

Bridging Science and Community: *Volunteer Monitoring, Drinking Water, and Water Science Education in the Finger Lakes*

SUNY ESF Water Science and Policy Seminar
3/25/26

Grascen Shidemantle, PhD
Executive Director
Community Science Institute



Partnering with Communities to Protect Water



CSI Volunteer Thomas Bjorkman sampling
Johnsons Creek on March 17, 2026

Agenda

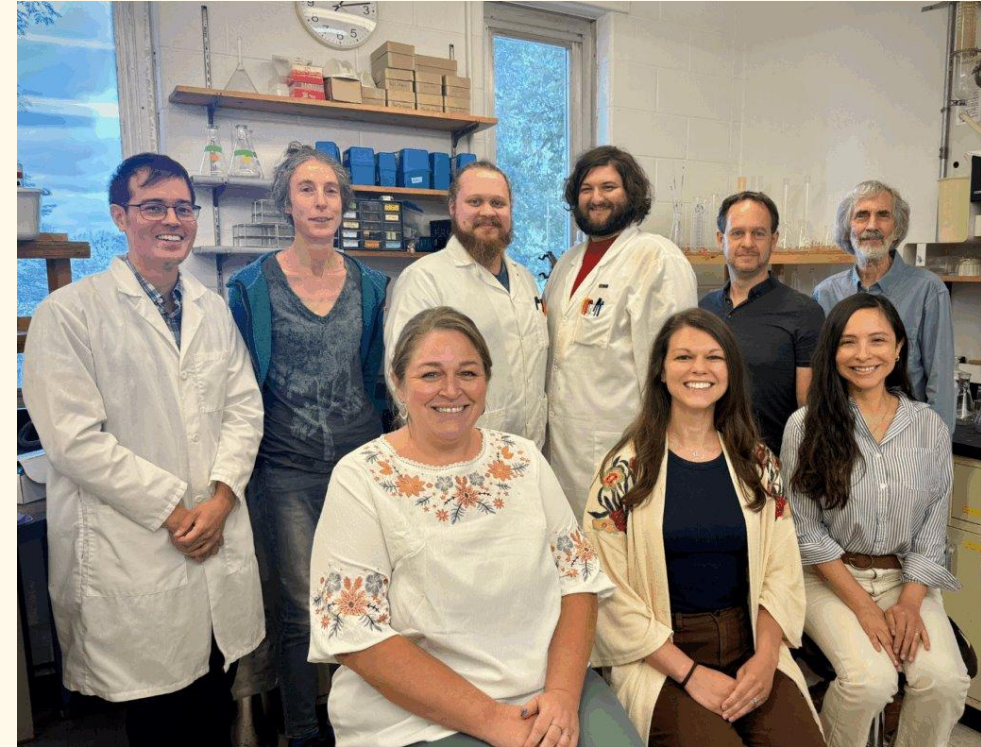
Community Science Institute

Volunteer Monitoring Partnerships

Water Quality Database

Fee-for-Service Water Testing

Outreach and Education



CSI Staff

Agenda

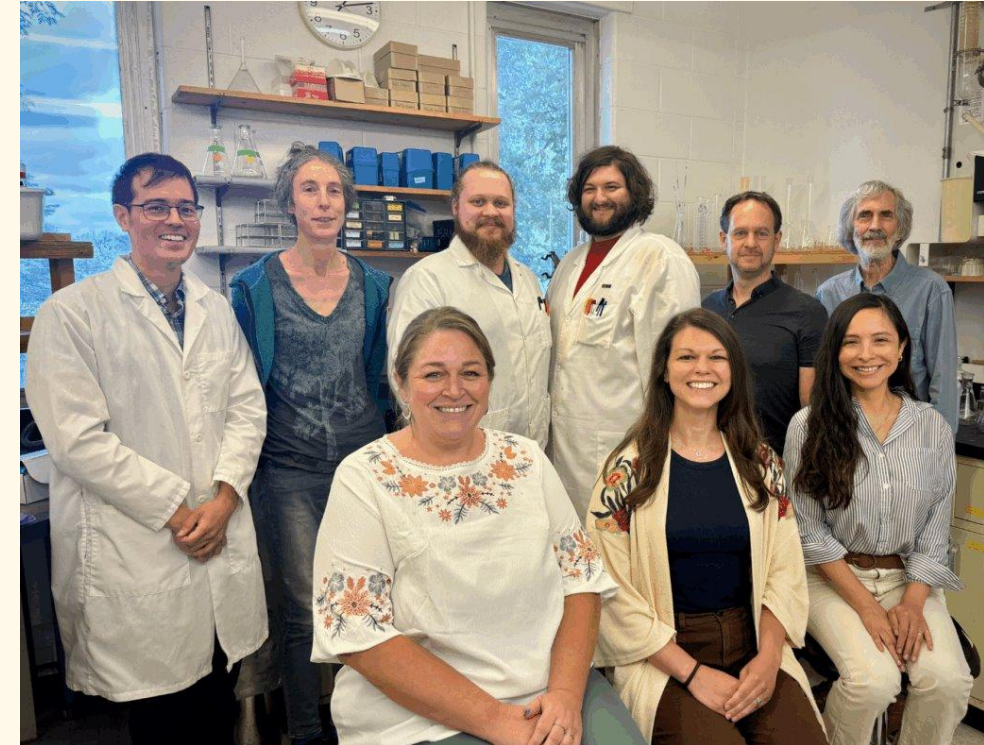
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Community Science Institute

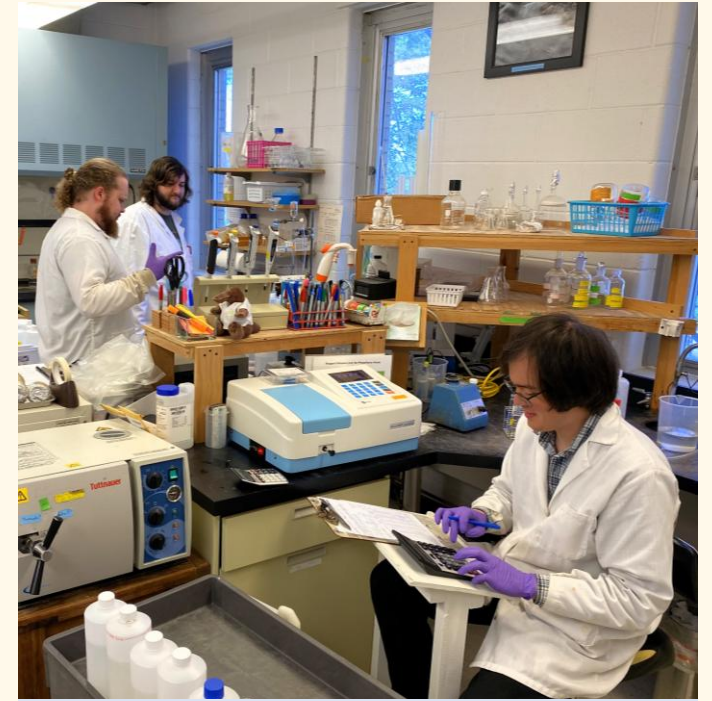
CSI is a 501(c)3 non-profit and NYSDOH-ELAP certified water testing lab in Ithaca, NY



Volunteer Water Monitoring Partnerships



Outreach and Education



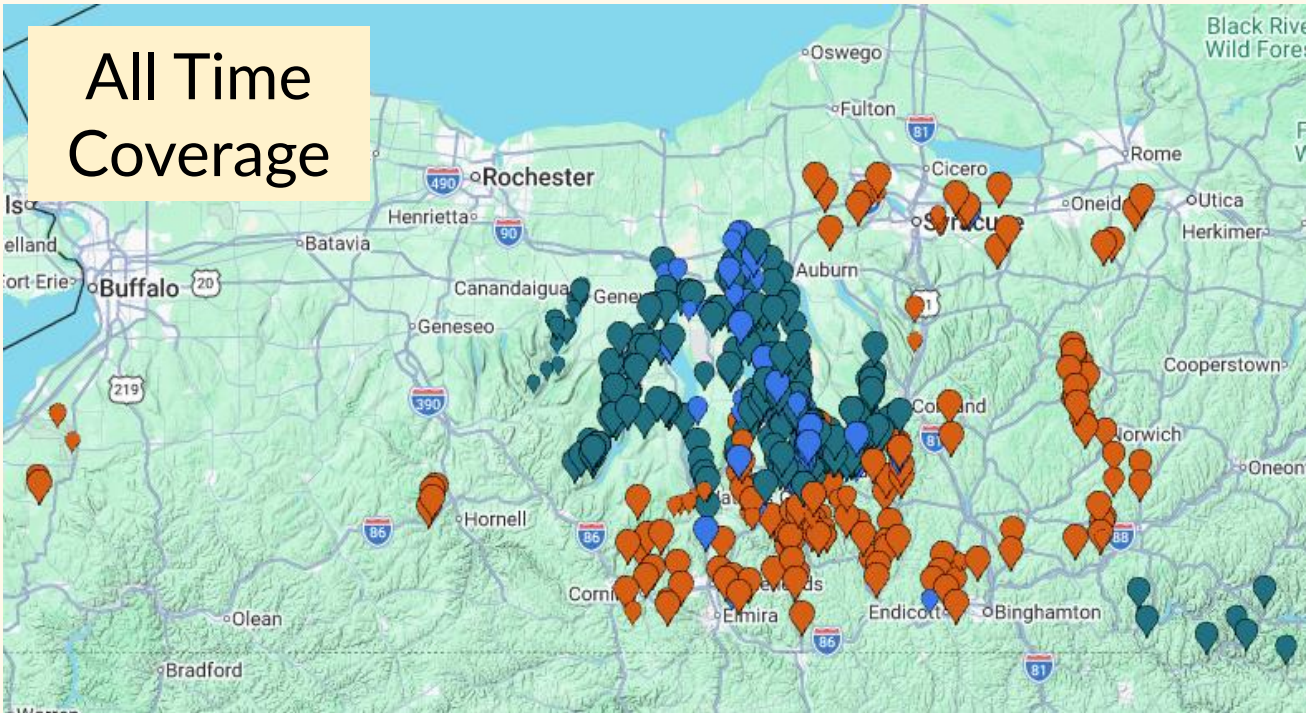
Fee-for-Service Water Testing

Our Mission: To inspire and empower communities to safeguard water resources by cultivating scientific literacy through volunteer water quality monitoring, certified laboratory analyses, and education.

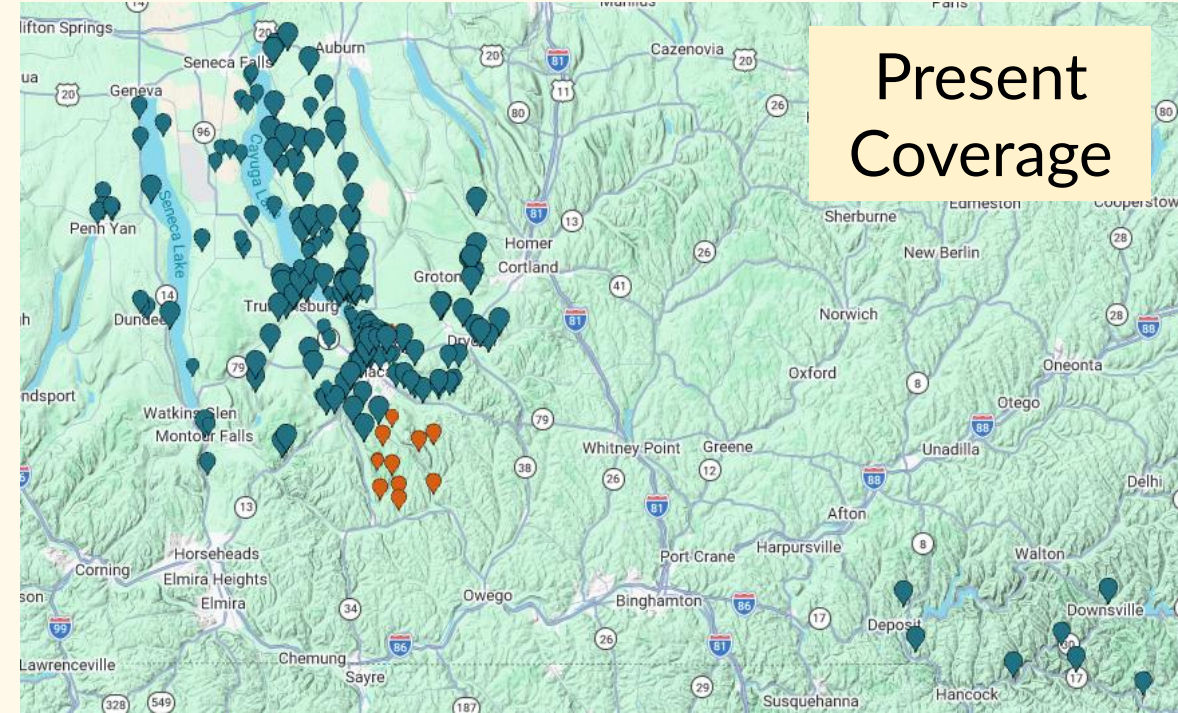
Community Science Institute

Most of our work is centered around the Cayuga Lake Watershed, but we serve other watersheds too!

All Time Coverage



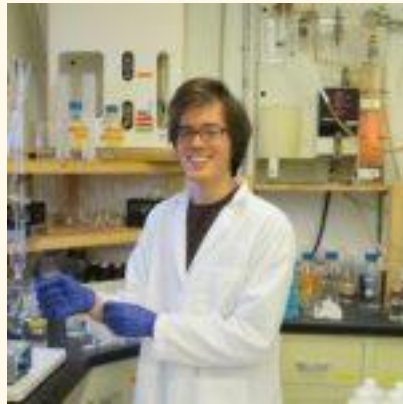
Present Coverage



Community Science Institute Team



Grascen Shidemantle
Executive Director



Noah Mark
Laboratory Director



Adrianna Hirtler
Biomonitoring Coordinator



Katia Appel
Office Administrator



Alyssa Johnson
Outreach and
Programs Coordinator



Dan Pascucci
Water Quality Scientist



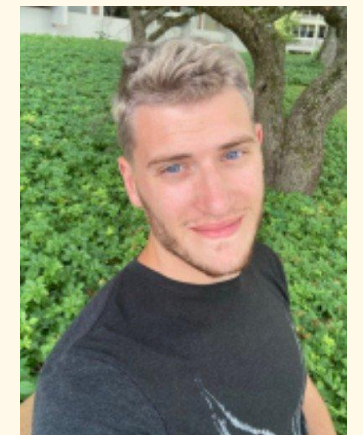
Seth Bingham
Water Quality Scientist &
Quality Assurance Officer



Aditi Khare
Database Developer



Rama Hoetzlein
Database Developer



Jared Thomas
Intern - FWS Student

Agenda

Community Science Institute

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Water Quality Database

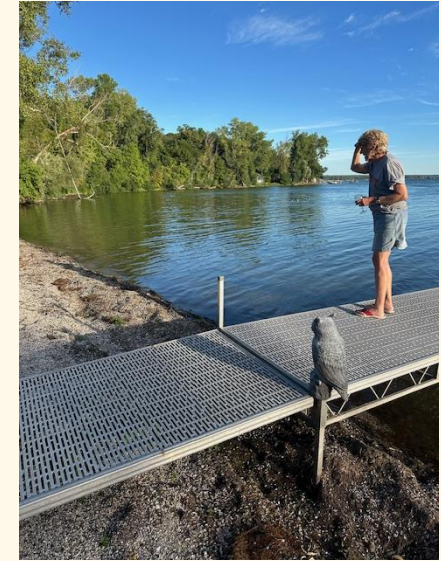
Fee-for-Service Water Testing

Outreach and Education



CSI Volunteer, Christina Stark

CSI's Volunteer Water Monitoring Partnerships



Synoptic Stream and Lake Monitoring

Biomonitoring

Cayuga Lake Harmful Algal Bloom (HAB) Monitoring

CSI's Volunteer Water Monitoring Partnerships

We take on other projects as need or interest arises as well



Owego Creek Tributaries
Monitoring Project with
Trout Unlimited



Red Flag Program and
Groundwater Monitoring

Synoptic Stream and Lake Monitoring Partnership



David has been monitoring water quality on Fall Creek with us since 2002!

Purpose: Produce regulatory-quality stream and lake water chemistry data that can inform water resource management decisions as well as keep the public informed on the state of their local water resources.

Monitor streams and lakes for:

- Nutrients
- Sediment
- Bacteria
- Salt
- pH, conductivity, temperature, etc.



Synoptic Stream and Lake Monitoring



Volunteers collect samples from their designated stream 3 times each year under “stormwater” & baseflow conditions

Samples are analyzed in CSI’s state-certified water testing laboratory

David
monit
quality
with us

Synoptic Stream and Lake Monitoring

Data are regulatory quality:

- Quality Assurance Project Plan (QAPP)
- Analyzed in ELAP-certified lab

Data submitted every two years to the DEC for the NYS Water Quality Report

New York State's 2020/2022 Water Quality Reports

On September 11, 2024, New York State issued the Final 2020/2022 NYS Section 303(d) List and the 2020/2022 Section 305(b) Report. The Final 2020/2022 NYS Section 303(d) List was developed based on external water quality data assembled through two, five month long public data solicitation processes (2019 and 2021), internal NYSDEC water quality data, and by following methods detailed in the 2021 CALM.

In addition, a Draft 2020/2022 NYS Section 303(d) List was made available for public comment for a 59-day public comment period that ended February 25, 2022. During that comment period, comments from various organizations, municipalities, and individuals were received.

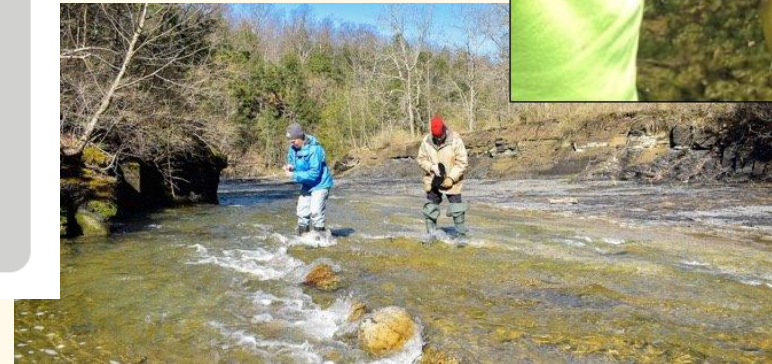
[Final 2020/2022 NYS Section 303\(d\) List \(xlsx\)](#)

[2020/2022 Response to Public Comment on the Draft 2020/2022 NYS Section 303\(d\) List](#)

[Clean Water Act Section 305\(b\) Water Quality Report](#)

[Final 2020/2022 NYS Section 303\(d\) List ENB Notice](#)

[Consolidated Assessment and Listing Methodology, May 2021](#)

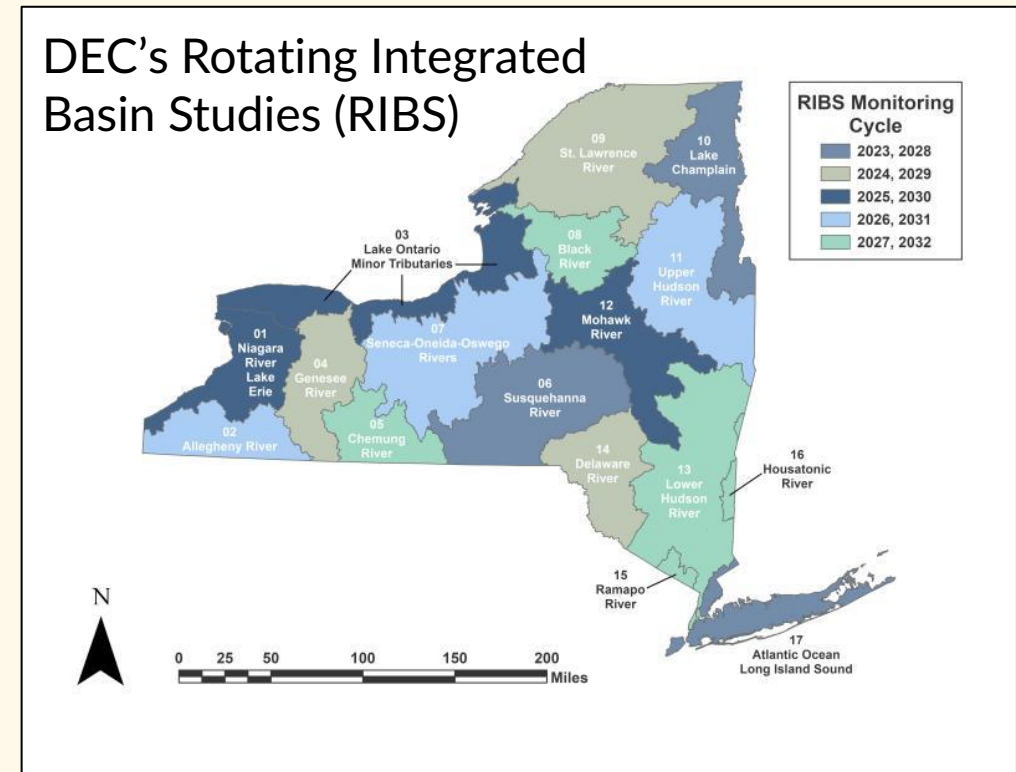


Synoptic Stream and Lake Monitoring

Doesn't NYSDEC monitor streams?
Why do we need CSI?

DEC's Rotating Integrated Basin Studies (RIBS)

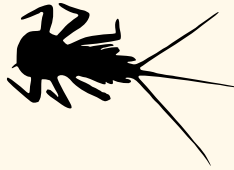
- Each drainage basin monitored once every five years
- Collect data on a limited number of streams and locations
- Only monitor analytes listed in the CALM
- Takes several years for data to become available
- Limited opportunities for volunteer/community involvement



Biomonitoring Partnership



Biomonitoring



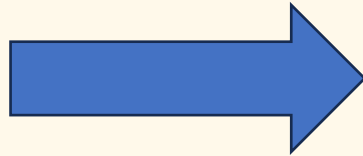
BMI = Benthic Macroinvertebrates

Purpose: Determine the ecological and long term health of streams while educating community members about local aquatic biodiversity



Volunteers collect samples in the field

Summer






Volunteers sort and identify organisms in the lab

Winter/Spring

Biomonitoring

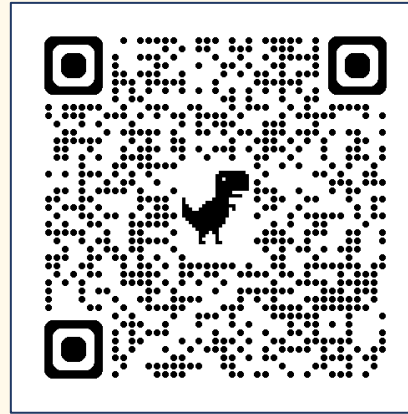
Collect and identify samples of benthic macroinvertebrates (BMI) to calculate:

- Total Family Richness
- EPT Richness
 - Ephemeroptera = mayflies 
 - Plecoptera = stoneflies 
 - Trichoptera = caddisflies 
- Family Biotic Index
- Percent Model Affinity

Biological Assessment Profile

non-impacted
slightly impacted
moderately impacted
severely impacted

Permits are obtained from DEC and results are shared with DEC annually.



Where Bugs and Water Quality Hide: Continued

Then in 2023, the Upper Treman sites (Enfield and Fishkill Creeks) both showed a healthy community of BMI indicating "non-impacted" water quality. This was confirmed in both the quick youth surveys and lab-processed samples. Though it started out that water quality above the gorge and park in the main branch of Enfield Creek seemed to be about the same and then worse as compared with the water below the gorge and park (2019-2022), now the water quality above Enfield gorge was showing a higher BAP than the water downstream (2023-2024) - there also seems to be an inverse relationship between water quality in Fishkill and Enfield Creeks at Upper Treman during the same period that the downstream water quality was declining (see Figure 2). What will the 2025 results show? Come join one of our Open Labs to help us find out.

Mile Creek, has also been slipping deeper into the "slight impact" range (Figure 3). An amazing group of mostly independent volunteers has sampled four locations along Six Mile Creek annually since the program's early years, highlighted in a recent Ithaca Voice article³. The upstream Slaterville 600 Rd site has shown consistently good water quality between 2011 and 2024. Potters Falls - just downstream of the City of Ithaca drinking water reservoir - has mostly shown a "slight impact," likely due to proximity to a dam. The Plain Street site downtown has fluctuated between "slight impact" and "no impact," while the German Cross Road site has also fluctuated but appears to have now shifted towards a more consistent "slight impact" after several years of better water quality.

Another long-sampled site, German Cross Road on Six

CSI's unique volunteer biomonitoring program

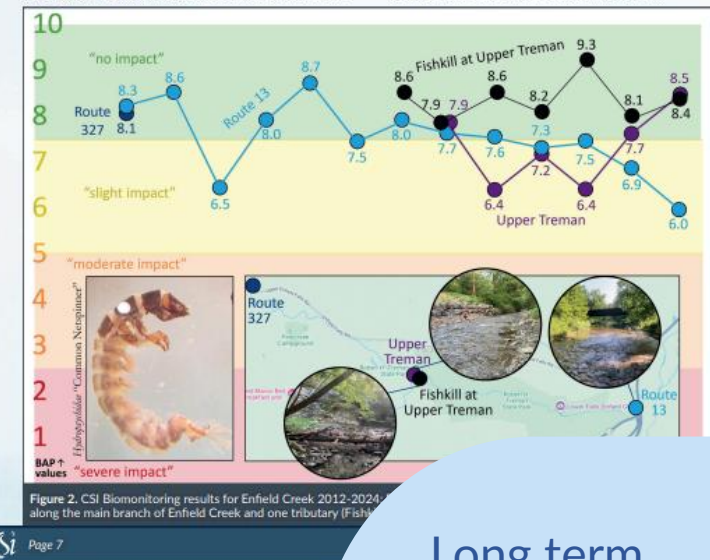


Figure 2. CSI Biomonitoring results for Enfield Creek 2012-2024 along the main branch of Enfield Creek and one tributary (Fishkill).

Long term trends reported in CSI's 2025 Water Bulletin

Cayuga Lake Harmful Algal Bloom Monitoring Partnership



Cayuga Lake HAB Monitoring

Purpose: Collect actionable data on cyanobacteria blooms, protect public health, and relay bloom information and testing results quickly and efficiently.

HABs Harriers perform weekly shoreline surveys for HABs



Blooms are reported to CSI via HABs Hotline



Samples are analyzed in CSI's state certified lab*



CSI alerts public to HABs



The Cayuga Lake HABs Monitoring Program is led by CSI in collaboration with CLWN and DCL

Cayuga Lake HAB Monitoring

HAB samples are analyzed to:

- Identify cyanobacteria genera
- Measure chlorophyll a
- Measure microcystin

Bloom information is uploaded to CSI's
[Cayuga Lake HABs Database](#)

CSI reports all blooms to county health department officials and NYSDEC (NYHABS)



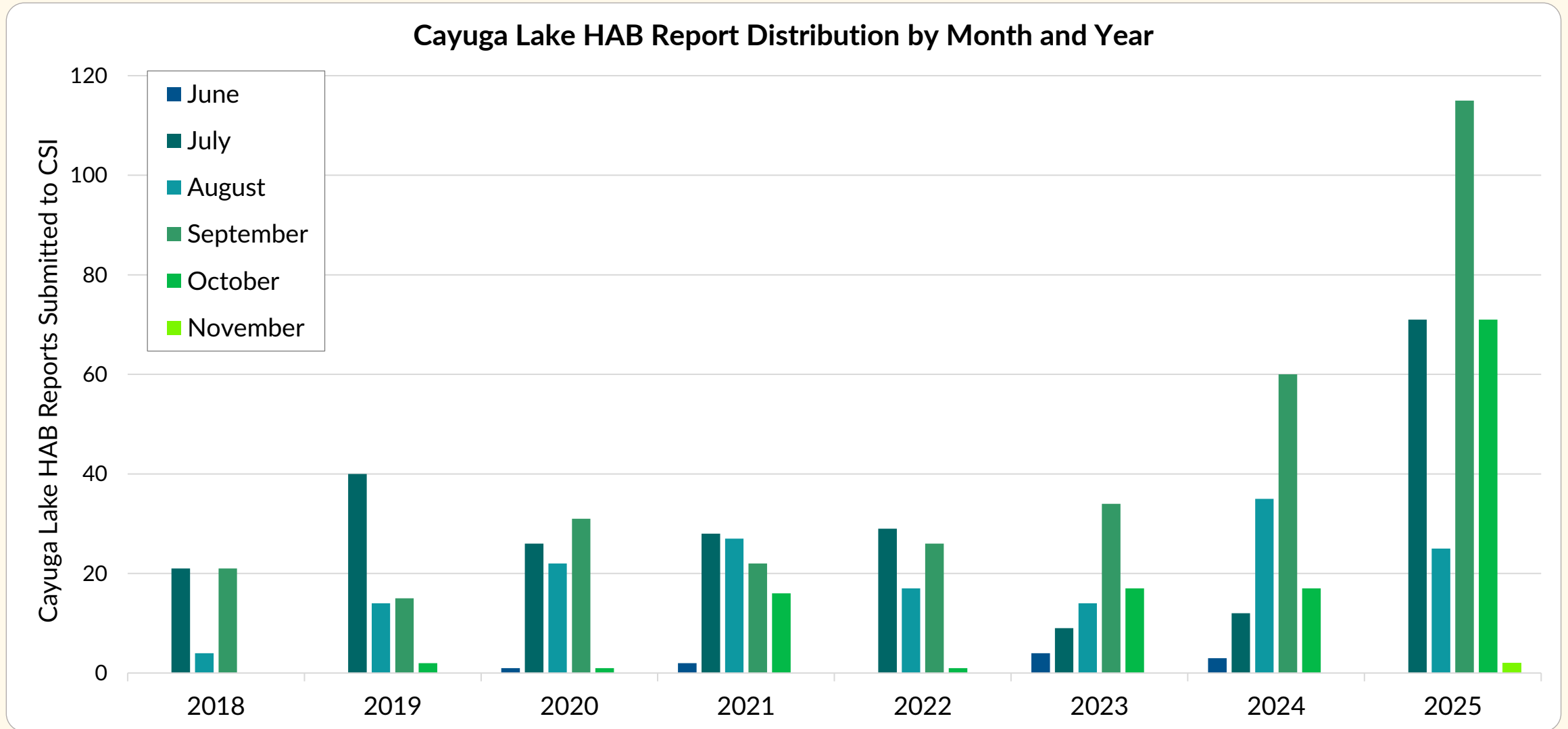
Microcystis sp.



Dolichospermum sp.



2018-2025 Cayuga Lake HAB Reports



CSI's Data Make a Difference

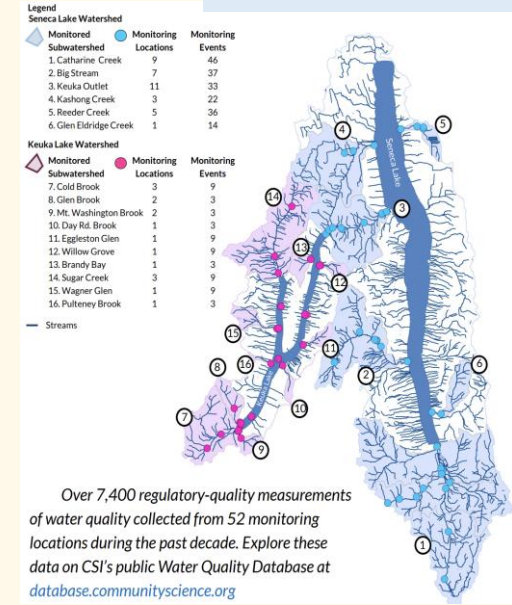


Removal of the southern end of Cayuga Lake from the 303(d) list for pathogenic bacteria

Trumansburg Wastewater Plant upgrades



Seneca-Keuka 9E Plan



Over 7,400 regulatory-quality measurements of water quality collected from 52 monitoring locations during the past decade. Explore these data on CSI's public Water Quality Database at database.communityscience.org



Validate the Cayuga Lake Modeling Project's model of Fall Creek phosphorus loading

Peer-reviewed research

Journal of Environmental Management
Volume 354, March 2024, 120128

Research article
Harmful algal blooms in Cayuga lake, NY: From microbiome analysis to eDNA monitoring

Nan Wang ^a, Noah Mark ^b, Nathaniel Launer ^b, Adrianna Hirtler ^b, Claire Weston ^b, Lisa Cleckner ^c, Chloe Faehndrich ^d, Lydia LaGorga ^a, Lingzi Xia ^a, Daniel Pyrek ^a, Stephen M. Penningroth ^b, Ruth E. Richardson ^a

S1833 is now on the Senate floor calendar.

Senate Bill S1833
Enacts the "harmful algal bloom monitoring and prevention act"

Sponsor:
MAY

Inform Policy

Agenda

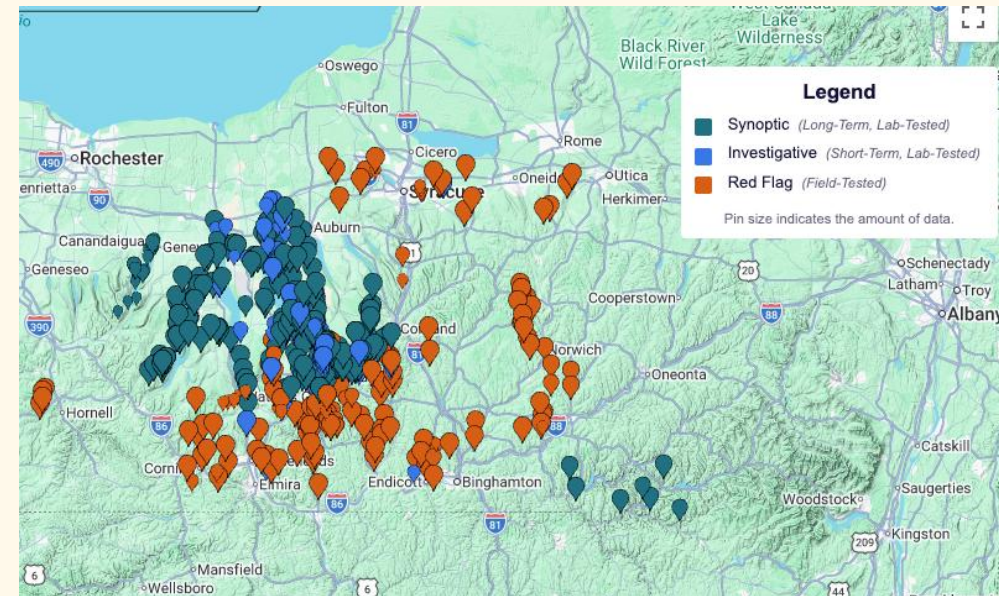
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CSI Streams and Lakes Chemistry Database

CSI's Water Quality Database



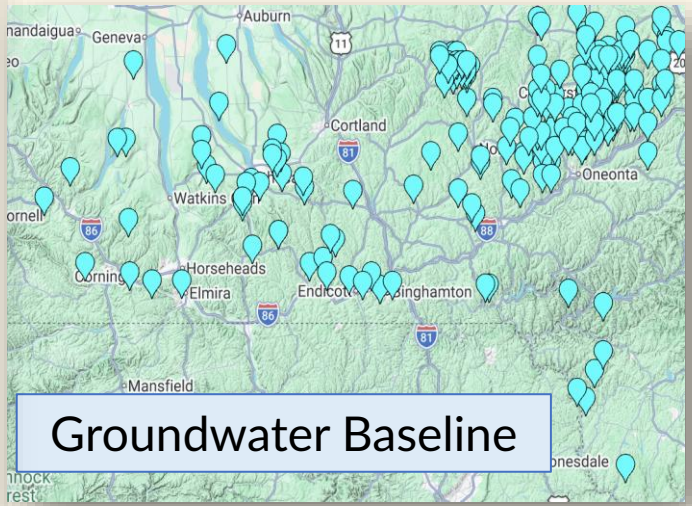
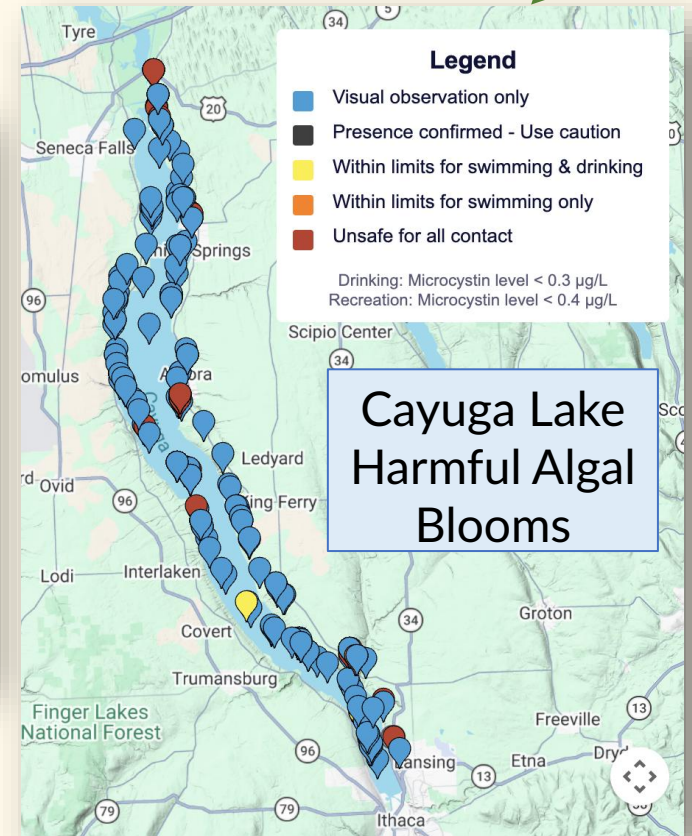
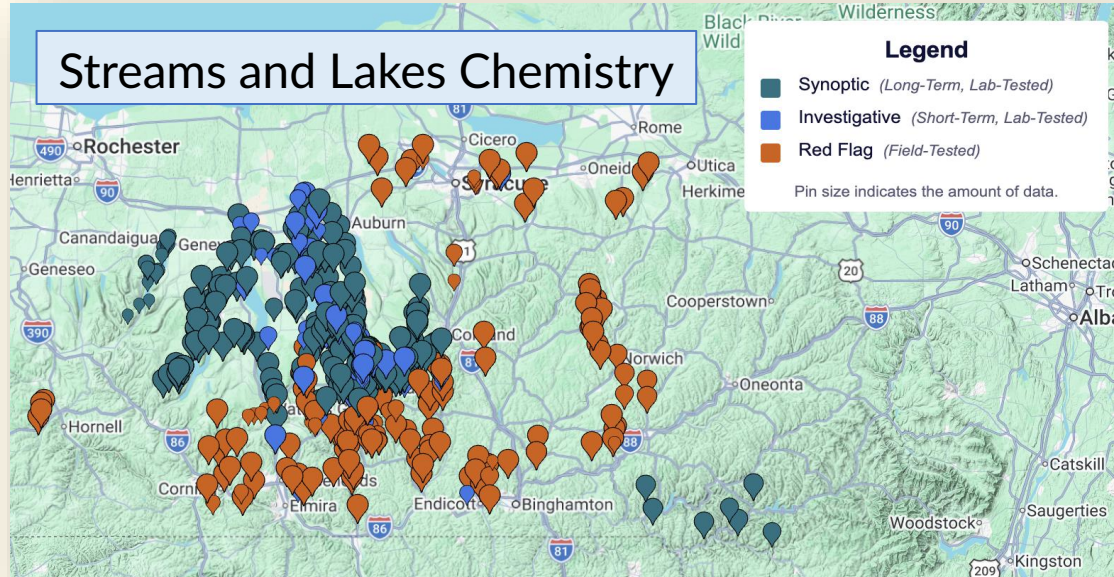
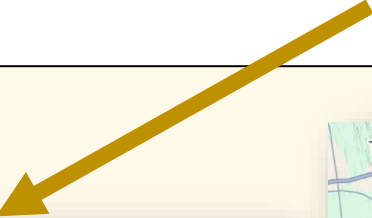
www.database.communityscience.org

CSI's Water Quality Database – 3 Sections

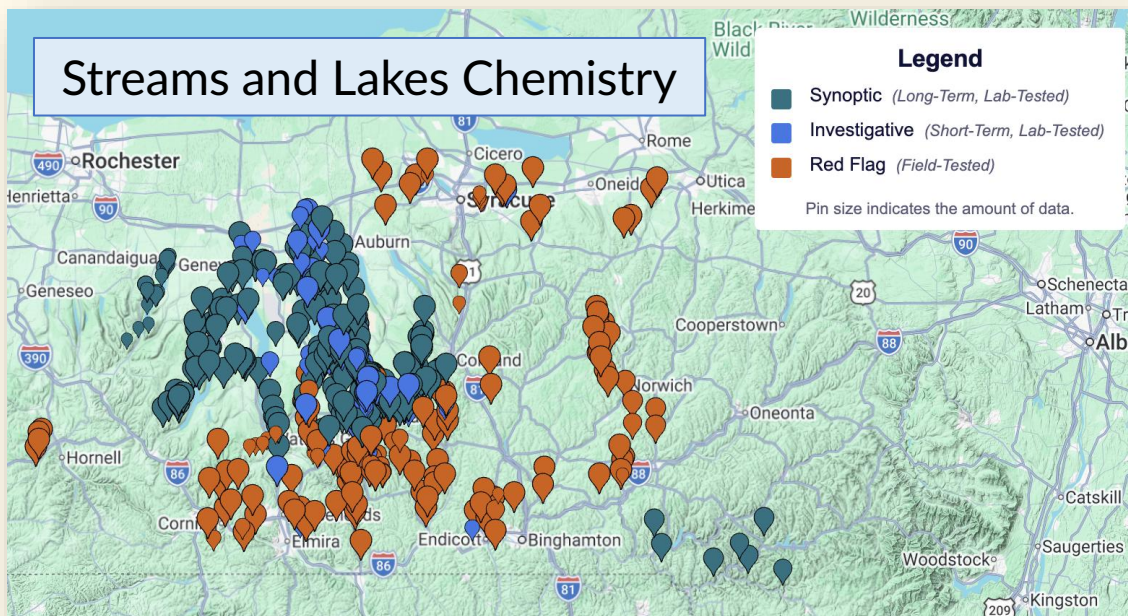
 Community Science Institute Database
Partnering with Communities to Protect Water

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[About](#) [Streams and Lakes Chemistry](#) [Harmful Algal Blooms \(HABs\)](#) [Groundwater Baseline](#)



“Streams and Lakes Chemistry” Water Quality Indicators

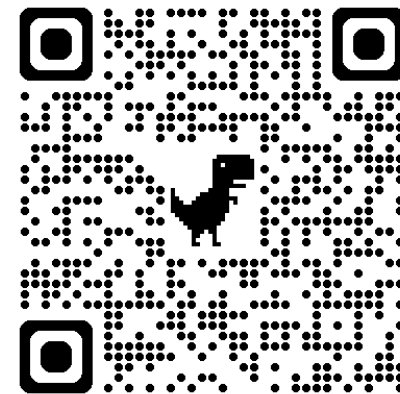


Red Flag: Field-Tested

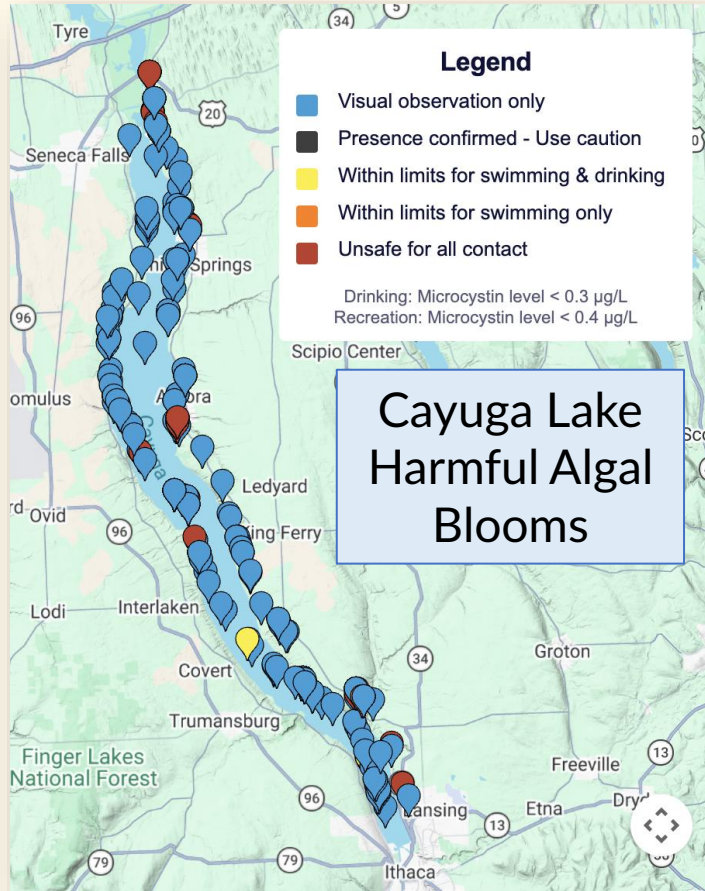
- pH
- Total Hardness
- Conductivity
- Dissolved Oxygen
- Temperature

Synoptic: Long-term, Lab-Tested

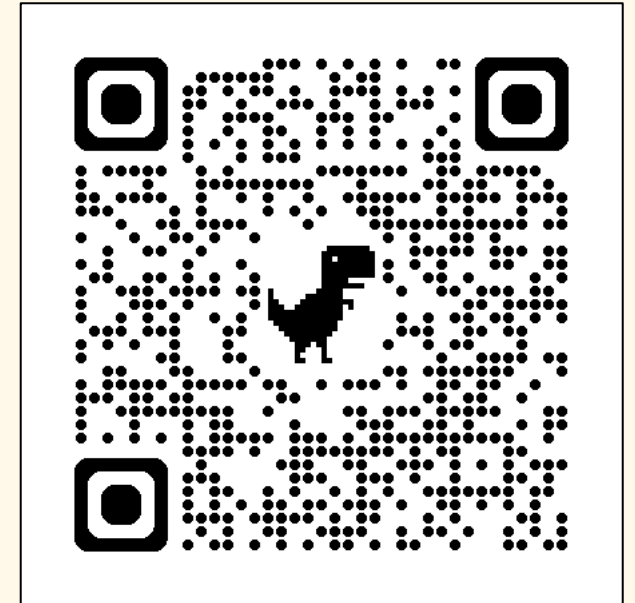
- pH
- Alkalinity
- Total Hardness
- *E.coli*
- Nutrients
 - Total Phosphorus
 - Soluble Reactive Phosphorus
 - Nitrate-+Nitrite-Nitrogen
 - Total Kjeldahl Nitrogen
- Turbidity
- Total Suspended Solids
- Conductivity
- Chloride
- Chlorophyll (lakes only)



“Harmful Algal Blooms” HAB Report Data



- **Where**
 - Latitude and Longitude
 - Segment
 - County
 - Extent
- **When**
 - Bloom Reported
 - Bloom Sampled (if applicable)
- **What**
 - Bloom Genera
 - Present
 - Dominant
 - Bloom Chemistry
 - Microcystin Concentration
 - Chlorophyll a Concentration
- **Other**
 - Bloom Description



Agenda

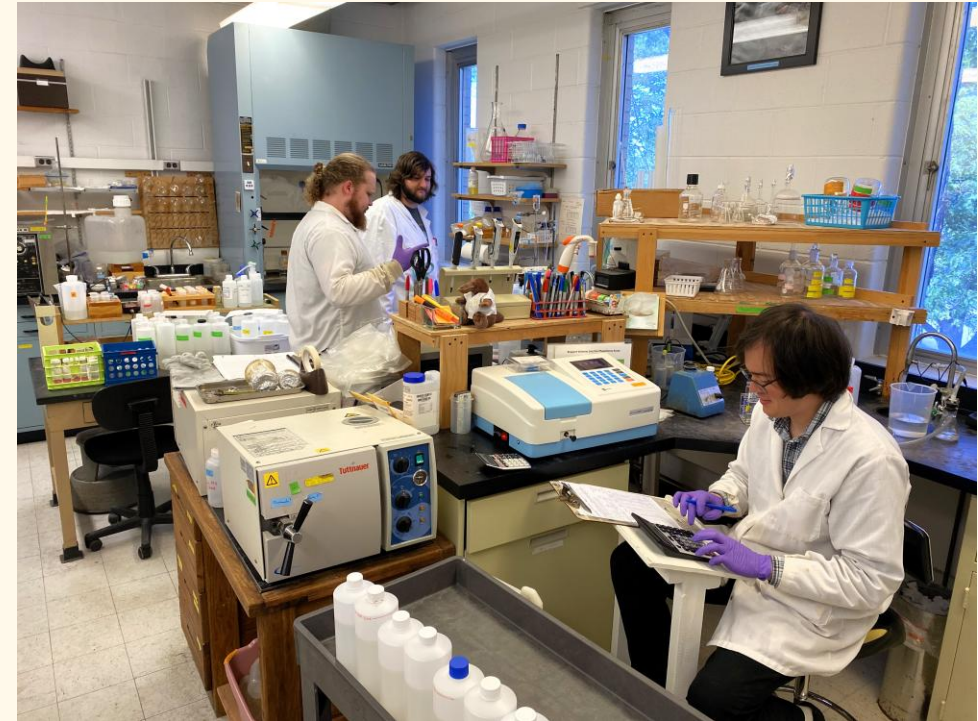
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CSI's Water Testing Lab

Fee-for-Service Water Testing

We test water from private wells, municipal water systems, swimming beaches, effluents, and more!



We serve:

Residents

- Home sales
- Routine testing
- Health/taste/quality concerns

Local Businesses

- Farms
- Restaurants
- Breweries
- Wineries
- Mobile Home Parks
- Apartment Buildings
- Daycares

Government Agencies

- Tompkins County Health Dept.
- NY State Parks
- NYS Dept. of Environmental Conservation
- US Army Corp of Engineers
- NYS Dept. of Health

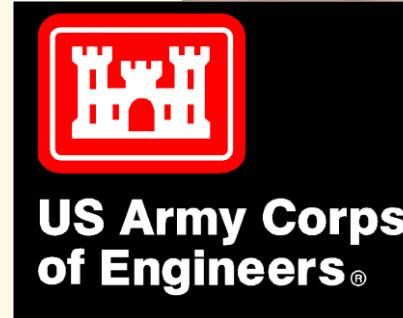
NYSDOH-ELAP #11790

Public Health Impacts



New York State
Parks, Recreation and
Historic Preservation

At least weekly swimming area testing



Fluridone testing for
Hydrilla treatment



Water treatment plant
testing for microcystin



Routine drinking water testing for local
businesses

Resources

FAQ page on CSI's website

Handouts on common questions such as how to shock a well, iron and manganese bacteria, and microcystin in beach wells

Referrals for local water treatment specialists

Sample bottles available for pick up at:

- CSI's Lab by the Ithaca Airport
- Greenstar on Cascadilla Street
- ShurSave in Trumansburg

Water Testing Frequently Asked Questions

- + How do I know if my water is safe for drinking?
- + What should I test my water for?
- + How can I get my water tested?
- + What kinds of toxic chemicals might be in my water?
- + My water tested positive for coliform bacteria. What should I do?
- + What can I do to take care of my well?
- + How can my water get contaminated?
- + How often should I test my water?
- + What kind of water treatment system should I install?
- + My water looks, tastes, or smells funny. What should I do?
- + I'm concerned about hydrofracking contaminating my well. What should I do?
- + What's the difference between water in streams and lakes and the water in a well?
- + How does my well water quality compare to others in this region?

Water Testing Assistance Program

50% discount on in-house water tests for those facing financial hardship

We believe that everyone has the right to know if their water is safe to drink!

WATER TESTING ASSISTANCE PROGRAM

Making reliable drinking water testing affordable for everyone



Why test your water?

Access to clean, safe drinking water is a basic human need. For households on private wells, routine testing is the only way to ensure your water is free from harmful contaminants.

But the cost of regulatory-quality testing can be a barrier for low-income families. That's why **Community Science Institute (CSI)** has launched the Water Testing Assistance Program.



WHAT CSI OFFERS

- 50% discount on CSI's in-house drinking water tests for low-income households
- Personalized testing recommendations from CSI's scientific staff
- Certified testing for contaminants such as:
 - Bacteria (total coliform/*E.coli*)
 - Nitrate + Nitrite
 - and more!

HOW TO ACCESS ASSISTANCE

- Talk to a CSI staff member
 - ☎ 607-257-6606
 - ✉ info@communityscience.org
 - 📍 283 Langmuir Lab 95 Brown Rd. Ithaca, NY
- Referrals also available through trusted partners:
 - Tompkins County Whole Health's Healthy Neighborhoods Program
 - Ithaca Neighborhood Housing Services (INHS)

This program was made possible thanks to a generous grant from the Rotary Club of Ithaca



CSI is a 501(c)3 non-profit and state-certified water testing lab (NYSDOH-ELAP #11790)



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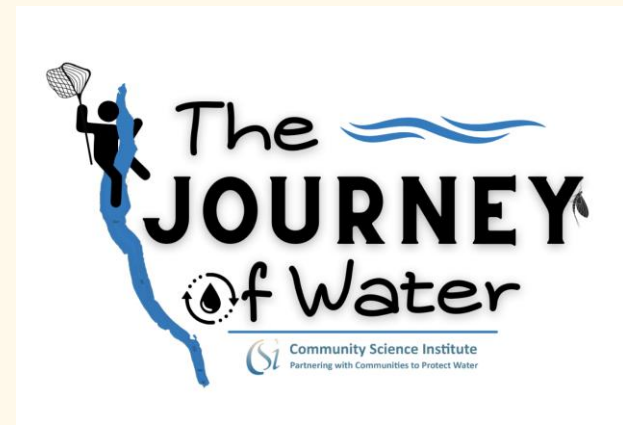
Fee-for-Service Water Testing

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Wild Wetlands, Fantastic Filters Program

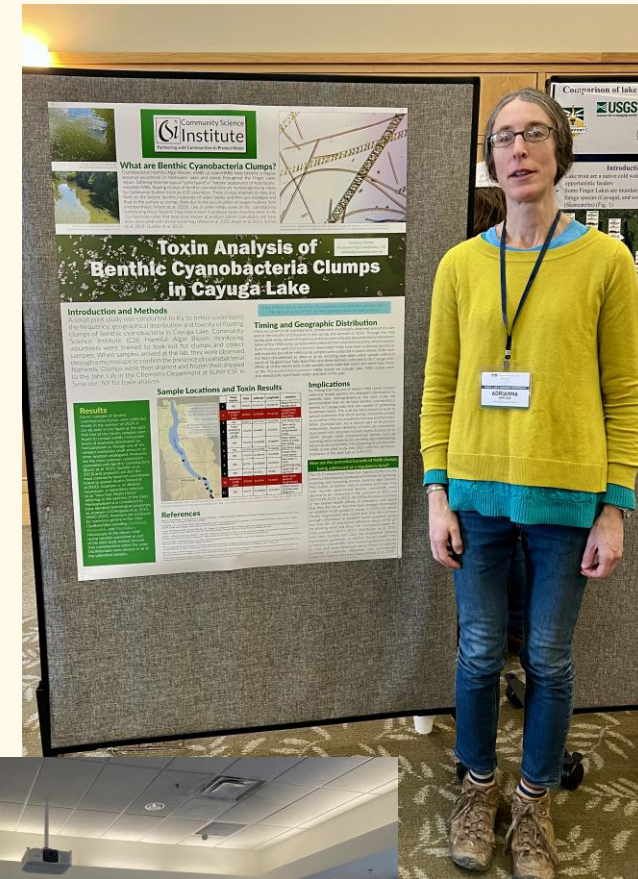
Journey of Water Summer Youth Education Series



PARK
FOUNDATION



Public Events and Presentations



Educational Materials

2025 Edition

The Water Bulletin
The Newsletter of the Community Science Institute

Inside this Edition:

- CSI's Statewide Impact: Advancing Science-Based Water Stewardship Across New York Pages 1 - 2
- Reports vs. Reality: Refining How We Read Cayuga Lake's Harmful Algal Blooms Pages 3 - 5
- Where Bugs and Water Quality Hide: Reflecting on Decades of Biomonitoring with CSI Pages 6 - 8
- Illuminating Water Toxicity with the Bioluminescence Inhibition Assay Pages 9 - 10
- Science and Community Meet in the Owego Creek Watershed Pages 11 - 13
- CSI Board and Staff Acknowledgements, References Cited, & Glossary Page 14

www.communityscience.org | (607) 257-6606 | info@communityscience.org

Annual Water Bulletin Newsletters

Water Quality Fact Sheets

Online Learning Materials

Community Science Institute
Partnering with Communities to Protect Water

This striking photo was captured by one of our dedicated volunteers in Varick, on the west side of Cayuga Lake. It showcases a sediment plume flowing from the mouth of a creek—officially labeled by FEMA as "Unnamed Tributary #3 to Cayuga Lake in the Town of Varick." A sediment plume is a visible cloud of suspended particles spreading from a disturbance, in this case, caused by heavy rainfall and melting snow and ice from the previous day's weather. This natural phenomenon is a great reminder of how land and water are closely connected—highlighting the importance of protecting our watersheds from excess runoff!

Photo: Thomas Björkman, Synoptic Stream Monitoring Volunteer
02/27/25 - Varick, NY

February 2025 Monthly Update

Monthly Email Updates

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Journey of Water – Water Quality Cruise

Acknowledgements



Dedicated volunteers!



CSI Staff Past and Present



Business Members



FARMER GROUP



Partners



FINGERLAKES
Wealth Management



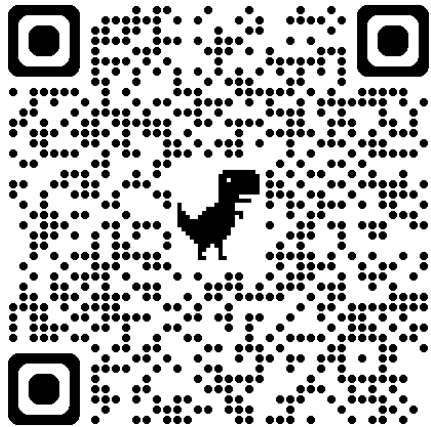
CSI Members



HALCO
HOME SOLUTIONS

Stay in touch!

Join CSI's email list for monthly updates



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02/27/25 - Varick, NY

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@communityscienceinstitute

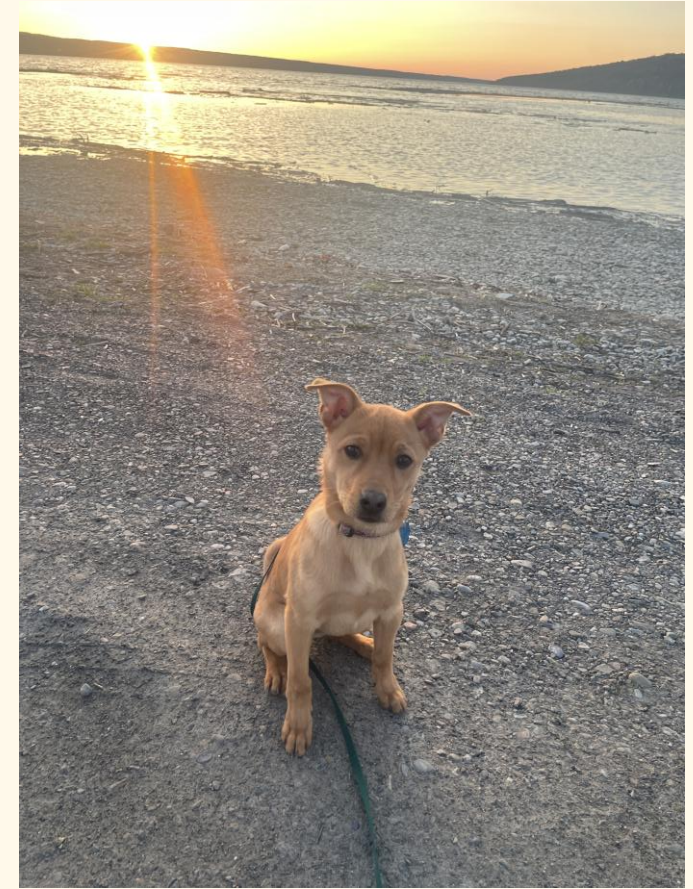
Set up a meeting with me

gshidemantle@communityscience.org

(607) 257-6606

www.communityscience.org

Q&A



Kita and Dolly enjoying the Finger Lakes