Monitoring Small Watersheds to Inform Agricultural Conservation Actions

June 5, 2026

Jimmy Webber
Associate Coordinator of USGS Chesapeake Bay Studies
jwebber@usgs.gov

Objective: to describe how the USGS is working with local, state, and federal partners to provide monitoring-based insights about agricultural conservation actions.

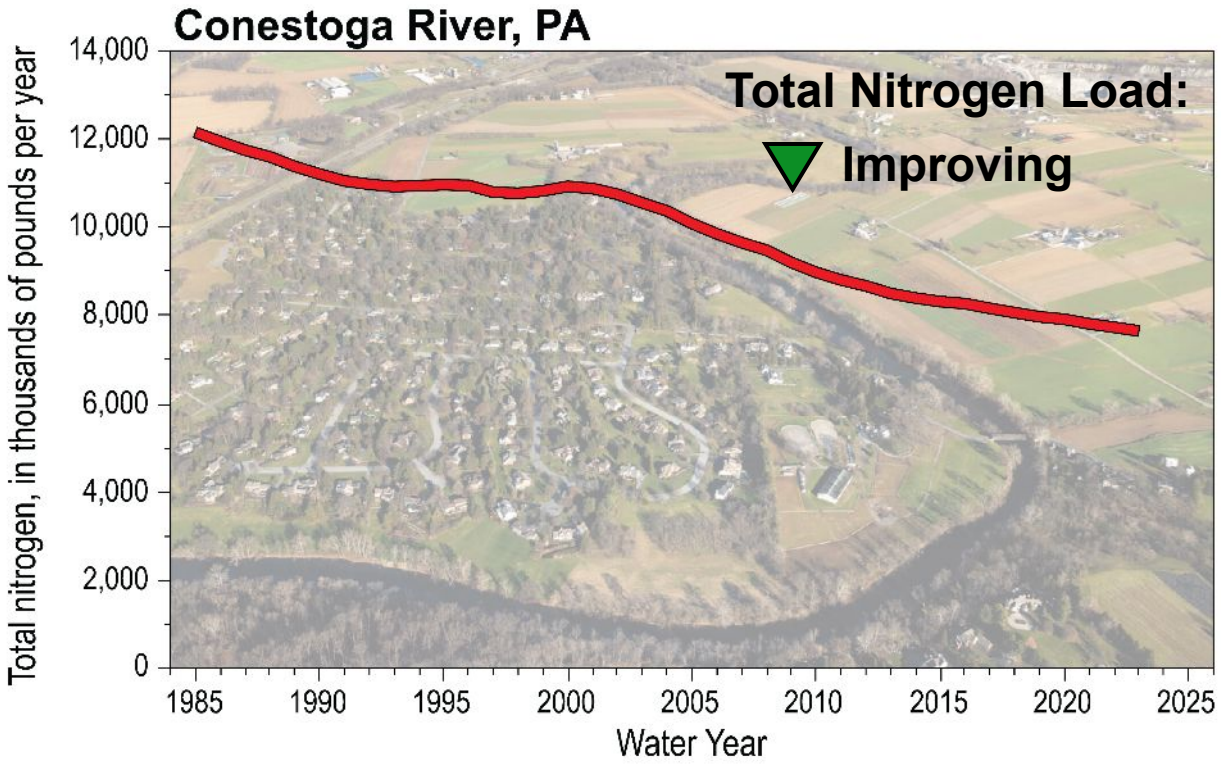
We need to work with you so our science can continue to address the highest priorities of the Chesapeake Bay agricultural community.

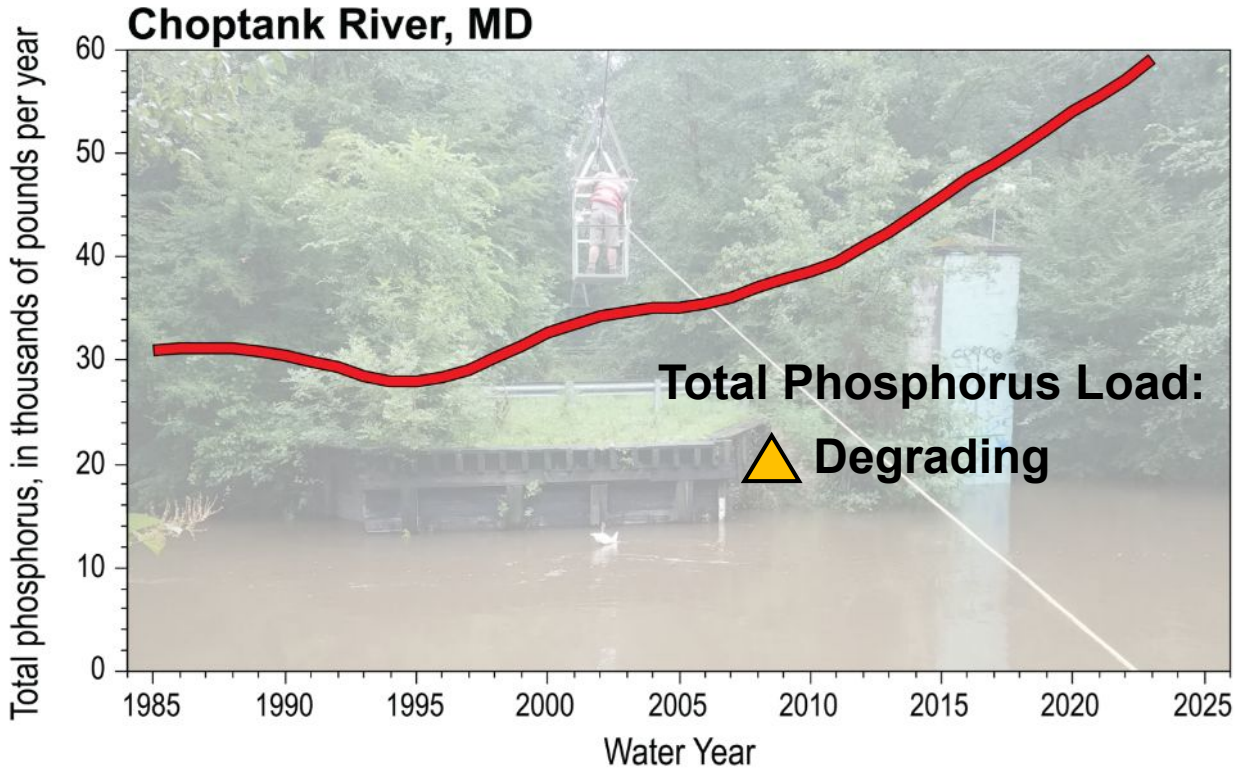
Aerial photograph of the Conestoga River, PA

Photographs used throughout this presentation are courtesy of the Chesapeake Bay Program and the USGS.

We monitor streams and rivers to provide unbiased science that informs agricultural conservation activities.

Monitoring data show a mixture of nutrient trends in agricultural rivers





Understanding how agricultural conservation practices and other factors affect river nutrient loads is one of the grand challenges we're actively working to address.

We're working across scales: from large rivers to small streams

Long-term monitoring of large rivers provides a critical understanding about water-quality trends.

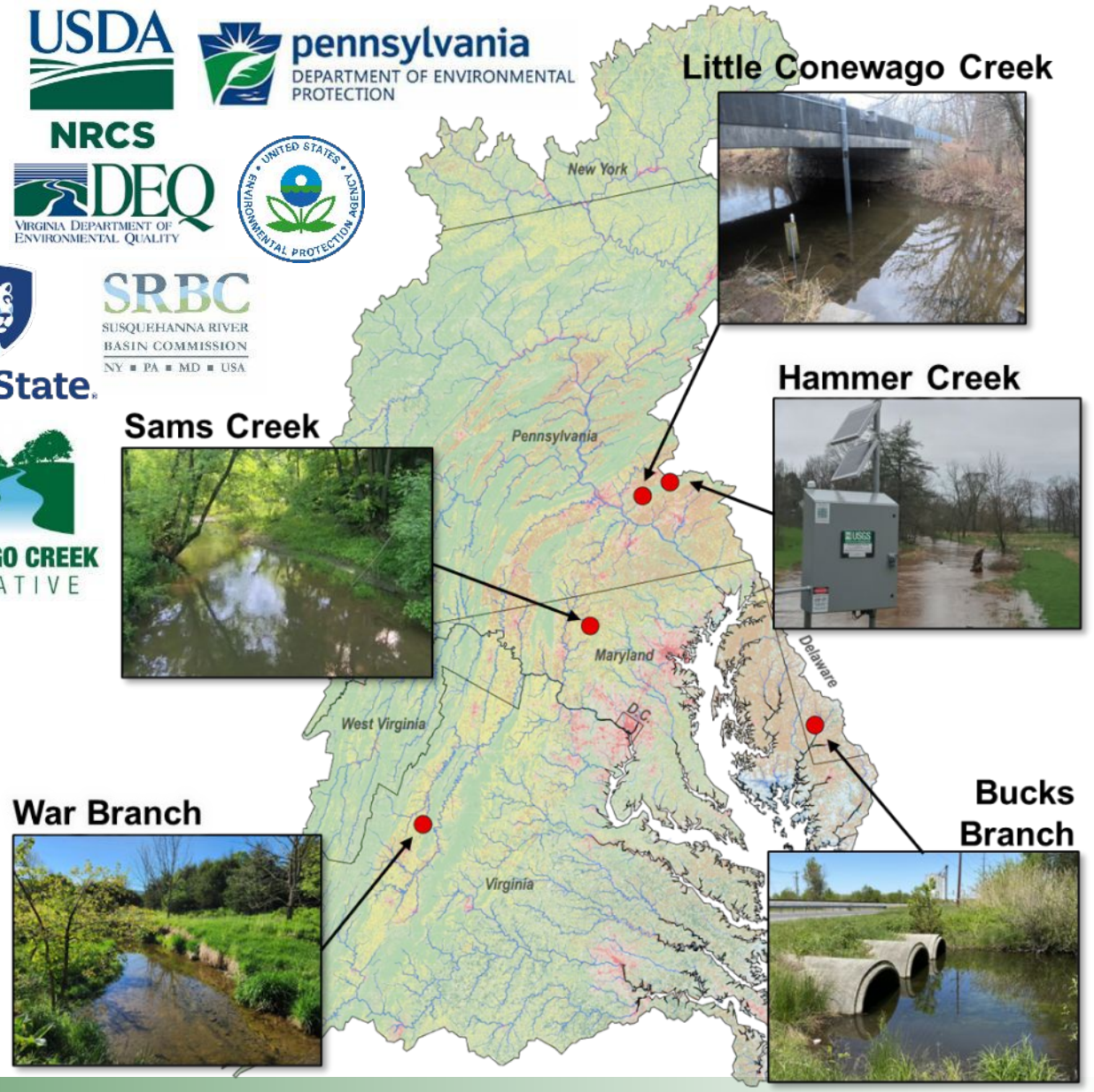
Studies of smaller streams can provide more detail about local conservation and landscape effects.

We're monitoring small agricultural watersheds

In 2024, we began monitoring in five small agricultural watersheds, in collaboration with local, state, federal, and academic partners.

The objectives of this study are to:

1. Strengthen partnerships among resource managers, farmers, and scientists.
2. Help ensure clean water on farms by evaluating the water-quality effects of conservation practices.



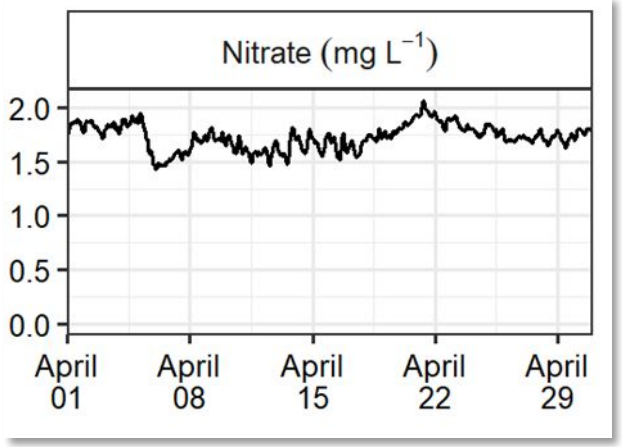
We're turning monitoring data into actionable insights

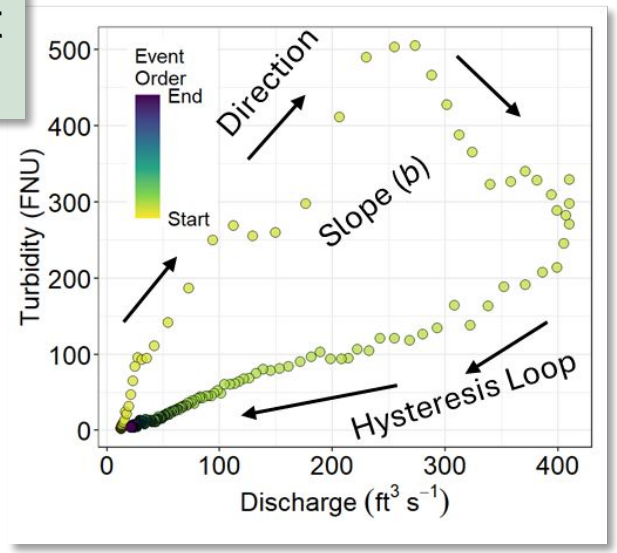
Stream Monitoring Data → Insights about nutrient trends, sources, transport pathways, and groundwater residence time

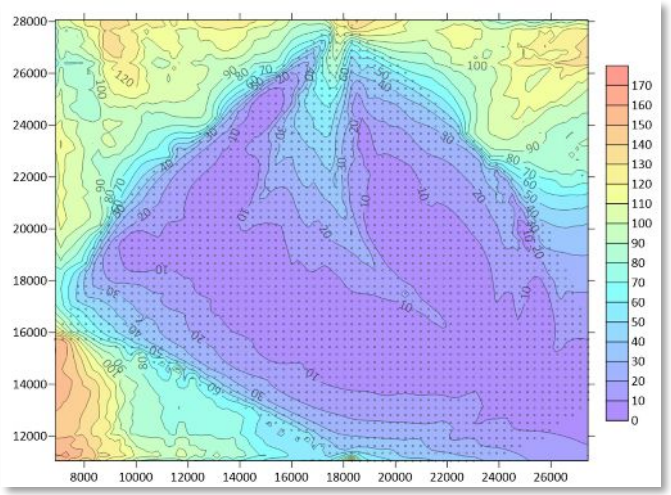
Water-Quality Samples

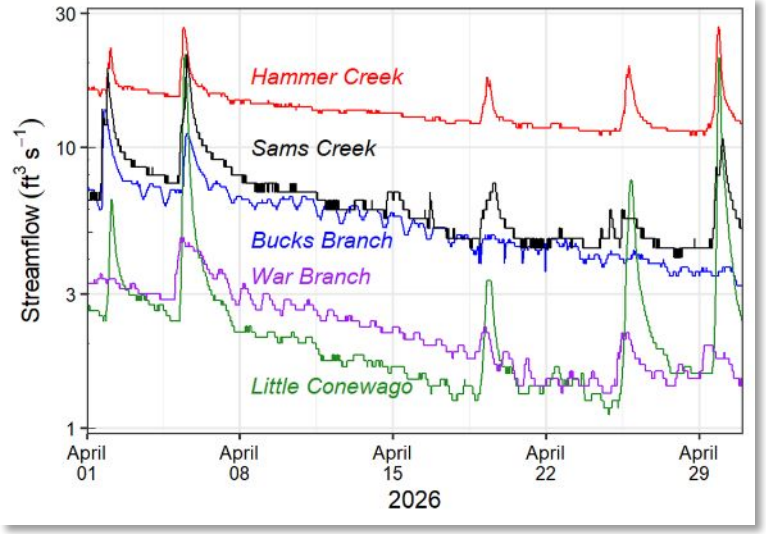
Streamflow

Continuous Data



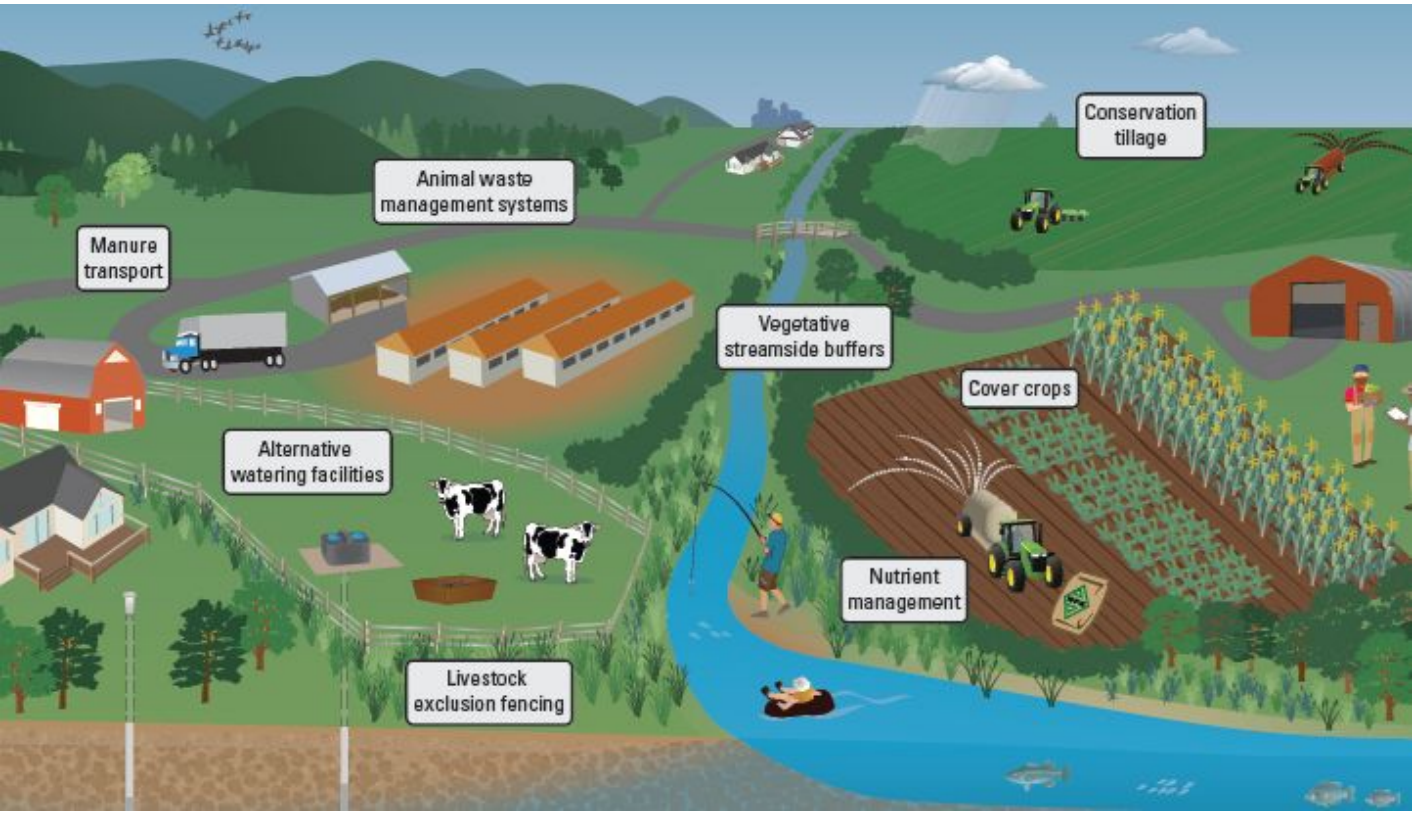




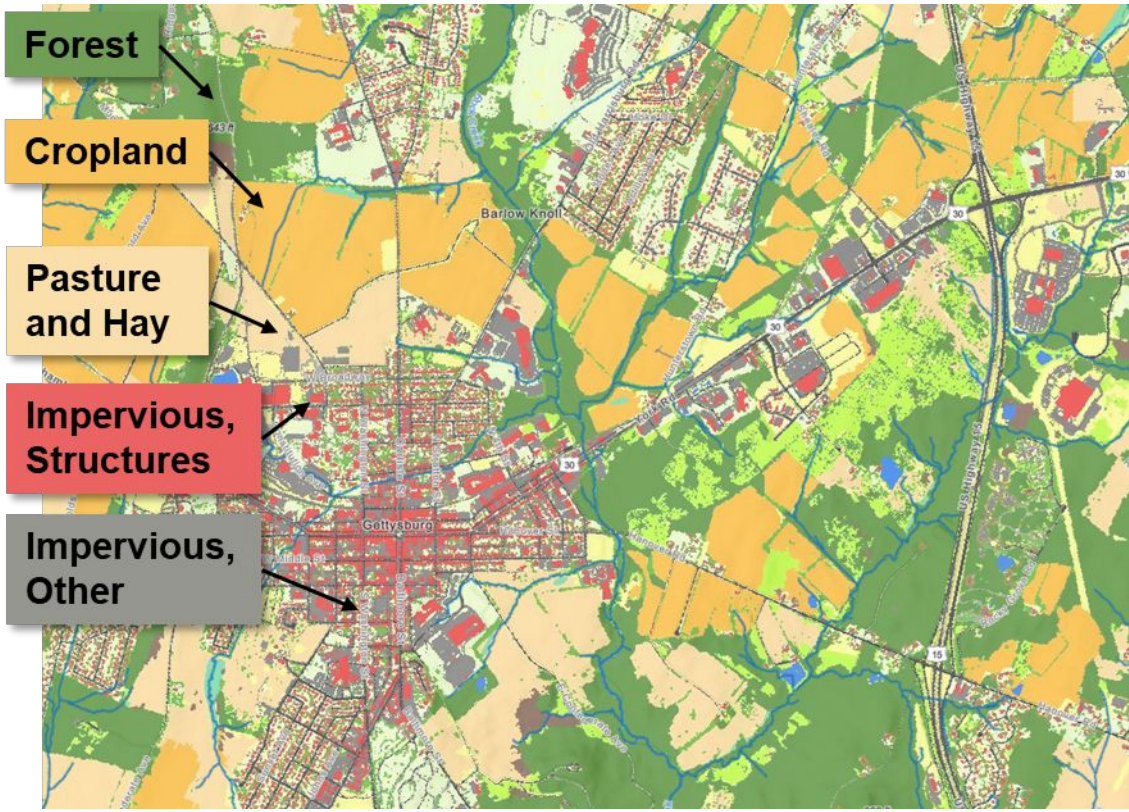


Our work utilizes conservation and land-use data

We collaborate with NRCS and state agencies to apply conservation practice data in our science.



We map land use to understand how agricultural and urban activities affect water-quality.



Map of 1-meter land use land cover data representing conditions in 2021/22.

Partnerships strengthen our science

Partnerships with local resource managers, technical specialists, farmers and scientists are needed to advance our understanding about conservation and water quality.

We need to work with you so our science can continue to address the highest priorities of the Chesapeake Bay agricultural community.

Monitoring Small Watersheds to Inform Agricultural Conservation Actions

June 5, 2026

Jimmy Webber
Associate Coordinator of USGS Chesapeake Bay Studies
jwebber@usgs.gov

Objective: to describe how the USGS is working with local, state, and federal partners to provide monitoring-based insights about agricultural conservation actions.

We need to work with you so our science can continue to address the highest priorities of the Chesapeake Bay agricultural community.

Aerial photograph of the Conestoga River, PA