

Cayuga Lake HABs Volunteer Monitoring Information Packet – 2021

Dear Cayuga Lake HABs Harriers,

Welcome to the Cayuga Lake HABs Monitoring Program! For many of you, this will be your fourth summer monitoring blooms on Cayuga Lake, and for some, it will be your first! Either way, it seems that each time we go out to our shorelines, we learn something new about HABs. After three seasons of monitoring blooms, the datasets that we continue to build together are revealing interesting patterns of bloom occurrence. Thus far, it seems that blooms typically occur in early July and then again in early September. The blooms seem to occur most frequently in the southern and northern ends of the lake and interesting, the blooms with the highest microcystin toxin levels seem to be those that are dominated by a genus of cyanobacteria called *Microcystis*

which seem to bloom most frequently in the northern end of the lake. However, in 2020 these patterns shifted, and high-toxin *Microcystis* blooms occurred in the southern end of the lake as well ([Fall 2020 Water Bulletin, CSI, 2020](#)). Revealing these patterns – which may be useful for informing risk management strategies and our understanding of why blooms occur on the lake - is an invaluable result of your work to monitor blooms. Equally important, your continued efforts keep lake-goers safe from exposure to these harmful blooms and help inform both a regional and statewide audience. In 2020, our HABs Reporting Page received over 40,000 views! Thank you for your continued help monitoring Cayuga Lake. We look forward to another summer monitoring HABs together.

Harrier: [har-ee-er] noun, from the verb harry, to harass or attack repeatedly. Example: A Harrier Hawk attacks small game.



A widespread harmful algal bloom that occurred along a roughly two-mile stretch of shoreline on September 8, 2020. Photo by HABs Harriers Lloyd and Joni Dropkin.

Context and Objectives

Initiated in 2018, the Cayuga Lake HABs Monitoring Program is led by the Community Science Institute (CSI) in collaboration with the Cayuga Lake Watershed Network (CLWN) and Discover Cayuga Lake (DCL). We partner with over 90 HABs Harrier volunteers around the lake who monitor their shoreline once per week from July - September. Our program operates under the general auspices of the New York State Department of Environmental Conservation (NYSDEC). The objective of this monitoring program is to:

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1. Maintain vigilant surveillance of the Cayuga Lake shoreline to observe and sample suspicious algal blooms so that users of the water in affected areas may be quickly alerted to the potential threat the bloom may pose with accurate information and results of lab analyses; and to
2. Develop long-term HABs datasets that can help us understand where, and under what conditions, cyanobacteria bloom in Cayuga Lake and the level of toxin that is present when a bloom occurs. Establishing robust datasets is the first step in effectively managing HABs.

Training Workshop

Before you can begin your harrying duties, you'll need to attend one of three workshops offered by CSI. At the workshop, the Cayuga Lake HABs Monitoring Program Coordinator at CSI and a representative from the DEC will explain what cyanobacteria are and how to recognize and distinguish blooms of cyanobacteria from other types of algal blooms or common non-bloom lookalikes. You will also be provided with sampling instructions, kits for sample collection, and other helpful resources.

As part of the training workshop, immediately following NYSDEC's presentation, staff from CSI or CLWN will consult with you to select your shoreline monitoring area (zone). We will also review essential program logistics including sample chain of custody and drop-off procedures.

Due to the ongoing risk presented by COVID-19, these training sessions will again be held online in 2021. An electronic invitation for each training session can be found in the Appendix along with instructions and helpful tips for joining a Zoom meeting.

Training Dates

Wednesday, June 16th

10:00 – 11:30 AM

Online Webinar

&

6:00 – 7:30 PM

Online Webinar

Friday, June 18th

1:00 – 2:30 PM

Online Webinar

The recorded webinar(s) will become available for review on CSI's website following these dates.

Survey Period and Frequency:

- Once a week, every week, June 27th – September 2nd, 2021

The 2021 Cayuga Lake HABs monitoring season will start the week of June 27th and continue through the last week September. This survey period reflects the time frame when cyanobacteria blooms are most likely to occur on Cayuga Lake based on prior reports and our ongoing dataset of HABs occurrences. The Cayuga Lake HABs Hotline (habshotline@gmail.com or, alternatively, 607-257-6606 during normal business hours) will be open year-round, in order to allow time to manage any issues that may arise or to accept any suspicious bloom reports outside of the official HABs monitoring season.

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Weekly Survey Schedule:

Once a week, as a HABs Harrier, you'll walk, kayak, or boat along the length of your monitoring zone to look for cyanobacteria blooms. For help in recognizing suspicious blooms, you can refer to the pictures found within the Reference Materials section on page 7 or watch the [HABs Identification Training Video](#) on the [HABs Monitoring information page](#) found on our website at www.communityscience.org.

You can survey your shoreline any day of the week, preferably between the hours of 10 AM and 2 PM, when cyanobacteria blooms are most likely to be near, or at, the water's surface during direct midday sunlight.

It is recommended that you make a practice of monitoring your shoreline on the same day of the week, however conducting your survey on different days may be necessary due to adverse conditions such as windy, rough water, or rainfall. For example, if you plan on surveying your zone on a Sunday and conditions are not right, move your day to Monday or Tuesday when conditions are more suitable for survey work. You may conduct additional surveys of your zone during the week. You must submit a "No Bloom Report" for each survey.

How to Monitor for HABs

1. **Prepare** to monitor your zone by making sure you have the following items with you:
 - a. Sample Kit: 250 ml or 500 ml amber glass bottle, gloves, and "CSI Shoreline Survey/ Chain of Custody" form.
 - i. *You will need these materials if you observe a bloom.
 - b. Camera or cell phone with camera
 - c. Tool to determine GPS coordinates (GoogleMaps works or the Compass App on a smartphone both work well).
2. **Survey** the full length of your zone for one of two possible outcomes:
 - a. No blooms observed
 - b. Suspicious bloom observed
3. **Take the following actions** based on your observations:
 - a. **No Bloom** – file a "[No Bloom Report](#)" using the form available on the HABs Monitoring information page on our website.
 - b. **Suspicious Bloom**
 - i. Take two pictures of the suspicious bloom: one close up to show bloom composition and one from far away to show bloom extent.
 - ii. Label the sample bottle with the following information: **sample collector's name, waterbody name, sample code (21-[four-digit zone code]-B[consecutive number of bloom that has occurred in your zone this year]), date, and time.**
 1. If you are not able to determine the GPS coordinates, instead provide a street address or a physical landmark near the observed bloom.
 - iii. Carefully collect sample following NYSDEC protocol, being sure to wear gloves.
 - iv. Fill out the "CSI Shoreline Survey Form/Chain of Custody." Make sure information on the form matches the label on the sample bottle.

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- v. Email pictures of the bloom and the “CSI Shoreline Survey Form/Chain of Custody” to habshotline@gmail.com immediately. The email’s subject line should be formatted as follows: CYANOBACTERIA BLOOM PICTURES *zone#* *GPS coordinates/landmarks* *date* *time* EXP. CYANOBACTERIA BLOOM PICTURES, zone 5, 42.6761 -76.7189, 8/23/18, 1330

OR

- vi. Report the suspicious bloom on CSI’s online “Report a HAB” form at www.communityscience.org. You must fill all the required fields to submit the form online. Ensure that you have also attached the two photos of the suspicious bloom before submitting the form.

iv. Store sample in a cool, dark place (preferably on ice or refrigerated) until you can deliver it **on ice**, along with the “CSI Shoreline Survey/ Chain of Custody” form, to the CSI lab at 95 Brown Rd, Room 283, Ithaca, NY. If possible, the sample is to be delivered the same day it is collected, but **no later than 4:00 PM the following day**.

For further sample drop-off considerations, after hours drop-off, and using our sample relay system, please see the Sample Drop-off and Transport section below.

Sample Drop-off and Transport

The Community Science Institute is located at 283 Langmuir Lab, 95 Brown Rd, Ithaca, NY and is open Monday – Friday, 9:00 AM – 5:00 PM. If possible, samples should be dropped off at the CSI lab between 9:00 AM and 4:00 PM on weekdays. When you arrive, please give us a call at **(607) 257-6606** and a staff member at the lab will meet with you to accept the sample, complete the chain of custody form, and provide you with a new sampling kit.

If you are unable to transport the sample all the way to the CSI lab in Ithaca, there is a bloom relay system that may be used on an as-needed basis. It is a system of two mid-way sample drop-off locations, one in the Village of Aurora and the other in the Town of Ovid. If you need to use this drop-off system to transport samples to the lab please contact CSI lab or email the habshotline@gmail.com and a member of the HABs Leadership Team will respond to help coordinate sample transportation.

If you are unable to drop off a sample between 9:00 and 4:00 a weekday, an after-hours drop-off location is available behind the Langmuir Lab building in a small covered structure near the dumpsters (Figure 1). Place samples and completed “CSI Shoreline Survey Form/Chain of Custody” in the provided cooler inside the fenced structure. **Please be sure to fill out the chain of custody information at the bottom of the form.** This is the date and time that the sample was dropped off, not the date and time that the sample was collected. In this structure there will also be a box containing fresh sampling kits for you to take if you drop off a sample. **If you decide to drop your sample off in this cooler, you must notify a staff person at CSI by phone at (607) 257-6606 or email at info@communityscience.org.**

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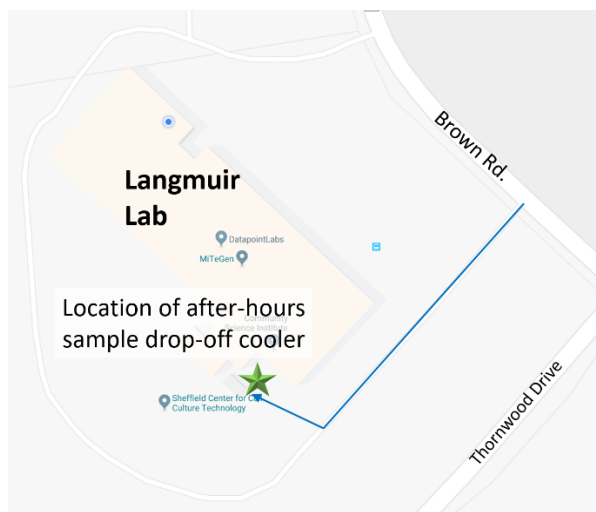
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Figure 1) HABs sample drop-off location for the weekend and after normal business hours



Map to drop-off location: Follow the blue arrow to the drop-off location marked by the green star. The cooler will be inside the fenced structure (see right).



Fenced structure with cooler: The door to the structure will be unlocked. Please close the door after depositing the sample.

What happens to the samples?

CSI will visually examine suspicious bloom samples for cyanobacteria using microscopy and determine the concentration of total chlorophyll a as a measure of bloom biomass. Together, these two measurements will help provide confirmation that the bloom sampled was a HAB. CSI will also analyze HAB samples for microcystin (dependent on funding) using the certified EPA method 546.

Where are the results reported?

CSI will report all results as they become available from our lab, with a goal of reporting all results for suspicious blooms within 24-72 hours. Results will be posted on CSI's website at www.communityscience.org on our [Cayuga Lake HABs Reporting Page](#). Results will include the cyanobacteria taxa identified in the sample, and total chlorophyll a and microcystin concentrations. CSI lab will be reporting all suspicious bloom reports and results from bloom sample analysis at CSI lab in Ithaca to the NYSDEC on a weekly basis. These HABs data from Cayuga Lake will then be reported on the NYSDEC's NYHABs state-wide HABs reporting database. The link for the NYHABs reporting database is: <https://nysdec.maps.arcgis.com/apps/webappviewer/index.html?id=ae91142c812a4ab997ba739ed9723e6e>

In addition, CSI will send a summary of results as well as survey reminders to HABs Harriers every week during the monitoring season. We will also notify regional health departments, local stakeholders, and the general public via email, press releases, website articles and social media with the recent reports of

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suspicious bloom and the results of suspicious bloom sample analysis as they become available. The CLWN will be sending out weekly summaries of recent bloom activity on Cayuga Lake to the public during the summer months. To receive these weekly updates, please contact CLWN at the email listed below.

Reference Materials and Contact Information

The process described in this document is presented as a flowchart in Attachment A. Please take a moment to look at the flowchart, identify your activities as a volunteer (in green boxes), and note how they are critical to the entire process of monitoring HABs on Cayuga Lake.

HABs Harriers can find an electronic copy of NYSDEC's HABs Volunteer Guide on CSI's [Harmful Algal Bloom Monitoring information page](#) on our website (see Resources below). This guide has excellent photos of HABs that you can use as a reference to help you identify suspicious algal blooms. Recorded training webinars, bloom identification videos, an electronic copy of this guide, and other resources can also be found on that page.

The NYSDEC maintains an excellent website at: on.ny.gov/HAB that can be referred to for additional information.

Please do not hesitate to contact your local HABs Leadership Team if you have any questions!

Community Science Institute

Nathaniel Launer, *Director of Outreach, Cayuga Lake HABs Monitoring Program Coordinator*
nathaniel.launer@communityscience.org | (607) 257-6606

Aleah Young, *Public Science Intern*, | (607) 257-6606

Cayuga Lake Watershed Network

Jennifer Tufano, *Programs Manager*, programs@cayugalake.org

Northwest Quadrant Leader

Bill Ebert – wsebert@yahoo.com

Northeast Quadrant Leader

Christy VanArnum – christyvanarnum95@yahoo.com

Southeast Quadrant Leader

Glenn Ratajczak - gratajczak@boltonpoint.org

Southwest Quadrant Leader

John Abel - jfa5@cornell.edu

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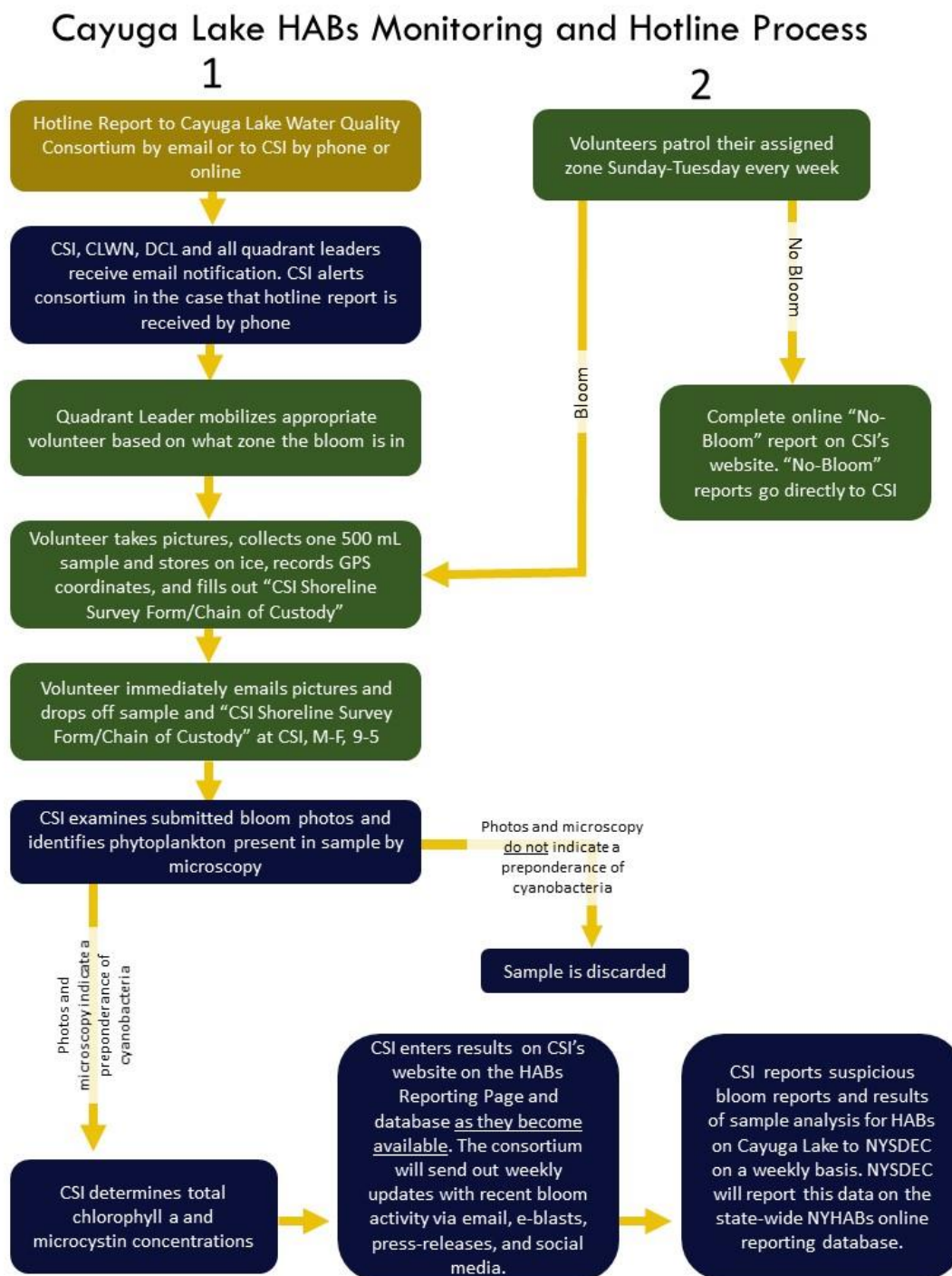
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Appendix

Attachment A: 2020 Cayuga Lake HABs Monitoring Flowchart



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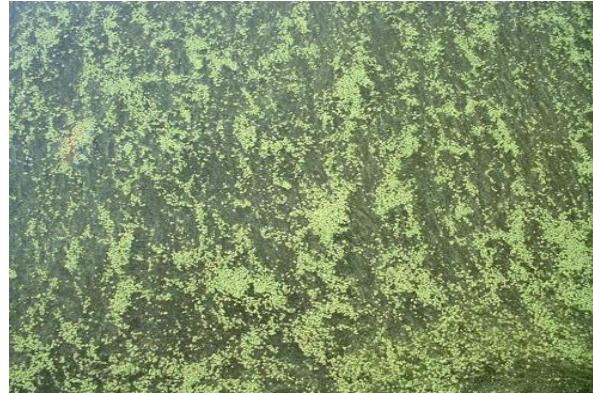
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<lab@communityscience.org>

Attachment B: NYSDEC HABs Identification Photos



HABs may look like parallel streaks, usually green, on the water surface.



HABs may look like green dots, clumps, or globs on the water surface.



HABs may look like blue, green, or white spilled paint on the water surface.



HABs may make the water look bright green or like pea soup.

For more information about how to identify a HAB, please visit our HABs Monitoring Information page (www.communityscience.org/volunteer/harmful-algal-bloom-monitoring), or watch a short HABs Identification Tricks and Tips video created by the NYSDEC (www.youtube.com/watch?v=8nL_s77FV-o).

**Attachment C: Picture of what a Cayuga Lake “No Bloom” report looks like online**

(A link that will give you access to this Google form will be provided in the coming weeks. Access to this form can also be found on CSI’s website under the tab “Harmful Algal Bloom Monitoring”)

Cayuga Lake No-Bloom Report

Complete this form following weekly shoreline survey only if no bloom is observed.

* Required

Name of HABs Harrier *

Your answer

Waterbody Name *

Your answer

Zone Number *

Your answer

Date the Zone Survey was Completed *

Date

mm/dd/yyyy

Time the Zone Survey was Completed *

Time

: AM

Observations

Your answer

SUBMIT

Never submit passwords through Google Forms.

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Attachment D: Volunteer Shoreline Survey/ Chain of Custody Form

This form should be filled out entirely each time you collect a HABs sample and submit it to CSI lab.

Volunteer

Suspicious Cyanobacteria Bloom Sample Tracking Sheet

Bloom Code (Lab Use Only): _____

Community Science Institute



www.communityscience.org

Volunteer Partnerships

Watershed Science

Online Public Database

Cayuga Lake Shoreline Survey and Certified Lab Chain of Custody Form

Suspicious Bloom Sampling and Tracking Procedure

1. Take at least two pictures of bloom: one close-up to show bloom detail and one from far away to show bloom extent.
2. Report bloom by emailing pictures, GPS Coordinates, location description, date and time of observation to habshotline@gmail.com OR on CSI's website at www.communityscience.org.
3. Collect sample in the provided glass sampling container. Wear Gloves! Fill out the label with sample collector's name, zone number, date, and time sampled.
4. Complete this chain-of-custody document for each sample. Information must match the information on the corresponding sample bottle and photos.

Name of person who collected bloom sample:		Email:	
Name of person who observed bloom (if different):		Email:	
Cayuga Lake quadrant and zone number where bloom was collected: _____			
Exact Location of Bloom			
1.)	GPS Coordinates	Latitude: _____	Longitude: _____
2.)	Nearest Address	_____	
3.)	Location Description	_____	
Date that suspicious bloom sample was collected:		Time that suspicious bloom sample was collected:	
Date that suspicious bloom was observed:		Time that suspicious bloom was observed:	
Bloom Extent (See back for descriptions):		<input type="checkbox"/> Pictures, date, time, GPS location, collector's name, and zone number have been emailed to habshotline@gmail.com OR <input type="checkbox"/> Bloom has been reported on CSI's website at www.communityscience.org	
<input type="checkbox"/>	Small Localized (few properties)		
<input type="checkbox"/>	Large Localized (many properties)		
<input type="checkbox"/>	Widespread		
Sample Preservation for toxin testing (check all that apply)		<input type="checkbox"/> On ice	<input type="checkbox"/> If no ice is available, drive to CSI lab immediately to prevent deterioration
		<input type="checkbox"/>	<input type="checkbox"/> Refrigerate if sample is collected after business hours

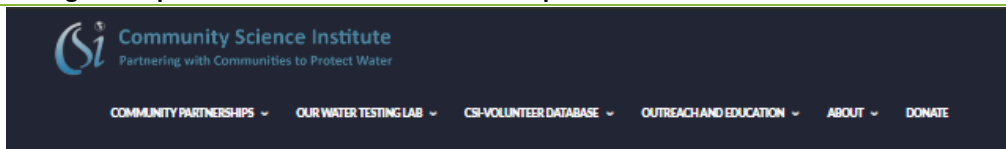
Chain of Custody Documentation						
	Date	Time	Relinquished By	Accepted By	# Containers	Temp. Upon Receipt
1.	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____

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Attachment E: Picture of the CSI's online suspicious bloom reporting form

(This form can be access on CSI's website at www.communityscience.org under the tab "Harmful Algal Bloom Monitoring. All required fields must be filled out and pictures must be attached to submit the report.



Fill out the form below to report a harmful algal bloom.

Please be sure to include your personal information (your name, email, and phone number), bloom information (observation date and time and location of the bloom), and two pictures (one close up to show bloom composition and one from far away to show bloom extent).

A member of the HABs monitoring consortium or one of the Quadrant Leaders will receive your report and follow up with you as soon as possible.

Thank you for taking part in the Cayuga Lake HABs Monitoring Program! By reporting this bloom you've aided the collection of valuable cyanobacteria data and played a significant role in protecting public health.

If you have any questions or are interested in monitoring Cayuga Lake's shoreline on a routine basis by becoming a HABs Harrier, contact Cayuga Lake's HABs Monitoring Program Coordinator, Nathaniel Launer, at nathaniel.launer@communityscience.org or Cayuga Lake Watershed Network's Steward, Hilary Lambert, at steward@cayugalake.org

Name (required)

Your Email (required)

Your Phone Number (optional)

Date bloom was observed (required)

mm/dd/yyyy

Time bloom was observed (required)

Location of bloom - Exact (GPS coordinates or address) (required)

Location of bloom - Described (landmarks and nearby points of interest) (required)

Photo 1 (optional)

Choose File No file chosen

Photo 2 (optional)

Choose File No file chosen

Additional Information (optional)

SEND

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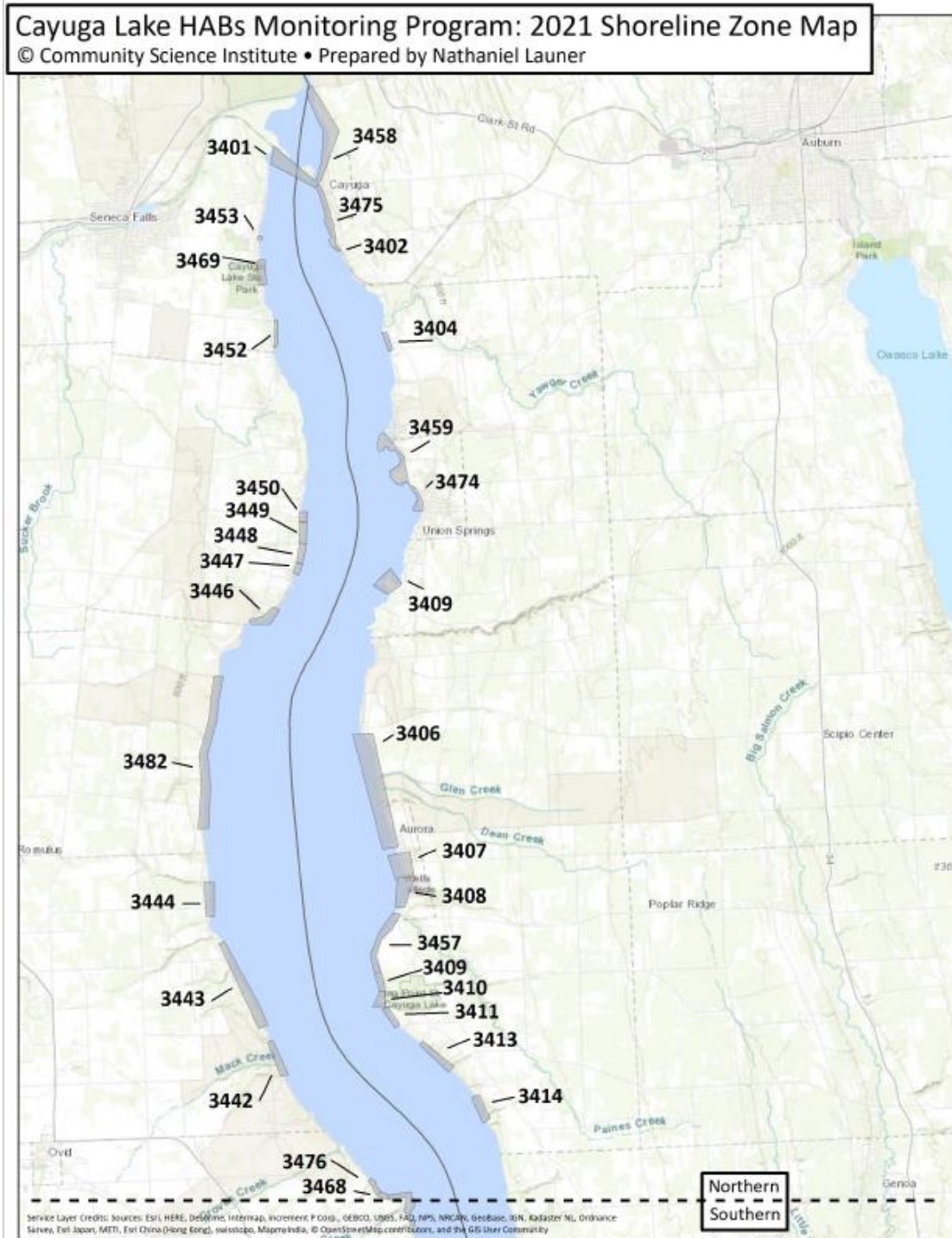
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Attachment F: Map of HABs Monitoring Zones

(This map is current as of 6/18/2021. Additional zones may be created as new volunteers are welcomed to the program prior to June 27, 2021. These zones can also be found on the interactive HABs Reporting Map on our Cayuga Lake HABs Reporting Page on our website).



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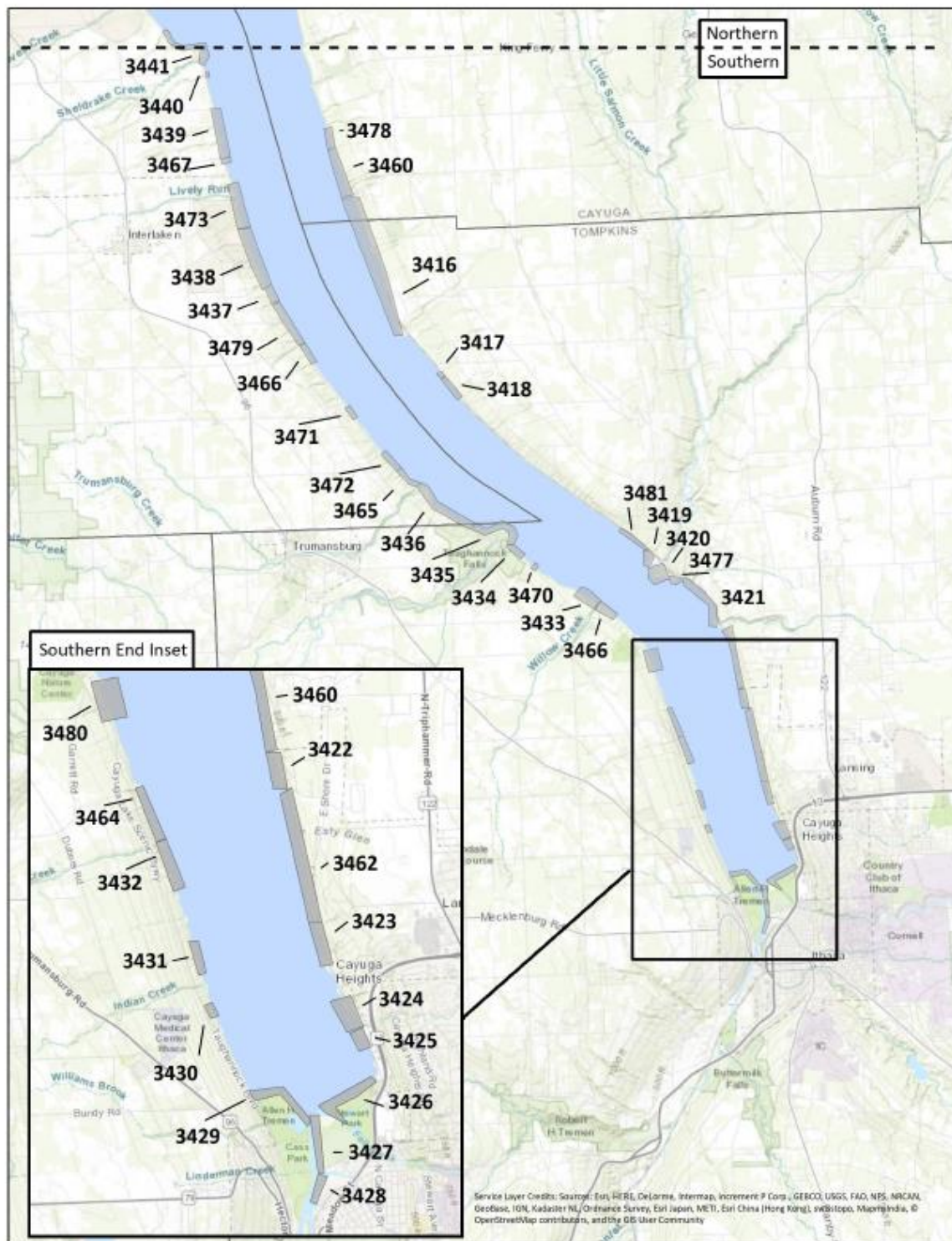
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