



## Lake Waramaug Task Force, Inc.

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The Lake Waramaug Task Force is a non-profit scientific and educational organization dedicated to maintaining and preserving the ecology and water quality of Lake Waramaug and its watershed.

### Dear Friends of Lake Waramaug:

Fall 2019

So, maybe it's possible that you've been able to dodge our communications about the clarity of the Lake this summer – I can't imagine you have – but just in case let me quickly recap. In June and early July, our Secchi disk clarity readings were off-the-charts good. They blew away all previous records. Folks were finding things off their docks they'd lost years before. As the summer progressed, the Lake gradually reverted toward more normal levels, but overall, it was the clearest year on record. Good as it was, the murk-causing cyanobacteria are still there. They're just down at depths where they are innocuous to swimmers and sunlight alike. The blooms they cause are still possible. We believe any blooms that do occur, however, will be short-lived because of the improvements we've made to the immune system of the Lake.

There have been other successes this year as well (more inside). Invasive weed levels have dropped to historically low levels; so much so that our botanists and divers were unable to find any in their second round of monitoring this summer. We built and launched our research boat, on which Sean and Kelsey have entertained more than 100 folks on our weekly sampling runs. Many of these participants were children and it was wonderful to see these future conservationists fascinated by the science of maintaining the health of the Lake as our staff demonstrated their techniques.

While by far the biggest reason for the improvement in the Lake is the cumulative effect of 40 years of work by the dedicated Task Force board and staff, recent additions to the staff have certainly quickened the pace. Over the past two years we've raised the Executive Director position from part to full time and hired a part-time research assistant – both of whom are trained scientists. Doing so has allowed us to bring in-house some of our water quality monitoring and research, thereby reducing expenses generated by outside consultants. We do our absolute best to contain our costs and over the past two years our aggregate operating expenses have actually declined.

Unfortunately, our donations have drifted lower over the same span and we've come up a bit short in both years. It's not a desperate situation but it is clearly unsustainable. That's why we are asking our faithful donors to do their best to maintain, or hopefully increase their support. We can't do it without you, and the continuation and efficacy of our programs depend on it.

Most of all, thanks to all of you for your support of the Lake -- and the Task Force!

**Peary Stafford**  
Chair, Lake Waramaug Task Force

## TASK FORCE CLEANS OUT SEDIMENT TRAPS : Getting the Silt Outta Here

The extremely dry summer has afforded the Task Force the opportunity to clean out our sediment traps. We designed and installed traps on Lake tributaries to capture polluted sediments before they reach the open waters of the Lake. These clean-out projects may look like a major disturbance to the watershed, however they are an extremely effective method of minimizing pollutant loading from upstream sources. Once the sediments were excavated, de-watered and hauled off site. The Task Force staff quickly stabilized the exposed soils with vegetation on all the project sites. Over 400 cubic yards of sediments were removed from the traps, representing 30+ large dump truck loads of polluted sediments that will now never enter the lake and degrade water quality. We have also created a protocol for depth of sediment measuring, so we can better predict when they need to be cleaned out and act when weather conditions allow. A huge thank you to Elwyn Tanner and the Town of Warren DPW Department for helping to make this project happen; Elwyn mobilizing two excavators to get the job done fast, and the Warren DPW providing dump trucks to haul all the sediments away from the lake,



*Completed sediment trap clean out at the intersection of Hawes Brook and North Shore Road.*

## RECENT SUCCESSES AND POSITIVE LONG-TERM TRENDS: Water Clarity!

In the summer of 2019, Lake Waramaug has experienced some unprecedented conditions. On July 1st, water clarity reached a depth of 6 m or approximately 19 ft, which has never been measured in the 45-year history of the Lake Waramaug Task Force. (see the charts in the Clean Water Corner). This is a far cry from the Lake in the 1980s, where at one point clarity was -3 inches – which means there was a 3-inch layer of foam on the lake surface created by a massive, toxic cyanobacteria bloom (see chart). To say that the Lake has greatly improved may be an understatement. The Task Force has initiated a number of new programs, and we will continue our current successful ones, all in an effort to ensure this trend continues.

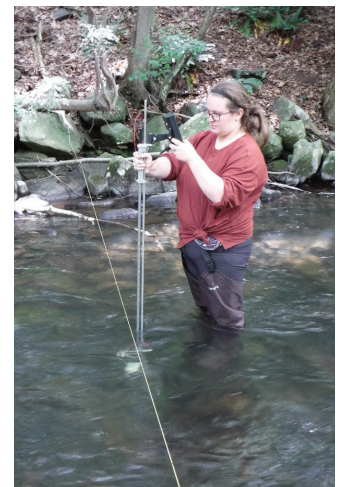
## LWTF INSTALLS NEW IN-LAKE STAFF GAUGE: Lake Levels in an Instant



The Task Force has installed a new piece of in-lake hardware near the Washington Dam! The staff gauge was installed to provide an accurate, instant measurement of Lake elevation. The goal of this new staff gauge is to allow the Task Force and the lake community to monitor Lake elevation instantly and create a historical record. Additionally, the Task Force is measuring the flow of the East Aspetuck River below the dam every two weeks. Sustaining high lake elevation benefits lake water quality; however, the health of the

East Aspetuck River must also be considered. The Task Force collecting the flow of the East Aspetuck combined with the lake elevation on the staff gauge, will allow the Town of Washington to make informed decisions about how much water to allow through the dam.

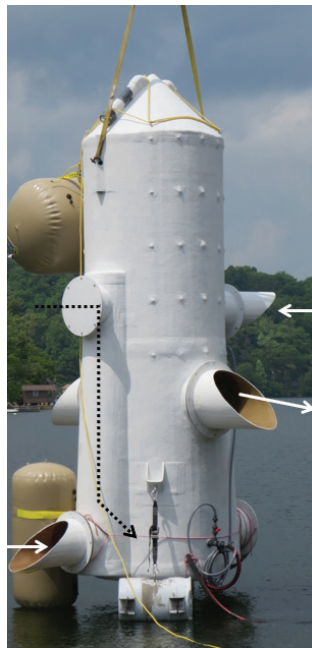
*At right: LWTF's Kelsey Sudol measures stream flow with our new stream gauge.*





## LWTF MYSTERIES SOLVED: The Case of the Mysterious Bubbles

While at first glance, the aerators appear to bubble oxygen into the lake, their actual function is to act like multi-level water mixers. These small school bus sized structures (shown at right) fabricated from fiberglass are submerged in the water column. They take warmer, oxygen filled water from closer to the surface and mix it with colder, oxygen poor water from closer to the bottom of the lake. The goal of this is to keep the middle layer of the lake oxygenated, and to keep the anoxic or oxygen-poor layer as far down towards the bottom of the lake as possible. This method of managing the middle layer of the lake is more efficient and cost effective than trying to oxygenate the whole bottom area of the lake.



Essentially, the compressed air pumped to the aerators is not the main way water is oxygenated in the lake. Instead, the compressed air allows the aerators to move and mix water from different layers of the lake to modify oxygen levels in the middle layer of the lake.

There are four aerators in Lake Waramaug – two in the Washington Bay, and two off of the end of Arrow Point. The Task Force data supports that keeping these aerators functioning is absolutely necessary in keeping the Lake clean clear and swimmable for years to come.



## ATTENTION: All Hands on Deck!

This summer the Task Force used the donor funded research boat to take local residents out to experience our lake monitoring regime. Our goal was to let people experience what it takes to monitor and manage Lake Waramaug and educate them on the basics of lake science.



The Task Force samples several parameters regularly. Our excursions allow residents to assist the Task Force



with the collection of lake data. We monitor the clarity of the lake using a secchi disc, and we measure temperature and dissolved oxygen throughout the water column with a depth specific sensor. Other instruments we use on a monthly basis that people can try include a Vertical Van Dorn that takes water samples to measure nutrients at discrete depths

and a plankton net to monitor in-lake zooplankton, a predator of cyanobacteria.

All of this data allows the Task Force to check the Lake's status throughout the summer, and make informed decisions on its management. The Task Force also has a number of projects and initiatives unfolding in the watershed, and seeing the uplands from the lake vantage point allows the Task Force to emphasize and visualize the importance of these programs to residents.

In addition to experiencing sampling, residents are able to peek behind the curtain of how the aerators (bubblers) work and see firsthand our zooplankton farm.

## Interested in joining us on one of these sampling events?

The Lake Excursions usually happen every Thursday at 10am (weather permitting), leaving from the Task Force facility at 48 Arrowpoint Road. **Registration by emailing or calling is required: [seanhayden@lakewaramaug.org](mailto:seanhayden@lakewaramaug.org) or 860-868-0331.**

## KEEP IN-THE-KNOW. IT'S EASY TO LEARN MORE ABOUT LWTF ACTIVITIES:

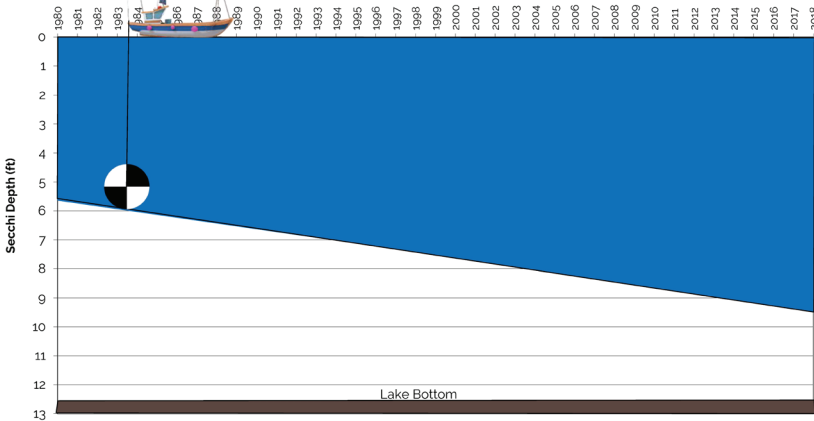
- Visit our website at [www.lakewaramaug.org](http://www.lakewaramaug.org)
- Join our mailing list on our website or email us at [info@lakewaramaug.org](mailto:info@lakewaramaug.org)
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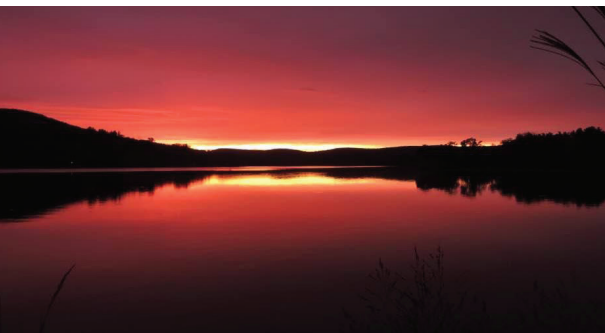
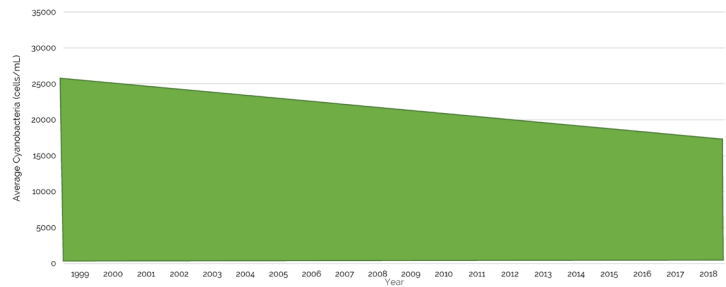
## CLEAN WATER CORNER



Mean Summer Transparency - Lake Waramaug 1980 - 2018



In-Lake Average Summer (July, August, September) Cyanobacteria levels (Cells/mL)



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