
CONOWINGO

WATERSHED IMPLEMENTATION PLAN

PROGRESS NEWSLETTER

ISSUE NO. 3 MAY 2026



Photo Credit: Susquehanna River Basin Commission

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The Conowingo Steering Committee brings together partners across jurisdictions to reduce nutrient levels in the Chesapeake Bay associated with infill behind the Conowingo Dam. This work is carried out through coordinated implementation of the Conowingo Watershed Implementation Plan (CWIP) and its two-year milestones, in collaboration with Maryland, Pennsylvania, and New York. This newsletter highlights recent projects and accomplishments.

More information can be found at the Steering Committee website:
[Conowingo WIP Steering Committee](#)

2026-2027 CWIP MILESTONES

The two-year milestone commitments with quantifiable outcomes have been submitted to EPA and are pending approval. The full milestones can be found on the [Steering Committee website](#).

Implementation of BMPs

1. 4th round of PENNVEST's Pennsylvania Clean Water Procurement Program open through April 22th, 2026
2. 2nd round of projects under review through the Maryland Verified Nutrient Reductions Program
3. New York and the Upper Susquehanna Coalition sustainable farm practices

Building Capacity & Technical Assistance

4. SRBC to employ and facilitate the Susquehanna Watershed Restoration Coordinator
5. Chester County Conservation District to employ and facilitate the role of Octoraro Watershed Coordinator
10. SRBC to coordinate the Plain Sect Outreach Program

Evaluating Crediting for New BMPs

6. Conowingo Reservoir Modeling Study to simulate dredging and climate scenarios led by MDE and USACE
7. Freshwater Mussel Partnership led by SRBC
8. Manure Treatment Technologies verification procedures led by PA agencies
9. Acid Mine Drainage evaluation led by PADEP and STAC

Funding Innovations

11. Evaluate using water quality mitigation funds to implement projects

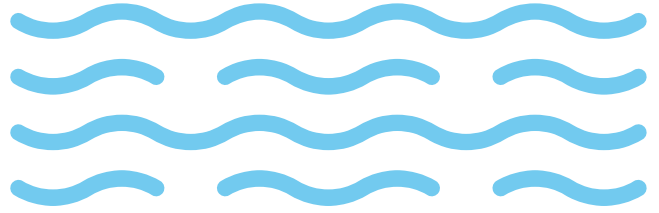
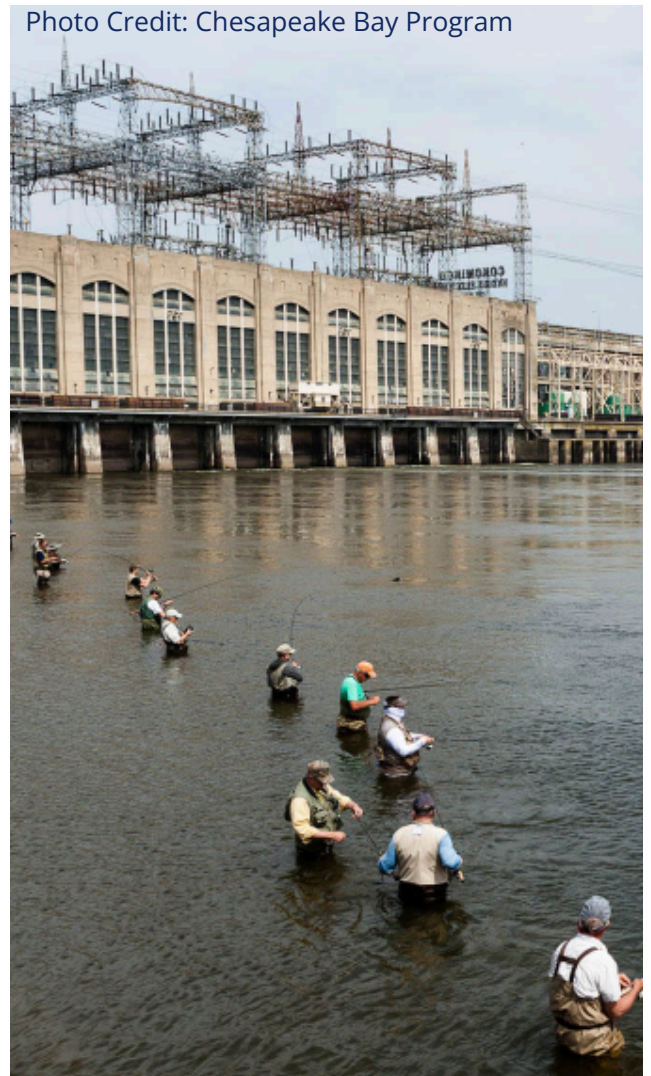


Photo Credit: Chesapeake Bay Program



*See page 14 for acronyms and definitions

PAY FOR SUCCESS REPORT OVERVIEW

ENVIRONMENTAL POLICY INNOVATION CENTER

The Chesapeake Bay region is leading the nation in applying pay for success (PFS) funding under the Chesapeake Bay Total Maximum Daily Load and associated Watershed Implementation Plans. These programs represent a shift from traditional practice-based funding to payments tied to verified outcomes, such as pounds of nitrogen reduced.

In March 2026, Harry Huntley, Agriculture Policy Lead of the Environmental Policy Innovation Center (EPIC), briefed the CWIP Steering Committee on a recent PFS study.

The analysis of five PFS programs across Maryland, Pennsylvania, Virginia, and the Susquehanna River Basin, examined cost data, timelines, contract structures, and stakeholder

perspectives. Findings of the EPIC study underscore that intentional program design is key to achieving both cost savings and environmental outcomes, with input from agencies, contractors, and program participants helping to refine best practices.

Overall, the programs demonstrate that scalable, outcomes-based models can improve the efficiency and effectiveness of nutrient reduction efforts across the watershed and beyond.

View the full report:

[Chesapeake Pay for Success is a Success](#)

or contact Harry Huntley at

[**hhuntley@policyinnovation.org**](mailto:hhuntley@policyinnovation.org)

BMP OPPORTUNITY ANALYSIS TOOL

CHESAPEAKE CONSERVANCY OUTREACH

The [BMP Opportunity Analysis Tool](#) was developed to accelerate implementation of high priority BMPs such as:

- Annual Cropland Practices (Conservation Tillage, Manure Incorporation, and Cover Crops),
- Prescribed Grazing,
- Barnyard Runoff Control,
- Urban Forest Planting,
- Wetland Restoration, and
- Vegetative Buffer Opportunities.

The tool was updated in spring of 2025 with new high resolution land use/land cover and parcel analysis in response to user feedback.

The Chesapeake Conservancy has worked with local implementation partners throughout the region to discuss uses of the tool and how to prioritize BMP types, coordinate efforts with other watershed groups and engineering firms, and utilize parcel analysis for prioritized outreach.



Outreach throughout the region has been well-received, engaging various audiences through virtual presentations, in-person meetings, trainings, and watershed group events.

For more information contact

Carly Dean at

[**cdean@chesapeakeconservancy.org**](mailto:cdean@chesapeakeconservancy.org)

or Louis Keddell at

[**lkeddell@chesapeakeconservancy.org**](mailto:lkeddell@chesapeakeconservancy.org)



ADVANCE RESTORATION PLANS
 Knight Run and Nickel Mines Run Subwatersheds
 Chester and Lancaster Counties, PA

ADVANCE RESTORATION PLANS FOR KNIGHT RUN & NICKEL MINES RUN SUBWATERSHEDS

Project Overview

As part of a targeted effort to improve water quality in the Octoraro Creek Watershed, Advance Restoration Plans (ARPs) were undertaken for the subwatersheds of Knight Run in Chester County and Nickel Mines Run in Lancaster County, Pennsylvania. Both streams are impaired for aquatic life due to excess sediment, and Nickel Mines Run is additionally impacted by elevated nutrients. The ARPs outline strategies to reduce sediment, nitrogen, and phosphorus loads, with the goal of ultimately improving downstream conditions in the East and West Branches of Octoraro Creek and protecting drinking water quality in the Octoraro Reservoir. Final versions will be released in April 2026.

Project Context

The Knight Run and Nickel Mines Run ARPs are a collaborative initiative supported by the Octoraro Source Water Collaborative. The EPA and Pennsylvania Department of Environmental Protection (DEP) have been involved in the Collaborative since it formed in 2016 under the leadership of the Alliance for the Chesapeake Bay and the Chester Water Authority.

KNIGHT RUN
TARGET REDUCTION:
 20% Nitrogen
 40% Phosphorus
 58% Sediment
PROJECT AREA:
 9.1 SQUARE MILES
ARP TIMELINE:
 OCTOBER 2024- APRIL 2026

NICKEL MINES RUN
TARGET REDUCTION:
 17% Nitrogen
 52% Phosphorus
 40% Sediment
PROJECT AREA:
 4.6 SQUARE MILES
ARP TIMELINE:
 OCTOBER 2024- APRIL 2026

continued on page 5.....

FEATURED PROJECT: KNIGHT RUN & NICKEL MINES RUN WATERSHED PLANNING

The EPA funded the development of a water quality model for the Octoraro Creek Watershed in 2022-2023. This effort was done to support DEP's mission of watershed planning to restore water quality and protect source water. The ARP approach is one of the tools in the toolbox that DEP has been using in cases where there is a small watershed in need of restoration and there are partners willing to implement a watershed plan.

ARPs assist conservation partners with targeting BMP implementation in small subwatersheds to achieve rapid results.

Because the Octoraro Creek Watershed is large and home to a range of land uses, EPA agreed to develop ARPs for two small subwatersheds, one in Chester County and one in Lancaster County, as a pilot to demonstrate how the Scenario Application Manager (SAM) Tool could be used to support local planning. The SAM Tool developed by RESPEC (a South Dakota-based firm) is a user-friendly decision-support tool that can run the HSPF model to evaluate the change in water quality. The Collaborative played a vital role in selecting subwatersheds based on the modeled loads, prioritization of agricultural opportunities, and their knowledge of the receptiveness of landowners to make improvements.

Landowner Relationships

The ARPs include a strategic approach for conducting education and outreach to landowners in the watershed by starting at the headwaters and working their way downstream. The outreach is conducted by trusted local partners who can help landowners find cost-effective, workable options to protect Knight Run and Nickel Mines Run. The Octoraro Watershed Restoration Coordinator at Chester County Conservation District assisted in this outreach.

The Octoraro Source Water Collaborative and Lancaster Clean Water partners have seen great success in working with landowners who have become interested in implementing best management practices (BMPs) after hearing positive feedback about working with local partners from their neighbors. Working in localized communities allows for neighbor-to-neighbor discussion that causes a ripple effect of small BMPs being implemented.

Those small BMPs add up to greater environmental benefits for local streams. The framework of these ARPs focused on a coordinated approach for concentrated outreach efforts. Instead of focusing on one small area in the headwaters of a watershed, the ARPs divide subwatersheds into three to four smaller, more manageable areas to conduct work progressively through personal connections and relationships.



Photos shared by Ashley Geiger for use in this article.

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FEATURED PROJECT: KNIGHT RUN & NICKEL MINES RUN WATERSHED PLANNING

Challenges to Implementation

ARP development was initially scheduled to take 10 months, but has taken roughly 18 months to complete. The timeline was adjusted to meet specific goals of the project, including gathering stakeholder input and to accommodate regularly scheduled OSWC meetings where contractors and the EPA would engage with partners. Longer feedback and review windows were provided to ensure the final product could be used to guide future efforts.

Co-Benefits

Strategic BMP implementation not only reduces sediment and nutrients, but produces co-benefits including improving soil health, boosting crop yield and farm sustainability, and improving the groundwater quality for private homeowner wells. Planting trees and other vegetation to filter runoff along streams can protect livestock from pathogens and other health risks associated with contaminated water, as well as providing aesthetic value for landowners and neighbors.

The Conowingo WIP Coordination Team thanks Ashley Geiger for providing the information presented in this article and for her work on the Knight Run and Nickel Mines Run ARPs.

Final Thoughts

“Any watershed plan needs to stay current to be meaningful. The EPA has been involved in the Octoraro Source Water Collaborative since it formed in 2016. I hope to continue my role in supporting the implementation team by learning from the local partners what is working and what might need adjustments. That will likely mean updating these ARPs to reflect the on-ground progress and new strategies for challenges that might arise.”

Ashley Geiger
US EPA Region 3, TMDL Coordinator

Other Information & Resources

To learn more about how ARPs fit into EPA’s long-term vision for implementing Section 303(d) of the Clean Water Act and about EPA’s Octoraro projects, please see the following webpage:

epa.gov/tmdl/Vision
epa.gov/tmdl/impaired-waters-and-tmdls-region-3



PROJECT FUNDING

Funding provided by EPA Region 3

PARTNERS

THE CADMUS GROUP, LLC
OCTORARO SOURCE WATER COLLABORATIVE
PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL
PROTECTION, TMDL SECTION
RESPEC
U.S. EPA REGION 3, WATER DIVISION

FEATURED PROJECT: OPTIMIZING NITROGEN APPLICATION



Optimizing Nitrogen Applications through the use of Pivot Bio PROVEN® 40
Rosetree Consulting
Susquehanna River Watershed

OPTIMIZING NITROGEN APPLICATION IN CROP PRODUCTION

Project Overview

The Nitrogen Optimizing Application project, led by Rosetree Consulting, represents a unique, in-field approach to nutrient management and pollution prevention. Unlike other structural BMPs, such as streambank restorations, manure storage facilities, or forested buffers, this approach focuses on improving how, when, and where nutrients are applied. By aligning nitrogen availability with crop demand, these practices can reduce excess nitrogen application and nutrient runoff while supporting farm productivity and water quality goals.

Through Maryland's Pay for Success Program administered by the Susquehanna River Basin Commission (SRBC), Rosetree Consulting was able to pilot the use of Pivot Bio's PROVEN 40 biologic nitrogen product for in-field nutrient management.

This project builds on core nutrient stewardship principles and reflects Rosetree's broader mission to deliver practical, farmer-driven solutions that improve production efficiency while reducing environmental impact.

Approach

Rosetree worked directly with producers to identify manageable, high-potential areas within their operations that were strong candidates for testing improved nitrogen management practices. Participating farmers were guided to reduce traditional nitrogen applications, targeting "high-risk" sources (those most prone to loss due to poor timing and placement) and implement alternative nitrogen application practices through the use of a biologic product.

QUICK FACTS

PROPOSED NITROGEN REDUCTION:

123,291 LBS

ACHIEVED NITROGEN REDUCTION:

149,000 LBS*

**Based on preliminary results, CAST modeling shows the project exceeded its nutrient reduction goals by 21%*

Pivot Bio PROVEN 40 is a genetically modified, root-colonizing, nitrogen-producing bacteria that delivers nitrogen close to plant uptake

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FEATURED PROJECT: OPTIMIZING NITROGEN APPLICATION

pathways, minimizing the risk of nutrient loss. Farmers implemented a targeted strategy of utilizing less than one pound of nitrogen (from sources including manure, legumes, or commercial fertilizer) per bushel of expected yield and filled in the nitrogen “gap” through a more direct and prescriptive use of the microbial nitrogen product. Farmers were supported through the transition process by Rosetree, allowing them to reduce conventional nitrogen inputs over time while building confidence in the new system.



Results

Early results from the project demonstrate that it is possible to maintain crop yields while improving nitrogen use efficiency. By replacing a portion of traditional nitrogen inputs with a biological source, participating farmers have shown measurable reductions in overall nitrogen application. As confidence in this approach grows, Rosetree expects participating farmers will expand product use to more of their acreage and replace traditional nutrient applications with Pivot Bio products, and more producers will sign on to participate in the project.

Challenges

While results are promising, some challenges to implementation and expansion of this project have been identified. Performance of the PROVEN 40 product and others like it can differ across soil types and field conditions. Continued monitoring of project sites and farm production is needed to validate long-term outcomes and scale applications up throughout the region. Time is also an important factor in introducing innovative practices to farmers. It takes time to build confidence in the product, show consistent results, reduce traditional nitrogen inputs, and gradually expand the practice to additional acreage and other farms.

Ongoing support and funding through Maryland’s Pay for Success Program, or similar funding programs is critical for the continuation and expansion of this project. Financial incentives make it possible for participating farmers to receive Pivot Bio’s PROVEN 40 product and Rosetree’s nutrient management support.

Next Steps

In-field nutrient management practices are highly scalable because they integrate directly into existing farm operations, require no land to be removed from production, and can be expanded quickly across large acreages.

Continued investment will be critical to refine performance data, expand farmer participation, and quantify water quality benefits. Building on early successes, Rosetree aims to scale these practices across the region, demonstrating that farmer-driven, in-field solutions can play a meaningful role in achieving long term nutrient reduction goals.

Resources

Rosetree Consulting: rosetreeconsulting.com

Pivot Bio: pivotbio.com

or contact **Eric Rosenbaum**, CCA, Sr.
Agronomist & Regulatory Planner at
Rosetree Consulting,

ericrosenbaum@rosetreeconsulting.com

FEATURED PROJECT: ROOFED COMPOSTING FACILITY



ANIMAL WASTE MANAGEMENT
(Multiple BMPs)
Atglen,
Chester County, PA
Octoraro Creek
Watershed

ROOFED MANURE STACKING/MORTALITY COMPOSTING

Project Overview

Pleasant View Farm, owned and operated by Matt King and his family, is a multi-generational farm in southern Chester County, PA. The farm has a diverse operation including organic broiler chickens, a small herd of Angus beef cattle, and rotation crops of corn, soybeans, barley, and hay.

In 2024, Pleasant View Farm partnered with Mowery Environmental to implement a roofed manure stacking and mortality composting facility to address water quality concerns associated with nutrient-laden runoff to Glen Run, a stream impaired for “agriculture siltation” and “agricultural causes unknown”, in the Octoraro Watershed.

The new BMP was strategically located on the footprint of a former poultry waste management facility. Prior to installation, poultry litter and mortalities were stored on an uncovered asphalt pad where runoff was neither collected nor treated. This exposure to precipitation increased the risk of nitrogen, phosphorus, and pathogen transport to nearby surface waters during storm events.

To further protect water quality, the project also included installation of a roof runoff structure, subsurface drainage, and critical area plantings.

QUICK FACTS

ANNUAL REDUCTION:

231.5 lbs. Nitrogen
64.9 lbs. Phosphorus

PROJECT AREA:

480 SQUARE FEET

TIMELINE:

2024- 2025

Landowner Relationship

King is a long-time cooperator with the Chester County Conservation District (CCD), having worked with the District on installing updates and other BMPs. King has demonstrated a willingness to adopt innovative conservation practices such as crop diversification, crop rotation, and participation in regional agricultural initiatives.

Project Funding

Funding for this project was made possible by Local Government Implementation (LGI) funds for the CWIP through PA DEP.

Citations

Information for this article was sourced from PA Eats Grain to Glass (paeats.org), Deer Creek Malthouse (deercreekmalt.com/) and contributions from **Ray Fenstermcher**, Octoraro Watershed Restoration Coordinator

CONOWINGO WIP FIELD TRIP

EVENT SUMMARY

In October, multi-jurisdictional partners from across the Chesapeake Bay Watershed gathered in Pennsylvania for a Conowingo WIP field trip tour, highlighting high-performance pollutant reduction projects. These projects were funded through strategic investment approaches including PENNVEST's Clean Water Procurement Program (CWPP) and Maryland's Pay for Success Program. These projects serve as models of how strategic investment and collaboration can deliver meaningful restoration outcomes.

Sinking Springs Farm, York, PA

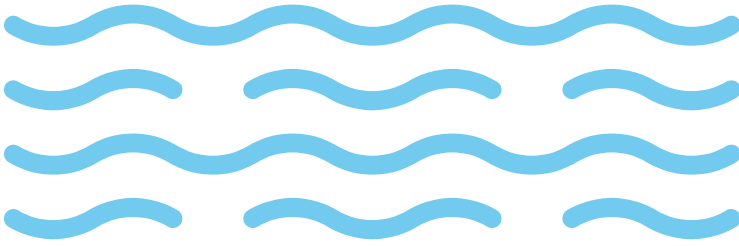
- **BMP Type(s):** Stream and Wetland Restoration, and Nutrient Management Alternatives
- **Contractors/Consultants:** Resource Environmental Solutions (RES) and Rosetree Consulting

This project reconnected a degraded stream corridor to its floodplain and expanded the wetland restoration by an additional 1.29 acres, linking previously restored phases. This project provides treatment for stormwater conveyed across the nearby Interstate, enhancing sediment trapping and nutrient uptake. The Sinking Springs Farm site also features Rosetree Consulting's nutrient management program with the use of biological nitrogen products such as Pivot Bio's PROVEN 40.

This event was organized by the CWIP Coordination team, led by co-chairs Matt Rowe of MDE, and Jill Whitcomb of the PA DEP, in partnership with Chesapeake Bay Research Consortium. The event took place on October 24, 2025 and attendees toured three projects in York, Felton, and Peach Bottom, Pennsylvania. The event brought together state agencies, local governments, county conservation districts, consultants, residents, nonprofits, and watershed practitioners.



CONOWING WIP FIELD TRIP SUMMARY



Green Hill Farm, Peach Bottom, PA

- **BMP Type(s):** Stream and Wetland Restoration, Riparian Buffer Establishment
- **Watershed:** Conowingo Creek
- **Contractors/Consultants:** Resource Environmental Solutions (RES)

This project achieves pollutant reductions by creating over seven acres of wetlands and restoring 3,900 linear feet of stream and riparian grassland buffers along Conowingo Creek and its tributaries. The floodplain is being restored to its historic elevation, while woody debris sourced from the property are being used to store carbon, slow water flow and provide habitat for wildlife. Together, these improvements enhance habitat, improve water quality, and reduce downstream flooding and erosion impacts.



TNT Cattle Farm, Felton, PA

- **BMP Type(s):** Stream and Wetland Restoration
- **Watershed:** Pine Run
- **Contractors/Consultants:** Resource Environmental Solutions (RES)

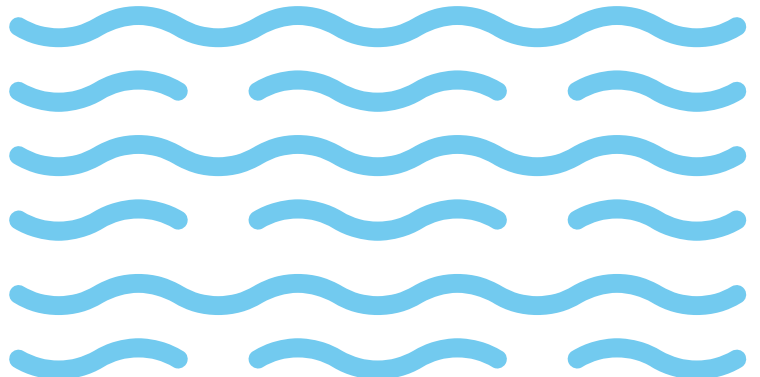
This project restored approximately 7.25 acres of wetland using a floodplain restoration approach. The stream was reconnected to its historic floodplain, allowing high flows to spread out, slow down, and deposit sediment across the wetland system. By restoring hydrological connectivity, the project reduces downstream sediment transport and associated nutrient loads.

Resources

[States join forces for restoration in the Susquehanna watershed](#)

[Rosetree CWIP Project](#)

[RES CWIP Project Sites Overview](#)



HISTORIC \$340 MILLION AGREEMENT ADVANCING WATER QUALITY AT THE CONOWINGO DAM

On October 2, 2025, Governor Wes Moore announced a landmark agreement between the State of Maryland and Constellation Energy to fund and implement operational improvements and environmental restoration projects at the Conowingo Dam.



“The Chesapeake Bay is the keystone to Maryland’s prosperity...This agreement will lead to real improvements in water quality in the biggest tributary of the Chesapeake Bay, while securing the future of one of our state’s largest clean energy producers. By bringing everyone to the table, we have struck an agreement that is good for the environment, good for energy production, and good for Marylanders.”

- Governor Wes Moore

The new agreement replaces the 2019 federal relicensing agreement with Constellation Energy, establishing enforceable water quality standards tied to the dam’s federal relicensing and long-term operation. This legally binding agreement between the Maryland Department of the Environment (MDE), Constellation Energy, Waterkeepers of the Chesapeake and the Lower Susquehanna Riverkeeper Association, is tied to Maryland’s issuance of a revised Clean Water Act Section 401 Water Quality Certification which establishes the conditions under which the dam can continue operating under a new 50-year federal license. The settlement represents one of the most significant environmental investments associated with the dam.

The settlement resolves years of litigation by establishing a comprehensive compliance structure including reporting requirements, timelines for implementation, and dispute resolution processes among the contracted parties. In exchange, Maryland grants the necessary water quality certification which enables the dam owner to proceed with their federal relicensing.

The agreement represents a shift toward holding dam operations accountable for downstream water quality impacts - particularly its role in sediment and pollution buildup in the Susquehanna River and impacts to the Chesapeake Bay during storm events - while providing regulatory certainty for continued hydropower generation.

“This historic agreement ensures that our children and grandchildren will inherit a Chesapeake Bay and Susquehanna River that are cleaner and healthier than they are today...I'm proud of our office's tireless efforts in this case to improve water quality and protect the lives and livelihoods of Marylanders who depend on these essential waterways for recreation and work.”

- Attorney General Anthony G. Brown.

The agreement includes allocated funding for targeted investments to reduce nutrient and sediment pollution to the Susquehanna River and Chesapeake Bay, which are itemized below.

Key Investments

- Water Quality and resiliency: \$87.6 million for pollution reduction and resiliency initiatives that include shoreline restoration, forest buffers, fish passage projects and planting underwater grasses.
- Trash and debris removal: \$77.8 million to strengthen trash removal efforts.
- Aquatic life passage: More than \$28 million for fish and eel passage improvements and protections at the dam to help American shad, river herring, and freshwater mussels.
- Freshwater mussel restoration: \$23.3 million to build and operate a mussels hatchery.
- Dredging: \$18.7 million to support additional studies on dredging and related activities.
- Invasive species management: \$9.4 million to control destructive aquatic species to protect the river's ecosystem and support Maryland's fishing economy.
- Ongoing: Lower Susquehanna Riverkeeper Association and Waterkeepers Chesapeake have an ongoing role in aspects of the implementation of the certification and settlement agreement.

Next Steps

The agreement requires Constellation Energy to fund, implement, and maintain a suite of environmental programs to offset the dam's water quality impacts. The agreement is structured to ensure that the environmental programs are enforceable and sustainable efforts, rather than one-time projects. A key feature of the new agreement is its adaptive framework, allowing projects and funding to be adjusted over time based on monitoring results and evolving science.

Once the Federal Energy Regulatory Commission issues the license, Constellation Energy will begin to implement the agreement's required programs on a defined schedule, including funding allocations, project selection, and early-phase initiatives such as debris removal, monitoring, and planning for sediment and nutrient reduction projects. Compliance oversight and dispute resolution provisions will guide how any issues are addressed.

ACRONYMS

- EPA:** Environmental Protection Agency
MDE: Maryland Department of the Environment
NY DEC: New York Department of Environmental Conservation
PA DEC: Pennsylvania Department of Environmental Protection
PENNVEST: Pennsylvania Infrastructure Investment Authority
SRBC: Susquehanna River Basin Commission
USACE: United States Army Corps of Engineers
USC: Upper Susquehanna Coalition

THIS NEWSLETTER WAS DEVELOPED BY:

The Center for Watershed Protection
under the direction of the
CWIP Steering Committee co-chairs:
Ashley Hullinger, PA DEP
and Christina Lyerly, MDE

CENTER FOR WATERSHED PROTECTION



Pennsylvania
Department of
Environmental Protection



PA DEP, MDE, and NY DEC contribute staff support to advance the goals of CWIP.

CWIP Steering Committee Webpage:

<https://www.chesapeakebay.net/who/group/conowingo-watershed-implementation-plan-steering-committee>