



The President's Message...

Spring 2019

Happy Spring!

The vernal season celebrates burgeoning life and new beginnings. And here at the Orleans Pond Coalition we are awaiting, with all of the excitement of new parents, the delivery of the first MaxDO LB2000 unit ever to be used for a water remediation project in New England. We wish to thank the Fred J. Brotherton Charitable Foundation whose generous \$10,000 grant helps to make purchase of the unit possible. And OPC is grateful for all of our members and contributors who have encouraged and financially supported this project.

In early May, we will begin the demonstration project of nanobubble aeration technology (NAT) in Sarah's Pond. This promising technology can be an effective, sustainable and affordable treatment for low oxygen pond conditions that can cause toxic algal blooms and other water quality problems in the ponds and lakes on Cape Cod. It involves no chemicals other than oxygen, deployed in bubbles invisible to the naked eye and capable of remaining in solution for long periods of time, even weeks. This is a clear advantage over other conventional aeration systems whose bubbles quickly rise and escape. Dissolved oxygen helps a pond's own biological defenses protect against toxic algal blooms and other impacts of nutrient pollution.

The journey began in 2017, when Jim McCauley, then President of OPC, brought Dr. Mayur Dev, of Gaia USA, Inc., to speak about this nanobubble oxygenation technology to the OPC Annual Meeting. His lecture generated great enthusiasm. Over the next several months, members of the OPC Board researched NAT projects in Canada and other parts of the United States, and came to believe from anecdotal evidence that this technology was too promising to ignore. Last November, OPC obtained its permit for the Sarah's Pond demonstration project and contracted with SOLitude Lake Management to manage the equipment.

Scientific interest in nanobubble technology's effectiveness in combatting algae and microbial toxins is growing with the realization that harmful algal blooms in marine and freshwater are a widespread global problem. The Federal Government's National Oceanic and Atmospheric Administration (NOAA) has been conducting encouraging research at its Hollings Marine Laboratory using this technology as an environmentally sustainable way to prevent or eliminate dangerous algal blooms. We will keep you posted on further discoveries, research and developments that we find along the way. Technology can be a game changer.

Suzanne Moore, President



A BRIEF HISTORY OF TIME:

The Comprehensive Water Quality Management Plan.

In 1978, Cape Cod, pursuant to Section 208 of the Clean Water Act, adopted a plan that was not updated for the next 33 years. In the meantime, population growth and robust development were taking their toll on the quality of our aquifers, ponds, lakes and coastal waters. Environmental activists and concerned communities pushed for change as the damage continued with little abatement. For years many had known that over 70% of nutrient pollution originate from their septic systems.

The opposite page is from the Orleans Pond Coalition 2008 archives, portraits of distressed ponds and an urgent call to vote for a draft Wastewater Plan. In 2008, that plan proposed the collection and treatment of wastewater from 2800 Orleans properties, or 53% of the town at an estimated cost of \$150 million to meet its nitrogen management and water quality needs. In 2009, at the fall Town Meeting, Orleans voters approved the plan by unanimous voice vote and it was approved by the Cape Cod Commission and Massachusetts Environmental Protection Agency in 2011.

Then in 2013, a hiccup! The vote to fund the phase 1 design became a referendum on the plan and its cost, and missed getting the necessary two-thirds majority by six votes. A repeat vote several months later failed by a wider margin. Back to the drawing board!

The revised plan was developed by a large, diverse working group of public and private stakeholders, the Orleans Water Quality Advisory Panel, working with a team of consultants and engineers. The resulting consensus agreement reduced the sewerage footprint to 20% of the town (1,080 users) and the removal of the remaining two-thirds of Orleans' nitrogen quota by "non-traditional technologies" such as use of aquaculture and denitrification of ground water with permeable reactive barriers (PRBs). True, there is a lot of heavy lifting for unproven alternative strategies, but cost estimates dropped to a much more modest level.

UPDATE: This past year the Town has moved from planning to doing. Time to act. As that ten-year-old flyer reminds us, the Cape waters are waiting.

- There are pipes in the ground for the new downtown collection system.
- The 3-year aquaculture demonstration project in Lonnie's Pond has been completed and is being evaluated from a nitrogen removal standpoint. A commercial aquaculture and biological research facility, Ward Aquafarms, will take over growing the oysters in Lonnie's Pond this season.
- A PRB demonstration project is underway at Eldredge Parkway.
- A final design for the sewer treatment plant and effluent disposal sites is ready for final funding approval at Spring Town Meeting. See information on Articles 16, 18 & 19.

**MAKE SURE YOUR VOICE IS HEARD!
ATTEND ORLEANS TOWN MEETING ON
MONDAY, MAY 13 AT 6:30 PM AT THE
ORLEANS MIDDLE SCHOOL.**

**VOTE TUESDAY, MAY 21; 8 AM TO 8 PM
AT THE ORLEANS SENIOR CENTER.**



Some Results of Nutrient OverLoading, August, '08

Aerial photos by Jeff Norgeot; Uncle Harvey's closeup by Liz De Lima



Uncle Harvey's Pond is pea-green with an algal boom; inset top left is closeup of the pond surface



Shoal Pond, with lots of plant life, is slowly filling in



Plant "explosions" in Critchett's Pond

Nutrients (Nitrogen and Phosphorus) travel into our freshwater ponds and saltwater embayments and fertilize microscopic plants (algae) and pond weeds, sometimes causing uncontrolled growth called "algal blooms." When this occurs, the algae release huge quantities of oxygen, but when they die and fall to the bottom of the pond, the process of their decomposition depletes oxygen from the water. In extreme cases, this can result in fish kills (Cedar Pond in 2002 and Meadow Bog in 2005). Nutrient loading is killing our waterways NOW. The problem will only increase in the future.

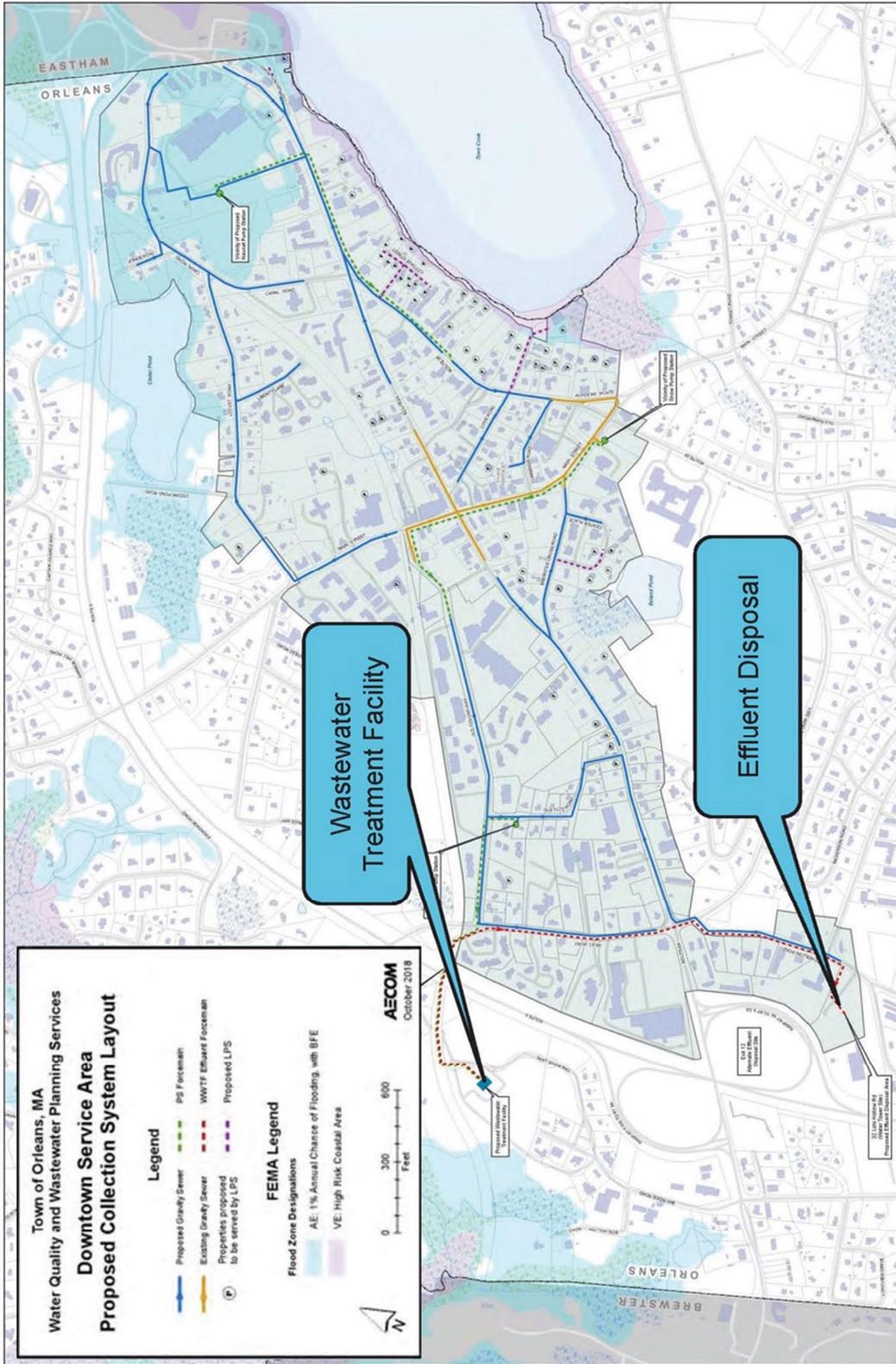
Vote 'YES' on the draft Wastewater Plan; Save our Waters!



Sarah's Pond showing algae, with Meadow Bog, Little Quanset Pond, and Quanset Harbor in the background



Orleans Town Cove with Yacht Club on left; plankton bloom shows red in the water





ON THE WARRANT AT ORLEANS TOWN MEETING, MONDAY, MAY 13 AT 6:30 PM

ARTICLE 16: *Fund Comprehensive Water Resources Management Plan (CWRMP) Implementation/Construction:*

This is the critical vote for the CWRMP. If approved, it would allocate **\$47,382,800** in FY20 that will be allocated as follows:

- **\$47,276,200:** for construction of the collection system, wastewater treatment plant, and the effluent disposal system. The treatment facility will be located at 29 Overland Way and will have an eventual capacity to process 350,000 gallons per day. More capacity can be added as necessary. The treated effluent disposal will be discharged at 32 Lots Hollow Road (see AECOM map).
- **\$106,600** for the *Permeable Reactive Barrier demonstration project at Eldredge Parkway:* PRBs create a barrier of reactive material installed in the path of a groundwater flow to trap and convert nitrates to inert gas before these pollutants reach Town Cove and other bays and estuaries. PRBs are part of the adapted management programs of the CWRMP.

TIMING: Construction will begin in 2020 and will be completed in 2023. Repayment of the loan will not begin until 2024 when the system is fully operational.

FUNDING THE PROJECT: When construction of the wastewater system and non-traditional technologies is approved, Orleans will qualify for zero interest loans from the MA State Revolving Fund.

MORE HELP FROM THE STATE: *The Massachusetts' Clean Water Trust*, enacted this year, the most significant environmental assistance for Cape Cod in a generation, can provide 25% of the sewer project costs.

MORE FINANCIAL ASSISTANCE: MA Department of Environmental Protection has the authority to forgive up to 10% of the loan principal.

NEW REVENUE SOURCE: The recently passed *Short-term Rental Tax* will create a revenue stream to

Orleans for sewer debt repayment, although it will take a year or more of operational experience to determine the amount of revenue that this new source is expected to provide.

BULLETIN: More good news for taxpayers. Bond anticipation notes issued before the State Revolving Fund loan kicks in will be interest-free as well. Orleans is taking advantage of all available financial assistance that the State can provide to minimize taxpayer impact. And the news keeps getting better and better.

ARTICLE 18: *Special Purpose Stabilization Fund for Wastewater:*

This special-purpose fund will earmark the revenue from the new short-term rental tax for repayment of debt for the Town's Water Quality Management Plan. *We need this article to help offset the financial impact of the wastewater plan on the property tax!!*

ARTICLE 19: *Authorize an increase of the local rooms excise tax from 4% to 6%.*

This article would raise the existing Orleans hotel-motel excise tax from 4% to 6% to maximize the revenue stream from the short-term rental tax for sewer debt repayment. To quote Andrew Gottlieb, Executive Director of the Association to Preserve Cape Cod: "Want to refuse financial assistance from a tax paid by non-Cape residents and, in doing so, increase your own property tax burden? I suspect not." Indeed, Andrew, indeed!

ARTICLE 47: *Adopt General Bylaw, CH. 97 – Prohibition On Sale and Use of Balloons.*

Balloons are traditional at birthdays, weddings, graduations and more, but once they get loose, balloons can pose a threat to many animals. Birds, turtles and other animals commonly mistake balloons for food, which can harm or even kill them. In addition, many animals can become entangled in balloon strings, which can strangle them or hurt their feet and paws. OPC supports passage of this environmental protection article.



THE CONSEQUENTIAL GARDENER

As longer, warmer days and other siren songs of spring draw us outside, we find life-affirming comfort in tending our gardens and lawns.

While daffodils dance and perennials pop, it's a good time to contemplate our stewardship of the land. Everything that we put into the earth has a consequence: fertilizer timing and choice, seed and plant selection, herbicide and pesticide use. These are all choices that we make when we garden, so we are all consequential gardeners. Let's make a check list of responsible practices.

Fertilizers don't remain in your lawn and garden soil. The nitrogen and phosphorus they contain travel long distances through the ground water and add to the nutrient pollution in ponds, lakes, and estuaries, as well as our drinking water.



Photo by Karen Pierson



Photo by Nanette Masi

Think algal blooms, dangerous cyanobacteria and pond scum. Please limit or eliminate your use of fertilizers. Most Cape Cod towns have fertilizer use regulations. In Orleans, fertilizer applications are limited to twice a year between April 15 and October 15, the prime season for algae blooms. Fertilizing of any kind within 100 feet of a wetland is prohibited.

The chemicals found in pesticides and herbicides are also contaminants that leach into the ground water. They can last a long time, poison wildlife and harm us...especially children.



Photo by Karen Pierson



The consequential gardener will limit the use of these products, choose the least toxic treatment, and adapt a high threshold for pest tolerance. Good basic garden maintenance produces healthy plants that are less vulnerable to pests. OPC's *Orleans Blue Pages*, available on our website www.orleanspondcoalition.org, has many helpful tips on pest control.

One of the most important choices we can make to limit chemical use in our landscape is the selection of plant material. The consequential gardener will prefer plants native to our region that are best suited to Cape soils, climate and growing season. Many types of native plants also support local wildlife with their flowers, fruits and seeds. They tend to be drought tolerant and disease resistant, and many don't need fertilizers. A popular trend is layered gardening, using densely planted material of

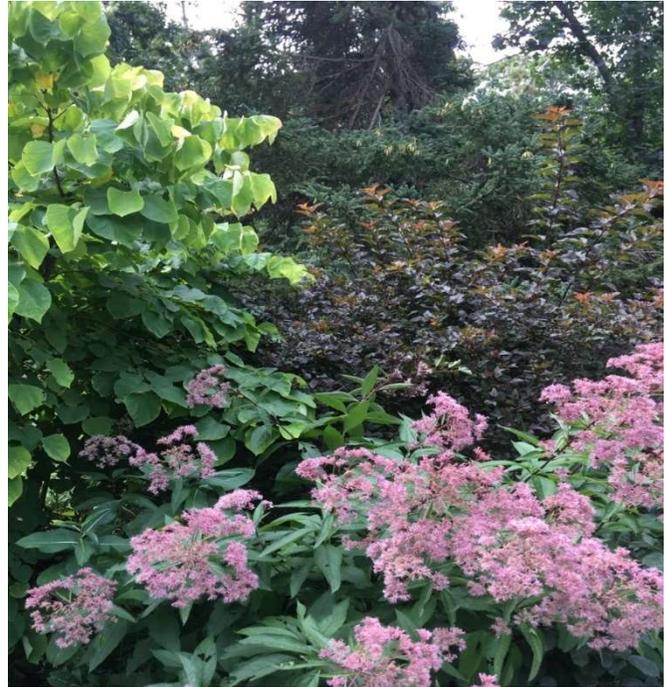


Photo by Karen Pierson

various heights, which provides natural weed control and eliminates the need for mulch. A complete list of non-native plants to avoid that are invasive problems on the Cape is available on the Orleans Town website, "Invasive Species Brochure."



Photo by Karen Pierson

For a Cape Cod lawn, native grasses, such as fine-leaved fescues and perennial rye grasses, require less water and mowing. When you do mow, leave grass at least 3 inches high throughout the season. And leave the clippings on the ground to provide soil nutrients. Lawn improvement can be achieved naturally by aeration of compact soil and addition of organic loam to increase the water-holding capacity of the soil.

Perceptions are changing about what constitutes an ideal lawn and garden, especially in the environmentally sensitive land and waterscape of Cape Cod. That's a good thing. Is your perception changing?



In This Issue

President's Message

A Brief History of Time:

The Comprehensive Water Quality
Management Plan

Some Results of Nutrient Overloading, 2008

Map of Downtown Sewer Service Areas

On the Warrant: Orleans spring town meeting

The Consequential Gardener

Volunteer Opportunities

Celebrate Our Waters is looking for
Volunteers, Can you give a few hours before
or during the weekend of September 22-3 to
help make this a great event?

If interested, email:

volunteer@OrleansPondCoalition.org

Visit our website at OrleansPondCoalition.org

Vote "Yes"
on Articles 16, 18, 19, & 47
At Town Meeting on May 13th
Orleans Middle School

Save the Date:
Celebrate our Waters
September 21st and 22nd

Non-Profit Org
US Postage Pd
Orleans
02653
Permit #20

