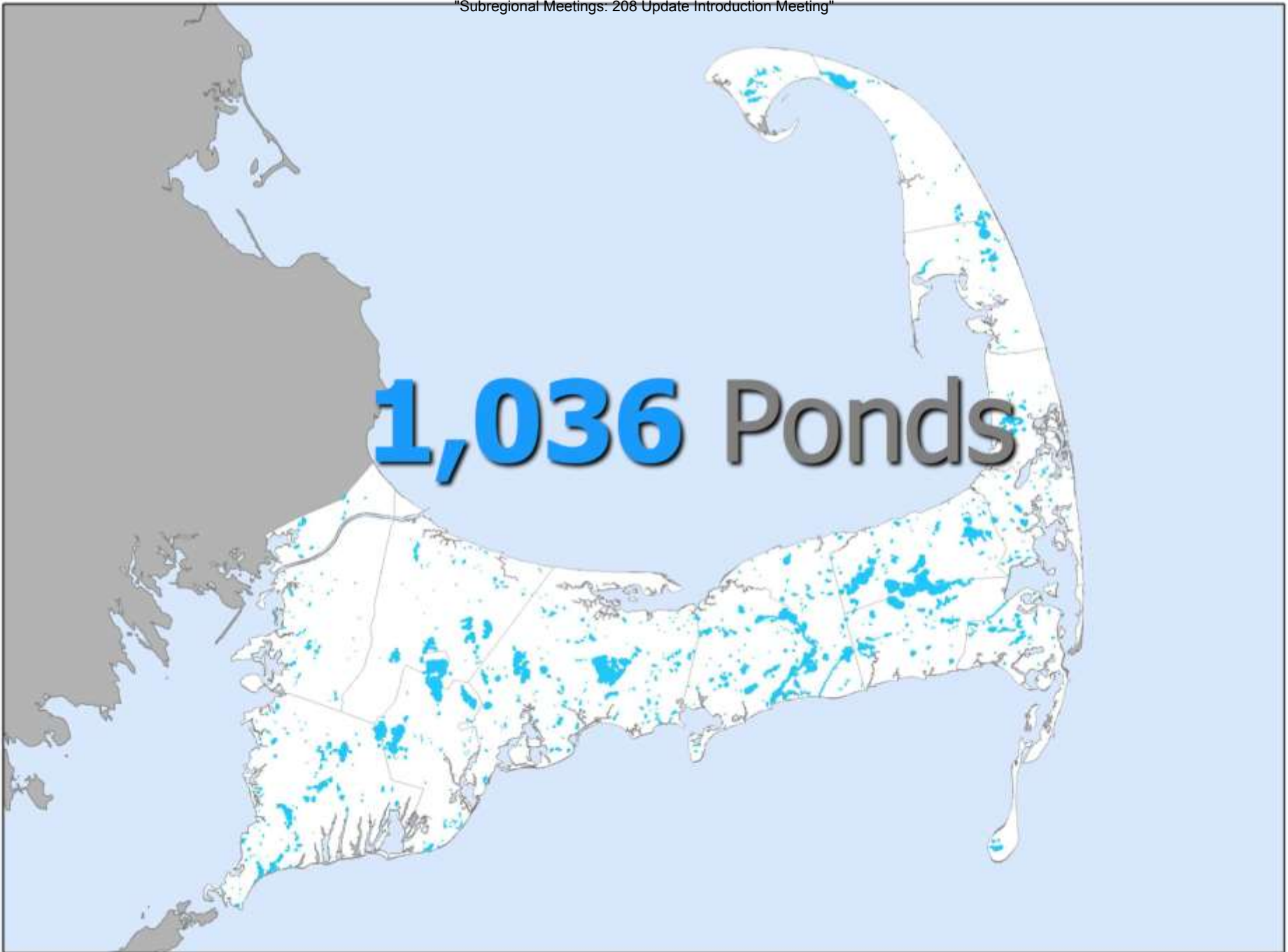
SHARED BY: Falmouth

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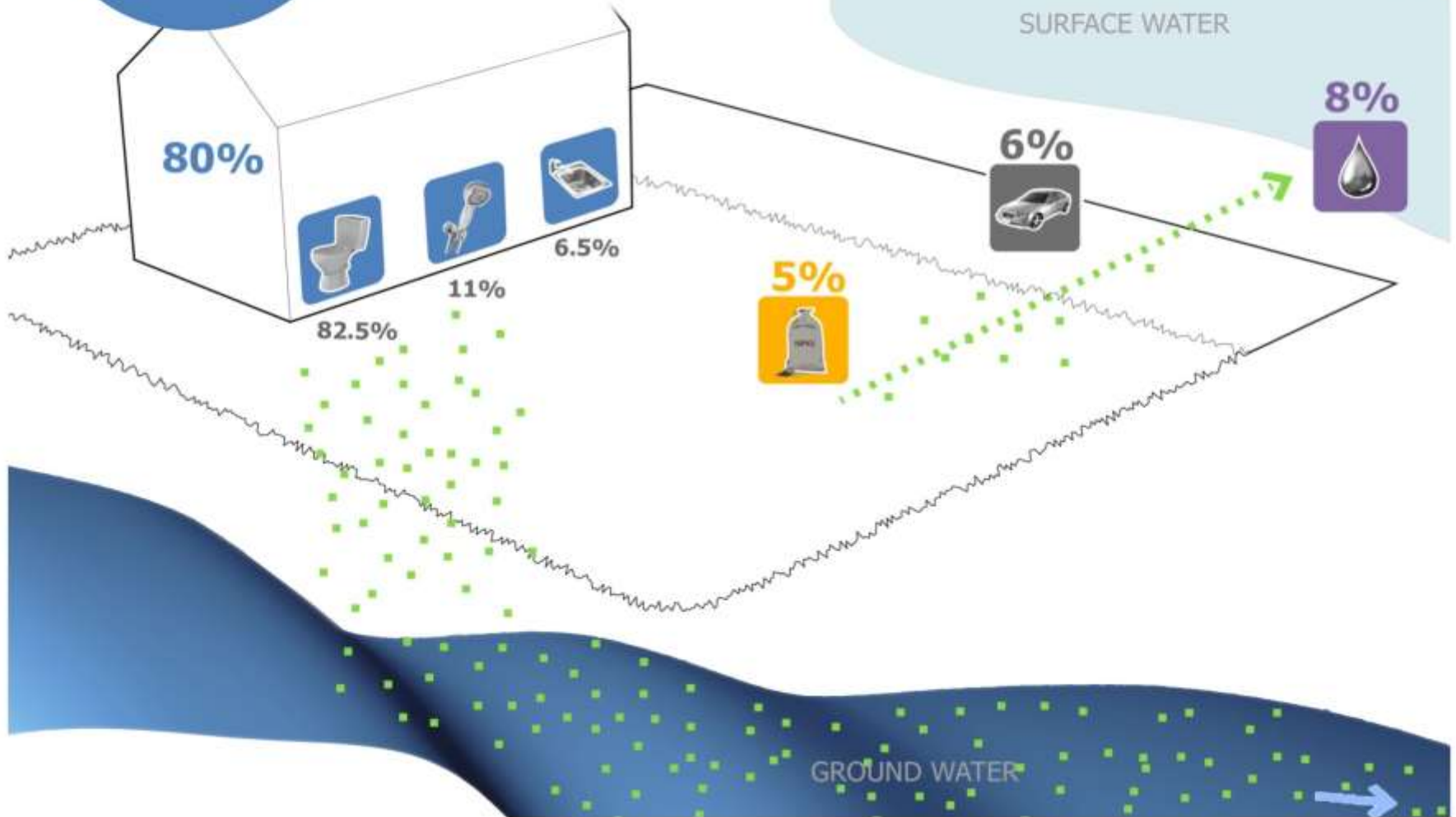
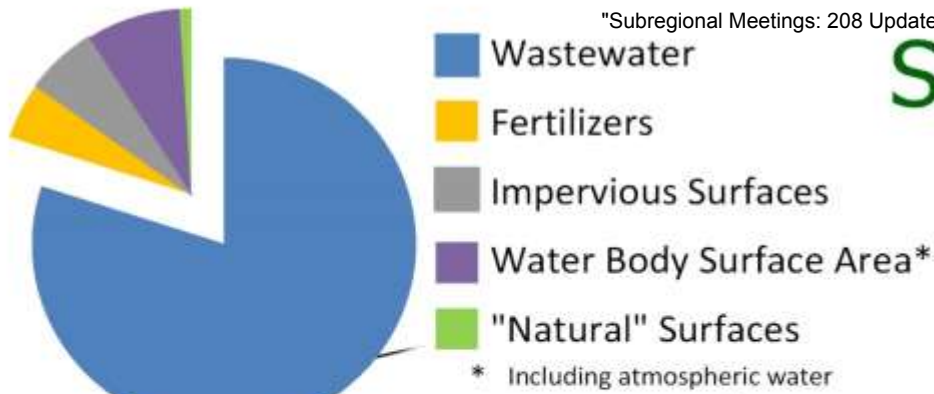
- **QUISSETT HARBOR** – Falmouth
- **OYSTER POND** – Falmouth
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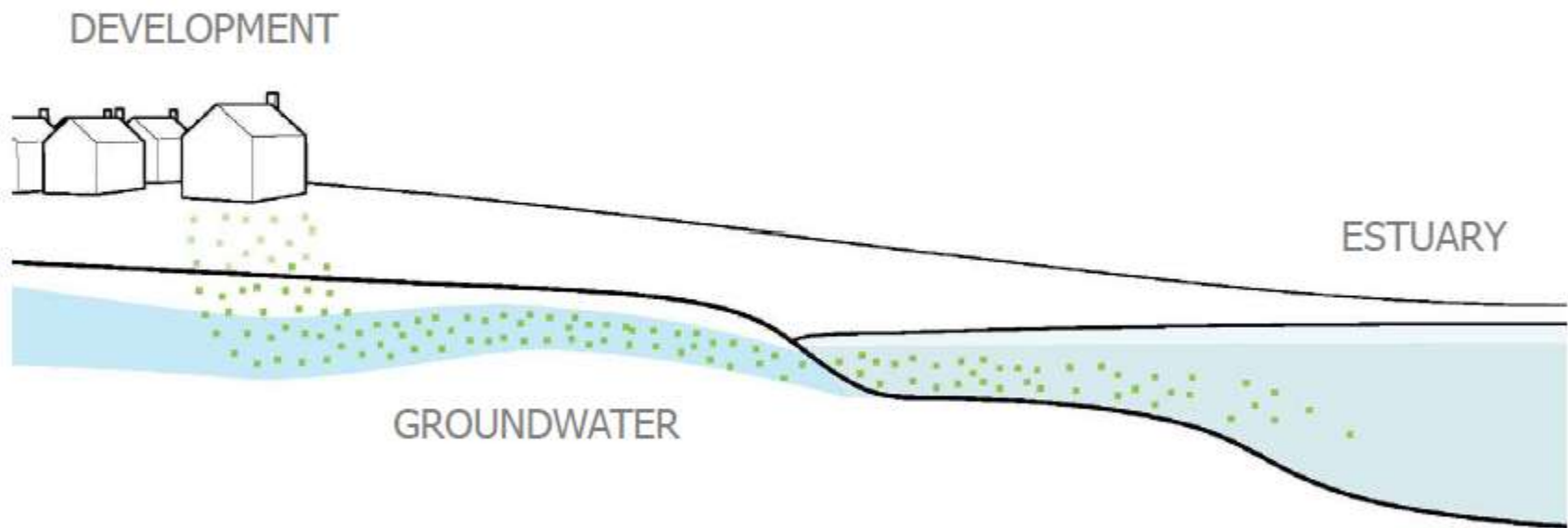


1,036 Ponds

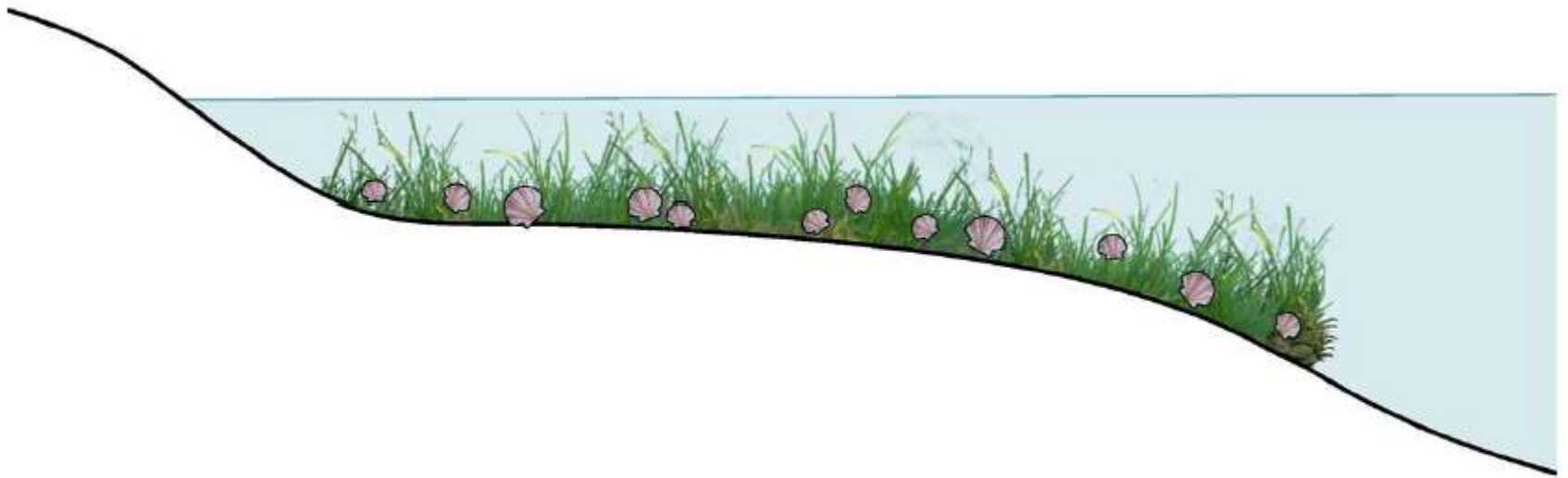


Sources of Nitrogen

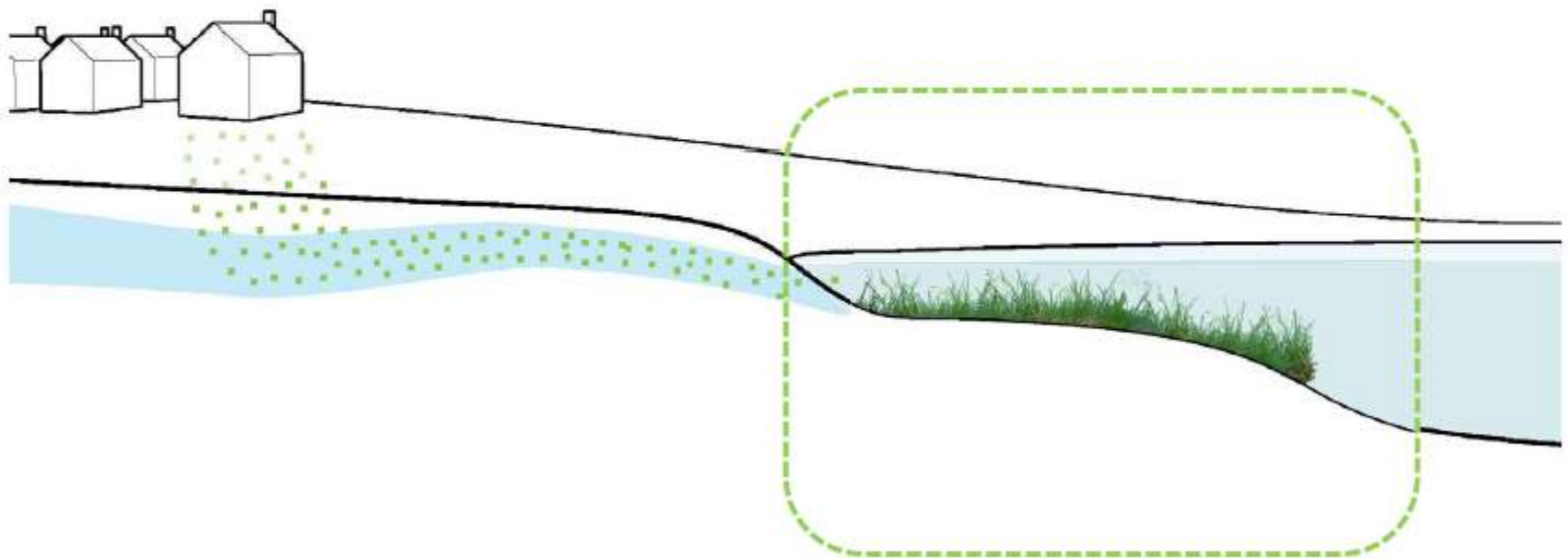




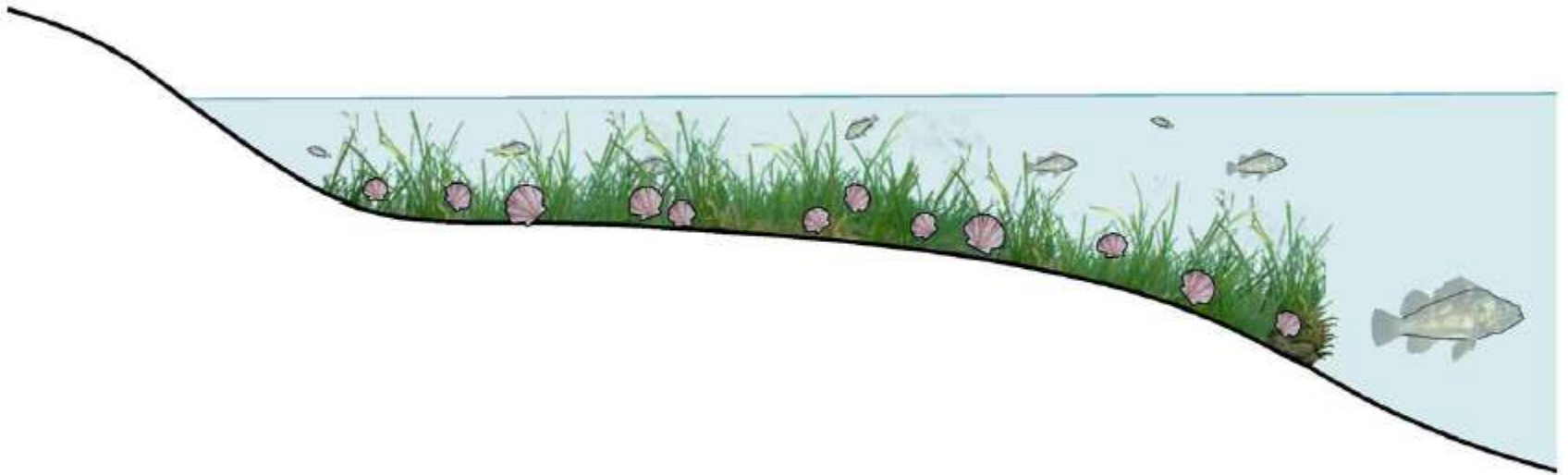
The Nitrogen Story



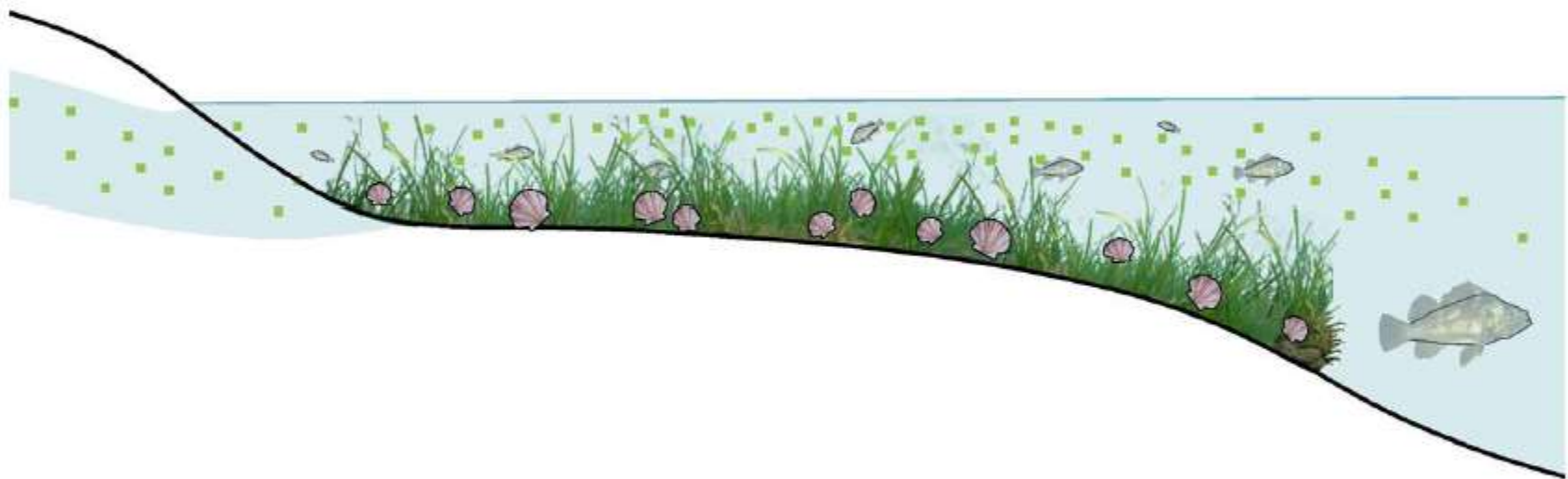
Healthy Shoreline



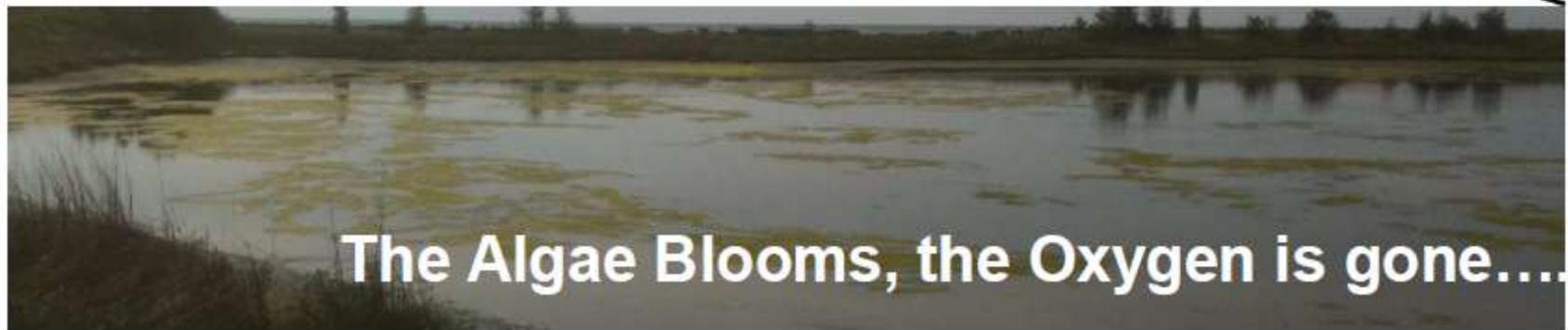
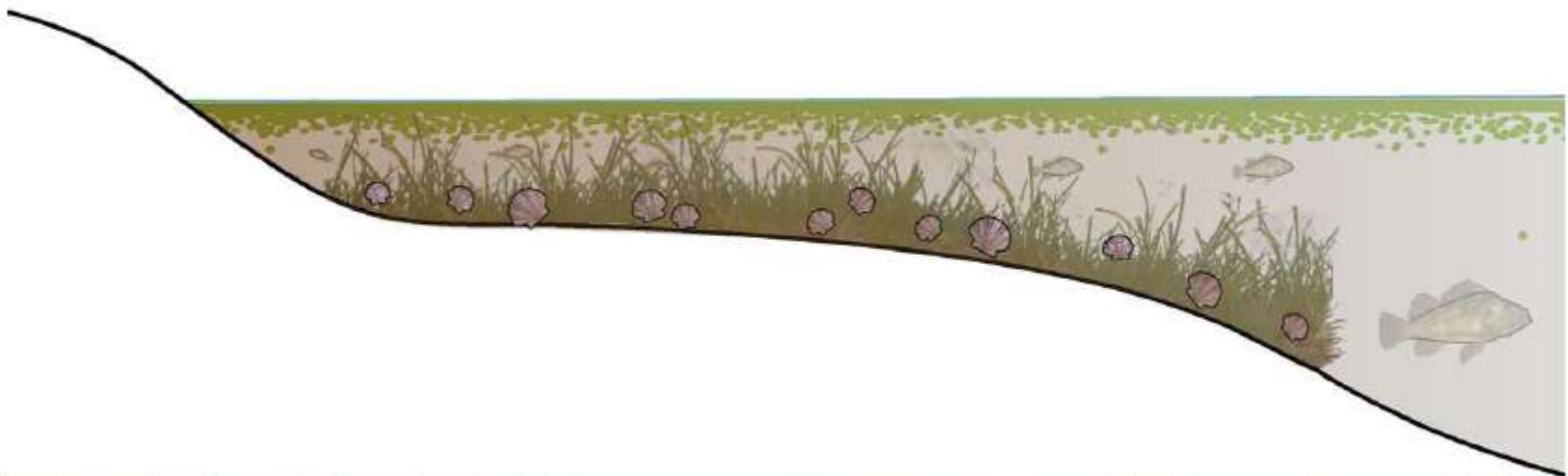
Where Groundwater Meets the Estuaries....



A Diverse Habitat



The Nitrogen Enters from Groundwater....

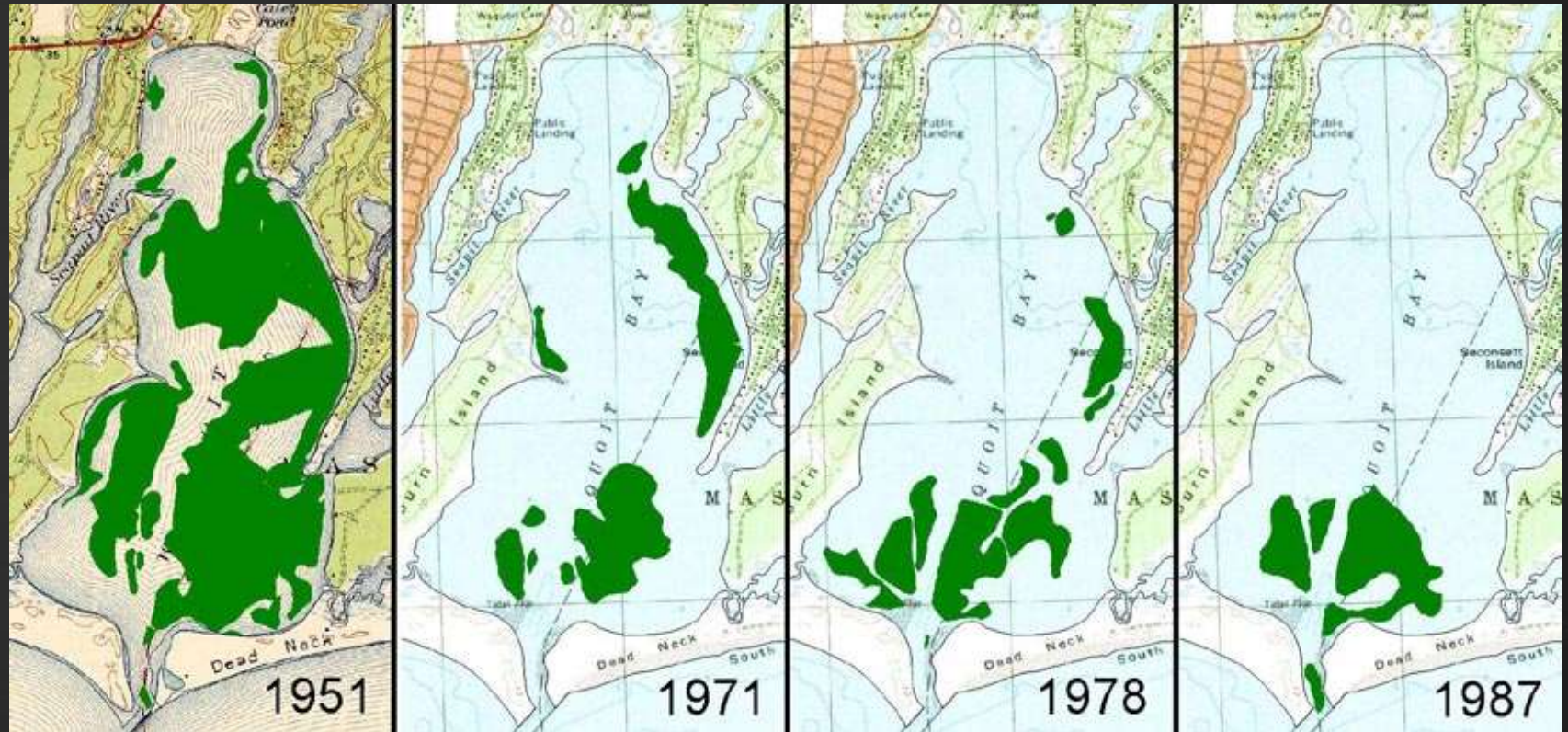


The Algae Blooms, the Oxygen is gone....

Bournes Pond, Falmouth – May 2013



Coastal Water Quality Problem



Reduction in eel grass

Waquoit Bay - Falmouth and Mashpee

Approach to the 208 Plan Update

- **Update to 1978 Plan**
- **Watershed-Based**
- **Stakeholder Engagement – Cape-Wide & Watershed-Based**
- **Maximize Benefits of Previous Planning**
- **No Optimal Solution. Diverse Technologies**
- **Adaptive – Technology Development, Pilot Projects, Progress Monitoring**
- **Coordination with MassDEP and U.S. EPA**

Outreach

208 Town Meetings

Discussion

- 208 watershed planning process
- Status of local planning to date

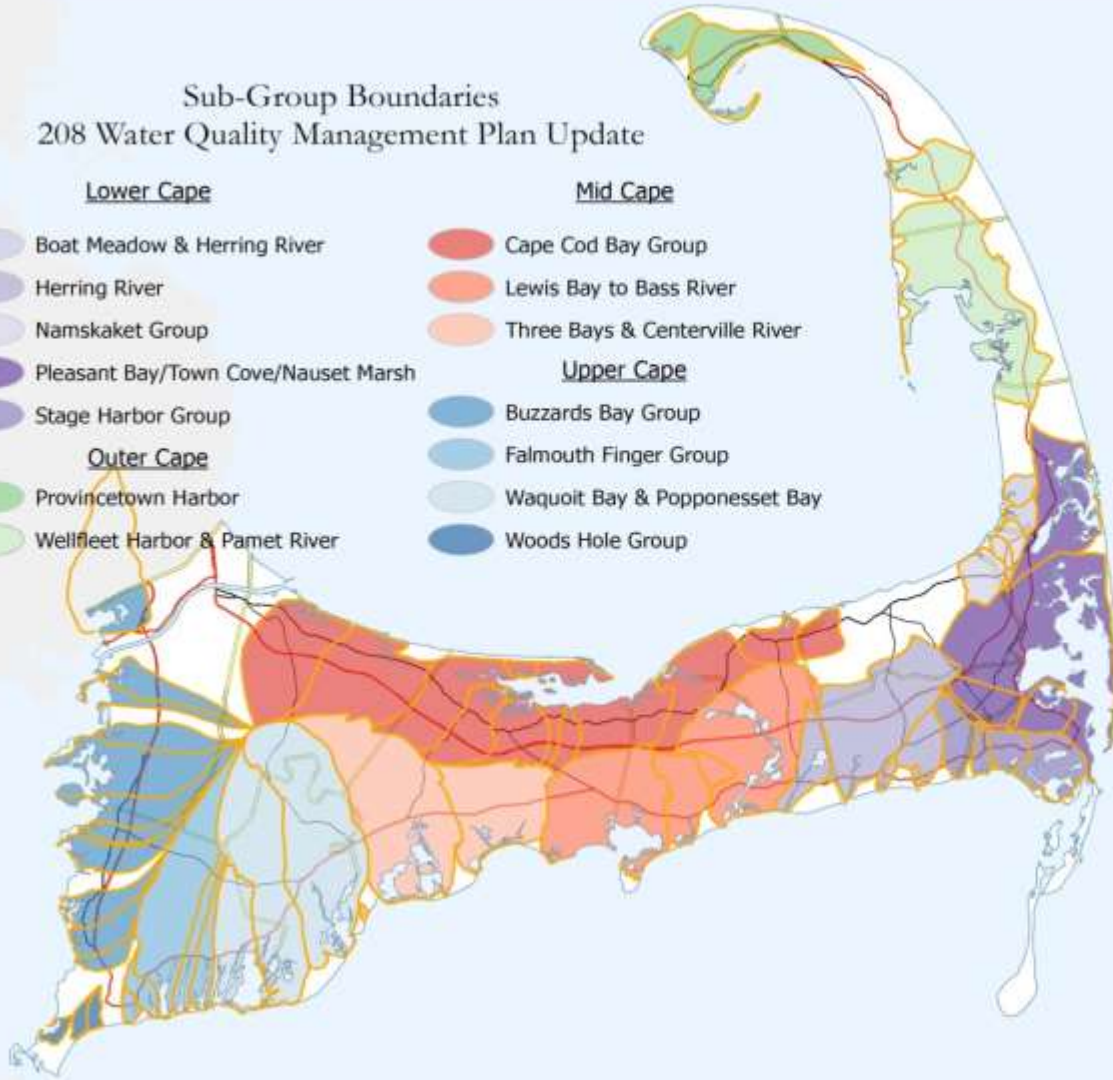
Public Meetings – Work Plan & Project Goals

- Outer Cape – 7/15
- Upper Cape – 7/16
- Lower Cape – 7/17
- Mid Cape – 7/18

Sub-Group Boundaries 208 Water Quality Management Plan Update



- | | |
|-------------------------------------|--------------------------------|
| <u>Lower Cape</u> | <u>Mid Cape</u> |
| Boat Meadow & Herring River | Cape Cod Bay Group |
| Herring River | Lewis Bay to Bass River |
| Namskaket Group | Three Bays & Centerville River |
| Pleasant Bay/Town Cove/Nauset Marsh | <u>Upper Cape</u> |
| Stage Harbor Group | Buzzards Bay Group |
| <u>Outer Cape</u> | Falmouth Finger Group |
| Provincetown Harbor | Waquoit Bay & Popponesset Bay |
| Wellfleet Harbor & Pamet River | Woods Hole Group |



Working Group Participants

- Target of 15-20 members per working group
- 8-10 Designated Seats
 - Local Elected Officials
 - Wastewater Committee Member
 - Town Professional Staff
 - Local Business Owner/Operator
 - Local Environmental Organization
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- 5-7 open seats for each group
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Stakeholders Should Expect to...

- Represent and articulate the diverse range of interests and concerns they represent.
- Seek input from constituents, and keep them informed about Working Group proceedings.
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Stakeholder Workshops

Three meetings for each of 14 Watershed Groups

MEETING 1:

Baseline Conditions & Impairments

MEETING 2:

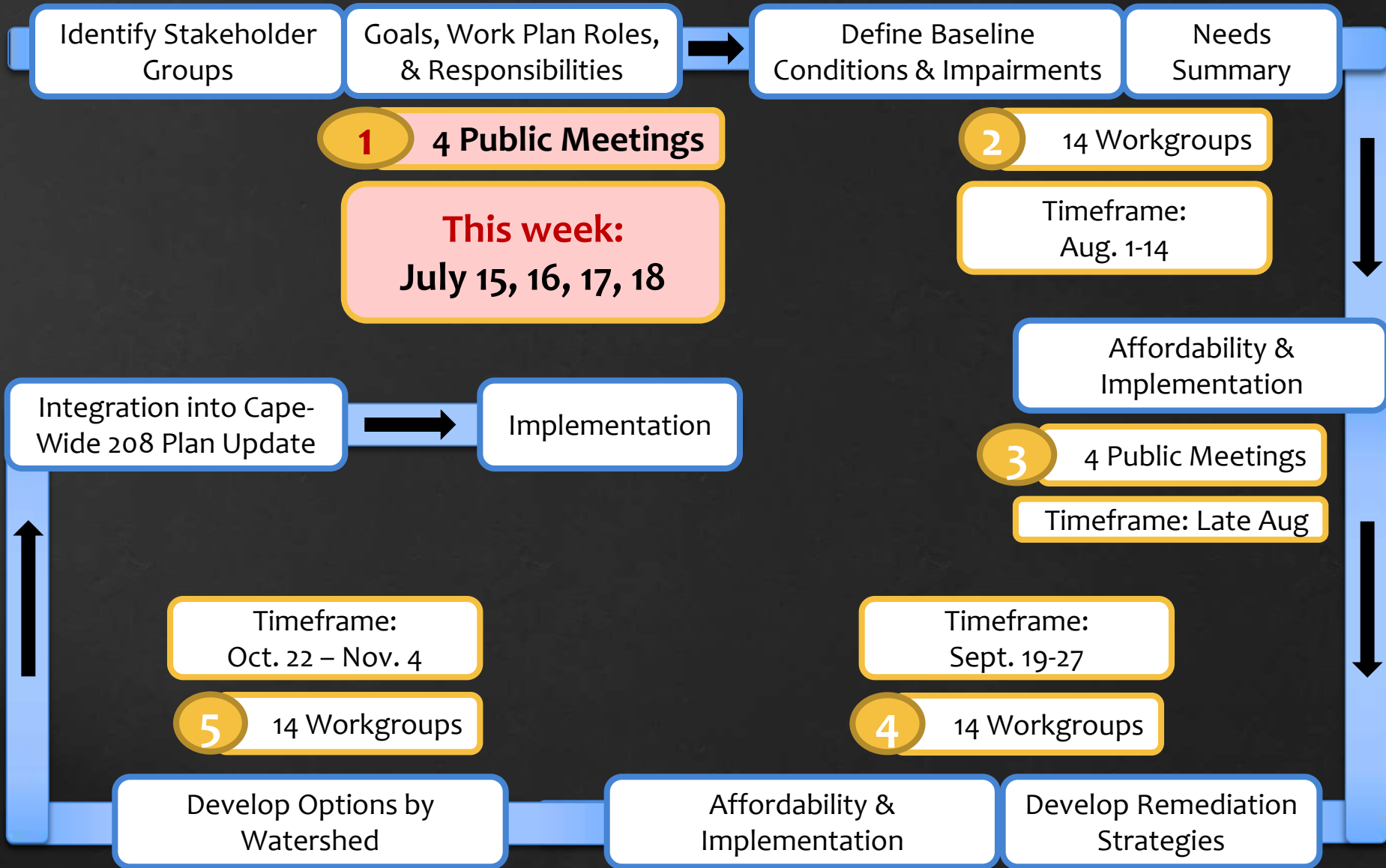
Develop Remediation Strategies

MEETING 3:

Develop Options by Watershed

(revised from initial presentation)

The Workshop Process



(revised from initial presentation)

Upper Cape Working Groups

Buzzards Bay

Bourne Town Hall

8:30 a.m –
12: 30 p.m.

Aug. 6

Sept. 30

Oct. 24

Woods Hole Group

Smith Lab, WHOI

8:30 a.m –
12: 30 p.m.

Aug. 13

Sept. 27

Oct. 22

Falmouth Fingers Group

Falmouth Town Hall

8:30 a.m –
12: 30 p.m

Aug. 2

Sept. 24

Oct. 25

Waquoit/Popponesset

Mashpee Town Hall

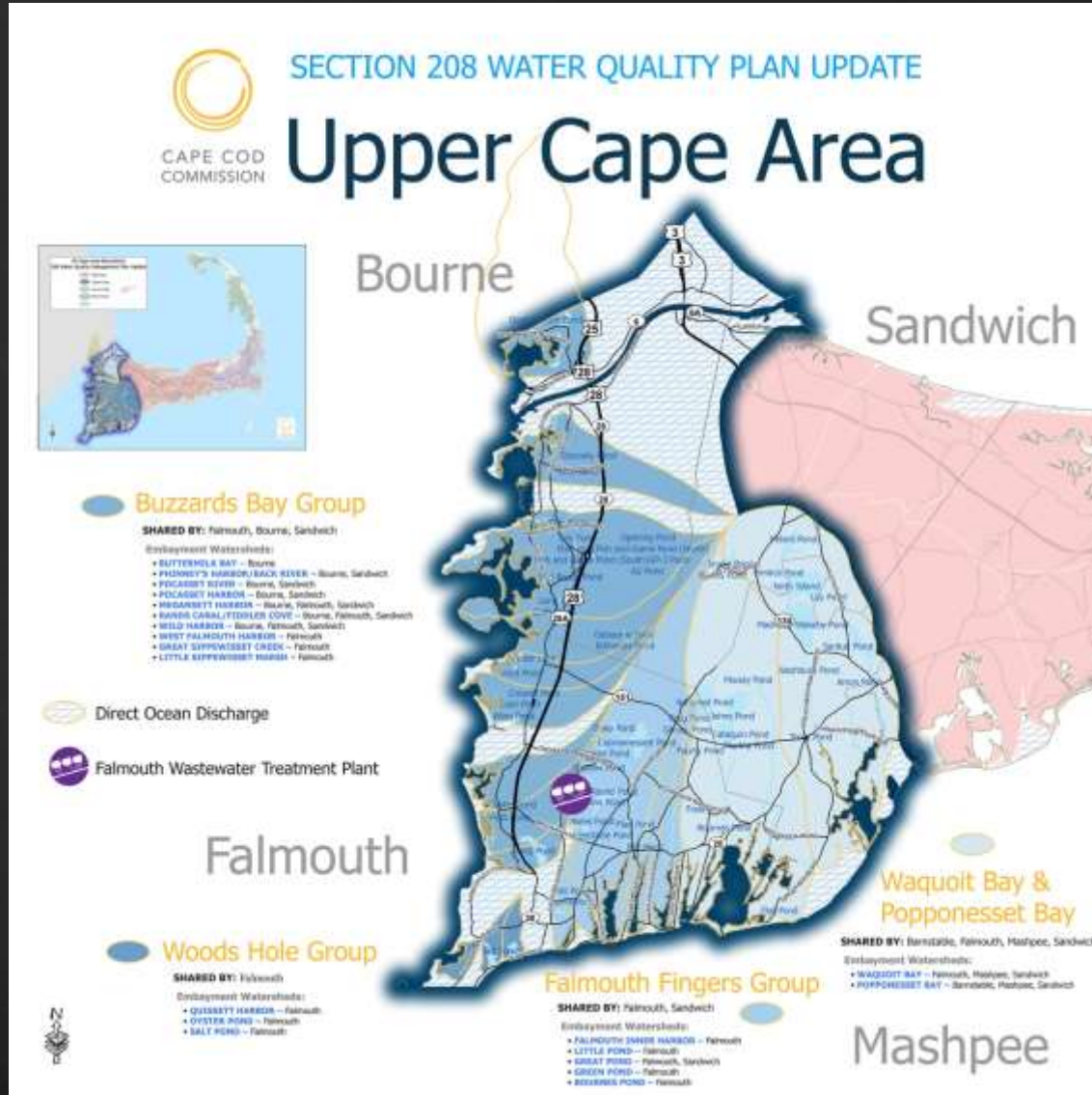
1:00 – 5:00
p.m.

Aug. 7

Sept. 25

Oct. 30

QUESTIONS?



Thinking about this process...

What is our greatest opportunity?

What is our greatest challenge?

Take 15 minutes to talk these
over in small groups.

Register to Play Cape₂O

Cape₂



It's something in the water

It's something in the water

communityplanit.org/capecod



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watersheds.capecodcommission.org

Section 208

Area-Wide Water Quality Management Plan Update

Mid Cape Area



CAPE COD
COMMISSION

Why Are We Here?



Prince's Cove, Marstons Mills – May 2013

The 208 Plan: What is It?

- Clean Water Act Section 208
- Much more known/done now
- Focus on 21st Century Problems
 - Nitrogen:** Saline waters
 - Phosphorus:** Fresh Waters
 - Growth & Title 5 Limitations**
- Directed to update the existing plan by the Commonwealth
- Provided \$3 million to complete it

Approach to the 208 Plan Update

- **Update to 1978 Plan**
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- **Stakeholder Engagement – Cape-Wide & Watershed-Based**
- **Maximize Benefits of Previous Planning**
- **No Optimal Solution. Diverse Technologies**
- **Adaptive – Technology Development, Pilot Projects, Progress Monitoring**
- **Coordination with MassDEP and U.S. EPA**
- **Support and expedite targeted watershed solutions under existing plans**



57 Major Coastal Embayments

- ◇ Embayment Boundary
- Creeks
- Townline
- ▣ Ponds
- MMR Boundary

57 Embayments

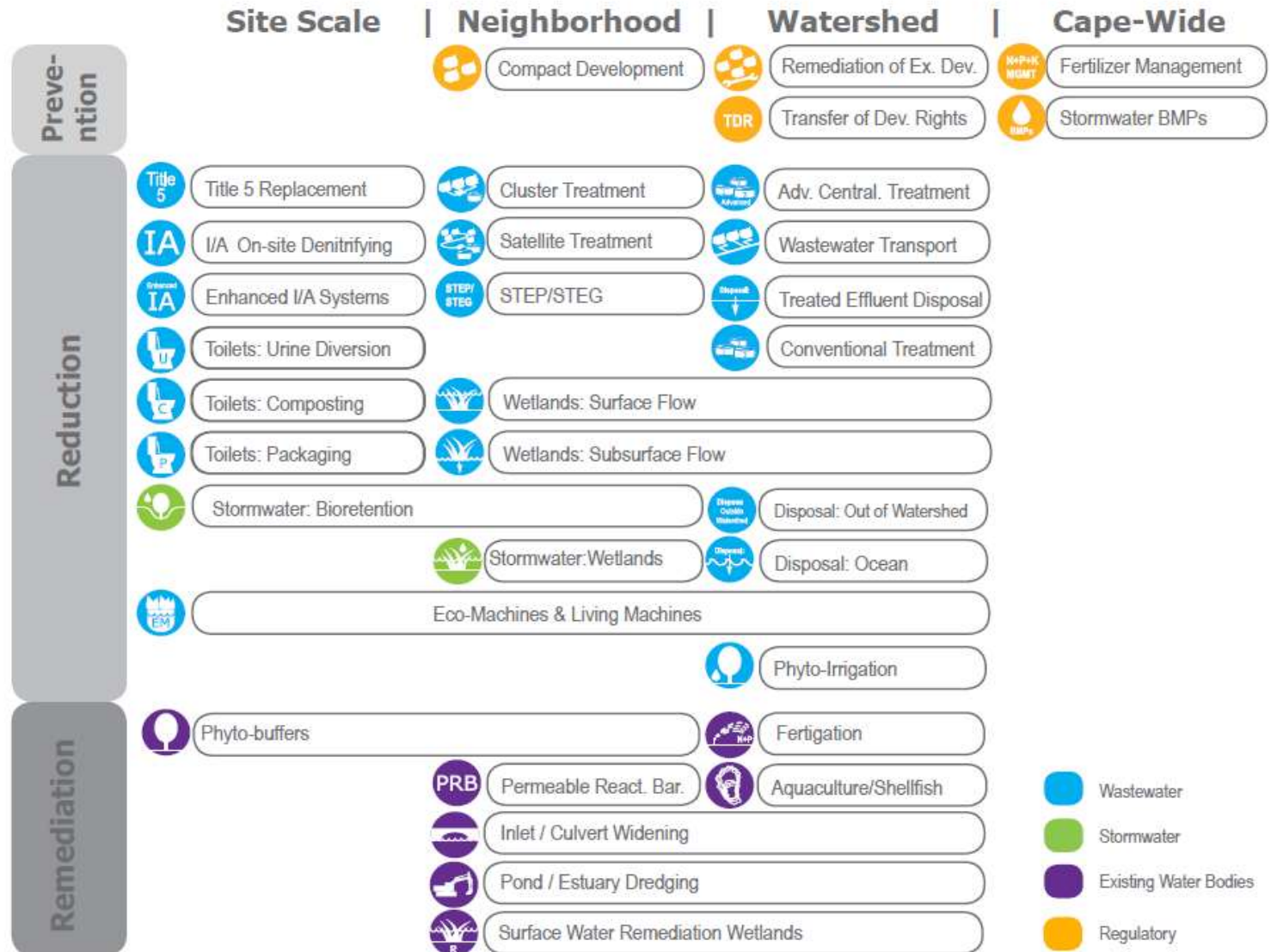


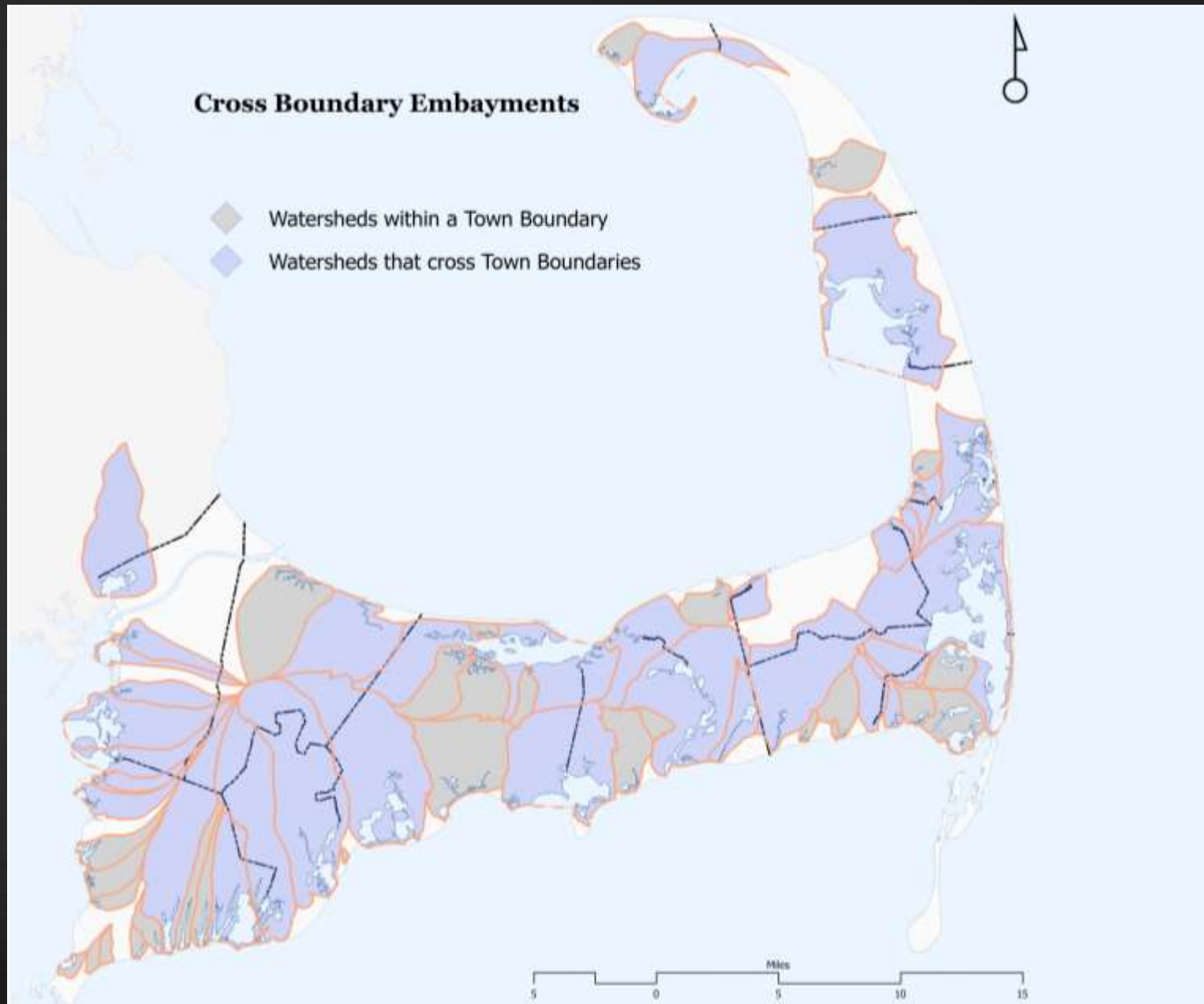
1 Sole Source Aquifer



NO Single Solution

Diverse Mix of Technologies





Nitrogen Sources/Facts

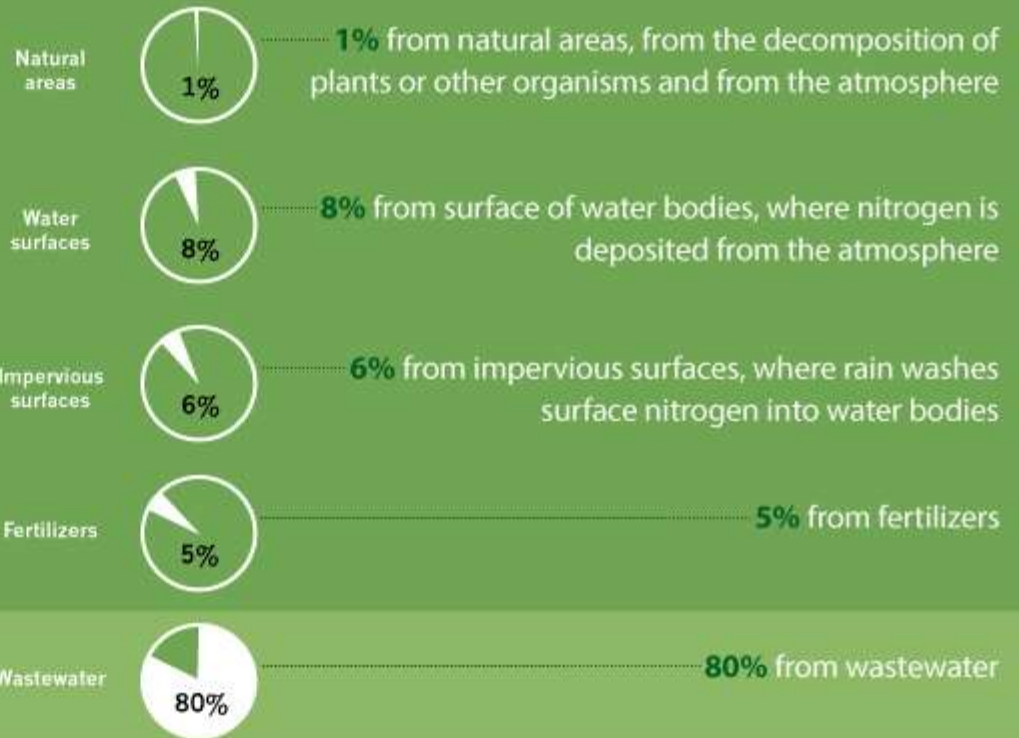
NITROGEN

Nitrogen is an element abundant in the environment. Nitrogen is a nutrient that is common in all living things and essential for growth.

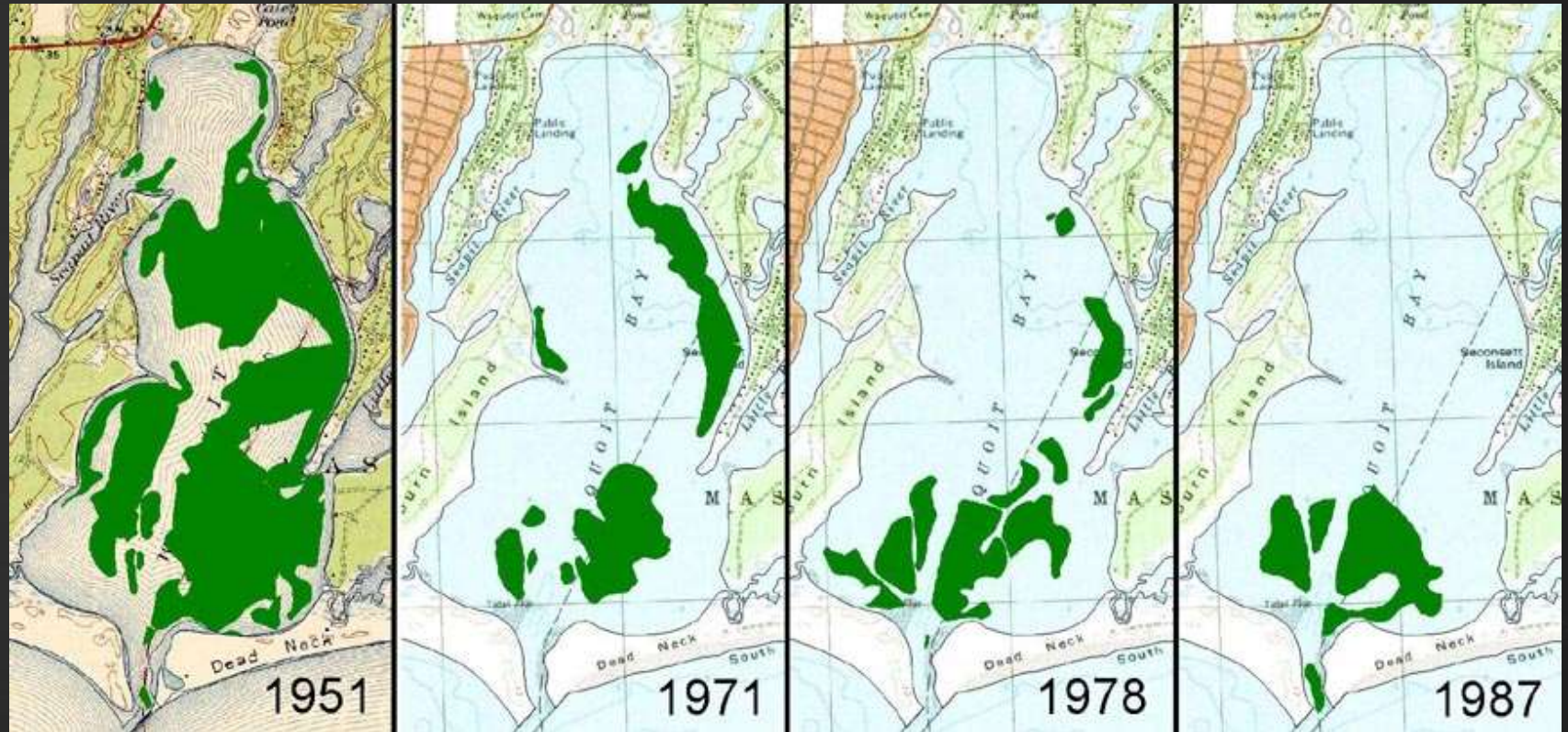


CAPE COD NITROGEN FACTS

Nitrogen enters our water bodies from a variety of natural and human sources

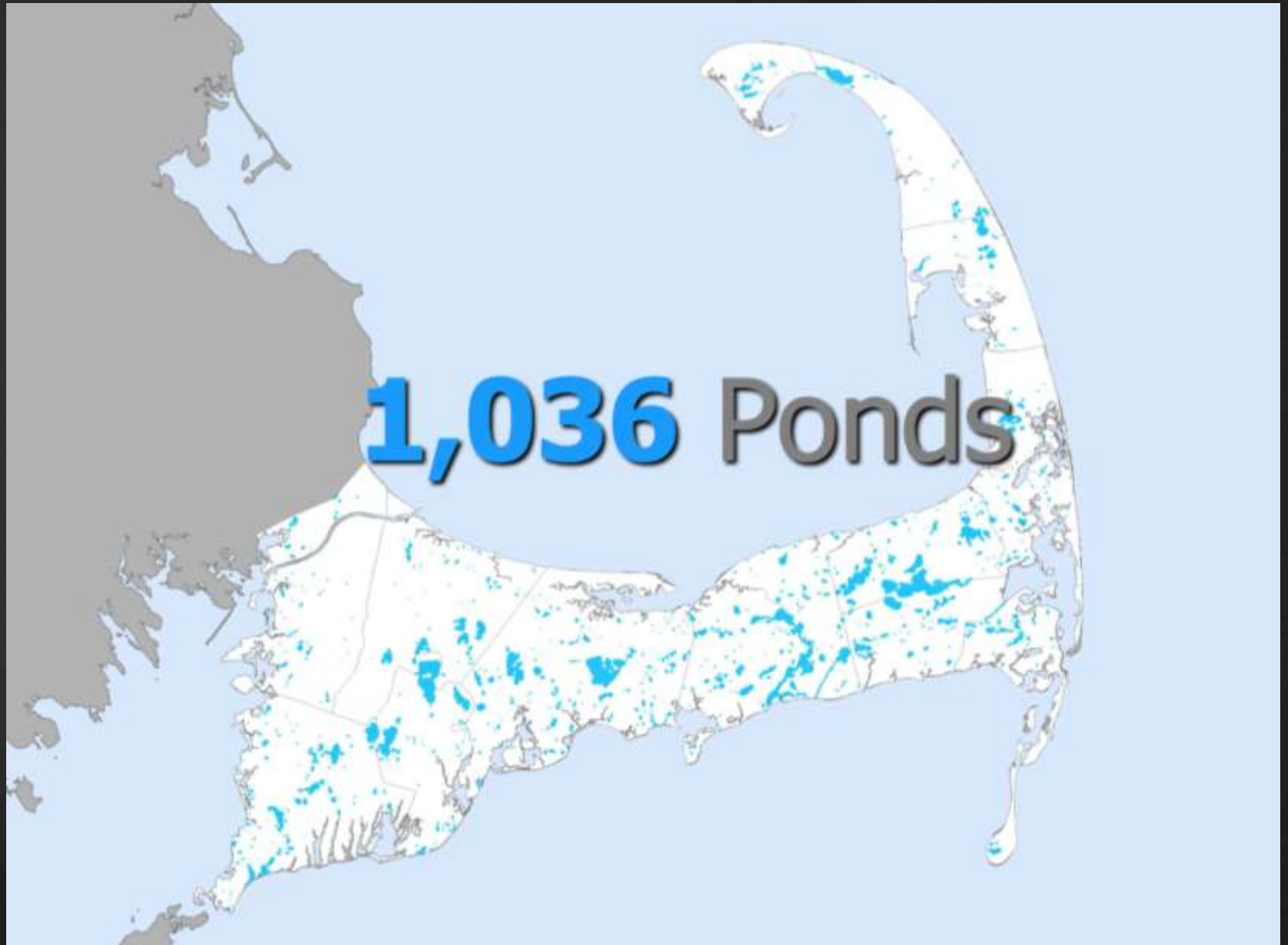


Coastal Water Quality Problem



Reduction in eel grass

Waquoit Bay - Falmouth and Mashpee



Phosphorus and Freshwater

PHOSPHORUS

Phosphorus is an essential nutrient for all life on earth. Our bodies need phosphorus for healthy bones and teeth.

Plants need phosphorus to grow, but there is a limit. When there is too much phosphorus in a pond, lake or stream, algae may bloom and plant life and fish can die as a result of eutrophication.



Common sources of phosphorus entering our fresh and coastal water bodies are:

Runoff from mining, farming, animal waste, and home lawn fertilizers



Wastewater from our septic tanks -- including human wastes, food residues, detergents, and soaps.

Phosphorus can be reduced to harmless amounts as it travels through varying soils, which act as a filter for phosphorus.



Homes located close to pond shore



Homes located away from pond shore

Locating development -- including septic systems, lawns, and drainage from paved surfaces -- away from pond shores helps to protect the quality of our fresh water bodies.

Project Team

Consultants:

AECOM, Consensus Building Institute
Emerson College, Engagement Game Lab,
Offshoots Productive Landscapes

Staff:

Cape Cod Commission

Stakeholder Engagement

CAPE-WIDE

Advisory Board
Communications Strategy
Communications Campaign
Benchmarking & Assessing
Program Branding

Regulatory
Coordination

Technical Advisory
Committee

WATERSHED

Stakeholder Communication
Workshop Facilitation
Capacity Building
Watershed Status Portal

watersheds.capecodcommission.org

208 Advisory Board

Meets 3rd Tuesday of each month

Members:

Robert Churchill: Churchill Associates

Robert Lawton: Interim Harwich Town Administrator, Former Yarmouth Admin

Wendy Northcross: CEO of the Cape Cod Chamber of Commerce

Sheila Vanderhoef: Eastham Town Administrator

Virginia Valiela: Member- Falmouth Water Quality Mngmt Committee

Robin Wilkins: Former Town of Harwich Selectman

Regulatory, Legal & Institutional Work Group

Members:

Cape Cod Commission

MassDEP

U.S. EPA

U.S. Army Corps of Engineers

Regulatory Flexibility, Financial Affordability

- Provides the basis for state & federal support
- Seek regulatory flexibility for innovative and shared solutions
- Seek funding covering 50% of capital costs

New Tools/Resources

The Commission is developing a set of innovative tools to assist with decision making.

- Watershed MVP
- Systems Dynamics Model
- Green Infrastructure Site Selection Process
- Game-based Planning

Outreach

208 Town Meetings

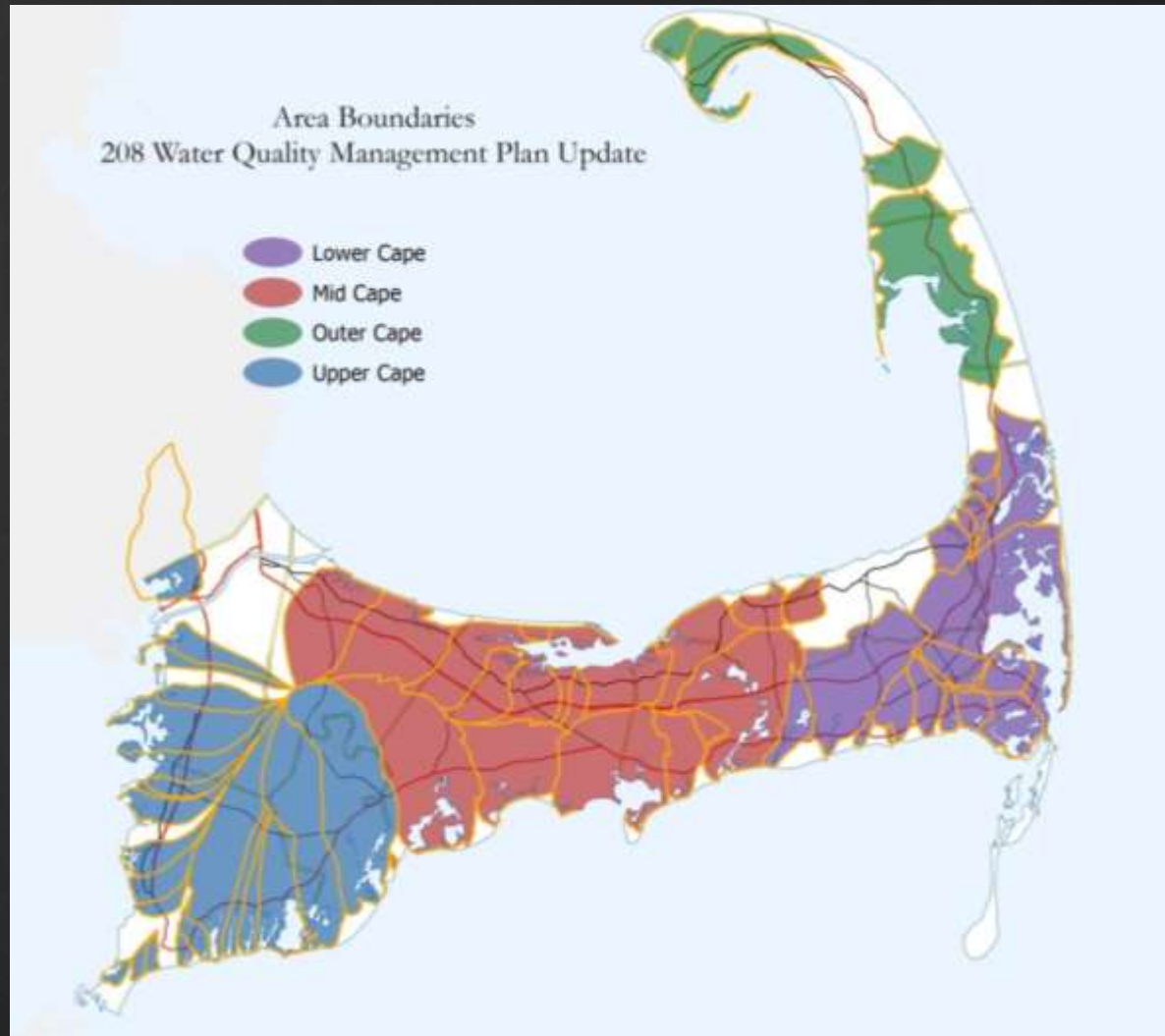
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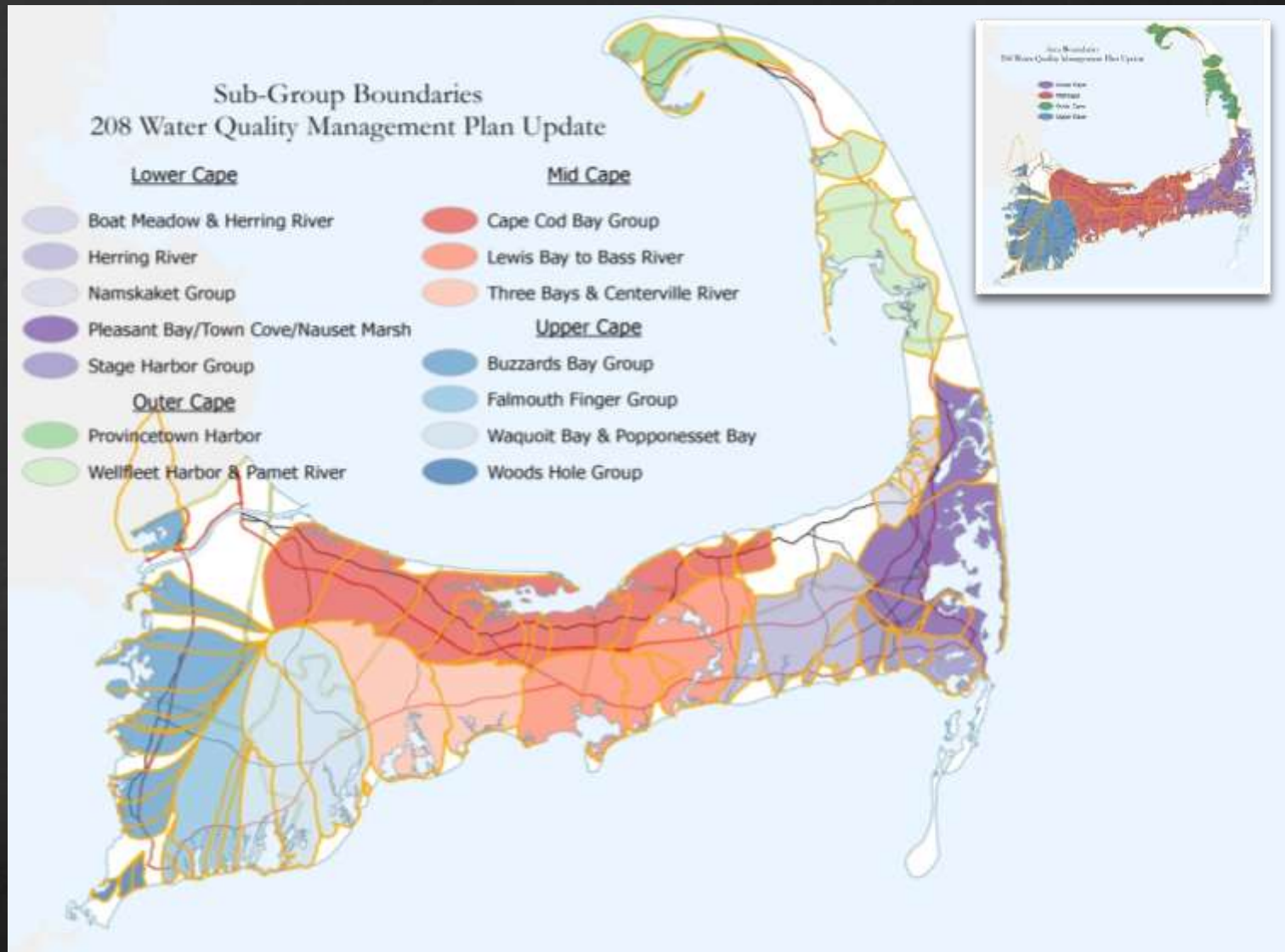
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Four Regions



Four Regions Into 14 Working Groups





Mid Cape Area

Cape Cod Bay Group

SHARED BY: Barnstable, Brewster, Dennis, Sandwich, Yarmouth

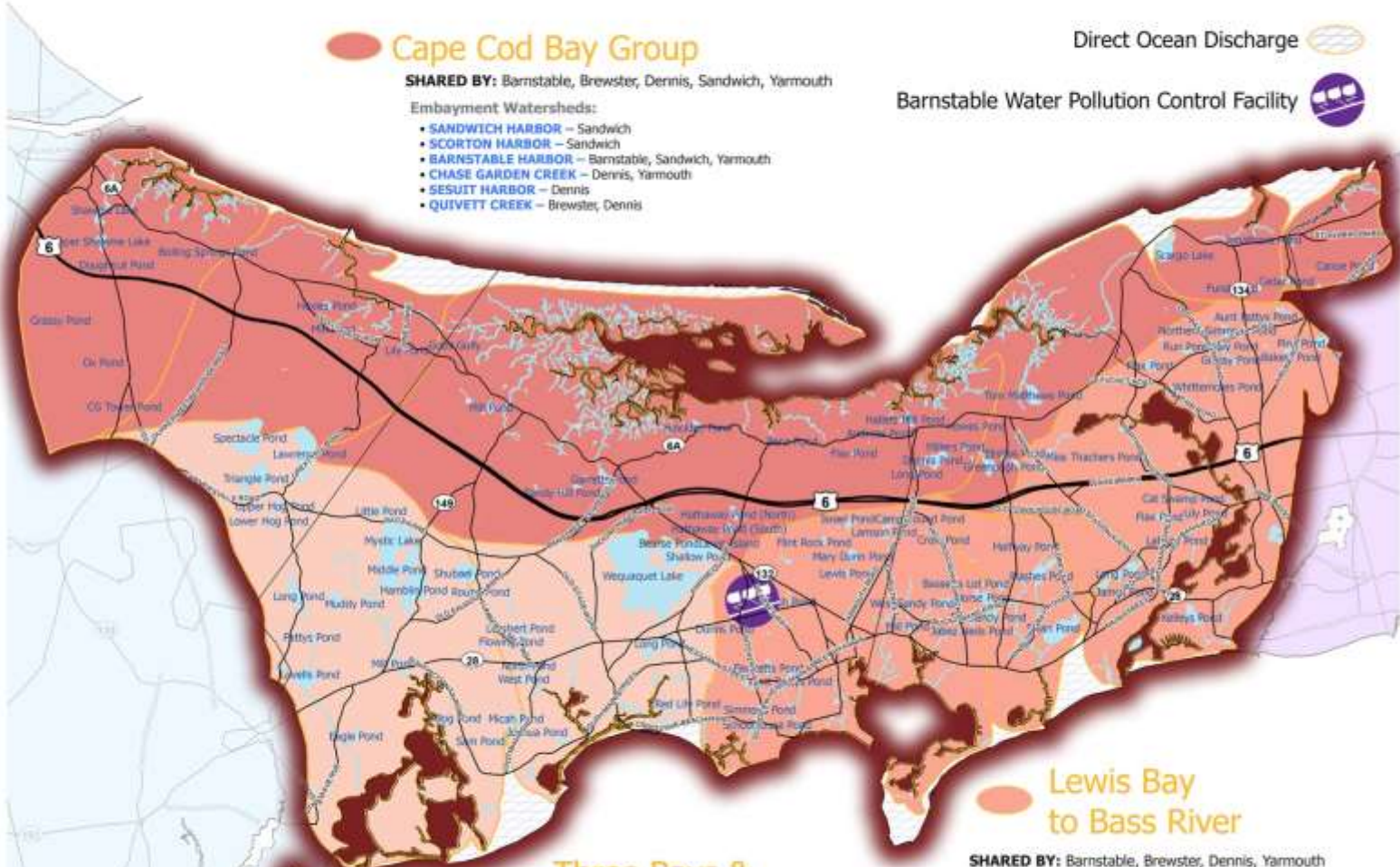
Embayment Watersheds:

- SANDWICH HARBOR – Sandwich
- SCORTON HARBOR – Sandwich
- BARNSTABLE HARBOR – Barnstable, Sandwich, Yarmouth
- CHASE GARDEN CREEK – Dennis, Yarmouth
- SESUIT HARBOR – Dennis
- QUIVETT CREEK – Brewster, Dennis

Direct Ocean Discharge



Barnstable Water Pollution Control Facility



Lewis Bay to Bass River

SHARED BY: Barnstable, Brewster, Dennis, Yarmouth

Embayment Watersheds:

- LEWIS BAY – Barnstable, Yarmouth
- PARKERS RIVER – Yarmouth
- LONG POND – Yarmouth
- BASS RIVER – Brewster, Dennis, Yarmouth

Three Bays & Centerville River

SHARED BY: Barnstable, Mashpee, Sandwich

Embayment Watersheds:

- RUSHY MARSH POND – Barnstable
- THREE BAYS – Barnstable, Mashpee, Sandwich
- CENTERVILLE RIVER – Barnstable



Three Mid Cape Working Groups

THREE BAYS & CENTERVILLE RIVER

SHARED BY: Barnstable, Mashpee, Sandwich

Embayment Watersheds:

- **RUSHY MARSH POND** – Barnstable
- **THREE BAYS** – Barnstable, Mashpee, Sandwich
- **CENTERVILLE RIVER** – Barnstable

LEWIS BAY TO BASS RIVER

SHARED BY: Barnstable, Brewster, Dennis, Yarmouth

Embayment Watersheds:

- **LEWIS BAY** – Barnstable, Yarmouth
- **PARKERS RIVER** – Yarmouth
- **LONG POND** – Yarmouth
- **BASS RIVER** – Brewster, Dennis, Yarmouth
-

CAPE COD BAY GROUP

SHARED BY: Barnstable, Brewster, Dennis, Sandwich, Yarmouth

Embayment Watersheds:

- **SANDWICH HARBOR** – Sandwich
- **SCORTON HARBOR** – Sandwich
- **BARNSTABLE HARBOR** – Barnstable, Sandwich, Yarmouth
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- **SESUIT HARBOR** – Dennis
- **QUIVETT CREEK** – Brewster, Dennis

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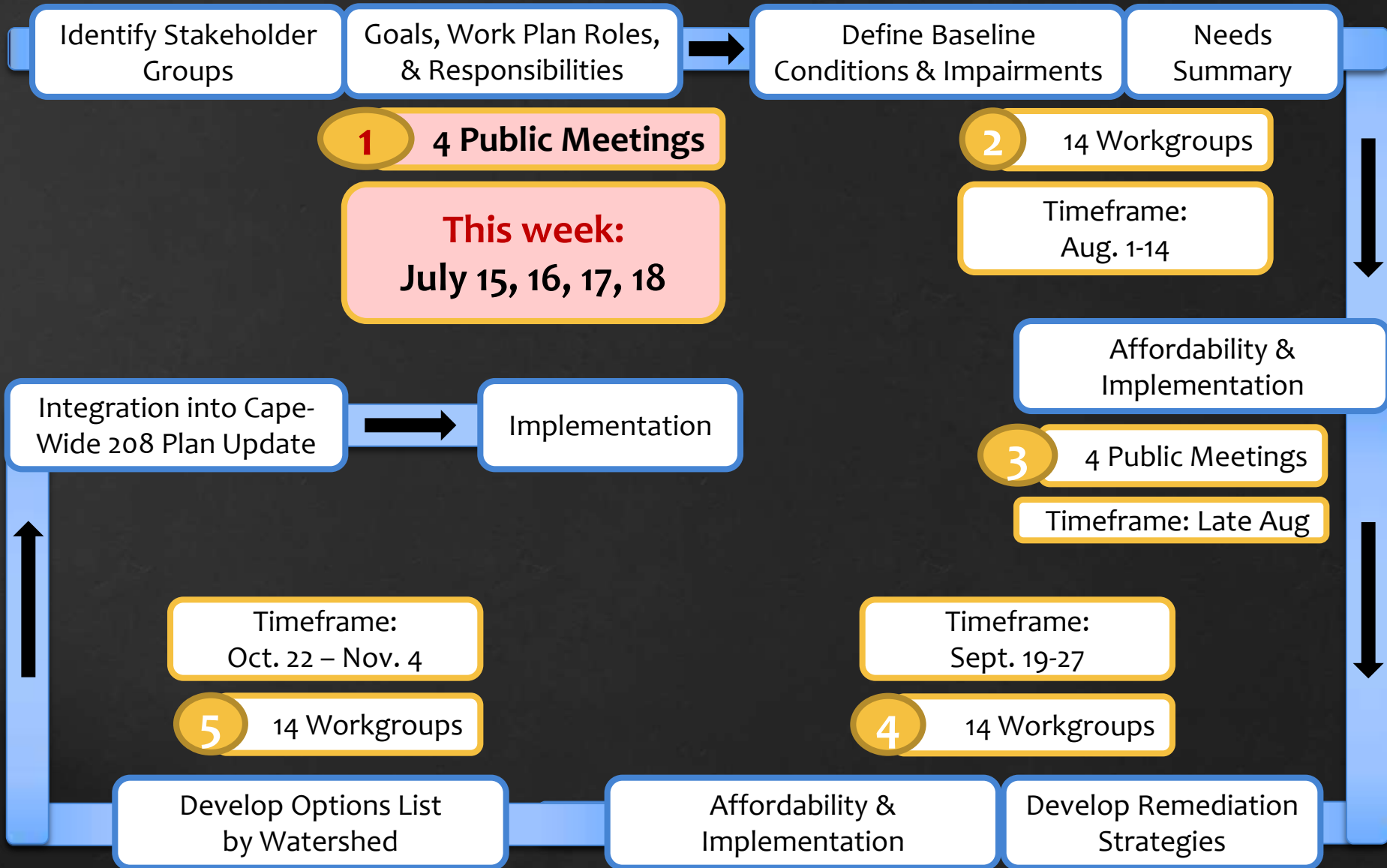
MEETING 2:

Develop Remediation Strategies

MEETING 3:

Develop Options List by Watershed

The 208 Process - Year 1



Mid Cape Working Groups

Cape Cod Bay Group

Cape Cod Commission Office		8:30 a.m – 12:30 p.m
Aug. 13	Sept. 24	Oct. 30

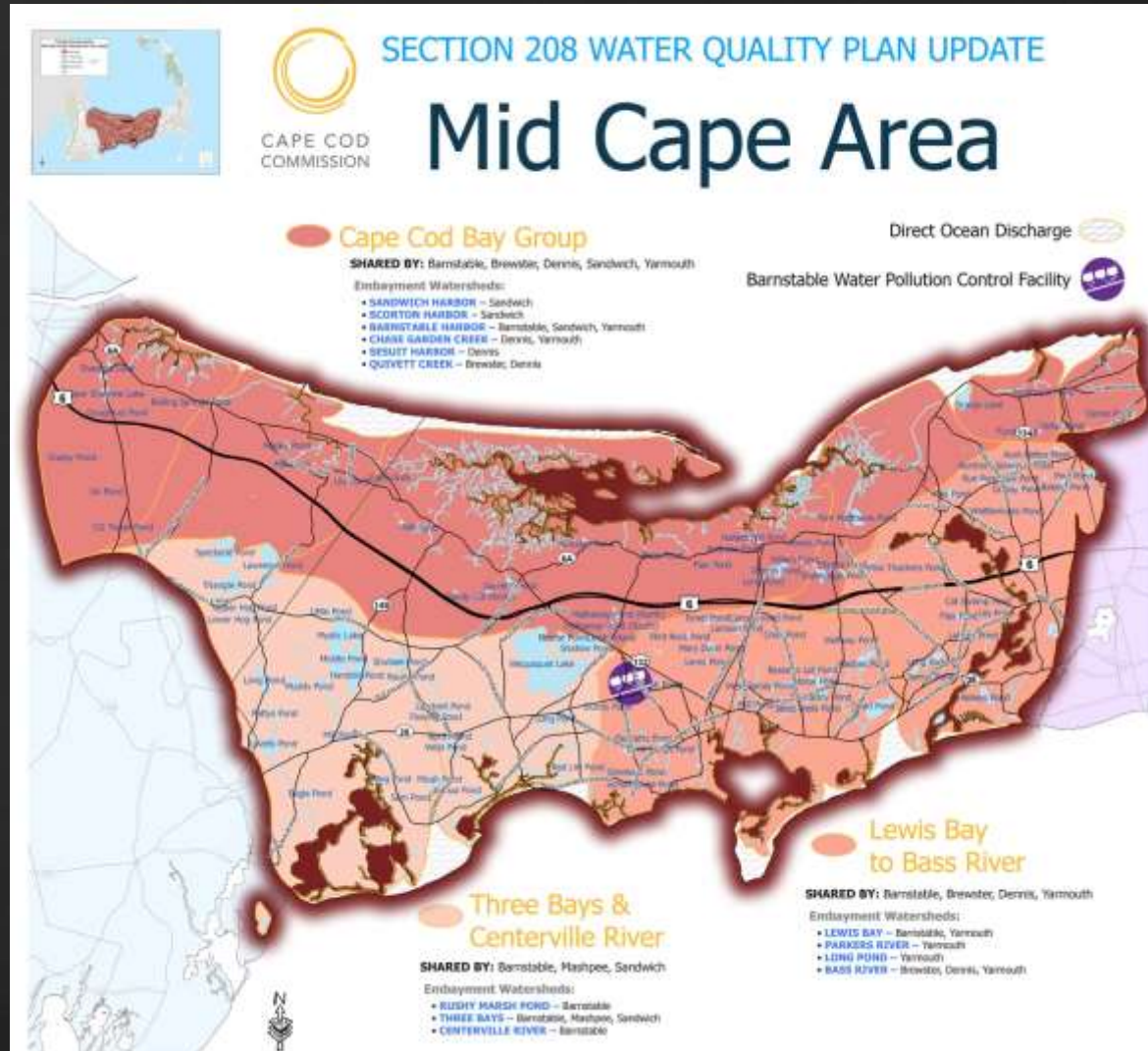
Three Bays & Centerville River

COMM Fire Headquarters		8:30 a.m – 12:30 p.m
Aug. 14	Sept. 19	Nov. 4

Lewis Bay to Bass River

C&I Association of Realtors Mid Tech Drive, West Yarmouth		8:30 a.m – 12:30 p.m
Aug. 14	Sept. 26	Oct. 29

QUESTIONS?



Thinking about this process...

What is our greatest opportunity?

What is our greatest challenge?

Take 15 minutes to talk these
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Register to Play Cape₂O

Cape₂



It's something in the water



communityplanit.org/capecod



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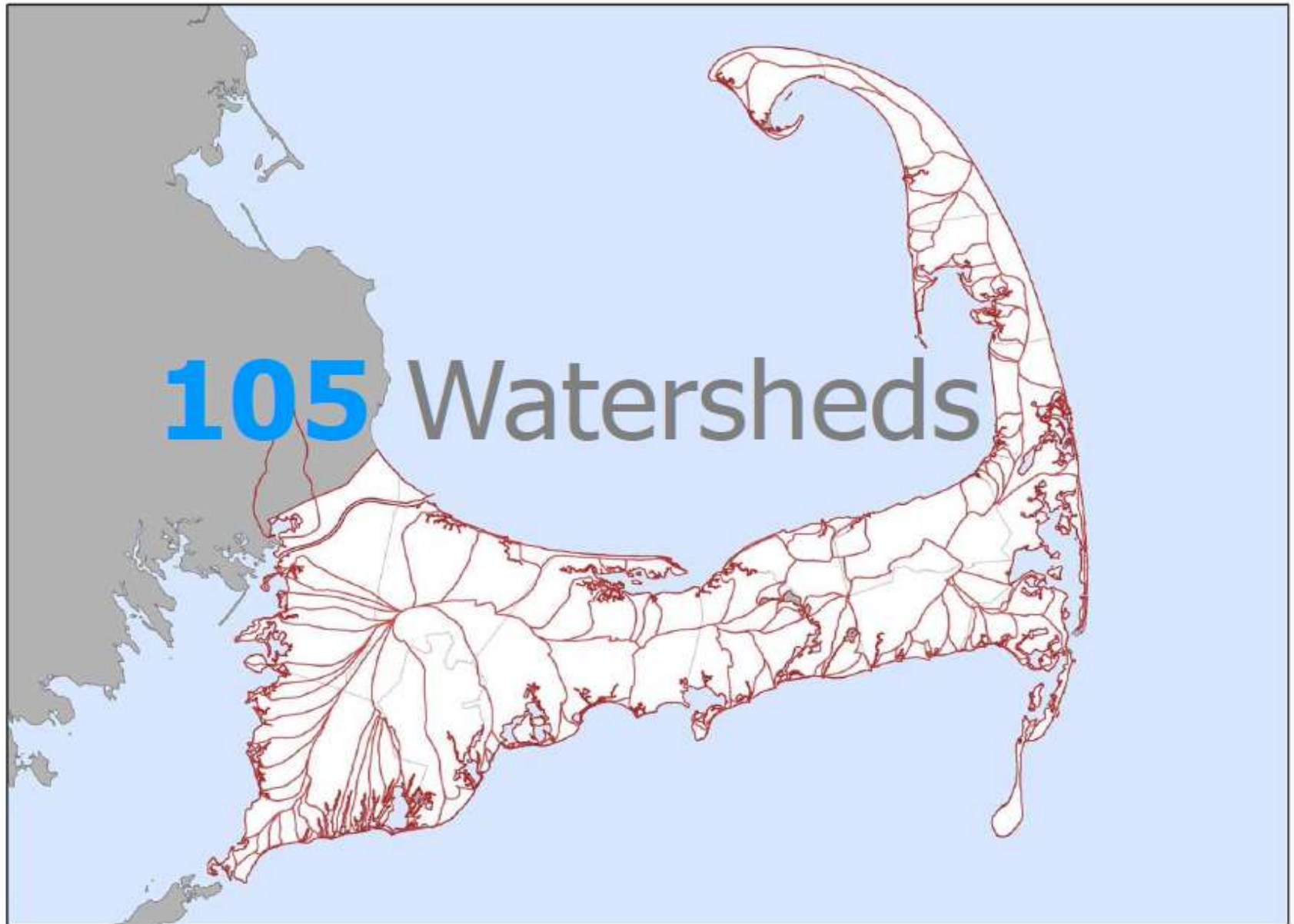
Section 208

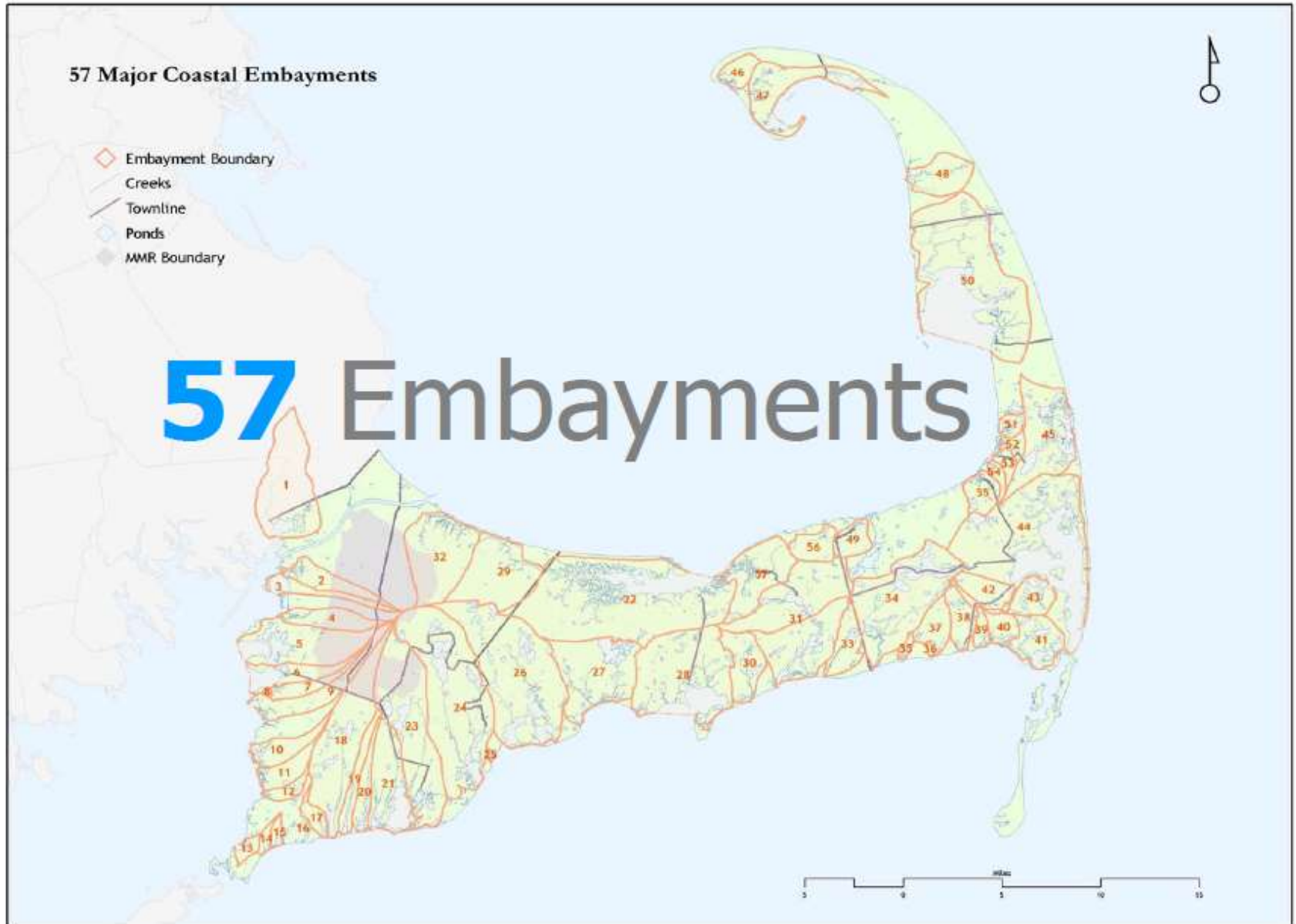
Area-Wide Water Quality Management Plan Update

Outer Cape Area



CAPE COD
COMMISSION





1 Sole Source Aquifer



NO Single Solution

No "silver bullet"
to fit multiple
needs:

**Traditional Gray
Infrastructure**

AND

**Green Infrastructure &
Alternative Approaches**

STRATEGIES:

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"Subregional Meetings: 208 Update Introduction Meeting"

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Watershed

Cape-Wide

SOURCES: NITROGEN POLLUTION



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- Wetlands: Vertical S
- Phyto-buffer: S
- Permeable React Bar. **PRB**

DISCHARGE

SECONDARY, TERTIARY & DISCHARGE

- Sewers
- Satelite Treatment
- Cluster Treatment

- Eco-Machines **EM**
- Wetlands: Surface Flow
- Wetlands: Vertical LG
- Phyto-irrigation

- Sewers
- Centralized Treatment
- Culvert Widening
- Dredging

- Phyto-buffer: LG
- Permeable React Bar **PRB**
- Shellfish Aquaculture
- Seaweed Farming
- Eco-Restorer/
Floating Wetland
- Nutrient Harvesting Gabi **[N-P]**

- Biofiltration Strips
- Green Roofs

- Wetlands: Surface Flow
- Wetlands: Vertical LG

- Septic: Regulation
- Toilets: Regulation
- H2O Reuse: Regulation
- Low-Flow Fixtures: Reg
- Growth Management
- Alt. Discharge Options

- Landscape Guidelines
- Fertilizer Policies
- Mun. Maintenance Regs

PREVENTION REDUCTION REMEDIATION

Stakeholder Engagement

CAPE-WIDE

Advisory Board
Communications Strategy
Communications Campaign
Benchmarking & Assessing
Program Branding

Regulatory
Coordination

Technical Advisory
Committee

WATERSHED

Stakeholder Communication
Workshop Facilitation
Capacity Building
Watershed Status Portal

watersheds.capecodcommission.org

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Emerson College, Engagement Game Lab,
Offshoots Productive Landscapes

Staff:

Cape Cod Commission

Advisory Board

June 18th – First Meeting

Members:

Robert Churchill Churchill Associates

Robert Lawton former Yarmouth Town Administrator

Wendy Northcross CEO of the Cape Cod Chamber of Commerce

Sheila Vanderhoef Eastham Town Administrator

Virginia Valiela Member- Falmouth Water Quality Mngmt Committee

Robin Wilkins former Town of Harwich Selectman

Regulatory, Legal & Institutional Work Group

Members:

Cape Cod Commission

MassDEP

U.S. EPA

U.S. Army Corps of Engineers

Financial/Regulatory Goals

Work with state and federal partners for:

- Regulatory flexibility
- Funding supporting 50% of capital costs

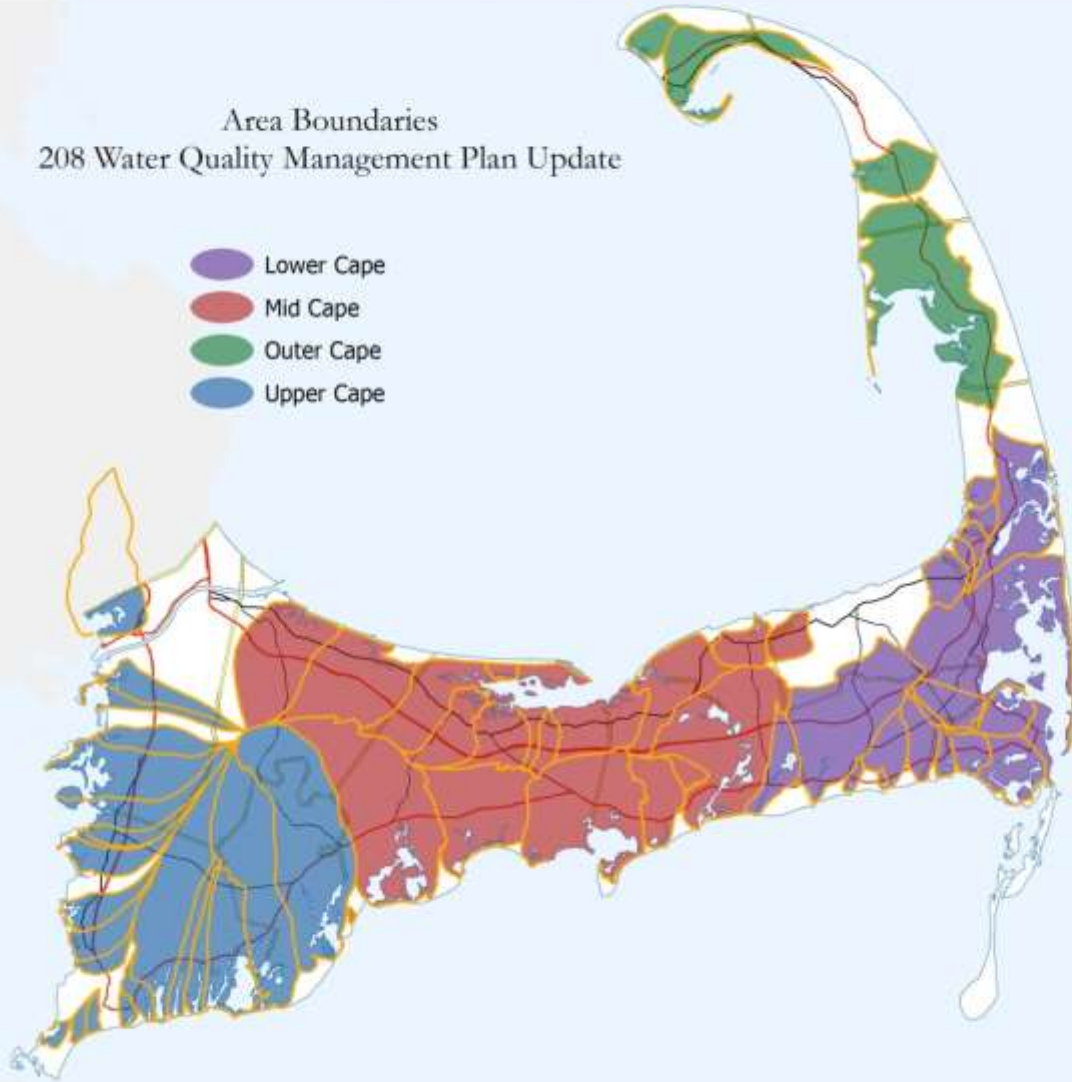
New Tools/Resources

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- Watershed MVP
- Systems Dynamics Model
- Green Infrastructure Site Selection Process
- Game-based Planning

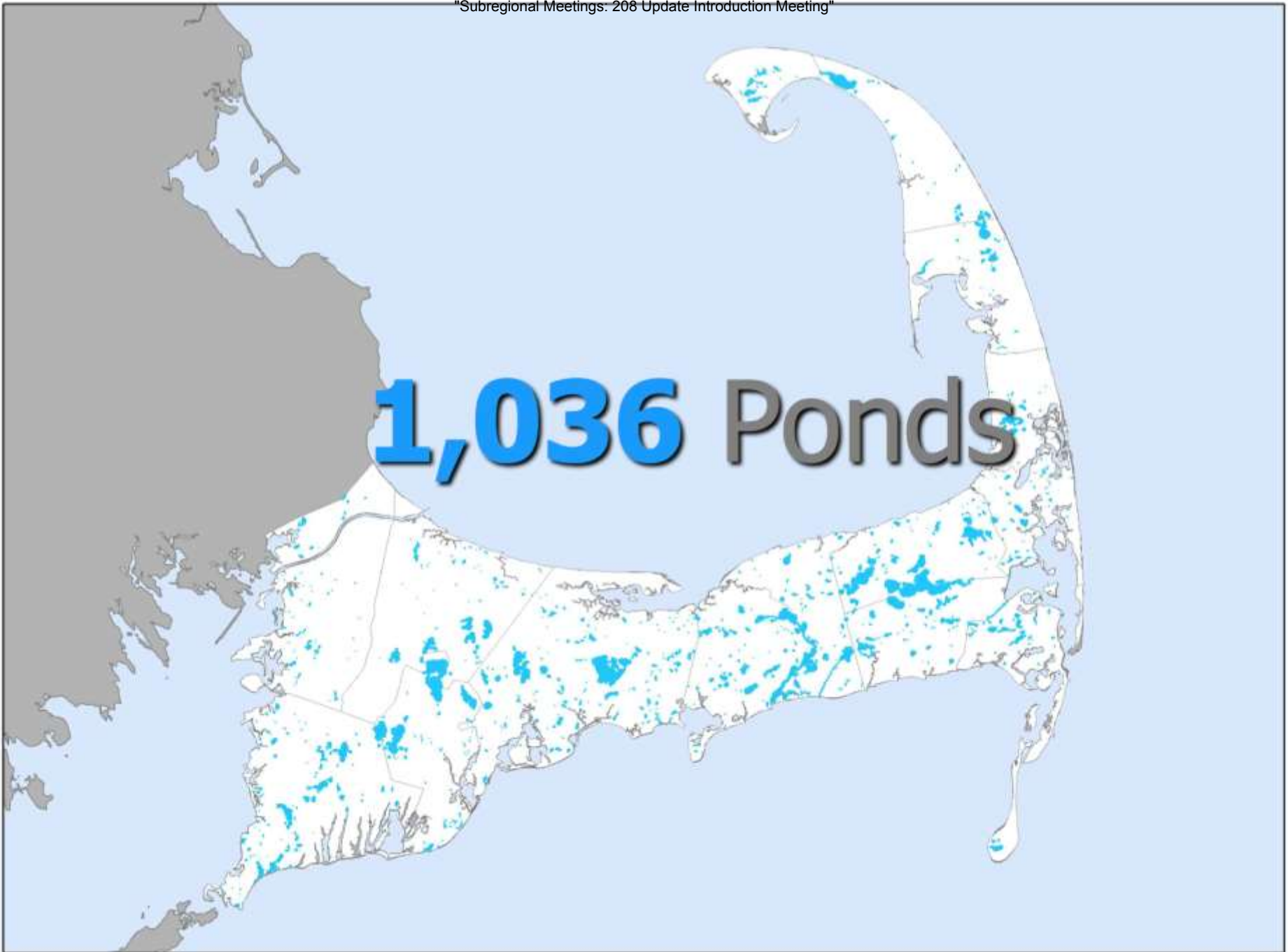
Area Boundaries
208 Water Quality Management Plan Update

- Lower Cape
- Mid Cape
- Outer Cape
- Upper Cape

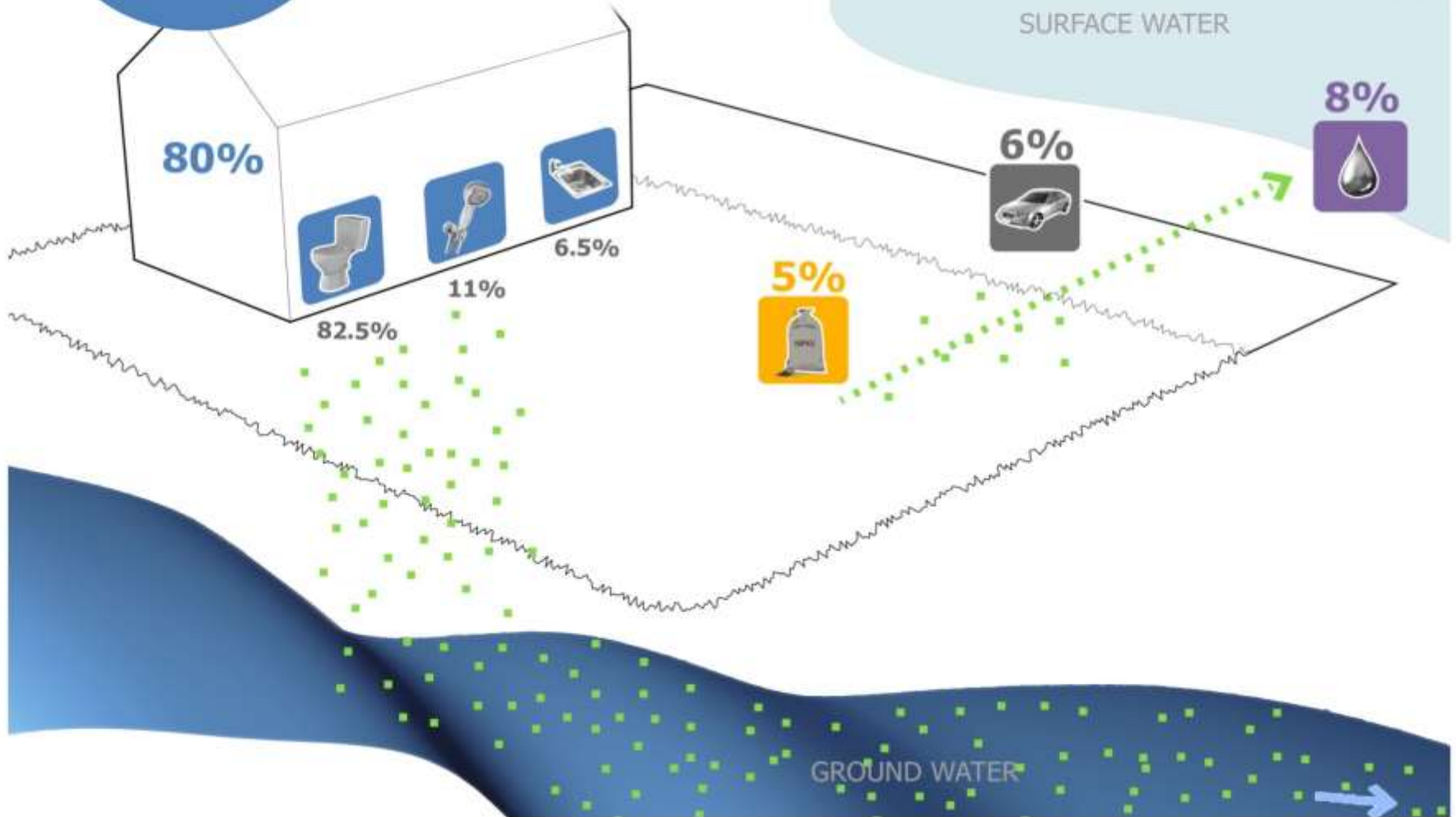
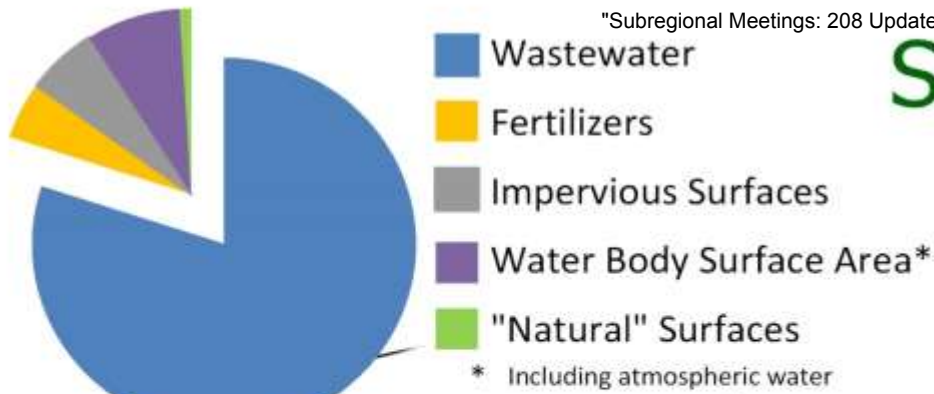


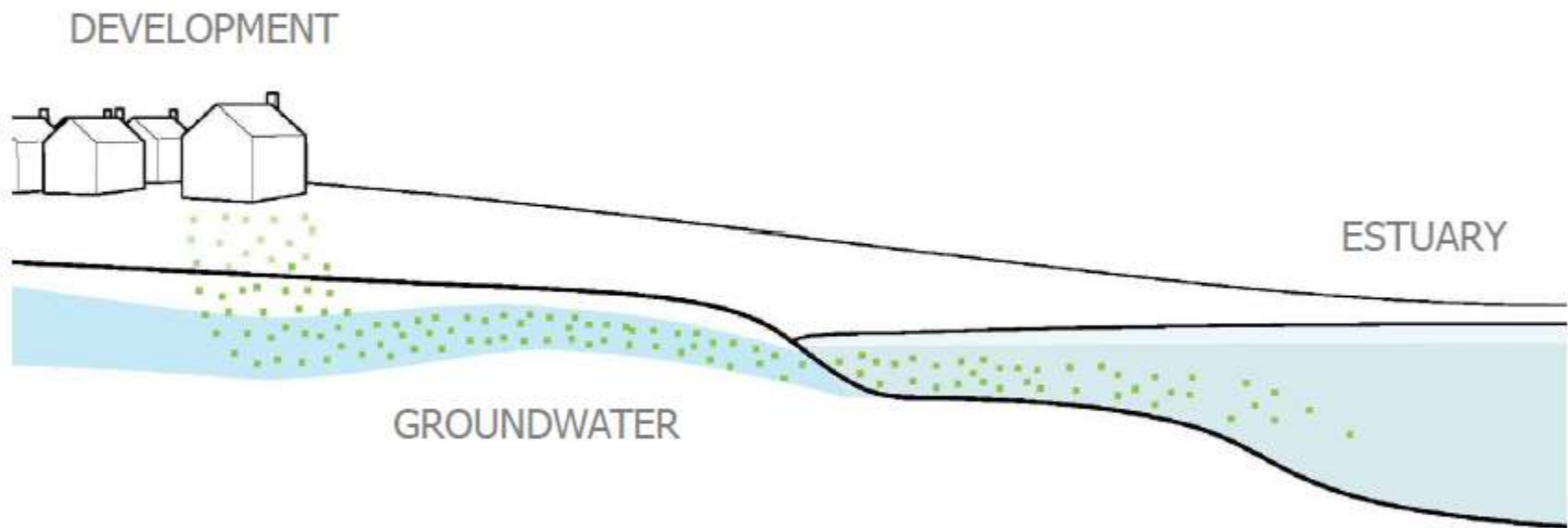


1,036 Ponds

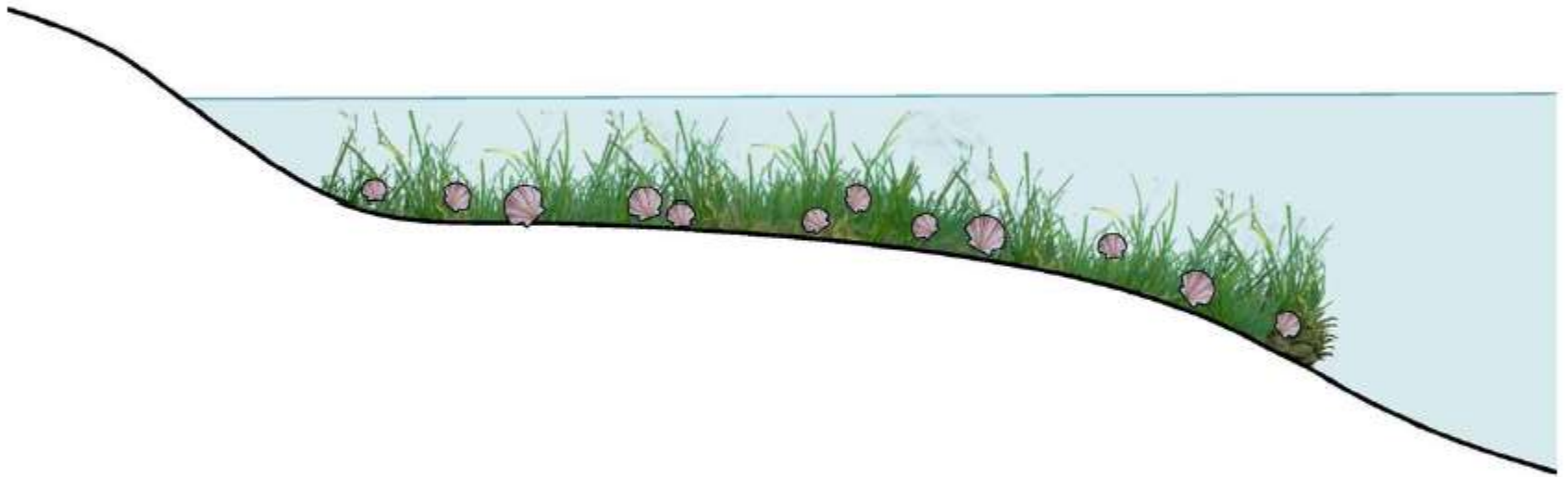


Sources of Nitrogen

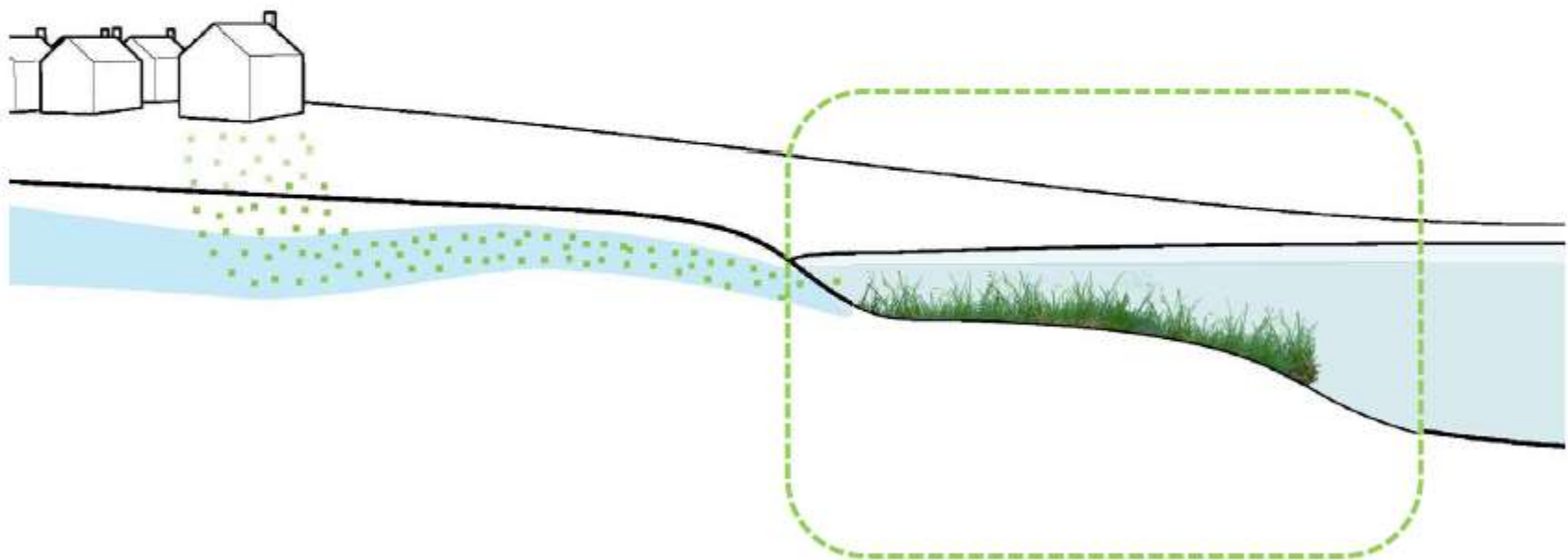




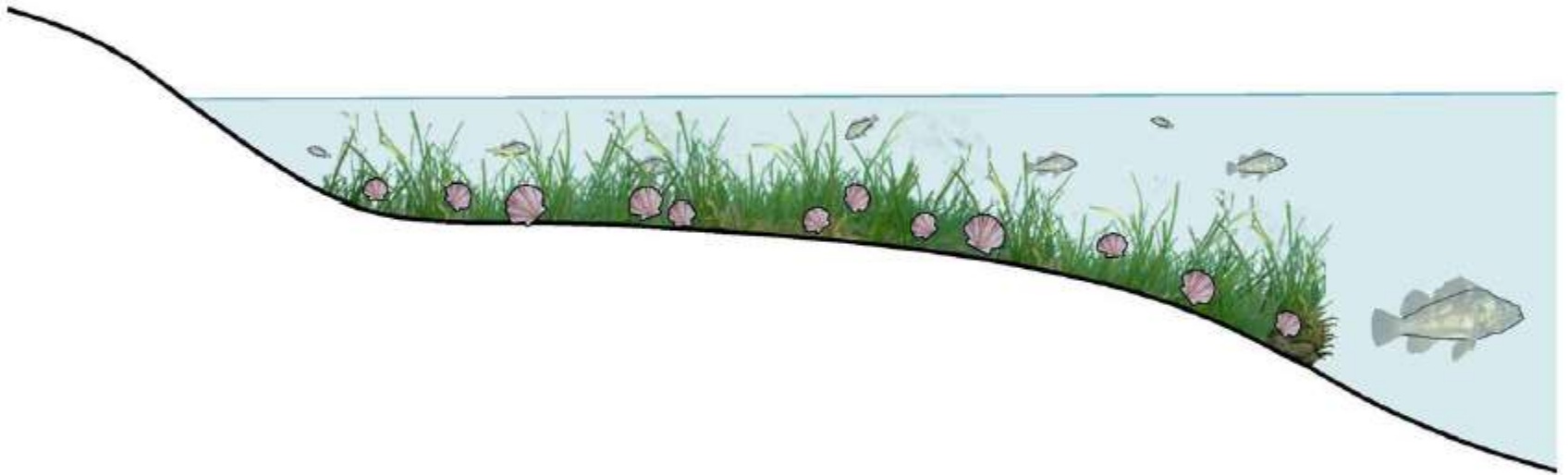
The Nitrogen Story



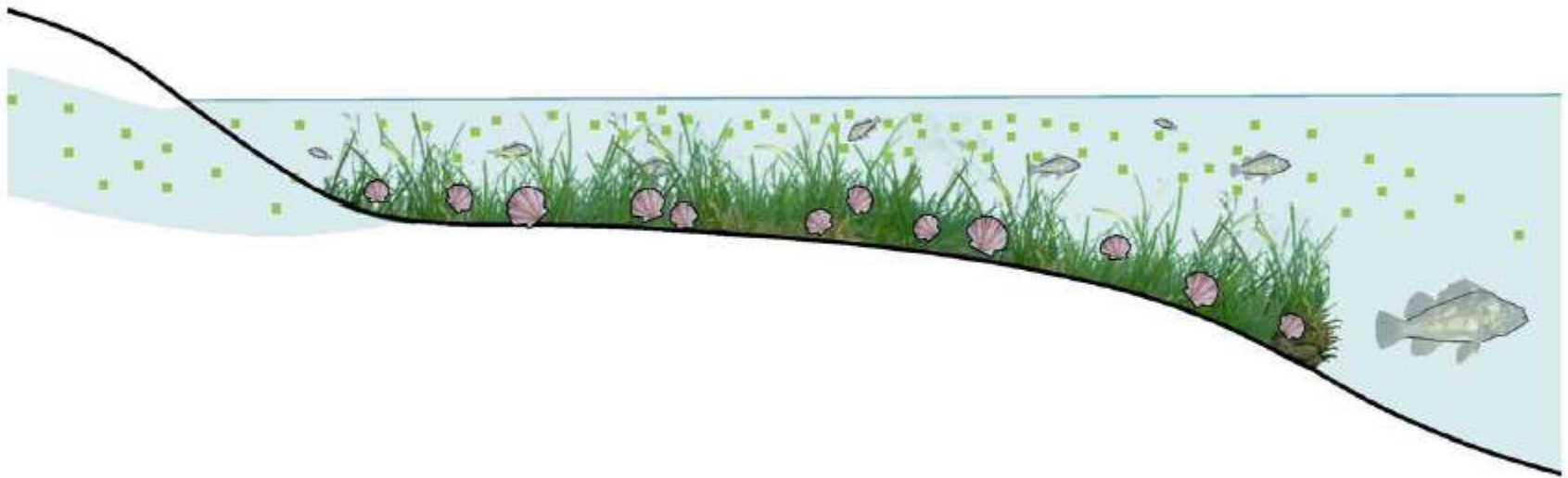
Healthy Shoreline



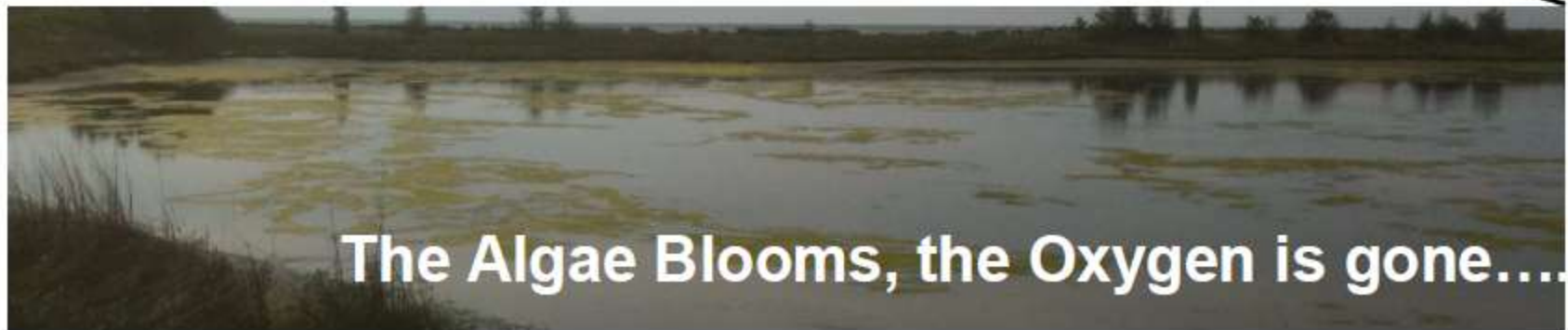
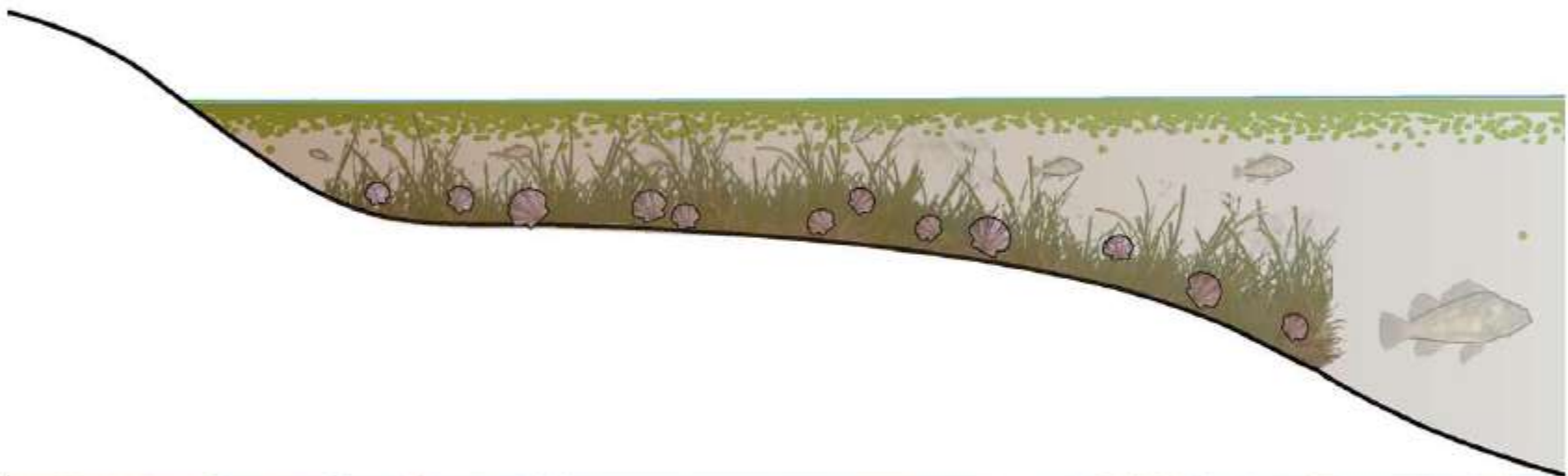
Where Groundwater Meets the Estuaries....



A Diverse Habitat

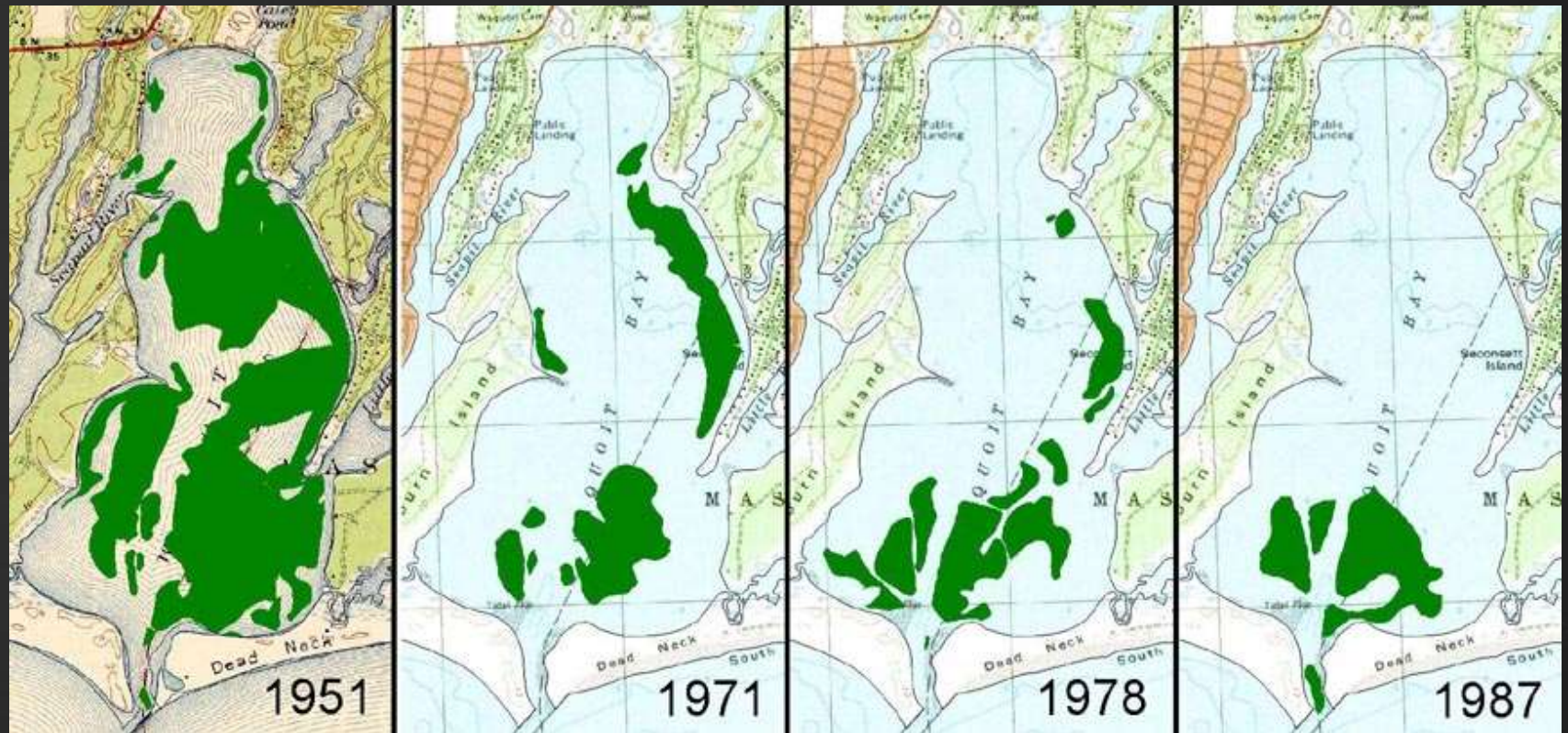


The Nitrogen Enters from Groundwater....



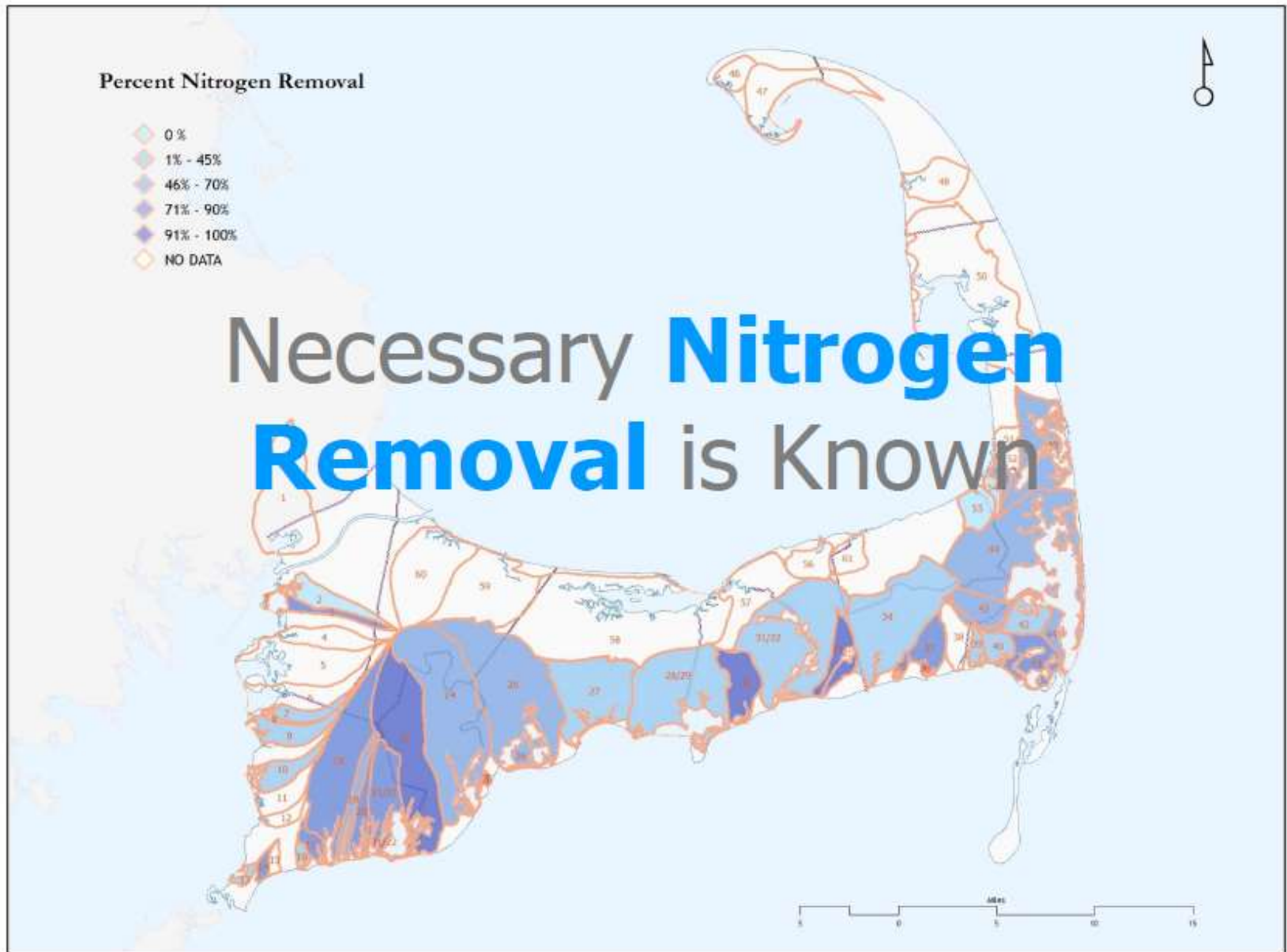
The Algae Blooms, the Oxygen is gone....

Coastal Water Quality Problem



Reduction in eel grass

Waquoit Bay - Falmouth and Mashpee



Approach to the 208 Plan Update

- **Update to 1978 Plan**
- **Watershed-Based**
- **Stakeholder Engagement – Cape-Wide & Watershed-Based**
- **Maximize Benefits of Previous Planning**
- **No Optimal Solution. Diverse Technologies**
- **Adaptive – Technology Development, Pilot Projects, Progress Monitoring**
- **Coordination with MassDEP and U.S. EPA**

Outreach

208 Town Meetings

Discussion

- 208 watershed planning process
- Status of local planning to date

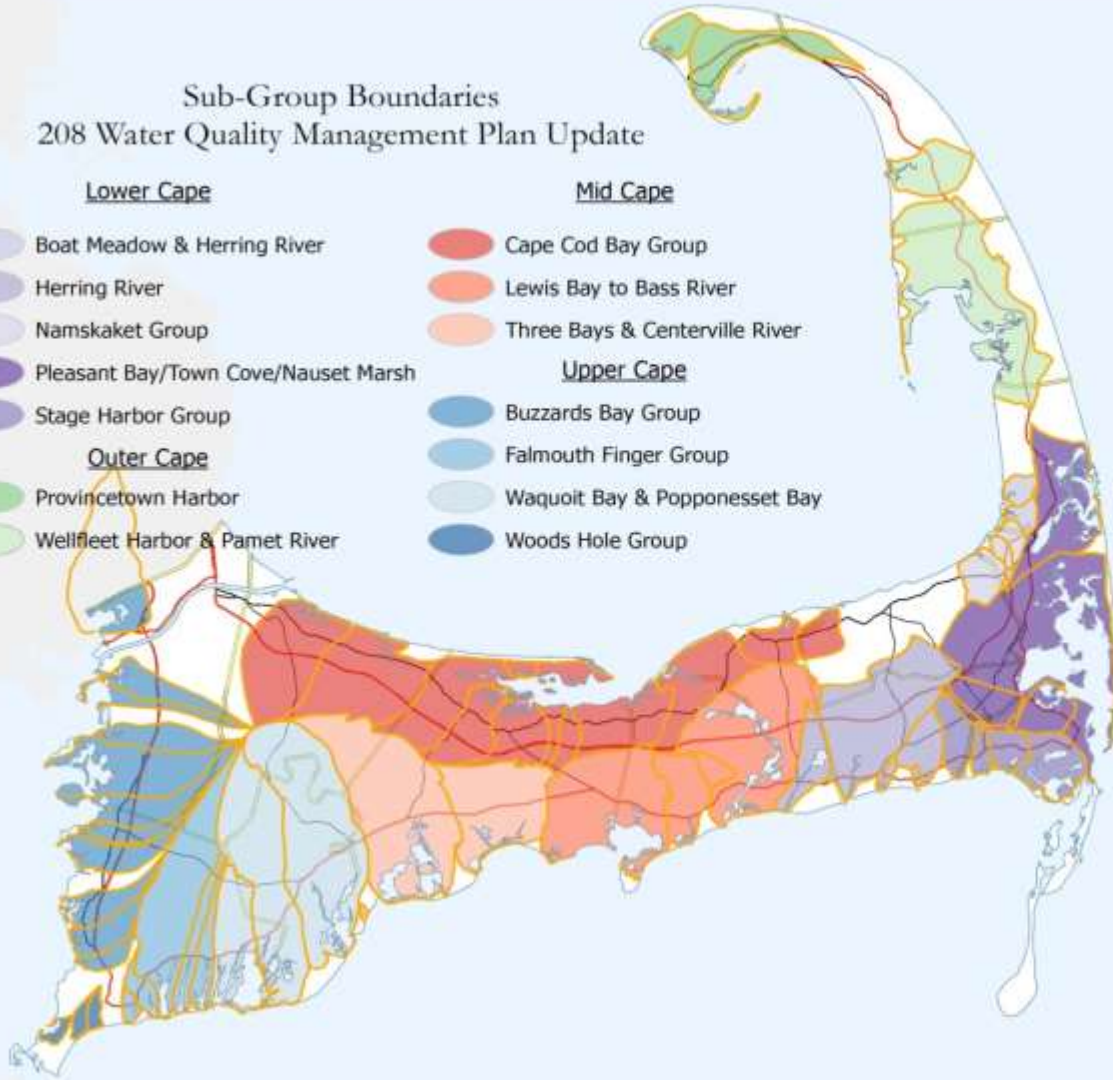
Public Meetings – Work Plan & Project Goals

- Outer Cape – 7/15
- Upper Cape – 7/16
- Lower Cape – 7/17
- Mid Cape – 7/18

Sub-Group Boundaries 208 Water Quality Management Plan Update



- | | |
|-------------------------------------|--------------------------------|
| <u>Lower Cape</u> | <u>Mid Cape</u> |
| Boat Meadow & Herring River | Cape Cod Bay Group |
| Herring River | Lewis Bay to Bass River |
| Namskaket Group | Three Bays & Centerville River |
| Pleasant Bay/Town Cove/Nauset Marsh | <u>Upper Cape</u> |
| Stage Harbor Group | Buzzards Bay Group |
| <u>Outer Cape</u> | Falmouth Finger Group |
| Provincetown Harbor | Waquoit Bay & Popponesset Bay |
| Wellfleet Harbor & Pamet River | Woods Hole Group |



Working Group Participants

- Target of 15-20 members per working group
- 8-10 Designated Seats
 - Local Elected Officials
 - Wastewater Committee Member
 - Town Professional Staff
 - Local Business Owner/Operator
 - Local Environmental Organization
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- 5-7 open seats for each group
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- Seek input from constituents, and keep them informed about the discussions and proceedings of the Working Group.
- Attend all meetings and participate actively in discussions.
- Engage in respectful and constructive dialogue with other participants, and seek creative options to resolve wastewater problems that respond to their own interests as well as other viewpoints.

Stakeholder Workshops

Three meetings for each of 14 Watershed Groups

MEETING 1:

Baseline Conditions & Impairments

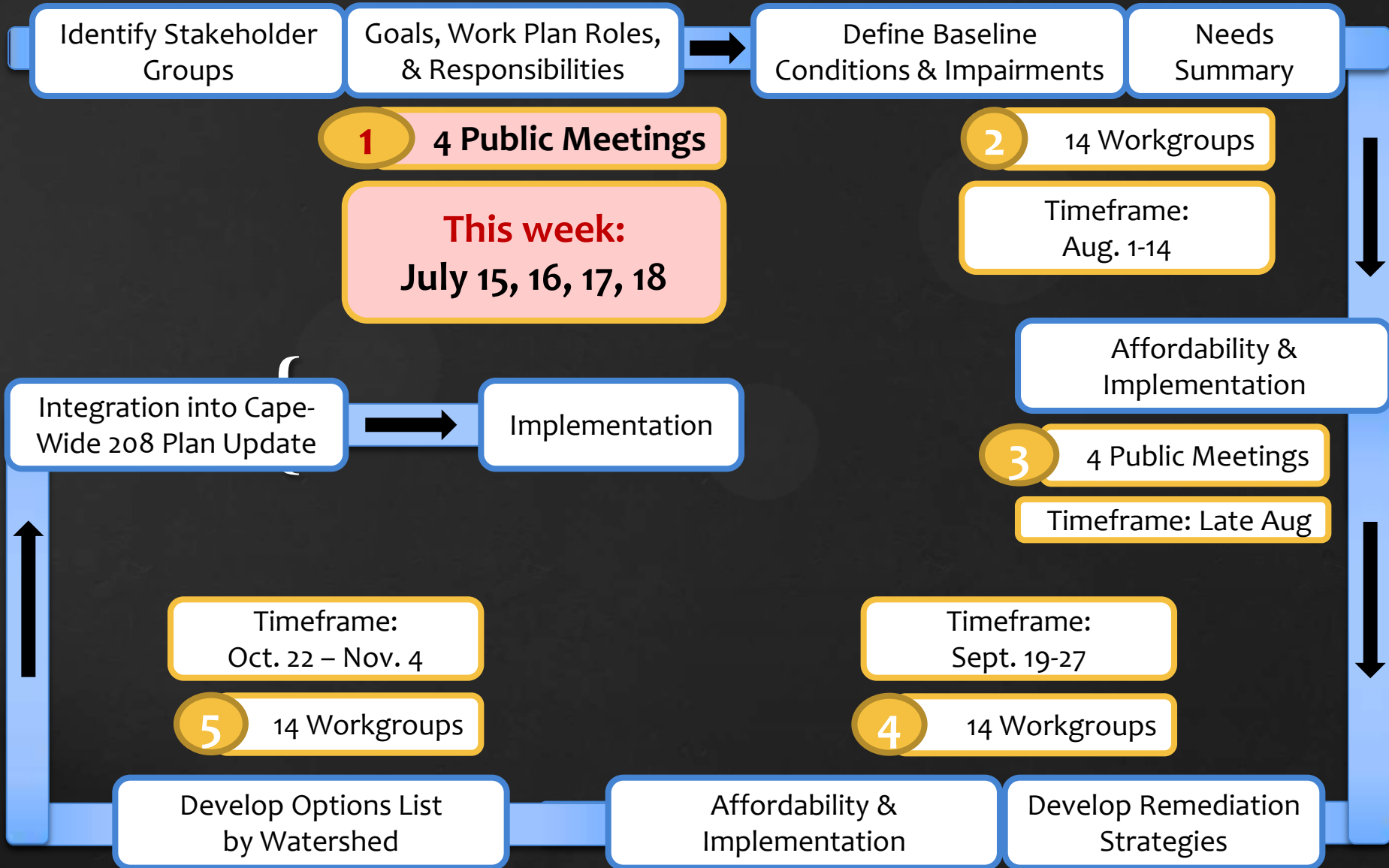
MEETING 2:

Develop Remediation Strategies

MEETING 3:

Preferred Plans by Watershed

The 208 Process - Year 1



(revised from initial presentation)

Outer Cape Working Groups

Provincetown Harbor Group

Provincetown Harbor Group
Judge Welsh Room

8:30 a.m –
12: 30 p.m.

Aug. 1

Sept. 24

Oct. 29

Wellfleet Harbor & Pamet River Group

Wellfleet Council on Aging

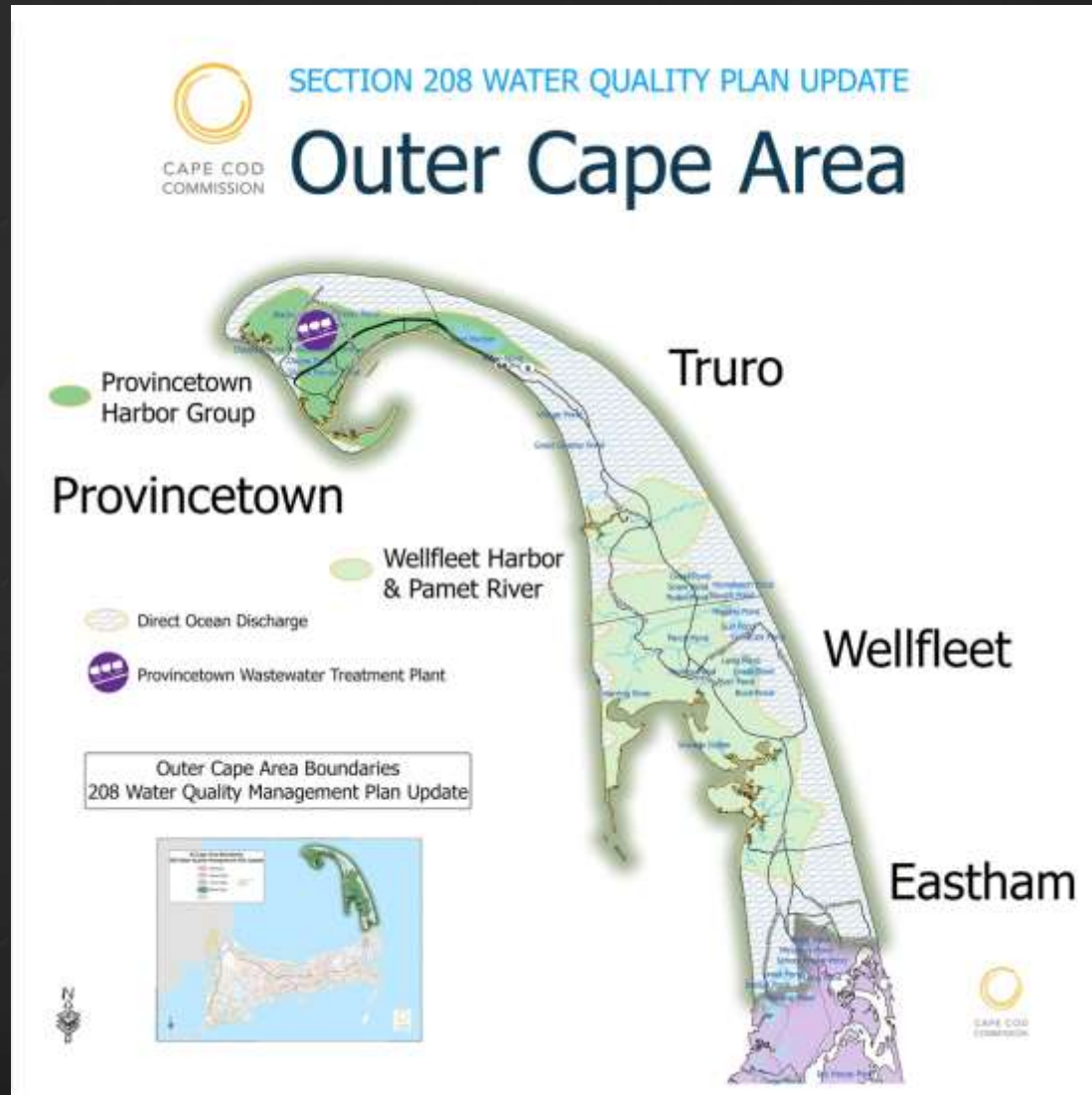
1 – 5 p.m.

Aug. 6

Sept. 25

Oct. 30

QUESTIONS?



Thinking about this process...

What is our greatest opportunity?

What is our greatest challenge?

Take 15 minutes to talk these
over in small groups.

Register to Play Cape₂O

Cape₂



It's something in the water

It's something in the water

<http://communityplanit.org/capecod>



CAPE COD
COMMISSION

Section 208

Area-Wide Water Quality Management Plan Update

Lower Cape Area



CAPE COD
COMMISSION

Why Are We Here?



Round Cove, Harwich – June 2013

The 208 Plan: What is It?

- Clean Water Act Section 208
- Much more known/done now
- Focus on 21st Century Problems
 - Nitrogen:** Saline waters
 - Phosphorus:** Fresh Waters
 - Growth & Title 5 Limitations**
- Directed to update the existing plan by the Commonwealth
- Provided \$3 million over three years to complete it

Approach to the 208 Plan Update

- **Update to 1978 Plan**
- **Watershed-Based**
- **Stakeholder Engagement – Cape-Wide & Watershed-Based**
- **Maximize Benefits of Previous Planning**
- **No Optimal Solution. Diverse Technologies**
- **Adaptive – Technology Development, Pilot Projects, Progress Monitoring**
- **Coordination with MassDEP and U.S. EPA**
- **Support and expedite targeted watershed solutions under existing plans**



57 Major Coastal Embayments

- ◇ Embayment Boundary
- Creeks
- Townline
- ▣ Ponds
- MMR Boundary

57 Embayments

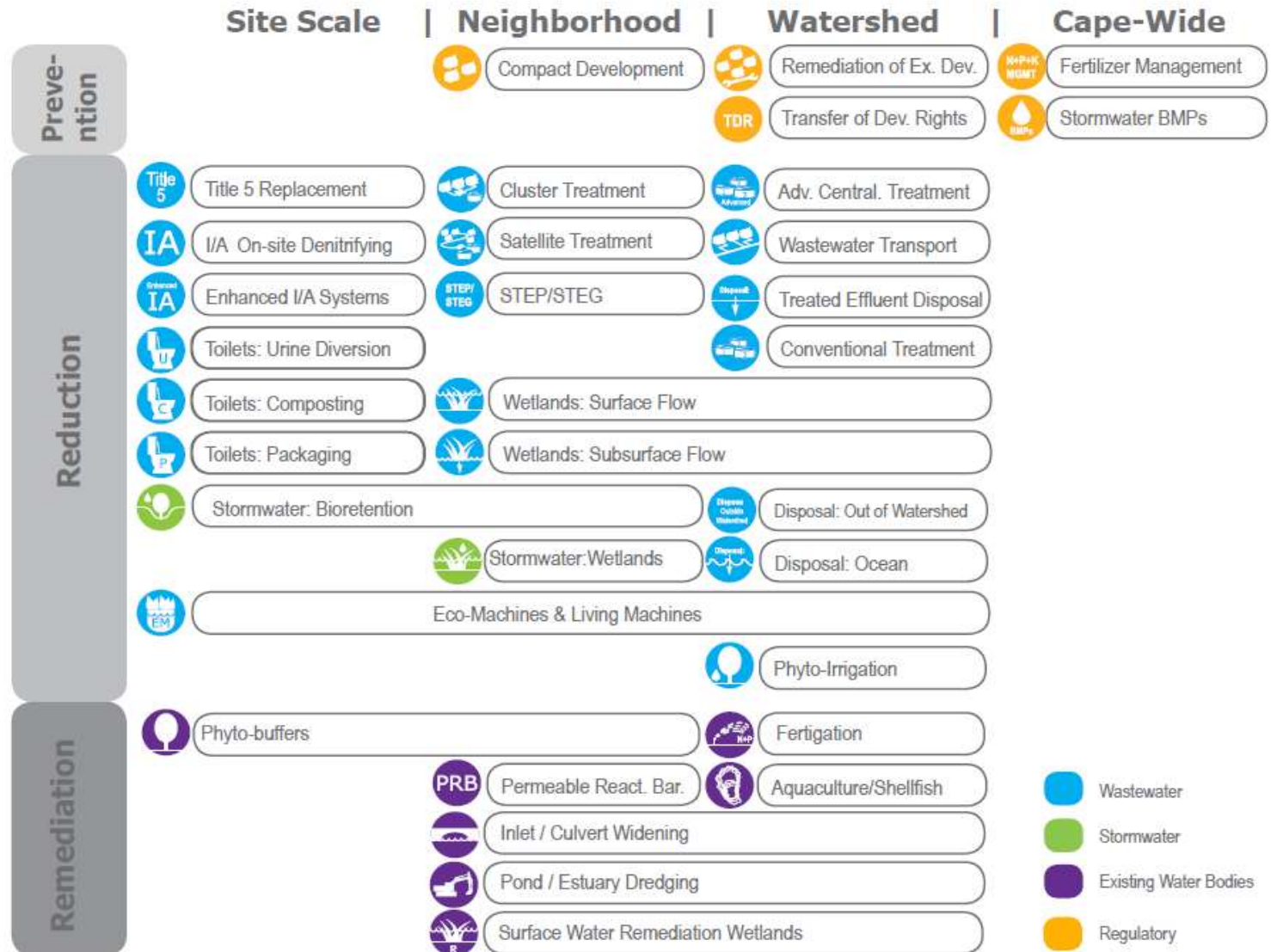


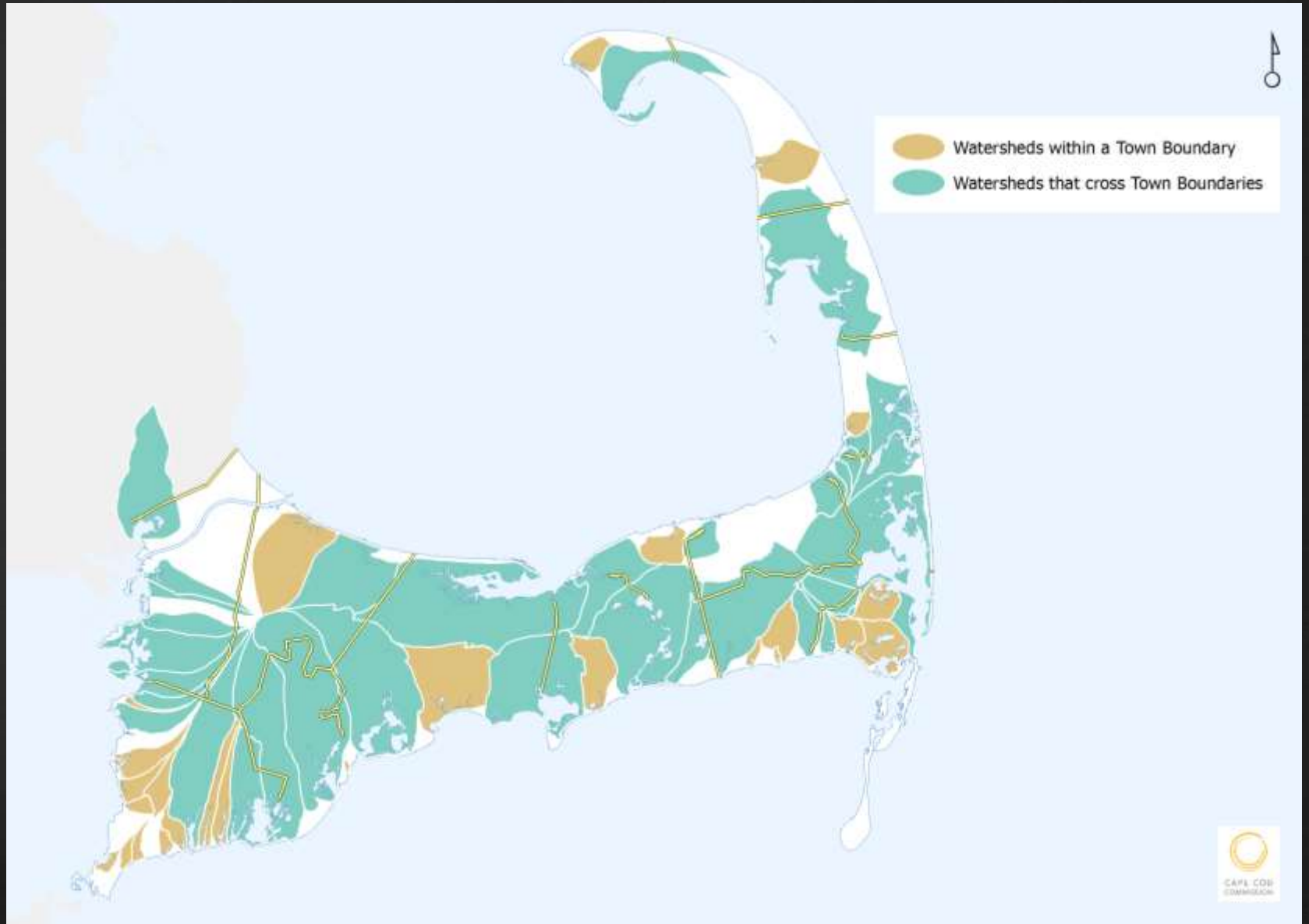
1 Sole Source Aquifer



NO Single Solution

Diverse Mix of Technologies

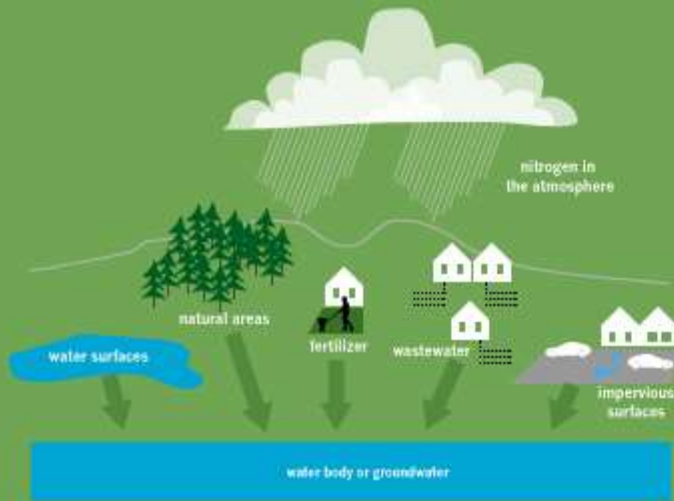




Nitrogen Sources/Facts

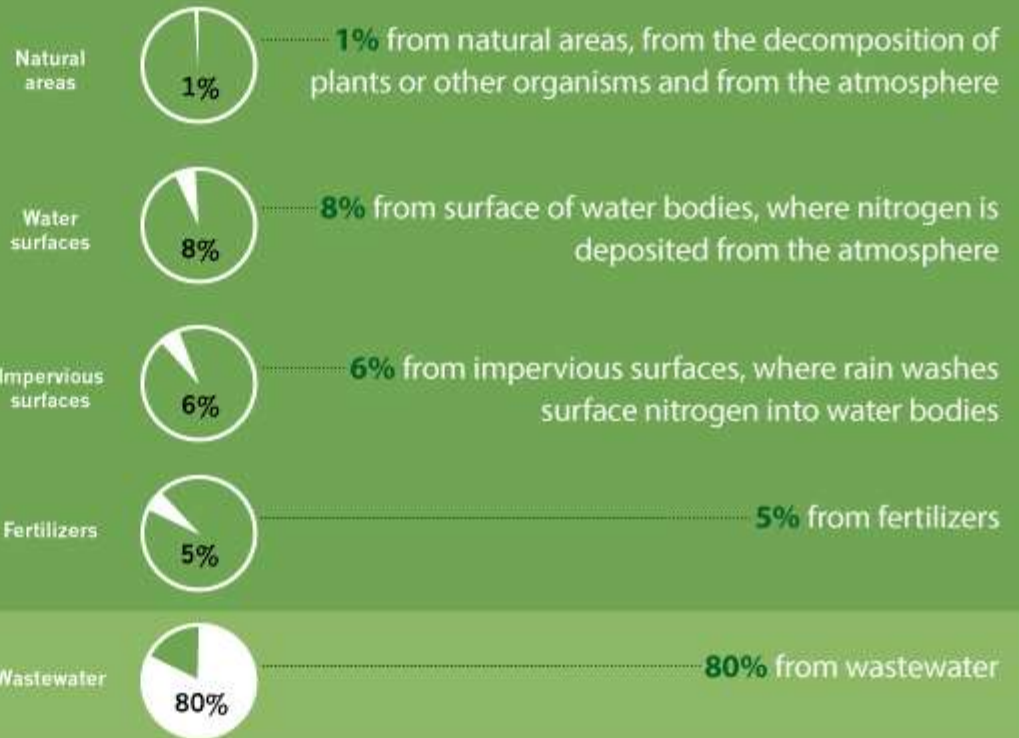
NITROGEN

Nitrogen is an element abundant in the environment. Nitrogen is a nutrient that is common in all living things and essential for growth.

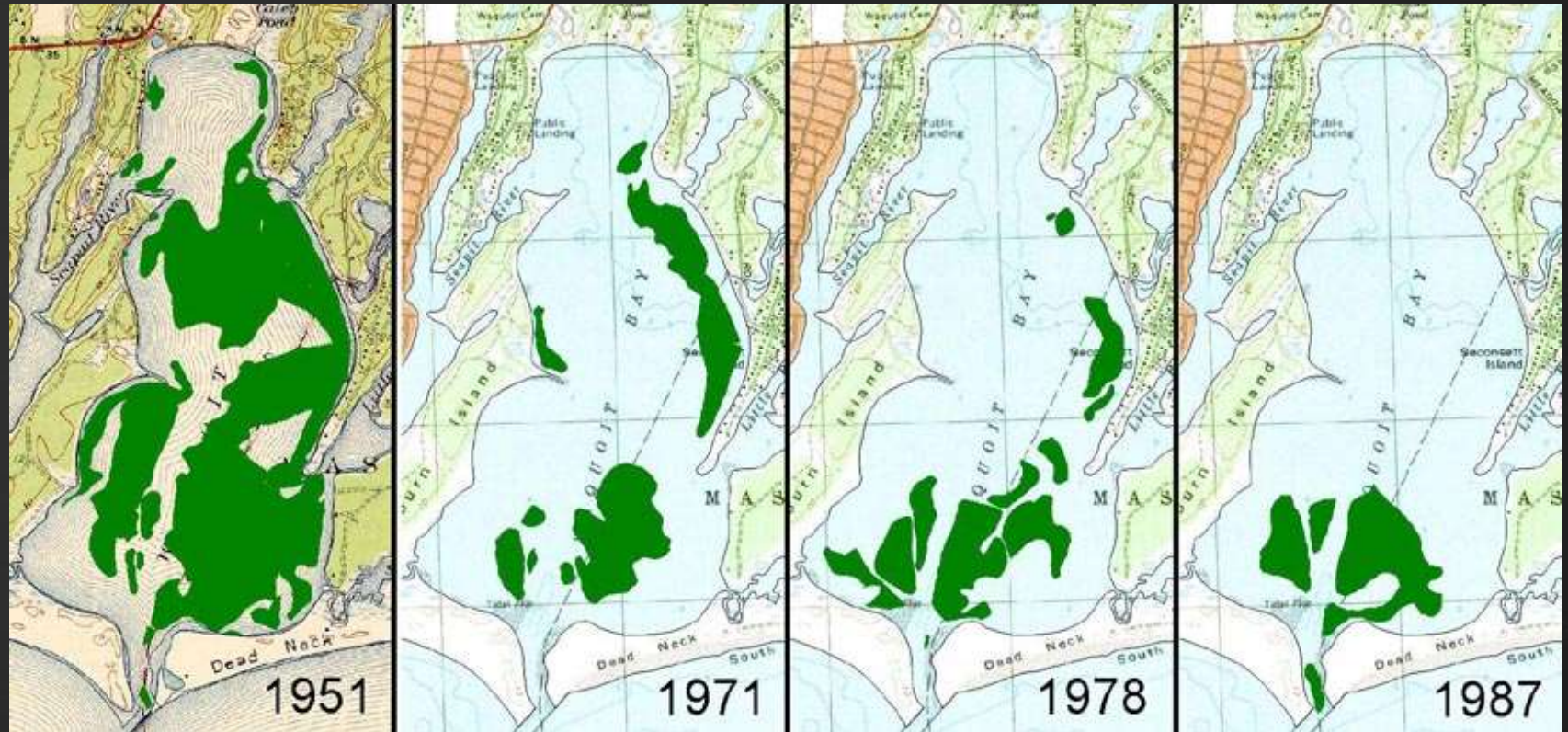


CAPE COD NITROGEN FACTS

Nitrogen enters our water bodies from a variety of natural and human sources

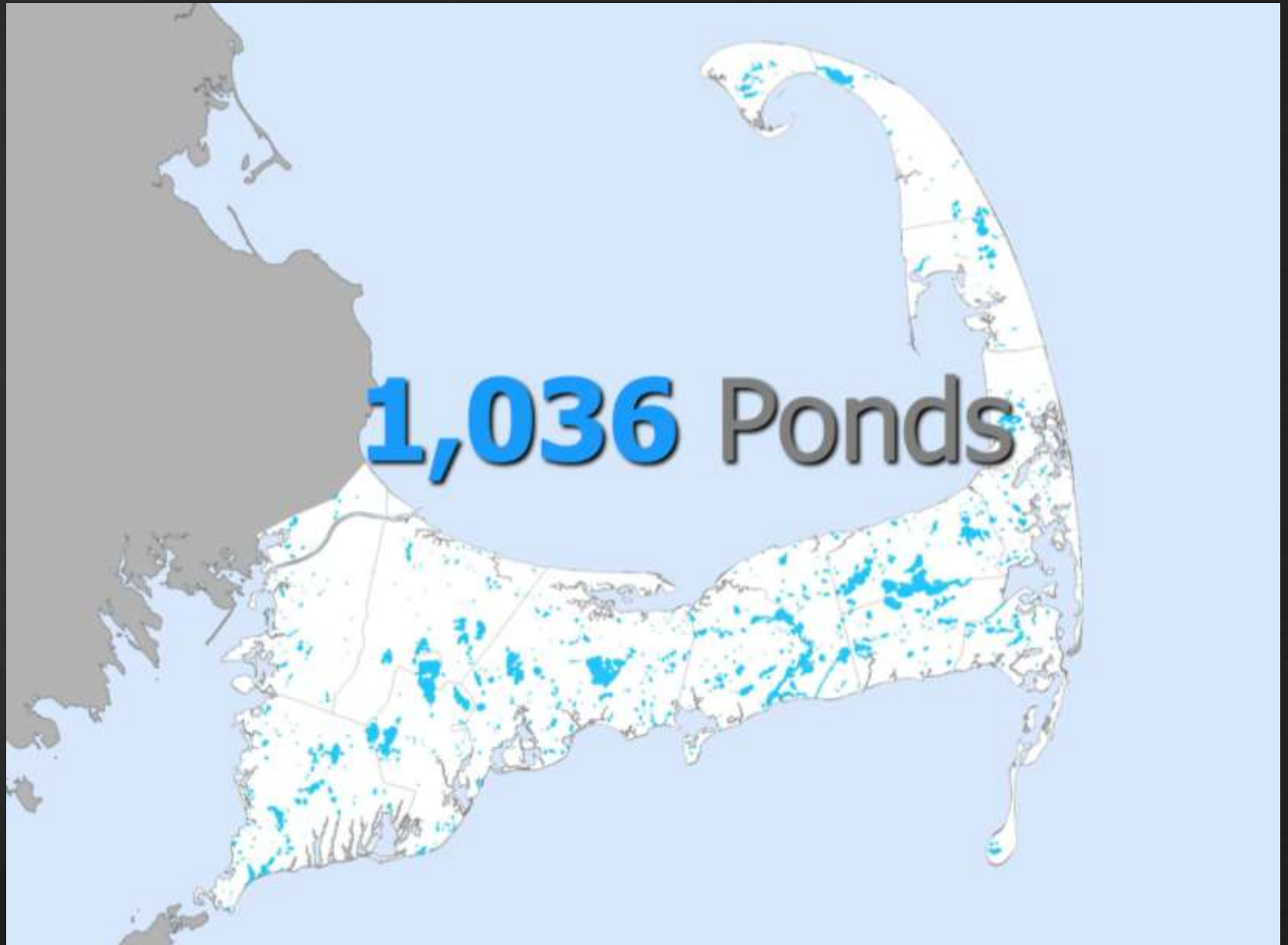


Coastal Water Quality Problem



Reduction in eel grass

Waquoit Bay - Falmouth and Mashpee



Phosphorus and Freshwater

PHOSPHORUS

Phosphorus is an essential nutrient for all life on earth. Our bodies need phosphorus for healthy bones and teeth.

Plants need phosphorus to grow, but there is a limit. When there is too much phosphorus in a pond, lake or stream, algae may bloom and plant life and fish can die as a result of eutrophication.



Common sources of phosphorus entering our fresh and coastal water bodies are:

Runoff from mining, farming, animal waste, and home lawn fertilizers



Wastewater from our septic tanks -- including human wastes, food residues, detergents, and soaps.

Phosphorus can be reduced to harmless amounts as it travels through varying soils, which act as a filter for phosphorus.



Homes located close to pond shore



Homes located away from pond shore

Locating development -- including septic systems, lawns, and drainage from paved surfaces -- away from pond shores helps to protect the quality of our fresh water bodies.

Project Team

Consultants:

AECOM, Consensus Building Institute
Emerson College, Engagement Game Lab,
Offshoots Productive Landscapes

Staff:

Cape Cod Commission

Stakeholder Engagement

CAPE-WIDE

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Communications Strategy
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Regulatory
Coordination

Technical Advisory
Committee

WATERSHED

Stakeholder Communication
Workshop Facilitation
Capacity Building
Watershed Status Portal

watersheds.capecodcommission.org

208 Advisory Board

Meets 3rd Tuesday of each month

Members:

Robert Churchill: Churchill Associates

Robert Lawton: Interim Harwich Town Administrator, Former Yarmouth Admin

Wendy Northcross: CEO of the Cape Cod Chamber of Commerce

Sheila Vanderhoef: Eastham Town Administrator

Virginia Valiela: Member- Falmouth Water Quality Mngmt Committee

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Regulatory, Legal & Institutional Work Group

Members:

Cape Cod Commission

MassDEP

U.S. EPA

U.S. Army Corps of Engineers

Regulatory Flexibility, Financial Affordability

- Provides the basis for state & federal support
- Seek regulatory flexibility for innovative and shared solutions
- Seek funding covering 50% of capital costs

New Tools/Resources

The Commission is developing a set of innovative tools to assist with decision making.

- Watershed MVP
- Systems Dynamics Model
- Green Infrastructure Site Selection Process
- Game-based Planning

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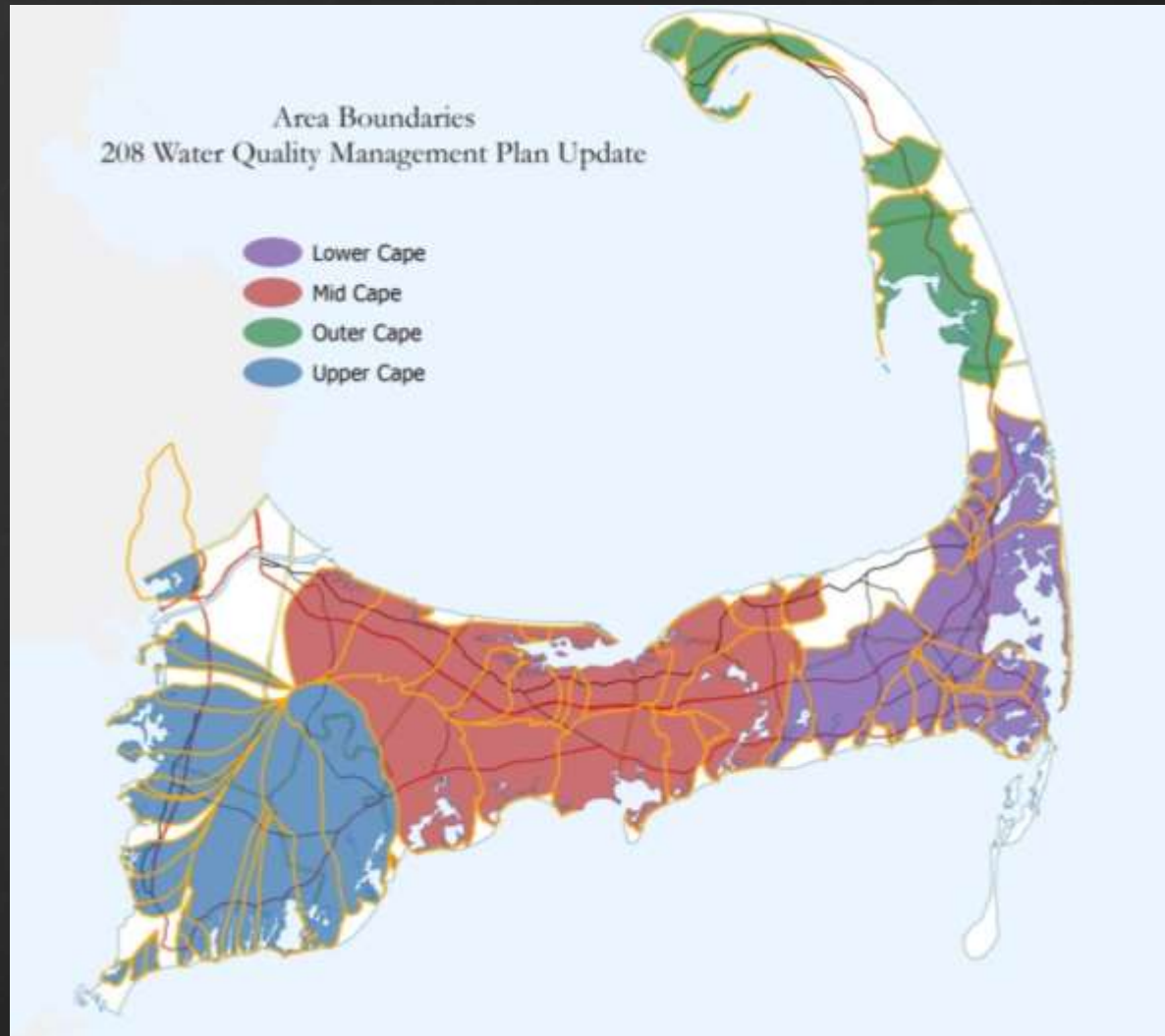
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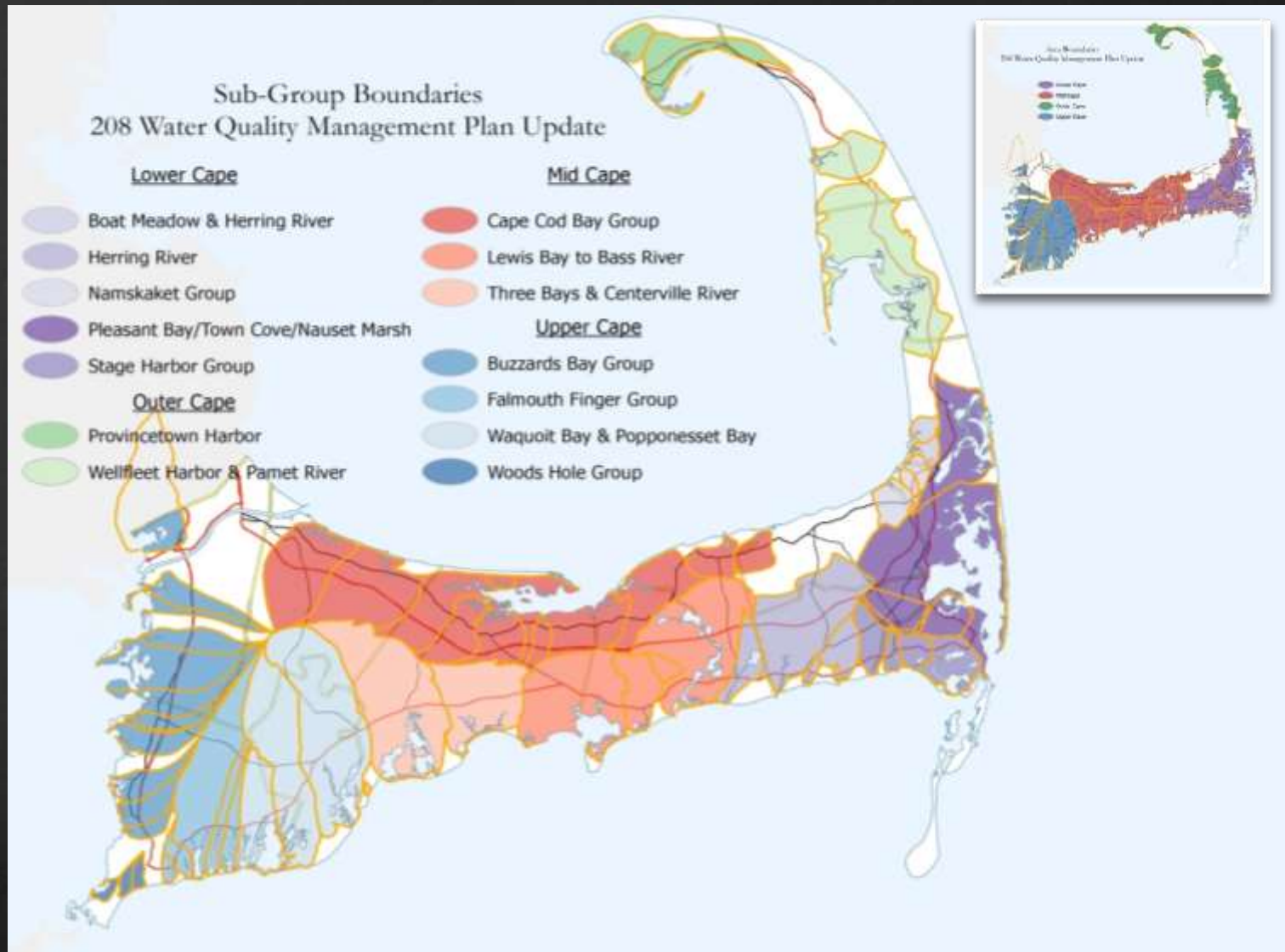
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Four Regions



Four Regions Into 14 Working Groups



Five Lower Cape Working Groups

HERRING RIVER, HARWICH

SHARED BY: Brewster, Dennis, Yarmouth

Embayment Watersheds:

- **SWAN RIVER** – Dennis, Harwich
- **HERRING RIVER** – Brewster, Dennis, Harwich
- **ALLEN HARBOR** – Harwich
- **WYCHMERE HARBOR** – Harwich
- **SAQUATUCKET** – Harwich

STAGE HARBOR GROUP

SHARED BY: Chatham, Harwich

Embayment Watersheds

- **RED RIVER** – Chatham, Harwich
- **TAYLORS POND/MILL CREEK** – Chatham
- **SULFER SPRINGS/BUCKS CREEK** – Chatham
- **STAGE HARBOR** – Chatham

NAMSKAKET GROUP

SHARED BY :Brewster, Eastham, Orleans

Embayment Watersheds

- **NAMSKAKET CREEK** – Brewster, Orleans
- **LITTLE NAMSKAKET CREEK** – Brewster, Orleans
- **ROCK HARBOR** – Eastham, Orleans

BOAT MEADOW & HERRING RIVER

SHARED BY: Eastham, Orleans

Embayment Watersheds

- **BOAT MEADOW RIVER** – Eastham, Orleans
- **HERRING RIVER** – Eastham

PLEASANT BAY/TOWN COVE/NAUSET MARSH

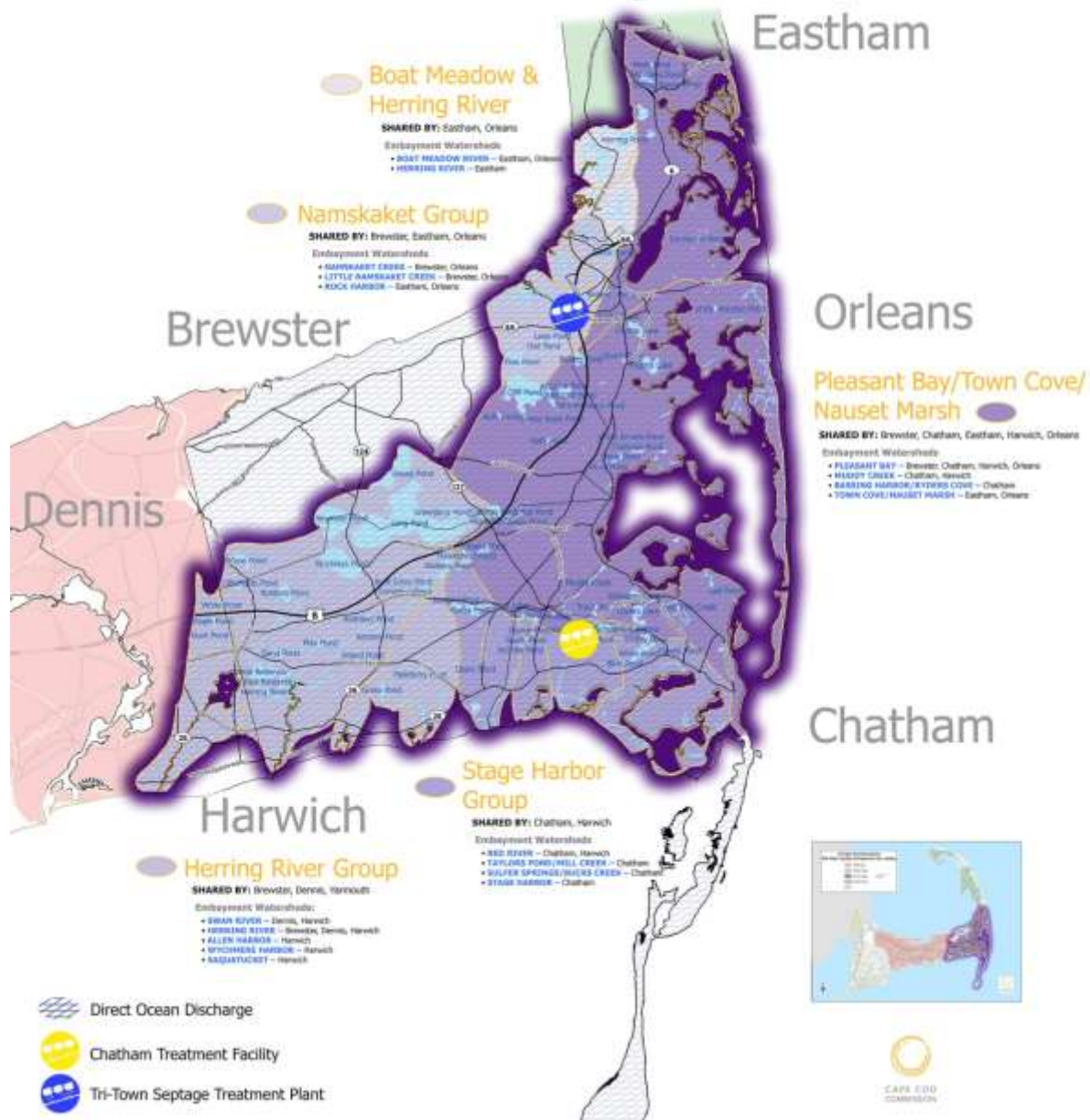
SHARED BY :Brewster, Chatham, Eastham, Harwich, Orleans

Embayment Watersheds

- **PLEASANT BAY** – Brewster, Chatham, Harwich, Orleans
- **MUDDY CREEK** – Chatham, Harwich
- **BASSING HARBOR/RYDERS COVE** – Chatham
- **TOWN COVE/NAUSET MARSH** – Eastham, Orleans



Lower Cape Area



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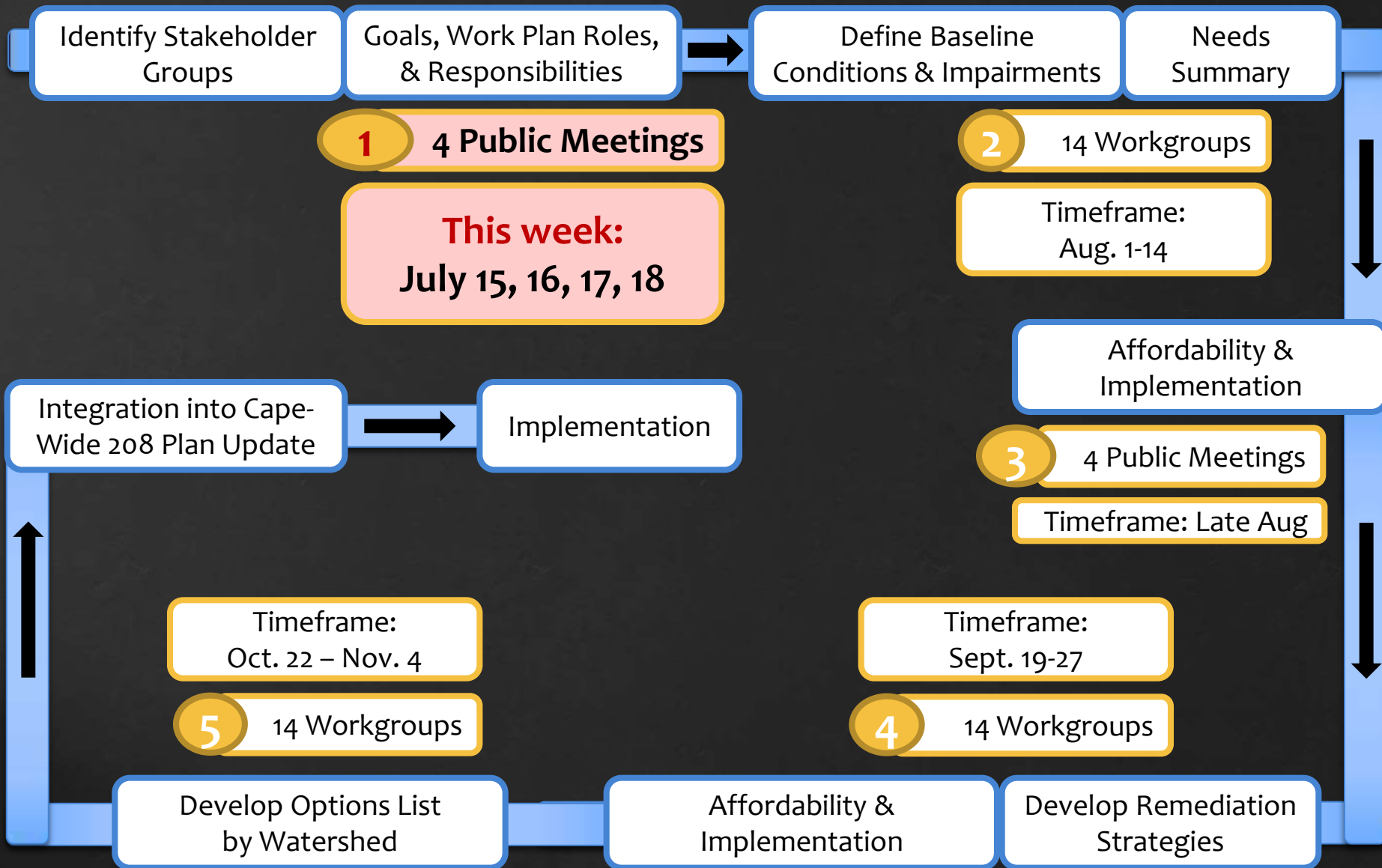
Develop Remediation Strategies

MEETING 3:

Develop Options List by Watershed

(revised from initial presentation)

The 208 Process - Year 1



(revised from initial presentation)

Lower Cape Working Groups

Namskaket Group

Snow Library

1:00 – 5:00
p.m.

Aug. 9

Sept. 17

Oct. 28

Stage Harbor Group

Chatham Community
Center

8:30 a.m –
12: 30 p.m

Aug. 8

Sept. 26

Oct. 29

Herring River (Harwich)

Harwich Community
Center

8:30 a.m –
12: 30 p.m

Aug. 5

Sept. 24

Oct. 21

Pleasant Bay/Town Cove Nauset Marsh

Orleans Town Hall

8:30 a.m –
12: 30 p.m.

Aug. 12

Sept. 27

Oct. 24

Boat Meadow & Herring River (Eastham)

Eastham Town Hall

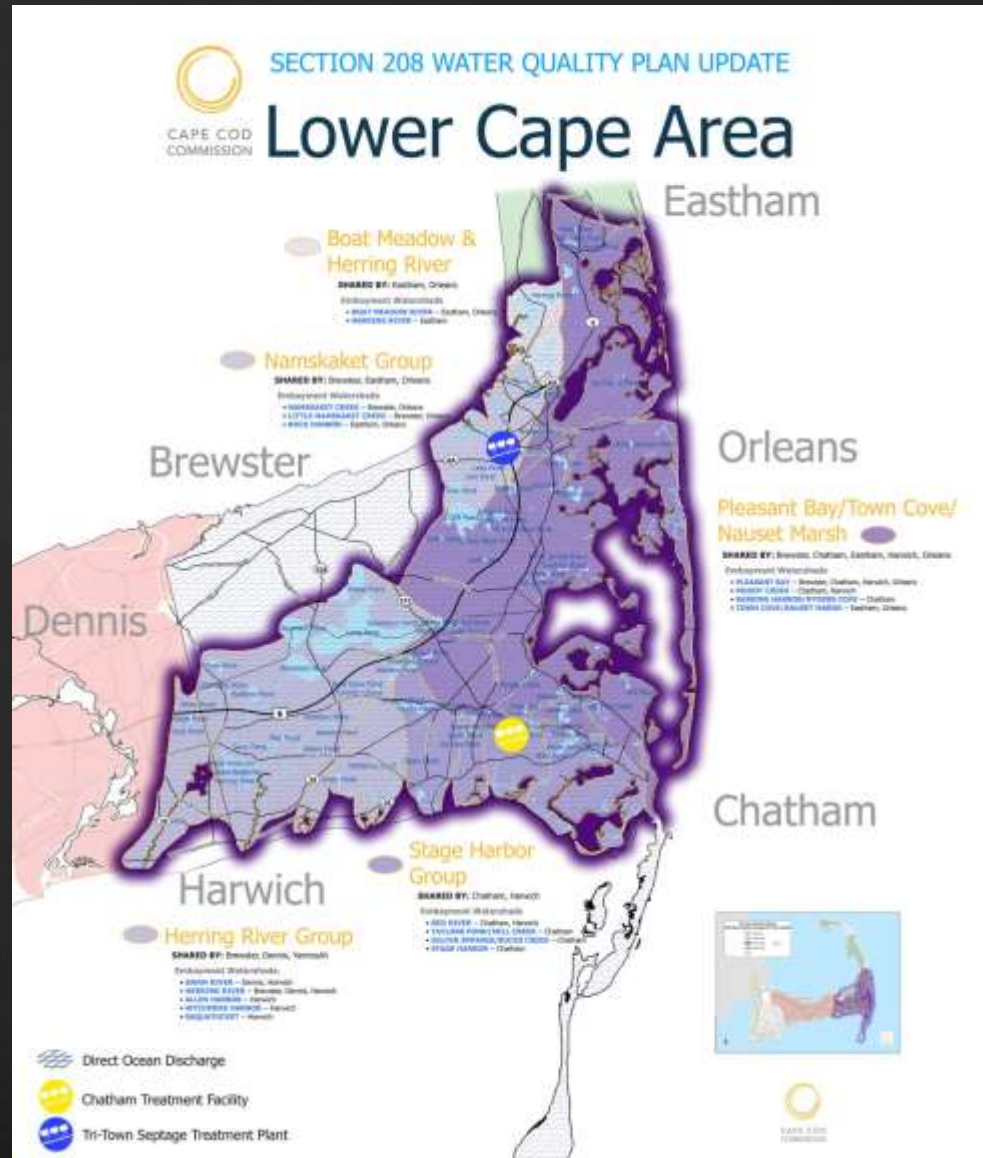
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Aug. 7

Sept. 25

Oct. 22

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