Scott Horsley
Chairperson

Comprehensive Wastewater Management Plan (CWMP) Ad Hoc Advisory Committee

Presentation to
Barnstable Town Council
November 19, 2026



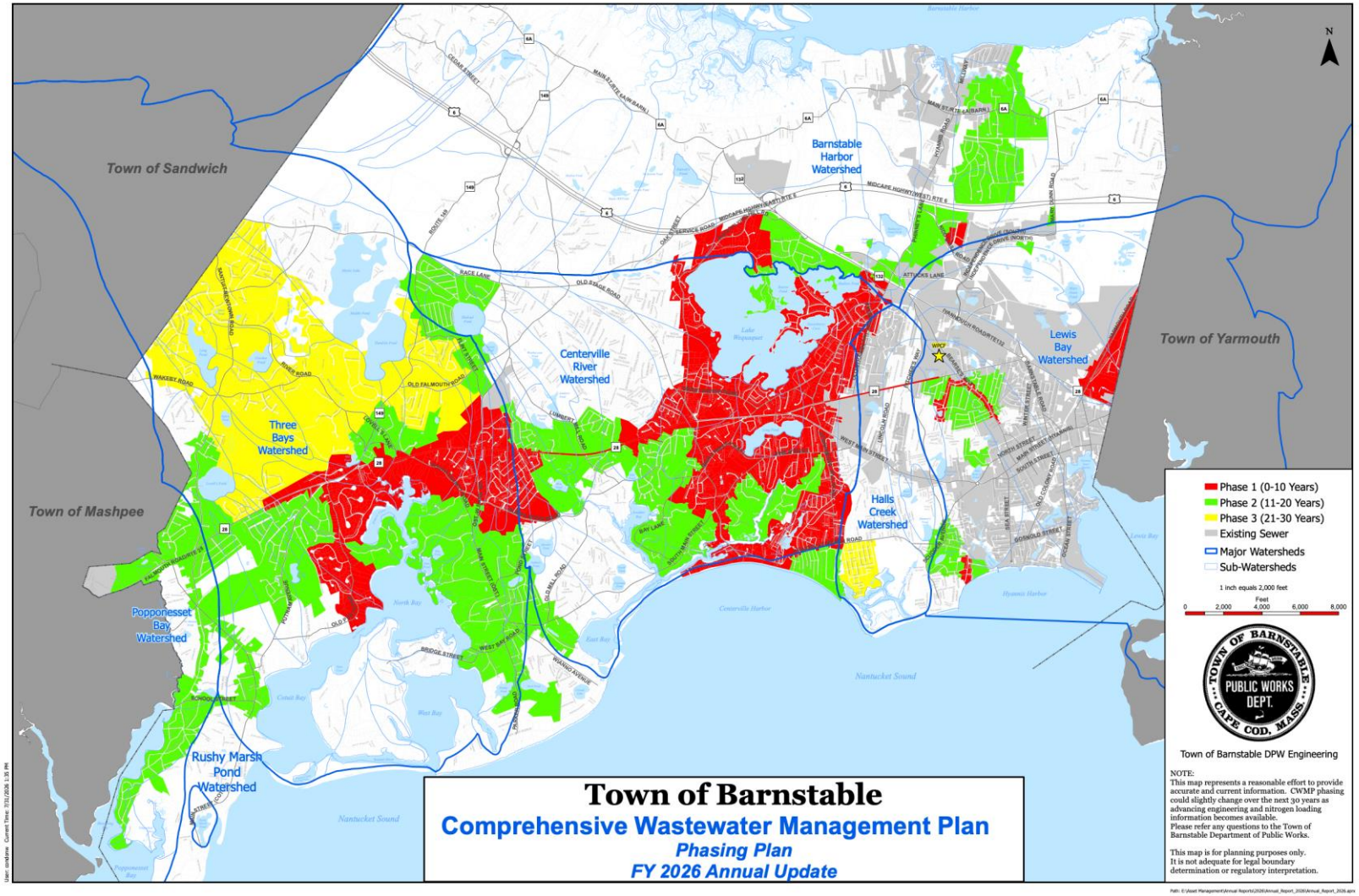
Ad Hoc Comprehensive Wastewater Management Plan (CWMP) Committee

Committee Members

- Scott Horsley (Chair)
- Brian Hughes (Vice Chair)
- Tom Cambareri
- Zee Crocker
- Rob O'Leary
- Louise O'Neil
- Butch Roberts
- Glenn Snell

Town Council

- Kris Clark, Vice President, Precinct 11
- Paul Neary, Precinct 6
- Gordon Starr, Precinct 1
- Barry Sheingold



RECOMMENDATIONS

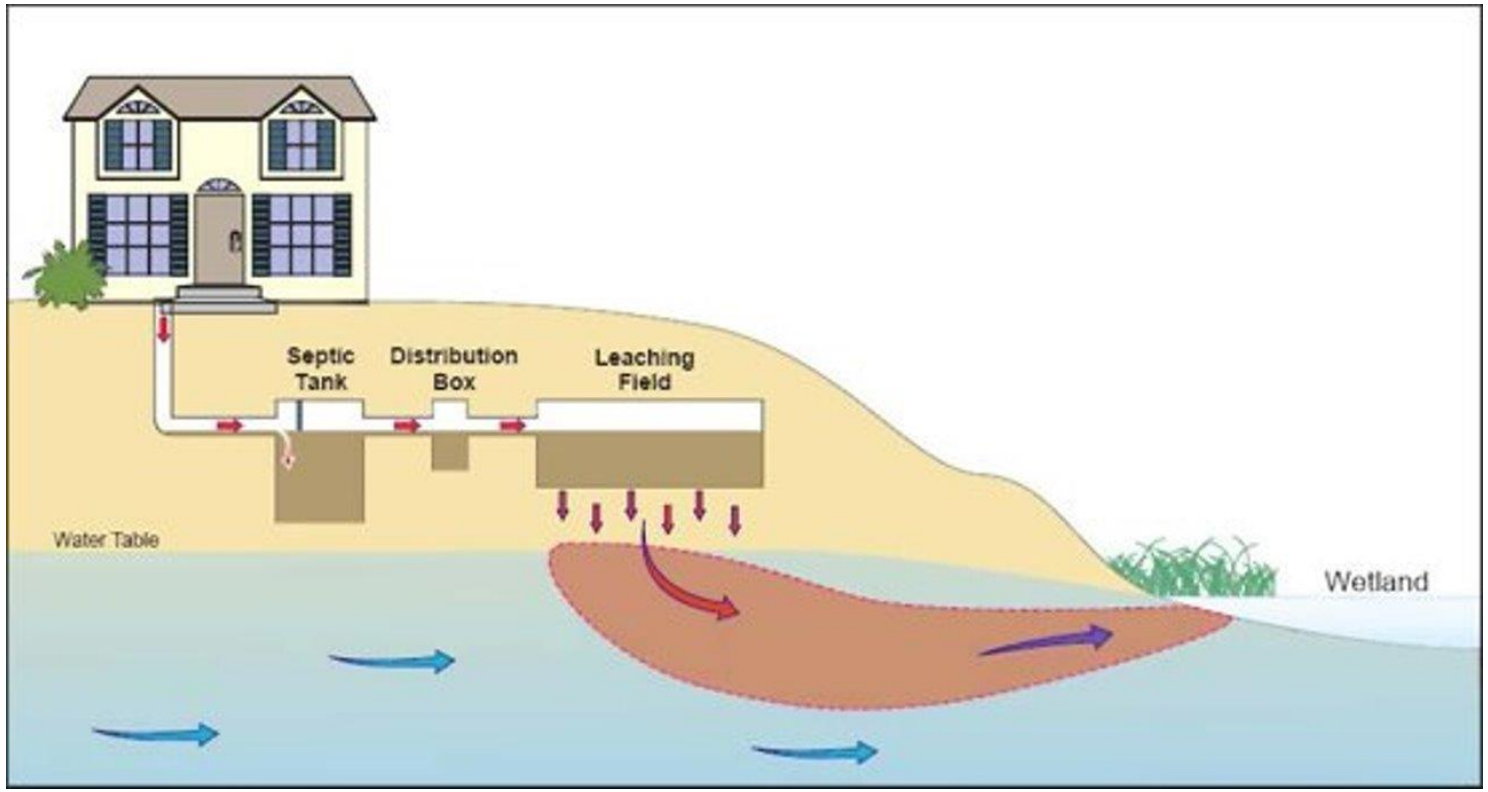
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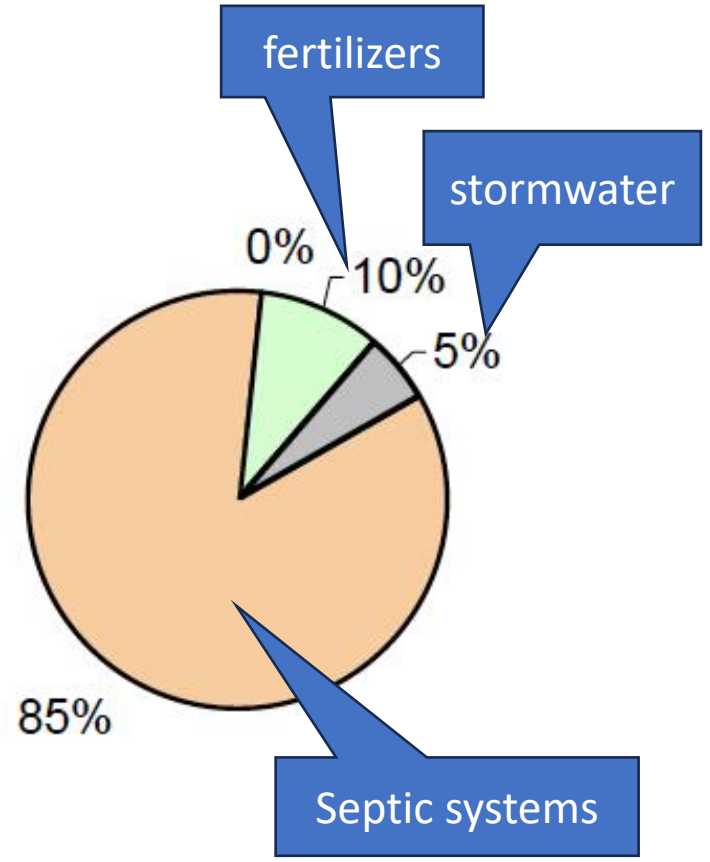
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3. Assist with a pilot project to evaluate alternative phosphorus mitigation approaches and technologies at a freshwater pond.

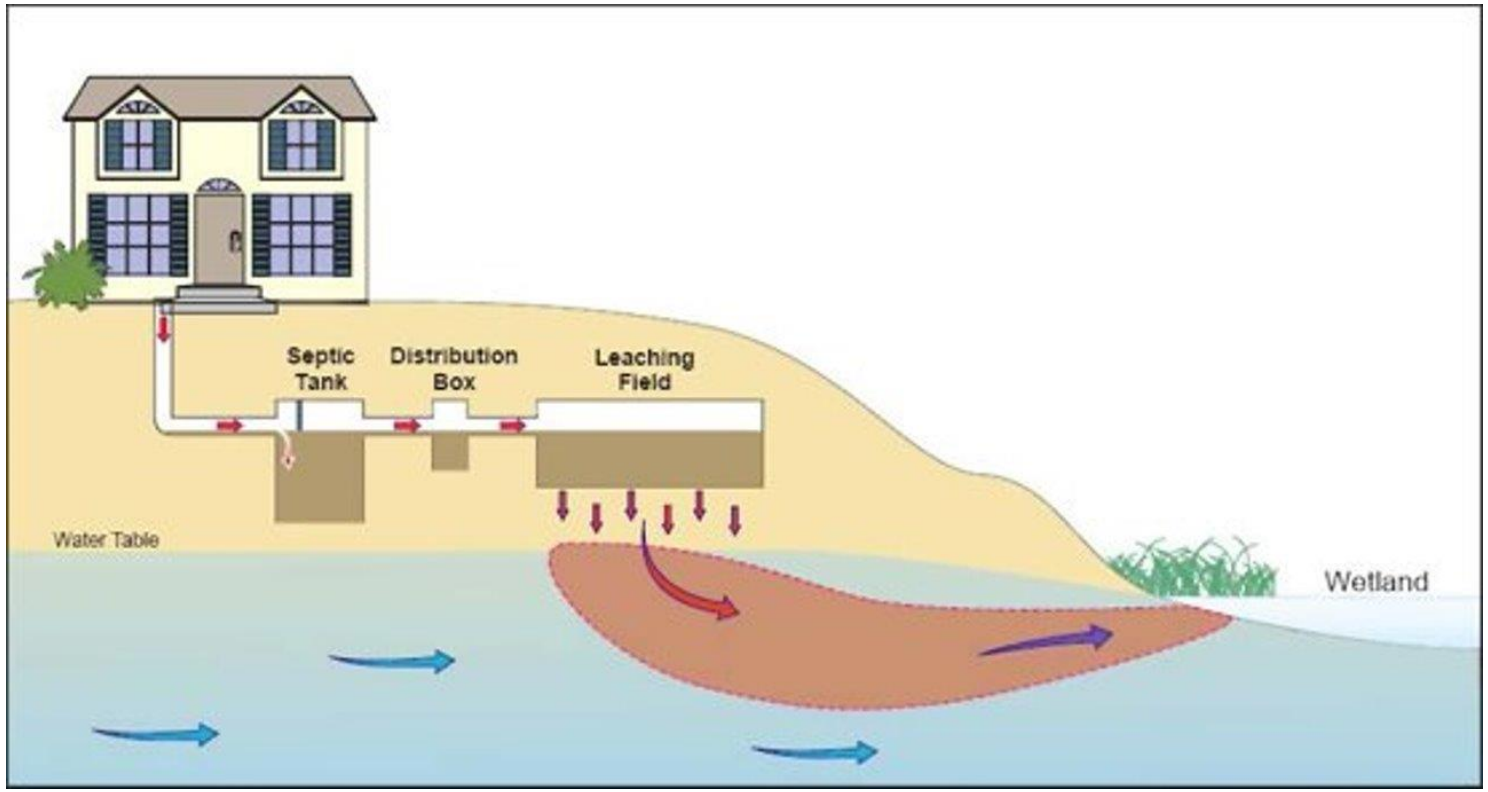
4. Re-formulate the CWMP Ad Hoc Committee into a standing advisory committee to continue to identify and help develop alternative approaches to achieving the CWMP goals and other water quality initiatives.

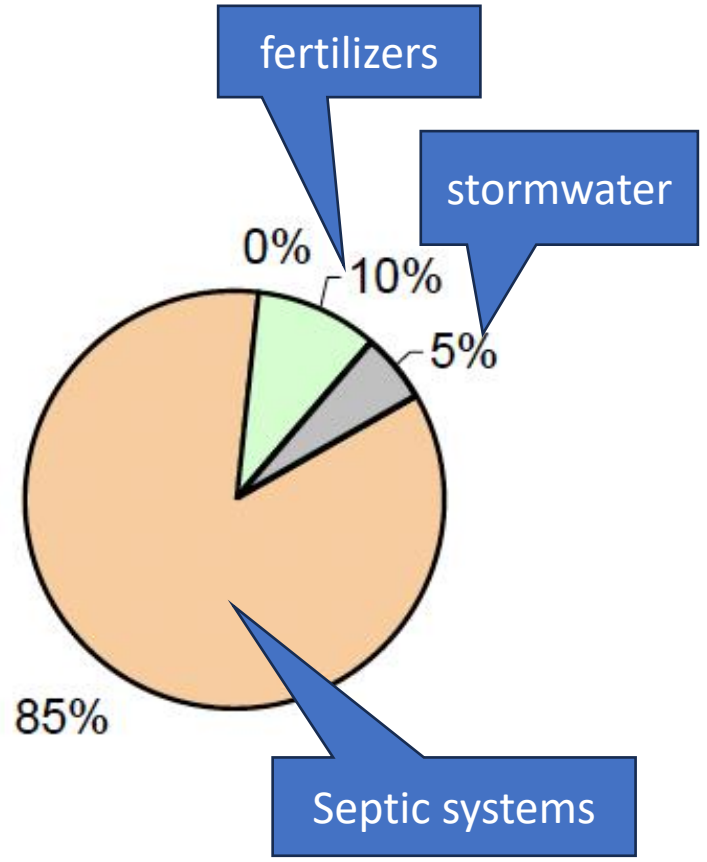
Septic systems are the primary pollution source





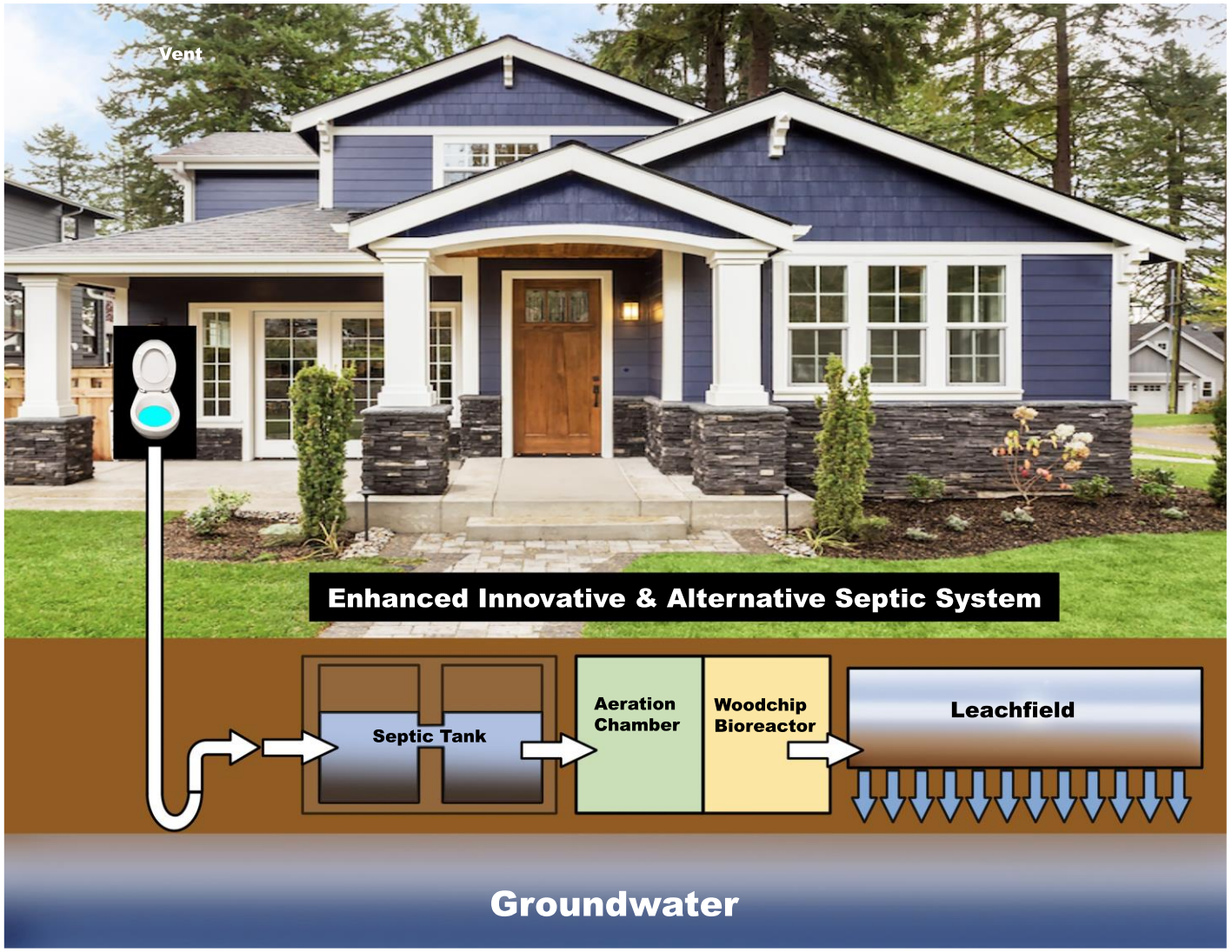
Septic systems are the primary pollution source





Does it make sense to continue installing more Title 5 systems without nitrogen treatment?


House Vent
Conventional Title 5 Septic System
Septic Tank
Leachfield / Drainfield
Effluent Absorption
Groundwater



Recommendation 1

Evaluate a potential Health Regulation to implement septic system upgrades to nitrogen-reducing (NR) systems in coastal areas.

Innovative & Alternative (I&A)
or
Nitrogen Reducing (NR)
Septic Systems

MassDEP Approved
Best Available Nitrogen Reducing Technologies (BANRT)

- NitROE
- Nitrex
- Fuji Clean
- Amphidrome
- BioClere

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Contents lists available at ScienceDirect

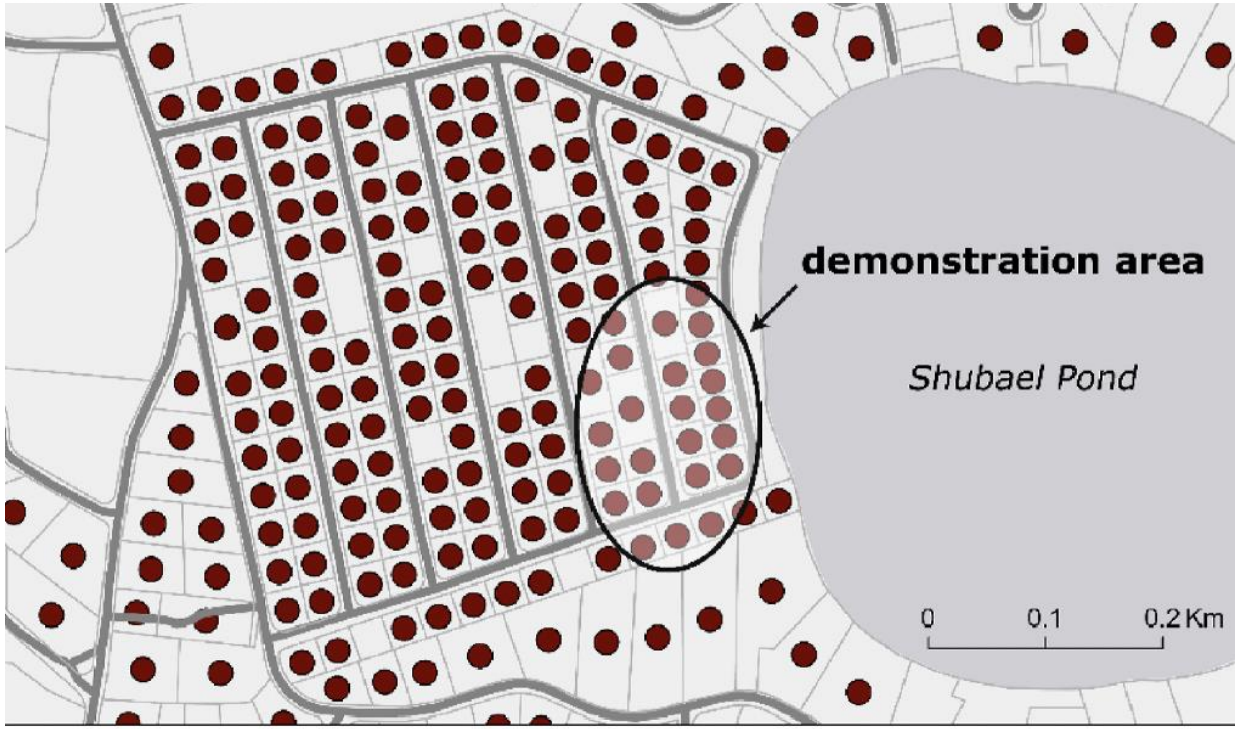
Journal of Environmental Management

journal homepage: www.elsevier.com/locate/jenvman

Research article

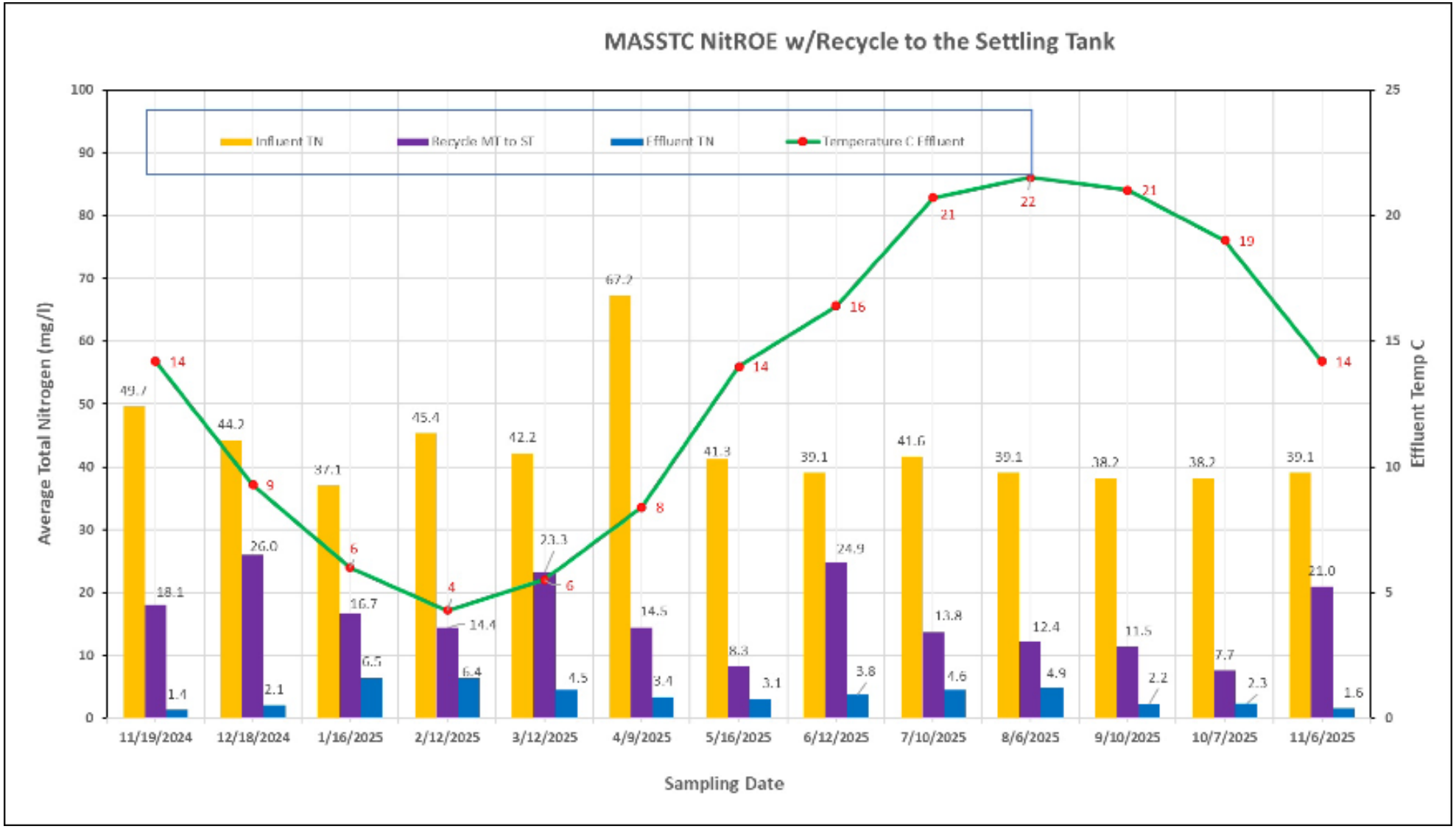
Reducing wastewater nitrogen loading by >90% with carbon-amended septic systems: A field demonstration in Barnstable (Cape Cod), Massachusetts

Laura E. Erban [a,*], Sara K. Wigginton [b], Brian Baumgaertel [b], Bryan Horsley [b], Timothy D. McCobb [c], Zenas Crocker [d], Scott Horsley [e], Timothy R. Gleason [a]



Average Influent: 97.8 mg/liter
Average Effluent: 7.6 mg/liter
Nitrogen Reduction: 92%

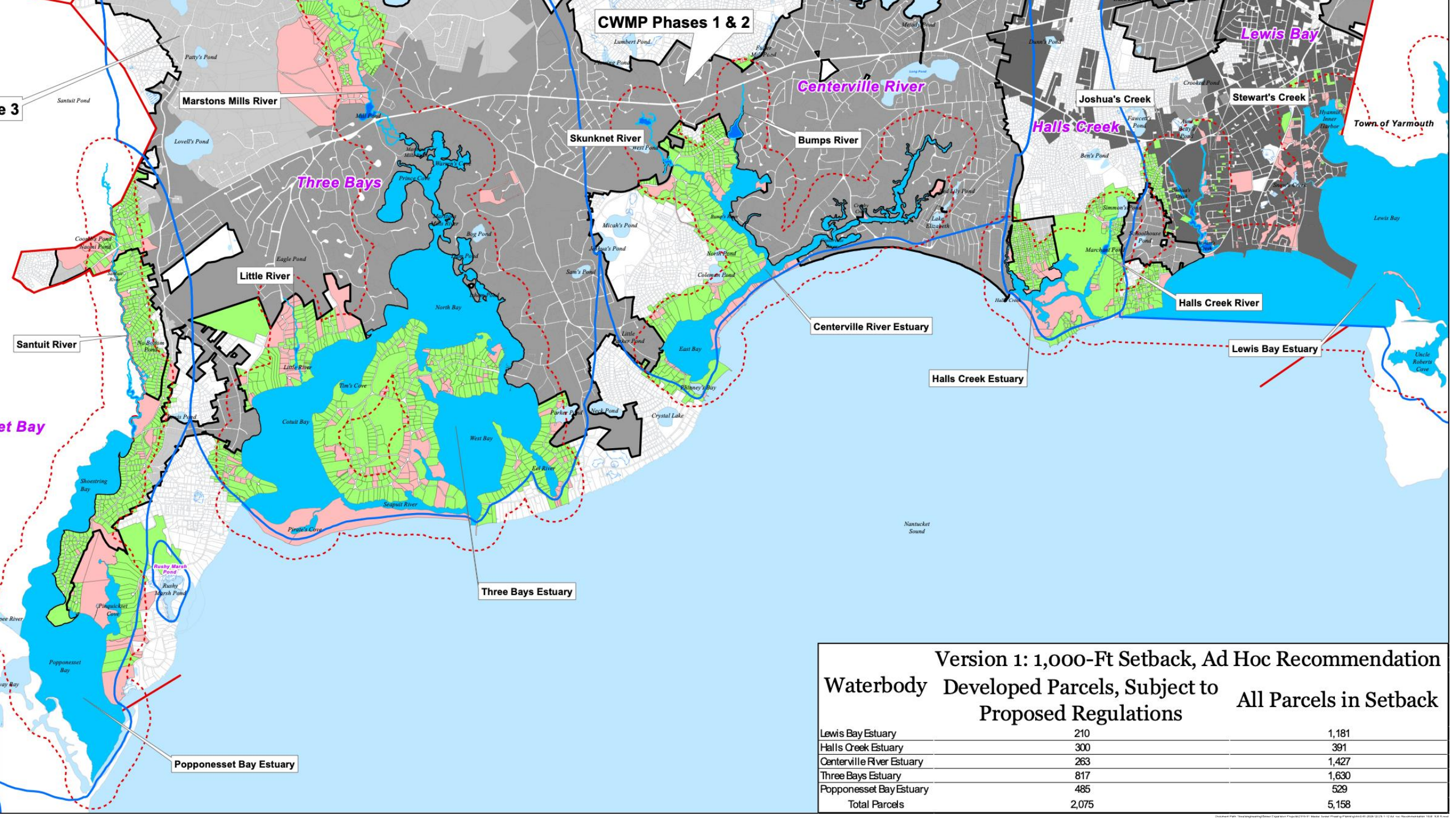
NitROE 3.0 data at Massachusetts Septic System Test Center (Independent 3rd Party Data)




5 Days, $22K

Advantages of Nitrogen Reducing (NR) Septic Systems

- Time of Travel – water quality benefits sooner
- Provides supplementary nitrogen removal as hedge against uncertainties – provides for adaptive management
- Could reduce Phase 3 sewering needs and costs
- Marginal Cost of adding N treatment when upgrading a septic system is approximately $30K (minus tax credit of $18K = $12K)



Waterbody	Version 1: 1,000-Ft Setback, Ad Hoc Recommendation	
	Developed Parcels, Subject to Proposed Regulations	All Parcels in Setback
Lewis Bay Estuary	210	1,181
Halls Creek Estuary	300	391
Centerville River Estuary	263	1,427
Three Bays Estuary	817	1,630
Popponesset Bay Estuary	485	529
Total Parcels	2,075	5,158

Possible Health Regulation

- Potential NR septic system installation triggers:
  - New construction
  - Additions to existing homes (or ADU)
  - Replacement required by system failure
  - Real estate transfers

Note: Otherwise, existing homes within the 1000-foot buffer will not be affected by this proposed regulation

COST CONSIDERATIONS

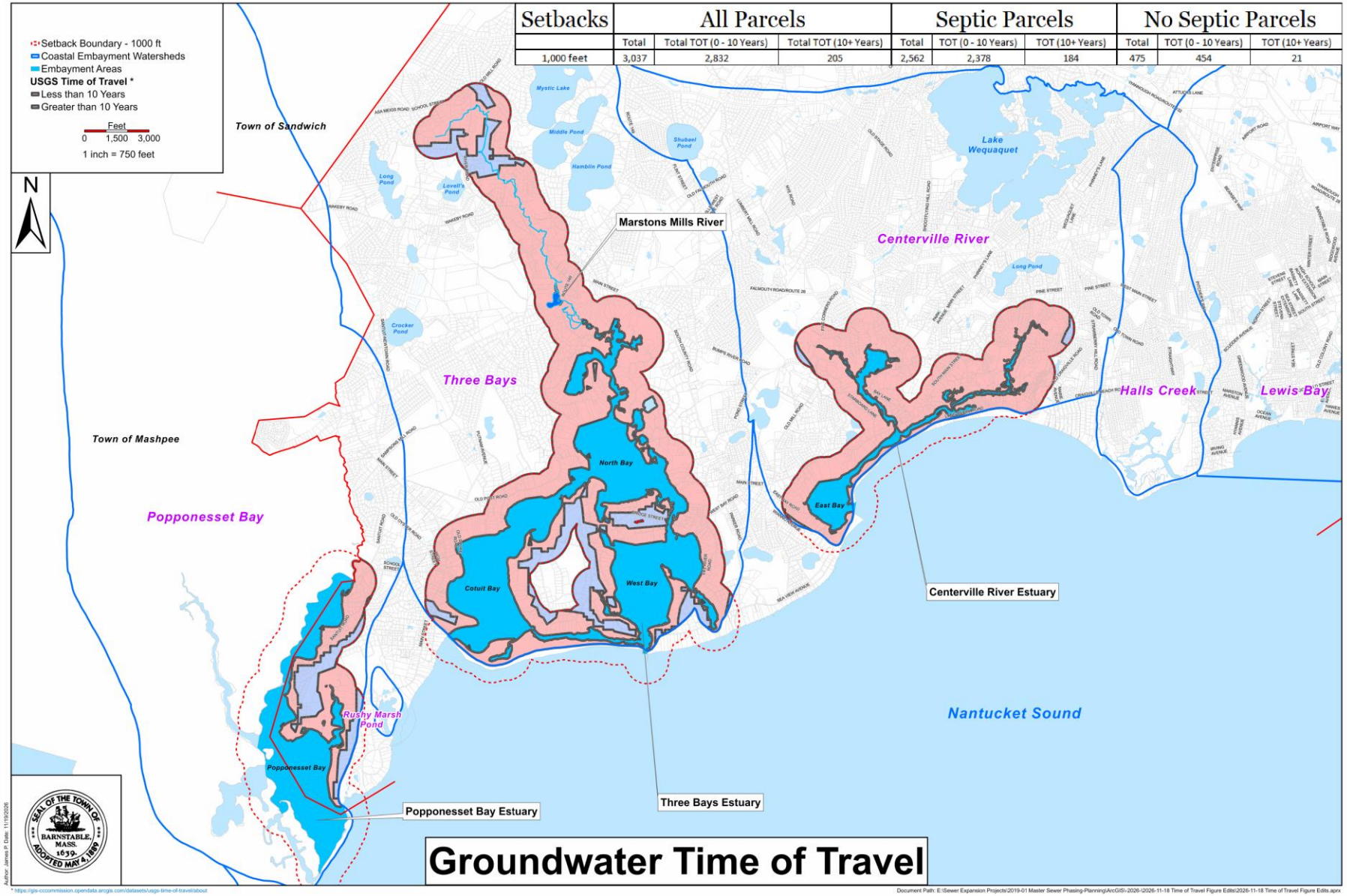
New Title 5 System: $30,000

Marginal Cost adding NR technology: $30,000

MA Tax Credit: - $18,000

Net Cost for NR technology: $12,000

Cape Cod AquiFund – low and no interest loans

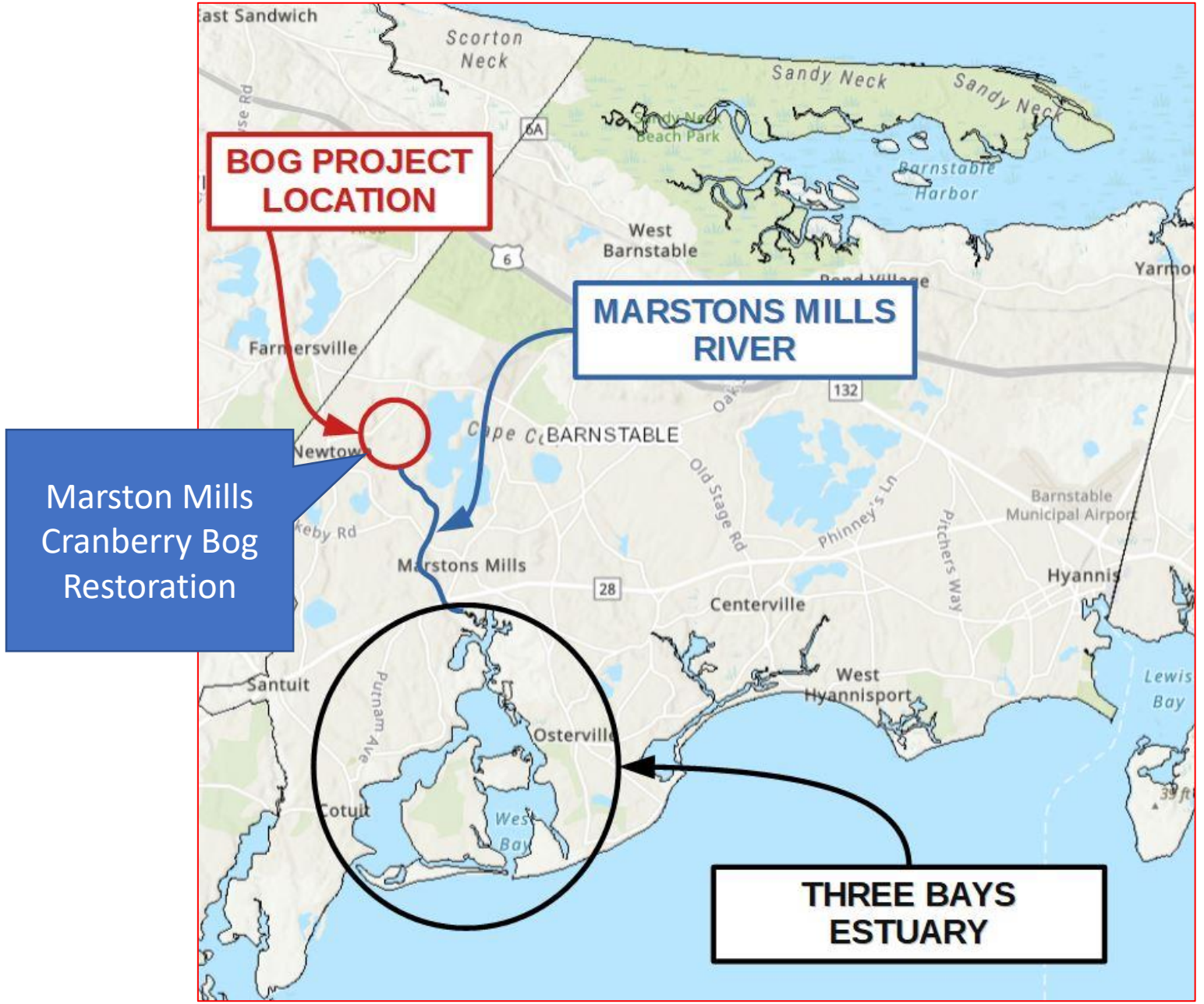


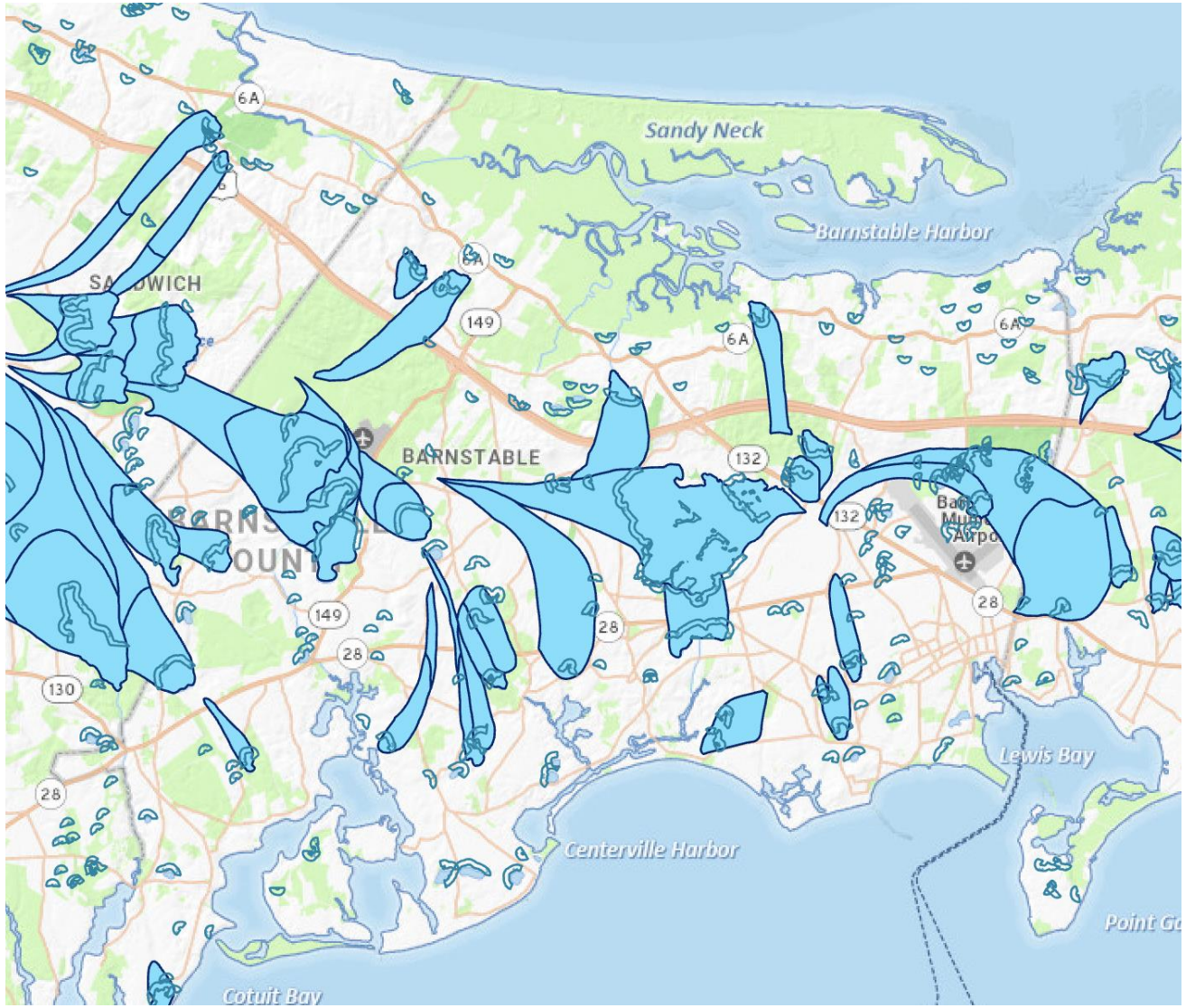
Upgrading septic close to shore will result in water quality improvements sooner

Groundwater moves slowly (1-2 feet/day)

Recommendation 2

Support the restoration of wetlands at the cranberry bogs at the headwaters of the Marstons Mills River.

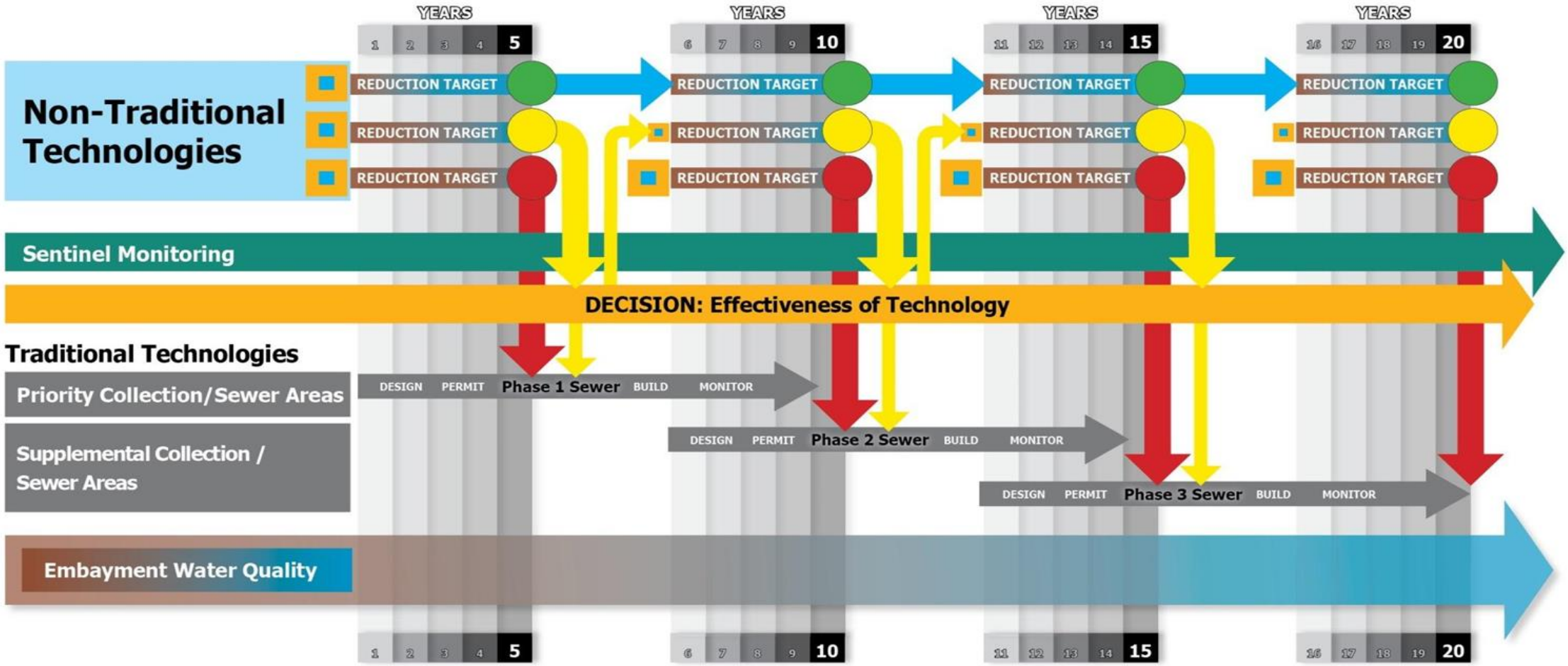




Recommendation 3

Assist with a pilot project to evaluate alternative phosphorus mitigation approaches and technologies at a freshwater pond.

Recommendation 4: Re-formulate the CWMP Ad Hoc Committee into a standing advisory committee to continue to identify and help develop alternative approaches to achieving the CWMP goals and other water quality initiatives.



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Scott Hersey
Water Resources Consultant

Thank you for your attention.

Questions please?