



# COALITION Quarterly

## Fool's Gold



*"Drilling for Gold" see page 2*

# A Note from The Helm



## Drilling for Gold

The title of this newsletter is “Fool’s Gold”. I am being a little bit cheeky because the “gold” we are referring to is our own urine...and we have collectively “fooled” ourselves into thinking we can just flush it away with no impact.

The cover inset photo shows us sampling for nitrogen (from urine) both in surface water and in groundwater with a drilling rig brought to Cape Cod from the U.S. Environmental Protection Agency’s (EPA) Environmental Research Center in Ada, Oklahoma. Sample wells drilled have allowed us to identify a neighborhood in Barnstable where we will install and monitor a network of next generation Innovative/Alternative (I/A) septic systems.

The current Title 5 septic systems in use on the Cape are believed to remove, at best, just 20-30% of the nitrogen we generate. Eighty-five percent of the Cape’s wastewater is treated by septic systems. The I/A septic system we will install in phase one can remove 80-90% of the nitrogen, operating close to the levels of most municipal treatment systems.

Working with our partners, including the U.S. EPA, U.S. Geological Survey (USGS), Massachusetts Department of Environmental Protection (MassDEP), The Nature Conservancy (TNC), and the town of Barnstable, our plan is to begin a program this spring establishing an extensively monitored network of I/A septic systems. The data from this network will be the first of its kind and is intended to allow regulators, and our community, to identify a new and powerful tool to confront the challenge of nitrogen overload in our groundwater and waters generally.

Why is this important? The gold-colored urine we generate creates nitrogen that the town of Barnstable is under mandate to remove. Excess nutrients are our biggest

problem. In fact, our “blue economy” on the Cape is turning brown with algal blooms that are threatening our environment, and our way of life. The cost of municipal treatment is enormous with, until now, limited proven alternatives.

This I/A septic system effort is the cornerstone of our plan to identify and test cost effective alternatives that can remove harmful nutrients and return our waters to clean and healthy conditions. Previously we discussed other approaches that BCWC is working on, like returning cranberry bogs to wetlands that can treat excess nutrients biologically. Those efforts are still underway, too.

Details regarding this project and the I/A septic system we have identified can be found on the following pages.

Our work is funded by our readers, like you.

I hope you will consider funding this important work by giving generously in 2020!

See you on the water this spring!

## A TRIBUTE TO OUR FOUNDER WILLIAM GAHAGAN 1929-2019

Our community is fortunate that Bill Gahagan was at hand in the 1990’s when a series of storms threatened Dead Neck Sampson’s Island. At a time when financial pressures prevented the town from acting, Bill brought together a group of concerned neighbors to fund the island’s restoration. This alliance became known as Three Bays Preservation, the parent of our own Barnstable Clean Water Coalition.

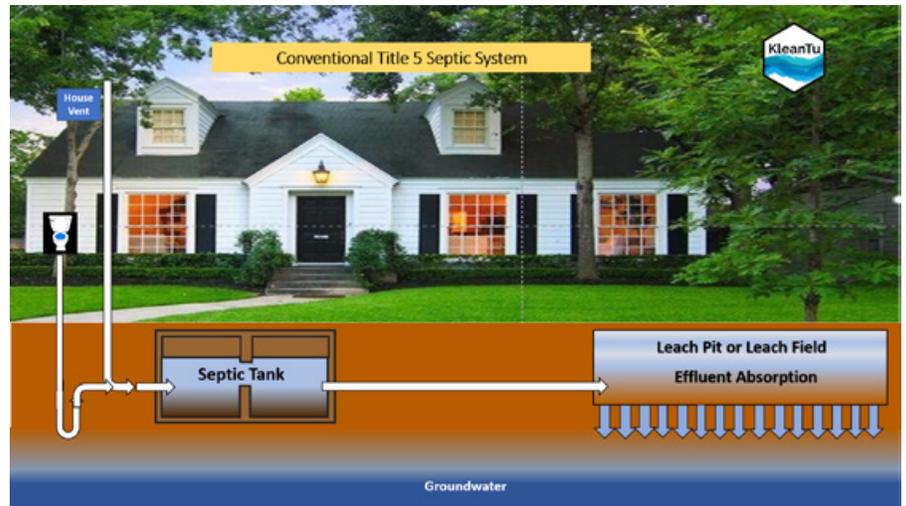
Bill’s efforts have left us with an important legacy, which we carry on today: giving back to our community. Today we have more than twenty years of water quality data collected during his leadership, which means that we have critical baseline data. With this data, we can move forward with our clean water restoration work that is so important to the residents of Bill’s beloved Cape Cod. Thank you, Bill, and God bless.



# Neighborhood Septic System Project

Innovative/Alternative (I/A) septic systems are not new. In fact, several thousand are in operation on the Cape and Islands. Unfortunately, these first-generation systems have serious flaws: expensive to install, complicated, costly to maintain, and with highly variable performance that is not much better than our existing Title 5 septic systems (see image to right).

Statistical analysis of the roughly 2,000 installed I/A systems has led us to conclude that a new approach to alternative septic systems is needed, which is the reason why BCWC is embarking on a neighborhood septic system project. We have selected our first next generation I/A system, the NitROE System (see image below). Low cost and long lived with superior wastewater treatment performance, this system relies on gravity and a small amount of electricity.



Our goal is to test the performance of next generation I/A systems in the real-world environment at a scale that is statistically significant. For that, we need to use the “law of averages”: installing enough systems in one area to demonstrate a measurable impact in nutrient reduction in groundwater.

The project is complex because all households are different, and they change regularly. On Cape Cod, a three-bedroom home may be occupied by an older couple, or a family of five, or even 13 seasonal workers.

As BCWC analyzes the performance of our neighborhood project systems and their effect on the groundwater, it will give us critical data that we believe will show these systems to be cost effective, high performance alternatives to municipal treatment.

In high density areas, local municipal treatment is the sensible choice, but the math changes depending on location. Disposing of treated wastewater is one of the most complicated and costly challenges facing the town of Barnstable. These new systems could help mitigate the problem of wastewater disposal.



The Massachusetts Alternative Septic System Test Center (MASSTC) is one of only two sites in the United States that test alternative septic systems. We are fortunate that MASSTC is located nearby at Joint Base Cape Cod. BCWC is working closely with them to help identify next generation systems that fit our criteria: low cost and long lived with superior performance. MASSTC will also work with us to develop individual monitoring protocols for all systems.



The U.S. EPA Office of Research and Development, U.S. EPA Region 1, and the United States Geological Survey (USGS) have helped us identify a suitable neighborhood for this project. The team will also design, develop and implement a network of monitoring wells that will look at the changes in groundwater that occur as the neighborhood I/A septic systems are deployed. Groundwater on Cape Cod typically moves at between one and four feet a day, so this monitoring will be critical to understanding and modeling how this distributed technology will impact the waters of our community.



We have many partners in this Neighborhood System Plan

PARTNERS



The town of Barnstable, Town of Barnstable, and the Barnstable Clean Water Coalition are vital partners in this effort. The Barnstable Comprehensive Wastewater Management Plan is spending close to one billion dollars on wastewater treatment throughout the town. The town's long-term wastewater plan will play a significant role in restoring and other impaired bodies of water. Additional, cost effective components

# Barnstable CLEAN WATER Coalition

Partners invested  
in the  
Neighborhood Septic  
Project:

PARTNERS



The Town Council and Board of Health are aware that the town has recently put forward a Comprehensive Waste Management Plan (CWMP) that proposes \$10 million in dollars on expanding municipal waste treatment. The town has identified alternative treatment as an important element of the plan. Next generation I/A septic systems may improve the health of the Three Bays estuary and protect the water in Barnstable while providing an alternative to centralized municipal treatment.



The Nature Conservancy (TNC) will continue to commit significant resources to this project, especially the examination of funding through impact investing. TNC's goal of working on the health of our planet fits perfectly with this effort to deal with the global issue of human waste.

Ultimately, tens of thousands of I/A septic systems may be required to help solve Cape Cod's nutrient issues. TNC is hard at work on answering the question of how we can pay to install, monitor and maintain such systems.



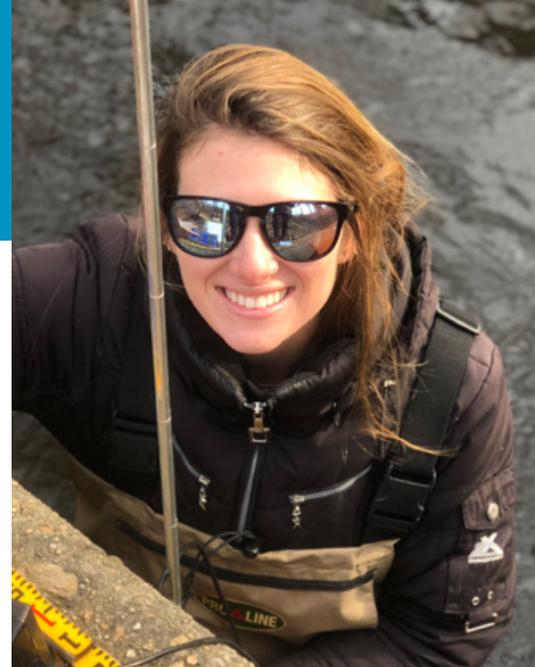
Massachusetts Department of Environmental Protection (MassDEP) has been and will continue to be actively involved in each step of this and all our projects that seek to address nutrient overload. MassDEP is the state's regulatory body responsible for the certification of I/A septic systems and one of the major goals of this project is to identify technologies that can achieve general approval and certification. Only then can we expect to add these alternatives to the toolbox of solutions.

# Field Notes from Meg

For over 20 years, AmeriCorps Cape Cod has been an integral part of the Barnstable County community, serving the residents and our local environment. Last year, BCWC was lucky to be assigned an AmeriCorps member, and the same goes for this year. Alex Davies was placed with BCWC in early October. She joins me every Thursday for seven hours of field work along the Marston's Mills River. We collect weekly streamflow measurements, water samples and associated data at 11 stations along the river. This water quality data is used to determine the total amount of nitrogen traveling down the river and into the Three Bays estuary.



There are days when Alex and I sample in less than ideal weather - think snow, rain, wind and freezing cold temperatures! Regardless, Alex is always positive and ready for whatever conditions we may encounter along the river. I am so glad to have someone like her who loves being out in the field and on the water as much as I do!



*Alex grew up in northern New Jersey and recently graduated from Ramapo College with a bachelor's degree in Literature and Creative Writing. Although she ultimately wants to pursue a Ph.D. in Literature, Alex has a great passion for the outdoors and working in the environment, which is why she chose to become an AmeriCorps member. She enjoys reading, writing, hiking and spending time with friends and her dog, Charlie.*

# BCWC Notes and Events

## One Fish, Two Fish... It's That Easy!

Want to be part of an exciting citizen science program collecting important data for the state? Join our growing team of river herring counters! To learn more about river herring on Cape Cod and how easy it is to count herring as they travel upriver for their annual spawning run, please attend our Marstons Mills River Herring Counter Information and Training Session on Saturday, March 7<sup>th</sup> from 9am-11am at the Osterville Village Library, 43 Wianno Avenue, Osterville. For more information, email [info@bcleanwater.org](mailto:info@bcleanwater.org) or call 508.420.0780.



## Volunteer Spotlight: Phyllis Welby

Like so many of us, Phyllis Welby first came to the Cape as a young girl, which inspired her to move here full-time 25 years ago. She enjoys being outdoors and has spent many hours harvesting shellfish in Buzzards Bay.

Phyllis cares deeply about the environment, which made her sit up and pay attention when she noticed the decline in eel grass and other negative changes to the Cape's aquatic habitats. By volunteering with BCWC collecting water samples, counting herring and working at community events, Phyllis is doing her part to help improve our local waters. She even passed along her love of the environment and volunteering to her grandchildren, by bringing them with her to count herring!

## Grab A Beer & Join the Discussion at Clean Water Wednesdays

Always informative and featuring lively presentations and great beer, our Clean Water Wednesdays (CWW) cover a myriad of trending environmental topics from sea level rise to cyanobacteria. Go to [BCleanWater.org](http://BCleanWater.org) for more information on upcoming dates and topics.

### TOPICS & DATES

January 29<sup>th</sup>: Innovative/Alternative  
Septic Systems

February 19<sup>th</sup>: River Herring

April 29<sup>th</sup>: Green Landscaping

Talks begin at 6:30pm at Cape Cod Beer, 1336 Phinney's Lane, Hyannis

Purchase a  
Clean Water  
Wednesday  
20 oz glass and get a  
20 oz pour for the price  
of 16 oz EVERY  
Wednesday!





P.O. Box 215  
 Osterville, MA 02655  
 508-420-0780  
 BCleanWater.org

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 Hyannis, MA

**Mission Statement**

*Barnstable Clean Water Coalition works to restore and preserve clean water in Barnstable. BCWC utilizes science as its foundation to educate, monitor, mitigate and advocate for clean water.*

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*Susie Perry, Graphic Designer*  
*Photo Credits: BCWC Staff, Heather Fone, Dave Burleson*

# Upcoming Events! BCleanWater.org

*Join the Growing Tide of Supporters at These BCWC Events*

**Clean Water Wednesdays**  
 6:30pm, Feb. 19<sup>th</sup>, April 29<sup>th</sup>,  
 June 17<sup>th</sup> & July 22<sup>nd</sup>  
 Cape Cod Beer, Hyannis

**Clean Water Fest**  
 5pm-8pm, Sat., May 16<sup>th</sup>  
 Cape Cod Beer, Hyannis

**Annual BCWC Open House**  
 5pm-7pm, Thurs., June 25<sup>th</sup>  
 Wianno Club, Osterville

**Clean Water Challenge Golf Tournament**  
 8am-2pm, Mon., Aug. 31st  
 Oyster Harbors Club, Osterville

**10<sup>th</sup> Annual Cape Cod Wildlife Festival**  
 10am-3pm, Sat., Sept. 12<sup>th</sup>  
 Long Pasture Audubon Sanctuary, Cummaquid

**10<sup>th</sup> Annual Paddle for the Bays: RACE Cape Cod**  
 9am-3pm, Sun., Sept. 20<sup>th</sup>  
 Oyster Harbors Club, Osterville

**SHUCK! A Day of Oysters and Beer**  
 1pm-5pm, Sat., Oct. 3<sup>rd</sup>  
 Cape Cod Beer, Hyannis



**Help BCWC continue its work for clean water by donating today.**



**Donate online at:  
 BCleanWater.org**



**Donate by mail:  
 BCWC  
 P.O. Box 215  
 Osterville, MA 02655**