‘Are we doing the right thing here?’ Residents turn to last-resort solution for N.H. lake overtaken by toxic bacteria.

Dogged by cyanobacteria blooms, Lake Kanasatka became the poster child for green, soupy water. An expensive chemical treatment was the last resort. But did it work?

By **Amanda Gokee** Globe Staff, Updated September 14, 2025, 6:00 a.m.

A pontoon boat of researchers from the University of New Hampshire traveled on Lake Kanasatka in Moultonborough, N.H., as they investigate the cyanobacteria that has returned to the waters. JIM DAVIS FOR THE GLOBE

MOULTONBOROUGH, N.H. — Kirk Meloney remembers the crystal clear waters of Lake Kanasatka from visiting as a boy, when the water was clean enough that he and his family drank it during vacations in the 1970s.

But one morning in 2020, Meloney saw the entire lake had turned an alarming shade of Gatorade green, the result of an out-of-control bloom of potentially toxic cyanobacteria that can harm humans and animals.

The lake had crossed its tipping point, according to water quality experts, with nutrients from fertilizer, stormwater runoff, and increased levels of phosphorus fueling the cyanobacteria growth. By 2023, aerial photos showed the cyanobacteria blooms in Lake Kanasatka flowing downstream and leaking into Lake Winnipesaukee, threatening the state's largest lake and an economic engine.

Amid worsening conditions, the lake association pursued a last-resort chemical treatment: coating the lake with aluminum compounds that could end up killing fish and other aquatic life and that wasn't guaranteed to fix the problem.

"We're going to be slamming this little precious lake of ours with a ... ton of a chemical," Meloney told himself at the time. "Are we doing the right thing here?"

With climate change increasingly raising water temperatures and fueling dangerous cyanobacteria blooms, more communities across New England are considering chemical treatments as a possible solution, even as experts urge caution.

In New England, Lake Kanasatka has become a poster child for long-term cyanobacteria blooms, according to Andrea LaMoreaux, president and policy advocate at NH LAKES, a nonprofit that works on lake restoration and preservation. She said the increasing severity and duration of blooms on Lake Kanasatka were the worst she's seen in recent years and a powerful warning to other lake communities.

"Every lake has a tipping point," said LaMoreaux, describing the precipitous decline in water quality that befell Lake Kanasatka in 2020.

Researchers from the University of New Hampshire took water samples on Lake Kanasatka as they investigate the cyanobacteria that has returned to the waters. JIM DAVIS FOR THE GLOBE

While cyanobacteria is naturally abundant and nearly ubiquitous in low levels, warmer temperatures and human activity have created conditions that allow it to grow quickly and become harmful. Toxic blooms can cause skin rashes, respiratory and gastrointestinal distress, and, in rare cases, death to people and pets.

At 353 acres, Lake Kanasatka is much smaller than neighboring Lake Winnipesaukee, and less of a tourist destination. Lake Kanasatka is often used for boating, swimming, and fishing, its shores encircled by about 180 lakeside homes that are often rented to vacationers and a summer camp for kids.

The cyanobacteria blooms seemed interminable: In 2023, blooms lasted for over 120 days.

New Hampshire issues a public health warning when there are 70,000 or more cyanobacteria cells per milliliter. That summer, samples of Lake Kanasatka contained over 3 million cells per milliliter, nearly 43 times over the threshold, according to the lake's treatment plan.

Amanda McQuaid, the director of the Lakes Lay Monitoring Program, with an instrument she was looking at reflected in her sunglasses. JIM DAVIS FOR THE GLOBE

Lisa Hutchinson, who owns a home on Lake Kanasatka, said that after kayaking near the blooms one day, she felt her lips go numb. She later learned that toxins from the blooms can become airborne.

"We can't live with this," Meloney, now the president of the Lake Kanasatka Watershed Association, said he thought at the time. "There's got to be something we as human

beings can do to try to right this wrong, because this is not normal."

The lake association sprung into action, raising $85,000 for a watershed management plan that was completed in 2022, including $60,000 from the town of Moultonborough. They also raised another $50,000 to pay environmental consultants. They learned that low oxygen levels at the lake bottom had allowed old deposits of the phosphorus, a mineral, to escape, feeding the cyanobacteria blooms.

Phosphorus levels at the lake's bottom were about 200 parts per billion — 20 times higher than the 10 parts per billion tipping point that Amanda McQuaid, director of the University of New Hampshire Lakes Lay Monitoring Program, said typically triggers more algal growth and cyanobacteria.

To fix the cyanobacteria, they would have to stop phosphorus from above and from below. But addressing the phosphorus in the lake would require chemical intervention, according to Laura Diemer, a certified lake manager at FB Environmental, a consulting firm based in Maine and New Hampshire that worked on the lake's treatment plan.

The aluminum compound would bond with the phosphorus and trap it at the lake bottom. It was a treatment used in Kezar Lake in Sutton in 1984 and Nippo Lake in Barrington in 2021. The treatment came with a big price tag: about $600,000.

Alum treatments have been used since the 1970s. In Diemer's view, the treatment is a proven option, while McQuaid considers it partially experimental.

As climate change and human development exacerbate water quality issues, the northernmost New England states of New Hampshire and Maine are starting to adopt these treatments, according to Diemer. She said those issues afflicted southern New England sooner, and treatment is more common in Rhode Island, Connecticut, and Massachusetts.

The Lake Kanasatka Watershed Association raised almost $400,000, and was awarded a $500,000 grant from the state in April 2024.

People enjoying Lake Kanasatka on a beautiful summer morning. JIM DAVIS FOR THE GLOBE

To get a permit from the state for the chemical treatment, the community also had to demonstrate that it had reduced external sources of phosphorus.

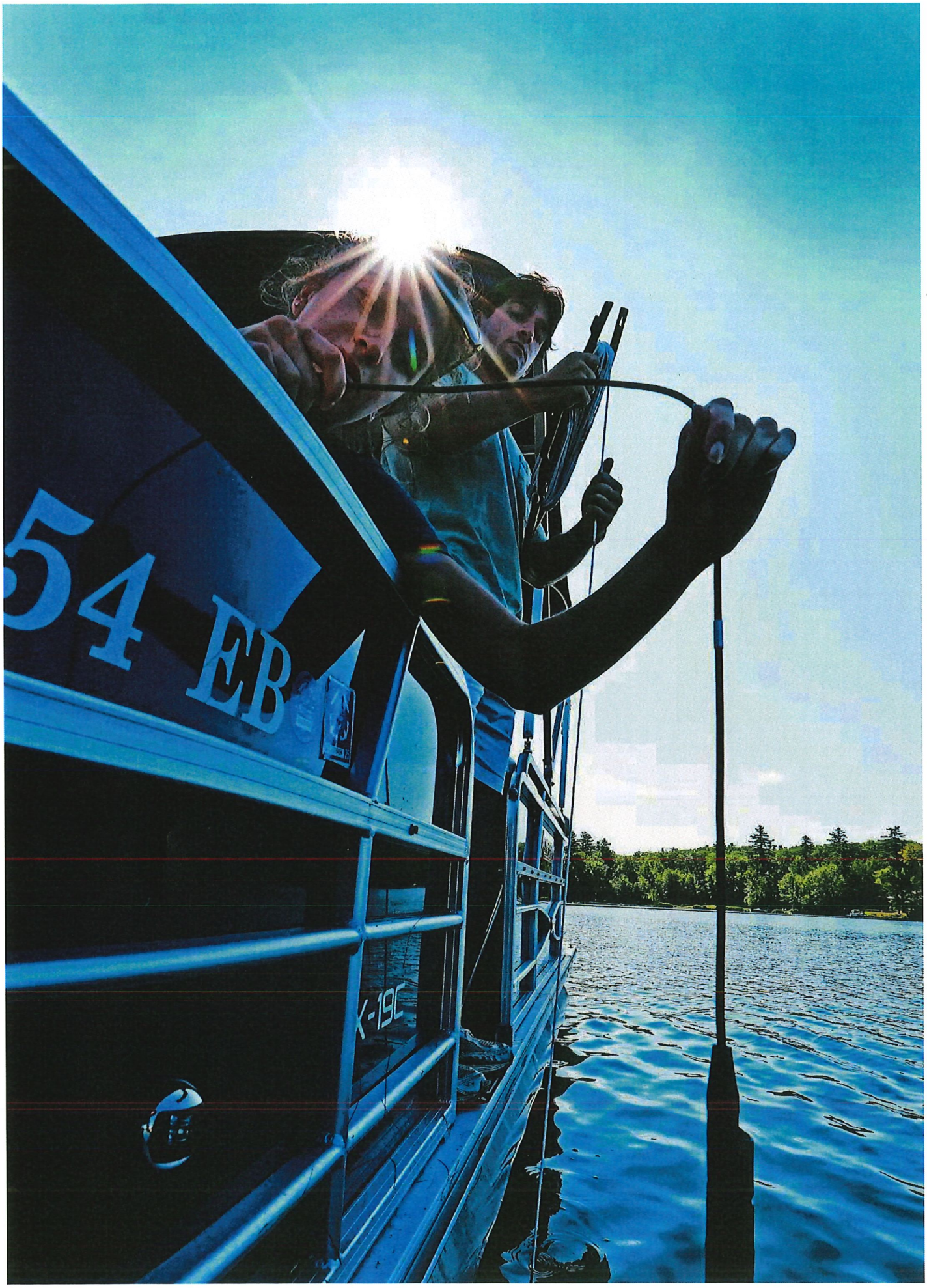
The association got to work, installing drainage ditches and encouraging property owners to update septic systems, plant vegetation near the shoreline, and slow stormwater runoff so nutrients could absorb into the soil before reaching the lake.

Permit finally in hand, Meloney was nervous, although he had put his trust in the science guiding the process.

In May 2024, a barge loaded with aluminum compounds rode slowly around the lake, depositing chemicals into the water. Those efforts have already cost at least $770,000, according to Meloney. The treatment might only last for 13 years, according to some estimates.

And it came with risks: If the pH of the water gets too low, aluminum can become toxic, said Amy P. Smagula, chief aquatic biologist at the New Hampshire Department of Environmental Services. The treatment can also disrupt plankton, impacting the food web on a short-term basis.

"Anytime you do a large manipulation like that, it's a risk to the lake," Smagula said.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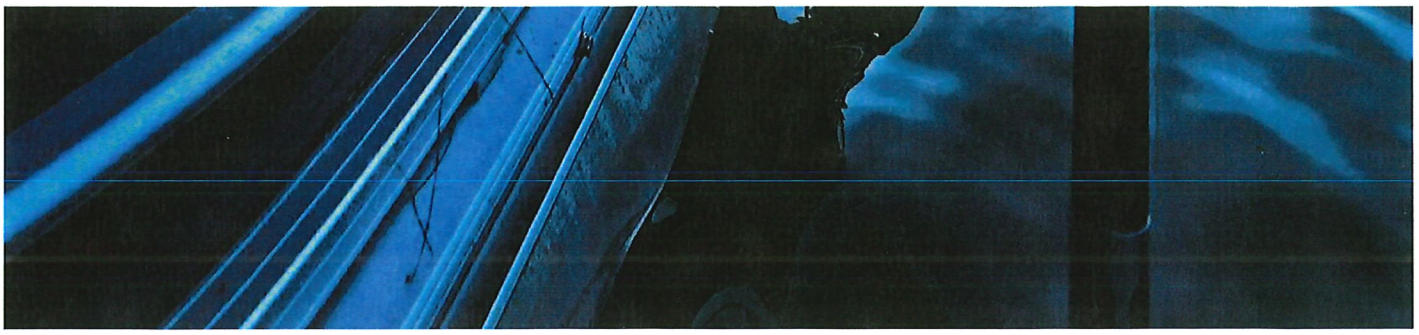
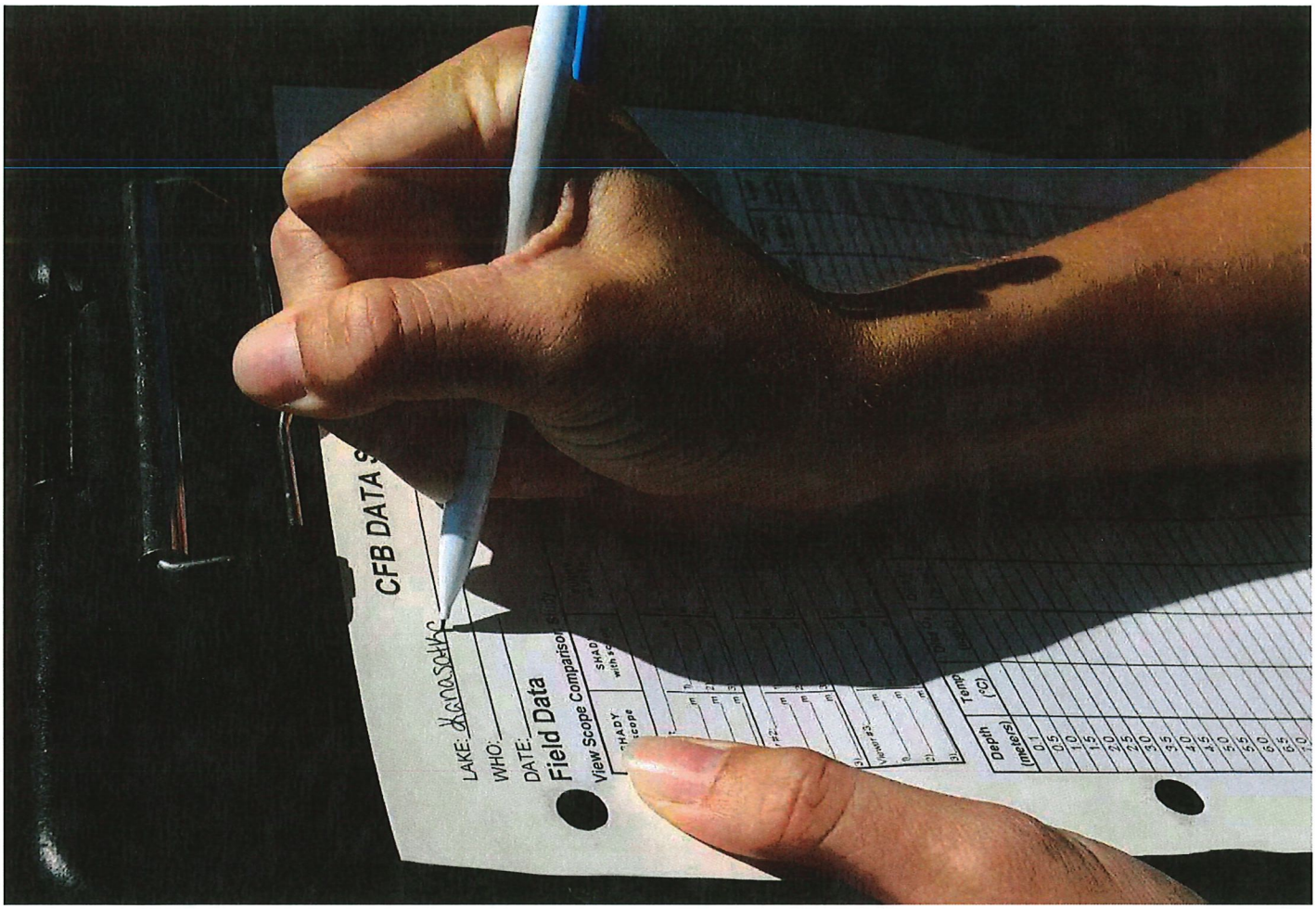


Researchers from the University of New Hampshire took water samples on Lake Kanasatka. JIM DAVIS FOR THE GLOBE

In mid-August, from aboard her pontoon, Hutchinson admired the lake's clarity, which she called "fabulous" since the treatment.

"We feel really good," she said. "The lake is beautiful. All the parameters we're looking at so far are very positive."

As water quality chair of the lake association, Hutchinson has been taking water samples alongside the UNH Lakes Lay Monitoring Program. The samples show that phosphorus levels have fallen dramatically, from 200 parts per billion to about 10 parts per billion at the bottom of the lake. The ecosystem appears healthy after the treatment, according to McQuaid.



Ingrid Siudzinski filled out a data sheet after taking water samples from Lake Kanasatka. JIM DAVIS FOR THE GLOBE

Experts said the treatment's success was not guaranteed.

"In any sort of treatment across the world, in any bio manipulation that we've studied and looked at, it's never 100 percent going to work," McQuaid said. "And so it's a huge investment for a 50-50 kind of output, a lot of unintended, maybe, consequences."

The lake has not been cyanobacteria-free since the treatment. The New Hampshire Department of Environmental Services issued two watches in 2024, and a small bloom surfaced in June 2025.

"I cringed," Meloney said. "We all cringed."

Diemer told residents the shoreline accumulations were largely fed by external sources of phosphorus following heavy spring rains. In 2025, Partridge Lake in Littleton and Lyman underwent the same treatment process.

Still, Smagula cautioned against future treatments for Lake Kanasatka.

"I don't want to see this become a decadal cycle of putting chemicals in the lake to mitigate something that humans should be doing better about," she said.

Meloney said he's confident the treatment worked, but skeptical about convincing more waterfront property owners to help keep the lake clean. He plans to keep trying anyway.

"That's my charge: to convince people to do the right thing," he said. "We're all in this together."

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