

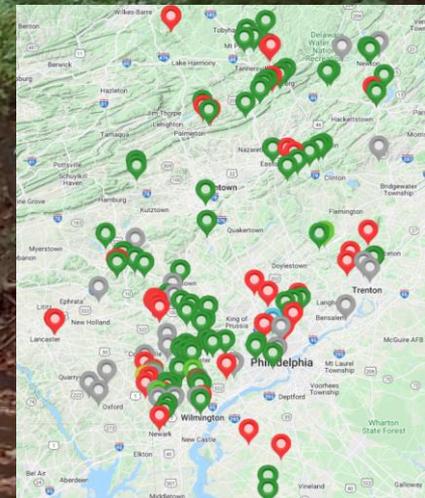
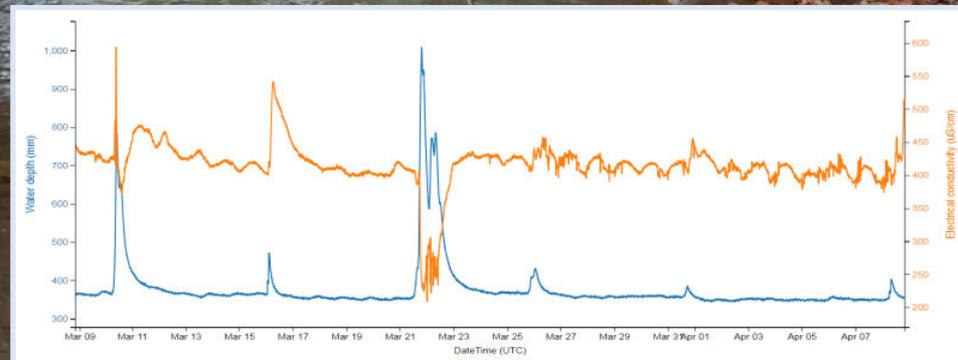
# WELCOME!

## Monthly EnviroDIY in the DRB User Group Meeting

*Online, Thursday, November 17, 2022, 2:30-3:30p*



 **Monitor My Watershed<sup>®</sup>**

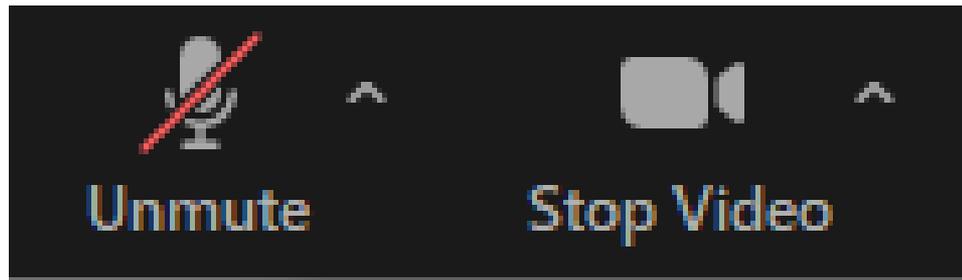




# Zoom Orientation



**\*Meeting is being recorded**



**\*Mute unless asking question**

# These Monthly Meetings

Recordings available at: <https://wikiwatershed.org/drwi/>

The image shows a YouTube video player interface. At the top left is the YouTube logo. A search bar is located at the top center. The video content features a blue banner with the text "WELCOME! Monthly EnviroDIY-DRWI User Group Meeting Online, Thursday February 17, 2021, 2:30-3:30p". Below the banner are several images: a water quality monitoring station in a stream, a snow-covered stream, a map of the region with green and red location markers, a close-up of a sensor, and a line graph showing data over time. The "STROUD" logo is visible in the bottom right corner of the video frame. On the right side of the video, there are four small video thumbnails showing participants in a virtual meeting. The video player controls at the bottom show a play button, a progress bar at 0:07 / 1:00:14, and icons for volume, full screen, and settings. Below the video player, the title "February 2022 EnviroDIY-DRWI Monthly Meeting" is displayed, along with "24 views • Feb 17, 2022". Interaction buttons for "1" like, "DISLIKE", "SHARE", "SAVE", and a menu icon are present. At the bottom left, the channel name "Stroud Water Research Center Videos" is shown with "571 subscribers". A red "SUBSCRIBE" button is located at the bottom right.

YouTube

Search

**WELCOME!**  
Monthly EnviroDIY-DRWI User Group Meeting  
*Online, Thursday February 17, 2021, 2:30-3:30p*

EnviroDIY

Monitor My Watershed®

STROUD

February 2022 EnviroDIY-DRWI Monthly Meeting

24 views • Feb 17, 2022

1 DISLIKE SHARE SAVE ...

Stroud Water Research Center Videos  
571 subscribers

SUBSCRIBE

# These Monthly Meetings

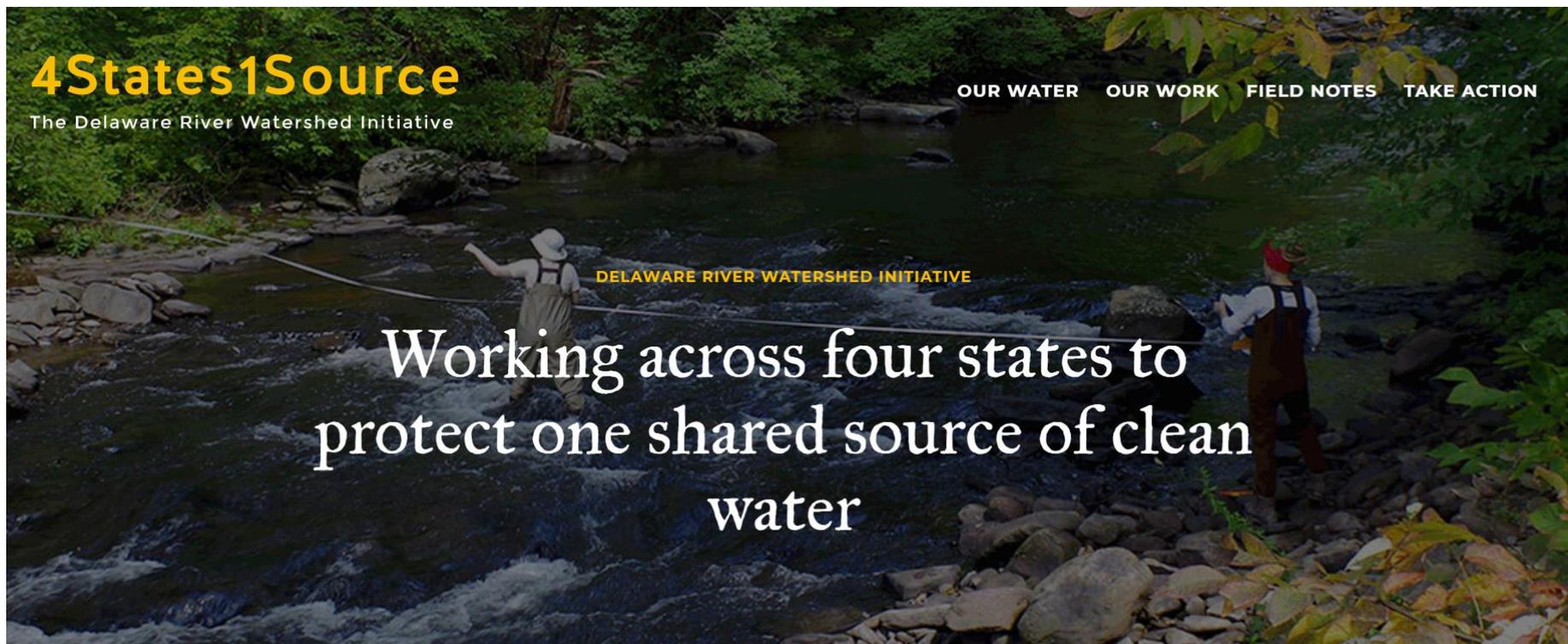
- Every third Thursday of the month
- 2:30-3:30p
- Zoom link will remain the same:  
<https://us02web.zoom.us/j/81881801310?pwd=eUFmbXZLbmRibVcxa1dtNVhzRmNvZz09>
- Reminder email one week prior to each month's meeting
  - All are welcome, please share
  - **And let us know if others should be added**

# REMINDER

- Attendees include:
  - Groups working in Delaware River Watershed Initiative (DRWI)
  - Groups working in Delaware River Basin (DRB) but not DRWI
  - Folks from outside the DRB
- Stroud Center support via DRWI and C-SAW

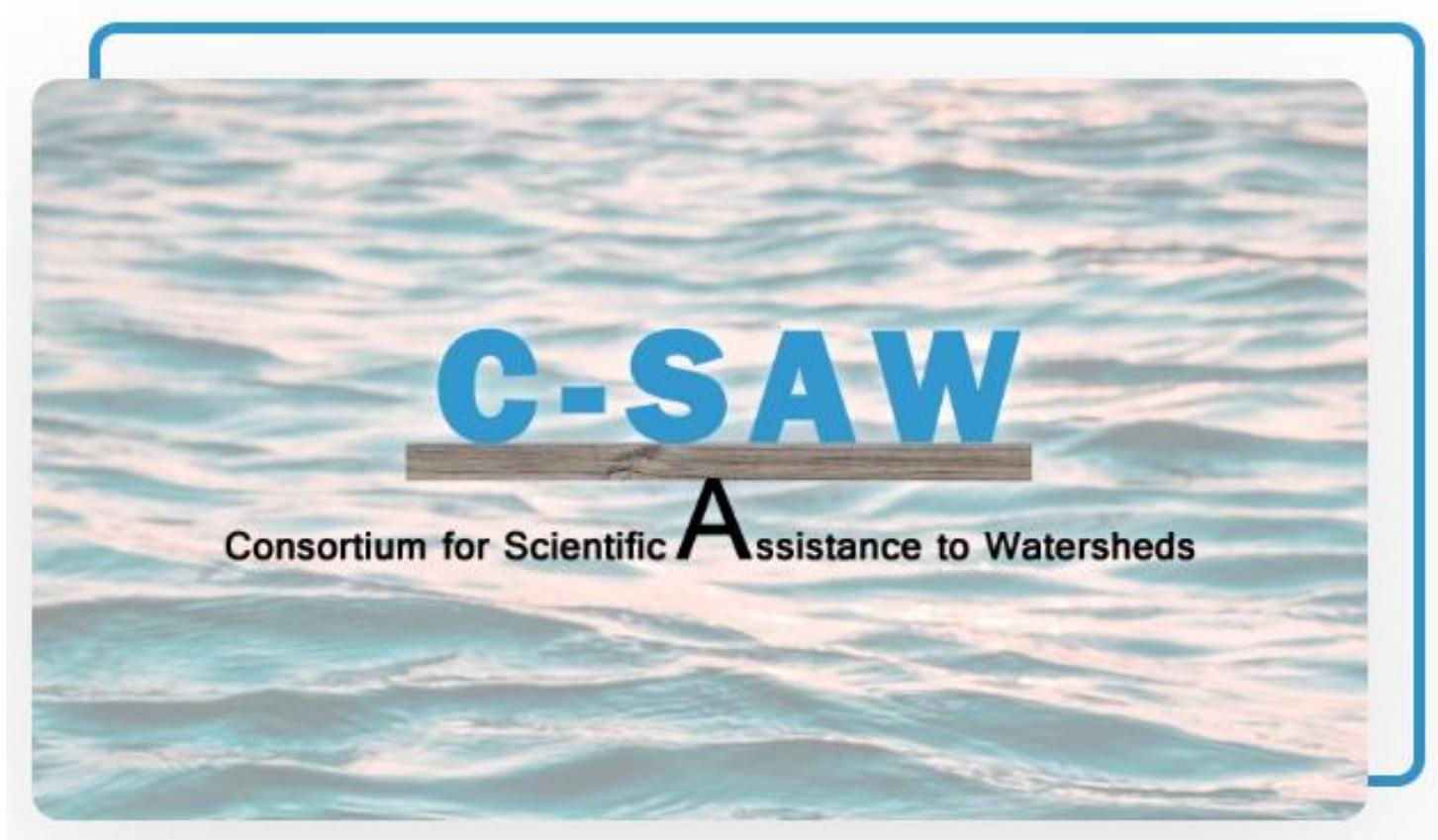
# Delaware River Watershed Initiative (DRWI)

<https://4states1source.org/>



# C-SAW

<https://www.c-saw.info/>



# Goals for these monthly meetings

- **Time to check-in, ask questions, report issues, network, etc.**
- **Updates** from the Stroud Center
- **Presentations**
  - **Station Owner/Manager Presentations** – communicate about individual situations, local watershed work
  - **Focus Topic Presentations** – guest presenters talk about technical/ecological/other focus topics

*\*All of this to support gathering good data and using it purposefully*

# Stroud Center project personnel

## Stroud Center Facilitators:

David Bressler



Project facilitator

Rachel Johnson



Research Engineer  
Technician

Christa Reeves



Northern DRB  
technician and  
organization  
collaborator

Shannon Hicks



Research Engineer,  
Mayfly and EnviroDIY  
Inventor/Designer



Elena Hadley  
Part-Time Environmental Educator  
Research Technician

# Stroud Center project personnel

## Master Watershed Steward Facilitators:

Carol Armstrong



George Seeds



Master Watershed  
Steward Program



PennState Extension

# Stroud Center project personnel

## Stroud Center DRWI Leads:

Dr. John Jackson



Senior Research Scientist

Matt Ehrhart



Director of Watershed Restoration

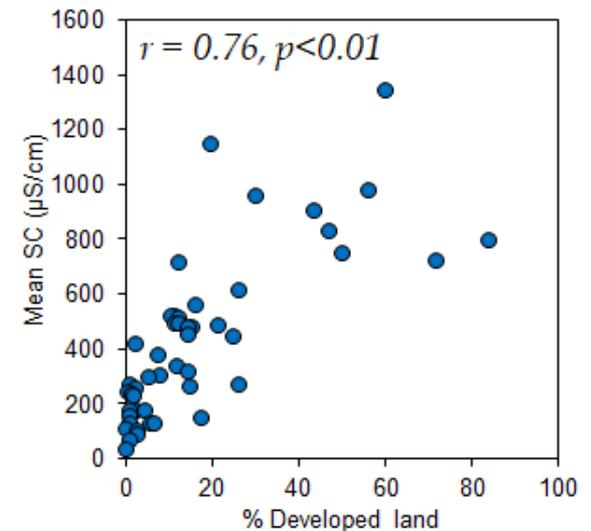
Dr. David Arcscott



Executive Director, President  
Research Scientist

# Stroud Center Perspective – EnviroDIY in the DRB

- Primary Goal
  - Support Station owners, managers, and volunteers
  - Use stations for local purposes
- Secondary Goal
  - Analyze basin-wide data set
  - Develop tools to characterize and contextualize watersheds



# Today's Agenda

1. Introduction
2. Stroud Updates
3. Presentation: Darby Creek Headwaters monitoring project and salt snapshot – Willistown Conservation Trust and Darby Creek Valley Watershed Association, Lauren McGrath
4. Discussion
5. Conclusion

# Stroud Center Updates

- Fall weather means leaf fouling of turbidity sensors
  - Clean sensors more often, as needed
- Power issues due to lower light before leaves have fallen
  - Hang on until leaves fall
  - Cycle batteries in the meantime if necessary

# Stroud Center Updates

- Stroud Center (Rachel Johnson and Elena Hadley) collecting grab samples for lab analysis all new EnviroDIY sites deployed in 2022 in DRB
  - About 20 sites
  - If permission is needed we will be in touch, but feel free to reach out

# Stroud Center Updates

- A number of groups doing Salt Snapshots
  - Be in touch with the Stroud Center if you'd like assistance in doing this

## Watershed Salt Snapshot – Instructions

### Overview

The following is a method for documenting salt levels in streams and rivers across a watershed by measuring the concentration of chloride (Cl<sup>-</sup>) (milligrams/liter, mg/l) during baseflow conditions. Measuring electrical conductivity is also recommended as it can provide explanatory information and is directly related to chloride concentration.

The intent of this method is to 1) determine salt levels that aquatic life is exposed to the majority of the time (i.e., during baseflow conditions) in streams of a watershed(s) and 2) identify specific areas of the watershed(s) that may be contributing to or preventing salt contamination of nearby streams.

### The basic method:

Over a short period of time (less than a week, to ensure consistency in data) a group of people fans out across a watershed (or other area of interest) during baseflow conditions and collects water samples from pre-determined stream sites. Sites are strategically chosen to help identify specific areas of the landscape that may be contributing to or protecting nearby streams from salt contamination. The samples are returned to a central meeting location where they are measured for chloride (mg/l) and specific conductivity (µS/cm). Because sampling is recommended to occur over a relatively short time period, it is important to consider the number of people available to conduct the work and the number of sites that can be visited in the allotted time. Judgment will be required to balance desired number of sites with personnel and time availability.

*Baseflow: the resting state of a stream between precipitation events; a stream or river's normal flow state when not influenced by recent precipitation runoff, often composed primarily of groundwater; the flow that would exist in a stream without the contribution of direct overland runoff from rainfall or melting snow/ice.*

### Equipment/Supplies

- Chloride Quantab® Test Strips, 30-600 mg/l, or other chloride measurement method

# Stroud Center Updates

- Follow-up Questions/Discussion from these meetings and in general
  - Post to Manage My Watershed – Stroud Center current recommendation



# Stroud Center Updates

<https://managemywatershed.org/>

## Main Forum

Viewing topic 1 (of 1 total)

Topic	Voices	Posts	Last Post
<a href="#">How to Use the Q &amp; A Forum</a> Started by:  Heather Brooks	1	1	February 5, 2021 at 3:45 pm  Heather Brooks

Viewing topic 1 (of 1 total)

You must be logged in to create new topics.

Username:

Password:

Keep me signed in

Log In

**Make an account and save your log in information**

# Stroud Center Updates

<https://managemywatershed.org/>

Viewing topic 1 (of 1 total)

Topic	Voices	Posts	Last Post
<a href="#">How to Use the Q &amp; A Forum</a> Started by:  <a href="#">Heather Brooks</a>	1	1	<a href="#">February 5, 2021 at 3:45 pm</a>  <a href="#">Heather Brooks</a>

Viewing topic 1 (of 1 total)

Create New Topic in "Main Forum"

**A note about images:** Within the text editor, clicking the image icon only allows you to embed images via URL, in other words, images that exist on other websites. There is an option, below the text editor, to attach your own images to the topic.

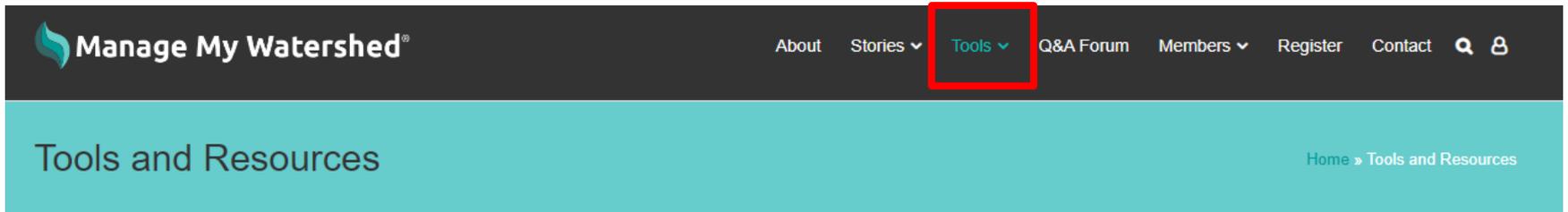
Topic Title (Maximum Length: 80):

Visual Text

**B** *I* “ ” ABC ☰ ☷ ☹ ☺ ☻ ↶ ↷ 🔗 🖼️

# Stroud Center Updates

<https://managemywatershed.org/>



The screenshot shows the top navigation bar of the 'Manage My Watershed' website. The logo is on the left, and the navigation menu includes 'About', 'Stories', 'Tools' (highlighted with a red box), 'Q&A Forum', 'Members', 'Register', and 'Contact'. Below the navigation bar is a teal header section with the text 'Tools and Resources' on the left and 'Home » Tools and Resources' on the right.

Have you found (or created) a resource or tool that supports freshwater stewardship? [Complete a short form](#) to submit it for consideration. We'll review it and, once approved, it will be added to the list below.

## [USGS StreamStats](#)

StreamStats provides access to spatial analytical tools that are useful for water-resources planning and management, and for engineering and design purposes. The map-based user interface can be used to delineate drainage areas, get basin characteristics ...



Dave Bressler / No Comments

## [Water Reporter](#)

Water Reporter is an app that connects people and organizations working to protect watersheds. The social network of users collect and share water observations and watershed information in an effort to build monitoring campaigns and ...



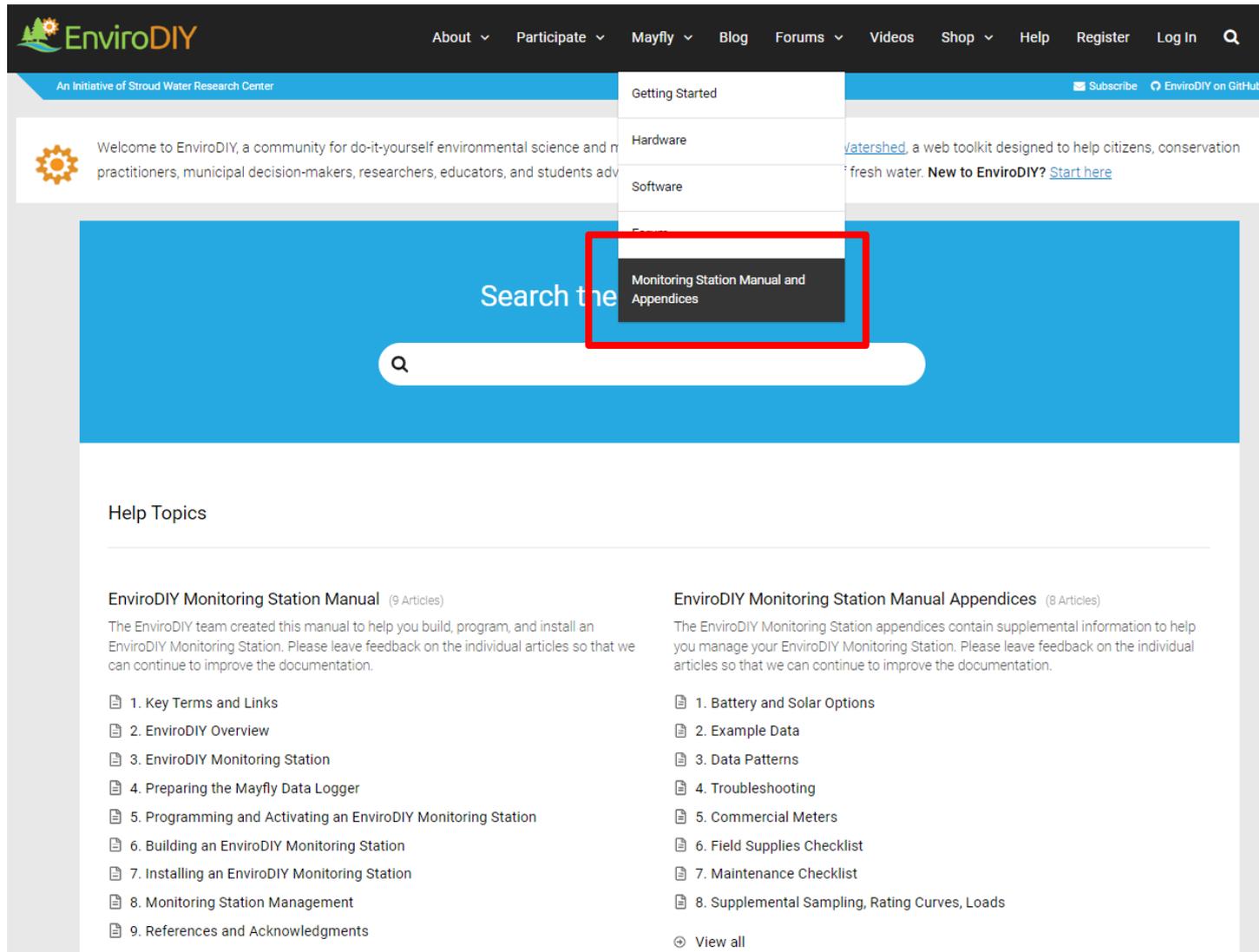
Scott Ensign / No Comments

## [Water Data Collaborative](#)

The Water Data Collaborative was created by a partnership of water-focused environmental organizations to "organize community water science resources, and practitioners. as well as create new and helpful tools to guide users through the entire ...

# Stroud Center Updates

- EnviroDIY manual - <https://www.envirodiy.org/knowledge-base/>



The screenshot shows the EnviroDIY website interface. At the top, there is a navigation bar with the EnviroDIY logo and links for About, Participate, Mayfly, Blog, Forums, Videos, Shop, Help, Register, and Log In. Below the navigation bar, there is a search bar and a dropdown menu. The dropdown menu is open, showing a list of categories: Getting Started, Hardware, Software, and Monitoring Station Manual and Appendices. The 'Monitoring Station Manual and Appendices' option is highlighted with a red box. Below the search bar, there is a section titled 'Help Topics' with two columns of links. The left column is titled 'EnviroDIY Monitoring Station Manual (9 Articles)' and lists 9 items. The right column is titled 'EnviroDIY Monitoring Station Manual Appendices (8 Articles)' and lists 8 items. A 'View all' link is at the bottom of the right column.

EnviroDIY  
An Initiative of Stroud Water Research Center

Getting Started  
Hardware  
Software  
Monitoring Station Manual and Appendices

Welcome to EnviroDIY, a community for do-it-yourself environmental science and practitioners, municipal decision-makers, researchers, educators, and students advocating for fresh water. [New to EnviroDIY? Start here](#)

Search the

Help Topics

**EnviroDIY Monitoring Station Manual** (9 Articles)  
The EnviroDIY team created this manual to help you build, program, and install an EnviroDIY Monitoring Station. Please leave feedback on the individual articles so that we can continue to improve the documentation.

1. Key Terms and Links
2. EnviroDIY Overview
3. EnviroDIY Monitoring Station
4. Preparing the Mayfly Data Logger
5. Programming and Activating an EnviroDIY Monitoring Station
6. Building an EnviroDIY Monitoring Station
7. Installing an EnviroDIY Monitoring Station
8. Monitoring Station Management
9. References and Acknowledgments

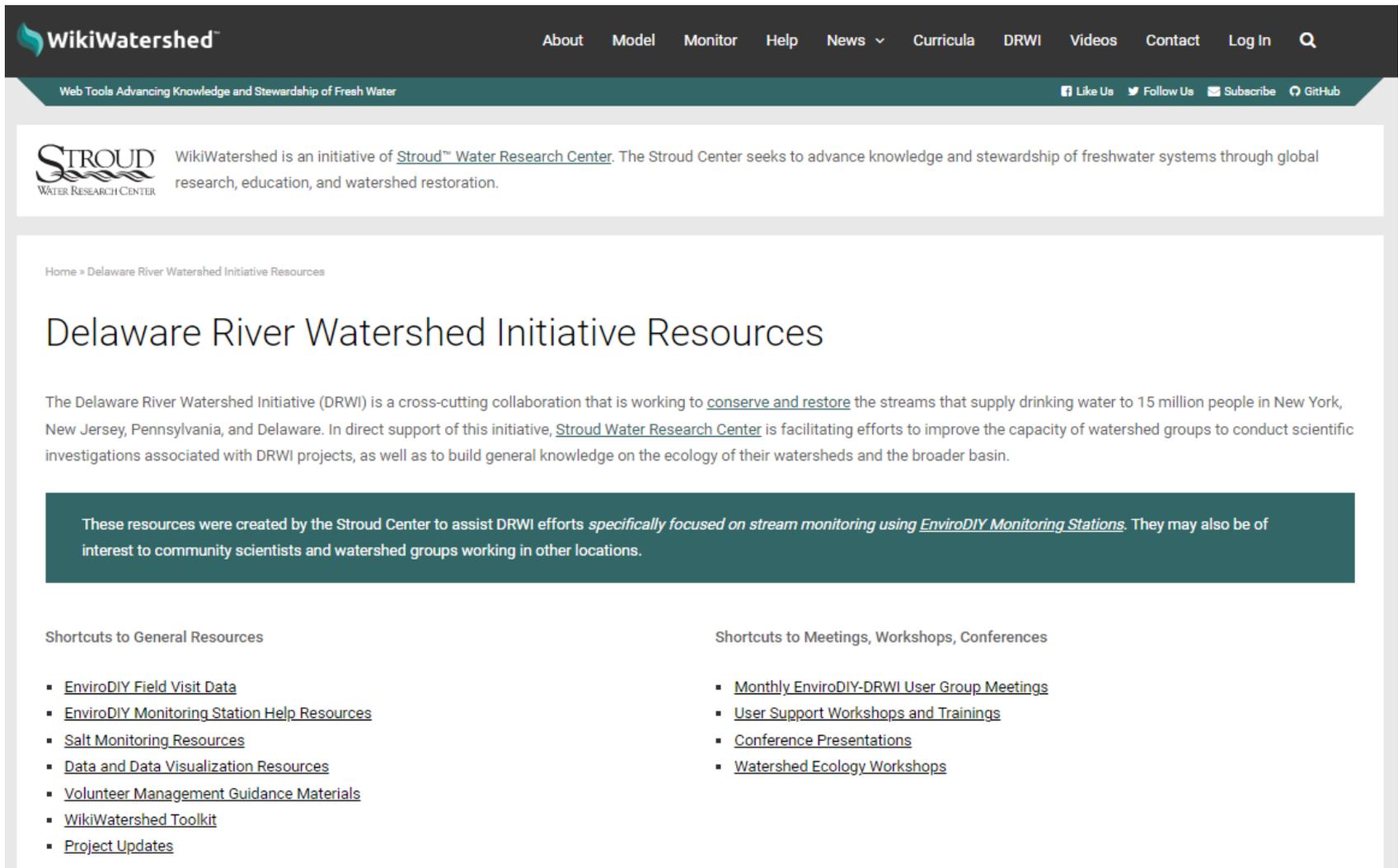
**EnviroDIY Monitoring Station Manual Appendices** (8 Articles)  
The EnviroDIY Monitoring Station appendices contain supplemental information to help you manage your EnviroDIY Monitoring Station. Please leave feedback on the individual articles so that we can continue to improve the documentation.

1. Battery and Solar Options
2. Example Data
3. Data Patterns
4. Troubleshooting
5. Commercial Meters
6. Field Supplies Checklist
7. Maintenance Checklist
8. Supplemental Sampling, Rating Curves, Loads

View all

# Stroud Center Updates

- Guidance materials - <https://wikiwatershed.org/drwi/>



The screenshot shows the WikiWatershed website. The top navigation bar includes links for About, Model, Monitor, Help, News, Curricula, DRWI, Videos, Contact, and Log In. Below the navigation bar is a banner for the Stroud Water Research Center, which is an initiative of WikiWatershed. The main content area is titled "Delaware River Watershed Initiative Resources" and contains a paragraph describing the Delaware River Watershed Initiative (DRWI) and its goals. A dark green callout box highlights that the resources were created by the Stroud Center to assist DRWI efforts, specifically focused on stream monitoring using EnviroDIY Monitoring Stations. At the bottom, there are two columns of links: "Shortcuts to General Resources" and "Shortcuts to Meetings, Workshops, Conferences".

WikiWatershed™

About Model Monitor Help News Curricula DRWI Videos Contact Log In

Web Tools Advancing Knowledge and Stewardship of Fresh Water

Like Us Follow Us Subscribe GitHub

**STROUD**  
WATER RESEARCH CENTER

WikiWatershed is an initiative of [Stroud™ Water Research Center](#). The Stroud Center seeks to advance knowledge and stewardship of freshwater systems through global research, education, and watershed restoration.

Home » Delaware River Watershed Initiative Resources

## Delaware River Watershed Initiative Resources

The Delaware River Watershed Initiative (DRWI) is a cross-cutting collaboration that is working to [conserve and restore](#) the streams that supply drinking water to 15 million people in New York, New Jersey, Pennsylvania, and Delaware. In direct support of this initiative, [Stroud Water Research Center](#) is facilitating efforts to improve the capacity of watershed groups to conduct scientific investigations associated with DRWI projects, as well as to build general knowledge on the ecology of their watersheds and the broader basin.

These resources were created by the Stroud Center to assist DRWI efforts *specifically focused on stream monitoring using [EnviroDIY Monitoring Stations](#)*. They may also be of interest to community scientists and watershed groups working in other locations.

### Shortcuts to General Resources

- [EnviroDIY Field Visit Data](#)
- [EnviroDIY Monitoring Station Help Resources](#)
- [Salt Monitoring Resources](#)
- [Data and Data Visualization Resources](#)
- [Volunteer Management Guidance Materials](#)
- [WikiWatershed Toolkit](#)
- [Project Updates](#)

### Shortcuts to Meetings, Workshops, Conferences

- [Monthly EnviroDIY-DRWI User Group Meetings](#)
- [User Support Workshops and Trainings](#)
- [Conference Presentations](#)
- [Watershed Ecology Workshops](#)

Any questions before we move on?



# Presentation

Presentation: Lauren McGrath, Anna Willig (Willistown Conservation Trust), and Aurora Dizel (Darby Creek Valley Association)



**Darby Creek headwaters monitoring project**

# Mentors currently available

- Carol Armstrong (MWS), [mnem.np@gmail.com](mailto:mnem.np@gmail.com), 610-659-7477
- George Seeds (MWS), [geoseeds@verizon.net](mailto:geoseeds@verizon.net), 484-886-9586
- Rachel Johnson (Stroud Center), [rjohnson@stroudcenter.org](mailto:rjohnson@stroudcenter.org), 973-557-8995
- Christa Reeves (Stroud Center)(in the north, situational), [christa@musconetcong.org](mailto:christa@musconetcong.org), 727-520-5849

***\*Anyone else interested? If so get in touch with Stroud Center or Carol or George***

# Conclusion

Next month's meeting will be on:

**Thursday December 15, 2022**  
**2:30-3:30p**

# Onward!

## Stroud Water Research Center, EnviroDIY-DRWI contacts:

- David Bressler, [dbressler@stroudcenter.org](mailto:dbressler@stroudcenter.org), 410-456-1071
- Shannon Hicks, [shicks@stroudcenter.org](mailto:shicks@stroudcenter.org), 610-268-2153 x267
- Rachel Johnson, [rjohnson@stroudcenter.org](mailto:rjohnson@stroudcenter.org), 973-557-8995
- Christa Reeves, [christa@musconetcong.org](mailto:christa@musconetcong.org), 908-537-7060

## Master Watershed Stewards, EnviroDIY-DRWI contacts:

- Carol Armstrong, [mnem.np@gmail.com](mailto:mnem.np@gmail.com), 610-659-7477
- George Seeds, [geoseeds@verizon.net](mailto:geoseeds@verizon.net), 484-886-9586

Organization	Chronic/Long-Term Chloride Threshold (mg/l)	Acute/Short-Term Chloride Threshold (mg/l)	Links
New York Department of Environmental Conservation	250	--	<a href="https://www.epa.gov/sites/default/files/2014-12/documents/nywqs-section2.pdf#page=24">https://www.epa.gov/sites/default/files/2014-12/documents/nywqs-section2.pdf#page=24</a>
New Jersey Department of Environmental Protection	230	860	<a href="https://www.nj.gov/dep/standards/njac7_9b.pdf">https://www.nj.gov/dep/standards/njac7_9b.pdf</a>
U.S. Environmental Protection Agency (Aquatic Life)	230	860	<a href="https://www.epa.gov/sites/default/files/2018-08/documents/chloride-aquatic-life-criteria-1988.pdf">https://www.epa.gov/sites/default/files/2018-08/documents/chloride-aquatic-life-criteria-1988.pdf</a>
Germany Environment Agency, Umweltbundesamt	50-200		<a href="https://www.umweltbundesamt.de/en/topics/water/rivers/assessment-of-watercourses/chemical-quality-standards-assessment#chemical-water-quality-classification">https://www.umweltbundesamt.de/en/topics/water/rivers/assessment-of-watercourses/chemical-quality-standards-assessment#chemical-water-quality-classification</a>
Delaware River Basin Commission, Delaware River Zone 3	180	--	<a href="https://www.epa.gov/sites/default/files/2016-10/documents/dewqs-drbc.pdf#page=109">https://www.epa.gov/sites/default/files/2016-10/documents/dewqs-drbc.pdf#page=109</a>
Michigan Department of Environment	150	640	<a href="https://www.michigan.gov/-/media/Project/Websites/egle/Documents/Programs/WRD/NPDES/chloride-sulfate-implementation-plan.pdf?rev=07c3a64eed2849a6aae7130eda1fe384">https://www.michigan.gov/-/media/Project/Websites/egle/Documents/Programs/WRD/NPDES/chloride-sulfate-implementation-plan.pdf?rev=07c3a64eed2849a6aae7130eda1fe384</a>
Canadian Council of Ministers of the Environment	120	640	<a href="https://sustainabletechnologies.ca/app/uploads/2014/05/CWQG_chlorides.pdf">https://sustainabletechnologies.ca/app/uploads/2014/05/CWQG_chlorides.pdf</a>
Ohio EPA Recommended Hazard Concentration for Aquatic Biota	52	--	Hazard concentration: <a href="https://www.researchgate.net/publication/352922966_Assessing_the_Impacts_of_Chloride_and_Sulfate_Ions_on_Macroinvertebrate_Communities_in_Ohio_Streams">https://www.researchgate.net/publication/352922966_Assessing_the_Impacts_of_Chloride_and_Sulfate_Ions_on_Macroinvertebrate_Communities_in_Ohio_Streams</a>
Delaware River Basin Commission, Delaware River Zone 2	50	--	<a href="https://www.epa.gov/sites/default/files/2016-10/documents/dewqs-drbc.pdf#page=96">https://www.epa.gov/sites/default/files/2016-10/documents/dewqs-drbc.pdf#page=96</a>
Maryland Department of Environment, MD Bio Stressor ID Process)	50	--	Threshold concentration: <a href="https://mde.maryland.gov/programs/Water/TMDL/Approved_FinalTMDLs/Documents/BSID_Methodology_Final_2009.pdf">https://mde.maryland.gov/programs/Water/TMDL/Approved_FinalTMDLs/Documents/BSID_Methodology_Final_2009.pdf</a> (p19-20)

Figure 4. Example chloride criteria and thresholds. To view Chloride criteria across the country: <https://www.epa.gov/wqs-tech/state-specific-water-quality-standards-effective-under-clean-water-act-cwa#tb3>