



CAPE COD
COMMISSION

WMA NEXT STEPS

All Cape Meeting | June 2015



CAPE COD
COMMISSION

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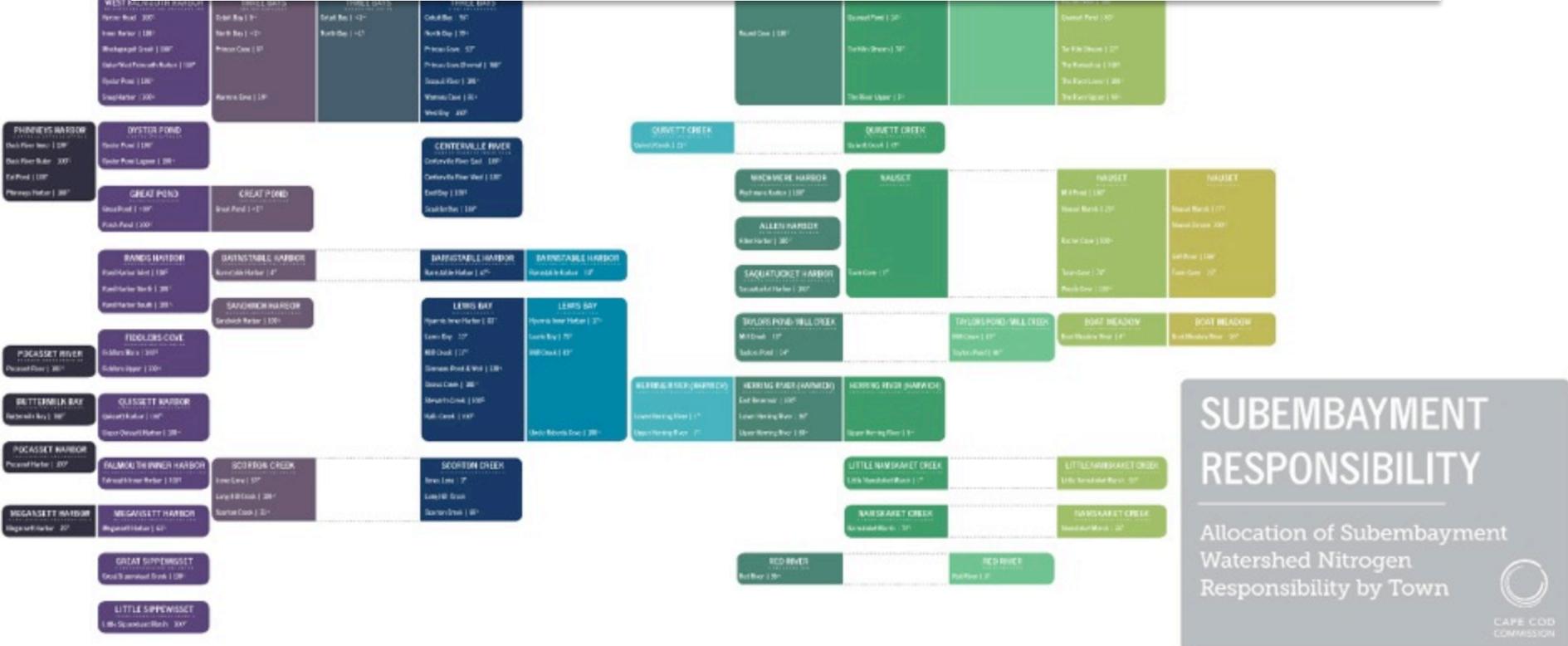
REVIEW

**PRINCIPLES FOR
ALLOCATION OF
NITROGEN
RESPONSIBILITY**

Allocating Nitrogen Responsibility

Five Principles

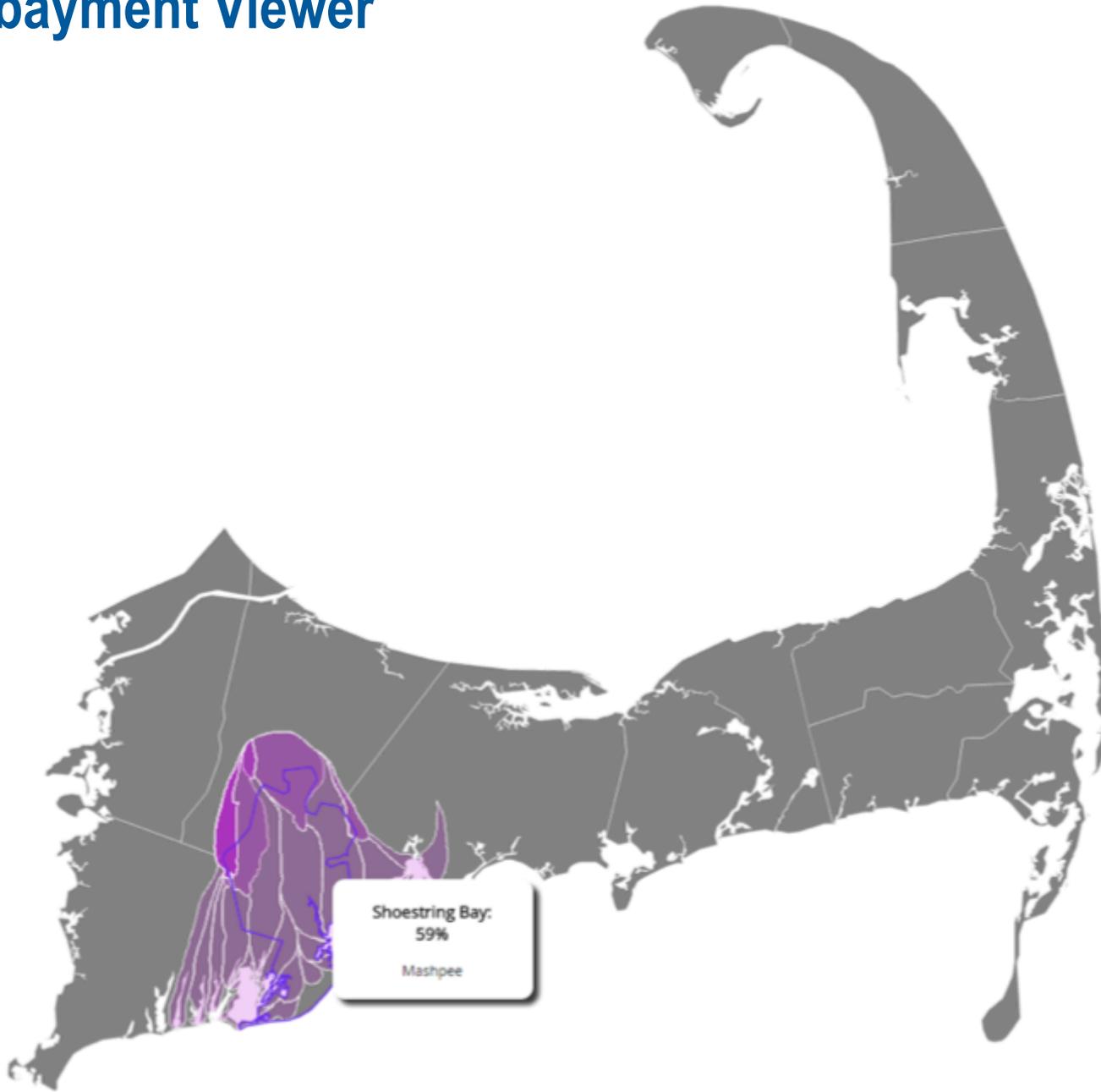
1. Assign responsibility at the subembayment level
2. Start with unattenuated load and apply attenuation where available
3. Calculate existing responsibility from existing attenuated nitrogen load
4. Calculate future responsibility from unattenuated potential nitrogen load
5. Data updates every five years with option and process for local modifications



SUBEMBAYMENT RESPONSIBILITY

Allocation of Subembayment Watershed Nitrogen Responsibility by Town

Subembayment Viewer



Town Subembayment Reports

ORLEANS Subembayment Watersheds



ORLEANS: Subembayment Watersheds

SUBEMBAYMENT: TAR KILN STREAM

Unattenuated Load (kg)	Attenuated Load (kg)	Threshold (kg)	Reduction Target (kg)	Percent Contribution	Kilogram Responsibility	Additional Contributing Towns
607	607	1,307	N/A	22%	N/A	Brewster (78%)

SUBEMBAYMENT: THE HORSESHOE

Unattenuated Load (kg)	Attenuated Load (kg)	Threshold (kg)	Reduction Target (kg)	Percent Contribution	Kilogram Responsibility	Additional Contributing Towns
204	204	233	N/A	100%	N/A	N/A

SUBEMBAYMENT: THE RIVER LOWER

Unattenuated Load (kg)	Attenuated Load (kg)	Threshold (kg)	Reduction Target (kg)	Percent Contribution	Kilogram Responsibility	Additional Contributing Towns
1,217	1,217	892	325	100%	325	N/A

SUBEMBAYMENT: THE RIVER UPPER

Unattenuated Load (kg)	Attenuated Load (kg)	Threshold (kg)	Reduction Target (kg)	Percent Contribution	Kilogram Responsibility	Additional Contributing Towns
1,460	1,088	634	454	99%	447	Brewster (1%)

ROCK HARBOR

SUBEMBAYMENT: CEDAR POND

Unattenuated Load (kg)	Attenuated Load (kg)	Threshold (kg)	Reduction Target (kg)	Percent Contribution	Kilogram Responsibility	Additional Contributing Towns
2,568	2,367	961	1,398	79%	1,256	Eastham (21%)

SUBEMBAYMENT: ROCK HARBOR

Unattenuated Load (kg)	Attenuated Load (kg)	Threshold (kg)	Reduction Target (kg)	Percent Contribution	Kilogram Responsibility	Additional Contributing Towns
899	315	397	N/A	100%	N/A	N/A

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NEXT STEPS

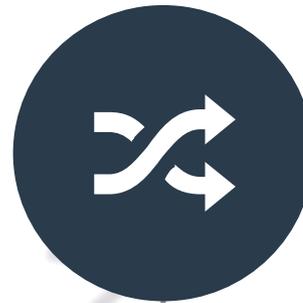
**WASTE TREATMENT
MANAGEMENT
AGENCIES**

Next Steps



JUNE 15

Certification of
Section 208
Plan Update by
The Governor



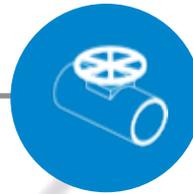
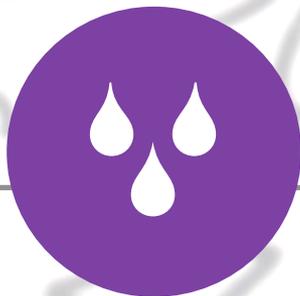
12 MONTHS

To develop
watershed
reports

Next Steps

WATERSHED REPORTS

Scenarios form outer bounds of adaptive management plan



Collection Scenario

Traditional collection and treatment



Non-Collection Scenario

Remediation, restoration and on-site reduction approaches

Next Steps



DESIGN LOAD

- Established By WMAs
- Defines Non-nitrogen Needs
- Sets Stormwater and Fertilizer Credits



HYBRID SCENARIO

- Achieves design load reduction
- Uses collection and non-collection approaches

Next Steps



IMPLEMENTATION REPORT

- Post 12 month period
- Will describe WMA action to date
- Prepared by the Commission



DEFAULT WATERSHED REPORT

- If not completed by WMAs
- Based on feedback
- Prepared by the Commission



The Problem

Description of the problem

- **MEP TECHNICAL REPORT STATUS:** Status
- **TMDL STATUS:** Status
- **TOTAL WASTEWATER FLOW:** XX (million gal per year)
- **TREATED WW FLOW:** XX MGY
- **SEPTIC FLOW:** XX MGY
- **UNATTENUATED TOTAL NITROGEN LOAD (MEP):** XX
- **ATTENUATED TOTAL NITROGEN LOAD (MEP):** XX
- **SOURCES OF CONTROLLABLE NITROGEN (MEP):**
 - XX% Septic Systems
 - XX% Lawn Fertilizer
 - XX% Stormwater from Impervious Surfaces
 - XX% Wastewater Treatment Facilities

CONTRIBUTING TOWNS

- **CONTRIBUTING TOWN1**
- **CONTRIBUTING TOWN2**

THE MEP RESTORATION SCENARIO:

- **WATERSHED TOTAL NITROGEN REDUCTION TARGET:** XX%
- **WATERSHED SEPTIC REDUCTION TARGET:** XX%
(The scenario represents the aggregated sub-

embayment percent removal targets from the MEP technical report)

ESTUARY

- **EMBAYMENT AREA:** XX
- **EMBAYMENT VOLUME:** XX
- **2012 INTEGRATED LIST STATUS:**
 - Status by waterbody
 - Status by waterbody
 - Status by waterbody
 - www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf

WATERSHED

- **ACRES:** XX
- **PARCELS:** XX
- **% DEVELOPED RESIDENTIAL PARCELS:** XX%
- **PARCEL DENSITY:** XX acres per parcel
- **WASTEWATER TREATMENT FACILITIES:** XX
 - Treatment Facility Name
 - Treatment Facility Name

Freshwater Sources

PONDS

- **IDENTIFIED SURFACE WATERS:** XX

<< Introduction and description of the watershed location. >>

- NUMBER OF NAMED FRESHWATER PONDS: XX
- PONDS WITH PRELIMINARY TROPHIC CHARACTERIZATION: XX
- 2012 INTEGRATED LIST STATUS: XX
- DISCUSSION:

STREAMS

- SIGNIFICANT FRESHWATER STREAM OUTLETS: 6
- Stream1:
 - Average Flow: XX cubic meters per day (m3/d)
 - Average Nitrate Concentrations: XX milligrams per liter (mg/L)
- Stream2:
 - Average Flow: XX m3/d
 - Average Nitrate Concentrations: XX mg/L
- Stream3:
 - Average Flow: XX m3/d
 - Average Nitrate Concentrations: XX mg/L
- DISCUSSION:

DRINKING WATER SOURCES

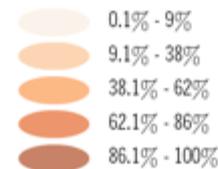
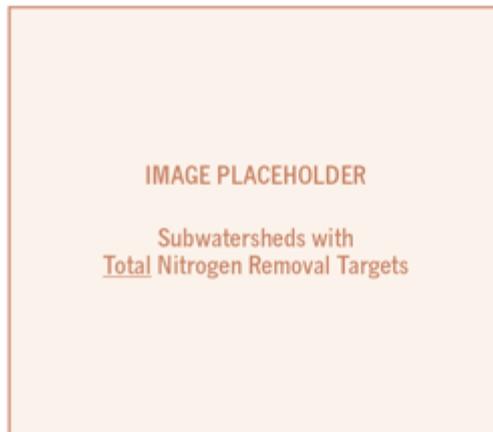
- WATER DISTRICTS: XX
 - Water District Name
 - Water District Name
- GRAVEL PACKED WELLS: XX
 - X have nitrate concentrations between 0 and 0.5 mg/L
 - X have nitrate concentrations between 0.5 and 1 mg/L
 - X have nitrate concentrations between 2.5 and 5 mg/L
 - X have no nitrate concentration data
- SMALL VOLUME WELLS: XX
- DISCUSSION:

Degree of Impairment and Areas of Need

Discussion on nitrogen reduction targets.

ECOLOGICAL CHARACTERISTICS AND WATER QUALITY

- OVERALL ECOLOGIC CONDITION: XX
- Waterbody Quality Status
- Waterbody Quality Status
- SENTINEL STATION:
 - Total Nitrogen Concentration Threshold: XX mg/L
 - Total Nitrogen Concentration Existing: XX mg/L (As reported at the MEP sentinel water-quality monitoring station)



Subwatersheds with Total Nitrogen Removal Targets

Figure 4-1 XX

Subwatersheds with Septic Nitrogen Removal Targets

Figure 4-2 XX

Nitrogen Management Approaches

Description of scenario planning approaches.

HYBRID APPROACH

Description of approach taken in scenario development.

TRADITIONAL APPROACH

Description of approach taken in scenario development.

NON-TRADITIONAL APPROACH

Description of approach taken in scenario development.

LOCAL PROGRESS

TOWN1

Description of local efforts.

TOWN2

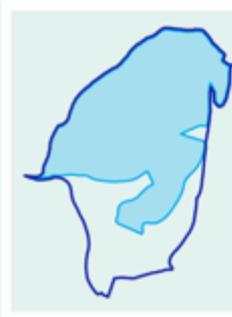
Description of local efforts.

Potential Watershed Scenarios

SCENARIO:
Centralized
Disposal In Watershed



SCENARIO:
Centralized
Disposal Out of Watershed



SCENARIO:
Non-Traditional



SCENARIO:
Hybrid



Credits

- Stormwater
- Fertilizer

Scenario Details

- Scenario Detail - i.e. number of properties sewered
- Scenario Detail - i.e. flow collected
- Scenario Detail- i.e. acres of aquaculture
- Scenario Detail- i.e. linear feet of PRB
- Scenario Detail- i.e. number of eco-toilets
- Scenario Detail- i.e. cubic feet of constructed wetlands

Cost

- Collection
- Transport
- Treatment & Disposal
- Operations and Maintenance
- Annual

Targeted Watershed Planning



Targeted Watershed Planning

DESIGN LOAD

TECHNOLOGIES

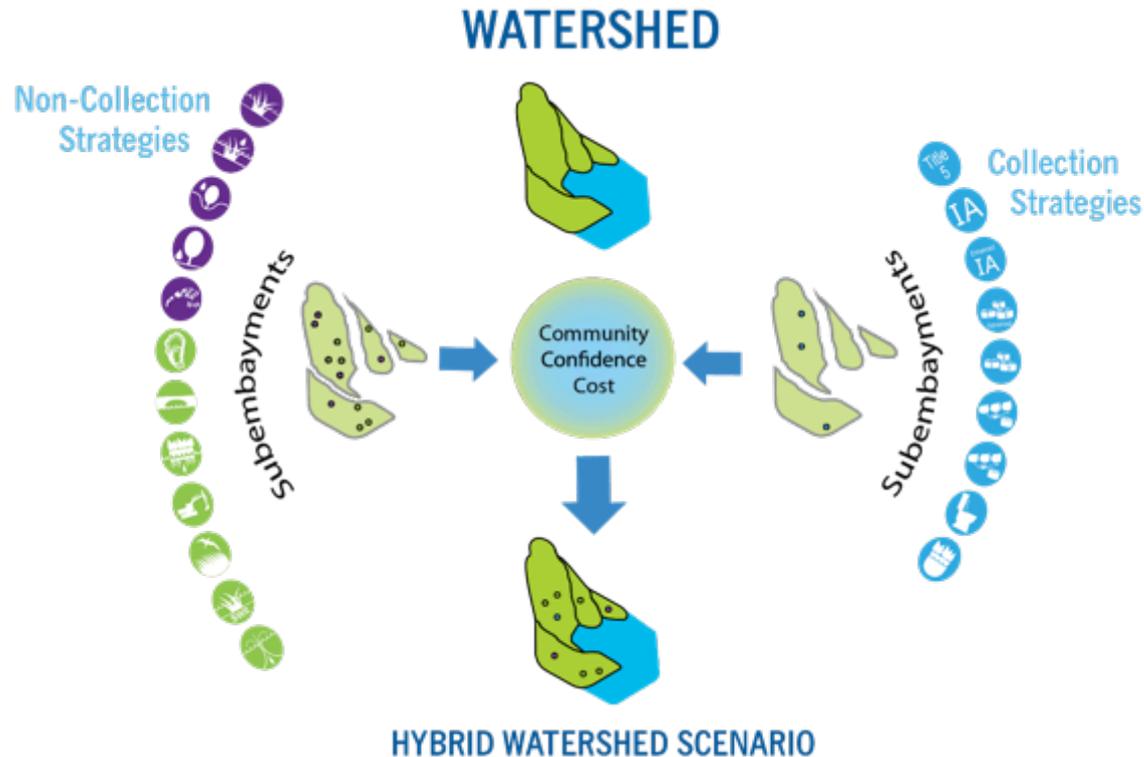


COMMUNITY
EVALUATION

Targeted Watershed Planning

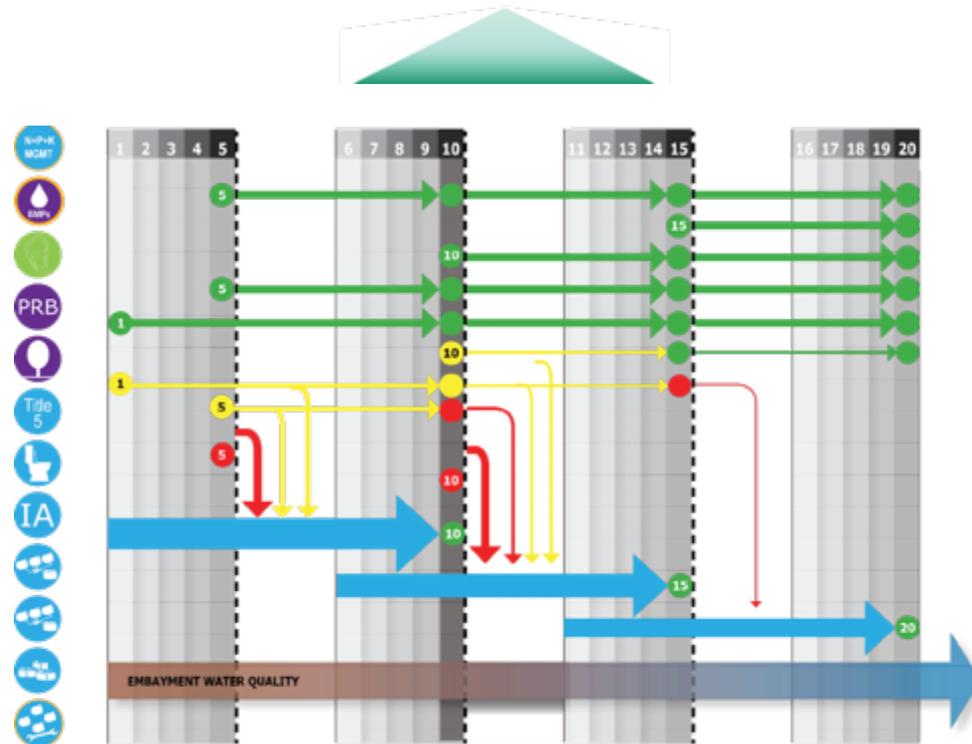
ADAPTIVE MANAGEMENT PLAN

COMMUNITY
EVALUATION



Targeted Watershed Planning

WATERSHED PERMIT



ADAPTIVE MANAGEMENT PLAN

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**WATERSHED TEAM
TECHNICAL
ASSISTANCE**

Goals

Comply with
permitting
requirements



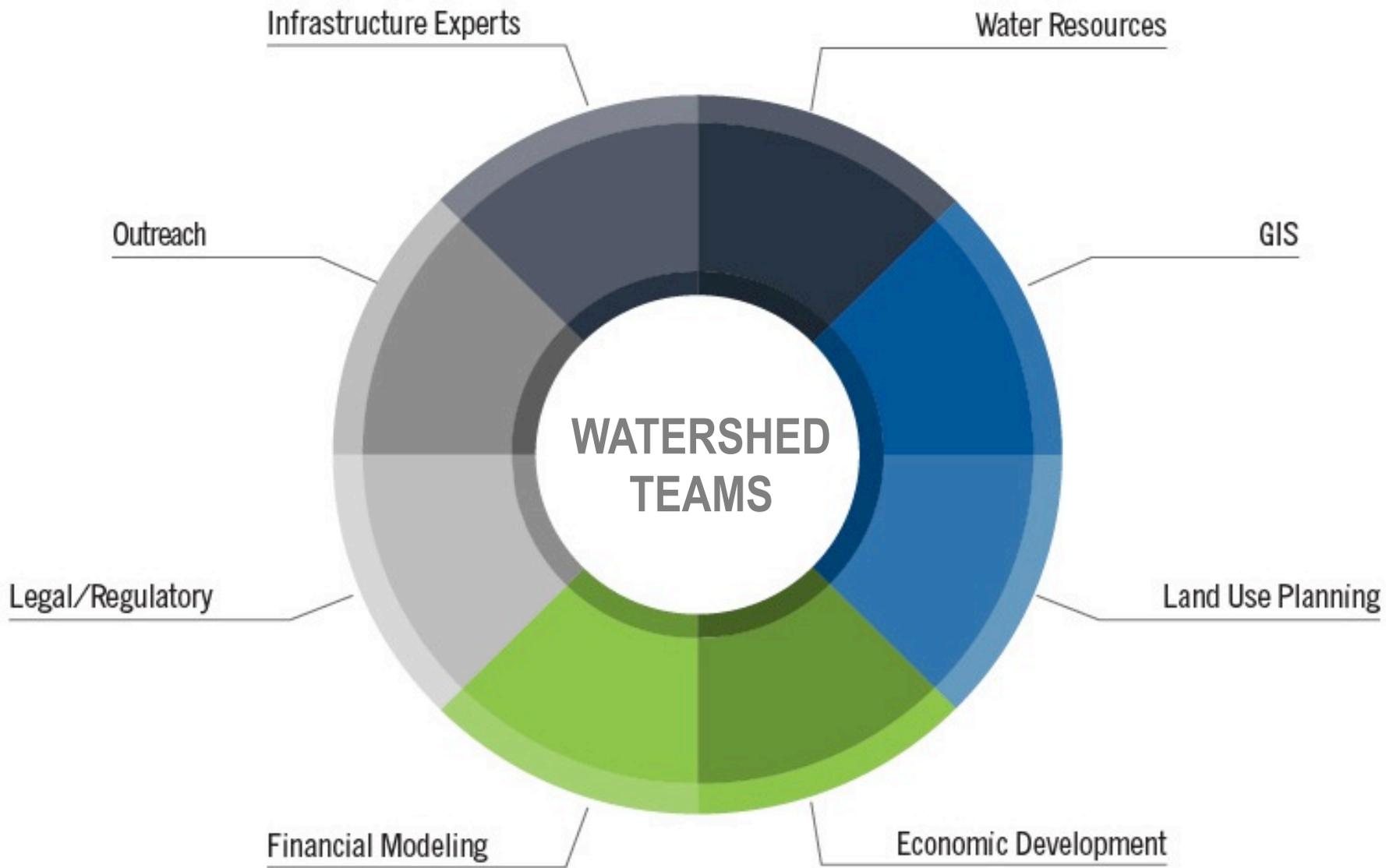
**ASSIST WMAS IN
DESIGNING
INNOVATIVE &
COST-EFFECTIVE
PLANS**



Achieve water
quality goals



Meet essential
community needs



Support



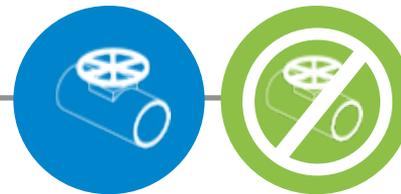
WATERSHED PLANS

Outline, Tasks
and Schedule

Support

ANALYTICAL TOOLS

Apply decision support tools created by the Commission



EVALUATION

Recommend appropriate engineering solutions

Evaluate feasibility of hybrid plan components

Support



OPTIONS

Define and evaluate public/private options



COST

Develop comparative cost information

Support

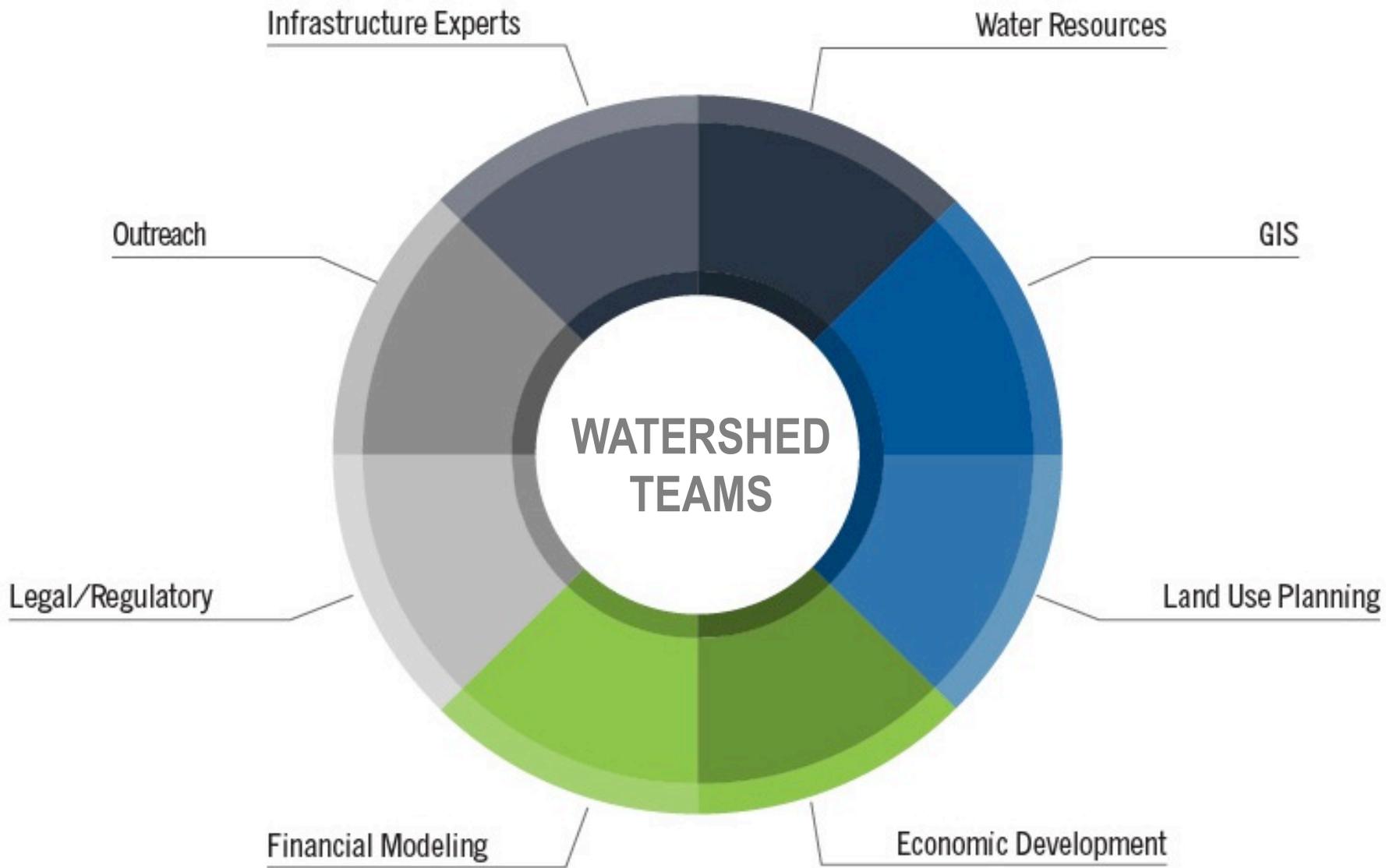
PERMITTING

Assist in the development of permitting strategies



ADAPTIVE MANAGEMENT

Develop targeted monitoring and adaptive management plans



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BENEFITS OF COLLABORATION

Simplifying the Process



TECHNICAL ASSISTANCE

Enhancing town expertise to aid local implementation



REGULATORY FLEXIBILITY

Ensuring consistency with Regional Plans



FINANCIAL RESOURCES

Providing access to new sources of revenue

\$1 Million in State funds over next four years

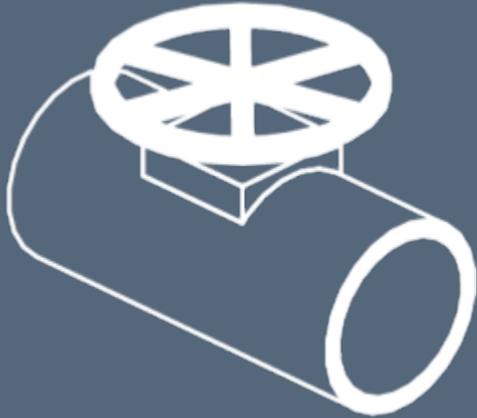


New Funds
For
Monitoring
Efforts



\$1 Million match from Barnstable County

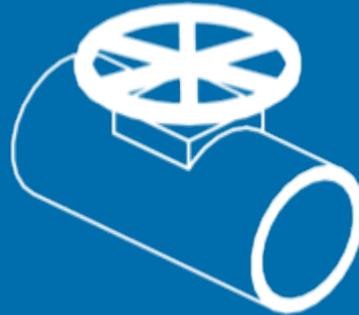
Cutting Back the Cost



**\$6-8
BILLION**

INITIAL COST

Estimate to sewer
the entire Cape



**\$4.6-6.2
BILLION**

CAPE-WIDE COST

RWMP estimate
sewers to meet MEP
water quality goals

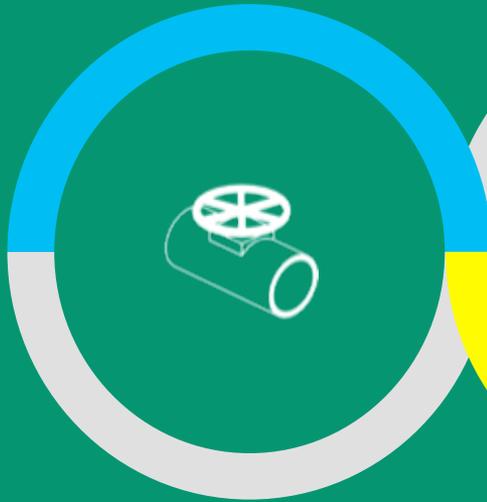


**\$2-3.8
BILLION**

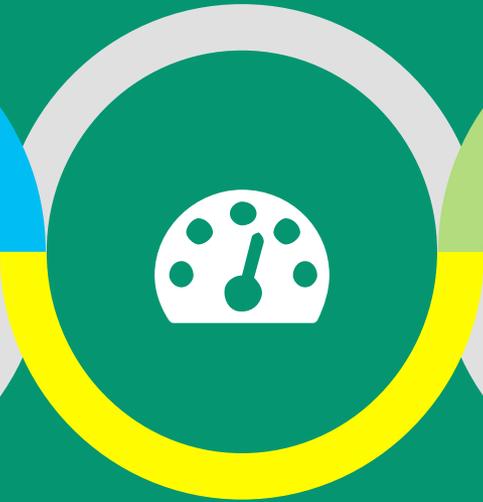
208 UPDATE COST

Estimate to meet
water quality
standards

208 UPDATE COST SAVING MEASURES



Considering collection and treatment in areas where it's most appropriate



Broadening the use of remediation and restoration technologies



Cost sharing results in a lower cost for residents and affordable scenarios

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TOWN OF ORLEANS

**BENEFITS OF
COLLABORATION**

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Q&A



CAPE COD
COMMISSION