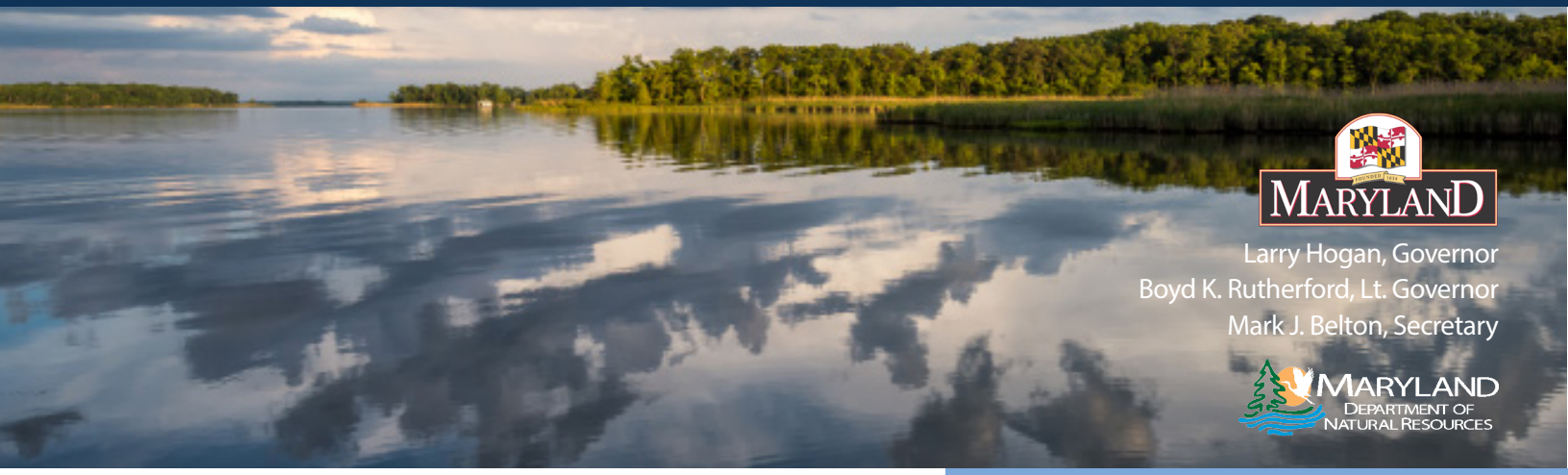
CHESAPEAKE AND ATLANTIC COASTAL BAYS TRUST FUND

2019 ANNUAL REPORT



MARYLAND

Larry Hogan, Governor
Boyd K. Rutherford, Lt. Governor
Mark J. Belton, Secretary

MARYLAND DEPARTMENT OF NATURAL RESOURCES

The Chesapeake and Atlantic Coastal Bays Trust Fund (Trust Fund) was created to provide the financial assistance necessary to advance Chesapeake Bay restoration by focusing available financial resources on the most effective non-point pollution control projects. Essential to its success is an annual allocation process that:

- Targets funds to the most cost effective locations and practices;
- Leverages funds to the greatest extent achievable;
- Engages the community and holds everyone accountable; and
- Provides the flexibility necessary to take advantage of constantly changing conditions, opportunities and scientific developments.

Maryland's Chesapeake and Atlantic Coastal Bays Trust Fund accelerates bay restoration by supporting pollution-reduction projects that have a rippling impact—projects that engage numerous partners and require community collaboration leading to improved water quality and raised awareness on a host of levels.

- Kristin Junkin, director of operations and finance, ShoreRivers

Budgeted Through FY19

$452,900,000 in state funds

$211,188,000 in leveraged funds

$664,088,000 total

By the Numbers

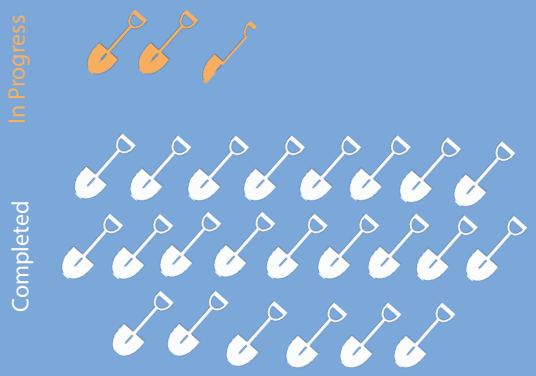
Nutrient and Sediment Reductions (FY09 - FY18)

2,455,367
lbs Nitrogen

260,578
lbs Phosphorus

199,711
tons Total Suspended Solids

Status of Funded Projects:



Over **2,600** project sites awarded in Maryland's Chesapeake and Atlantic Coastal Bay watersheds

= 100 sites

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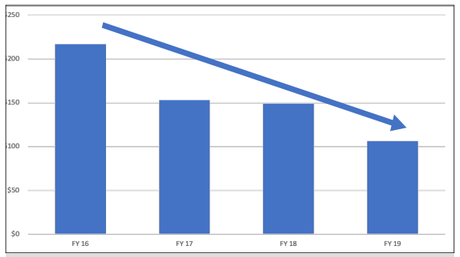
Maximizing Investments

The Trust Fund allows Maryland to accelerate Chesapeake Bay restoration by focusing available financial resources on the most cost effective non-point source pollution control projects in targeted geographic areas of the state. Essential to success is the competitive solicitation process that annually focuses on getting the greatest environmental benefit per Trust Fund dollar spent and allows for the flexibility necessary to take advantage of constantly changing conditions, opportunities, and scientific developments.

Recognizing these factors, the state partnered with Chesapeake Commons and the National Fish and Wildlife Foundation to develop FieldDoc, a platform of tools for restoration professionals, to better estimate the potential nutrient and sediment to be achieved per investments. Through FieldDoc and the continued focus on outcome based performance, the Trust Fund has seen an increased return on investment as measured in cost per pound of pollutant removed.

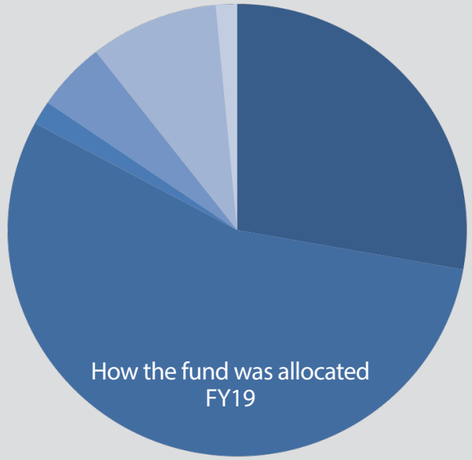
Nitrogen
15 year lifespan cost per pound

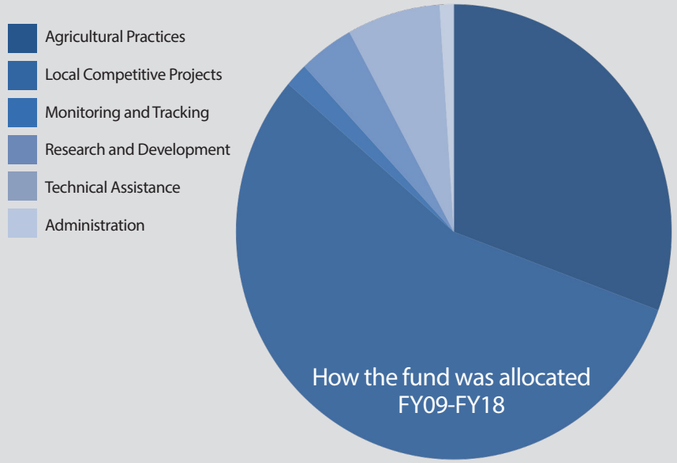


"The Center [Center for Watershed Protection] has the pleasure of working directly with many state and local government organizations, and we have been extremely impressed with the Department of Natural Resources' staff and programs supporting innovation including the Chesapeake and Atlantic Coastal Bays Trust Fund. Like the center, the department applauds strategies that are simultaneously cost-effective and inventive, yet realistic, to reduce polluted runoff and support improvements in habitat."

- Hye Yeong Kwon, executive director
Center for Watershed Protection

Trust Fund By the Numbers

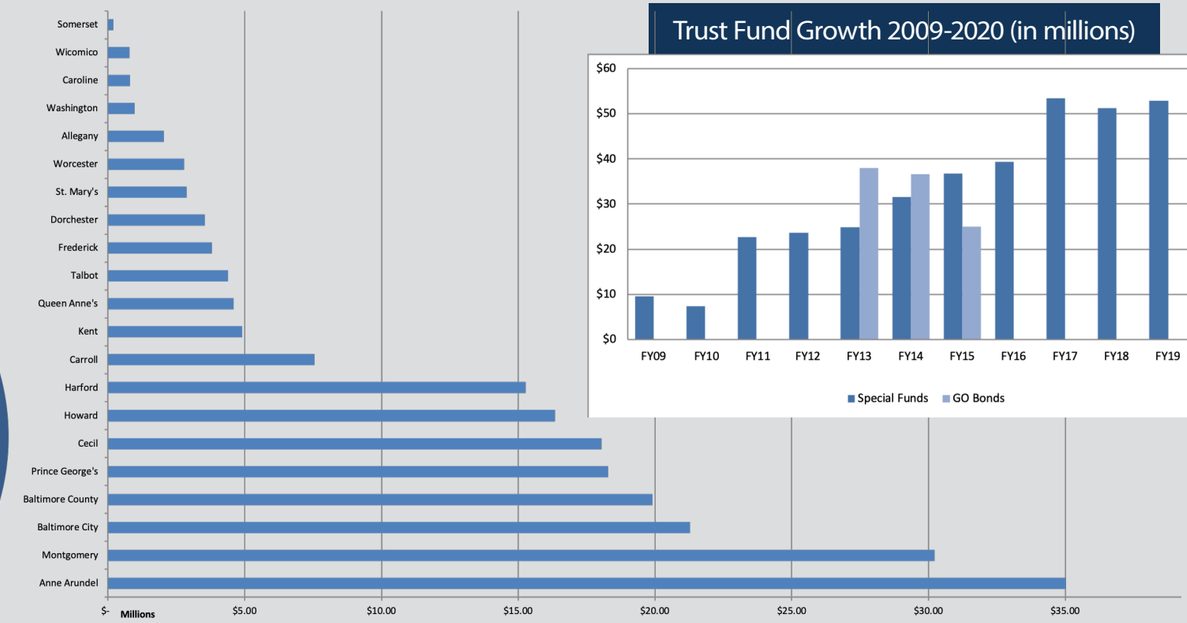




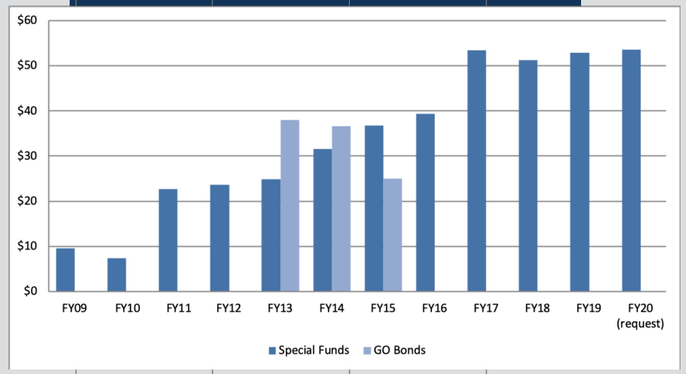
$453 million to date

for non-point source pollution projects across Maryland

Funding by County 2009-2018



Trust Fund Growth 2009-2020 (in millions)



Completed to Date

4,982 acres of wetland restored

206,765 linear feet of stream restored

605 stormwater retrofits installed

661 rain gardens installed

22 acres of impervious surface removed

20,558 urban trees planted

395,862 acres of Cover Crops in FY18

1,201 acres of riparian forest established

36,529 volunteers engaged

2,973 direct and indirect jobs supported

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DEMONSTRATING RESULTS

Given that the Trust Fund is a significant investment, there is a need to be able to demonstrate positive results in order to justify expenditures. While bay-wide water quality trends sometimes require years to decades to be detected, the Trust Fund monitoring strategy works at small spatial scales and at targeted locations to: a) detect changes due to non-point source best management practice implementation and b) provide feedback in a shorter amount of time so that future best management practice implementation can be optimized.

Stream Restoration in the Muddy Creek Watershed: Anne Arundel County

PROBLEM: A deeply incised stream channel and disconnected flood plain were allowing excess nutrients and sediment to reach Chesapeake Bay.

SOLUTION: Restored the stream channel and adjacent riparian area by reconnecting 1,500 linear feet of stream and floodplain while improving instream and riparian habitat.

RESULTS:

Pollution Reduction *(Annual pounds)*		Cost per Pound *(Based on an est. 15-yr project life)*	
572	Nitrogen	cost per lb. of Nitrogen	$277
125	Phosphorus	cost per lb. of Phosphorus	$1,264
46,146	Suspended Sediments	cost per lb. of Sediments	$3.43

To learn more about the Trust Fund and to track projects funded in your region, please visit:

dnr.maryland.gov

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410-260-8753 I gabe.cohee@maryland.gov

The allocation and implementation of the Trust Fund is a collaborative effort between the following partners: Maryland's Bay Cabinet Agencies, the Scientific Advisory Panel, and the General Assembly. The program is administered by the Maryland Department of Natural Resources.

Publication Date: 1/2019
DNR 14-012519-119
Printed on recycled paper

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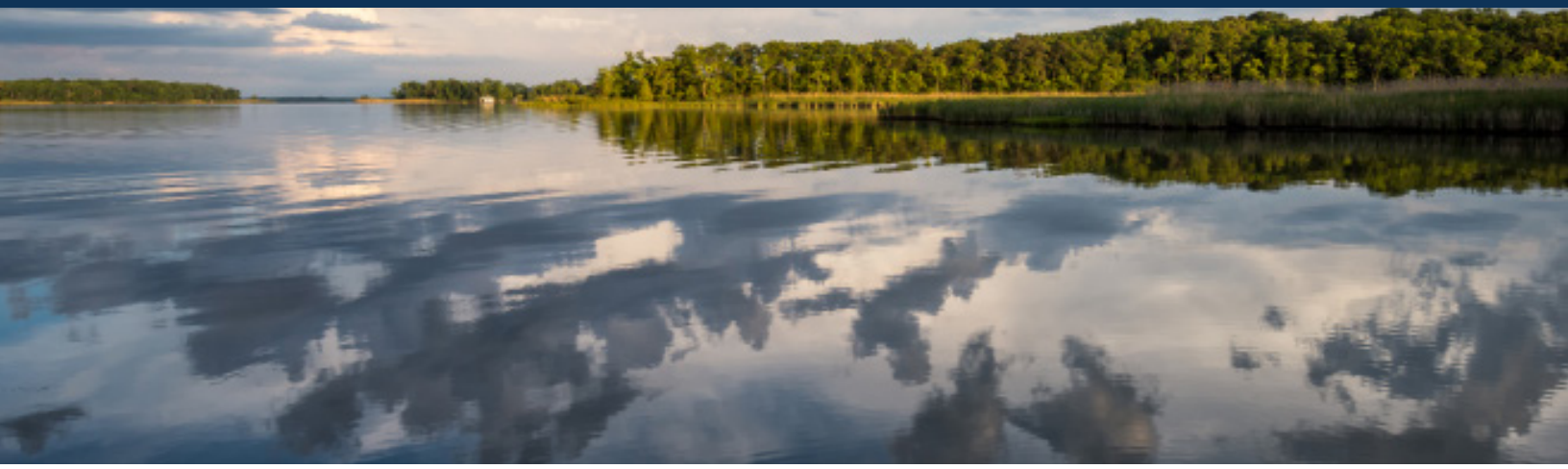
CHESAPEAKE AND ATLANTIC COASTAL BAYS TRUST FUND

FY20 BUDGET AT A GLANCE



Annual Expenditure Plan (FY18 - FY20)

Targeted Activity	Project Partner	FY18 Actual	FY19 Current	FY20 Request	+/- FY19 to FY20
Accountability, Verification and Management					
1. Strategic Monitoring & Assessment	Natural Resources	$400,000	$400,000	$400,000	$0
2. Restoration Research Grant Program	Competitive grants	$300,000	$300,000	$300,000	$0
3. Implementation Tracking	Information Technology	$200,000	$200,000	$200,000	$0
4. Administration & Management (1.5%)	Natural Resources	$695,000	$793,970	$804,380	$10,410
Accelerating Restoration through Research & Development					
5. Innovative Technology Fund	Natural Resources/ University of Maryland	$1,000,000	$1,000,000	$1,000,000	$0
6. Manure Management through Proven Technology	Agriculture	$1,660,000	$1,600,000	$1,600,000	$0
Implementation Technical Assistance					
7. Agricultural Technical Assistance	Agriculture	$3,290,000	$3,290,000	$3,290,000	$0
8. Water Management Permit Expediters	Environment	$825,000	$750,000	$750,000	$0
9. Field Restoration Specialists	Natural Resources	$750,000	$750,000	$750,000	$0
	Sub TOTAL	$9,120,000	$9,083,970	$9,094,380	10,410
Integrated Targeted Projects to Meet Maryland's Milestones					
Implementation of Agricultural Practices					
10. Cover Crop Program	Agriculture	$11,250,000	$11,250,000	$11,250,000	$0
11. Conservation Reserve Enhancement Program Bonus Payments	Agriculture	$500,000	$500,000	$500,000	$0
12. Grants to Farmers	Agriculture	$2,000,000	$2,000,000	$2,000,000	$0
13. Manure Transport Program	Agriculture	$750,000	$750,000	$750,000	$0
14. Governor's Phosphorus Management Tool Initiative	Agriculture	$150,000	$210,000	$210,000	$0
Implementation of Local Watershed Implementation Plans (WIPS)					
15. Cost-Effective Nonpoint Source Projects	Competitive grants	$21,540,000	$23,137,363	$23,820,948	$683,585
16. Natural Filters on Public Lands	Competitive grants	$6,000,000	$6,000,000	$6,000,000	$0
	Sub TOTAL	$42,190,000	$43,847,363	$44,530,948	$683,585
	GRAND TOTAL	**$51,310,000**	**$52,931,333**	**$53,625,328**	**$693,995**

CHESAPEAKE AND ATLANTIC COASTAL BAYS TRUST FUND

FY20 BUDGET DETAILS

Accountability, Verification and Management : $1,704,380

1. Strategic Monitoring & Assessment: Will provide $400,000 to develop and implement monitoring strategies, collect and analyze data for trends, provide biological monitoring in Trust Fund watersheds and comparison watersheds, and communicate the results of the restoration efforts.

2. Restoration Research Grant Program: Will provide $300,000 to competitively fund monitoring projects that will answer regulatory and restorative questions about best management practices for non-point source pollution in a robust, rigorous and representative manner.

3. Implementation Tracking: Will provide $200,000 to provide hosting, application, maintenance, and data support services for the Trust Fund dashboard, mapper and Maryland's integrated map services.

4. Administration & Management: Will provide 1.5 percent of the total operating allowance to provide fiscal oversight; manage grant programs including solicitation development, project review, contract and project development and management; coordinate with bay agencies, the Scientific Advisory Panel, Department of Budget and Management, Department of Legislative Services; and report to the Maryland General Assembly.

Accelerating Restoration through Research and Development: $2,600,000

5. Innovative Technology Fund: Will provide $1 million to the fund, established with the goal of accelerating Chesapeake Bay restoration through the development of new innovative technologies. It is made possible through funding from the Trust Fund, Environmental Protection Agency's Chesapeake Bay Implementation Grant, and in partnership with the University of Maryland's Industrial Partnership and Mtech Ventures Program.

6. Manure Management Projects with Proven Technology: Will provide $1.6 million to support the Animal Waste Technology Fund. These funds will be used to support technologies that provide promising alternatives for utilization of animal wastes such as energy production.

Implementation Technical Assistance: $4,790,000

7. Agricultural Technical Assistance: Will provide $3.29 million to support agricultural technical assistance positions in Soil Conservation Districts. In total, the Trust Fund now supports 68 (43 state and 25 local) Soil Conservation District positions needed to assist farmers in the implementation of agricultural best management practices as identified in the Watershed Implementation Plan.

8. Water Management Permit Expediters: Will provide $750,000 to expedite state review of qualifying stormwater and wetland restoration projects and to protect the quality of the ground and surface waters.

9. Field Restoration Specialists: Will provide $750,000 to increase the level of field specialists to assist state and local partners identify, engineer, design, and provide construction and construction oversight assistance of priority Chesapeake Bay restoration projects.

Implementation of Agricultural Practices: $14,710,000

10. Cover Crop Program: Will provide $11.25 million to Maryland's Cover Crop Program to supplement funds provided through Maryland's Chesapeake Bay Restoration Fund. Cover crops are critical to achieving the reduction of nutrients necessary to meeting the the Watershed Implementation Plan.

11. Conservation Reserve Enhancement Incentive: Will provide $500,000 to support the Conservation Reserve Enhancement Program. Trust Funds are used to provide the state $100 per acre signing incentive for new and re-enrolled acres on eligible best management practices including grass and forest stream-side buffers, wetlands and permanent stabilization of highly erodible land.

12. Grants to Farmers (Nutrient Management Regulations): Will provide $2 million to assist farmers with implementing nutrient management regulations. This funding will help offset the infrastructure costs to implement or enhance manure storage and provide incentives for improved management of manure and other sources of crop nutrients.

13. Manure Transport Program: Will provide $750,000 to transport manure away from farms with high soil phosphorus levels to other farms or locations that can use the manure agronomically. Dollars will leverage funds already provided by poultry integrators and state general funds traditionally used to support manure transport.

14. Governor's Phosphorus Management Tool Initiative: Will provide $210,000 to provide technical assistance through nutrient management advisors to assist farmers in planning for phosphorus management tool transition and implementation of management changes.

Implementation of Local Watershed Implementation Plans: $29,820,948

15. Cost-Effective Non-point Source Projects: Will provide $23,820,948 to projects that deliver the most cost-effective and measurable nonpoint source pollution reduction per dollar. Grants are awarded on a competitive basis to projects that target and reflect the state's diverse landscapes, challenges and sources of pollution.

16. Natural Filters on Public Lands: Will provide $6 million for the implementation of nutrient and sediment reduction projects on state and public lands. Projects include forested buffers, reforestation, wetland restoration, stream and floodplain restoration, stormwater retrofits and other bioremediation projects.

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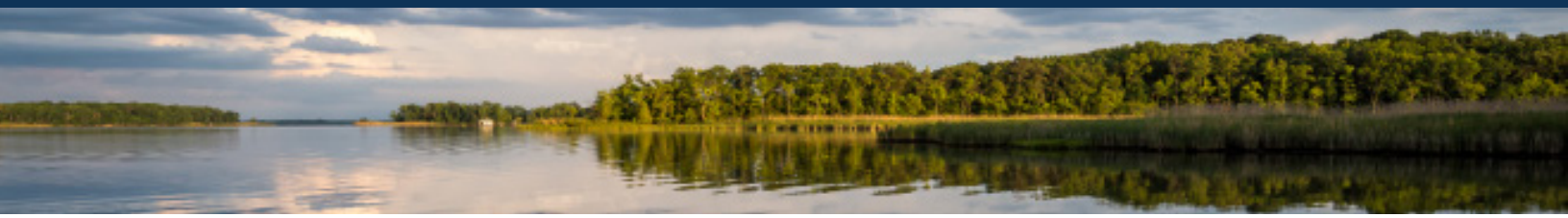

The Trust Fund at Work

Advancing the Science of Restoration

Innovative Technology Fund

The Trust Fund is taking a leading role for advancing new market-driven technologies that is resulting in new jobs and tools to restore the Chesapeake Bay. In partnership with the Maryland Industrial Partnership (MIPS) Program, the state is able to leverage more than 30 years of expertise and the extensive laboratory resources of the University System of Maryland.

"The Innovative Technology Fund was an excellent resource enabling us to advance our R&D timeline and enter the pre-commercialization phase with our product. Funds like this are an excellent driver for economic and environmental health initiatives".
– Felipe Correa, AviHome, LLC

With an investment through the Innovative Technology Fund, AHPharma created a radiant, hot-water flooring system to improve the performance of birds from poultry houses while lowering the emissions from the houses and minimizing the land disposal of poultry litter. The investment resulted in a cost-effective prototype for the poultry industry to employ within the normal grow-out system, without disruption to normal operations. The system is currently being reviewed by the Chesapeake Bay Program as a method to reduce non-point source pollution from poultry-rearing houses.

Restoration Research Grant

Now in its fourth year, a partnership that includes the state, the Maryland Department of Transportation, the Montgomery County Department of Environmental Protection and the Chesapeake Bay Trust created the Restoration Research Grant to address key restoration questions that serve as a barrier to project implementation.

Efforts to restore the Chesapeake Bay and its tributaries call for a significant increase in the number of watershed restoration projects intended to improve both water quality and habitat. Questions about the performance and function of some restoration practices persist in the regulatory community as well as the restoration practitioner community. Answering these questions will ultimately lead to increased confidence in outcomes of restoration projects, identification of better locations and economical ways to build projects, and information useful to regulatory agencies in project permitting.

"The health of Chesapeake Bay depends on the quality of the water flowing from the streams and tributaries in our backyards and communities. This program will provide more in-depth scientific data and measurable results to help local stream restoration activities and efforts that seek to mitigate the amount of sediment and nutrients entering our waterways."
- Mark Belton, Department of Natural Resources

Cumulative Benefits Approach: Natural Lands Project with Washington College

With Maryland's Northern Bobwhite population at historic lows and bay restoration goals in mind, Washington College's Center for Environment and Society and ShoreRivers partnered in 2015 to form the "Natural Lands Project" on Maryland's Upper Eastern Shore. Supported by a $700,000 award from the Trust Fund, the two organizations leveraged their collective expertise in habitat creation and water quality improvement to enlist private landowners interested in restoring wildlife populations and cleaning up the bay. Funding from the Trust Fund supported the work with interested landowners resulting in the creation of 372.4 acres of native upland meadows and 35.7 acres of wetlands between 2015 and 2018. This collective effort has also resulted in the reduction of 2,107.19 pounds of nitrogen, 148.19 pounds of phosphorus and 55.36 tons of sediment from entering local watersheds.

CHESAPEAKE AND ATLANTIC COASTAL BAYS TRUST FUND

Supporting Local Restoration Efforts and Economies (FY18 Project List)

Allegany County

Allegany County: $786,422 for 3,500 LF of George's Creek to be restored (District 1B)

Anne Arundel County

Alliance for the Chesapeake Bay: $515,001 for stormwater management at Ashbury Broadneck Methodist Church (District 33)

Alliance for the Chesapeake Bay: $424,940 for wetland creation, reforestation and stormwater management at St. Luke's Episcopal Church (District 30)

Watershed Stewards Academy: $540,825 for Berrywood stream restoration, stormwater management and living shoreline (District 33)

Anne Arundel County: $1,683,654 for 1,800 LF of stream restoration and a pond retrofit at Najoles Road (District 33)

Annapolis Maritime Museum: $516,648 for 336 LF regenerative stormwater conveyance, wetland and shoreline enhancement at Back Creek Park (District 30A)

South River Federation: $136,027 for 750 LF of outfall restoration and upland stormwater practices (District 33)

Baltimore County

Baltimore County DEPS: $1,083,000 for 2,300 LF stream restoration of White Marsh Run (District 8)

Gunpowder Valley Conservancy: $195,040 for 27.25 acres of trees and residential stormwater management (multiple districts)

Baltimore Soil Conservation District: $274,214 for 1,440 LF of stream restoration at Long Green Creek (District 7)

Baltimore Soil Conservation District: $1,398,144 for 4,748 LF of stream restoration at Indian Run (District 7)

Baltimore Soil Conservation District: $518,226 LF of stream restoration at First Mine Branch (District 7)

Caroline County

Adkins Arboretum: $253,750 for stormwater management at Adkins Arboretum (District 36)

Carroll County

Carroll County: $150,000 for 12.5 acres of riparian buffer in Double Pipe Creek (District 5) and 12.5 acres in South Branch Patapsco (District 9A)

Cecil County

ShoreRivers: $992,492 for 3,893 LF of stream restoration at Oakshire (District 36)

Cecil County: $818,225 for stormwater pond retrofit at Timberbrook (District 35A) and roadside ditch restoration implementation (multiple districts)

Cecil Land Trust: $4,500,000 for 14,487 LF of stream restoarion and 30.9 acres of riparian bufferin the Principio watershed (District 35A)

Dorchester County

Delmarva RC&D Council: $130,000 for 3.58 acres of wetland restoration in Indiantown (District 01)

Frederick County

StreamLink Education: $332,575 for 33.6 acres of riparian buffer along Tuscorora Creek and Monocacy River with the Waterside Community (District 3A)

Harford County

Harford County: $1,100,000 for 2,150 LF of stream restoration, shallow marsh and water quality retrofits at Willoughby Beach (District 34A)

Harford County: $1,600,000 for 2,670 LF of stream restoration at Bynum Run (District 34B)

Harford Soil Conservation District: $459,567 for 1,400 LF of stream restoration at Island Branch (District 1)

Harford Soil Conservation District: $204,535 for 1,183 LF of stream restoration and livestock exclusion at Graveyard Creek (District 1)

Harford Soil Conservation District: $141,818 for 300 LF of stream and 0.5 acres of wetland restoration at Hopkins Branch (District 1)

Harford Soil Conservation District: $100,000 for 228 LF of stream restoration at Vaughn Property (District 35B)

City of Havre de Grace: $350,000 for 200 LF regenerative stormwater conveyance and 570 LF of shoreline at Concord Cove (District 34A)

Howard County

Howard County: $612,000 for stormwater management facilities at Patapsco River Road and Trinity School (District 9B)

Kent County

Kent County: $77,000 for 125 LF of stream restoration at St. Paul's Church (District 36)

Montgomery County

City of Rockville: $450,000 for Hungerford-Stoneridge stormwater pond retrofit (District 17)

Montgomery County: $1,250,000 for 1,200 LF of stream restoration and pond retrofit at Flint's Grove (District 15)

Montgomery County: $450,000 For a pond retrofit at Watkins Meadow (District 39)

Montgomery County: $130,000 for a pond retrofit at Potomac Ridge (District 15)

Montgomery County: $130,000 for a pond retrofit at Hunter's Woods III (District 39)

Montgomery County: $100,000 for green infrastructure stormwater management at Olney Elementary (District 14)

Montgomery County: $1,175,000 for 1,050 LF of stream restoration and a pond retrofit at Fall Reach (District 15)

Worcester County

Maryland Coastal Bays Program: $107,693 for 10 acres of wetland restored at Newport Bay (District 38C)

Prince George's County

Univeristy of Maryland: $1,200,000 for 2,200 LF of stream restoration at Campus Creek (District 21)

Queen Anne's County

ShoreRivers: $150,228 for stormwater management practices at Gunston school (District 36)

Queen Anne's County: $300,000 for 12 acres of wetland enhancement and 42 acres of forest and meadow at Blue Heron Park (District 36)

Talbot County

Town of Oxford: $650,000 for stormwater management at Causeway Park (District 37B)

Talbot County: $350,000 for stormwater management and living shoreline at Reese's Landing (District 37B)

Statewide

Ducks Unlimited: $595,988 for restoring 80 acres of emergent wetland in the Upper Eastern Shore region (multiple districts)

Maryland Forestry Foundation: $600,000 for reforesting 140 acres of private land in twelve counties (multiple districts)

SHORERIVERS

Engaging Partnerships for Restoration and Stormwater Management at Chesapeake College

Before: at site of regenerative step pool storm conveyance project

After: the ephemeral tributary of the regenerative step pool storm conveyance project

Maryland's Chesapeake and Atlantic Coastal Bays Trust Fund accelerates bay restoration by supporting pollution-reduction projects that have a rippling impact—projects that engage numerous partners and require community collaboration leading to improved water quality and raised awareness on a host of levels.

A prime example of its reach is reflected in the work recently completed at Chesapeake College in Queen Anne's County on Maryland's Eastern Shore.

In 2013, ShoreRivers embarked on the first ever assessment of the Wye River watershed, seeking to prioritize locations where pollution-reduction projects would benefit water quality. This initial effort was funded by the Chesapeake Bay Trust.

The Chesapeake College campus, draining into the upper Wye River, was one of the priority sites identified. Much of the infrastructure of the college was built in the 1960s. As the campus grew, stormwater issues magnified. The campus drains from all of its own impervious parking areas and buildings and also from 80 acres of farm fields across Route 50. Most of the stormwater flowed into a settlement pond at one end of the campus. The settlement pond routinely overflowed, rushing under a dam, scouring out large culverts of eroding bank, pouring sediment, nutrient and heavy metal pollution into the Wye East River.

Kristin Junkin, director of operations at ShoreRivers, approached the college and began working collaboratively with its officials, successfully obtaining funding for and managing several small projects on campus. Building on those successes, ShoreRivers began working with the college to design a comprehensive project to address its major stormwater challenges. The centerpiece of the project is a regenerative step pool storm conveyance project, the design and permitting for which the National Fish &

Wildlife Foundation agreed to fund. As Junkin explained, "this is a series of pools built to slow down the flow of surface water. Potentially harmful nutrients in the stormwater will be filtered by native plants and vegetation in the pools. The water flow will also be slowed, lessening the amount of sediment in the stormwater before it reaches the headwaters of Wye East River."

Following completion of the step pool project design, the Maryland Department of Natural Resources, allocating funds from the Chesapeake and Atlantic Coastal Bays Trust Fund, awarded ShoreRivers $745,000 to construct the step pool centerpiece and embark on a suite of other projects including the construction of five bioretention ponds, a wetland creation, riparian buffer plantings, three wildflower meadows, and almost four acres of switch grass buffers around the farm fields on the campus. Following this grant, Queen Anne's County awarded $292,587 in additional funds to pay for the design, management, and construction of additional proposed projects to complete the campus restoration.

As of today, 19 projects have been completed on campus. Collectively, they will reduce nitrogen running into the Wye River by approximately 400 pounds per year, phosphorus by 37 pounds per year, and sediments by almost 19 tons each year. The projects will also intersect with education programs at the college by providing opportunities for students to study the effects of the restoration work and help maintain the new infrastructure. The projects will also have high visibility as demonstration projects for all community members who use and visit the campus.

Construction underway on one of the bioretention ponds on the Chesapeake College campus

Biopond construction underway at Chesapeake College

Many partners collaborated to make this happen. These included ShoreRivers, Chesapeake College, National Fish and Wildlife Foundation, Chesapeake Bay Trust, Maryland Department of Natural Resources, Queen Anne's County, and a network of engineers and contractors including Sustainable Science, Blessing Environmental Concepts, Environmental Concern, and Resource Restoration Group—who Junkin describes as "people with enormous talent and skills who have been able to turn these projects from mere concepts into reality."

Former Maryland Natural Resource Secretary Mark Belton called the Chesapeake and Atlantic Coastal Bays Trust Fund "one of the most innovative pollution reduction programs in the nation." Current Acting Secretary Jeannie Haddaway-Riccio agreed, stating: "It engages local partners in an unprecedented way and results in practical projects and measurable outcomes. Through this program, the state is lowering the cost of reducing pollution in our waterways - a victory for the environment, the taxpayer, and the watershed."

And as Junkin said, concluding her remarks at a press conference on campus showcasing the projects: "Now more than ever, it is up to us at the local, county, and state level to lead the efforts, to keep up the good fight, to protect our environment, our rivers, our Chesapeake Bay. The restoration and stormwater projects at Chesapeake College are a perfect example of what local and state partnerships can achieve."

The Maryland Chesapeake and Atlantic Coastal Bays Trust Fund is making this happen.

A celebratory groundbreaking ceremony with Chesapeake College colleagues and board members, Queen Anne's County officials, ShoreRivers staff and board members, Department of Natural Resources, project partners Environmental Concern, Resource Restoration Group and Blessing Environmental Concepts.