



WATER  
REPORTER

# USE CASE SPOTLIGHTS

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2020

a product of



# Welcome

## WATER REPORTER IN ACTION

Nothing can stop watershed organizations and the environmental movement from pursuing their missions to engage local communities and protect their local waterways. No year has more tragically confirmed the dedication, innovation, industriousness, and persistence of the environmental movement than 2020.

Even when the cards stacked are against them, environmentally-minded groups know that monitoring must go on! And, from our vantage point, these organizations and their volunteer monitors came out in record numbers in 2020 to collect quantitative and qualitative data on their water(shed) health.

When your needs are great and your budgets are slim, you have to think carefully about how you spend every dollar and staff hour. Balancing collection costs with the need to *do things* with the data, monitoring groups turn to the Water Reporter platform. Through this platform users have options for collection, storage, analysis, and visualization for their unique monitoring program.

In the past year, Water Reporter has registered frequent and expanding use by our subscription holders. The division between groups exclusively using observational monitoring or quantitative data management has blurred as many groups use of all data management streams continues to grow. Groups have reported that began with one type of monitoring program can build complementary programs within the platform to broaden their reach and results. The increased demand on the system allowed the team behind Water Reporter to invest in upgrades to support our existing users while explore new feature developments that complement long-term goals for data sharing and collection through common pipelines.

Growth from both the application and development sides of the Water Reporter platform are possible thanks to the continued use of the product, input from our stakeholders, and investment from our donors. The following pages highlight just a few of the many active programs from the 2020 monitoring season and intend not only to showcase their achievements but also spark new ideas for monitoring work in the coming years.



**“Elevating these local water quality monitoring programs through a suite of software features empowers these groups. Remarkably, we see the ripple effect regionally as each program, like a stone dropped in a pond, impacts broader and larger efforts. Seeing the sharing of ideas and results is always exciting.**

**Water Reporter epitomizes our mission to offer software solutions for the environmental movement to leverage for their mission”**

**- R. John Dawes, Jr  
Executive Director,  
The Commons**

# 2020 Year in Review

Water Reporter celebrated unprecedented user growth in 2020. Close to 30 new organizations signed up for subscription accounts. New users expanded monitoring programs to new regions and deepened the network in existing high-use geographies. Water Reporter entered the mid-west monitoring community through a partnership with Cleveland Water Alliance's Smart Citizen Science Initiative, recorded new monitoring work along the East Coast thanks to support by the Long Island Sound Funders Collaborative, and reached new organizations in the Pacific Northwest and Mid-Atlantic through our participation as a core stakeholder in the Water Data Collaborative. More than 175 now holding Water Reporter subscription accounts, an exciting number that we hope will only continue to grow in future monitoring seasons.

## USER STATISTICS

Each subscription stands up an organization and can include unlimited basic users to support their monitoring work. Basic users within an active subscription group ranges from five to more than 200 individuals. In total, more than 6,000 basic user accounts have been created in Water Reporter.

A multitude of system updates deployed in 2020 opened up access of Water Reporter to more users. Most notably, the mobile application underwent a total overhaul; on-the-fly forms and digital data forms were rolled out, and map visualizations received more customization options.

## DATA COLLECTED

Water Reporter collects temporal and geographic coordinate data for all samples. Samples can consist of observations, continuous monitoring samples, or on-the-fly collections. For both continuous monitoring samples and on-the-fly, account holders define the parameters and collection methods. All data can appear on interactive, embeddable maps and can be exported from the system.

## APPLICATIONS

From anglers documenting lesions on small mouth bass to retirees taking weekly water samples with a YSI device and paddlers sending off possible harmful algal bloom sightings, the application of the Water Reporter to the monitoring programs of subscription holders varies significantly depending on individual vision, resources, and goals. Applications focused on user engagement may take advantage of the plethora of data collection and communication options whereas a program that requires more training and intensive data collection may focus on the default quality control, storage, and interactive visualization features.



# Use Cases

## What to know

### PARTICIPATING SUBSCRIPTION HOLDER PROFILES

Each subscription holder account has autonomy to use the Water Reporter features as they see fit to support their unique monitoring programs. Our understanding of each application goes only so far as these groups are willing to share their behind-the-scenes work from their team with our team. Accounts profiled in this report range from small, local watershed organizations to national leaders in conservation.

In fall of 2020, the Water Reporter team created a template that collects information about the monitoring programs supported by Water Reporter. The Water Reporter Team reached out to a subset of subscription holders and invited them to complete a case study of their monitoring work. Contacts were provided with a template inspired by the EPA's Citizen Science QAPP guide. Respondents were asked to fill it out to the best of their ability to convey their monitoring program and the role that Water Reporter plays in supporting their work and goals.

#### Observation

Observational monitoring programs collect geo-located photos with comments. The photos appear in feeds or maps for the user, tagged organization, hashtags and watersheds. Tagged organizations are notified of new posts. Anyone can comment on existing posts.

#### On-the-Fly

On-the-Fly monitoring allows assigned contributors to complete geo-located forms created by the subscription holder and photos that are shared directly to subscription holder administrators. Results can be displayed on a map.

#### Continuous Monitoring

Users define a list of stations, qualitative parameters, and indicators where data is collected on a routine basis. Samples are collected or imported into the data source and displayed on interactive, embeddable maps.



This document showcases twelve use cases out of the dozens of incredible community science monitoring programs currently using Water Reporter. Check out our website for more examples of the monitoring programs using Water Reporter.

### MONITORING IN THEIR WORDS

The following use cases were written by individuals at the participating organization. Participation was voluntary and these use cases are only a subset of activities supported by the Water Reporter platform. The answers have only been edited for length and clarity, otherwise, all information provided was written by individuals in charge of the monitoring program.

To all of the organizations that took the time to share your monitoring programs, thank you. We are forever honored to have you using the Water Reporter platform and excited to share your innovative work to educate and protect your natural resources.

# Spotlight Organizations

- **Buffalo Niagara Waterkeeper**  
New York  
BNW's water chemistry and bacterial monitoring anchors their citizen science program and has launched spinoff programs to monitor for microplastics, harmful algal blooms, and general watershed health.
- **Connecticut River Conservancy**  
Massachusetts (Connecicut, New Hampshire, Vermont)  
Invasive water chestnut plants indiscriminately smother lakes and streams. Partner organizations pull out water chestnut plants then document and share results to CRC via Water Reporter to track and visualize.
- **Friends of Casco Bay**  
Maine  
More than 200 self-selected volunteers help FOCB keep an eye out for wildlife, algae, king tides, eel grass, erosion, and pollution. The photos shared through Water Reporter inform staff and most importantly, residents feel the pulse of their watershed in novel ways.
- **Howard County Conservancy**  
Maryland  
High school students love getting out of the classroom to conduct water quality sampling and collect important data on watershed health. Showing the results via an interactive Water Reporter map lets the lessons continue far into the future.
- **Izaak Walton League of America**  
Nationwide  
IWLA's SaltWatch program distributes thousands of chloride test strips to organizations and individuals across the United States that want to monitor the impact that winter road salt application may have on their local waterway health.
- **Lake Auburn Watershed Association**  
Maine  
The Community Science Initiative gives residents of the Lake Auburn area opportunities to learn, engage, and improve their natural world through observation and action.

- **Pearl Riverkeeper**  
Mississippi  
Thanks to the ambitious efforts of Pearl Riverkeeper a water quality monitoring program, pulling from the Alabama Water Watch protocols, has kept tabs on the health of the Pearl since 2017 and now has expanded statewide.
- **Penn State Extension**  
Pennsylvania  
First Investigation of Stream Health provides individuals, families and volunteer groups with the opportunity to document, and share the fascinating changes in wildlife and vegetation that happen following stream restoration projects.
- **RE Sources**  
Washington  
RE Sources's expanding network of community members actively keep an eye out for pollution. Partnering with local government agencies, pollution problems can now be resolved efficiently when they're documented and reported.
- **Save the Sound**  
Connecticut  
Stormwater's *impact* on water quality is well documented, but documenting *where* culverts drain water into the rivers is another story. Save the Sound has launched an education initiative to canvas the Hutchinson River's drainage locations and issues.
- **Tualatin Riverkeepers**  
Oregon  
Paddlers launching along the scenic Tualatin River expect stunning views, vibrant wildlife, and, unfortunately, logjams. With the use of Water Reporter, now paddlers can more safely float by reporting logjams and finding existing ones on Water Reporter.
- **Watershed Management Group**  
Arizona  
In Tucson, the rivers are dry most of the year. Restoration efforts are underway to reverse the issue & return waterways to their historic flow levels. Volunteers play a crucial role in monitoring the rivers to record changes & identify new areas of concern.



## RiverWatch

### PROGRAM SUMMARY

Riverwatch is a volunteer water quality program. Volunteers are trained by Waterkeeper staff to take water samples throughout the watershed. They gather important data and provide a network of eyes of the water to report issues like pollution and harmful algal blooms.



### Research Question

What are the water quality conditions in the Niagara River Watershed? How do monthly test results compare to New York State Standards? Which waterways are experiencing Harmful Algal Blooms and at what time of year?

### Objectives

Collect high quality data to understand yearly conditions of waterways throughout the watershed and engage community members.

### DATA MANAGEMENT

#### Data Uses

Data collected helps inform future Waterkeeper restoration projects as well as advocacy efforts. Data is also used to inform community members about waterway conditions and for student lessons and projects. Our HABs observation data is used to notify the NYSDEC and local health departments.

**DATA TYPES** | FIXED LOCATIONS  
OBSERVATIONAL

**USE GOAL** | EDUCATION &  
ENGAGEMENT

### PROJECT MANAGEMENT

#### Problem your program addresses

Volunteers help collect baseline water chemistry data to provide a general assessment of water quality throughout the Niagara River Watershed. We compare data to New York State Standards. Volunteers are also the eyes on the water to report harmful algal blooms (HABS) or pollution/spills.

#### Brief History of Problem and Program

This is a long term water monitoring program which started in 2010. We used to use test tablets and lower quality equipment. We wanted higher quality data that could be accountable so we transitioned to using water probes. Our staff can't sample all the locations as regularly as we want, and this program provides a great way to engage interested citizens in science. The data is also used for school programs and talking to elected officials and leaders.



#### Data Fields

- Location
- Date
- Temperature
- pH
- Conductivity
- Total Dissolved Solids
- Turbidity
- E.coli

#### Geographic Area

The Niagara River Watershed



Data visualization is the main gain from using Water Reporter! We upload data monthly and see it in the map and it can be viewed by others on our website. We have started to explore making other maps to present other information and use Water Reporter with volunteers for observational data- this may lead to a specific project down the line.

## DATA ACQUISITION

### Sampling methodology and Protocols

Volunteers visit pre-selected sites on a monthly basis from Spring through Fall to collect water quality data. Results are compared to New York State Department of Environmental Conservation water quality standards.

### Equipment Used

We use a Eureka Manta 20+ and Hach turbidimeter. For E.coli we test in house using coliscan easy gel.

### Data limitations and management

Our data is only collected 1 time a month at each site so it is just a snapshot. We tell volunteers it is like going to the doctors for your health vitals.



## PARTICIPANT DETAILS

### Volunteer Profile

Currently, most volunteers are adults with access to transportation and flexible availability.

### Participation Requirements

Volunteers must be able to drive to monitoring locations at the required time, monthly.



**Riverwatch Volunteers noticed consistently high conductivity and turbidity levels downstream of a golf course. This resulted in conversations with the town conservation board, Waterkeeper, the NYSDEC and the Golf Course. We eventually wrote a grant to work on a restoration project, which was just completed. We just held an educational webinar to train/inform more golf course personnel about these BMPs and work that can be done on courses to help WQ but also maintain playability.**

## PLANNING COMPONENTS

### Training Plans

We train volunteers about the data parameters and how they effect the water. Then we focus on equipment usage. Also, we explain why we collect this data. We recorded a training presentation to send to volunteers this year due to Covid-19 restrictions.

### Engagement Plans

We would like to engage with new volunteers in the future to make our program more diverse and also add new elements to the Riverwatch Program to allow additional volunteers to participate with less scheduling restrains.

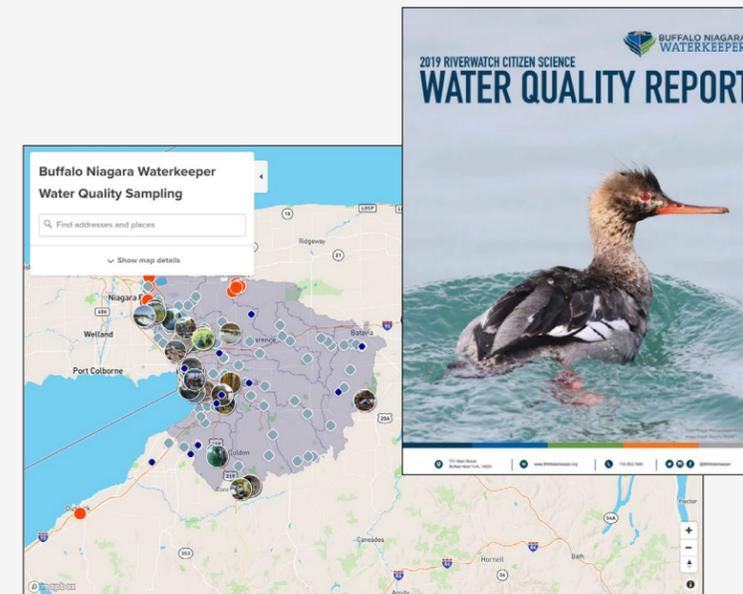
### Implementation Plans

Training typically occurs in early spring. Sampling takes place May through October annually.

## REPORTING AND PRESENTATIONS

Data is shared with stakeholders through an annual Water Quality Report and automatically via a Water Reporter map on our Water Quality webpage.

<https://bnwaterkeeper.org/water-quality-testing/>



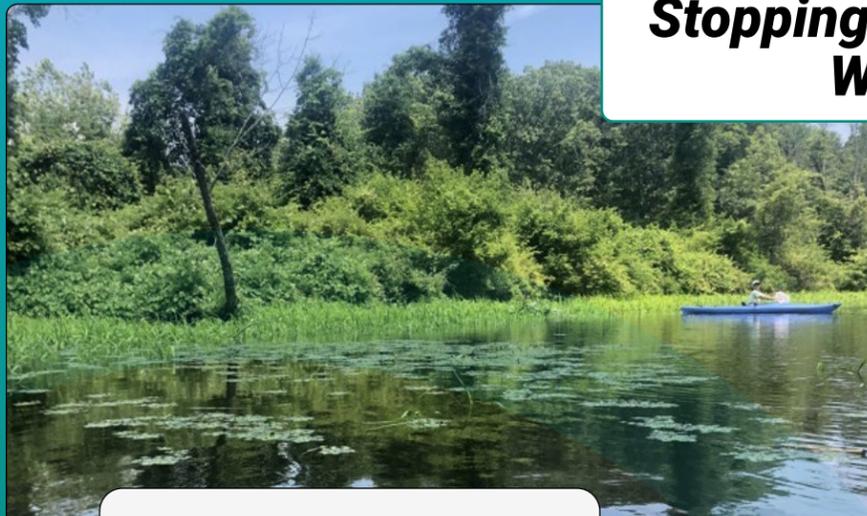
### Organization

[Buffalo Niagara Waterkeeper](https://bnwaterkeeper.org/)

### Point of Contact

Elizabeth Cute  
Manager,  
Community Engagement

## Stopping and Invasive Species: Water Chestnuts



### PROJECT MANAGEMENT

#### Problem your program addresses

Water chestnut has the potential to fully cover still and slow-moving waters up to 16 feet in depth, not only degrading wildlife habitat but also making paddling and boating nearly impossible. Water chestnut is an annual plant that mainly spreads from seeds, however it is feasible to control if the plant is removed before setting viable seeds. This program explores effective measures for water chestnut removal.

#### Brief History of Problem and Program

The water chestnut is native to Northeast Asia, Southeast Asia, Western Europe, and Western Africa. In 1877, the species *Trapa natans* was introduced to the United States from Europe. It was planted in Collins Lake, MA and other ponds before escaping in 1879 and growing in the Charles River. Since then it has spread along the east coast as far south as Virginia and Kentucky, as far north as Quebec. Since its discovery in the CT River watershed in 1998, invasive water chestnut has spread throughout the watershed, impacting recreation opportunities and native plants and animals.

### PROGRAM SUMMARY

Water chestnut removal work has been happening in the CT River watershed for over a decade. Many organizations and volunteers foster removal activities in individual lakes, ponds and coves throughout the watershed. This program coordinates a watershed wide coalition of individuals and organizations working together toward the eradication of water chestnuts.



#### Research Question

Where are the invasive water chestnuts and how effective are our removal efforts?

#### Objectives

Full eradication of the invasive water chestnut in the CT River watershed. Integral parts of this program include physical removal efforts as well as widespread education efforts and tracking of patterns of outbreaks.

### DATA MANAGEMENT

#### Data Uses

Its been great to engage with state officials, organizations, private property owners and the general public using the data collected through this program. With data, we can more easily show where the biggest infestations are and use this as a lead-in to a deeper dive conversation about water quality and river health.

#### Data Fields

- Location
- Cubic feet removed
- Size of infestation pre- removal
- Size of infestation post- removal
- Hours worked
- Volunteers present
- Water chestnut distribution
- Other vegetation distribution

#### Geographic Area

Connecticut River Watershed:  
Massachusetts, Connecticut, Vermont, New Hampshire

DATA  
TYPES

**FIXED LOCATIONS**  
for known sites  
**ON-THE-FLY**  
for new infestations  
**OBSERVATIONAL**  
for other watershed activity

USE  
GOAL

**EDUCATION & ENGAGEMENT**  
**SCIENTIFIC RESEARCH**




## WATER REPORTER

Through Water Reporter we collect locations and gather volunteer reports from infested sites. We use the Water Reporter map to display status of pulling events on our website, track new locations, and display general watershed observations.

## DATA ACQUISITION

### Project Planning

We completed a user needs assessment in which CRC spoke with all partners and individuals working on this effort to determine their needs and capacity. This was instrumental in creating a tool through Water Reporter that streamlined their removal efforts and connected them to others that are doing the work. Biggest thing is consistent and frequent training of volunteers

### Equipment Used

Boats and human power



## PARTICIPANT DETAILS

### Volunteer Profile

46+ organizations and individuals participate in the program.

### Participation Requirements

Volunteers and organizations undergo a training in order to learn how to effectively remove the plant. Access to a boat and the ability to carry weight is helpful.



**"[I] pulled a free-floating water chestnut from the middle of the river, just south of the second island in Sunderland. Been paddling here for 20+ years and this is the first time I've seen one actually in the Connecticut. Not clear where it came from, anybody have any ideas?"**

**- Lili Dwight, Water Reporter User**

## PLANNING COMPONENTS

### Training Plans

We are currently building out a new training plan and therefore don't have one prepared as of yet.

### Staff Roles and Responsibilities

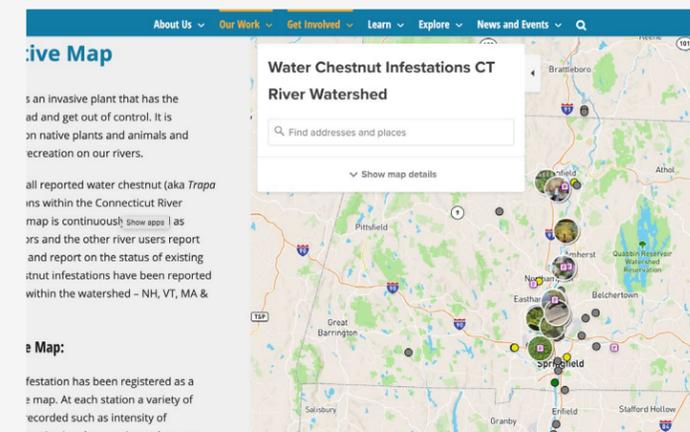
Four members of the Connecticut River Conservancy staff participate in holding up the Removal Program. The highest staff demand is in training and equipment. Volunteer management, data management and analysis, results sharing, and website hosting all require coordination amongst multiple staff members.

### Implementation Plans

The removal season happens annually: May- September. Behind the scenes prep and training happens March-April

## REPORTING AND PRESENTATIONS

Currently, all aspects of this program are reported on The Connecticut River Conservancy website <https://www.ctriver.org/get-involved/stopping-an-invasive-species-water-chestnut>. As participants provide more years of robust data we will be exploring more ways to share this information.



### Organization

[Connecticut River Conservancy](https://www.ctriver.org)

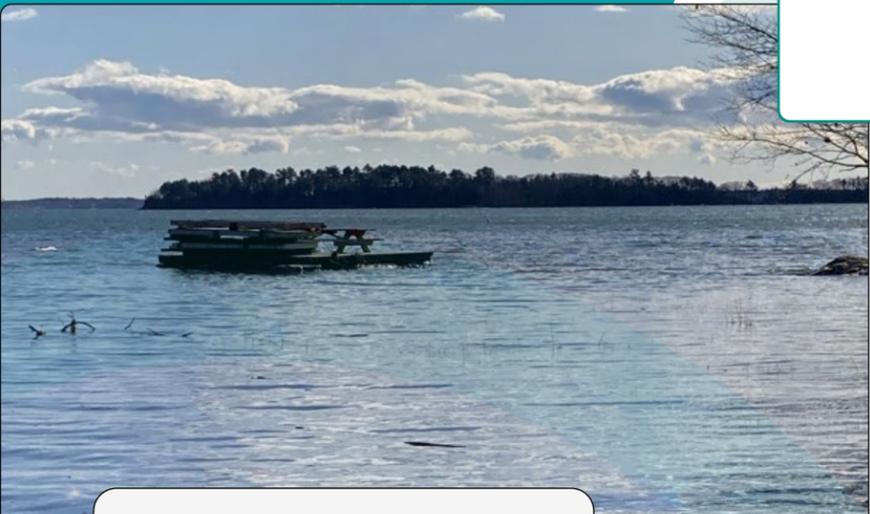
### Point of Contact

Gabriel Chevalier  
Laboratory Manager  
gchevalier@ctriver.org

### Partner Organizations

46+ Organizations and Individuals

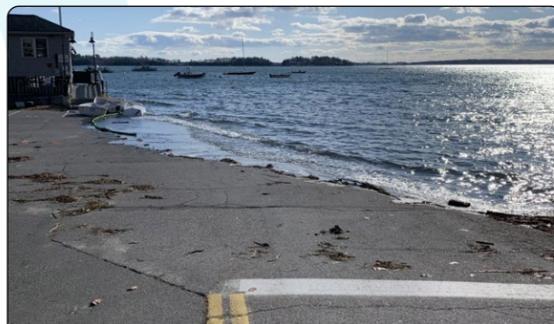
## Friends of Casco Bay



### Water Reporters

#### PROGRAM SUMMARY

A community science monitoring program needs a plan, a purpose, tools, and - most importantly - volunteers. Friends of Casco Bay's blueprint embraces simplicity, training, and Water Reporter. Their replicable program engages hundreds of volunteers and generates critical data for Casco Bay.



#### Research Question

How is the Bay changing?

#### Objectives

Find, catalog, and respond to observations

#### PROJECT MANAGEMENT

##### Problem your program addresses

The Casco Bay is experiencing more changes than our staff can observe and respond to by ourselves. We also have a motivated and dedicated network of members who want to find ways to support our work in their daily lives.

##### Brief History of Problem and Program

Friends of Casco Bay, a founding Waterkeeper Alliance member, has three intertwined areas of work: Science, Advocacy, and Community Engagement. The Casco Baykeeper is the official eyes, ears, and voice of the Bay, but she can't do it alone! Water Reporter encourages everyone to explore the question "How is the Bay changing?".

#### DATA MANAGEMENT

##### Data Uses

The Casco Baykeeper shares observations with government authorities, showcases posts on local news channels, wraps them into strategic planning, and shares them through newsletters.

Water Reporter's observations have allowed us to have conversations with landowners to reduce their use of fertilizers on their property.

The tracking of nuisance algal blooms by Water Reporters was used to add two Casco Bay locations to the [Nonpoint Source Priority Watersheds List](#) from Maine Department of Environmental Protection in 2020. These areas are then given priority when grant funds are awarded to study, identify, and address the source of the issues.

One post allowed Staff to engage the Coast Guard and Portland Harbor Master to ensure that debris from a pier construction project were properly removed and a containment boom ensured no other debris polluted the Bay.

##### Data Fields

- |                        |                          |
|------------------------|--------------------------|
| Date                   | Hashtag of choice:       |
| Time                   | #W - wildlife            |
| Geographic Coordinates | #A - algae               |
| Photo                  | #T - trash               |
| Comments               | #E - erosion or eelgrass |
|                        | #R - report pollution    |
|                        | #S - sea level rise      |

##### Geographic Area

Casco Bay, including Portland, ME.

**DATA TYPES** | OBSERVATIONAL

**USE GOAL** | EDUCATION & ENGAGEMENT  
SCIENTIFIC RESEARCH



### WATER REPORTER

Volunteers download the Water Reporter mobile application and share their observations with the Friends of Casco Bay staff via the app. Results are shared in social media posts as well as on the Friends of Casco Bay website.

## DATA ACQUISITION

### Project Planning

Friends of Casco Bay staff identify critical observational indicators that volunteers can search for throughout the watershed. These are typically easy to identify and may indicate underlying issues that the staff can take action to respond to. Once these items are identified, volunteers are notified and the training materials are updated to help gather the information.

### Equipment Used

The beauty of this program is that volunteers do not need any specialized equipment.

## PARTICIPANT DETAILS

### Volunteer Profile

Anyone with a smartphone and an interest in observing the Bay can participate.



With the help of a mobile app, anyone interested in sharing their experience can take a picture and share it with our organization. Without any in-person training requirements or requisite specialized tools, we have increased access to participation in the program. Data appears on interactive maps on our website and is showcased on local news outlets to educate and reach more stakeholders.



## PLANNING COMPONENTS

### Training Plans

Volunteers are trained through scheduled events. Folks that identify as non-tech savvy can sign up for a 30 minute call to walk through the app installation process, creating a log in, and completing their first test post.

### Staff Roles and Responsibilities

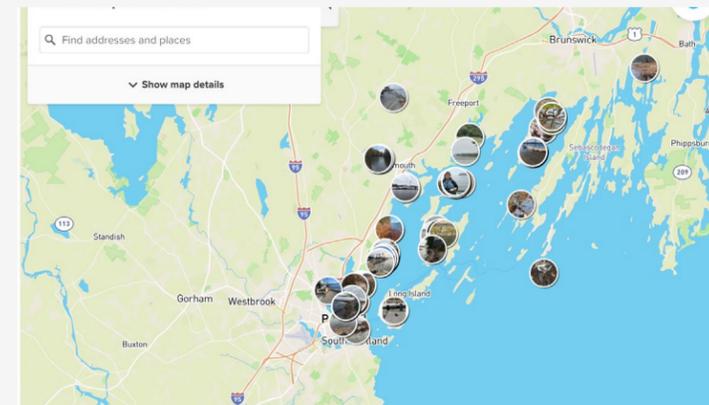
This is a hands-on program. Staff monitor and respond to all observations shared within the Water Reporter app. Staff also prepare and share both training and education materials to support the successful participation of volunteers. Finally, staff host online get togethers to assist volunteers with troubleshooting needs.

### Implementation Plans

Participants engage as a Water Reporter monitor year-round at their leisure. To spark continued engagement FOCB sometimes changes the requests for observation and showcases results in e-newsletters.

## REPORTING AND PRESENTATIONS

The Casco Baykeeper shares observations with government authorities, showcases posts on [local news channels](#), wraps them into strategic planning, and shares them through newsletters.



Friends of Casco Bay received the [2020 CommUNITY](#) award for their volunteer work conducted through Water Reporter.



### Organization

[Friends of Casco Bay](#)

### Point of Contact

Sarah Lyman  
Community Engagement  
Coordinator

## Howard County Conservancy

### Watershed Report Card



#### PROJECT MANAGEMENT

##### Problem your program addresses

The Watershed Report Card program allows Howard County Public School (HCPSS) 9th grade students to evaluate the physical, biological and chemical properties of local streams as part of a systemic Meaningful Watershed Educational Experience (MWEE)

##### Brief History of Problem and Program

The Watershed Report Card program was developed to increase awareness about stream and watershed health in Howard County, Maryland.

The Watershed Report Card program is in its 7th year of water monitoring. Each fall, the HCC conducts field trips where ninth grade students sample a local stream. They collect data for the chemical, physical and biological parameters. Students also complete a Schoolyard Report Card where they spend time on their school campus assessing erosion, runoff and water quality. Students compile results and suggestions for improvement into the Watershed Report Card. The students then advocate for water quality at a Watershed Summit with local elected officials.

#### PROGRAM SUMMARY

The Watershed Report Card program allows 9th grade students to learn about water quality and stream health. The program not only gives opportunity for stream monitoring, it also allows students to advocate for ways to improve stream health.



#### Research Question

What is the health of my watershed?

#### Objectives

Our main objective is to create awareness of the health of local streams and to get students to recognize that stream quality is affected by land use throughout the watershed.

#### Geographic Area

Howard County, Maryland

#### DATA MANAGEMENT

##### Data Uses

The data collected will be used to advocate for improving the local watershed and engaging students in the process of collecting data, analyzing data and advocating for change.

##### Sampling Methodology

We use the MD DNR Corridor Assessment and MD DNR biotic index methodologies.

##### Data Fields

Temperature  
Dissolved Oxygen level  
Phosphate  
Nitrate  
Turbidity  
Conductivity  
pH  
Biotic index  
Corridor Assessment total

##### Data Custody

The students work in groups of 6 to record their data. This data is entered into a spreadsheet of all student data from that day.

The data sheets from students were collected at the end of each field trip and then combined into a single data sheet with average values from water quality assessments and a cumulative total for the type of macroinvertebrates found data is the cumulative data entered into a spreadsheet with the correct format.

DATA  
TYPE

FIXED LOCATIONS

USE  
GOAL

EDUCATION & ENGAGEMENT



The Water Reporter maps have been valuable in allowing students to observe any trends in the water quality data over the time that the program has been established. Especially in the time of COVID, students have been asked to research watershed health using the Water Reporter maps.

## DATA ACQUISITION

### Project Planning

Each test was conducted by students under the supervision of Howard County Conservancy trained volunteers. The test protocols and directions were clearly detailed and provided to both the students and volunteers.

Our data is student-collected data. As such, it can be used to give an overview of water quality, but not any specific statements regarding animal populations, or water pollutants, etc.

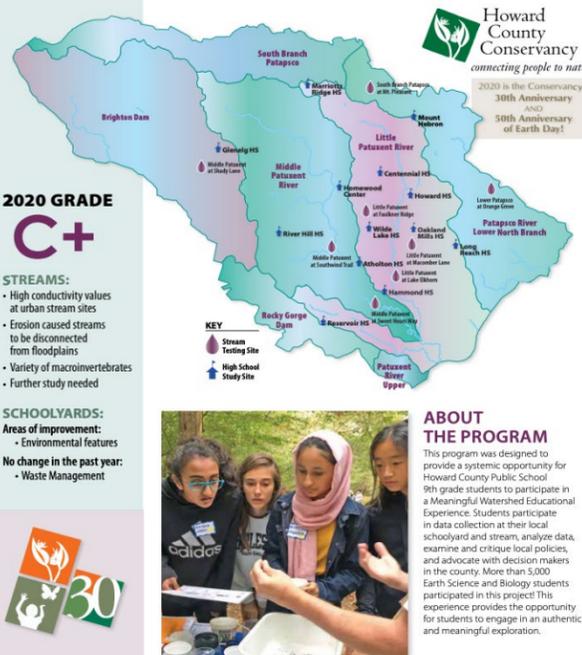
## PARTICIPANT DETAILS

### Volunteer Profile

Students from every high school in the Howard County, MD public school system. 50 community volunteers receive hands-on stream training about the data sampling protocols



## 2020 HOWARD COUNTY WATERSHED REPORT CARD Student Scientists in Action



## PLANNING COMPONENTS

### Training Plans

We conduct volunteer training in August of each year to prepare our volunteers to work with students to collect data.

### Staff Roles and Responsibilities

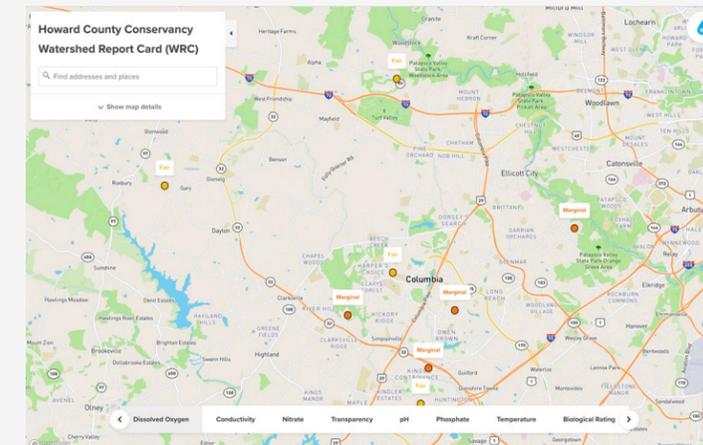
Because this program is part of the HCPSS, this effort is led by our HCPSS environmental educator, Ann Strozyk, who is part of our staff at the Howard County Conservancy. She has been instrumental in getting the science staff and teachers to work with us in the program. The Howard County Conservancy staff has provided support in arranging and training volunteers, procuring and organizing equipment, analyzing data and producing the Watershed Report Card.

### Implementation Plans

This program is in its seventh year. It has become an integral part of the HCPSS curriculum. We hope that it continues to enlighten students for many years to come.

## REPORTING AND PRESENTATIONS

Our data is being reported in our Watershed Report Card and to elected officials at the Watershed Summit.



### Organization

[Howard County Conservancy](https://www.howardcountymd.gov/conservancy)

### Point of Contact

Meg Boyd  
Executive Director  
Howard County Conservancy

### Partner Organizations

Howard County  
HC Public School System  
NOAA



## Salt Watch

### PROGRAM SUMMARY

For three years, individuals have used basic chloride test strips distributed by IWLA to test the chloride levels in streams before, during, and after winter weather events. These tests help indicate how much road salt enters these waterways and provides baseline data of the impact chloride may have on waterway health.

### PROJECT MANAGEMENT

#### Problem your program addresses

SaltWatch addresses chlorides as a water quality program and road salt as a water quality problem. The data that we collect is not regulatory or anything at all. These strips are not EPA approved but they are relatively accurate and they get people to realize that this is a problem and to raise awareness.

#### Brief History of Problem and Program

Our clean water fellow watched a big pile of salt at the entrance to our office sit on a stormdrain that goes into the local stream. He got very worried about it and wanted to clean it up himself but for safety reasons he couldn't. But no one would clean it up. He called all the local government agencies and finally MDE took responsibility. He penned letters to the editor published in both Washington Post and in the Olney Newspaper. So we asked the question, if this is one random point on a highway in a not-super wintery state is this a problem nationwide? Is there a nationwide network of people who care? We're not the first people who realized salt is a problem but we've tapped into something at a good time.

### Research Question

What are the chloride levels in the stream?

### Objectives

This is evolved from the number of people participating to the number of people using all of their test strips. The number of people posting their readings.

### DATA MANAGEMENT

#### Data Uses

Education and advocacy. The partnership with MCPA in MN is planning on using the data to screen for chloride hotspots that they don't know about for them to do further sampling with legit conductivity meters. Other small watershed organizations participate or duplicate the program because it is a low-cost, high participation opportunity to engage volunteers. We love duplication and broad participation as it encourages education and engagement but also helps us gather more information on chloride levels.

#### Data Fields

These are not EPA recognized strips. The classic way of measuring for chloride is a conductivity meter. We are not measuring for that, and some more rigorous programs may see that. Our data fields are:

- Coordinates
- Watershed
- Chloride reading result
- Email addresses
- Mailing address

#### Geographic Area

The program is national, since locations are self-selected most are concentrated in places where it snows such as the Mid-Atlantic and the mid-west.

DATA TYPES

ON-THE-FLY OBSERVATIONAL

USE GOAL

EDUCATION & ENGAGEMENT POLICY & LEGISLATION



We use Water Reporter so that participants can easily take a geo-located photo and share it with us. We then export all of the data to check and analyze it. We use Water Reporter's mapping feature as well.

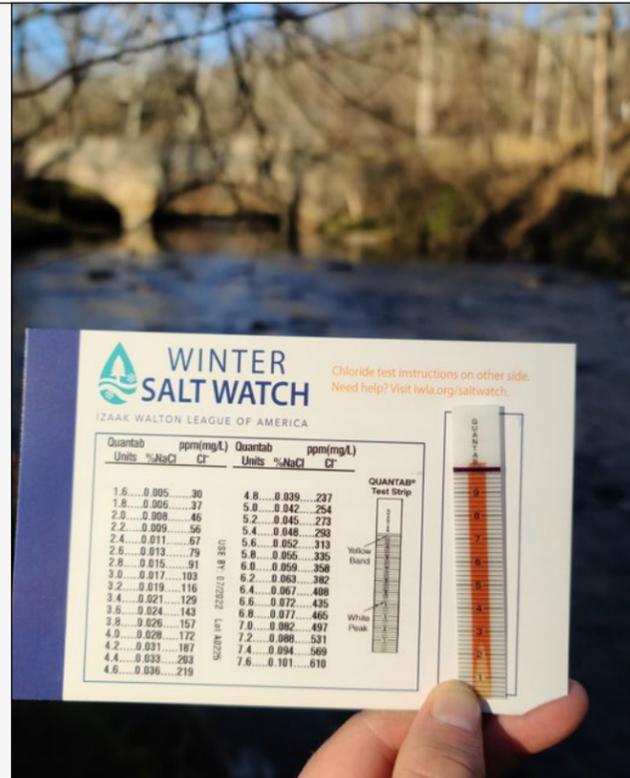
There is no way we could have done this program in Facebook or another platform, Water Reporter is the best way.

## DATA ACQUISITION

### Project Planning

Building the kits took more thought than you might think. For example we order chloride bottles for the strips. The first time we ordered them, not all of the bottles had the same chart. We learned that different lots have different charts. Now we make sure to order just one lot. And we track which lot number we're sending.

After the data is received, IWLA exports posts once a week. We looking at each picture to confirm the reading. Some people don't realize that their strips are expired, or that they read it wrong. We conduct quality assurance by reviewing each post. This data isn't regulatory in anyway, but having some quality assurance is important



## PARTICIPANT DETAILS

### Volunteer Profile

We get two waves of people: people who are involved in some group and or have participated in the past that get started in the fall or in November/December.

**It's easy to participate as an unaffiliated individual or a watershed organization. It's elegantly simple for people to participate in and groups have really made it their own. Some groups have their volunteers sign a pledge and make their own communication materials. We're getting great data and I'm obsessed with this program.**

-- Emily Bialowas

## PLANNING COMPONENTS

### Training Plans

We thought a lot about what information goes into the kit. There are two instructions - how to take the reading, the other is how to post it to Water Reporter.

### Engagement Plan

Everyone who signs up for a kit gets a saltwatch newsletter list. It's our most opened regular email that we send out. We send out a monthly email during the active saltwatch months - October to say "get ready and it's coming" and we maintain the list of everyone who has signed up. Share highlights and updates on the national map. We send some interested people the raw data. Through cascading data sharing groups can create more localized strategies to use and act on the data points.

### Implementation Plans

People get so excited about it and it's elegantly simple for people to participate in. The very clear cause and effect connection is important. It can be adopted by groups without there being territorial issues. The cost to distribute kits, with postage, comes out to \$5-\$6 per kit.

## REPORTING AND PRESENTATIONS

### Project Successes

Road salt is an emerging water quality issue. We got started on it at time that more people are aware and care about it. As an issue, it's fairly straightforward. Water quality is impacted by so many land use decisions, here there is a direct correlation and I can check my stream and I know that road salt is a big deal. Complicating with messaging from other sources like water softeners, it's such a clear cause and effect relationship and why they feel that they can do it easily with their kids or, just as kind of an introduction to monitoring. Here is one water quality issue you can try out monitoring and caring about. And then people do care more.



### Organization

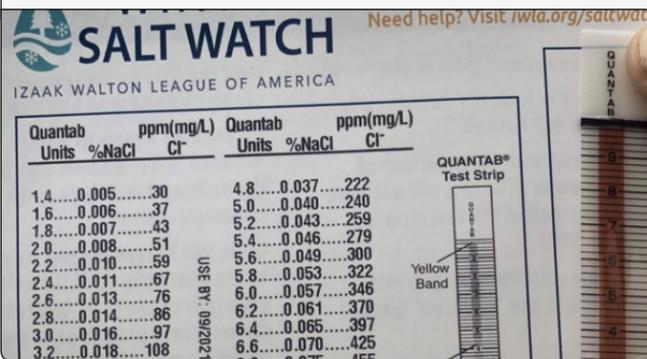
[Izaak Walton League of America](https://www.iwla.org/)

### Point of Contact

Emily Bialowas  
Chesapeake Bay Monitoring  
Outreach Coordinator

### Partner Organizations

Minnesota SaltWatch  
Informal participating partners



# Lake Auburn Watershed Protection Commission



## LAWPC Community Science Initiative



### PROJECT MANAGEMENT

#### Problem your program addresses

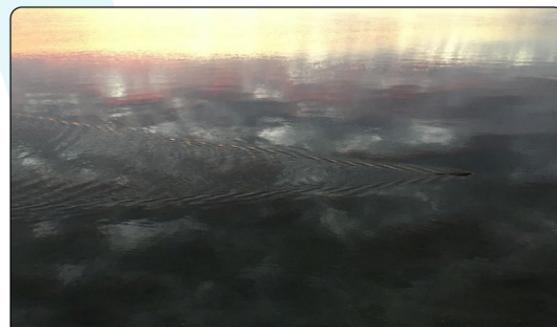
Runoff, pollution, development are all significant issues facing Lake Auburn and its watershed, and while the lake's water quality is excellent, our program addresses the issue of awareness and education regarding Lake Auburn as a critical water resource for the surrounding communities of the cities and towns within the Lake Auburn watershed.

#### Brief History of Problem and Program

The LAWPC was formed in 1993 by the Auburn Water District and the City of Lewiston Water Division, as a result of the EPA waiving the requirement for filtration. Despite Lake Auburn's waiver from filtration, via the Safe Drinking Water Act (Surface Treatment Water Rule), it's imperative to make sure that the excellent water quality of the lake stays that way. However, runoff, pollution, and development are all pressing issues that can threaten the water quality of the Lake. We use education and outreach as the primary methods at raising awareness of those issues in the watershed.

### PROGRAM SUMMARY

The Community Science Initiative is a collaborative effort of all community members using place-based knowledge, social learning, and collective action, to engage and empower local communities regarding scientific inquiry. We're aiming to get folks out in the community gathering scientific data and engaging in watershed conservation like never before through various projects: including water quality and soil testing, trail maintenance and clean-up, wildlife observation and tracking, educational hikes, and outdoor classrooms.



#### Research Question

What's happening in the watershed? What is algae? What type of wildlife can be found? How do conservation easements protect water quality?

#### Objectives

Increase community engagement and awareness of Lake Auburn as a water resource. Connect existing stakeholders and interest groups to create a network of active and dedicated community scientists.

### DATA MANAGEMENT

#### Data Uses

Educate the public on Lake Auburn, its current water quality conditions, and its importance as a drinking water resource for the surrounding communities. Promote stewardship and encourage local community members to protect water quality. Additionally, data gets reported to the EPA, Maine Drinking Water Program, the City of Lewiston Water Division and the Auburn Water District.

DATA  
TYPES

FIXED LOCATIONS  
OBSERVATIONAL

USE  
GOAL

EDUCATION & ENGAGEMENT



#### Geographic Area



## WATER REPORTER

Water Reporter supports our community science program by allowing community members to engage in watershed conservation without having to necessarily gather in groups (during the COVID-19 pandemic) and without the oversight of more "formal" scientists. It hasn't supported our monitoring efforts yet, because we sample our water quality in-house. Hopefully, down the line Water Reporter will allow us to share data samples collected upstream and out-of-lake with our community members.

## DATA ACQUISITION

### Project Planning

Since our Community Science Initiative is still very new we believe that we're on the right track towards achieving our programming goals. We've already had three successful community events that drew community members from various backgrounds and look forward to continuing events in a safe manner.



### PARTICIPANT DETAILS

We're using Water Reporter as an educational tool to promote the importance of Lake Auburn as a water resource and build a base of community members who are interested in watershed conservation. Water Reporter has allowed us to take the next step in branching out to new (digital and social) communities.



Within our first month of having a group page on Water Reporter, a community member submitted a post and picture of what they thought was algae. After sampling that area for algae, water clarity/turbidity etc., we determined that the "cloudiness" of the water wasn't actually due to algae but rather an animal (perhaps an otter or mink) going in and out of the water to eat clams and snails, which caused the water and sediment in the lake bed to get stirred up.

## PLANNING COMPONENTS

### Training Plans

We will eventually (Spring 2021) be holding a training for Maine Audubon's Stream Explorers program, additional information can be found at <https://maineaudubon.org/projects/stream-explorers/>

### Engagement Plan

We've been holding monthly events for our community science programming, given winter is a bit of an issue in Maine we'll most likely resume events in the Spring of 2021.

### Implementation Plan

We collect water quality samples from the lake once a week, and from the tributaries every other week, during the Spring, Summer, and Fall months. Automated water quality monitoring occurs on the hour, every day during the year.

## REPORTING AND PRESENTATIONS

Collected data gets reported to the Auburn Water District and the City of Lewiston Water Division, then relayed to the LAWPC. Additionally, data is occasionally sent to the Maine Drinking Water Program and the EPA. Our data is also public, and often gets used in presentations to schools as a part of our education and outreach.



### Organization

[Lake Auburn Watershed Protection Commission](#)

### Point of Contact

Sean Seary  
Education and Outreach  
Coordinator

### Partner Organizations

Androscoggin Land Trust  
Maine Audubon



# Pearl Riverkeeper

## Water Stewards



### PROJECT MANAGEMENT

#### Problem your program addresses

Mississippi has over 26,000 miles of perennial streams and rivers. According to the 2016 Water Quality Assessment Report, “The status of water quality on the remaining 89% (23,586 miles) of the state’s perennial rivers and streams is unknown.” Citizen science-based monitoring can amplify and fill in the gaps of our government-led monitoring programs. Community, group and citizen observations can accelerate the identification of problem areas, provide data to determine waterway impairments, and contribute to a more complete knowledge of watershed health.

#### Brief History of Problem and Program

In order to develop a new water quality monitoring program, in 2017, Pearl Riverkeeper reached out to the very successful leader in the field of citizen science engagement, Alabama Water Watch. AWW provided Pearl Riverkeeper with the training to stand up our own EPA-approved citizen science water quality monitoring program. The success of Pearl Riverkeeper’s program led to the development of the state-wide MS Water Stewards program.

### PROGRAM SUMMARY

The “Water Stewards”, Bacteriological and Water Chemistry monitoring program, follows the protocols and procedures developed by Alabama Water Watch in 1992 and certified by EPA Region 4 in 1999 and 2010. All of our Pearl Riverkeeper Water Stewards volunteers attend a one-day training course, are certified by Global Water Watch and follow a Quality Assurance/Quality Control program approved by the EPA. Our Water Stewards volunteers have collected over 400 water quality readings at 31 locations in the Pearl River watershed.



#### Research Question

The goals of our program include providing citizens with timely information about whether or not it is safe to recreate in a particular location, providing baseline data to be able to determine trends over time and keeping citizens informed about the impact to water quality from various pollutants including sewage spills.

### DATA MANAGEMENT

#### Data Uses

Pearl Riverkeeper volunteer monitors test 11 popular primary contact recreation locations around the watershed. This testing is conducted weekly in the summer and monthly in the winter. Pearl Riverkeeper publishes this data on our own website using the interactive Water Reporter map. We also use an opt-in email notification system. Unusual trends or water quality problems are reported to our MDEQ state agency or to the agency responsible for the 33,000 acre Ross Barnett Reservoir.

#### Data Fields

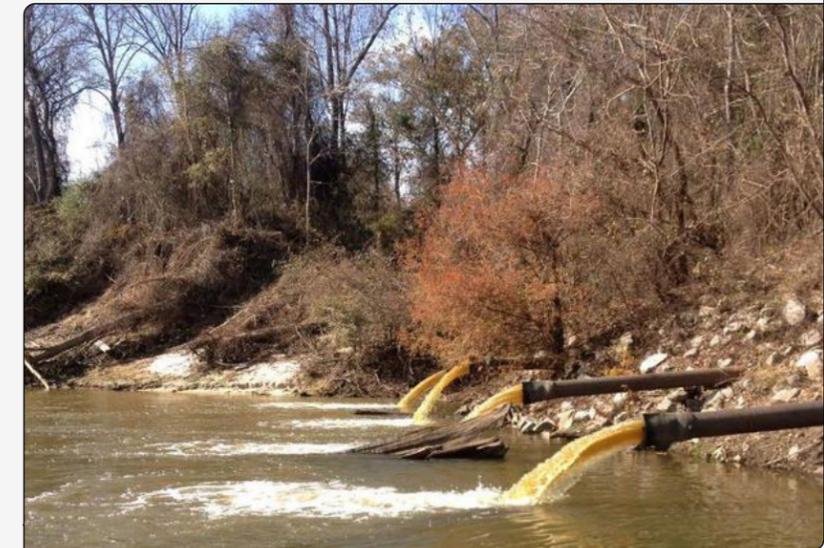
- pH
- E.coli
- Turbidity
- Hardness
- Alkalinity
- Dissolved oxygen

#### Geographic Area

Pearl River watershed in Mississippi and Louisiana

**DATA TYPES** | **FIXED LOCATIONS**

**USE GOAL** | **EDUCATION & ENGAGEMENT**



Pearl Riverkeeper utilizes the interactive Water Reporter app embedded on our website to visually display current water conditions as well as trends over time.

## DATA ACQUISITION

### Sampling Methodology

Sampling Methodology follows [Alabama Water Watch](#)

### Equipment Used

Bacteriological Monitoring Program uses the Coliscan Easygel system. Water Chemistry Monitoring uses LaMotte Company testing supplies.



## PARTICIPANT DETAILS

### Volunteer Profile

The project has exceeded our expectations on the side of volunteer engagement. Our trained volunteers are passionate about their work and so dedicated that they hate to miss a week of testing. In addition, we have over 100 citizens on the waiting list to attend the next training session.



## PLANNING COMPONENTS

### Training Plans

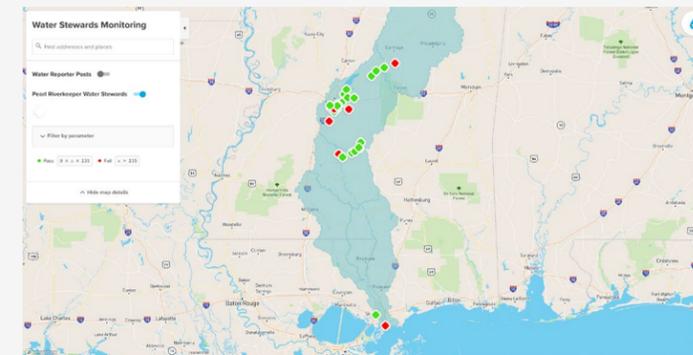
We are currently using the Alabama Water Watch training curriculum. Mississippi State Extension and the newly formed Mississippi Water Stewards program are editing the AWW training materials as necessary to apply to Mississippi. (<http://extension.msstate.edu/natural-resources/water/mississippi-water-stewards>)

### Implementation Plans

Testing occurs weekly in the summer and monthly during the rest of the year.

## REPORTING AND PRESENTATIONS

Results are posted embedded in the Pearl Riverkeeper [website](#).



### Organization

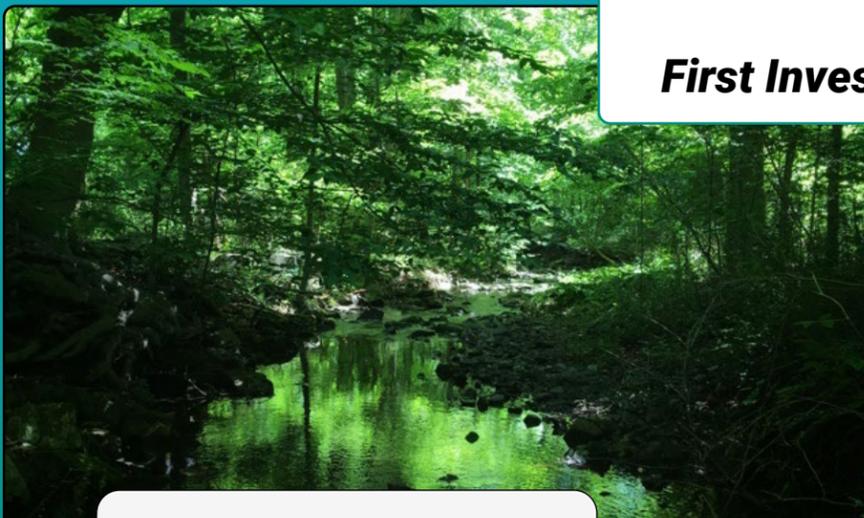
[Pearl Riverkeeper](#)

### Point of Contact

Abby Braman  
Pearl Riverkeeper

### Partner Organizations

Mississippi Water Stewards



**FISH:**  
*First Investigation of Stream Health*

**PROGRAM SUMMARY**

First Investigation of Stream Health (FISH) is a fun and easy citizen science tool that provides individuals, families and volunteer groups with the opportunity to track, document, and share the fascinating changes in wildlife and vegetation that can happen following stream restoration projects.



**Research Question**

What evidence of stream health improvements (or degradation) are you seeing on your property over time?

**Objectives**

- Creating a collection of individual success stories to share with potential new streamside BMP implementers.
- Encouraging maintenance and ongoing landowner attentiveness to implemented streamside BMPs.
- Educating streamside BMP owners about their stream and streamside habitat.

**PROJECT MANAGEMENT**

**Problem your program addresses**

Landowner buy-in for streamside restoration practices and stream health/habitat improvement

**Brief History of Problem and Program**

Most landowners do not get to personally see the long-term water quality benefits (nutrient and sediment reductions) that come from streamside restoration practices like buffers, fencing, etc. In order to help encourage new adopters, we needed first-hand success stories that landowners could see, right on their own property. Habitat improvement provides an opportunity for this.

FISH was first developed as a paper form as part of the Conewago Initiative funded by the National Fish and Wildlife Foundation (NFWF.) Over time, it became an online survey tool before it was modified by Chesapeake Commons to an app, and then added to Water Reporter.

**DATA MANAGEMENT**

**Data Uses**

Data is used to educate the public about stream health and water quality so that they can make informed decisions when managing their own lands or in support of public land management efforts.

Data collected is for site-specific comparison and to measure change over time. The data collected is not for broad comparisons from site to site due to qualitative nature of ranking scores.

**Data Fields**

- Date and Time
- Coordinates
- Water clarity
- Aquatic life populations
- Streamside wildlife observations
- Streambank vegetation ranking
- Embeddedness ranking
- Riparian buffer vegetation ranking

**Geographic Area**

Currently this program is Pennsylvania focused, but is available across the United States. It is intended for monitoring wadeable streams and on users' property or on sites with permitted public access.

DATA TYPE

**FIXED LOCATIONS**

self-determined, self-calibrated

USE GOAL

**EDUCATION & ENGAGEMENT**



**WATER REPORTER**

Users identify a stream they want to sample and a station is set up for them using Water Reporter. The data users collect is then populated on a map through the Water Reporter platform and embedded at [www.fishprotocol.org](http://www.fishprotocol.org).

## DATA ACQUISITION

### Sampling Methodology

The methodology consists of self-calibrated observational ranking, counts of species observed, water clarity measured with transparency tube (optional), and basic species identification. More information on the project description can be found at [www.fishprotocol.org](http://www.fishprotocol.org). It is a simplified, user friendly modification of the In-Stream Comprehensive Evaluation (ICE) protocol used by PA DEP to assess stream impairment.

### Equipment Used

Transparency Tube (optional), field guides (optional)

## PARTICIPANT DETAILS

### Volunteer Profile

Interested users are granted access to Water Reporter after signing up through a Penn State survey process.

### Participation Requirements

Participants must sign-up and have access to a stream where monitoring can take place.



## PLANNING COMPONENTS

### Training Plans

A [recorded webinar training](#) is available and we will host face-to-face trainings when possible based on group size and location.

### Engagement Plan

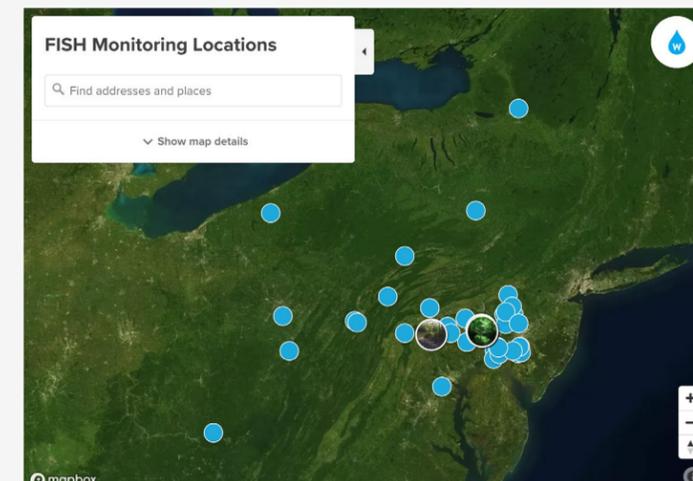
We conducted statewide training of Penn State Extension Master Watershed Stewards to be FISH facilitators. We encourage any landowner we work with who has implemented streamside restoration projects to use FISH.

### Implementation Plans

Site sampling is recommended at least once a year, preferably twice a year for at least 3 years (encouraged for many more!)

## REPORTING AND PRESENTATIONS

All results are displayed at [www.fishprotocol.org](http://www.fishprotocol.org).



We have tried implementing FISH using a lot of different interfaces (virtual and non-virtual) and we are happy to have a stable platform with ongoing support. Thanks Water Reporter!



### Organization

Penn State Extension

### Point of Contact

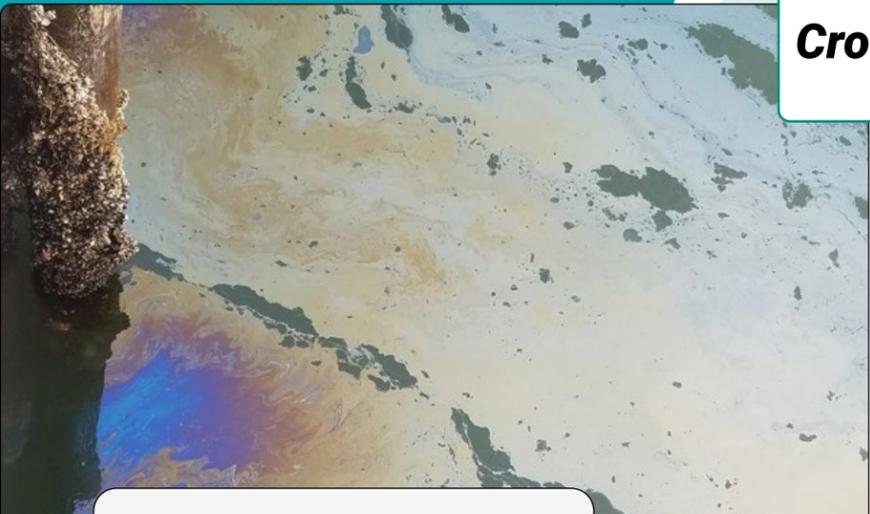
Kristen Koch  
Program Manager

### Partner Organizations

Penn State Agriculture and Environment Center

## RE SOURCES

### Crowdsourcing Local Pollution



#### PROJECT MANAGEMENT

##### Problem your program addresses

Stormwater pollution, litter hotspots, and lack of understanding of local pollution.

##### Brief History of Problem and Program

The majority of contaminants that enter the ocean come from stormwater runoff—which is largely unregulated. These contaminants find their way into the food chain and have devastating impacts as they bioaccumulate.

Species from algae to salmon and orcas suffer from toxic contamination from stormwater runoff.

RE Sources has public education campaigns about stormwater before, but hasn't used a platform like Water Reporter to help people apply their knowledge before.

##### Program successes and outcomes

We have developed a stronger working relationship with local regulatory agencies to address stormwater pollution, so they are quicker to respond and take action when we report pollution

#### PROGRAM SUMMARY

We wanted to create a network of people who know what pollution looks like and know how to report it. This will significantly increase the odds that pollution is properly reported and cleaned up by the appropriate agency. By showing that we have an active community keeping an eye on the water, we hope individuals and industries will better monitor their own pollution. This supports a more timely response to pollution.



#### Research Question

Where is there a lot of pollution?  
What are the sources? Who is responsible?

#### Objectives

- 1) Educate the community on how to recognize and report pollution;
- 2) Hold polluters accountable and get the pollution cleaned up; and,
- 3) Track pollution to find trends

#### DATA MANAGEMENT

##### Data Uses

There are not enough people working in local regulatory agencies to track and clean up all the pollution that occurs.

Crowdsourced information to inform the agencies who regulate and clean up stormwater pollution about possible problems. RE Sources also uses peoples' contributions to show how everyday community members can have big impacts.

##### Training Outcomes

In the process of training people to use the app, we are also educating them on what pollution looks like, where it is likely to be found, and how to report it. This then teaches them about the general concepts of stormwater pollution, helping them make better decisions at their own house and neighborhood, and encouraging them to share the information with others.

##### Geographic Area

Whatcom and Skagit counties, WA

DATA  
TYPES

ON-THE-FLY

USE  
GOAL

EDUCATION & ENGAGEMENT  
PERMITTING ADHERENCE



There are many people in Whatcom and Skagit counties that are really concerned about pollution and are motivated to make a difference. These tools give people an opportunity to be actively involved in cleaning up and preventing pollution.

## DATA AQUISION

### Project Planning

Overview and supporting materials:  
<https://www.re-sources.org/initiative/water-reporter/#section-overview>

Blog: <https://www.re-sources.org/2020/02/new-app-lets-community-take-active-role-in-cleaning-up-waterways/>

### PARTICIPANT DETAILS

We have about 80 folks that have downloaded since the launch of the program 1 year ago. COVID interfered with a lot of our outreach events. Many of our supporters are older and don't use smartphones very much. I am going to reach out to schools and teachers more this year, hoping younger folks may embrace it more.



**This summer a woman notified me regarding a neighbor that was pouring oil down a storm drain. I went out to take a look and then notified our city's stormwater department and they came out with a pump truck to remove the oil. The city was supposed to follow up with educational materials but they didn't and the dumping occurred again. So we cemented markers on all the storm drains in the neighborhood indicating that what gets dumped flows directly to a waterway. The city pumped it out again and said they would follow up with educational materials. I am currently waiting to see if that materializes. This wound up being a good opportunity to collaborate with the city and to push them to get information out.**

-- Kirsten McDade, Pollution Prevention Specialist

## PLANNING COMPONENTS

### Engagement Plan

We have a Public Participation Grant through the Washington Department of Ecology, which helps fund our Water Reporter community outreach. Most of our presentation and tabling events scheduled for 2020 got canceled. We held a few virtual events, which were great but of course no substitute for on-the-ground training. Water Reporter will continue to be a part of our 2021 engagement plans.

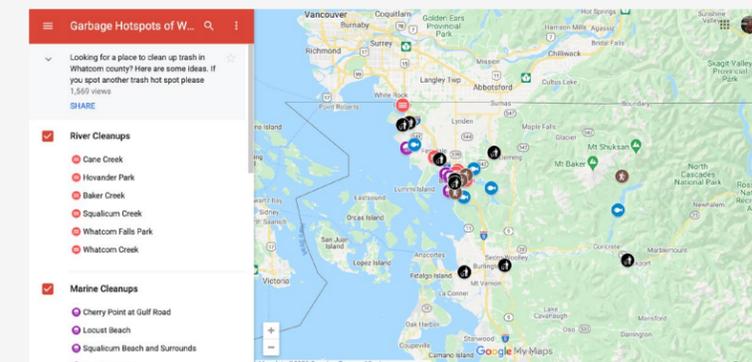
RE Sources started to send out quarterly newsletters to the 80+ community members who downloaded the app to give highlights, resources, and seasonal pollution tips.

### Implementation Plans

Ongoing

## REPORTING AND PRESENTATIONS

We made a garbage hotspot map using data from actual users' posts to help people plan their own trash cleanups. People found this very useful, since our larger litter cleanups were cancelled in 2020.



Visit the live map at this [link](#).



### Organization

[RE Sources](#)

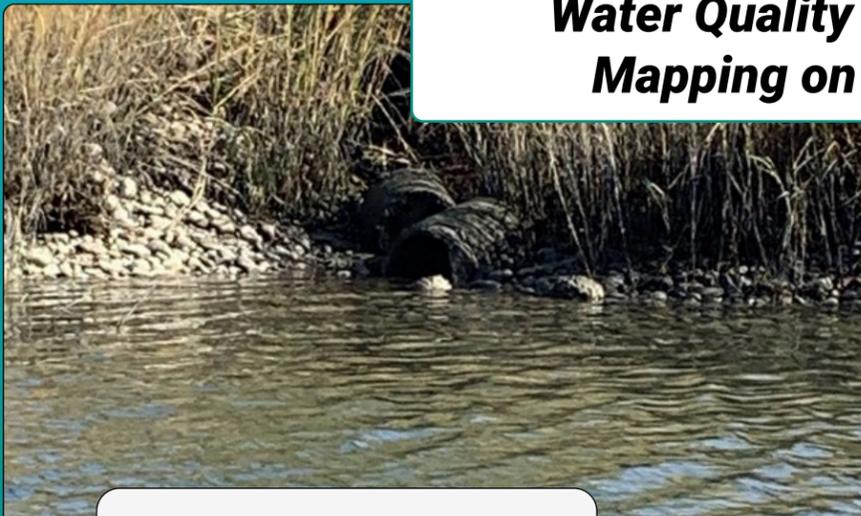
### Point of Contact

Kirsten McDade  
Pollution Prevention Specialist

### Partner Organizations

We collaborate with City of Bellingham, Port of Bellingham, and Department of Ecology

## Water Quality Monitoring and Culvert Mapping on the Hutchinson River



### PROJECT MANAGEMENT

#### Problem your program addresses

There are poor records of the water infrastructure systems that drain into the Hutchinson River. We are using Water Reporter to track these outfalls and culverts and fecal bacteria levels over time. The goal is for the students to use the data to lobby the city government to prioritize sewage infrastructure repairs.

#### Brief History of Problem and Program

Lack of proper recordkeeping has resulted in Mount Vernon's sewer system deteriorating to the point that it is unknown where exactly bacterial pollution is coming from. The City has faced an EPA consent order to fix the point source pollution issues.

Save the Sound recently partnered with the Boys and Girls Club of Mount Vernon to teach them about stream ecology, water quality, and local legislative advocacy. Our goal is for residents of the City of Mount Vernon to lead the charge when it comes to holding their elected officials accountable. Long-term monitoring and public outreach are significant portions of this program.

### PROGRAM SUMMARY

Mount Vernon is a community that has faced a disproportionate amount of pollution compared to surrounding communities in Westchester. A crumbling wastewater system has been leeching fecal bacteria into local water bodies for years. We are using data from water quality monitoring conducted by high school students in Mount Vernon to advocate for prioritization of water infrastructure repair.



#### Research Question

Are the pollution levels in the River decreasing since the EPA issued the consent order to Mount Vernon? Is Mount Vernon actually fixing these polluting outfalls and culverts?

#### Objectives

Continuously check in with City officials to ensure that the water infrastructure systems are being repaired. Document bacteria levels over time to test if the repairs are being made.

### DATA MANAGEMENT

#### Collection Strategy

Our first stream walk was exploratory, looking for previously undocumented outfalls. Follow-up monitoring has focused on collecting bacteria samples along multiple outfalls along the Hutchinson River.

#### Data Uses

We intend to use the data to show elected officials if their action on water pollution is working and if they are doing enough to reduce this pollution.

#### Project Planning

Students at the Boys and Girls of Mount Vernon partner with scientists at Save the Sound to track the improvement (or lack thereof) of sewage pollution entering the Hutch River.

- Meet regularly with elected officials and their teams in the City of Mount Vernon for project updates.
- Conduct regular water quality monitoring on the Hutch River.
- Identify unknown outfalls and culverts.
- Use data to demand action from politicians and increase awareness in the community.

#### Geographic Area

Hutchinson River between Mount Vernon and Pelham in New York State.

DATA  
TYPES

**FIXED LOCATIONS**  
for known sites  
**ON-THE-FLY**  
for new infestations  
**OBSERVATIONAL**  
for other watershed activity

USE  
GOAL

**EDUCATION & ENGAGEMENT**  
**POLICY & LEGISLATION**




**WATER  
REPORTER**

We used Water Reporter to create a mapped database of the outfalls spilling into the Hutch River. We are only just starting to explore the station feature to see how we can incorporate that aspect into our workflow.

## DATA ACQUISITION

### Sampling Methodology

**Exploratory** – Walk along a 750 yard stretch of the stream, documenting water quality at all known and unknown outfalls along the stretch.

**Regular** – Use the stations as reference to conduct regular water quality monitoring.

### Equipment Used

YSI probe is used for abiotic water variables. Bacteria bottles for fecal bacteria. Test strips for pH and nitrogen level. Measuring tape to record reach length.



## PARTICIPANT DETAILS

### Volunteer Profile

Students at the Boys and Girls Club of Mount Vernon

### Volunteer Training

We have had 3 separate trainings for the students. They were entirely hands-on based. This involved YSI training, test strip training, and playing around with the Water Reporter app.



**It has been great to watch Mt Vernon youth develop an interest in their natural environment. Access to nature is often the largest obstacle for connection and care about nature, and getting these kids out there has been empowering.**

**Many of the students have never explored a stream before. It was great to see them go from wobbly in waders to confident and curious.**

**One student asked if they could start organizing clean-ups along the Hutch, which is exactly what we're hoping to inspire in the community.**

## PROJECT OUTPUTS

### Engagement plan

We had a schedule of meetings and trainings with the students that are nearly complete. An additional stream walk and a Long Island Sound boat trip are in play, but are indefinitely postponed due to Covid-19.

### Implementation Plan

Right now this is a one-off year-long program. We hope to establish a culture of Environmental Stewardship at the Boys and Girls Club of Mount Vernon that future students that can be involved in. Save the Sound will continue to work with the Mount Vernon community, but the specifics of our projects may change over time.

## REPORTING AND PRESENTATIONS

We regularly share out data with the Mayor's office in Mount Vernon. It is map based, displaying fecal bacteria numbers over time attached to certain GPS points indicating outfalls and culverts.

### Successes

- Establishing a group of students who promote environmental stewardship in Mount Vernon.
- Repair of 50+ drainage pipes that effect water quality in the Hutchinson River.



### Organization

[Save the Sound](#)

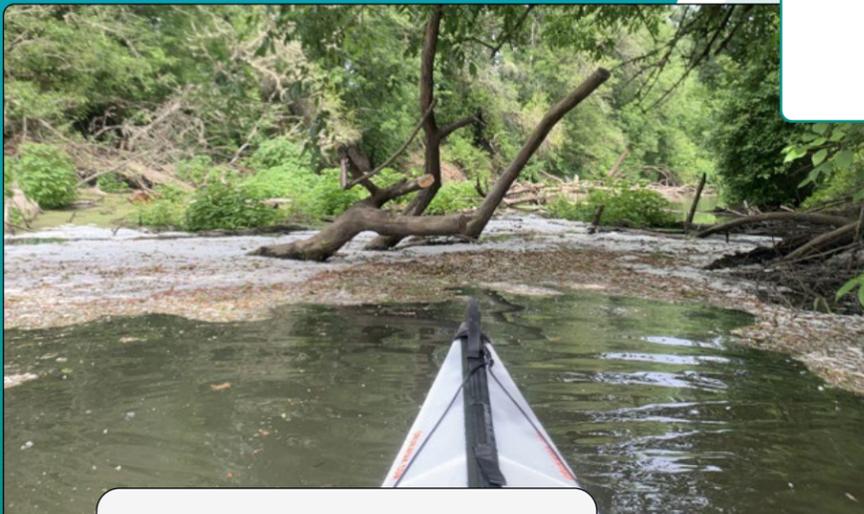
### Point of Contact

Siddharth Motwani  
Long Island Sound Program  
Assistant

### Partner Organizations

Boys and Girls Club of Mount  
Vernon

## Tualatin Riverkeepers



### Water Reports

#### PROGRAM SUMMARY

We use Water Reporter as a means of allowing recreational paddlers to share the locations of logjams and debris obstructions to navigation on the river, and to also share opportunistic sightings of wildlife to increase paddler safety and build a sense of community on our river. We will expand these efforts to include reports of water clarity and the presence of invasive weed infestations in the next couple of years to help raise general community awareness about issues impacting the Tualatin River.



#### Research Question

**Logjams:** Where are we consistently see spring logjams and how long do they persist?

**Erosion:** When and how frequently does water clarity decrease in certain locations?

**Invasive Species:** Where are we consistently seeing infestations of specific invasives?

#### DATA MANAGEMENT

##### History of Program

We frequently receive calls for information when paddlers are planning outings, particularly on logjam locations that affect navigability. That information was difficult to keep current when we were keeping a list of reported jams on our website ourselves. We switched to using the Water Reporter app and encouraged people to report their observations with dates and geo-tags, and to use the app to check for logjams prior to their recreational outings. This seems to be a better way to keep logjam information up to date and available for community use. At this point, we have only been asking for reports of logjams, navigation hazards, and interesting wildlife sightings. We hope to expand this program and the use of the app to include opportunities for erosion related observations and invasive plant infestations in the next couple of years.

##### Objectives

We hope that locating and sharing information on logjams and debris will improve paddler safety and allow improved experiences for paddlers of all levels. In the future, we hope that by noting changes in water clarity and identifying new bare banks and other signs of erosion impacts, we can help identify the scale of sediment impacts caused by erosion sites and broader stormwater impacts. We also hope that our future observations identifying invasive weeds will allow us to locate infestations early enough to control them.

##### Data Uses

We use the data to inform other paddlers about river conditions, locations of potential hazards such as logjams, or recent sightings of interesting wildlife.

**DATA TYPE** | OBSERVATIONS

**USE GOAL** | EDUCATION & ENGAGEMENT



We do not have a formal monitoring program. However, the geo-tag on submitted photos will track locations of logjams, erosion situations, and weed infestations. This feature is very helpful for our informal data collection purposes, and serves the goal of helping to inform paddlers who are planning to be on the river with current and updated information.

#### PROJECT MANAGEMENT

##### Problem your program addresses

Seasonal log and debris jams in the river channel affect navigation by recreational paddlers. In the future, we hope to add problems such as the impact bank slumps and stormwater erosion have on water clarity and the spread of non-native invasive weeds to our monitoring programs.

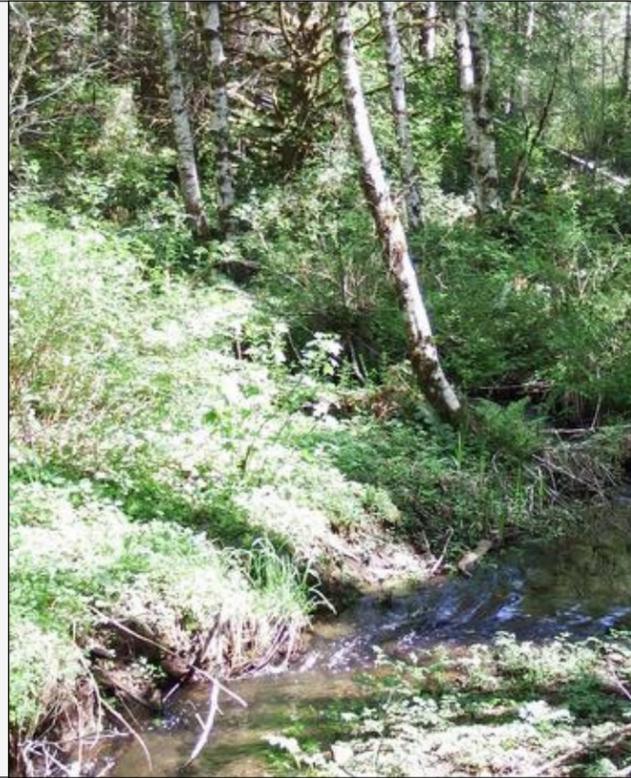
##### Brief History of Problems

- 1) Recreational use of the river is rapidly growing and winter season high flows create logjams that result in partially or entirely obstructed river navigation. These can become unanticipated hazards to novice and experienced paddlers alike who aren't prepared for them.
- 2) Flash stormwater events and a legacy of poorly designed development cause rapid gullying and erosion of soil into the river in the Tualatin River watershed.
- 3) Invasive weeds, like Japanese Knotweed and Purple Loosestrife, are rapidly spreading along the banks of the river.

## DATA AQUISITION

### Outcomes and Successes

Currently our intended outcome is to make paddling the river early in the season or later in the season safer for all levels of paddlers. In the future we hope to locate problem erosion situations and help control the spread of specific invasive plants. We also hope that in the future this will serve to increase awareness around issues impacting the health of the river by having paddlers who rent our boats or recreate on their own engage with the Water Reporter app and participate in data collection or at least gain knowledge of issues by reading other participant reports.



## PARTICIPANT DETAILS

### Volunteer Profile

This is a relatively new program with relatively little history. Over the last two paddling seasons, we have mostly been working on getting people in boats onto the Water Reporter app and used to using it. We have been citing and promoting the app as the best location to see where logjams are because those posts are dated and often include a geotagged photo.



## PLANNING COMPONENTS

### Training Plans

We plan to engage in formal volunteer training in the future, but we have not developed curriculum materials at this time.

### Staff Roles and Responsibilities

Mark Fitzsimons (Trips & Tours Program Coordinator) is the contact for this program. With data being collected opportunistically, the only managed components are Volunteer Training, and Equipment & Tools, which are both provided through our rental programs or by paddlers themselves as the only major tool is a boat.

### Implementation Plans

We do not have a formal monitoring program schedule, but our river rental program and guided trips typically happen generally between May through October, which also coincides with our community going out on the river on their own. Much of our monitoring is done then.

## REPORTING AND PRESENTATIONS

At this time we do not collect the data for assessment, nor do we have any plans to present it. Once we start collecting more data regarding erosion and locations of invasive plant infestations, we will begin to examine that data and then determine the best use of that data to achieve our goals of protecting and restoring the Tualatin River watershed.

### Geographic Area

The Tualatin River National Water Trail, which covers the lower 40 navigable miles of the river.



### Organization

[Tualatin Riverkeepers](#)

### Point of Contact

Mark Fitzsimons  
River Experiences Coordinator

### Partner Organizations

Tualatin Soil and Water Conservation District will help with volunteer training.

## Flow 365 Monitoring Program



### PROJECT MANAGEMENT

#### Problem your program addresses

Our 50-year vision is to restore the heritage of year-round, free-flowing creeks and rivers in Tucson. Despite interest in the community, the data that

#### Brief History of Problem and Program

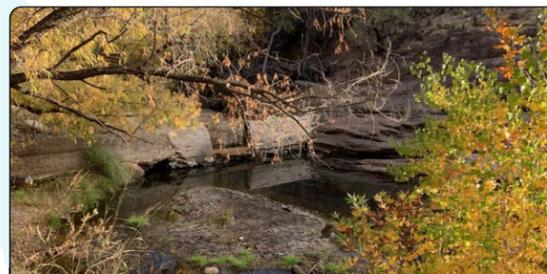
The Flow365 Community Science Monitoring Program is part of our larger River Run Network. The River Run Network Team has developed a 50-year strategic plan to achieve our vision to restore Tucson's heritage of flowing rivers. With the Flow365 program we will monitor the progress toward that goal. Read more on our website.

#### Successes and Outcomes

One of the successes of this program is community participation. We have consistently added more monitors annually, gaining 22 new monitors in 2020 alone. These monitors and their consistent data collection have contributed to another success: the data itself. Although we haven't fully analyzed the data yet, what we have shows positive changes in our rivers. There are still a few perennial spots in Tucson, like Lower Sabino Creek, which has been flowing non-stop since we started collecting data in 2016! Our monitors have also discovered new hidden gems in our city - places we had no idea were flowing. One of our monitors, Sara B., found a spot continuously flowing, even without rain, for over two months.

### PROGRAM SUMMARY

Our Flow365 community science monitors track flow in our creeks and rivers around Tucson. These committed volunteers routinely visit their specified sites to ensure the gathering of data to understand the progress our restoration efforts are making toward our 50-year vision.



#### Research Question

What is the flow status in each of our unique river systems?

#### Objective

To gather data related to river flow in Tucson. This data is not being collected by any other entity in our city.

### DATA MANAGEMENT

#### Data Uses

In this program, we use Water Reporter to collect numerical data on our rivers and photos of their current status.. The numerical data is analyzed to develop conclusions related to flow consistency, site-specific information, and relationship with rainfall. So far, we have concluded that there are some stretches of Tucson's creeks and rivers that flow perennially, some that flow intermittently, and some that flow ephemerally. We continue to use this data to prioritize restoration sites, inform our volunteers, and gain insights into the river systems. The photos are used to visualize the area, share and educate others in the program and River Run Network at large, and for organizational advertisement.. We hope to also organize and use the photos to show changes over time in relationship to the collected data.

#### Data Fields

Volunteers input in the form at the same spot each time. When they are taking a photo, they take artistic license for what to capture. The form documents the observed flow rate. Verified data appears on maps embedded into our website.

#### Data Analysis

Thanks to Water Reporter, our data is organized in a way that when we download it to Excel, we can use it to see data for specific locations for specific times.

#### Geographic Area

Tucson, Arizona

DATA TYPE | FIXED LOCATIONS

USE GOAL | EDUCATION & ENGAGEMENT



Volunteer monitors enter their observations into the digital data collection form.

Verified data appears on the maps embedded into our [website](#).

## DATA ACQUISITION

### Project Planning

Each monitor that joins the program attends a training, where they learn about the program, the parameters, our river systems, and how to use Water Reporter. Once they have gone through this training, they are added as “official monitors” and are assigned a site to observe and monitor. They continue their observations as often as possible throughout the required year of service.

### Equipment Used

Volunteers only need a smartphone and access to their monitoring site to participate.



## PARTICIPANT DETAILS

### Volunteer Profile

Volunteers are interested in returning routinely to one spot to monitor flow levels and have access to a smartphone.

### Participation Requirements

Participants must live in the Tucson area year-round to ensure consistent data collection. Many monitors will discontinue after a year, but we have had others monitors that have continued for a second, third, and even fourth year.



**“When Water Reporter updated, there were a lot of changes that we needed to communicate to our volunteers. This was the first time some of our monitors were meeting each other, so we wanted to make sure they got to know each other. One of the first questions during these “re-training” sessions asked monitors to reflect on why they had continued monitoring for however long they had been in the program. This section of the re-training took the longest as all of our monitors had amazing reasons to stay, from the program’s personal importance to interest in the data and how it would be used. It was an amazing opportunity to connect with our volunteers.” - Lauren Monheim**

## PLANNING COMPONENTS

### Training Plans

The training and Water Reporter Instructions that our monitors receive are comprehensive. Although there is a possibility for error in these observations, involving the community and having individuals collect this data is how we are able to gather this valuable data. Our staff are always able to answer questions for our monitors about their site and the data they collect.

### Engagement Plan

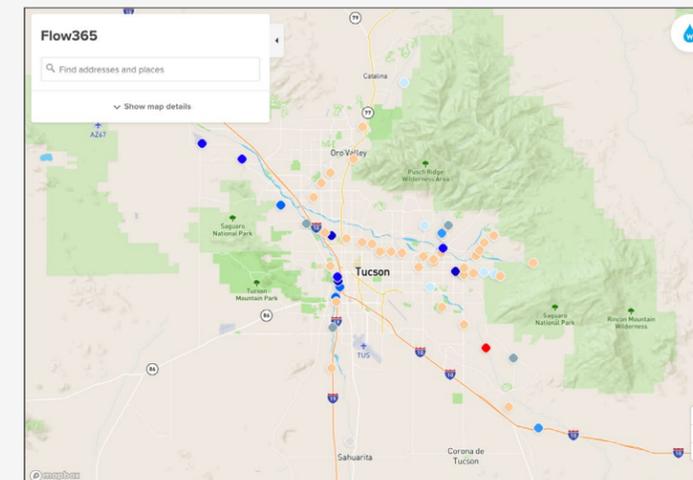
Our goal is the continued consistent monitoring of the sites we have around the city. To ensure this, we have continuous trainings throughout the year and we offer site visits for our monitors if they would like in-person time with staff. We are in constant communication with our volunteers about their sites and monitoring consistency.

### Implementation Plans

The monitoring takes place year-round. Volunteers must commit to a minimum of one year of participation, but there is no end on our side of the actual monitoring program. We encourage long-term participation.

## REPORTING AND PRESENTATIONS

We are reporting this data to our staff and volunteers, and hope to report it to other entities as well. We have begun presenting our data in trainings as well as in our monthly reports to our monitors.



### Organization

[Watershed Management Group](#)

### Point of Contact

Lauren Monheim  
River Run Network Program  
Coordinator



## The Commons

### Contact Info

✉ [support@waterreporter.org](mailto:support@waterreporter.org)

📍 1875 Connecticut Ave  
Washington, DC 20009