

# Harmful Algal Blooms in New York State

May 21, 2025

Senator Pete Harckham, Chair  
Senator Rachel May, Hearing Co-Chair  
Environmental Conservation Committee



## **Environmental Conservation Committee Members**

Senator **Peter B. Harckham**, Chair  
Senator **Daniel G. Stec**, Ranking Member  
Senator **Rachel May**, Hearing Co-Chair  
Senator **Siela A. Bynoe**  
Senator **Patricia M. Canzoneri-Fitzpatrick**  
Senator **Patricia A. Fahy**  
Senator **Michelle Hinchey**  
Senator **Brad Hoylman-Sigal**  
Senator **Brian Kavanagh**  
Senator **Anthony H. Palumbo**  
Senator **José M. Serrano**

This report was compiled by the New York State Senate's Environmental Conservation Committee with significant contributions by the Legislative Commission on Rural Resources. For more information on the Commission, visit:

<https://www.nysenate.gov/committees/legislative-commission-rural-resources>



## **Table of Contents**

|                                                      |           |
|------------------------------------------------------|-----------|
| <b>Introduction.....</b>                             | <b>3</b>  |
| <b>Background.....</b>                               | <b>3</b>  |
| <b>Findings from the Hearing.....</b>                | <b>4</b>  |
| <b>Policy Recommendations and Interventions.....</b> | <b>14</b> |
| <b>Chair’s Conclusion.....</b>                       | <b>30</b> |
| <b>List of Witnesses and Organizations.....</b>      | <b>32</b> |
| <b>References and Further Reading.....</b>           | <b>34</b> |

## **Introduction**

The Senate Standing Committee on Environmental Conservation convened a hearing on May 21, 2025, to hear testimony on the issue of harmful algal blooms, or HABs, across the State. The Committee aimed to evaluate the efficacy of the State's monitoring and management of harmful algal blooms and examine potential legislative solutions with a focus on four questions:

- 1) How effective are the State's current monitoring programs in accurately detecting and tracking the extent and severity of HABs?
- 2) Where have current policies worked in effectively addressing HABs, and where have they been less successful? Where could successes be expanded upon?
- 3) What are the most promising existing and emerging technologies and techniques for mitigating and remediating HABs?
- 4) What is the State doing to assist municipalities and lake communities to address HABs?

The Environmental Conservation Committee received oral and written testimony from various stakeholders, including representatives from State and local governments, industry, academia, and non-governmental organizations. Each panelist provided valuable insight into the history, development, and current state of HABs in New York, along with a number of potential policy solutions. This report aims to summarize major trends and key points made in testimony and during question-and-answer periods, but it is by no means exhaustive. The hearing in its entirety is available to view online here: <https://www.youtube.com/watch?v=kYe1J23-iEc>.

## **Background**

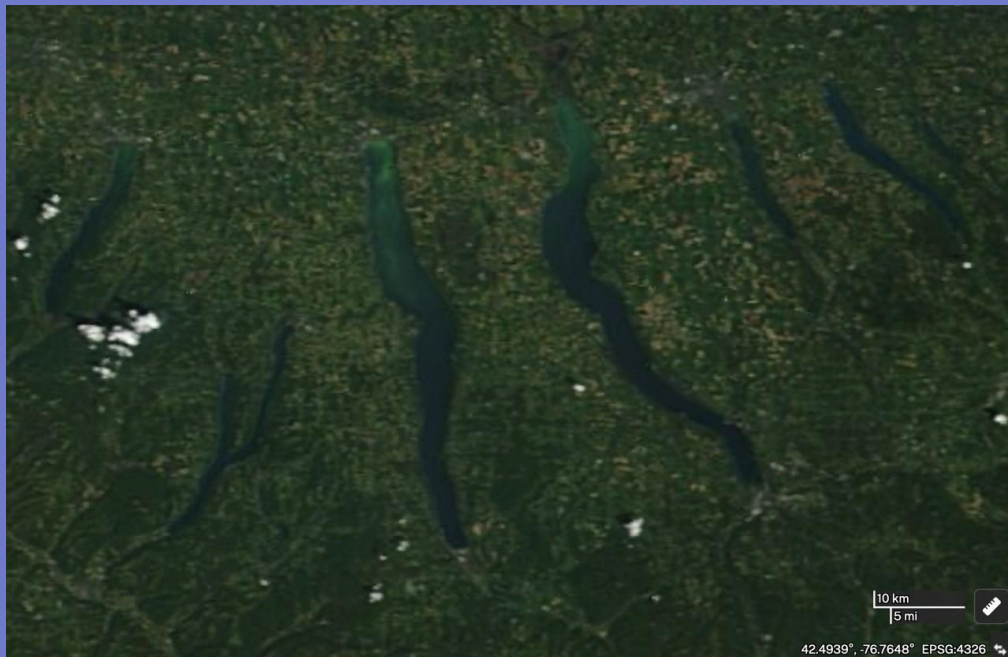
Harmful algal blooms (HABs) occur in freshwater environments when blue-green algae, or cyanobacteria, multiply rapidly, creating blooms that can discolor water and form scums. Favorable conditions such as warm temperatures, sunlight, and high nutrient levels in calm waters allow HABs to proliferate. These blooms pose risks to public health, pets, aquatic life, and local economies. HABs are known to be increasing in frequency and severity due to a combination of natural conditions and human activities. Human factors such as fertilizer use, sewage, runoff, and climate change—including warmer temperatures and stronger rainfall—intensify the problem.

Toxins from HABs can cause skin irritation, respiratory issues, gastrointestinal problems, and neurological effects in humans. They also damage aquatic ecosystems by killing fish, depleting oxygen levels, and releasing harmful gases. Economically, HABs lead to significant losses from healthcare costs and drinking water treatment to reduced tourism and fishing revenue. NOAA estimates that the average annual economic impact of HABs could be as high as \$100 million (NOAA, 2023). Continued research and mitigation are needed to better understand and manage these growing threats.

## Findings from the Hearing

### Widespread and Increasing Threat of HABs

A significant number of witnesses expressed that HABs have become more prevalent and severe in New York over the past two decades. Jake Welch of the Finger Lakes Regional Watershed Alliance noted that in previous years, HAB occurrences in the Finger Lakes numbered around 30, but had ballooned into the hundreds in 2024. This includes cold lakes like Seneca Lake, where large HABs such as the one seen below were previously unprecedented:



HABs at the north ends of Seneca Lake and Cayuga Lake are visible from space.  
Photo submitted by Jake Welch. Source: NASA. Taken September 15, 2024.

Ron Rausch, Deputy Commissioner for Environmental Stewardship at the NYS Office of Parks, Recreation and Historic Preservation (OPRHP), also testified about the proliferation of HABs in recent history:

Documented instances of HABs at New York State Parks are on the rise. 40% of State Park facilities have experienced a HAB. 2009 saw the first documented HAB at a State Park swimming beach. Since then, monitoring and detections have increased. Last year, 75 park locations had confirmed HABs, including 12 swimming beach locations.

Dr. Art Degaetano of the Cornell CALS Northeast Region Climate Center later added, “Unfortunately, climate change models are suggesting that the conditions for HABs are likely to increase in the future.” As this threat becomes more pronounced, it has negative impacts on public health, recreation, biodiversity, and local economies ranging from the Canadian border to Long Island. For example, Mr. Rausch continued, “Lake Welch...our largest freshwater beach...[experienced]...the loss of an entire bathing season in 2022, with almost \$1 million lost in revenue.” Similar local economic impacts can be expected to become more commonplace and multiply across the State without a comprehensive approach to preventing and mitigating HABs. For example, in the Finger Lakes Region, tourism accounted for over 50,000 jobs and almost \$4.4 billion in economic impact in 2023 (Empire State Development, 2024). If HABs continue to hinder recreation and threaten public health, local economies from Central New York’s wineries to Long Island’s beach communities will feel the effects.

One high-profile public health issue concerning HABs is in Owasco Lake. The lake supplies drinking water for over 40,000 people, which is more than half of Cayuga County’s population (Owasco Lake Watershed Management Council, n.d.). In 2016, toxins resulting from harmful algal blooms were found in treated drinking water from the lake for the first time. Auburn is one of the municipalities that sources its drinking water from Owasco, and according to Auburn City Clerk Chuck Mason, HABs in Owasco Lake have been an annual problem since then and have been getting increasingly worse, similar to many freshwater bodies around New York based on oral and written testimony.

While some testimony conceded that better detection and reporting may have contributed to some of the perceived increases in the data, the panelists largely agreed that this does not explain all of the rapid growth and expansion of HABs that they are witnessing statewide.

### Contributors to HABs

**“...HABs are fueled by excess nutrients, mainly phosphorus and nitrogen, entering our water bodies through nonpoint source runoff and wastewater discharges. Climate change further exacerbates the issue with warmer temperatures and heavier rainfall increasing the frequency and severity of HABs.”**

-Alexander J. Smith, Assistant Director, Division of Water, Department of Environmental Conservation

The consensus across the panels suggests that climate change is a prominent factor for the recent proliferation of harmful algal blooms; longer periods of warmer weather create favorable conditions, and increased rainfall leads to more nutrient runoff.

Regarding nutrient runoff, agriculture and stormwater were frequently mentioned as major contributors. The nitrogen and phosphorus used in agricultural practices run off into waterways and fuel rapid algae growth. However, several panelists noted the steps that farmers and the State have taken in recent years (such as cover cropping and reduced tillage) to mitigate runoff and combat HABs, and multiple panelists reported HABs in bodies of water that did not have agriculture in the surrounding areas. They cited contributors ranging from the use of residential fertilizer to wastewater and failing septic systems to legacy phosphorus. One major takeaway is that the type of HAB is largely dependent upon identifying the main contributing factor. Without understanding the source of the HAB, treatments will be less efficient and less cost-effective.

## State and Local Responses



**“New York State has one of the best harmful algal bloom monitoring programs in the country. In 2024, the DEC had reports of over 2,000 HABs in more than 200 water bodies in 56 of the 62 counties, which really speaks to the comprehensive nature.”**

**-Dr. Christopher Gobler, SUNY Distinguished Professor, SUNY Stony Brook-NYS Center for Clean Water Technology**

Many panelists commended New York State on the emphasis it has placed on HABs, especially over the last decade. From legislative policies to budget appropriations to agency regulations, several witnesses remarked that New York State is a leader when it comes to researching and mitigating HABs. However, the sentiment that “more needs to be done” was echoed on several panels. For example, Commissioner Richard Ball of the Department of Agriculture & Markets cited numerous agricultural programs targeted at mitigating and preventing HABs, but called for more action in order to reduce the frequency and duration of the blooms that we are witnessing in our water bodies. Likewise, while Blanche Hurlbutt of the NY Association of Conservation Districts noted recent improvements, she underscored the need for more action and funding to create sustained, long-term results. Finally, Adam Effler of the Owasco Lake Watershed Management Council, Kristy LaManche of FLOWPA, Renée St. Jacques of the New

York Farm Bureau, and Allyson Jones-Brimmer of the Northeast Dairy Producers Association all advocated for more research than New York is currently funding or managing.

Several State agencies (Department of Environmental Conservation (DEC), the Department of Agriculture & Markets (DAM), the Department of Health (DOH), and OPRHP are involved in HABs mitigation at one point or another in the process, and there are many organizations at the local level that work with State agencies and local governments, committees, and organizations to combat HABs.

*DEC.* According to Mr. Smith, the State has invested over \$500 million since 2018 in water quality improvements. DEC coordinates with Agriculture & Markets and Parks on extensive monitoring and mitigation programs. One such program is DEC's New York Harmful Algal Bloom System (NYHABS), which has recorded HABs in 650 water bodies since 2012 and manages this comprehensive monitoring and public reporting system. Mr. Smith stated that, on average, 200 bodies of water are impacted each year. The interactive map, which features current and archived HAB reports, can be found here: <https://experience.arcgis.com/experience/e5dec19912454731a308bbb7af605fb3/>.

Multiple programs related to agriculture or HABs mitigation are also funded through the Environmental Protection Fund (EPF) in DEC's budget. These include appropriations for Clean Water Infrastructure, Climate Resilient Farming, Agricultural Non-point Source Abatement, wastewater treatment, Soil & Water Conservation Districts (SWCDs), and local organizations like the Finger Lakes-Lake Ontario Watershed Alliance.

*DAM.* Commissioner Ball highlighted Agricultural Environmental Management (AEM), Agricultural Nonpoint Source Abatement, and Climate Resilient Farming as ways that DAM is working to reduce nutrient runoff and soil erosion while cutting greenhouse gas emissions. According to Commissioner Ball, New York State has supplied these programs with almost \$125 million in the last five years. There was wide-ranging support from Commissioner Ball and other panelists on the work of SWCDs, which help to facilitate best practices, such as nutrient management, in order to reduce runoff and mitigate HABs.

Commissioner Ball, conveying the impacts of these policies and programs, said:

Since 2020, more than 6,500 farms across New York State, working with our Soil & Water Conservation Districts, have received grants through the Department's environmental programs. Combined, the funded projects have reduced over 660,000 metric tons of carbon dioxide emissions, the equivalent to removing more than 154,000 cars off the road for one year...



Commissioner Ball before the Committee.

*The Eastern Finger Lakes Coalition.* Both Commissioner Ball and Ms. Hurlbutt commended the work of the Eastern Finger Lakes Coalition, consisting of the 11 SWCDs in the Eastern Finger Lakes. The Coalition implements action plans to improve water quality and reduce HABs. In the most recent State Budget, they received \$1.2 million under the EPF to continue their mission.

*The Finger Lakes-Lake Ontario Watershed Protection Alliance (FOLLOWPA).* FOLLOWPA receives funding through the EPF and works with 25 counties on water quality management. Ms. LaManche spoke to their efforts to combat HABs, which includes

collecting water quality data and sharing it with its partners, and an outreach campaign to notify the public about HABs and what to do if they encounter them. In the most current State Budget, FLOWPA received \$3.5 million and typically supplements this amount with funding from other sources, such as grants.

*The Owasco Lake Watershed Management Council.* The OLWMC is a nonprofit development corporation made up of representatives from all municipalities throughout the Owasco Lake Watershed. The organization's mission is to protect and restore the health of Owasco Lake and its watershed to ensure that it will serve as a source for public drinking water and recreational and economic activity. OLWMC utilizes grant funding to monitor and evaluate water quality, support research, and increase public awareness.

## Challenges

*Funding limitations.* Panelists identified the limitations of current funding throughout the course of the hearing. For example, Ms. LaManche shared that this past budget cycle, FLOWPA requested \$5 million, but only received \$3.5 million in State funding. That appropriation gets divided up by their 25 county partners, which equates to \$137,000 per county after administrative costs. While counties also leverage and tap into additional funding streams, she contended that more funding is needed and would have a bigger impact.

From oversubscription of some programs to current funding levels not being enough to adequately address the severity of the problem, witnesses across panels advocated for increased funding for virtually every State program mentioned in the hearing.

*Agency staffing and permitting delays.* While DEC identified progress in real-time HABs monitoring, the current capacity is limited given current policy and funding levels. Specifically, more resources are needed to expand real-time monitoring and forecasting capabilities.

Ms. Hurlbutt acknowledged that Soil & Water Conservation Districts have seen increases in funding over time, but contested that:

...the problem that a lot of the Districts come up against is the permitting process and how there [are] delays...due to permitting not being done quick enough in a year so that they can get the project done with the funding that is allowed within that year...and not have to ask for extensions.

When prompted by Senator Stec on the cause of the delays, Ms. Hurlbutt responded that she believed that DEC did not have enough people dedicated to efficiently process the permits. Later in the hearing, she expressed that it can take up to a year to get the proper permitting, and in the meantime, the HABs may have gotten worse with little being done to address it in the interim. The issue of delays in the permitting process was later reinforced in testimony by the Skaneateles Lake Watershed Agricultural Program.

*Interagency Coordination.* Due to the detection of HABs statewide on public lands and private properties, even with areas that do not have agricultural activity, as well as bodies that source drinking water, a successful response to match the scale of the problem requires a multiagency effort. The agencies represented at the hearing demonstrated a willingness to work together, but that perception is not always felt at the local level. Interagency coordination was repeatedly brought up as a growth area, highlighted by DOH declining an invitation to testify at the hearing and its resistance to perform regulatory updates for the Owasco Lake Watershed.

Representing the Owasco Lake Watershed Management Council, Mr. Effler called on agencies to implement further regulations for nutrient management beyond those that already exist:

...with the exception of Concentrated Animal Feeding Operations, otherwise known as CAFOs, permitting and associated certified nutrient management planning requirements for CAFOs, New York State agriculture is largely unregulated with respect to the use of commercial fertilizers and manure applications. Furthermore, without soil testing and documentation regarding the rates of applications, the amount of agriculturally-sourced nutrients lost to receiving water bodies is largely unknown.

One additional opportunity for coordination on oversight and outreach is regarding residential lawn care. Runoff from fertilizer used for landscaping was identified by multiple panelists as a contributor to HABs in areas that may not have significant agricultural activity. Residential lawn care is largely unregulated and lacking in meaningful data to inform mitigation responses. There has not been a statewide educational campaign on best practices to minimize environmental impacts when it comes to the resulting HAB formations.

### **Local Successes and Concerns**

Most testimony focused on the Finger Lakes and Suffolk County based on the representation of those invited to testify. Having significant agricultural activity paired with the proliferation of what have become annual blooms, DAM has made the Finger Lakes a top priority in promoting sustainable agricultural practices and water protection by reducing nutrient runoff and emissions.

Commissioner Ball spoke of DAM's recent work in the area:

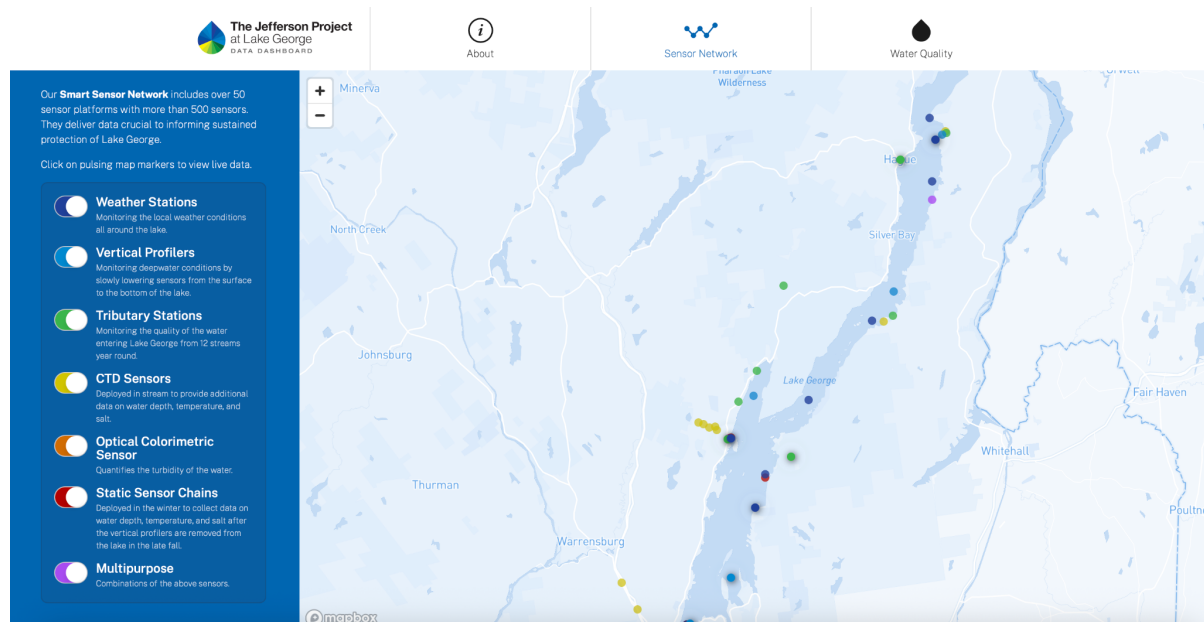
Specific to the Finger Lakes...\$66 million has been awarded over the last five years to implement Best Management Practices [BMPs] on 370 farms within that region. The projects awarded in the Finger Lakes alone have reduced 32,800 pounds of total phosphorus, 746 pounds of total nitrogen, and 43 million pounds of sediment per year. This work has reduced New York State's ag[ricultural] emissions by nearly 43,000 metric tons of carbon dioxide equivalent each year. We're proud of this impact, even as we know that more must be done to address HABs in the watersheds.

Suffolk County, which is among the top agricultural producing counties, also had the highest number of harmful algal blooms in freshwater bodies in 2024, as stated by Dr. Christopher Gobler of SUNY Stony Brook. Recent actions at the State, County, and local levels have sought to protect coastal waters and their sole source aquifer, which provides drinking water. DEC, Citizens Campaign for the Environment, and Save the Sound all remarked that the Suffolk County Water Restoration Act of 2024 was a step in the right direction for mitigating wastewater pollutants, thus reducing HABs. In 2024, Governor Hochul signed the Suffolk County Water Restoration Act, which was also passed by the Suffolk County Legislature. The act created a ballot measure that Suffolk

County residents overwhelmingly approved. Under the law, a small tax increase creates a water quality fund that will pay for individual septic system projects and capital projects for wastewater treatment facilities in a county where a large-scale sewer system would be costly and impractical.

Beyond the utilization of BMPs in the Finger Lakes and new funding for wastewater projects in Suffolk County, Lake George was recognized during the hearing for its real-time monitoring practices.

*The Jefferson Project.* The Lake George Association has teamed up with Rensselaer Polytechnic Institute (RPI) and IBM Research to form the Jefferson Project, which collects sample data from freshwater bodies for research and monitoring. The sensors that they have deployed study a number of metrics, including water depth, temperature, amount of salt, and turbidity. All of this data is visible in real-time on their website: <https://jeffersonproject.live/sensors>. Brendan Wiltse, executive director of the LGA, contended that the methods that the Jefferson Project has been using are largely successful and could be scalable. It is important to note that, as of the hearing, there had not been any documented HABs in Lake George, but the model could be adapted toward the real-time monitoring of HABs.



**Real-time sensor data in Lake George. Source: The Jefferson Project.**

As far as local concerns, Auburn City Clerk Chuck Mason and Mr. Effler expressed frustration over the DOH's failure to approve updated watershed regulations for Owasco Lake despite local consensus and court support. In May 2025, the Albany County Supreme Court ruled that, contrary to its claims, DOH is responsible for and has the authority to issue watershed rules and regulations to protect Owasco Lake, which is the source of Auburn's drinking water (Earthjustice, 2025). In a second lawsuit after the events of the hearing in July 2025, the New York State Supreme Court rejected DOH's claim that new protections were unnecessary for Owasco Lake in another victory for Auburn, Owasco, and the Owasco Watershed Lake Association (Vivenzio, 2025).

HABs first appeared in Owasco Lake in 2016 and have been a major problem ever since. Mr. Mason asked that the Legislature and State agencies exercise their power in updating and enforcing watershed regulations for Owasco Lake. Likewise, Mr. Effler asked the Committee to do its part to hold DOH accountable in updating Owasco's rules and regulations while also supporting other municipalities in similar circumstances to act in the interests of protecting their drinking water.

## **Policy Recommendations and Interventions**

**"Dealing with HABs is complex, and there are no easy fixes."**

-Gabriella Cebada Mora, Division Director, Environmental Stewardship and Planning, NYS Office of Parks, Recreation and Historic Preservation

**"There [is] a global consensus that the most effective way to mitigate freshwater HABs is to mitigate phosphorus and nitrogen...it's critically important that a one-size-fits-all approach is not taken. Every lake is different."**

-Dr. Christopher J. Gobler, SUNY Distinguished Professor, SUNY Stony Brook-NYS Center for Clean Water Technology

## Monitoring, Forecasting, and Research

One theme that emerged from the testimony was that each HAB is unique. Dr. Gobler of SUNY Stony Brook cited examples of freshwater bodies within close proximity that contained different primary contributors, ranging from agriculture to wastewater. In his opinion, doing deep dives to find the major HAB drivers of any water body is paramount in utilizing the proper treatment and mitigation techniques. The solution for one lake may not be the same solution for a neighboring lake. For him, funding to do this extensive research is “money well spent.” For these reasons, he warned against a one-size-fits-all, top-down approach, which can be both ineffective and wasteful, instead favoring gathering research and data locally to make decisions for a particular water body. Similarly, regarding the specific example of using carbon filtration systems to remove toxins from drinking water, Mr. Effler of the OLWMC said, “The efficacy of this top-down treatment...is unknown.” Getting the best data to assess the best particular course of action will require monitoring, forecasting, and research done locally, as outlined below.

*Expand real-time monitoring and forecasting capabilities.* This is especially important for high-risk areas like the Finger Lakes.

The Finger Lakes Regional Watershed Alliance and Save Our Sound both expressed support for Senator May’s Harmful Algal Bloom Monitoring and Prevention Act ([S.1833A](#)). The “HABMAP Bill” would:

- require DEC, DOH, and DAM to coordinate comprehensive statewide data collection on HABs and make recommendations for monitoring and mitigation;
- direct DEC to establish a clearinghouse for HABs monitoring, mitigation, and prevention data on a public website that included funding and grant opportunities;
- direct DEC to promulgate regulations to assist in the coordination of federal, State, municipal, and nongovernmental organizations to combat HABs; and
- create a grant program for municipal and intermunicipal organizations to use best practices in HABs monitoring and prevention.

S.1833A passed the Senate in 2024 and 2025, but currently has no same as. The 2025-2026 Senate One-House Budget included a version of the bill, but it was not included in the final Enacted Budget.



Senator May during questioning.

Another possibility for effective monitoring could be to scale up existing models. In his testimony, Mr. Wiltse of the Lake George Association spoke of the Jefferson Project's methodology and how it has been so effective. "This model of data-driven policy...is exactly how I would recommend approaching HABs... New York's current approach to tracking and monitoring HABs relies heavily on visual sightings and reports, which, while valuable, are insufficient for predictive management." He went on to say that real-time monitoring is the best way to combat HABs and that the Jefferson Project's partnership with the SUNY Albany's Mesonet Program, which integrates atmospheric data, in-lake sensor arrays, and advanced ecological models, could be worth replicating statewide. This type of multipronged approach was mentioned in a few remarks, especially integrating weather and climate data that is collected federally with that of

sensors in freshwater bodies. The Jefferson Project receives funding from the National Science Foundation, private donations, RPI and IBM, and, early on in its formation, a \$500,000 Higher Education Capital Matching Grant from New York State. Mr. Wiltse testified that the organization could expand to other lakes with increased funding from the State, but did not offer a specific amount at the hearing.

*Investing in continued research.* Research on bloom formation in both nutrient-rich and low-nutrient lakes is necessary due to the uniqueness of each water body and the type of HAB that may appear there. For example, Ms. Hurlbutt called for ongoing research to identify causes of blooms in places like Hemlock Lake, which is low in nutrients and has little agricultural land around it. Only by understanding specific contributors can treatment and mitigation be most effective.

In addition to researching the causes of bloom formation, investments in research are needed for new mitigation technologies, which may be more effective than current practices in specific instances. One possibility in bodies where phosphorus is the main contributor is alum, or aluminum sulfate. According to the Neponset River Watershed Association, when alum is added to lake water, it binds with phosphorus and causes the particulates to become heavier and sink to the lake bottom, where algae can no longer access the nutrients. Alum is not currently allowed to treat HABs in New York State. Senator Harckham asked about the status of DEC's studies on alum, and DEC responded that they have piloted its use on three lakes and are considering how they would permit usage in the future. Mr. Smith testified that the studies show promise, but that DEC was wary of "collateral damage" and did not want to trade "one environmental issue for another." The agency will need to be certain of application factors such as dosing and timing before authorizing the use of alum.

There is existing legislation that would create a permit allowing the use of alum as a mitigation tool. [S.5936A](#) (Harckham) would establish a nutrient inactivant applicator permit to effectively legalize the safe use of alum and other nutrient inactivants such as sodium aluminate and lanthanum. The bill died in Committee in 2024 and 2025.

Other possible remedies include peroxide-based treatments and SeaKlear. Ms. Cebada Mora of OPRHP said that they chose SeaKlear, an algaecide, to treat Lake Welch over peroxide because the latter was more expensive. She went on to say that while the

SeaKlear was cheaper and effective, peroxide may be more benign and worthy of additional funding in the future. Additionally, other mitigation efforts were combined with the application of SeaKlear, so the efficacy can't be solely attributed to its use alone. Further funding for research into the efficacy of alum, peroxide, and SeaKlear as HAB treatments in New York could lead to better mitigation for particular lakes.

*Fund and support water quality monitoring and data collection.* As previously mentioned, scaling up the Jefferson Project or passing S.1833A (The HABMAP Act) would be ways to do this, but witnesses also suggested direct funding via local partnerships like FLOWPA and Soil & Water Conservation Districts. FLOWPA already does water quality monitoring across 25 counties and requested \$5 million in their appropriation, but only received \$3.5 million. Increasing support here would better equip them to do more extensive water quality monitoring. Similarly, increasing funding for Soil & Water Conservation Districts would boost their capacity and leverage existing expertise.

Finally, while several experts applauded New York's monitoring policy, David Ansel of Save the Sound noted that DEC's NYHABS does not include marine HABs, contributing to a data gap. Coupled with Dr. Gobler's claim that Suffolk County has more HABs than any other county, there is more work to be done on policy in the maritime waters on the Long Island Sound and the waters that surround New York City to formulate a more complete picture of the prevalence and proliferation of HABs in New York's coastal waters.

### Regulatory and Permitting Reforms

**"Permitting is still the biggest challenge [Soil & Water Conservation Districts face. Streamlining that process, and not add[ing] more regulations, would be a key to getting the work done."**

**-Blanche L. Hurlbutt, Executive Director of the NY Association of Conservation Districts**

*Streamline permitting processes for conservation and mitigation projects.* Current delays at DEC hinder project implementation. While waiting for funding or clearance, blooms can get worse and become more expensive. During the hearing, the New York Association of Conservation Districts responded that DEC needed more staff to handle issuing permits. FLOWPA also expressed delays when it comes to invasive species

control and new wetland regulations, which add new permit requirements for responses that used to be handled at the local level. Ms. LaManche said that sometimes it can add another year to the process, “which adds time, money, and perhaps may lose interest from willing landowners to participate in programs.”

*Allow new treatment options on a case-by-case basis.* Mr. Smith of DEC expressed that if the results of the alum pilot studies were favorable, DEC could potentially start issuing permits for using alum to treat HABs in the future. Due to the lengthy process of existing permit structures, it would be important to ensure these permits can be issued in a responsive manner when it is determined that they are the appropriate course of action.

*Update and approve local watershed rules and regulations.* Mr. Effler highlighted Owasco Lake’s recently proposed updates to watershed rules and regulations. In response, DOH decided not to advance the nutrient management provision and terminated the community’s watershed rules and regulations project. After filing two lawsuits and winning against DOH, the City of Auburn, the Town of Owasco, and the Owasco Watershed Lake Association are seeking assistance from the State and the Legislature to update their watershed rules and regulations, which are forty years old and no longer reflect the reality on the ground.

Mr. Effler continued:

The New York State Department of Health is failing to meet its responsibility under current New York State Public Health Law. I encourage this Committee to hold the Department of Health accountable concerning the efforts of Owasco Lake drinking water purveyors to update Owasco Lake watershed rules and regulations, but also to provide a clear pathway for drinking water-purveying municipalities across the State to create and update their own watershed rules and regulations.



Mr. Effler, center, testifying at the hearing.

As HABs become more prevalent and pose threats to other drinking supplies, it will be necessary for additional watershed rules and regulations to be updated based on input from local experts.

### **Funding and Resource Allocation**

The hearing revealed widespread support for existing programs with an acknowledgment that more needs to be done to fully address HABs. Due to the growing nature of the problem, increasing funding was a common theme. Ms. Hurlbutt testified, “Many of the New York Soil & Water Conservation Districts need additional funding to continue to bolster our Nonpoint Source Best Conservation Management Practices...more funding equates to more improvements.” In that vein, there was a consensus to *increase funding* for:

- **Clean Water Infrastructure** (\$500 million FY ‘25-’26)
- **Environmental Protection Fund (EPF)** (\$425 million FY ‘25-’26)
  - **FLLOWPA** (\$3.5 million FY ‘25-’26)
- **Soil & Water Conservation Districts (SWCDs)** (\$19.5 million FY ‘25-’26)

- **Agricultural Environmental Management (AEM)**
  - **Agriculture Nonpoint Source Abatement** (\$18.5 million FY '25-'26)
  - **Climate Resilient Farming (CRF) Program** (\$6.6 million FY '25-'26)
- **Eastern Finger Lakes Coalition** (\$1.2 million FY '25-'26)
  - The Eastern Finger Lakes Coalition is also receiving \$42 million through the Bond Act and other capital funding, which includes money for programs like AEM.
- The Jefferson Project (no State funding)

In her testimony, Allyson Jones-Brimmer of the Northeast Dairy Producers Association (NEDPA) added that some programs like AEM are oversubscribed, and increasing funding would create the capacity to allow more farms to buy into the program, increasing the environmental benefits. Similarly, Commissioner Ball testified that other agricultural programs are oversubscribed as well and should receive more funding. These programs include Climate Resilient Farming and Agriculture Nonpoint Source Abatement.

It's important to note that AEM is voluntary, and there was some concern in the testimony around participation levels and the effectiveness of a voluntary program. About a third of all farms in New York participate in the program (New York State Department of Agriculture and Markets, n.d.), which means that there are some farms that may be contributing to HABs without practicing some of the mitigation techniques incentivized in the program. Due to the range of State and federal programs, it's difficult to say for sure how many farms are participating in one form or another. Ms. Jones-Brimmer suggested that mapping would help shed more light on funding, incentives, and areas of need.

*Adjust grant structures.* During the hearing, Senator Stec questioned some municipalities' abilities to apply for grants in a timely manner due to a lack of resources or staffing. The bandwidth for smaller municipalities or organizations is limited, so providing technical assistance from State agencies for application and management of grants would make this more realistic for utilizing these funds, according to Mr. Effler of the Owasco Lake Watershed Management Council. Jeremy Cherson of Riverkeeper also advocated for more State technical assistance for communities.

## Agricultural and Land Use Practices

**“...[A]griculturally-sourced nutrient reduction is the clear and overarching target for protecting New York State lakes from HABs. The only proven and documented tool for reducing lake eutrophication is the bottom-up pollutant reduction approach, leveraging nutrient limitation by reducing nutrient loads to receiving water bodies.”**

-Adam Effler, Executive Director, Owasco Lake Watershed Management Council

*Promote best management practices (BMPs).* BMPs that help to reduce or mitigate HABs include cover cropping, reduced tillage, nutrient buffers, and manure storage. The promotion of these practices is already included for many types of farms under programs like AEM and the practices of organic farms generally. In her testimony, Katie Baidon of the Northeast Organic Farming Association of New York stated the number of farms under organic management is growing, totaling 980,000 acres as of the hearing. As BMPs have become more widely adopted over time through existing programs and the expansion of organic farming, more incentives are necessary to meet the demands of adequately addressing HABs that are sourced by agricultural nutrient runoff.

For a complete list of BMPs, visit:

[https://agriculture.ny.gov/system/files/documents/2024/02/ag\\_bmp\\_catalogue.pdf](https://agriculture.ny.gov/system/files/documents/2024/02/ag_bmp_catalogue.pdf).

*Maintain and expand funding for farm-based environmental programs.* The consensus from witnesses working in agriculture was that expanding or building on existing programs was preferred to creating new ones. For example, Ms. Baidon went on to say that BMPs such as rotational grazing and composting manure could be incentivized in the Climate Resilient Farming Program. Other existing programs like AEM and Agriculture Nonpoint Source Abatement were widely touted as effective nutrient reduction tools, but were identified as being oversubscribed and in need of more funding.

*Consider regulation, training, or education for residential lawn care.* Nutrient runoff occurs outside of agriculture, and residential lawn care is one sector that contributes to HABs, but has largely been unaddressed. Mark Burger of the Skaneateles Lake Watershed Agricultural Program shared an example of a program that offered free soil testing and education for nutrient application on residential properties located near water bodies,

but the program only had three households participate. A larger outreach or educational effort for landscaping practices is necessary, with Senator May suggesting that employee training sessions could be a useful avenue, and Mr. Burger agreed. He went on to say that the State could adapt the models used in agriculture and apply them to residential lawn care.

### **Septic and Stormwater Infrastructure**

This year's New York State Budget once again included \$500 million for clean water infrastructure, totaling \$6 billion going back to 2017. This funding pays for a host of projects that improve water quality from wastewater treatment to upgrading septic systems to remediating emerging contaminants, all of which help to reduce or mitigate HABs. This funding has been flat since 2019, and multiple witnesses, including Adrienne Esposito of the Citizens Campaign for the Environment, called for funding to be increased. Emerging contaminants and New York's aging infrastructure make the need more pressing, and the Senate, to its credit, included \$700 million for this program in its One-House Budget this year.

*Upgrade failing septic systems.* Failing septic systems release nutrients into local water bodies (Gibb, 2018). In areas where some nitrogen and phosphorus can be traced to residential sources, such as in Suffolk County, this is one solution that can be used to mitigate HABs. The voter-approved tax levied under the Suffolk County Water Restoration Act, which is detailed above, serves as a funding model for communities where septic systems are contributing to blooms. Replicating this model creates revenue for these projects without having to rely strictly on State appropriations or homeowners' out-of-pocket expenses.

*Implement advanced and innovative septic systems.* The State could encourage the use of new septic technology through tax breaks and grant incentives to homeowners and builders. [S.3055](#) (Harckham) is one bill that could serve this end by exempting innovative and alternative septic systems from State sales and use taxes, reducing nitrogen pollution in our water. The bill has died in Committee the last three years, but was endorsed by Riverkeeper and the American Water Works Association during the hearing.

There are also existing programs that work to upgrade septic systems, like the State Septic System Replacement Fund Program. In July 2025, Governor Hochul announced

the latest round of funding, which allocated \$30 million for the program, two-thirds of which will be dedicated to Suffolk County. This grant funding goes to the counties, who then administer the reimbursements to property owners for replacing their old septic systems and cesspools.

That same month, Governor Hochul also signed [S.8241A](#) (Harckham) into law; this raises the reimbursement rates for this program. According to Ms. Esposito, the program previously provided up to a 50% reimbursement with \$10,000 being the limit. Under this new legislation, the same reimbursement and limit apply to the installation of conventional systems, but owners can also be reimbursed 75% of eligible costs up to \$25,000 for installing an enhanced septic system, which is vastly more effective at reducing nitrogen. For more information on the Septic Replacement Fund, visit: <https://efc.ny.gov/septic-replacement>.

During his testimony, Dr. Gobler of SUNY Stony Brook highlighted the NYS Center for Clean Water Technology's latest septic technology, the nitrogen removing biofilter, or NRB. It removes more than 90% of nitrogen and emerging contaminants from wastewater, making it one of the most effective tools of its kind in the world. The system converts nitrogen into inert nitrogen gas and can also reduce contaminants resulting from pharmaceutical use (Center for Clean Water Technology, n.d.). In its remarks, DEC reinforced that septic upgrades should entail the use of enhanced septic systems such as these.

*Enhance stormwater management.* This includes improving infrastructure to handle more intense storms (such as culvert replacements), erosion control, and reducing the use of road salt.

In severe storms, backed up culverts cause flooding, erosion, and more nutrients to enter waterways. Both Commissioner Ball and Ms. LaManche of FLOWPA stated that replacing existing culverts with larger ones meant to meet the demand of more frequent and more intense storms would decrease nutrient runoff. State appropriations for clean water infrastructure and funding from the Bond Act have been dedicated to carry out projects for upgrading culverts.

Beyond larger culverts, there are BMPs for both agriculture and stormwater that focus on erosion control. For agriculture, this involves an Erosion Control System, which

could include terraces, diversions, water and sediment control basins, waterways, roof runoff practices, access roads, and earthmoving practices. The proper combination based on the landscape and type of crops will reduce the amount of sediment and nutrients entering water bodies. For stormwater BMPs, multiple panelists mentioned soil retention, and these measures can include grading, shoring, or the construction of retaining walls.

Ms. St. Jacques of the New York Farm Bureau, Ms. Baildon, and Mr. Effler all advocated for the use of buffers in order to reduce erosion and runoff, with Ms. St. Jacques and Mr. Effler specifically identifying riparian buffers. Riparian buffers are strips of trees, shrubs, or grass that are planted next to streams or other water bodies to protect water quality (New York State Department of Environmental Conservation, n.d.). The vegetation absorbs pollutants and sediment before they can enter nearby water. According to DAM's *BMP Catalogue*, this is a relatively low-cost and easy-to-implement practice.

Road salt has several negative ecological impacts. According to the University of Waterloo, one of these effects is salinization. As more salt enters a water body, oxygen becomes depleted, which can lead to nutrient enrichment in lakes that already have phosphorus in their sediment. (Radosavljevic et al., 2023).

Mr. Cherson of Riverkeeper identified road salt as a contributor to HABs and advocated for legislation to limit the amount entering waterways. Senator Harckham carries three bills concerning road salt:

- [S.3442](#) would establish the East of Hudson Watershed Road Salt Reduction Task Force. That body would aggregate information and offer recommendations on reducing salt contamination in the East of Hudson Watershed. It died in Committee in 2024 and 2025; in 2023, it passed the Senate.
- [S.5010](#) would create a training program for road salt applicators. It has died in Committee every year since 2019 and currently has no same as.
- [S.6976A](#) establishes a council and advisory committee to monitor and combat road salt's effects on New York's drinking water and ecosystems. It has passed the Senate in each of the last two years.

## Public Education and Local Empowerment

*Fund local education and outreach programs.* Soil & Water Conservation Districts work with many lake associations to educate farmers and the general public about Lake-Friendly Living initiatives. These are educational in terms of the challenges water bodies may face, but they also recommend best practices for water quality. Building out these existing programs to reach more people would require additional funding.

While several lake associations and watersheds share Lake-Friendly Living information on their websites, Ms. Esposito suggested a more direct approach for real-time outreach: creating a HABs public notification program that would be modeled after the sewage notification program. Residents could opt in to receive text notifications on HAB occurrences via [NY Alert](#).

Both Ms. Esposito and Mr. Ansel of Save the Sound suggested that [LINAP](#) (Long Island Nitrogen Action Plan) could serve as a model for the rest of the State for public awareness campaigns and coordination between residents, stakeholders, and various levels of government.

According to DEC's *LINAP Fact Sheet*, LINAP is:

a multiyear initiative to reduce nitrogen in Long Island's surface and ground waters through technical, management, regulatory and policy action. A broad partnership is working together to develop and implement LINAP, which includes the New York State Department of Environmental Conservation (NYSDEC), the Long Island Regional Planning Council (LIRPC), Suffolk and Nassau counties, local governments, area scientists, numerous environmental organizations, non-governmental organizations and a cadre of consultant services.

LINAP disseminates information on threats to water quality posed by nitrogen runoff and promotes various programs to help combat the issue, including septic replacement. There is also a newsletter that Long Island residents may sign up for. After 10 years, LINAP is now run by the Long Island Watershed Program, and the structure and hyper-local outreach with information particular to Long Island water quality could be replicated and adapted to the types of HABs found in other watersheds.

*Expand multilingual or pictorial signage and warnings in public parks.* Ms. Cebada Mora stated that OPRHP is responsive to parks' requests for signage in different languages. She went on to say that the number of languages displayed varies by park and that they try to use pictures whenever possible in order to educate diverse communities about HABs risks. Senator May then noted that with the recent arrival of refugees and migrants across the State who may fish for food, effective public awareness requires signage that is accessible to as many residents as possible.

### **Governance and Agency Coordination**

**"There's no legal requirement for the DOH to notify the public when HABs threaten drinking water...We urge that the Legislature require real-time coordination between DOH, DEC, drinking water suppliers, and the public whenever toxins are detected or suspected."**

**-Jeremy Cherson, Associate Director of Government Affairs, Riverkeeper**

One of the most common topics throughout the hearing was the need to specify and improve the roles of agencies and how they coordinate in both proactive and reactive ways when it comes to water quality. As the recent DOH lawsuits demonstrate, there are strong local desires to protect waterways, and agencies need clearly defined roles and courses of action to ensure the best results.

*Clarify agency leadership and responsibilities.* DOH, DEC, and DAM each play a role in watershed management. Based on the growing problem of HABs and the frustration surrounding Owasco Lake and DOH, there were multiple requests (City of Auburn, Owasco Lake Watershed Management Council, Riverkeeper) to have the Legislature clearly define the roles and responsibilities of State agencies in addressing HABs. Specifically, these groups wanted DOH to take a more active role in updating watershed rules and regulations for drinking water supplies.

*More autonomy for Soil & Water Conservation Districts.* Several panelists lauded the work of SWCDs as invaluable and suggested giving them additional resources, authority, and voice in policy and project implementation, especially when there are bottlenecks with permitting or interagency coordination at the State level.

Ms. LaManche of FLOWPA said:

Soil & Water Conservation Districts are...the local experts...the boots on the ground...the ones that have the most experience...the local connections... Sometimes it's difficult to get anything done, and I feel that at some points the Districts and their technical expertise and abilities and knowledge could lend them to do things quicker than necessarily waiting to go through all of the proper channels with the time it takes and the staff requirements on the State's end to get anything done...and giving them a little bit more leeway to do things within the rules and requirements...to make things get done a little bit quicker.



Ms. LaManche, Program Coordinator, FLOWPA.

*Improve coordination among State agencies, local governments, NGOs, and landowners to ensure comprehensive, community-informed responses.* With DEC conducting monitoring, DAM working on HAB mitigation, and DOH charged with protecting drinking water, it's going to require sophisticated coordination to meet the challenges on the ground. That challenge of coordination, however, extends beyond State agencies to include local entities and academic institutions. Dr. Art Degaetano of Cornell CALS confessed that

he hadn't heard of the Jefferson Project and urged for more communication and coordination, saying, "Getting the different silos...in the State to collaborate...for looking at that [as a] broader [model] in the Finger Lakes and other parts of the State, and I think there [are] mechanisms to do that by collaboration."

Overall, given the unique and complex nature of every bloom, State agencies themselves will have to be responsive and nimble in their coordination with local groups and the general public. For some of the more successful local cases, such as the Jefferson Project and programs in Suffolk County, adapting and scaling those in other places offers solutions, and the agencies could play a role in facilitating that collaboration.

**CHAIR**  
ENVIRONMENTAL CONSERVATION

**COMMITTEES**  
ALCOHOLISM AND SUBSTANCE USE DISORDERS  
CRIME VICTIMS, CRIME AND CORRECTION  
INSURANCE  
RULES  
TRANSPORTATION  
VETERANS, HOMELAND SECURITY  
AND MILITARY AFFAIRS

**THE SENATE  
STATE OF NEW YORK**



**PETER B. HARCKHAM**  
SENATOR, 40TH DISTRICT

**ALBANY OFFICE**  
315 LEGISLATIVE OFFICE BUILDING  
ALBANY, NEW YORK 12247  
(518) 455-2340

**DISTRICT OFFICE**  
1 PARK PLACE  
SUITE 302  
PEEKSKILL, NEW YORK 10566  
(914) 241-4600

## **Chair's Conclusion**

Dear Colleagues,

Harmful algal blooms have had devastating impacts on New York State. These toxic blooms have adversely impacted ecosystem health, as well as our local economies. The impacts of climate change—such as rising water temperatures and intensified precipitation patterns—have worsened nutrient runoff, primarily phosphorus and nitrogen, which fuels algal bloom formation.

As Chair of the Senate Standing Committee on Environmental Conservation, I believed it to be imperative that a hearing be held in order to address this issue. This hearing brought together State agencies, local governments, agricultural organizations, researchers, advocacy organizations, and more in order to discuss barriers to HABs management, as well as propose potential solutions going forward. I am incredibly grateful to Senator May for her partnership in initiating and planning this hearing.

The alarming rise in harmful algal blooms across New York demands a coordinated, evidence-based, statewide strategy to mitigate risks and support our communities. More must be done in order to preserve our waterways and safeguard public health.

Many of the recommendations by panelists included streamlining permitting, increasing funding for oversubscribed programs, and investing in new mitigation technologies. I carry S.5936A, which establishes the nutrient inactivant application permit to allow for the use of certain aluminum-based treatments for HABs.

Additionally, I am a proud co-sponsor of hearing Co-Chair Senator Rachel May's bill, S.1833A, which establishes the "Harmful Algal Bloom Monitoring and Prevention Act." I look forward to continued discussions with stakeholders to support and initiate policies to control HABs in the future.

I am immensely grateful that all hearing attendees were able to bring their unique perspectives on HABs management to this hearing. I look forward to working alongside this group of stakeholders to find a long-term, sustainable solution for this issue.

Sincerely,

A handwritten signature in black ink, appearing to read "Pete B. Harckham". The signature is fluid and cursive, with the first name "Pete" and last name "Harckham" clearly distinguishable.

Pete Harckham

New York State Senator, 40th Senate District

## **List of Witnesses and Organizations**

David Ansel, Vice President of the Center for Water Protection, Save the Sound

Katie Baidon, Policy Manager, Northeast Organic Farming Association of NY

Richard Ball, Commissioner, Department of Agriculture & Markets

Ken Belfer, President, Mohegan Lake Improvement District

Mark Burger, Executive Director, Skaneateles Lake Watershed Agricultural Program

Gabriella Cebada Mora, Division Director, Environmental Stewardship and Planning,  
NYS Office of Parks, Recreation and Historic Preservation

Jeremy Cherson, Associate Director of Government Affairs, Riverkeeper

Dr. Art Degaetano, Director of the Northeast Region Climate Center, Cornell CALS –  
Nutrient Management Spear Program

Adam Effler, Executive Director, Owasco Lake Watershed Management Council

Adrienne Esposito, Executive Director, Citizens Campaign for the Environment

Dr. Christopher J. Gobler, SUNY Distinguished Professor, SUNY Stony Brook – NYS  
Center for Clean Water Technology

Judith A. Hansen, Legislative Consultant, NY Section - American Water Works  
Association

Blanche L. Hurlbutt, Executive Director, NY Association of Conservation Districts

Allyson Jones-Brimmer, Vice President of Regulatory and Legislative Affairs, Northeast  
Dairy Producers Association

Kristy LaManche, Program Coordinator, Finger Lakes-Lake Ontario Watershed  
Protection Alliance

Chuck Mason, City Clerk, City of Auburn

Ron Rausch, Deputy Commissioner for Environmental Stewardship, NYS Office of Parks, Recreation and Historic Preservation

Alexander J. Smith, Ph.D., Assistant Director, Division of Water, Department of Environmental Conservation

Renée St. Jacques, Acting Director of Public Policy, NY Farm Bureau

Jake Welch, President, Finger Lakes Regional Watershed Alliance

Brendan Wiltse, Executive Director, Lake George Association

## References and Further Reading

Brophy, N. (n.d.). *Annual Auburn water quality report shows city-treated water is safe to drink*. AuburnPub.

[https://auburnpub.com/news/local/government-politics/article\\_13e3f34e-5c96-46eb-ba5c-dc3e599bd3c0.html](https://auburnpub.com/news/local/government-politics/article_13e3f34e-5c96-46eb-ba5c-dc3e599bd3c0.html)

Center for Clean Water Technology. (n.d.). *Nitrogen removing biofilters for onsite wastewater treatment* [Fact sheet]. Stony Brook University.

<https://www.stonybrook.edu/commcms/cleanwater/research/NRB%20Fact%20Sheet.pdf>

Chan, S. (2016, August). *State funding pushes Lake George research project*. Times Union.

<https://www.timesunion.com/business/article/State-funding-pushes-Lake-George-research-project-6816191.php>

Day, L. (2024, August 23). *\$42 million awarded to protect the Finger Lakes watershed*. Finger Lakes Daily News.

<https://www.fingerlakesdailynews.com/local/42-million-awarded-to-protect-the-finger-lakes-watershed>

Earthjustice. (2025, January 25). *Court determines NYS DOH cannot shirk responsibility to protect drinking water supplies from agricultural contamination*.

<https://earthjustice.org/press/2025/court-determines-nys-doh-cannot-shirk-responsibility-to-protect-drinking-water-supplies-from-agricultural-contamination>

Empire State Development. (2023). *Finger Lakes, New York tourism economic impact 2023* [PDF].

<https://esd.ny.gov/sites/default/files/media/document/Finger-Lakes-New-York-Tourism-Economic-Impact-2023.pdf>

Environmental Facilities Corporation. (n.d.). *Septic System Replacement Fund*.

<https://efc.ny.gov/septic-replacement>

Gibb, T. (2018, December 11). *Nutrients from septic systems can impact well and surface water*. Michigan State University Extension.

<https://www.canr.msu.edu/news/nutrients-from-septic-systems-can-impact-well-and-surface-water>

Hochul, K. (2024, August 23). *Governor Hochul announces \$42 million to protect the Eastern Finger Lakes watershed*. New York State Governor.

<https://www.governor.ny.gov/news/governor-hochul-announces-42-million-protect-eastern-finger-lakes-watershed>

Hochul, K. (2024, May 23). *Governor Hochul signs legislation to protect public health, improve water quality in Suffolk County*. New York State Governor.

<https://www.governor.ny.gov/news/governor-hochul-signs-legislation-protect-public-health-improve-water-quality-suffolk-county>

Hochul, K. (2024, December 23). *Governor Hochul awards more than \$225 million to water quality protection projects across the state*. New York State Governor.

<https://www.governor.ny.gov/news/governor-hochul-awards-more-225-million-water-quality-protection-projects-across-state>

Hochul, K. (2025, July 23). *Governor Hochul announces \$30 million and signs legislation to make it more affordable to protect*. New York State Governor.

<https://www.governor.ny.gov/news/governor-hochul-announces-30-million-and-signs-legislation-make-it-more-affordable-protect>

Jefferson Project. (n.d.). *Sensors*. <https://jeffersonproject.live/sensors>

Matson, Z. (2025, July 28). *New York homeowners can get \$25,000 septic system rebates: Law boosts reimbursement rates for new septic systems*. Adirondack Explorer.

<https://www.adirondackexplorer.org/stories/law-boosts-reimbursement-rates-for-new-septic-systems>

National Centers for Coastal Science, NOAA. (n.d.). *Assessing environmental and economic impacts*. NOAA Coastal Science.

<https://coastalscience.noaa.gov/science-areas/habs/assessing-environmental-and-economic-impacts/>

Neponset River Watershed Association. (n.d.). *Why Lake Massapoag needs an alum treatment*.

<https://neponset.org/why-lake-massapoag-needs-an-alum-treatment/#:~:text=An%20alum%20treatment%20reduces%20algae,the%20water%20clearer%20and%20healthier.>

New York State. (n.d.). *New York State Alert System*. <https://alert.ny.gov/>

New York State Department of Agriculture and Markets. (n.d.). *Agricultural environmental management*.

<https://agriculture.ny.gov/soil-and-water/agricultural-environmental-management>

New York State Department of Environmental Conservation. (n.d.). *Harmful algal bloom monitoring and prevention fund experience*. ArcGIS Experience.

<https://experience.arcgis.com/experience/e5dec19912454731a308bbb7af605fb3/>

New York State Department of Environmental Conservation. (2025, June). *LINAP fact sheet*. <https://dec.ny.gov/sites/default/files/2025-06/linap-factsheet-2025.pdf>

New York State Department of Environmental Conservation. (n.d.). *Long Island watershed program (LINAP)*.

<https://dec.ny.gov/nature/waterbodies/oceans-estuaries/long-island-watershed-program/linap>

New York State Department of Environmental Conservation. (n.d.). *Riparian buffers*.

<https://dec.ny.gov/environmental-protection/water/water-quality/nps-program/riparian-buffers>

New York State Soil and Water Conservation Committee. (2024, February). *Agricultural Best Management Practice Systems Catalogue* [PDF]. New York State Department of Agriculture and Markets.

[https://agriculture.ny.gov/system/files/documents/2024/02/ag\\_bmp\\_catalogue.pdf](https://agriculture.ny.gov/system/files/documents/2024/02/ag_bmp_catalogue.pdf)

Ng, P. H., Cheng, T. H., Man, K. Y., Huang, L., Cheng, K. P., Lim, K. Z., Chan, C. H., Kam, M. H. Y., Zhang, J., Marques, A. R. P., & St-Hilaire, S. (2023). Hydrogen peroxide as a mitigation against *Microcystis* sp. bloom. *Aquaculture*, 577, 739932.

<https://doi.org/10.1016/j.aquaculture.2023.739932>

North American Lake Management Society. (n.d.). *The use of alum for lake management*.

<https://www.nalms.org/nalms-position-papers/the-use-of-alum-for-lake-management/>

NYSMesonet. (n.d.). *New York State Mesonet*. <https://www.nysmesonet.org/>

Office of the New York State Comptroller. (2024, February 23). *Peconic Bay Community Preservation Fund (2023-MR-1)* [Audit report]. NYS Comptroller.

<https://www.osc.ny.gov/files/local-government/audits/2024/pdf/peconic-bay-community-preservation-fund-2023-mr-1.pdf>

Owasco Lake Watershed Management Council. (n.d.). *Watershed and lake facts and figures*.  
<https://www.olwmc.org/watershed-and-lake-facts-and-figure>

Penale, A. (2025, May 21). *N.Y. state allocates \$42 M in effort to mitigate harmful Finger Lakes algal blooms*. Spectrum Local News – Rochester.

<https://spectrumlocalnews.com/nys/rochester/news/2025/05/21/n-y--state-allocates--42m-in-effort-mitigate-harmful-finger-lakes-algal-blooms>

Radosavljevic, J., Ju, J., Rudolph, D. L., Rezanezhad, F., Goucher, N., & Van Cappellen, P. (2023, November 20). *'Forever contaminant' road salts pose an icy dilemma: Do we protect drivers or our fresh water?* University of Waterloo.

<https://uwaterloo.ca/water-institute/news/forever-contaminant-road-salts-pose-icy-dilemma-do-we#:~:text=Salt%20and%20oxygen%20in%20water,sources%20in%20the%20surrounding%20landscape>

U.S. Environmental Protection Agency. (n.d.). *National menu of best management practices (BMPs) for stormwater construction*.

<https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater-construction>

U.S. Environmental Protection Agency. (n.d.). *Not so distant future: Pushing the ball forward on alternative/innovative septic systems in Southeast New England*.

<https://www.epa.gov/snep/not-so-distant-future-pushing-ball-forward-ia-septic-systems-southeast-new-england>

Vivenzio, E. (2025, July 10). *Court sides with Auburn Owasco on Owasco Lake lawsuit*.

<https://www.fingerlakesdailynews.com/local/cayuga/court-sides-with-auburn-owasco-on-owasco-lake-lawsuit>

Willis, S. (2024, August 24). *NYS releases \$42 million to help farmers protect Eastern Finger Lakes watershed* [News article]. WAER.

<https://www.waer.org/news/2024-08-24/nys-releases-42-million-to-help-farmers-protect-eastern-finger-lakes-watershed>



# Pete Harckham

New York State Senator

District 40



## Peekskill District Office

1 Park Place  
Suite 302  
Peekskill, NY 10566  
Phone: (914) 241-4600

## Albany Office

Room 315  
Legislative Office Building  
Albany, NY 12247  
Phone: (518) 455-2340

**Email:** [harckham@nysenate.gov](mailto:harckham@nysenate.gov)

**Web:** [harckham.nysenate.gov](http://harckham.nysenate.gov)

X @SenatorHarckham

Instagram @senatorharckham

Facebook SenatorPeteHarckham