

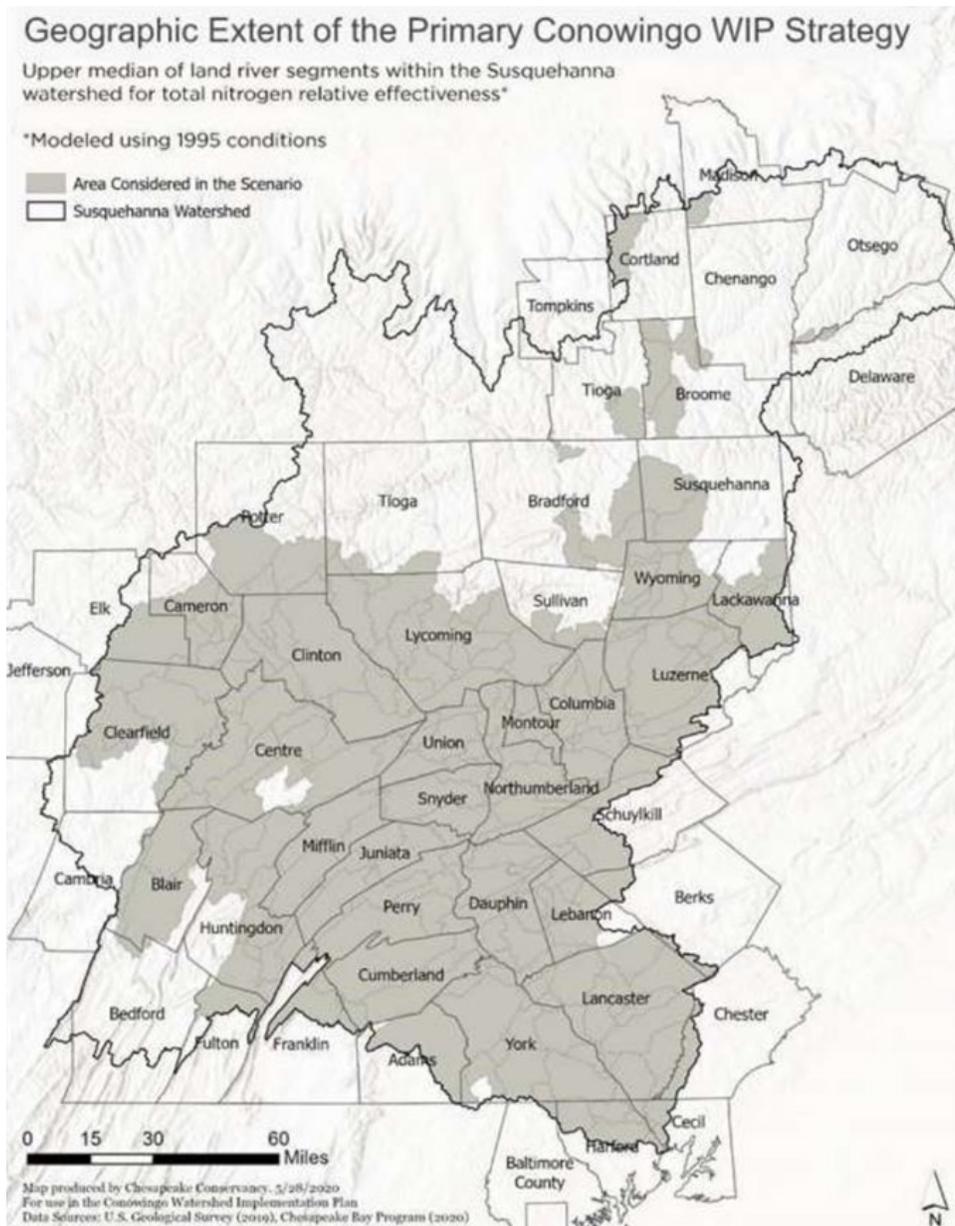
Conowingo Watershed Implementation Plan Update

Matt Rowe, MDE

Jill Whitcomb, PA DEP

Christina Lyerly, MDE, Steering Committee Co-Chair

Ashley Hullinger, PA DEP, Steering Committee Co-Chair



Background

- ▶ In 2017, US EPA determined that the Conowingo Reservoir was effectively full, resulting in an additional pollutant load of 6 million pounds of nitrogen and 260,000 pounds of phosphorus
- ▶ The [Conowingo Watershed Implementation Plan](#) was developed and finalized in 2021
- ▶ Multiple scenarios were developed that reflected implementation at different geographic scales, watersheds, and best management practices
- ▶ The chosen scenario was to implement nitrogen-effective best management practices (BMPs) in the Susquehanna River Basin

Conowingo Watershed Implementation Plan Approach

- ▶ Maryland, Pennsylvania, and New York achieve reductions through a collaborative, adaptive, and innovative Conowingo Watershed Implementation Plan (CWIP) approach
- ▶ “Two-Pronged Approach” to implementing the CWIP:
 - ▶ Statewide Pay for Performance programs in PA and MD
 - ▶ Federal, state, and local partnerships in targeted watersheds (e.g., Upper Susquehanna Coalition, Octoraro)
- ▶ Innovations in Best Management Practices:
 - ▶ Dredging studies
 - ▶ Freshwater mussels research and Acid Mine Drainage efforts

Pay for Success Programs

Pennsylvania's Clean Water Procurement Program (CWPP)

- ▶ Four application rounds have been rolled out by PENNVEST, most recently in 2026
 - ▶ 10 contracts have been executed, totaling almost \$28 million in funding
 - ▶ \$6 million in state funds allocated annually to the CWPP
- ▶ BMPs included: Animal Waste Storage Facilities, Animal Heavy Use Area Protection and Barnyard Runoff Controls, Streambank Fencing, Animal Walkways, Wetland Restoration, Grass and Forest Buffers, and Pasture Fencing
- ▶ Counties where projects are located: Lancaster, York, Adams, Snyder
- ▶ Contractors: Chesapeake Conservancy, Herbert Rowland and Grubic, Inc., HGS, LLC (RES), Keystone Streams, Conservation Innovation Fund

Pay for Success Programs

Maryland's Pay For Success Program

- ▶ Administratively managed by the Susquehanna River Basin Commission (SRBC) in partnership with MDE
- ▶ Round 1 Awards
 - ▶ Projects currently underway and represent a mix of restoration approaches (stream restoration, nutrient management, and riparian buffers) in MD and PA
 - ▶ Approximately \$11.3 million in awards
 - ▶ Annual estimated nitrogen reduction of 165,000 lbs expected
 - ▶ First project completed reduced 140,000 lbs of nitrogen in first year of implementation
- ▶ Round 2 Awards
 - ▶ Projects to be announced
- ▶ Expected to exceed Maryland's 180,000 lbs nitrogen per year target



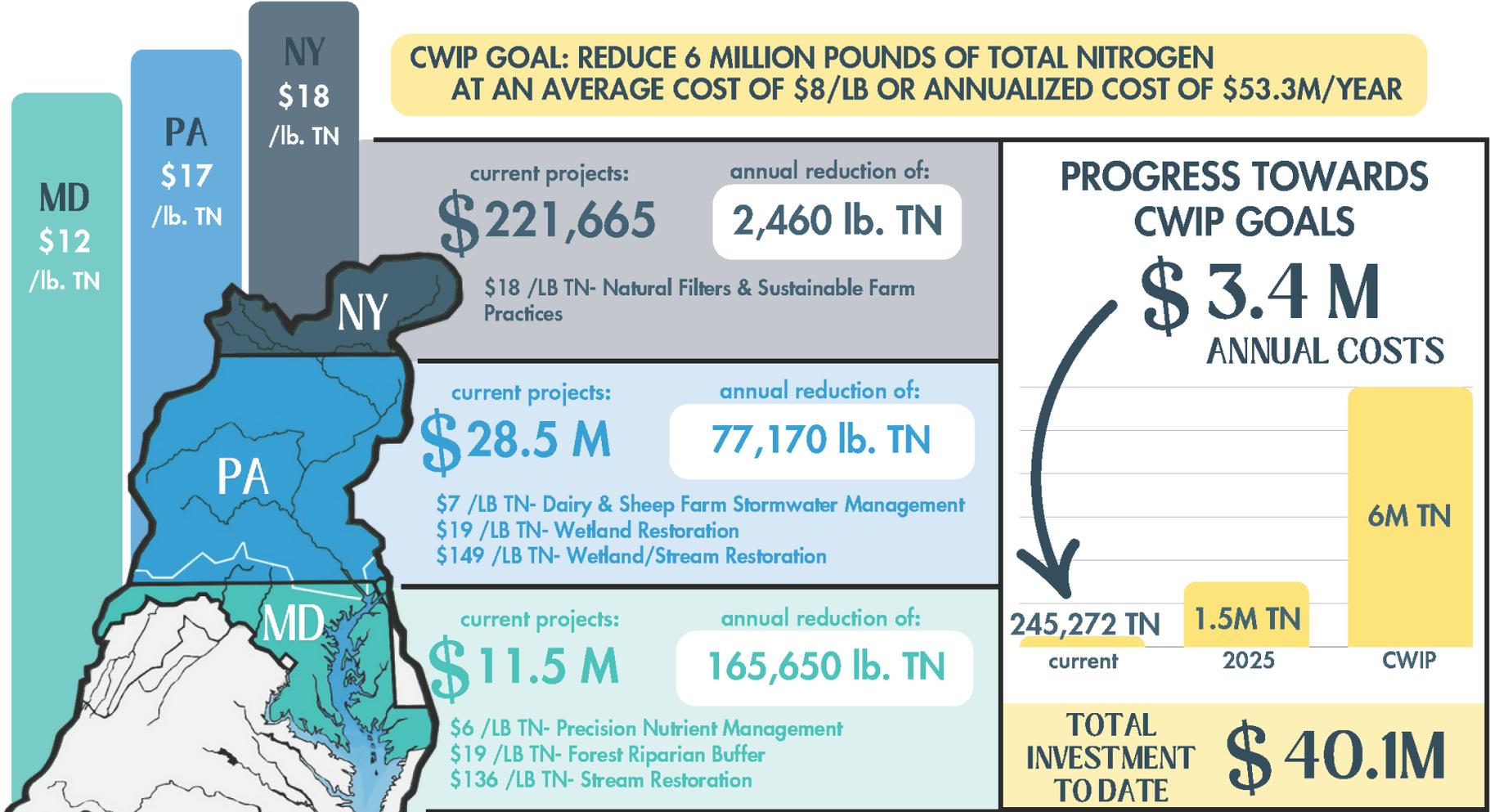
Pay for Success Site Visits October 2025

- ▶ Objective: Highlight the CWIP multi-jurisdictional efforts to drive measurable results through innovative funding mechanisms and partnerships
- ▶ Agenda:
 - ▶ Presentation by Rosetree Consulting on innovative nutrient management using biological products (MD Pay for Success)
 - ▶ Tours of three active wetland restoration project sites representing pre-, during-, and post-construction conditions in PA (PENNVEST CWPP)
- ▶ 25+ attendees representing jurisdictions, local government, RES, non-profit, federal government, private industry, and more

CONOWINGO WATERSHED IMPLEMENTATION PLAN



CWIP GOAL: REDUCE 6 MILLION POUNDS OF TOTAL NITROGEN AT AN AVERAGE COST OF \$8/LB OR ANNUALIZED COST OF \$53.3M/YEAR



*Total investment to date includes Program Administrative costs

8/25/2025



Chesapeake Pay for Success is a Success

How state water quality program design can drive cost-effectiveness

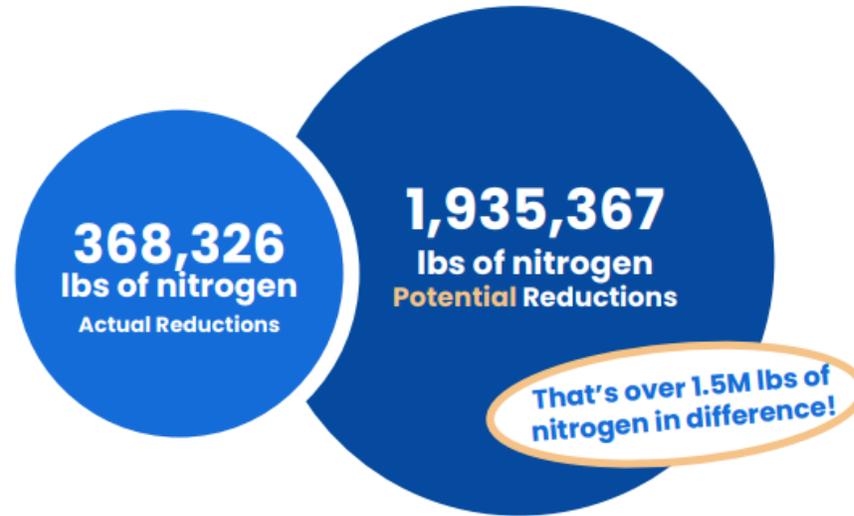


Figure 1: Visualization of Price Difference

This graphic shows the difference between the reductions actually purchased by the SRBC program and the reductions the program could have purchased with the same funds if all projects were at the cost of the project with the lowest price per pound

Based on our findings, we make the following key policy recommendations:

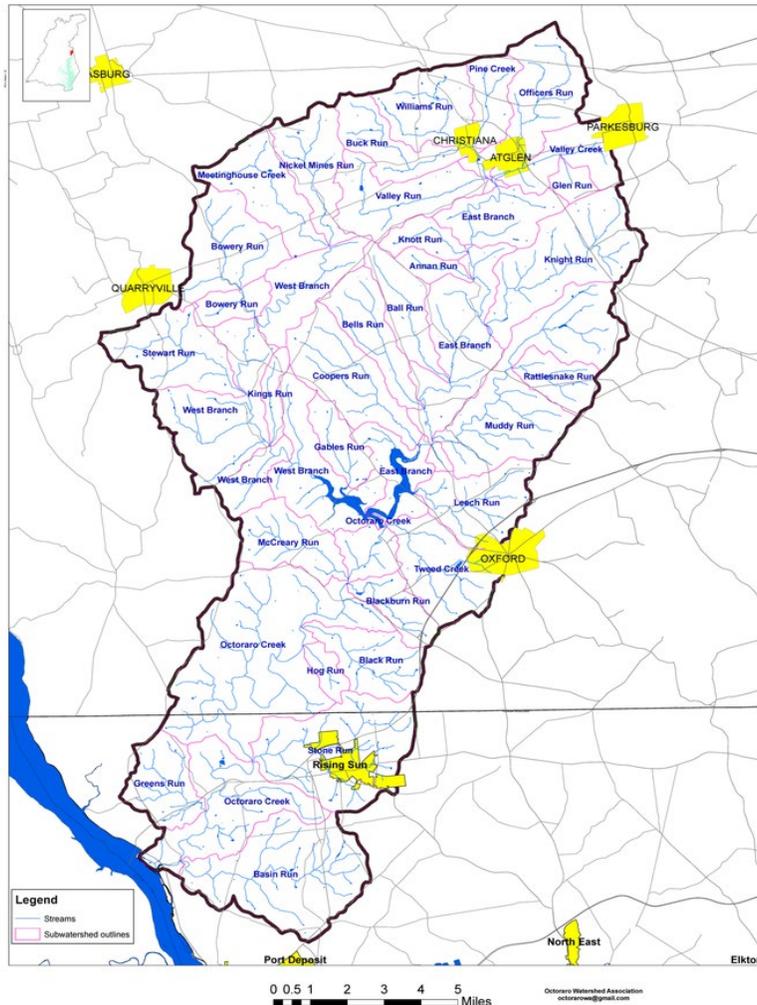
- **Keep funding these programs. They're working; we can just further optimize their design.**
- Minimize co-benefits in proposal scoring criteria, ensuring a minimum of 60% of points are attributed to the per-pound price.
- Use milestone payments to create payment schedules that balance the cost of capital and risk.
- Score proposals and award contracts as quickly as possible.
- Coordinate programs to continue to learn from one another, creating consistent signaling to the bidder community.
- Improve outreach and communication efforts to widen the bidder pool.

Targeted Watersheds Implementation Progress



- ▶ New York's Most Effective Basin Infrastructure Investment and Jobs Act funding
- ▶ Approximately \$500,000 annually
- ▶ Partnership with the Upper Susquehanna Coalition (USC) –
 - ▶ 22 Soil and Water Conservation Districts (18 in NY and 4 in PA)
 - ▶ Headwaters of the Susquehanna River Basin

Targeted Watershed Progress: Octoraro Watershed



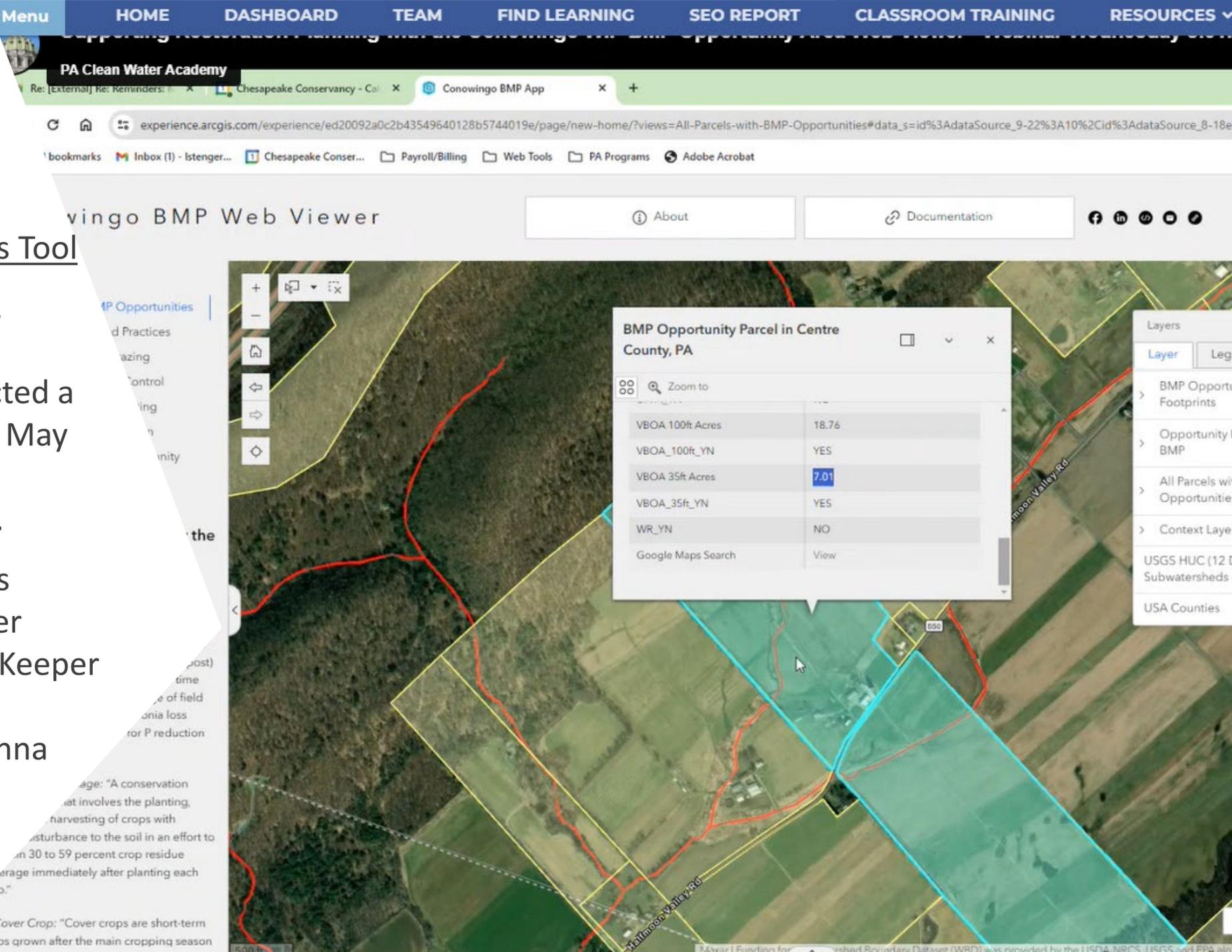
- ▶ Pennsylvania DEP directed Local Government Implementation (LGI) federal funds to Chester County Conservation District to implement CWIP projects in their share of the Octoraro Watershed
 - ▶ Funds were allocated in January 2024, and agriculture projects are currently being implemented
 - ▶ Octoraro Coordinator position created, providing technical assistance to increase practice implementation
- ▶ SRBC contract with the Alliance for Chesapeake Bay Amish Liaison Program

Targeting Tools

- ▶ BMP Opportunity Analysis Tool

- ▶ Chesapeake Conservancy, in partnership with Pennsylvania DEP, conducted a “Webinar Wednesday” in May 2024 for PA, MD, and NY Chesapeake Bay counties.

- ▶ BMP Opportunity Analysis is made available as a layer in Pennsylvania’s PracticeKeeper geodatabase for all PA counties in the Susquehanna River Basin



Areas of Innovation and Investment

Freshwater Mussels Partnership with SRBC:

- ▶ A network of experts and practitioners to advance and promote conservation and restoration and evaluating water quality value of freshwater mussels
- ▶ Tetra Tech study currently underway in follow up to 2020 STAC Workshop Recommendations.
- ▶ Freshwater mussels were added as a target in the revised Chesapeake Bay Watershed Agreement.

Acid Mine Drainage (AMD):

- ▶ In 2022, Pennsylvania DEP submitted an AMD workshop proposal to the Chesapeake Bay Program Scientific and Technical Advisory Committee (STAC). The [STAC Technical Review Report](#) was published in April 2025.
- ▶ SRBC scientists, in conjunction with Mansfield University researchers, initiated a study for initial characterization of nitrogen and phosphorus conditions in the Lower Tioga River and Tioga Reservoir to evaluate effects on nutrient availability before and after AMD treatment.
- ▶ AMD treatment was added as a target in the revised Chesapeake Bay Watershed Agreement.

Areas of Innovation and Investment

Dredging

- ▶ Conowingo Sediment Characterization study (2021) and Innovative Reuse and Beneficial Use pilot project (2022)
- ▶ U.S. Army Corps of Engineers cost-share agreement to develop a Conowingo Reservoir Modeling System. Will simulate nutrient loads and sediment scour and resuspension under different climate and dredging scenarios (estimated completion 2027)
- ▶ Evaluating dredging as a possible Chesapeake Bay Program approved practice for reducing nutrients and sediment



Conowingo Dam Water Quality Certification

- ▶ Settlement agreement with Constellation Energy Generation, LLC valued at more than \$340M
 - ▶ Water quality and resiliency
 - ▶ Trash and debris removal
 - ▶ Aquatic life passage
 - ▶ Freshwater mussel restoration
 - ▶ Dredging
 - ▶ Invasive species management
- ▶ Submitted to the Federal Energy Regulatory Commission for dam operating license renewal

Increasing Capacity and Implementation

National Fish and Wildlife Foundation (NFWF) Innovative Nutrient and Sediment Reduction (INSR) Grant

- ▶ Submitted proposal in January 2025 for creation of a Susquehanna Watershed Restoration Coordinator for the implementation of the CWIP
- ▶ NFWF awarded INSR to SRBC
 - ▶ Grant timing: 3 years
 - ▶ Funding: ~\$488k
- ▶ SRBC will hire a Coordinator through a competitive RFP process and will manage Coordinator activities
- ▶ Coordinator will serve as primary coordinator for CWIP implementation and public-facing point-of-contact

Takeaways and Future Considerations

- ▶ CWIP facilitates innovations and efforts that otherwise would not exist, such as financing solutions across jurisdictional boundaries (e.g. Pay for Success, MD's LGI funding)
- ▶ Coordination with EPA to continue this successful sandboxing example
- ▶ Ongoing capacity and implementation support fostered through funding from NFWF INSR and partnership with SRBC and others