

A scenic view of a creek with a bridge and trees. The water is calm, reflecting the surrounding greenery and the bridge. The bridge is a simple wooden structure with railings. The trees are lush and green, with some showing signs of autumn. The overall atmosphere is peaceful and natural.

Darby Creek Community Science Program

EnviroDIY DRWI User Group Meeting
May 16, 2024





- Volunteer-driven nonprofit watershed organization dedicated to enhancing the quality of life in and around the Darby Creek watershed by restoring and protecting its natural, historical, and cultural resources.
 - Clean ups, residential GSI, Steam Watch, educational programs, community science

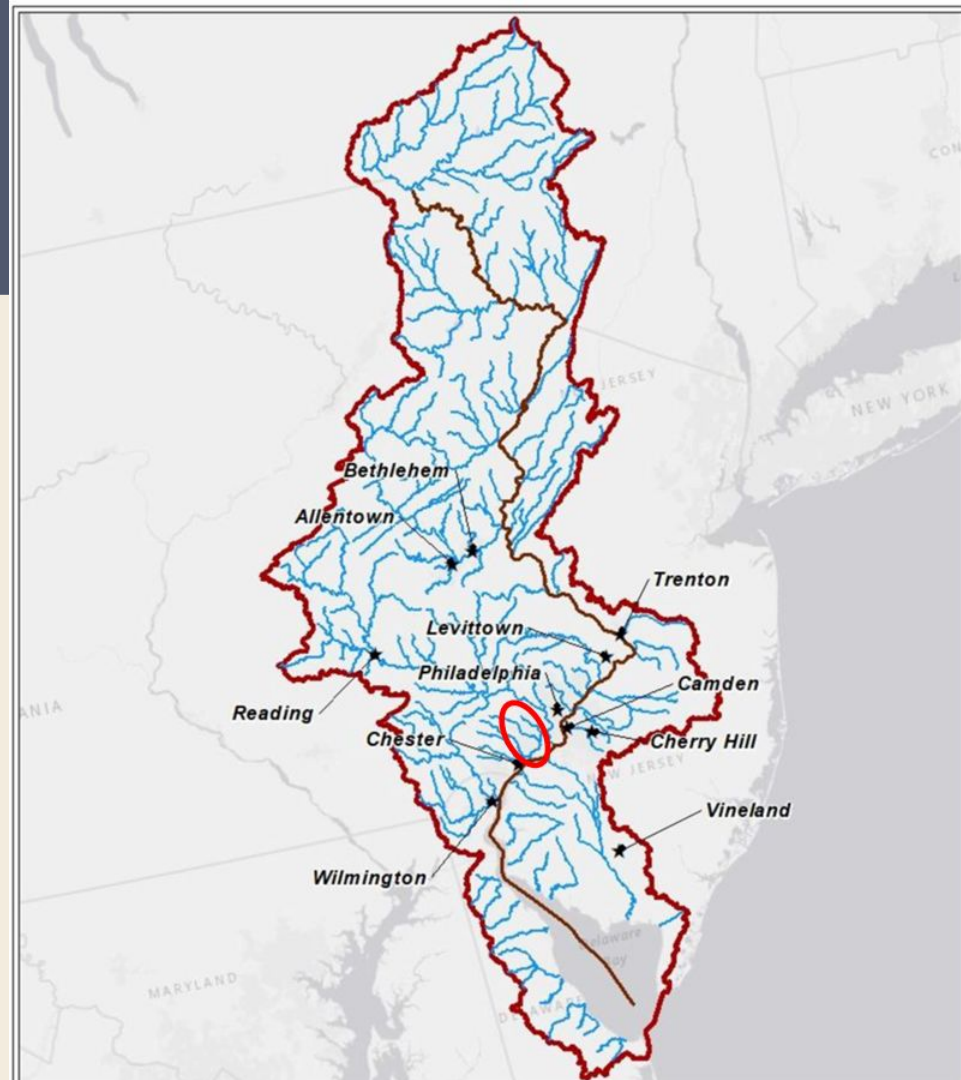




Willistown Conservation Trust

Darby Creek Community Science Monitoring Program

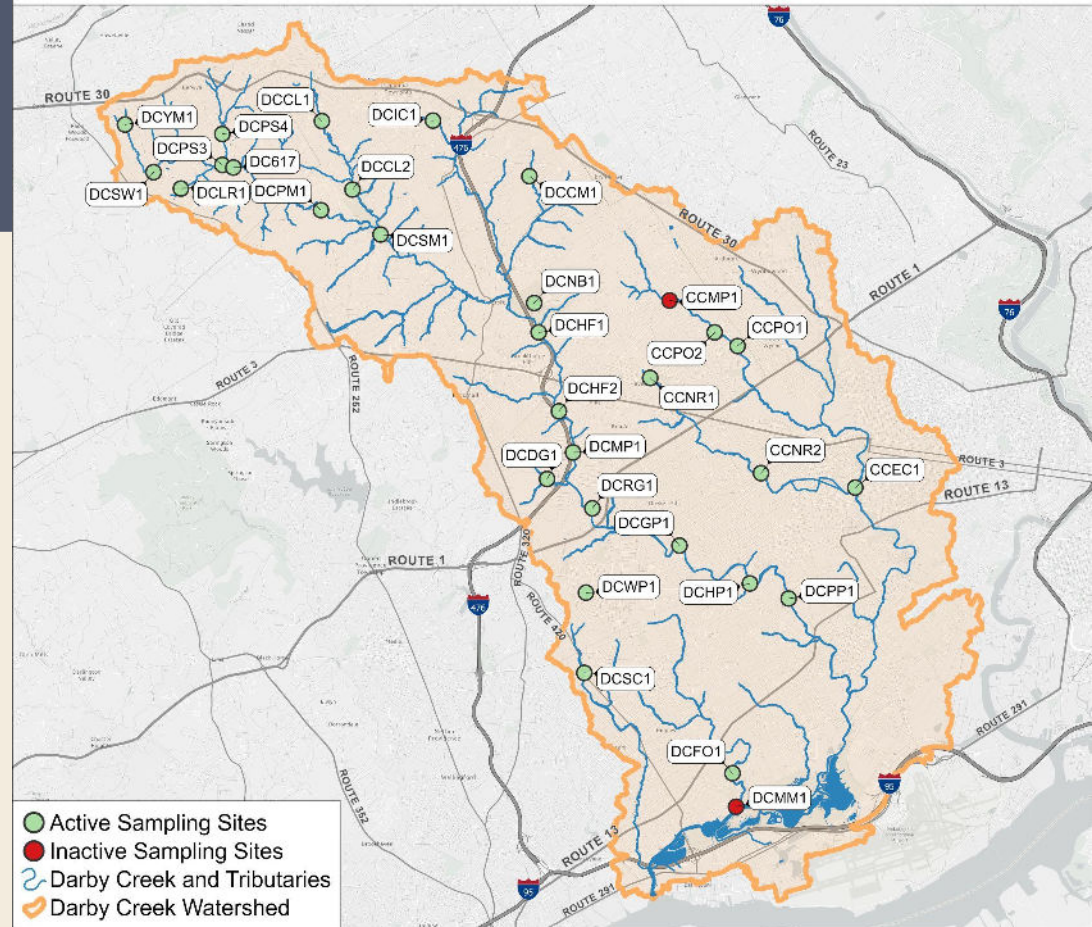
- Darby Creek is a small watershed that joins the Delaware River at John Heinz National Wildlife Refuge
- Cobbs Creek is the largest tributary to Darby Creek, and is often referred to as a separate watershed. For the purpose of this study, they are considered in the same watershed.



Darby Creek Community Science Monitoring Program

- Volunteers throughout the watershed are trained and equipped with supplies to collect water chemistry data including:
 - Water temperature
 - pH
 - Chloride
 - Conductivity
 - Qualitative data (Stream substrate, erosion, water conditions, riparian buffer condition, precipitation)
 - Site images
 - Total suspended solids*
- Sites are monitored every four weeks over a period of four days

Darby Creek Community Science Program



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Miles

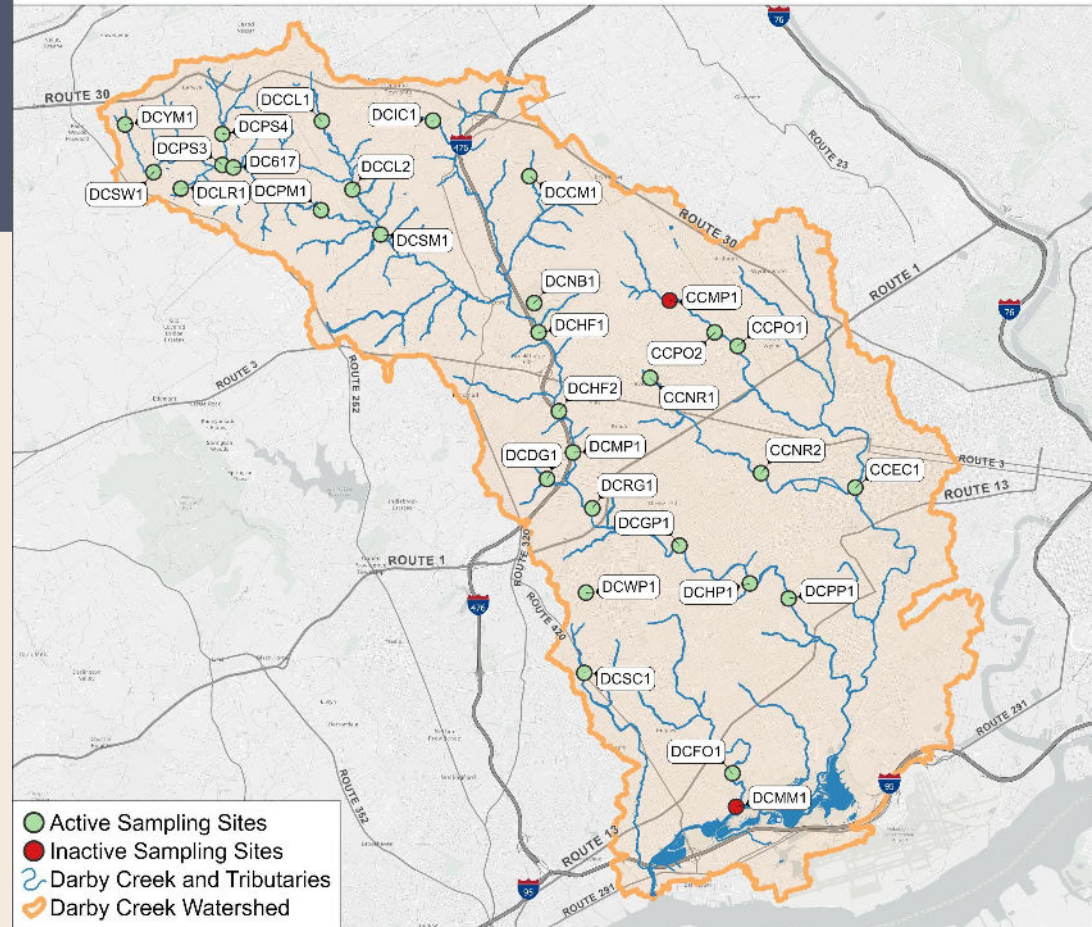
Map Updated:
4/11/2024



Darby Creek Community Science Monitoring Program

- Bi-monthly eblasts
- Quarterly meetings, alternating between in-person and virtual
 - Meetings focus on a range of topics, from advocacy to mussels to macroinvertebrates
- Monthly blog post is shared on the website and through emails highlighting educational and volunteer opportunities

Darby Creek Community Science Program



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Program Design: Prioritize the Volunteers Experience

✓ Four day monitoring period provides flexibility for volunteers

✗ Four day monitoring period allows for weather events to introduce variability within the community science data set

✓ Sites are selected based on proximity to the volunteer's home

✗ Sites are not evenly distributed across the watershed, leaving gaps in the data

✓ High frequency study design captures seasonal variation across a wide geographic area

✗ Expansion of program and addition of new sites takes time and energy

✓ Quarterly meetings alternate between in person and virtual, rotate throughout the watershed

✗ Accessibility to meetings based on time and travel distance is a barrier for regional programs

✓ **Outcome:** High volunteer retention and motivation to remain engaged in the monitoring program. Increased volunteer interest in continued learning and volunteer opportunities.

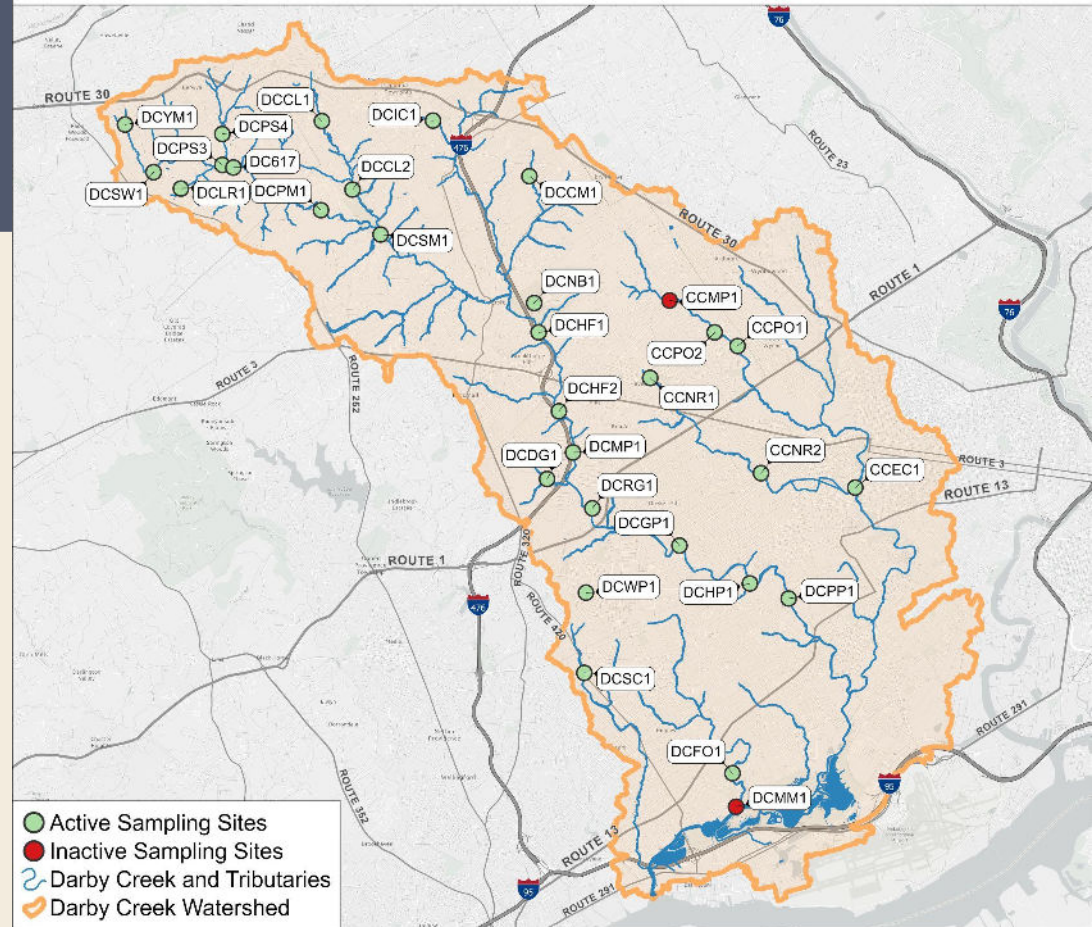
Happy Engaged Volunteers Collect Better Data!



Three Years of Sampling By the Numbers

- 38 active volunteers
- 30 active sample sites
 - 1 inactive site
- 40 sampling periods
- 542 sampling visits

Darby Creek Community Science Program



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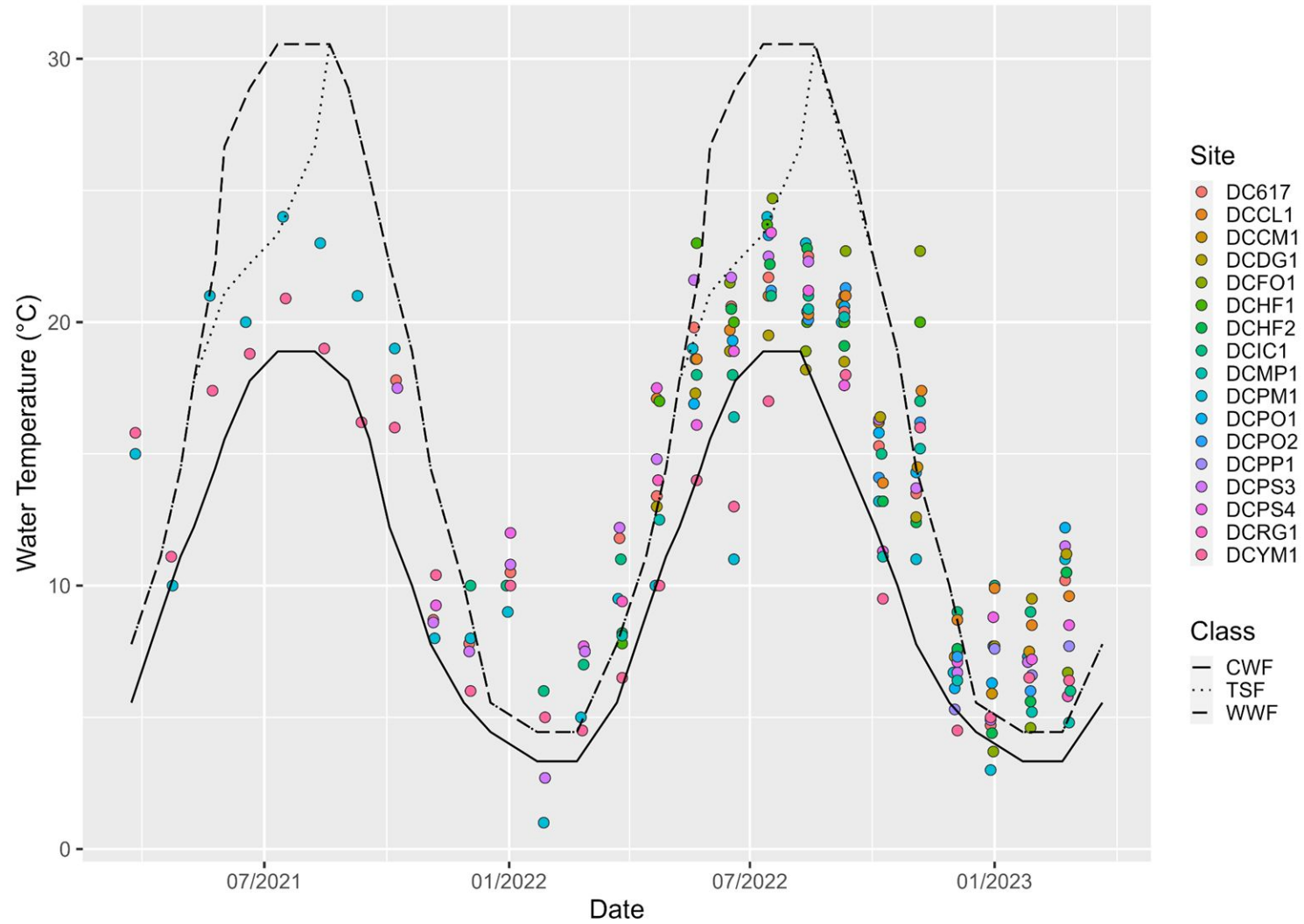
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About the Darby Creek Community Science Monitoring Program

The Darby Creek Community Science Monitoring Program was established in 2021 by the [Darby Creek Valley Association](#) and [Willistown Conservation Trust](#) with support from [Stroud Water Research Center](#)! This collaborative project aims to create a network of training and mentoring opportunities to empower the neighbors of Darby and Cobbs Creek watersheds to collect high quality stream data and become water advocates for their community. The long-term goal of this project is to use the information collected from Darby Creek to educate the community, advise restoration decisions, such as choosing the most effective location to improve riparian buffers or the best place to install a rain garden to slow down storm water



Skilled Volunteers Want to Engage with Other Research



EnviroDIY

Master Watershed
Steward Program



PennState Extension

Master Gardener



PennState Extension

Freshwater Mussels

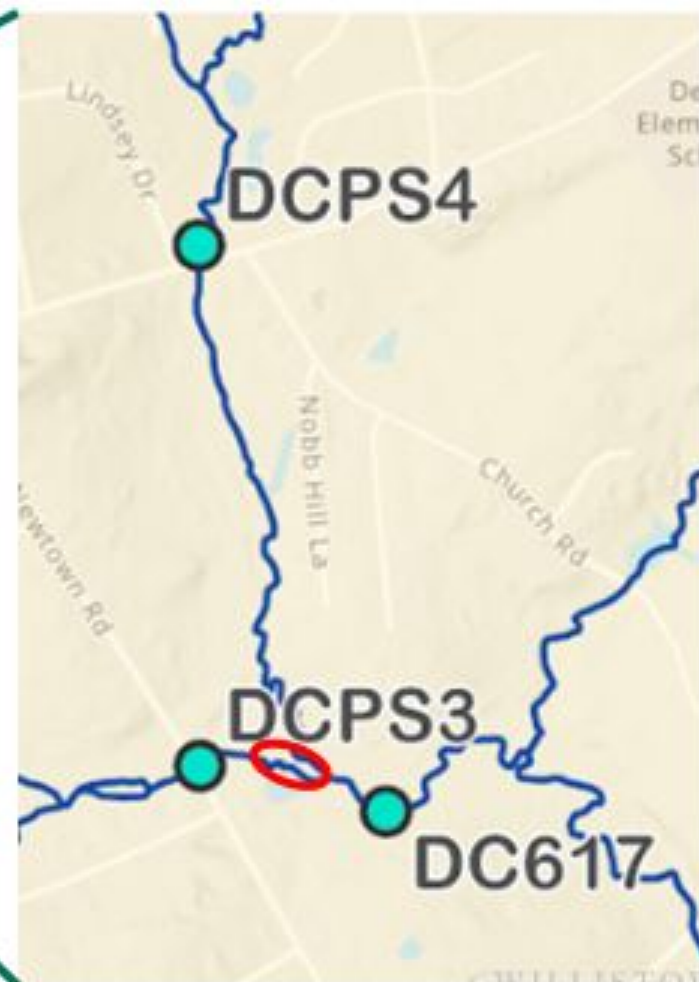
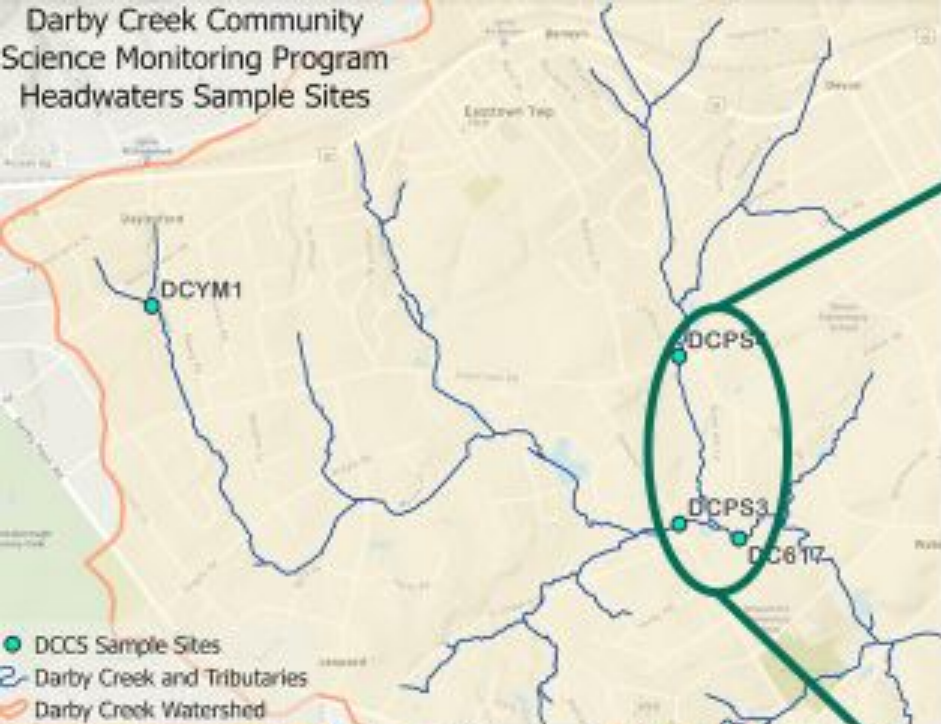


Darby Creek Community
Science Monitoring Program

- In 2022, a DCCS volunteer had found and documented freshwater mussel shells at their sample site
- Upon further investigation and exploration, the volunteer found live mussels which were verified in 2023
- The discovery of this population of Eastern elliptio was a direct result of regular visitation to the site by a volunteer, and their efforts to document these animals have led to a formal survey to be conducted this spring by the Delaware RiverKeeper Network



Darby Creek Community
Science Monitoring Program
Headwaters Sample Sites



Environmental Advisory Council Engagement



Darby Creek Community Science Monitoring Program

- DCCS volunteers have become more active in their local politics, including attending and joining their local EAC's
- One volunteer presented at a virtual gathering on her experience joining her EAC meetings as a result of an increased interest in the health of the Darby Creek at her sample site
- Her presentation led to an increase in attendance and interest in EAC meetings



Utilizing Existing Skill Sets



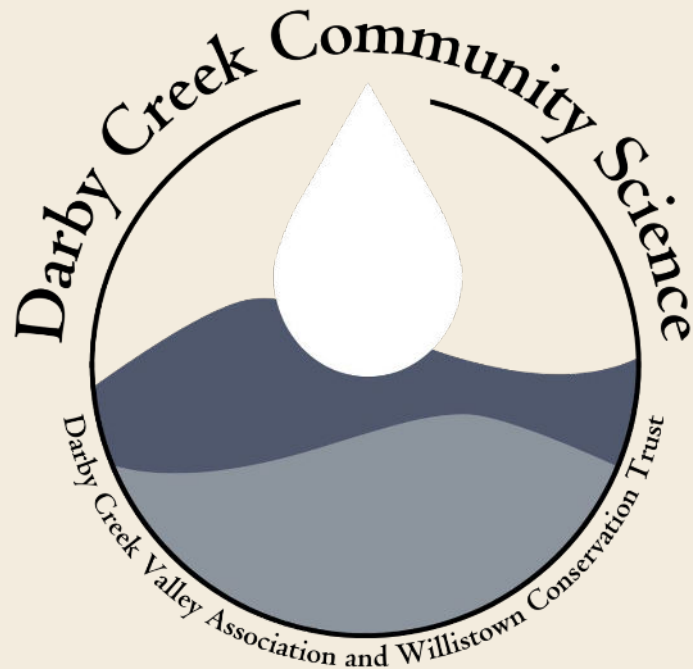
Darby Creek Community
Science Monitoring Program

- DCCS volunteers come from a variety of backgrounds, bringing in a wide range of skills
- Volunteers have offered support in the following ways:
 - Press Release and Outreach support
 - Strategic Planning Support
 - Additional water chemistry testing capabilities
 - Writing Blog Posts
 - And More!



Major Lessons from Three Years of DCCS

- People-first design!
 - Putting the human before the data leads to high volunteer retention and engagement
- Meet volunteers where they are!
 - Allowing volunteers to choose their level of engagement increases the creativity of engagement styles and allows volunteers to excel in their areas of interest and excellence
- Volunteer engagement at any level is positive!
 - Interacting at the municipal or advocacy level can still make an impact even if it is not being shared with the original volunteer group





Thank You!