



The Water Bulletin

Community Science Institute

SPRING 2013

DID YOU KNOW?

- CSI volunteers monitor over 1700 square miles of drainage area. That's bigger than Rhode Island!
- CSI is certified for many drinking water tests and can test your well water. Members get special discounts!
- Tompkins County spans two major watersheds—the Chesapeake Bay and the Great Lakes Basin. Do you know what watershed you live in?

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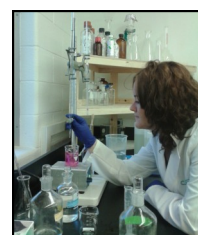
CSI Assesses Risks From Fracking

CSI collects comprehensive baseline data for Cayuga Lake streams

Very little is known about the risks to water from hydrofracking. It's not hard to find stories of fishkills, flammable faucets, strange rashes, dead livestock, or explosions near hydrofracking operations. It's also not hard to find a strong narrative from the shale gas industry about safety precautions, multiple well casings, best management practices, and a commitment to responsible gas extraction. The reality is that we're living through a massive scientific experiment where only time will tell what, if any, impact hydrofracking will have on water. ("Hydrofracking" refers to high volume horizontal hydraulic fracturing along lateral bores up to a mile long and is sometimes known as "unconventional" gas development.)

The Finger Lakes region is well known for its clean water. In

Tompkins County, where nearly every town has a ban or moratorium on hydrofracking, water resources - both streams and lakes - are invaluable assets. CSI began monitoring Cayuga Lake streams in 2002 to measure the impact of agriculture and urban development. This "Synoptic Sampling" monitoring program has been at the core of CSI's work, until hydrofracking came along. Late in 2009, when drilling



Chemical Analyst Casey Halton tests samples for chloride, an indicator for brine waste

seemed imminent, it became clear that our monitoring program needed to include

more parameters specifically related to hydrofracking. Our Synoptic Sampling program already included tests that are pertinent to both urban development and hydrofracking, including: total hardness, chlorides, and conductivity, to name a few.

In 2012, thanks to support from the Tompkins County Legislature, CSI collected and analyzed samples from 35 stream locations in each of the major watersheds flowing to the Southern end of Cayuga Lake: Trumansburg Creek, Taughannock Creek, the Cayuga Inlet, Six Mile Creek, Fall Creek and Virgil Creek. In addition to the parameters normally included as part of Synoptic Sampling, tests were added for gross alpha & beta radioactivity, barium, strontium, sulfate, chemical oxygen demand, surfactants, and total dissolved solids.

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A Message from CSI's President

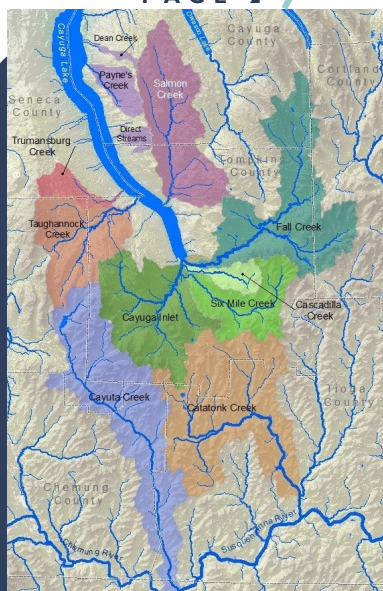
The Community Science Institute was founded over a decade ago to empower our local citizens to understand, track, and knowledgeably advocate for the highest water quality in our creeks, streams, and lakes. CSI has made remarkable advances toward achieving this important goal in a relatively short time period. Now, as new potential challenges to our water have surfaced, CSI is growing to meet the challenge. Among other things, we have begun a new membership program to encourage the active and generous

participation of as many community members as possible. The citizens of our region benefit enormously from the water quality data gathered by hundreds of CSI volunteers. This information is catalogued, stored and made easily available to everyone through our online database. The water sample analysis done at CSI's own certified laboratory assures that our information is reliable. CSI's well respected record of careful observations and scientific analysis result in a clearer understanding of the current condition of

our water and where future dangers might lie. CSI's database continues to grow rapidly, our mission keeps expanding, and right along with it, our ability to protect our waters and educate and involve our citizens.

David Weinstein is the President of the Community Science Institute's Board of Directors.





Watersheds monitored by
CSI Volunteers

CSI Assesses Risks From Fracking

(Continued from page 1)
(Test results can be viewed and downloaded from the CSI database at: www.communityscience.org/ database)
Even if your town has a fracking ban, baseline data is still important. Transportation accidents are one of the greatest known risks associated with hydrofracking - and most of our towns have major roads, often crossing over or running right next to streams. For this reason, locations with high road density were chosen for testing, as well as locations with a high

percentage of leased land upstream, and locations with unique natural value. So what did we find? As with all baseline testing, we weren't expecting to find any problems, prior to any potential hydrofracking in New York, and we didn't.

Baseline data is one of those things that you hope you never need to use, but should have on record just in case. For local streams in Tompkins County, we can say with confidence that our pre-drilling water quality is well-

documented and excellent. At CSI, we're doing everything we can to keep it that way.

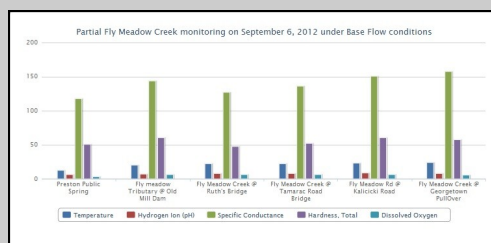
Becky Bowen is the
Outreach Coordinator
at the Community
Science Institute



To learn more, check out CSI's article, "Community-Based Risk Assessment of Water Contamination from High-Volume Horizontal Hydraulic Fracturing" recently published in the **peer-reviewed journal**, "New Solutions: A Journal of Environmental & Occupational Health Policy"

CSI Database: An Invaluable Community Resource

Free to use, interactive and user-friendly, the CSI water quality database features maps and graphs to provide spatial context and help turn data into results and information you can use. The search function makes it possible to filter the more than 40,000 test results collected by our volunteer monitoring partnerships by region, watershed, location, date, analyte, flow conditions and other criteria and download to MS Excel for storage and analysis. All of the data produced by CSI's volunteer monitoring partnerships is entered in CSI's



CSI's interactive database allows users to view
graphs, maps and download data

online database at www.communityscience.org/ database. For example: From the CSI home page, click on

"Maps & Data" to get to the database. Click on "Monitoring Sets" and select "Six Mile Creek" to see a map of the Six Mile Creek watershed; a graph with average concentrations of parameters from the drop-down menu; a list of sites; and a list of monitoring events. Click on a location to see monthly averages at that

location. Click on a date to see the results for a specific monitoring event in Six Mile Creek. To search the database, select "Data Query Interface" from the main menu and use the filtering options. Please let us know what you think of our database by emailing becky@communityscience.org. We welcome feedback!

Steve Penningroth is the Executive
Director of the Community Science
Institute

**Hydrilla
verticillata.**
Drawing from
University of
Florida Center
for Aquatic
Plants



Hydrilla Threat - Regional Problem, Community Response

The highly invasive aquatic plant, hydrilla verticillata, was found in the Cayuga Inlet in August 2011. Native to Asia, hydrilla has spread to every continent except Antarctica. If immediate action is not taken, the hydrilla could spread

from the Cayuga Inlet to the rest of the Finger Lakes and the Great Lakes, with potentially catastrophic impacts.

The fight to eradicate hydrilla requires cooperation among local, state, and federal agencies. CSI is involved in the eradication effort by testing water samples for herbicide

levels in the Inlet and at the intake for the Bolton Point water treatment plant. Herbicide levels need to be high enough to kill hydrilla but low enough not to impact drinking water.

Visit www.stophydrilla.org for more information.

Bio-Monitoring with CSI



Step 1: Volunteers collect BMI samples using a kick net

Benthic Macroinvertebrates (bottom-dwelling aquatic organisms without backbones that are visible to the naked eye) or BMI, are macro-invertebrates that live on stream bottoms. BMIs include a wide variety of insects (during one or more stages of their life cycles) and other small aquatic organisms. They feed on algae or decomposing organic matter from local landscape sources such as leaf litter. BMI are at the base of both aquatic and terrestrial food chains. Sometimes, they even eat each other!

A healthy stream fosters a good diversity of aquatic invertebrate species, which vary in their tolerance for impaired conditions. Therefore, one of the most effective ways to monitor surface water quality is through biological assessment of BMI in area streams. Unlike chemical tests that measure conditions at particular moments in time, BMI assessment can

detect overall changes in water quality over the long-term. Also, unlike chemical tests, more active participation by volunteers is required for BMI assessment, as it takes more time and effort than simply filling a sample bottle. In the process, volunteers get to immerse themselves a little more deeply in stream ecology.



Step 2: Volunteers sort BMI organisms by family or species

CSI volunteers from the community have been monitoring BMI in area streams since 2005. In 2012, CSI began working with local schools to introduce BMI in classrooms. Through both community and classroom efforts, CSI strives to develop high quality stream bio-monitoring programs. We train volunteers, students, and teachers in the techniques of BMI monitoring, using Hudson Basin River Watch protocols. We provide guidance throughout the process and we report findings on the CSI website. These find-

ings serve as another valuable resource in CSI's water quality monitoring efforts.

Our BMI programs give participants a chance to play active roles as guardians of local water quality during a time of change and development in local land use, including potential natural gas extraction.

Adrianna Hirtler is CSI's BMI Specialist.



Midges (above) are tolerant of water pollution, so their presence can indicate impacted water quality



Mayflies (above) are sensitive to water pollution, so their presence indicates non-impacted water quality

Protect Your Watershed - Become A Member !



Red Flag Volunteers test samples for Dissolved Oxygen

In 2012, CSI began its first-ever membership drive and would love to have YOU as a member! We are almost halfway to reaching our \$10,000 goal and we need your help to get there!

You can help protect water in your area by supporting baseline testing and stream

monitoring with a donation to CSI. Your one-time donation or recurring membership contribution will be used to support volunteer monitoring partnerships and publication of data on the CSI website.

Join today!

Members get these special benefits:

- ◆ Annual 20% Discount on certified bacteria, nitrate and lead tests for drinking water
- ◆ Special Invitation to CSI's Annual Symposium Dinner
- ◆ CSI's Newsletter, The Water Bulletin



Community Science Institute

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Certified Water Quality Testing Lab
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Send To:

Partnering with communities to protect water



Become a CSI Member Today!

| | | |
|--|--|--|
| <input type="checkbox"/> Yes, I want to help monitor and protect our region's water by becoming | | |
| This donation is for: <input type="checkbox"/> New Membership <input type="checkbox"/> Renewing Membership <input type="checkbox"/> Gift Membership* | Amount: <input type="checkbox"/> \$25 (Creek) <input type="checkbox"/> \$100 (River) <input type="checkbox"/> \$500 (Estuary) <input type="checkbox"/> Other \$_____ | <input type="checkbox"/> \$50 (Stream) <input type="checkbox"/> \$250 (Lake) <input type="checkbox"/> \$1000 (Watershed) |
| If you would like to pay by credit card please visit the "Donations" page on our website at http://www.communityscience.org | | |

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