

# Freshwater Initiative

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Stakeholder Meeting 3 – Monomoy Lens

HARWICH COMMUNITY CENTER | JUNE 4, 2024

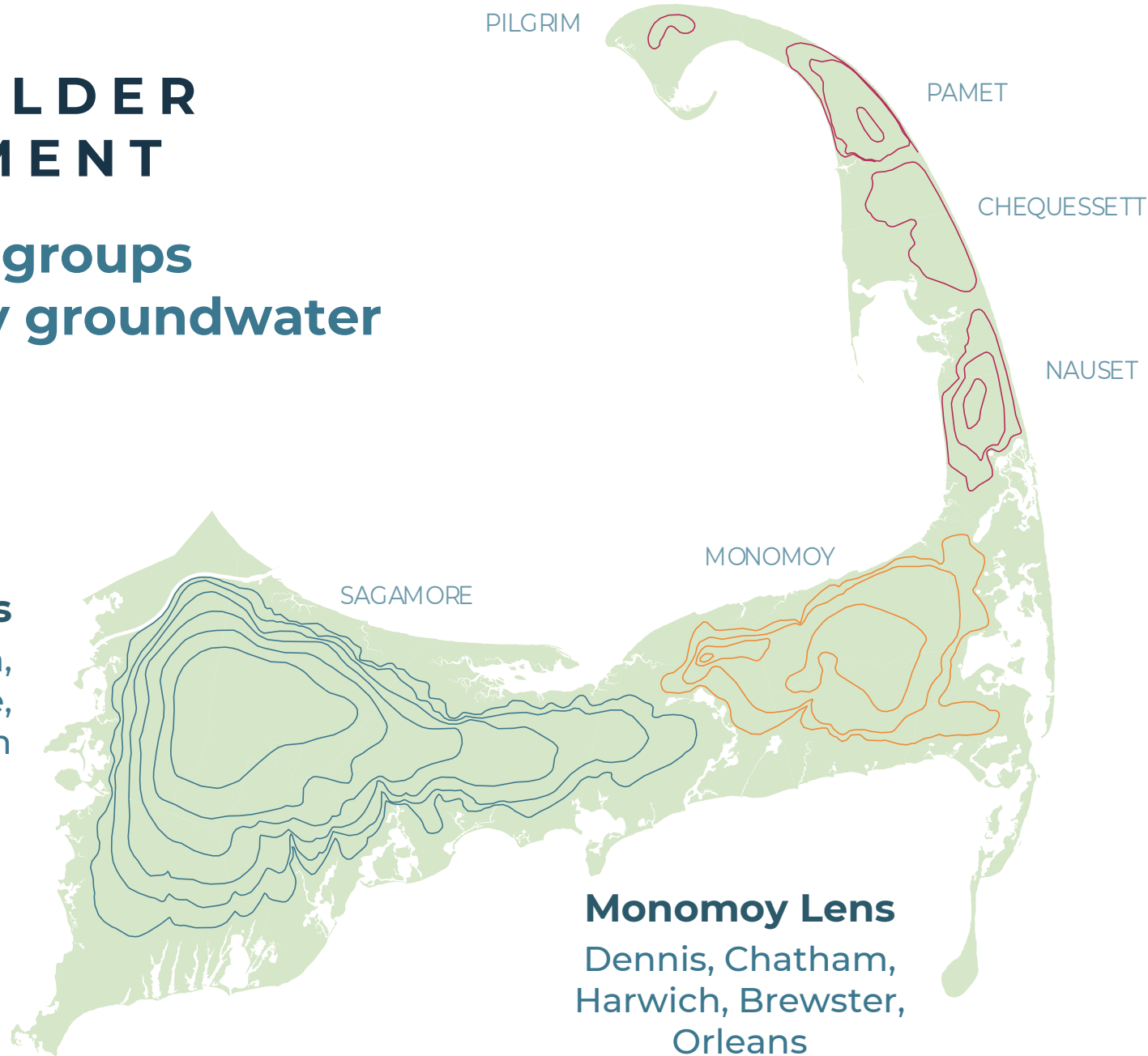


CAPE COD  
COMMISSION

# STAKEHOLDER ENGAGEMENT

Stakeholder groups  
organized by groundwater  
lenses

**Sagamore Lens**  
Bourne, Falmouth,  
Sandwich, Mashpee,  
Barnstable, Yarmouth



**Outer Cape  
Lenses**  
Eastham,  
Wellfleet, Truro,  
Provincetown

**Monomoy Lens**  
Dennis, Chatham,  
Harwich, Brewster,  
Orleans

# Stakeholder Meetings

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MARCH 19 AND 20

Meeting 1  
**Defining the Problem**

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Establish a shared understanding of freshwater systems, the Freshwater Initiative, and stakeholder perspectives

APRIL 22 AND 23

Meeting 2  
**Exploring Strategies and Priorities**

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Highlight existing pond management strategies, review breadth of potential strategies and identify priorities, discuss future pond management prioritization

JUNE 3 AND 4

Meeting 3  
**Recommendations and Implementation**

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Discuss recommendations and resources for implementation; solicit stakeholder feedback

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**FRESHWATER  
INITIATIVE**

# Agenda

## Meeting 3

- Welcome
- Freshwater Initiative Update
- Tools & Resources
- Draft Recommendations
- Next Steps



PLEASE BRIEFLY SHARE THE FOLLOWING:

**Name**

**Organizational Affiliation** (if any)

**One point you want to be sure we hear  
about Cape Cod's ponds**

# Cape Cod Freshwater Initiative

A science-based, information-driven planning process that will engage stakeholders and enable action to protect and restore Cape Cod's freshwater ponds

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## ESTABLISHING THE BASELINE

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Ponds And Lakes Atlas Update



Physical Characteristics



Data Management And Analysis



Remote Sensing

## STRATEGY DEVELOPMENT

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Engagement and Outreach



Strategies Database



Economic Analysis



Legal Analysis

## ONGOING MONITORING AND ANALYSIS

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Monitoring Program



Ongoing Data Management and Analysis



# Current Tools and Resources

**Harwich Ponds Profile**  
A RESOURCE OF THE CAPE COD FRESHWATER INITIATIVE

**Pond Watersheds**  
The area around a pond that contributes to freshwater ponds and streams. Watersheds for ponds are defined by the pond's watershed boundary. The pond's watershed boundary has been determined using the Cape Cod Pond Watershed Initiative's methodology to match larger than the water bodies. The watersheds for ponds are defined by the watershed boundary of the pond's watershed.

**Land Use in Pond Buffer Area**  
Understanding the land use in a pond's buffer area is important for determining the pond's watershed boundary. A large percentage of pond buffer areas are forested, which helps to filter and absorb pollutants. Land use in a pond's buffer area is defined by the watershed boundary of the pond's watershed.

**Top 5 Largest Ponds**

RANK	NAME	AREA (ACRES)
1	Long Pond	762.0
2	Harwich Pond	188.4
3	Harwich Pond	174.0
4	Harwich Pond	124.0
5	Harwich Pond	72.0

**Top 5 Deepest Ponds**

RANK	NAME	DEPTH (FEET)
1	Long Pond	39.4
2	Harwich Pond	38.4
3	Harwich Pond	38.4
4	Harwich Pond	38.4
5	Harwich Pond	38.4

**Documented Town Reports and Actions**

**Local Pond Organizations**

**Pond Strategies Implemented**

## Town and County Ponds Profiles

**Pond Restoration Projects Viewer**

Map showing restoration projects across Cape Cod, including locations like Harwich, Bourne, and Sandwich. The map includes a search bar and navigation controls.

## Pond Restoration Projects Viewer

**Ponds Atlas Viewer**

Map showing the distribution of ponds across Cape Cod, with various ponds labeled and highlighted in blue.

## Ponds Atlas Viewer

**Strategies Database and Fact Sheets**

Informational page detailing restoration strategies, including sections for Description, Advantages, Constraints, Implementation, and Relative Cost.

**DESCRIPTION**  
Pond buffer planting involves the planting of native, beneficial plants within a buffer area surrounding a pond. This buffer area helps to filter and absorb pollutants, improve water quality, and provide habitat for wildlife.

**ADVANTAGES**  
• Low maintenance  
• Improves water quality and habitat  
• Depending on plants, they provide recreational opportunities

**CONSTRAINTS**  
• Need access to grow operation  
• Certain costs for plant material  
• Plants require monitoring and watering  
• Competition among plants and other vegetation

**IMPLEMENTATION**  
**POTENTIAL ACTIONS**  
• Native plants are most effective for filtering pollutants.  
• Plant Landmarks: planting and watering regular plants to improve pond water quality.  
• Landmarks: planting native plants to improve pond water quality.  
• Pond Group: support and encourage others.

**RELATIVE COST**  
[Dollars] COST Variable

**FINANCIAL CONSIDERATIONS**  
Cost to plant operation of the pond buffer planting is low. The cost of the pond buffer planting is low. The cost of the pond buffer planting is low.

**POTENTIAL FUNDING SOURCES**  
• Community Development Block Grant  
• State  
• Local Government

## Strategies Database and Fact Sheets

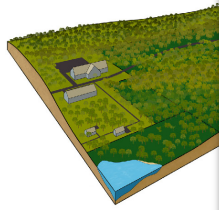
# 40 DRAFT STRATEGY FACT SHEETS

## FRESHWATER POND AREA PLANNING / REGULATION

### Land Protection

**THREATS ADDRESSED**  Excess Nutrients

**STRATEGY GOALS** Protect  Manage



**DURATION OF BENEFITS** Less than one month  One season or year

**DESCRIPTION**  
Land protection involves a Town, land to limit or prevent development at that site. Along with land protection, stewardship functions. Land protection protects pond along the pondshore or within the pond practices detrimental to pond health.

**ADVANTAGES**

- Land protection provides multiple benefits including wildlife and plant habitat, protection, management, water filtration, nutrient recreational benefits
- Land donation can provide a tax benefit for property owner
- Land protection prevents development in sensitive pond resource areas
- Benefits town-wide and regional land efforts

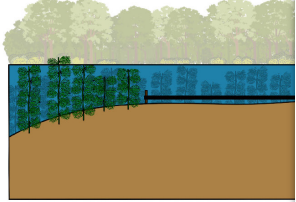
A Resource of the Cape Cod Freshwater Initiative

## VEGETATION MANAGEMENT

### Benthic Barriers

**THREATS ADDRESSED**  Excess Nutrients  Pollutant Inputs

**STRATEGY GOALS** Protect  Manage  Rehabilitate



**DURATION OF BENEFITS** Less than one month  One season or year  Multiple seasons or years

**DESCRIPTION**  
A benthic barrier is of variable composition (e.g., pond reverse-sediment, layering) placed on top of plants or light.

**ADVANTAGES**

- Useful on localized basis, limit to <10% of littoral zone
- Good for small areas near docks or beaches without affecting the rest of the waterbody
- Can be an effective management strategy, particularly when plant densities are low
- Non-toxic, and can be flexible and selective
- Can improve fish habitat by creating edge effects

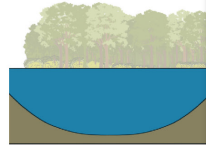
A Resource of the Cape Cod Freshwater Initiative

## NUTRIENT MANAGEMENT

### Permeable Reactive Barrier

**THREATS ADDRESSED**  Excess Nutrients

**STRATEGY GOALS** Protect  Manage  Rehabilitate



**DURATION OF BENEFITS** Less than one month  One season or year  Multiple seasons or years

**DESCRIPTION**  
A permeable reactive barrier (PRB) can be used to prevent nutrients (mainly phosphorus) from entering a pond by allowing groundwater contaminants through different processes to be biodegraded by microbes in the barrier. PRBs can also be used in combination with other strategies.

**ADVANTAGES**

- Relatively low capital and operating costs
- No above ground structures
- Potential for high nutrient (or other) removal rates
- Improves energy savings / nutrient management
- Improves management of flood-prone areas

Upon barrier removal, area prone to recolonization by species

A Resource of the Cape Cod Freshwater Initiative

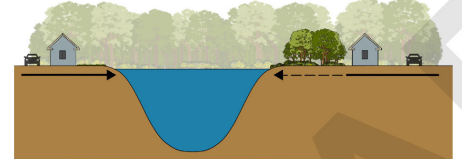
## NUTRIENT MANAGEMENT

### Pondshore Buffer Plantings

**THREATS ADDRESSED**  Excess Nutrients  Pollutant Inputs  Algal Blooms  Erosion  Invasive/Nuisance Species

**STRATEGY GOALS** Protect  Manage  Rehabilitate

**STRATEGY CO-BENEFITS** Habitat  Improve Aesthetics  Improve Recreation  Neutral



**DURATION OF BENEFITS** Less than one month  One season or year  Multiple seasons or years

**MAINTENANCE REQUIREMENTS** Monthly  Annually  Infrequently

**DESCRIPTION**  
Pondshore buffer planting involves the planting of native, beneficial plants within a buffer area along a pond shoreline. It may include enhancing existing pondshore plantings or replacing lawn, invasive species, and impervious surfaces within a certain distance (e.g., 100'-300') of the pond edge with native plants suitable for the pondshore environment. Through pondshore buffer planting, plant roots and associated soils prevent erosion, intercept sediments, absorb stormwater, nutrients and other pollutants and prevent these from entering and degrading ponds.

**ADVANTAGES**

- Simple to implement
- Low-maintenance if native plants used, "right plant, right place" principle followed, and once plants are established
- Enhances pondshore aesthetics and habitat value
- Depending on scale, may provide recreational opportunities, such as walking trails through restored areas

**CONSTRAINTS**

- Need to source or grow appropriate plants
- Up-front costs to purchase and install plants
- Plants require monitoring and maintenance
- Competition among plants will affect results, so expectations need to be managed and the choice of appropriate plants is important
- Invasive or aggressive species may need to be monitored and controlled to ensure success of desirable native species

A Resource of the Cape Cod Freshwater Initiative

## MANAGEMENT APPROACHES

- Planning & Regulations
- Nutrient Management
- Sediment Management
- Algae Management
- Vegetation Management
- Fisheries Management



# | Monitoring and Data Project Team and Roles



## **Association to Preserve Cape Cod**

Collect field monitoring data under Regional Pond Monitoring Program



## **Cape Cod Commission**

Manage freshwater data and database  
Host and maintain data portal



## **Woods Hole Oceanographic Institution**

Develop code for data formatting, analysis, and visualization



## **End-user group**

Provide input and feedback on interface design, features, and capabilities



## **Web Developer**

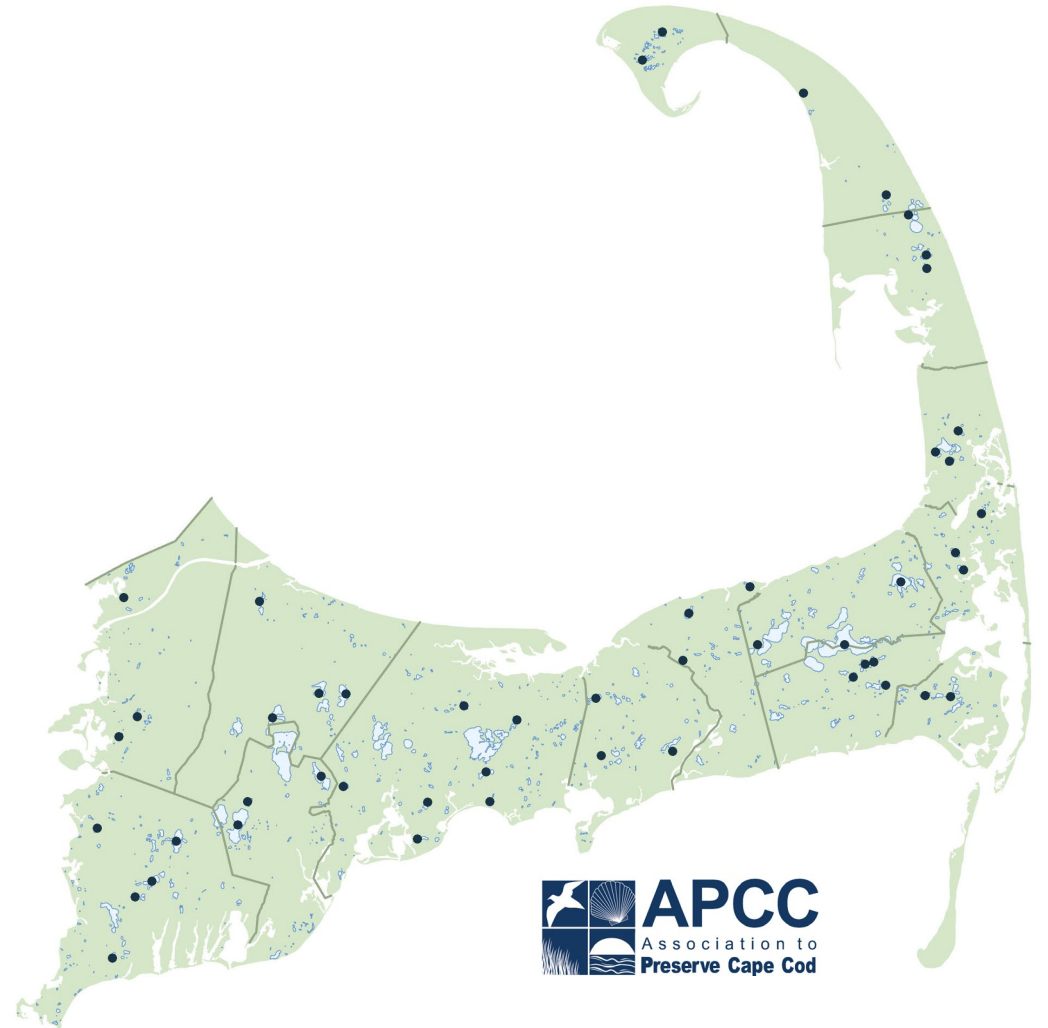
Translate data analyses and visualizations into public web application

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# POND MONITORING PROGRAM

## 2024 Regional Pond Monitoring

- **346 pond visits** by staff and volunteers in 2023
- **118 pond visits** through May 2024
- Regional database includes **data through March 2024**



# | Monitoring and Data Project Team and Roles



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# WATER QUALITY DATA PORTAL

## Goals:



Interactive tool for data access and exploration

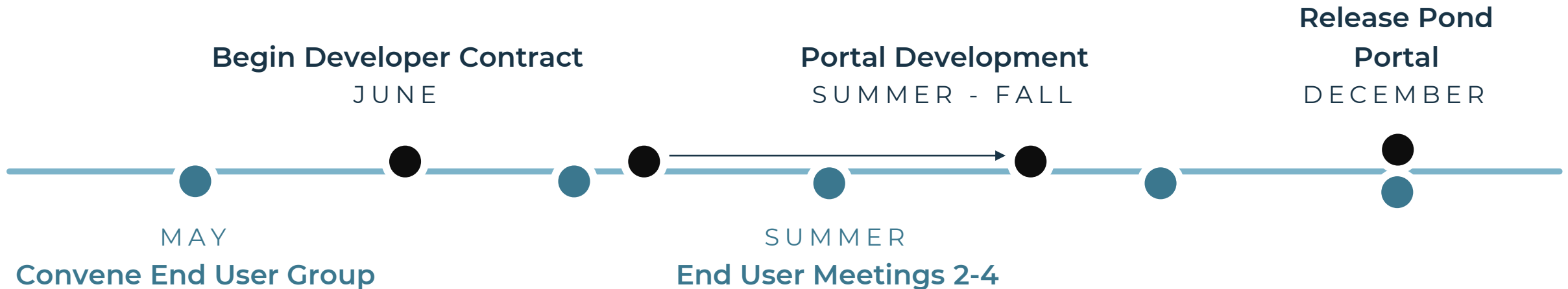


Allow users to select pond(s) / parameters / analyses



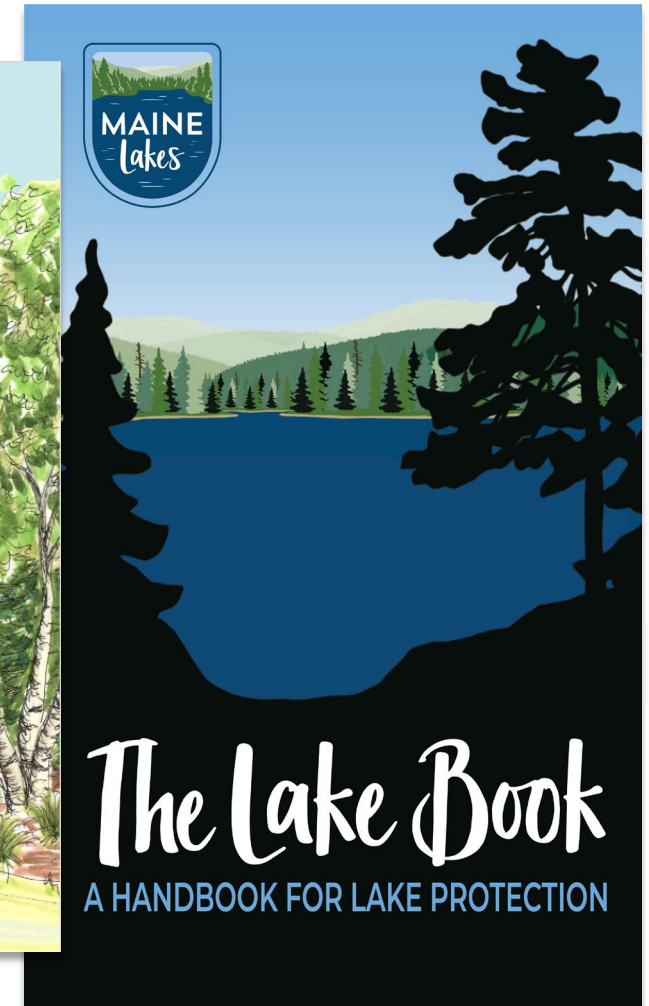
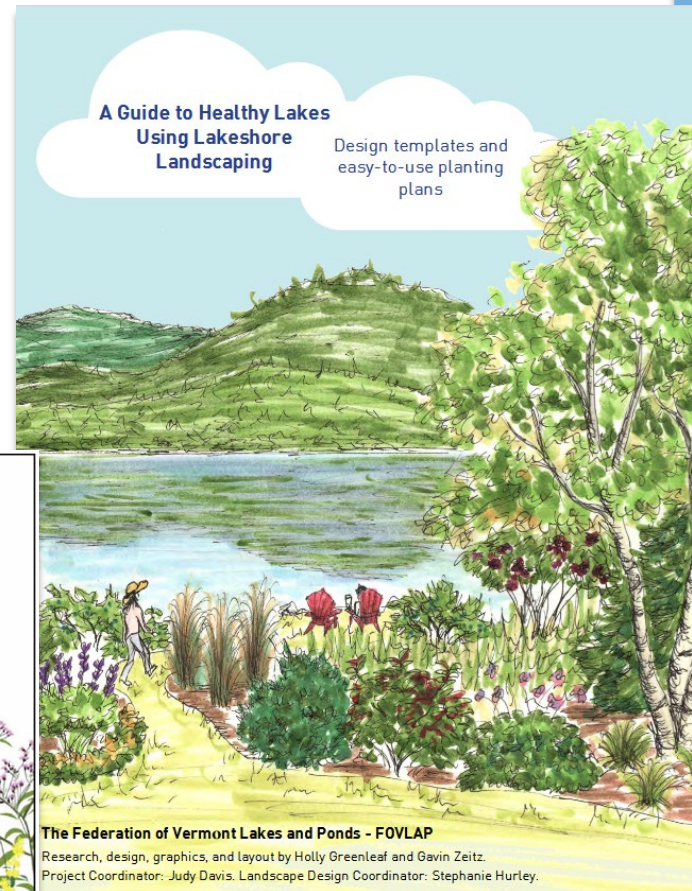
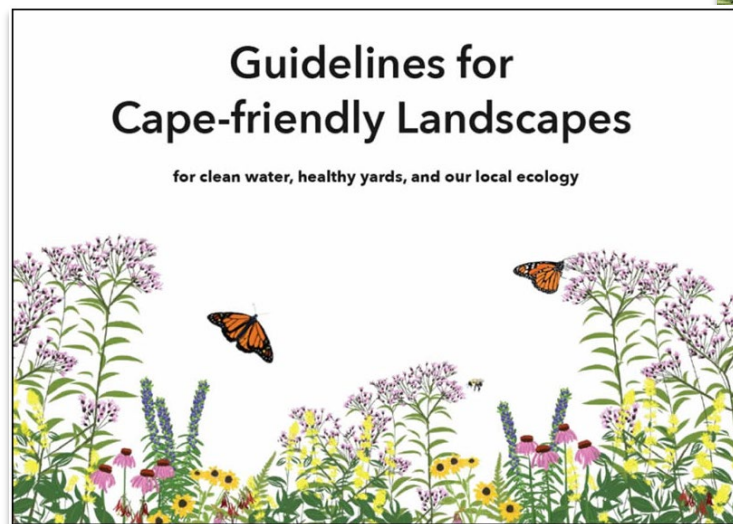
Designed for regularly updated data and flexible analysis

## Timeline:



# POND SHORE BUFFER GUIDELINES

- Drafting a Scope of Work for consultant
- Will follow existing guidance
- Design specific to Cape Cod's freshwater ponds environment





# COMMUNICATIONS FRAMEWORK

To Include:

Key Term Definitions

Information and Resources

Communications Best Practices

Talking Points

Social Media / Website content

Stakeholder lists



# POND PRIORITIZATION FRAMEWORK

## Potential Criteria for Prioritizing Ponds

- **Pond physical characteristics**
- **Pond water quality**  
(such as 303(d) list, trophic status, DO, bacterial closures)
- **Watershed metrics / CWMP**
- **Prior management actions**
- **Pond ownership and access**  
(such as public/private, public access, amenities e.g., bathrooms or parking)
- **Sensitive resource areas, habitat**
- **Community involvement**
- **Environmental Justice**



PARTNERS IN POND PROTECTION

# Cape Cod residents and visitors all have a stake in pond protection

REGIONAL ENTITIES ♦♦ MUNICIPALITIES  
BUSINESSES ♦♦ POND AND CIVIC ASSOCIATIONS  
PRIVATE LANDOWNERS ♦♦ LAND TRUSTS

# Freshwater Initiative

## CATEGORIES OF DRAFT RECOMMENDATIONS

Funding Sources and Mechanisms

Municipal Recommendations

Support / Technical Assistance

Regulatory Reform

Information (Monitoring, Data)

Education and Communications

# Funding Sources & Mechanisms

DRAFT RECOMMENDATIONS



## **SECURE DEDICATED AND CONSISTENT FUNDING FOR THE REGIONAL POND MONITORING PROGRAM**

- Continue generating highly valuable data to inform local and regional decision-making and provide an understanding of changing conditions
- Ensure continued implementation of the program beyond 2025
- Prioritize the use of existing water quality funding mechanisms and/or pursue funds to support continued and expanded monitoring

### **RESOURCES**

- Regional Pond Monitoring Program
- Water Quality Data Portal



# Funding Sources & Mechanisms

DRAFT RECOMMENDATIONS



## **DEVELOP A REGIONAL FUNDING PROGRAM FOR TOWN PROJECTS**

- Limited staff resources make identifying grant opportunities and preparing proposals challenging
- Considerable need for project funding
- Dedicated regional funding program could facilitate access to funds

## **RESOURCES**

- Regional Pond Monitoring Program
- Water Quality Data Portal
- Town Pond Profiles
- Strategies Database and Fact Sheets

# Funding Sources & Mechanisms

DRAFT RECOMMENDATIONS



## **COLLABORATE TO ACCESS STATE AND FEDERAL GRANT FUNDS**

- Evaluate and consider establishing a role to assist Cape Cod towns with accessing 604b and 319 grant funds
- Take advantage of DEP administered grants to advance planning and implementation of projects to support freshwater resources
- Align grant applications with priorities of federal and state water quality programs

## **RESOURCES**

- HRU Hotspots Maps
- Pond Atlas Viewer
- Legal Guidance

# Municipal

## DRAFT RECOMMENDATIONS



### **PRIORITIZE PONDS FOR ACTION**

- Strategic selection of ponds for management actions
- Use criteria to prioritize ponds for action
- Provide support and justification for town budget expenditures and grant applications for management projects

### **RESOURCES**

- Model Pond Prioritization Framework
- Town Pond Reports/Action Plans
- Pond Atlas Viewer
- Water Quality Data Portal
- Strategies Database and Fact Sheets

# Municipal

## DRAFT RECOMMENDATIONS



### **PROMOTE EASY-TO-IMPLEMENT STRATEGIES**

- Some strategies will improve pond water quality and can be implemented even in instances where limited data or information is available
- Incorporate strategies to improve pond water quality, such as stormwater management systems or stormwater control measures, into related planning and construction activities
- Prioritize nature-based solutions

### **RESOURCES**

- HRU Hotspots Maps
- Strategies Database and Fact Sheets
- 208 Technologies Matrix
- Pond Atlas Viewer

# Municipal

## DRAFT RECOMMENDATIONS



### **INTEGRATE FRESHWATER PONDS INTO MUNICIPAL WATER RESOURCE PLANNING DOCUMENTS**

- Consider pond water quality with other water resource discussions, including nutrient management for coastal waters and drinking water supplies
- Capture co-benefits of strategies for other water resources
- Include freshwater planning in source water protection plans, CWMPs and TWMPs

#### **RESOURCES**

- Regional Pond Monitoring Program
- Water Quality Data Portal
- Pond Atlas Viewer



# Support / Technical Assistance

DRAFT RECOMMENDATIONS



## UTILIZE POND BUFFER GUIDELINES

- Maintain and improve pond water quality through vegetated buffers
- Support community acceptance and implementation of buffers
- Promote native plants and healthy aquatic and pond shore ecosystems

## RESOURCE

- Strategies Database And Fact Sheets
- Pond Buffer Guidelines
- Pond Atlas Viewer

# Regulatory Reform

## DRAFT RECOMMENDATIONS



### **DEVELOP MODEL WETLAND BYLAWS AND ORDERS OF CONDITIONS**

- Help manage development impacts to ensure pond buffers are preserved and restored
- Review existing bylaws and regulations governing pond shore activities
- Develop model wetlands bylaw, regulations, and orders of conditions

### **RESOURCES**

- Legal Guidance
- Pond Buffer Guidelines
- Strategies Database And Fact Sheets

# Regulatory Reform

## DRAFT RECOMMENDATIONS



### **STREAMLINE WETLAND PERMITTING TO FACILITATE RESTORATION OF POND SHORE BUFFERS**

- Incentivize improvements to revegetate pond shore buffers
- Reduce permitting requirements, timeframes, costs
- Explore the possibility of a general permit for administrative approval of plans that propose the use of native plant species, meet design parameters, or are small in scale

#### **RESOURCES**

- Pond Buffer Guidelines
- Model Wetland Bylaws And Orders Of Conditions

# Information

## DRAFT RECOMMENDATIONS



### **EXPAND REGIONAL MONITORING AND LABORATORY CAPACITY**

- Expand the regional pond monitoring program
- Expand laboratory capacity to support pond monitoring
- Explore establishing a sentinel pond monitoring program

### **RESOURCES**

- Regional Pond Monitoring Program
- Pond Atlas Viewer
- Water Quality Data Portal

# Information

## DRAFT RECOMMENDATIONS



### ADDRESS DATA GAPS

- Fill gaps in existing data to promote better understanding of pond dynamics and facilitate identification of appropriate strategies
- Priority data gaps include:
  - Maximum pond depth
  - Pond volumes
  - Pond water retention time
  - Pond watershed delineations

### RESOURCES

- Regional Pond Monitoring Program
- Ponds Network
- Pond Atlas Viewer

# Education and Communications

## DRAFT RECOMMENDATIONS



### **DEVELOP AND COMMIT TO CONSISTENT COMMUNICATION AND OUTREACH, TARGETED FOR DIFFERENT POND USERS**

- Educate pond users about the natural variation in Cape Cod's ponds, how activities impact pond health, and best practices for preserving ponds
- Employ a communications framework and toolkit that includes consistent messaging, themes, and other content
- Provide a guide for using these resources to deliver consistent and effective messaging

### **RESOURCES**

- Pond Atlas
- Strategies Database and Fact Sheets
- MA Practical Guide to Pond and Lake Management
- Communications Framework
- Ponds Network

# Draft Recommendations



Secure dedicated and consistent funding for the regional pond monitoring program



Develop a regional funding program for town projects



Collaborate to access state and federal grant funds



Prioritize ponds for action



Promote easy-to-implement strategies



Integrate freshwater ponds into municipal water resources planning documents



Utilize pond buffer guidelines



Develop model wetland bylaws and orders of conditions



Streamline wetland permitting to facilitate restoration of pond shore buffers



Expand regional monitoring and laboratory capacity



Address data gaps



Develop and commit to consistent communication and outreach, targeted for different pond users



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## DRAFT RECOMMENDATIONS

*Is there anything missing? Are there other key recommendations that you think need to be included?*

*Which do you think will be most impactful from your perspective?*

# Draft Recommendations



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Develop a regional funding program for town projects



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Develop and commit to consistent communication and outreach, targeted for different pond users

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## DRAFT RECOMMENDATIONS

*Who needs to be engaged?*

*Are there ongoing efforts that could be expanded upon to achieve any of these recommendations?*

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## DRAFT RECOMMENDATIONS

*Are there barriers to implementation of any of these recommendations? How can they be overcome?*

A scenic view of a town nestled on a hillside overlooking a body of water. The town is surrounded by lush green trees and vegetation. The water is a deep blue, and the sky is a clear, bright blue. A semi-transparent blue rectangular box is overlaid in the center of the image, containing the text "Other questions or feedback?".

**Other questions or feedback?**

**[www.capecodcommission.org/freshwater](http://www.capecodcommission.org/freshwater)**

# Thank you!

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[www.capecodcommission.org/freshwater](http://www.capecodcommission.org/freshwater)

STAKEHOLDER MEETING 3 | JUNE 2024



CAPE COD  
COMMISSION