Barnstable Clean Water Coalition

EIA SEPTIC SYSTEMS: PARTNERSHIP AND PROGRESS ON CAPE COD

ZENAS CROCKER

NOVEMBER 14, 2024

THE WALL STREET JOURNAL.

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HOMEOWNEROUS | KRIS FRIESWICK

Why Your Septic System Will Not Be Ignored

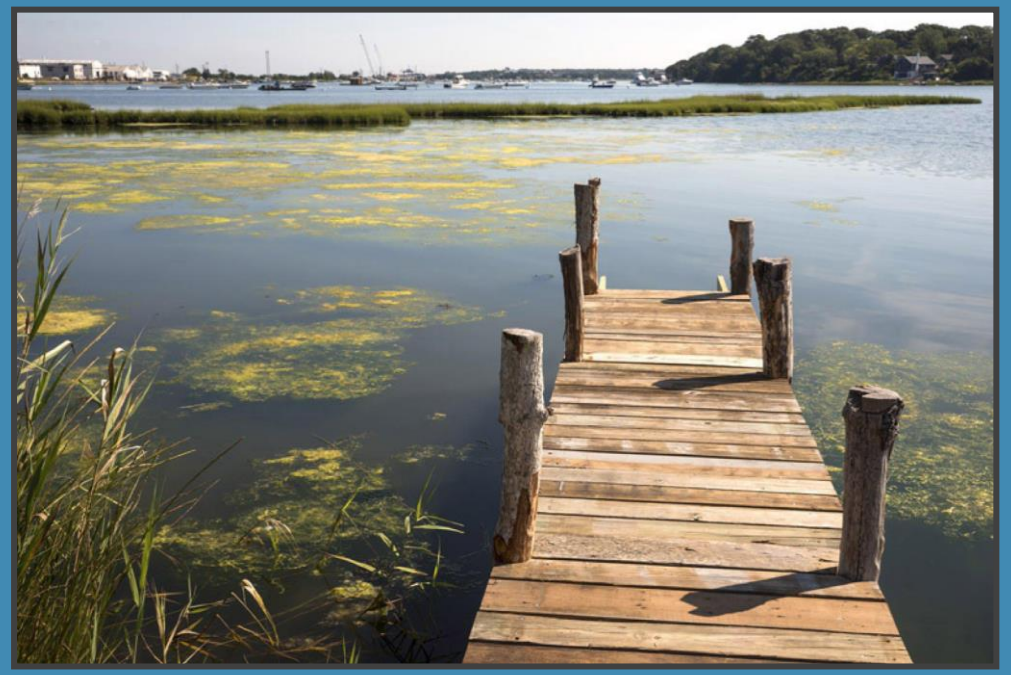
"Bet you didn't know you had a big old hunk of Moses-approved engineering history buried next to your rhododendron."

Proper waste management is so crucial that instructions on it can be found as far back as the

Old Testament: Book of Deuteronomy Chapter 23: Verses 12-13

"Designate a place outside the camp where you can go to relieve yourself," it commands. "As part of your equipment have something to dig with, and when you relieve yourself, dig a hole and cover up your excrement."

VINEYARD GAZETTE



Tisbury Tightens Septic Regulations

Louisa Hufstader *Tuesday, October 3, 2023 - 10:06am*

New Wastewater Rules Arrive in Tisbury as Part of Islandwide Plan

Thomas Humphrey *Thursday, January 4, 2024 - 4:45pm*

- **Regulations effective January 4, 2024**
  - **1,500 homes in the Tashmoo and Lagoon Watersheds**
- **Installation of enhanced, nitrogen removing septic system that removes at least 75% of nitrogen**
  - **House sales/real estate transfers**
  - **Upgrades, repairs, replacements — whether or not system has failed**
  - **New construction**
  - **Expansions/Additions (e.g., bedrooms)**
- **Considering another amendment to require upgrades for systems too close to the water (within 1,000 feet)**

The Enterprise
MASHPEE

Mashpee Health Board To Decide On Stricter I/A Septic Regulation

By ALEX MEGERLE Dec 15, 2023 0

Mashpee Health Board Passes New Septic Regulation, Fines

By ALEX MEGERLE Jan 5, 2024 0

MassDEP
Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs
Department of Environmental Protection
100 Cambridge Street Suite 900 Boston, MA 02114 • 617-292-5500

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Bonnie Heiple
Commissioner

Extension of Date for Best Available Nitrogen Reducing Technology for Septic Systems Serving New Construction in Designated Natural Resource Nitrogen Sensitive Areas

In accordance with Title 5, 310 CMR 15.000, MassDEP is extending the date for requiring the incorporation of Best Available Nitrogen Reducing Technology (BANRT) in septic systems serving New Construction on Cape Cod in designated Natural Resource Nitrogen Sensitive Areas (NRNSA).

Per 310 CMR 15.215(2)(e), MassDEP may extend deadlines for the new NRNSA requirements: "…the Department may extend any time limit contained in 310 CMR 15.215 for good cause including, but not limited to, an insufficient supply of necessary equipment or materials or unavailability of contractors."

Extending the date for this requirement will allow for:

-Continued and requested outreach and implementation guidance to the towns and local Boards of Health;

-A more comprehensive review of the data for nitrogen reducing technologies, leading to a more robust list of BANRT technologies;

-Additional evaluation of whether there is a sufficient supply of necessary equipment and materials, and availability of contractors; and

-Additional time for Cape Cod towns to prepare and submit a Notice of Intent to pursue a Watershed Permit, a Watershed Permit application, or a DeMinimis Load application, which would stay the requirement to install BANRT for both New Construction and existing systems and facilitate an efficient implementation of the new requirements.

The requirement to install BANRT for new construction was scheduled to commence on January 8, 2024 for 30 watersheds on Cape Cod and, on March 30, 2024 for the Wellfleet Harbor watershed on Cape Cod. MassDEP is extending this date to July 8, 2024 for all 31 watersheds designated as NRNSAs on Cape Cod.

This extension for New Construction does not change the timeline for the requirement to install BANRT on existing systems.

This extension for New Construction does not alter or stay any requirement(s) specified by a town bylaw or regulation.

November 30, 2023

The requirement to install BANRT for **new construction** was scheduled to commence on January 8, 2024 for 30 watersheds on Cape Cod and, on March 30, 2024 for the Wellfleet Harbor watershed on Cape Cod. **MassDEP is extending this date to July 8, 2024 for all 31 watersheds designated as NRNSAs on Cape Cod.**

This extension for New Construction does not change the timeline for the requirement to install BANRT on existing systems.

WHY ARE WE WAITING?

Approved for Provisional Use

This category is intended to evaluate, under actual field conditions, alternative systems that appear technically capable of providing levels of protection at least equivalent to those of a standard on-site disposal system. These systems are generally approved for nitrogen reduction but can be approved to evaluate reduction of other parameters. The system owner is required to have inspection and testing performed as required by the approval on a regular schedule throughout the Provisional Use period. Each Provisional Use technology shall install at least 50 systems pursuant to its approval. These systems can be installed for new construction or on remedial sites to replace a failed system. Contact the manufacturer for schematics of these I/A technologies.

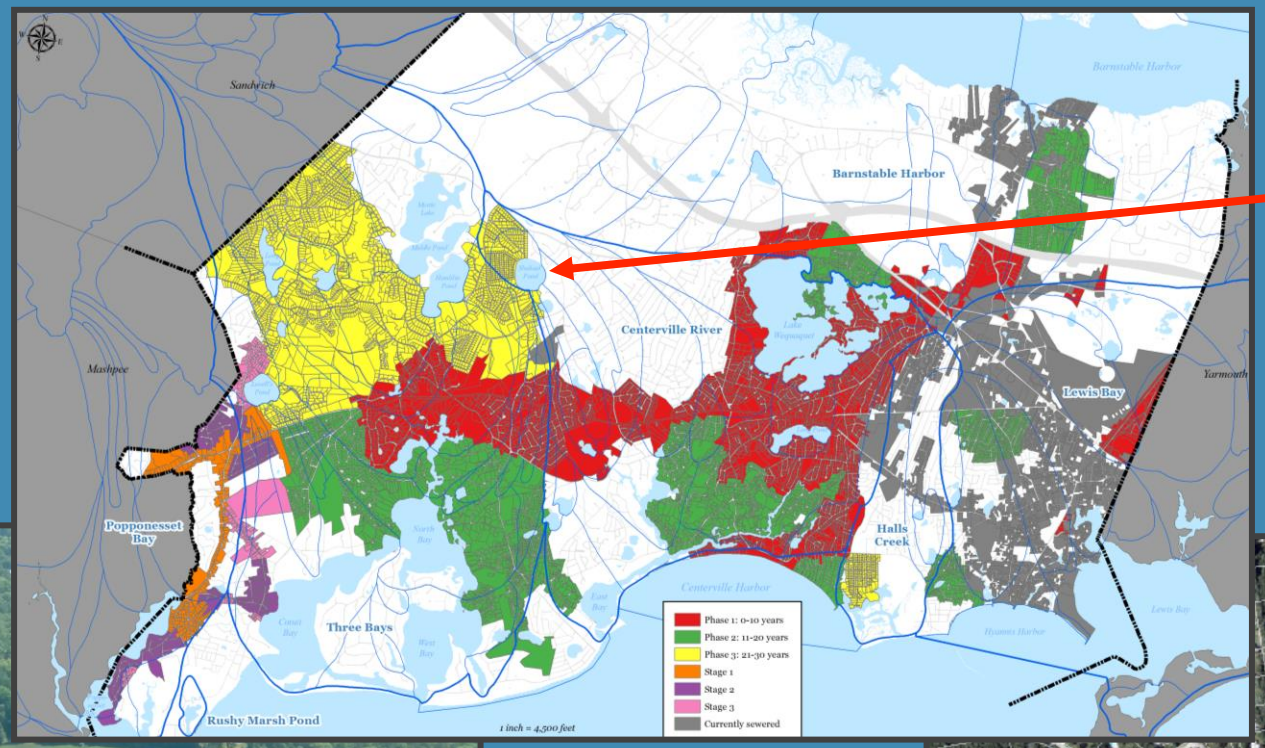
SHUBAEL POND
I/A SEPTIC SYSTEM PROJECT

- Neighborhood Demonstration Project
- Started in 2019 as a **Translational Science** project for U.S. EPA ORD, Region 1
- Location selected by U.S. EPA and USGS
- Monitoring and Testing Best In Class Technology in Real World Setting
- Unique and nothing like it in the U.S.
- U.S. EPA certified data shared across the country and internationally

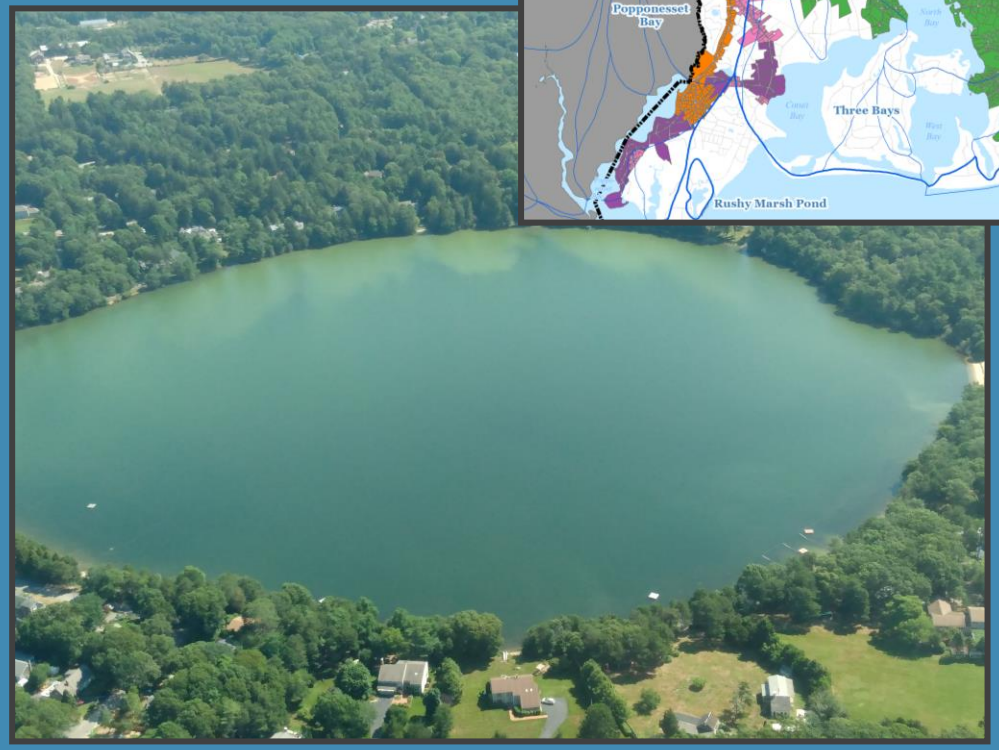
KLEANTU NITROE
I/A SEPTIC SYSTEM

Desirable Characteristics

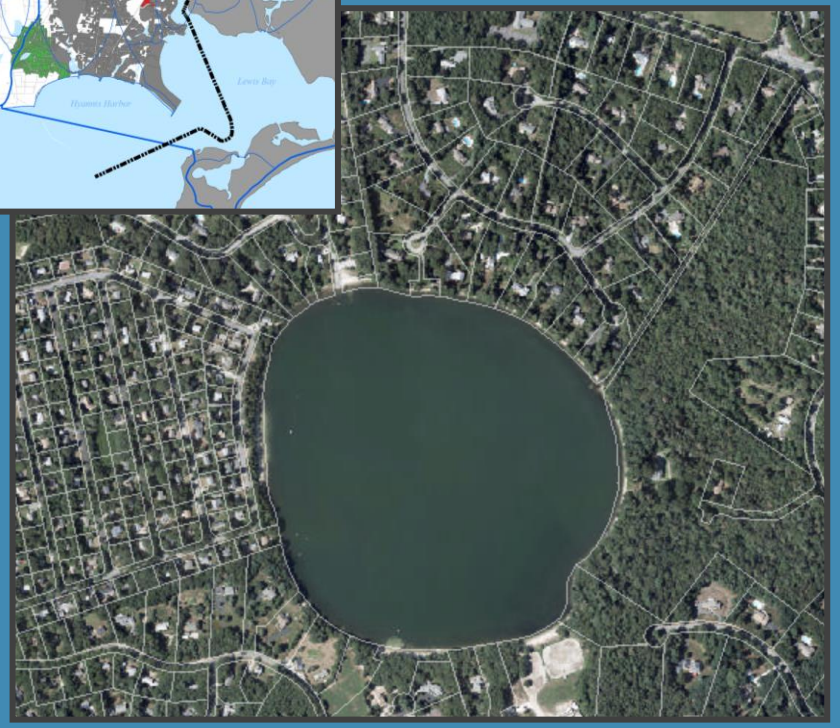
- Best in Class Performance
- Low cost/cost competitive to municipal sewer
- Modular structure allowing integration into existing Title 5 system
- Low maintenance
- Real time monitoring
- Ability to operate in absence of power



Shubael Pond
Marstons Mills

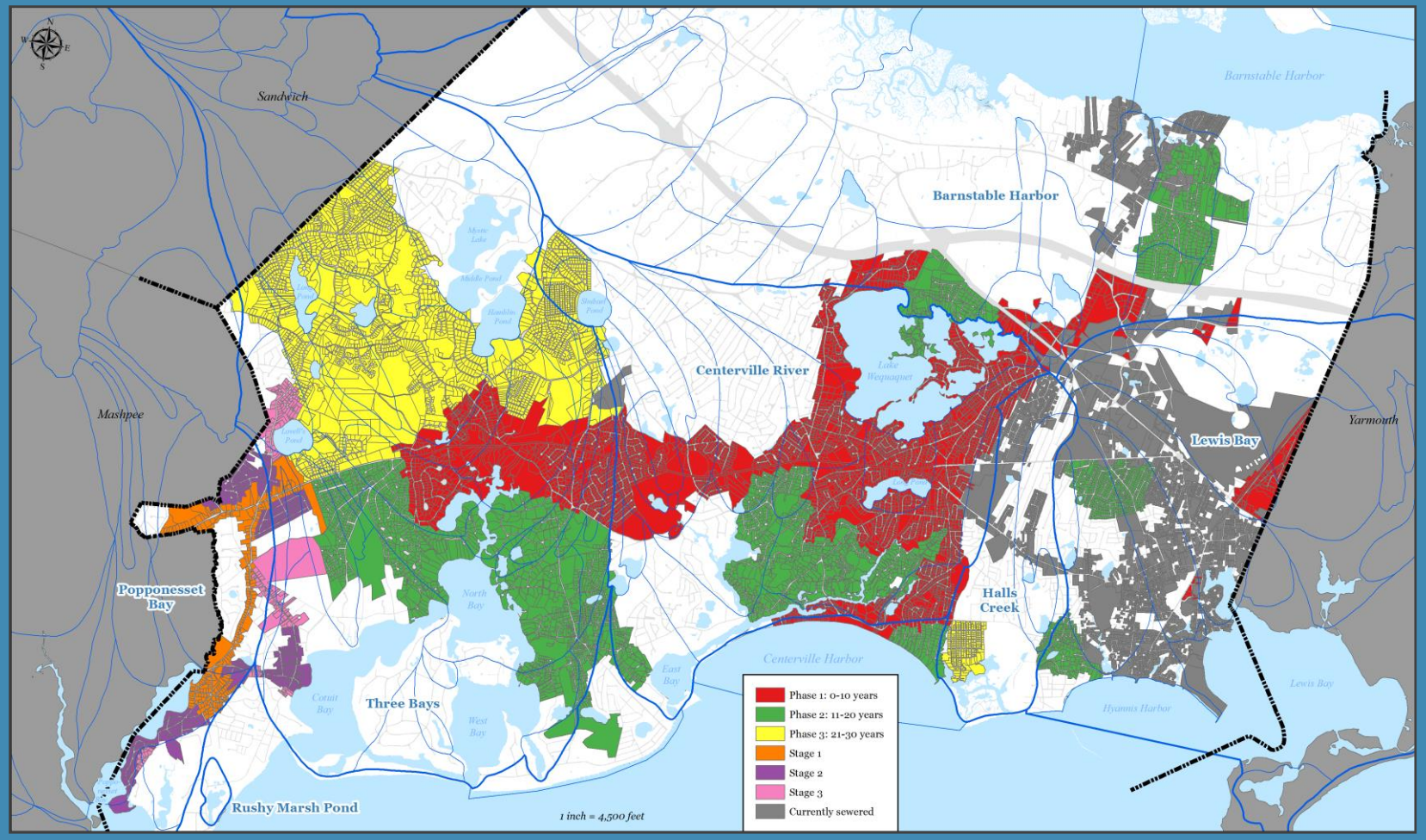


July 2020



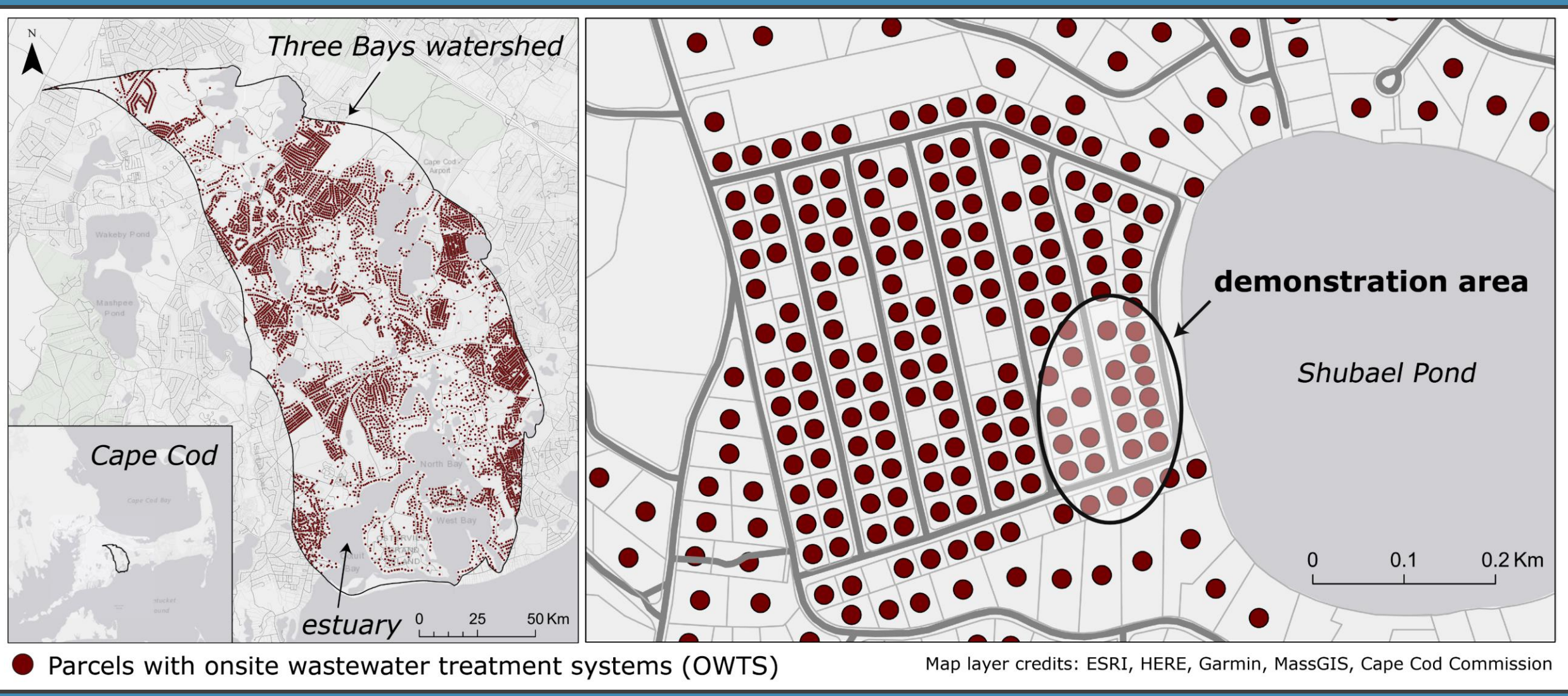
350 Homes Around Shubael Pond

BARNSTABLE COMPREHENSIVE WASTEWATER MANAGEMENT PLAN (CWMP)



- $1.46 Billion, 30-year plan
- 26,965 parcels in Barnstable
- 3,100 currently served by sewer; 100+ I/A septic systems with 85% reducing nitrogen
- 11,823 part of CWMP

ONLY 55% OF THE TOWN WILL BE SERVED


Three Bays watershed
N
Cape Cod
estuary
0 25 50 Km
demonstration area
Shubael Pond
0 0.1 0.2 Km
Parcels with onsite wastewater treatment systems (OWTS)
Map layer credits: ESRI, HERE, Garmin, MassGIS, Cape Cod Commission

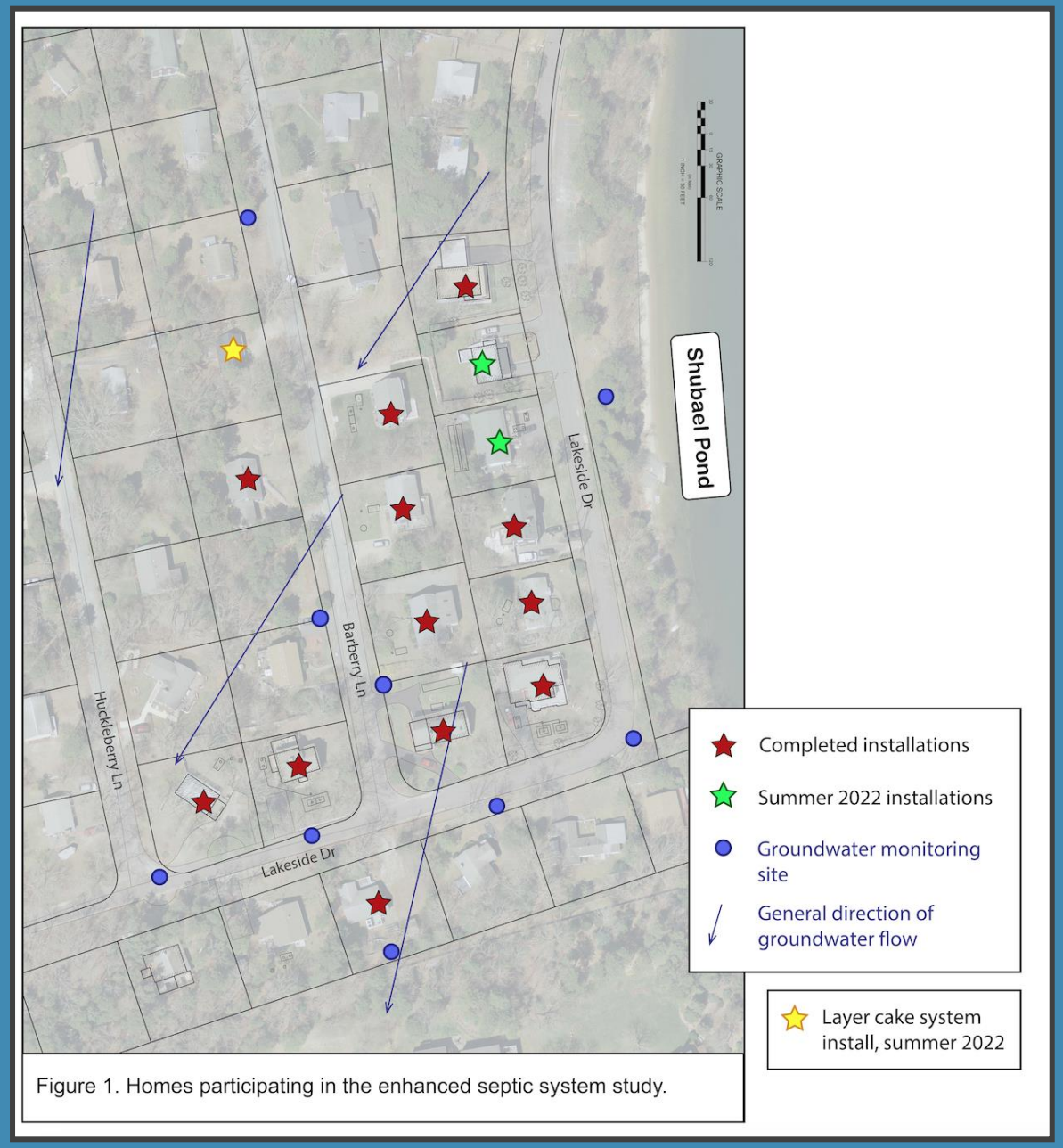
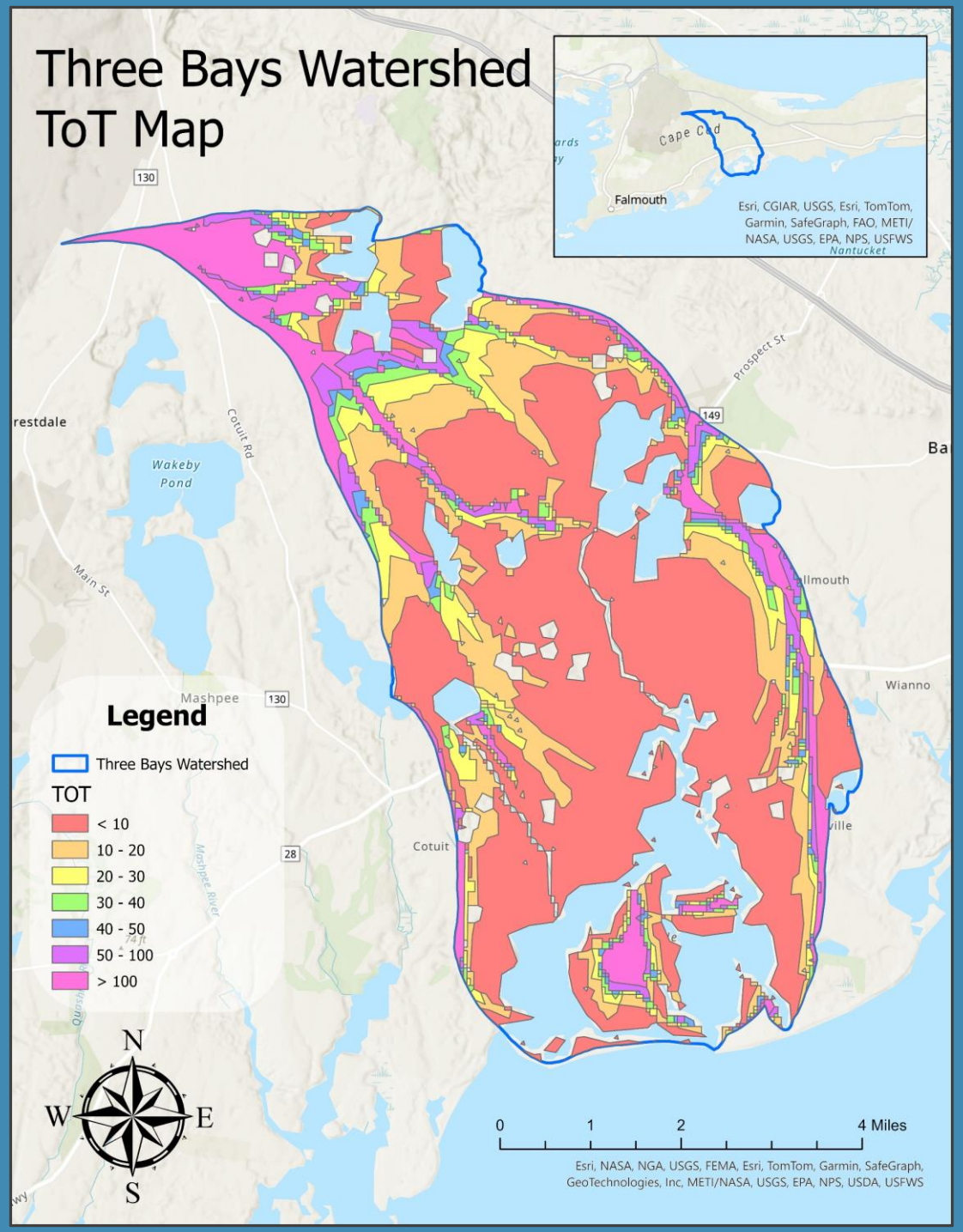


Figure 1. Homes participating in the enhanced septic system study.

We Went Where The Data Told Us To Go

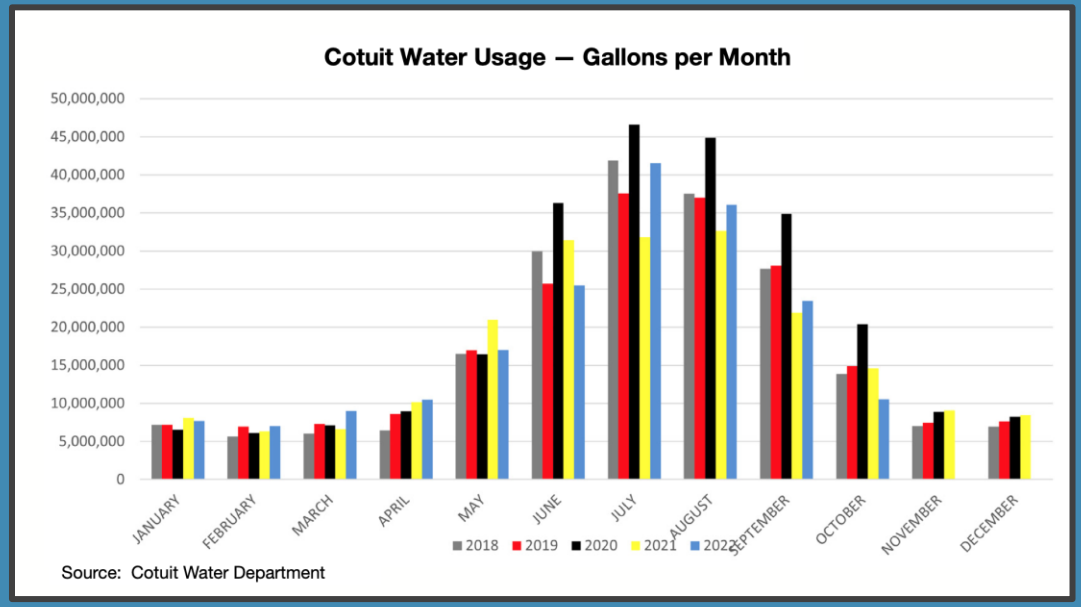
- 34 groundwater wells and 3 Multilevel Samplers (MLS) installed
- Groundwater flow directions have been stable over the period of monitoring


Three Bays Watershed
ToT Map
Cape Cod
Falmouth
Nantucket
Esri, CGIAR, USGS, Esri, TomTom, Garmin, SafeGraph, FAO, METI/ NASA, USGS, EPA, NPS, USFWS
130
149
28
Prospect St
Cotuit Rd
Wakeby Pond
Main St
Mashpee
Cotuit
Wianno
Mashpee River
Legend
Three Bays Watershed
TOT
< 10
10 - 20
20 - 30
30 - 40
40 - 50
50 - 100
> 100
N
W
E
S
0
1
2
4 Miles
Esri, NASA, NGA, USGS, FEMA, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, USFWS

- 106 single family homes within 400 feet from the shores of Cotuit Bay
- Discharge more than 47,000 gallons of wastewater per day; approximately 12 million gallons per year (1)

4,500 pounds (2.5 tons) of nitrogen going into Cotuit Bay annually

- I/As performing at 4 mg/L **could eliminate 3,600 pounds**



(1) Source: Cape Cod Commission's Watershed MVP software and Cotuit Water Department

SHUBAEL POND PROJECT
PROOF OF PERFORMANCE AND COST ANALYSIS

- Monthly monitoring vs. required quarterly monitoring
- Monitoring water use with dedicated water meters
- Measuring Influent, Effluent, Lysimeter
- Tracking installation and OM&M costs

OUR PARTNERS

The Nature Conservancy

United States Environmental Protection Agency

USGS science for a changing world

KleanTu Wastewater Treatment Technologies

Seal of the Town of Barnstable, Mass. 1639. Adopted May 4, 1889

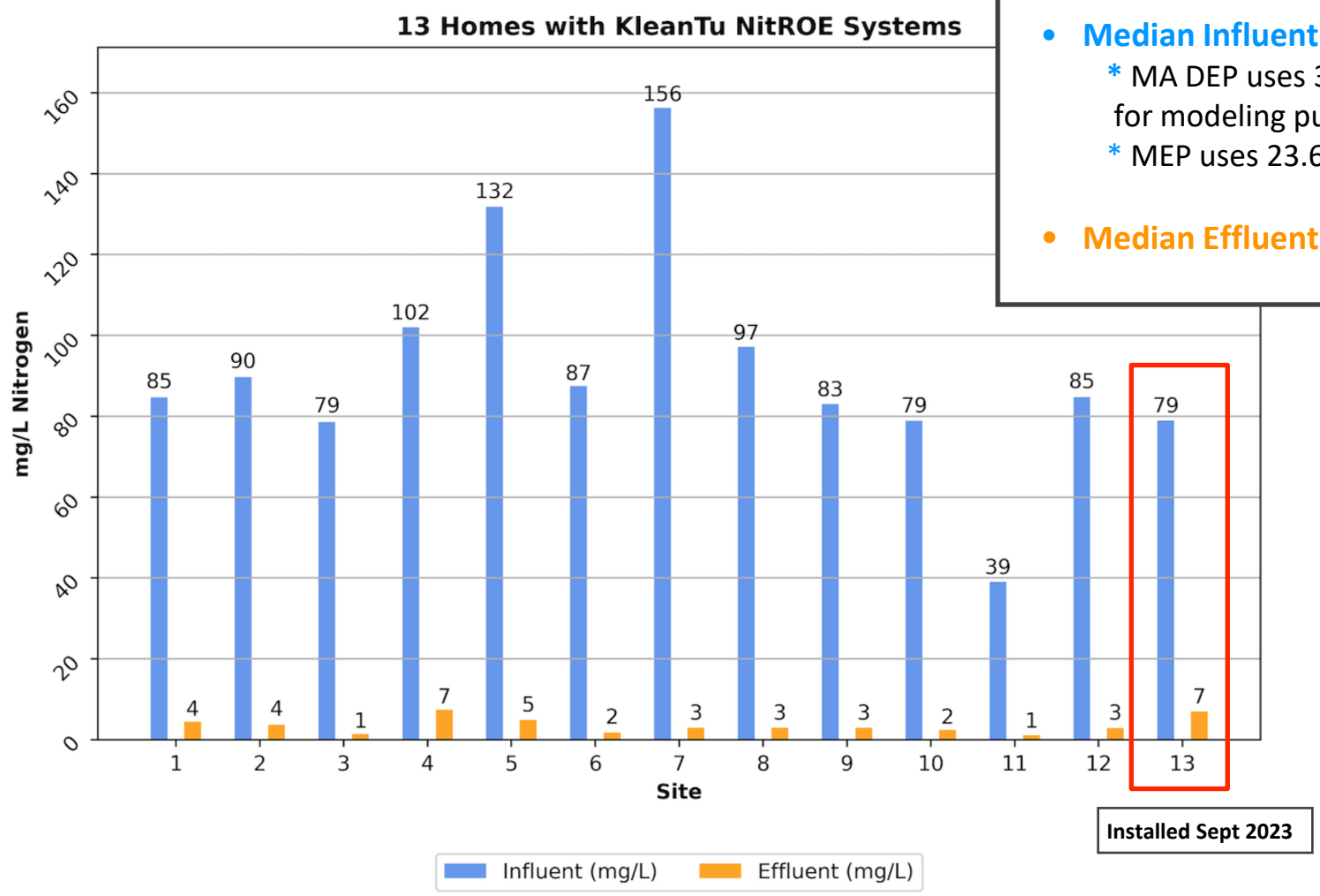
Cape Cod Commission

MassDEP

MASSTC

School for Marine Science & Technology
UMass Dartmouth

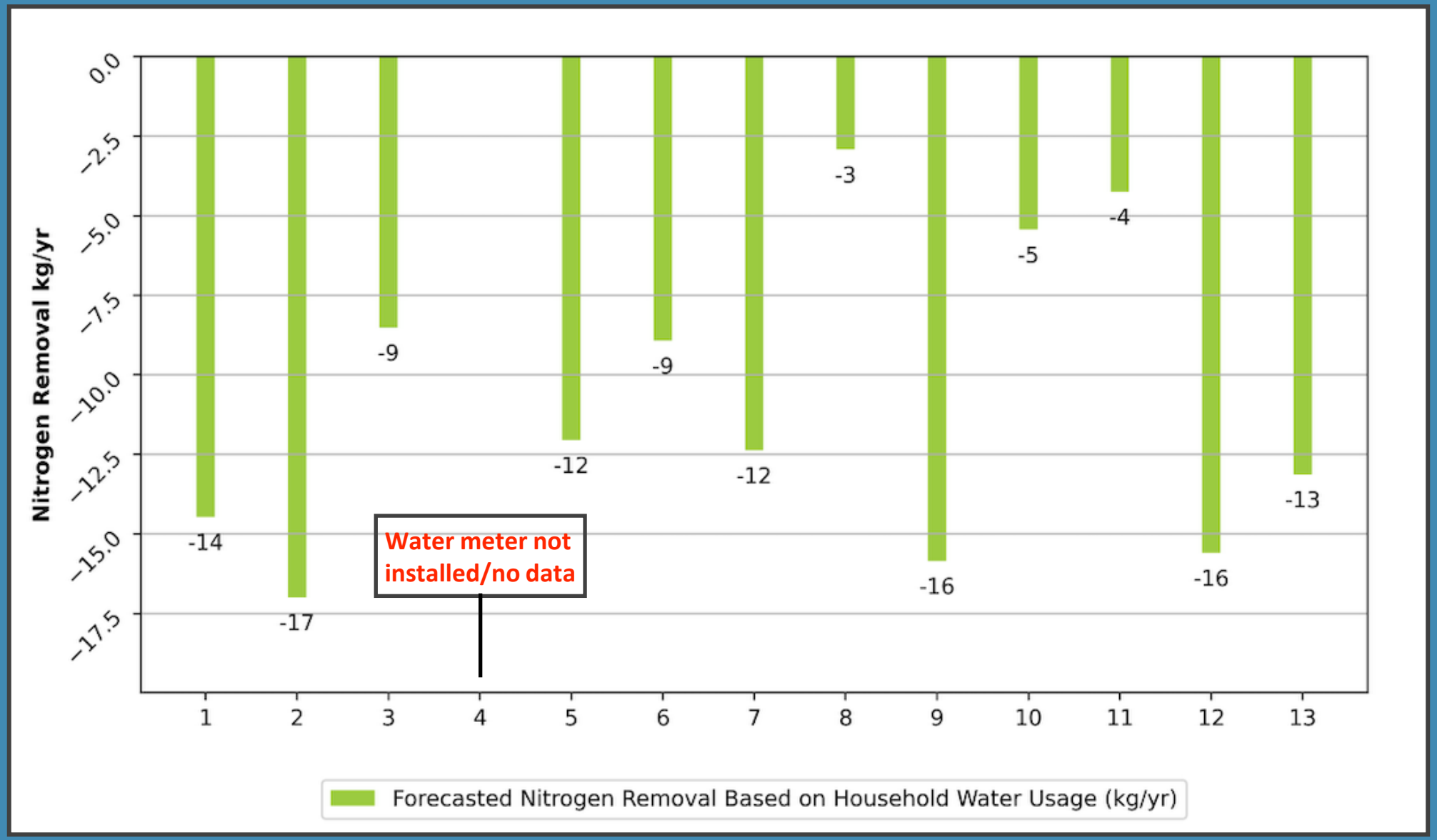
SHUBAEL POND I/A SEPTIC SYSTEM PROJECT
PERFORMANCE DATA 12/10/21 - 01/24/24 (MEDIAN)



- **Median Influent: 87.4 mg/L**
  - * MA DEP uses 35 - 45 mg/L for modeling purposes
  - * MEP uses 23.63 mg/L
- **Median Effluent: 2.9 mg/L**

Installed Sept 2023

SHUBAEL POND I/A SEPTIC SYSTEM PROJECT
NITROGEN REMOVAL KG/YEAR



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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]

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[e] Horsley Consulting, Cotuit, MA, USA

EDUCATING THE PUBLIC

Barnstable Clean Water Coalition

Issue 27, Spring/Summer 2024

COALITION Quarterly

Subsidize To Equalize

Faster, Cheaper, Fairer

BCleanWater.org

Barnstable Clean Water Coalition

Issue 25, Fall 2023

COALITION Quarterly

DOUBLE ISSUE

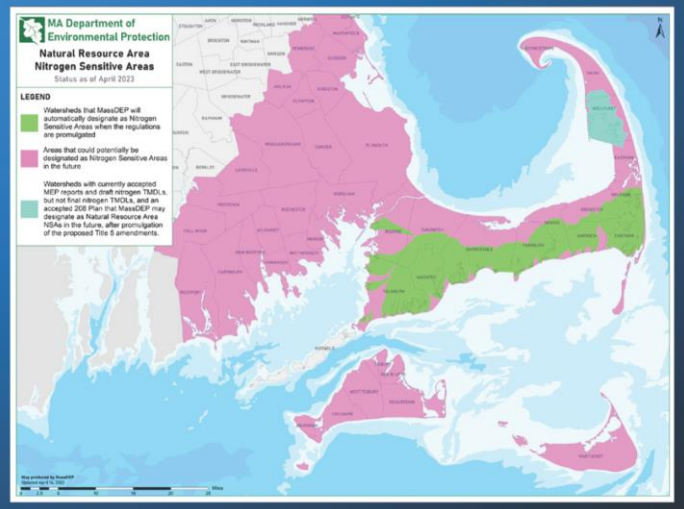
Rules, Regulations, and Resources

The Enterprise
FALMOUTH • BOURNE • MASHPEE • SANDWICH

Health Board Passes New Septic Regulations

VINEYARD GAZETTE

New Wastewater Rules Arrive in Tisbury



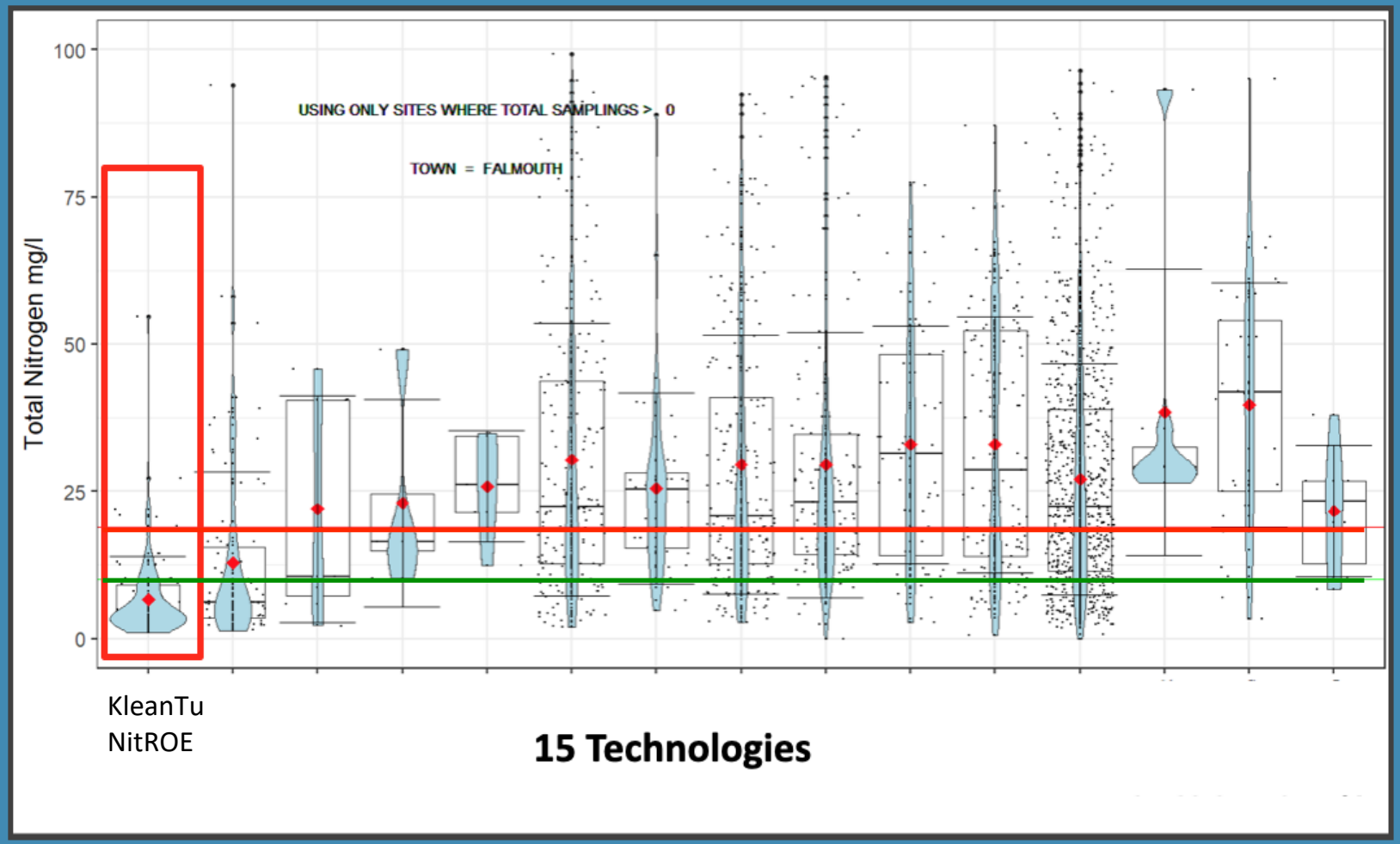
BCleanWater.org

Step-by-Step Instructions for Installing An I/A System

1. **Find out if you live in a Nitrogen Sensitive Area (NSA) and if your town is applying for a Watershed Permit (WP).** Please refer to the NSA map on this issue's cover page.
   - If you live in an NSA and your town is not applying for a WP, you will most likely need to install an I/A system.
   - If you live in an NSA and your town is applying for a WP, you should discuss with your town's Board of Health if you should install an I/A system.
   - If you live in Barnstable, visit the town's website (Administrative Dept>Assessing Division>Property Look Up) to determine if your property is scheduled to be connected to the town's sewer system.
2. **Explore your financing options.** The state, Barnstable County and a few Cape Cod towns have several options to help you. See page 6 for specific programs.
3. **Select a local engineer.** Choose a firm that specializes in civil engineering, land surveying, environmental permitting and understands the soil conditions of Cape Cod. They will design a system plan specific to your site and will secure approvals and construction permits with your local Board of Health and Conservation Commission (if you live near wetlands).
4. Working with your engineering firm, **select an I/A system manufacturer and installer** that offers an I/A system technology (BACT) that meets your goals and budget.
5. Once permits have been secured by your engineer, **hire an excavator** that will install your system and notify your town of the installation. It is important that the excavator is trained to install the I/A system you have selected.
6. **Set up a system maintenance contract with a service provider.**
7. **Follow the US EPA's Septic Smart tips** to ensure the proper function and longevity of your septic system.

Check out the Resources page on the BCWC website for more information.

FALMOUTH BOARD OF HEALTH
GUIDANCE AND DECISION MAKING DOCUMENT
FOR ENGINEERS AND HOMEOWNERS



I/A Septic Systems In Falmouth

- **Over 150 I/A systems installed**
- **15 technologies are being used**

As of March 2024

MASSTC

The Massachusetts Alternative Septic System Technology Center

ote that this list of technologies in non-exhaustive, and inclusion of a technology or manufacturer on this list in no way
es an endorsement or recommendation by MASSTC or Barnstable County.

- Show All
- I/A Technologies
- Alternative Drainfields
- Alternative Drainfields with Treatment
- Alternative Toilets

Data Availability

- Show All
- Has Real World Data
- Tested at Test Center
- Has Publications

ame | Manufacturer | Technology Type

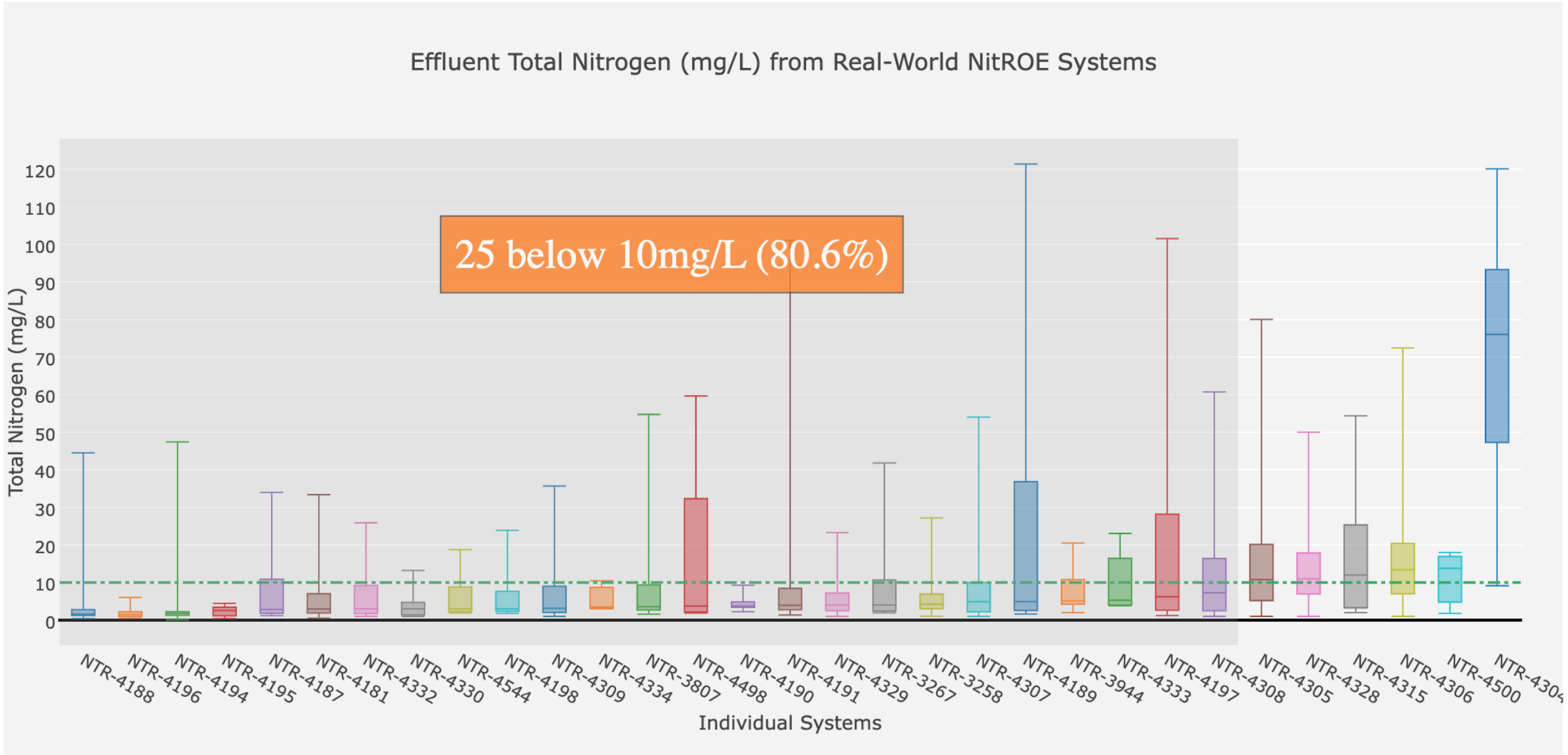
Enviro-Septic Presby Environmental, Inc.	AdvanTex Orenco Systems, Inc.	Aerobic Recovery System On-Site Treatment Systems™	Amphidrome F.R. Mahony & Associates, Inc.	Anua PuraSys SBR/ Puraflo Peat Fiber System Clearwater Recovery	BioBarrier MBR Bio-Microbics	Bioclere Aquapoint.3, LLC
Bottomless Sand Filter None	Busse-MF Busse Green Technologies Inc.	CERES III None	Clean Solution Treatment System Wastewater Alternatives, Inc.	Clear Rex Bubbler PekaSys Inc.	Clivus Clivus Multrum	Cromaglass Cromaglass Corporation
Cultec Chambers CULTEC, Inc.	Eco-Pure Peat Moss Biofilter Eco-Pure, Inc.	ECOPOD-N Delta Environmental – Pentair Water	Eliminite Eliminite	Enviro-Septic Wastewater Treatment System Presby Environmental, Inc.	FAST Bio-Microbics	Fuji Clean Fuji Clean USA, LLC
Geoflow Subsurface Drip Geoflow, Inc.	GeoMat GEOMATRIX	GPC Filter Ground Penetrating Carbon, Inc.	GST Leaching System GEOMATRIX	HOOT Hoot Systems, LLC	Hydro-Action Hydro-Action	Hydro-Kinetic Norweco, Inc.
Jet Jet, Inc.	Layer Cake Non-Proprietary	LooLoop SOSytems	Nitrex Lombardo Associates	NitROE KleanTu LLC	OxyPro Aeration Systems, LLC	PERC-RITE Drip Dispersal American Manufacturing
Phosphex	PhosRID	Recirculating Sand	RetroFAST™	SanTOE	SeptiTech	Singulair

NITROE DETAILS

MANUFACTURER

KleanTu LLC
P.O. Box 1154
Edgartown, MA 02539 United States
P: 508-627-3072
W: https://www.kleantu.com/

REAL-WORLD DATA



The Enterprise
FALMOUTH • MASHPEE • BOURNE • SANDWICH
SERVING CAPE COD COMMUNITIES SINCE 1895

Tripled Tax Credit Can Help Cape Homeowners Replace Failed Septic Systems

By ALEX MEGERLE Oct 13, 2023 0

Cape Cod residents have a new tool in the toolbox—and wallet—to help clean up local waters: a newly tripled tax credit to defray the cost of replacing failed septic systems.

Under the new rules, which are part of a tax package signed into law by Governor Maura T. Healey on October 4, residential property owners in the state can claim a tax credit of 60 percent of the cost of repairing or replacing a failed cesspool or septic system. Previously, a tax credit of 40 percent of the cost was allowed.

That cost "shall be the actual cost to the taxpayer or $30,000, whichever is less," according to the new language. That figure was bumped up from $15,000.

The credit cannot exceed $4,000 per year and any excess credit can be applied over the next five tax years up to a total maximum of $18,000. Previously, the annual limit was $1,500 and septic tax credit was capped at a $6,000 maximum.

SUBSIDIZE TO EQUALIZE

Cost to Sewer

$140,000: Cost per Home

$20,000: **Capped Cost to Homeowner**

Current

$120,000 Subsidized by the town through various revenue sources (meal and lodging taxes, subsidies and low interest loans through Mass Clean Water Trust, property taxes, etc.)

Cost for I/A Septic System

$46,000: Average cost for I/A system for 3-bedroom home

$10,000: **Cost for homeowner; subsidized with $18,000 state tax credit and low interest AquiFund loan**

Suggest

$18,000 subsidized by the town through various revenue sources (meal and lodging taxes, subsidies and low interest loans through Mass Clean Water Trust, property taxes, etc.)

CONCLUSIONS

- **IT'S TIME TO INSTITUTE NEW BOARD OF HEALTH WASTEWATER RULES TO PROTECT ALL OUR WATERS**
- **MASS DEP HAS BROUGHT FORWARD ESTUARY PROTECTION REGULATIONS**
  - **THESE NEW REGULATIONS ALLOW USE OF HIGH PERFORMING "PROVISIONAL" SYSTEMS**
- **KLEAN TU NITROE PERFORMANCE EQUALS/BETTERS BEST CENTRALIZED SYSTEMS**
- **"TIME TO TRAVEL" MANDATES ACTION**
- **BARNSTABLE NEEDS MULTI-PRONGED APPROACH: SEWER, NEW SEPTIC SYSTEMS & OTHER ALTERNATIVES FROM SHELLFISH TO BOG RESTORATION**