A RIPARIAN FOREST BUFFER OUTCOMES FUND FOR THE CHESAPEAKE BAY

BUSINESS PLAN

ENVIRONMENTAL POLICY INNOVATION CENTER

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OCTOBER 2023

With support from:

Chesapeake Bay Program
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Chesapeake Bay Trust

United States Environmental Protection Agency

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Executive Summary

The Chesapeake Bay watershed covers over 60,000 square miles in six states and is the third largest watershed in the world. The watershed is also densely developed, and nutrient and other pollution from agriculture and development has led to water quality challenges upstream and downstream in the Bay.

To improve water quality, the Bay has been an epicenter of collaborative cross-jurisdictional work to reduce and mitigate key sources of pollutants. Bay states have developed and are implementing the 2014-2025 Chesapeake Bay Agreement for pollution reduction and other environmental improvements in the region. The Bay is also under a TMDL with EPA to improve water quality, which provides a regulatory driver for interventions that reduce pollutant loads. The 2014 Agreement includes these water quality goals, but is more expansive, with additional goals related to biodiversity, conservation, and community engagement. These efforts have led to significant progress in reducing water pollution and restoring aquatic ecosystems, however, to varying degrees Bay states are behind in reaching certain goals. One of these goals - and the focus of this business plan - is the Chesapeake Bay Agreement's Riparian Forest Buffer Outcome Goal of restoring 900 miles of riparian forest buffer annually so that 70% of riparian areas in the Bay watershed are forested by 2025. Riparian forest buffers confer water quality and other important co-benefits and have been a focus area in the Bay but projects are not being implemented fast enough to reach the Buffer Outcome Goal.

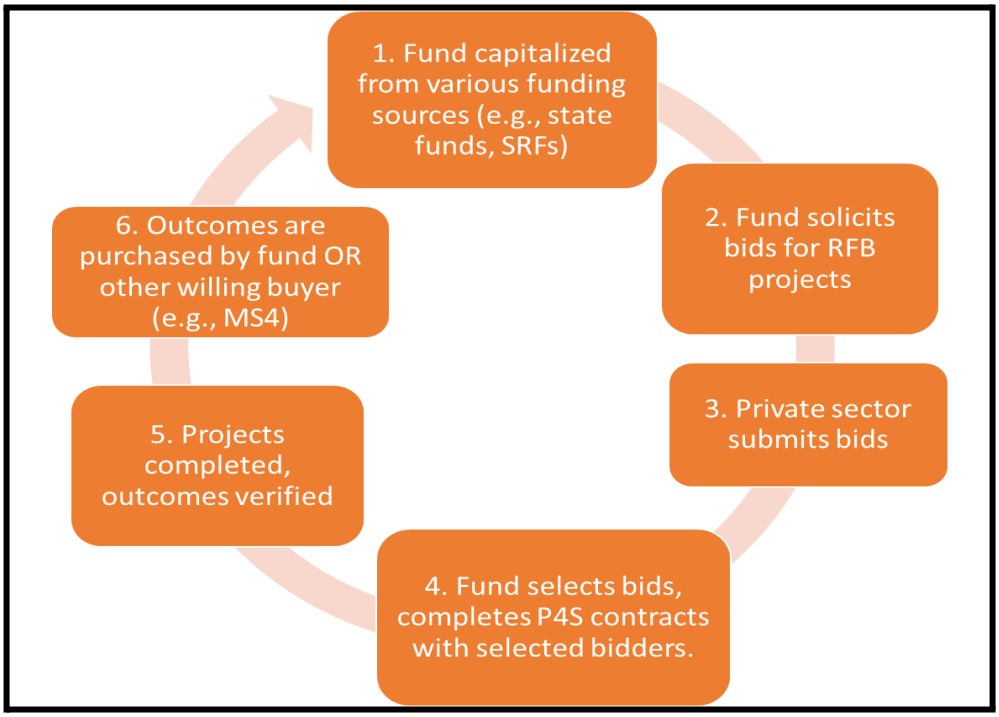
By 2020, Maryland was 88% of the way towards achieving the State's Phase III WIP goal for forest buffers on agricultural lands, and 76% of the way to achieving the state's WIP goal for forest buffers in urban areas (CC MD Forest Report). Across states, variation exists in the degree to which progress is being achieved for riparian forest buffers when assessed against the state-level WIP goals. Maryland and West Virginia are farther along in progress towards the WIP III goals (87% and 48%, respectively), while New York (32%), Delaware (21%), Pennsylvania (12%), and Virginia (6%) are farther behind. ***Overall, Maryland needs around 2,600 acres of additional riparian forest buffer acres to meet its WIP III goals; the Bay states together need a total of 152,325 acres to reach their total WIP III goals.***

This business plan is the result of a project to assess why Bay states are not meeting their riparian forest buffer goals and to identify an innovative financing strategy to incentivize greater riparian forest buffer planting to help Bay states meet the Riparian Forest Buffer Outcome goal in the Chesapeake Agreement. Research to inform the development of the business plan included desk research and interviews to first identify current barriers to riparian forest buffer planting; in other words, why aren't more buffers being planted in the Bay states? While there are multiple barriers to riparian buffer installation, a lack of reliable/guaranteed demand for riparian forest buffers in the region appears to be a significant hurdle in incentivizing planting, especially from private sector restoration companies. For this reason, the business plan centers on an outcomes purchase fund that is a pay for success contracting (PFS) model in which the successful outcomes of environmental work would be paid for by the fund after they are realized, rather than funding on-the-ground project work up-front as is more typically the case. Maryland has a robust restoration sector of private developers that will be incentivized to invest in riparian forest buffers given the certainty of recouping costs - plus some margin of profit - that the outcomes purchase fund would provide. Currently, this guaranteed source of demand does not exist.

The fund as conceptualized in this business plan would be established to pay for outcomes in Maryland - with the goal of eventually serving the Chesapeake region - and could be designed to cover riparian

forest buffer projects in different landscapes (e.g., urban, suburban, rural). Under the PFS model (Figure ES-1), the fund would issue requests for proposals (RFPs) for the outcomes needed (in this case, acres of riparian forest buffers established), project developers would submit bids, the fund would select bids based on a scoring rubric, and the fund would pay successful bidders for the outcomes once projects are completed and outcomes are verified.

Figure ES-1: Outcomes Purchase Fund Design



The riparian buffer outcomes fund would address existing barriers to buffer planting and catalyze additional planting through its structure and implementation:

- **Simplified "one-stop shop".** The fund would be managed by a single entity that could hold and administer funds from state, local and federal sources and distribute that money into projects, as a "one-stop shop" for project bidders.
- **Flexible contracting.** The fund could enter into contracts with, and distribute funds to, any kind of project developer,[1] whether nonprofit or for-profit, that delivers measurable and verifiable outcomes.
- **Guaranteed source of demand for riparian forest buffers.** The fund would be the buyer of last resort for riparian forest buffers, effectively creating a price floor. The fund would exclusively take bids on riparian forest buffer projects and select them primarily on the cost-effectiveness of the outcomes being delivered (measured in acres of riparian forest buffer established).
- **Built-in accountability for outcomes.** Project developers would not be reimbursed for expenses but rather paid for delivery of verified outcomes. The fund would pay project developers at

[1] A project developer is any entity that submits bids to–and/or contracts with–the fund in order to plant riparian forest buffers to sell outcomes to the fund.

predetermined intervals throughout the life of project implementation, with final payments tied to verified tree survival, not only to initial tree planting.

- **Broad application.** The fund would have a mission to support both urban and rural/agricultural projects so these categories are not competing with one another.
- **Market creation for riparian forest buffers.** The fund could also sell outcomes to secondary buyers who are interested in purchasing either compliance or voluntary outcomes. It could catalyze supply and facilitate linking with demand.
- **Flexibility for project developers.** Project developers could use any technique they choose, with no fund approval or review needed, as long as the projects generate an outcome that could be measured in established riparian forest.

This business plan provides the conceptual framework and suggestions for specifics for the fund components (e.g., the defined outcome; potential sources to capitalize the fund; potential fund implementing entities in the region; potential private sector developers; potential scoring criteria; potential verification requirements) but recommends a prototyping phase to further refine design details within each step of the fund process. The entity that would implement the fund would be an important partner in sorting through options for fund design and iterating on the prototype to adapt the final design.

The fund serves as the buyer of last resort for the outcome. Other entities with voluntary or regulatory compliance needs for this outcome could step in at various points of the project cycle and purchase projects in process – either from the fund or from project developers, depending on project readiness and buyer risk tolerance – for a penny more. Acres of riparian forest buffer established is an umbrella outcome that could be purchased, and it is possible to calculate other benefits (e.g., nitrogen, carbon) on a per-acre basis that these other entities may need.

The outcomes purchase fund strategy for meeting the riparian forest buffer goal is based on the successful implementation of this type of model around the country. The business plan provides case study examples (Washington DC's stormwater credit trading program, Wisconsin's water quality trading clearinghouse) that support the recommendation that a PFS model be used to catalyze Bay states to meet an important goal under the Chesapeake Bay Watershed Agreement.

This project has been funded wholly or in part by the United States Environmental Protection Agency (U.S. EPA) under assistance agreement 96374201 to the Chesapeake Bay Trust. The contents of this document do not necessarily reflect the views and policies of the Environmental Protection Agency, nor does the EPA endorse trade names or recommend the use of commercial products mentioned in this document.

Introduction

The Problem

Chesapeake Bay states set riparian forest buffer goals to assist them in meeting water quality and other regional goals, but the states are behind and additional riparian forest buffer project implementation needs to be catalyzed. This business plan was developed to address the question ***"How can innovative financing incentivize more riparian forest buffer planting?"***

Why Riparian Forest Buffers?

The proposed fund is specific to riparian forest buffers, which act as natural filters. Riparian forest buffers are strips of land along bodies of water planted with trees, shrubs, and other perennial plants and act as natural filters to clean water by absorbing nutrients before they enter waterways, and stabilizing soils and preventing erosion. Riparian forest buffers also confer these additional benefits:

1. **Flood mitigation.** Buffers reduce flooding, as well as coastal impacts from storm surges and sea level rise.
2. **Cleaner and cooler air.** Riparian buffers remove air pollutants and provide cooling benefits for people and wildlife.
3. **Climate mitigation.** Trees and vegetation planted as buffer strips sequester carbon.
4. **Habitat.** Buffer strips provide forested habitat, often as connectors facilitating wildlife movement. Buffers also improve aquatic habitat within streams; for example, the shade from trees helps maintain cool water temperatures for aquatic species.

The business plan defines riparian forest buffers according to the Chesapeake Bay Program's BMP Guide. Two types of riparian forest buffers are included: A-12 for riparian buffers on converted cropland (agricultural land) and D-7 for riparian forest buffers in urban areas.

- **A-12 forest buffer**: Linear wooded areas that help filter nutrients, sediments and other pollutants from runoff as well as remove nutrients from groundwater. The recommended buffer width is 100 feet, with a 35 feet minimum width required.
- **D-7 urban forest buffer:** Forest buffers are linear wooded areas that help filter nutrients, sediment and other pollutants from runoff as well as remove nutrients from groundwater. The recommended buffer width is 100 feet, with a 35 feet minimum width required.

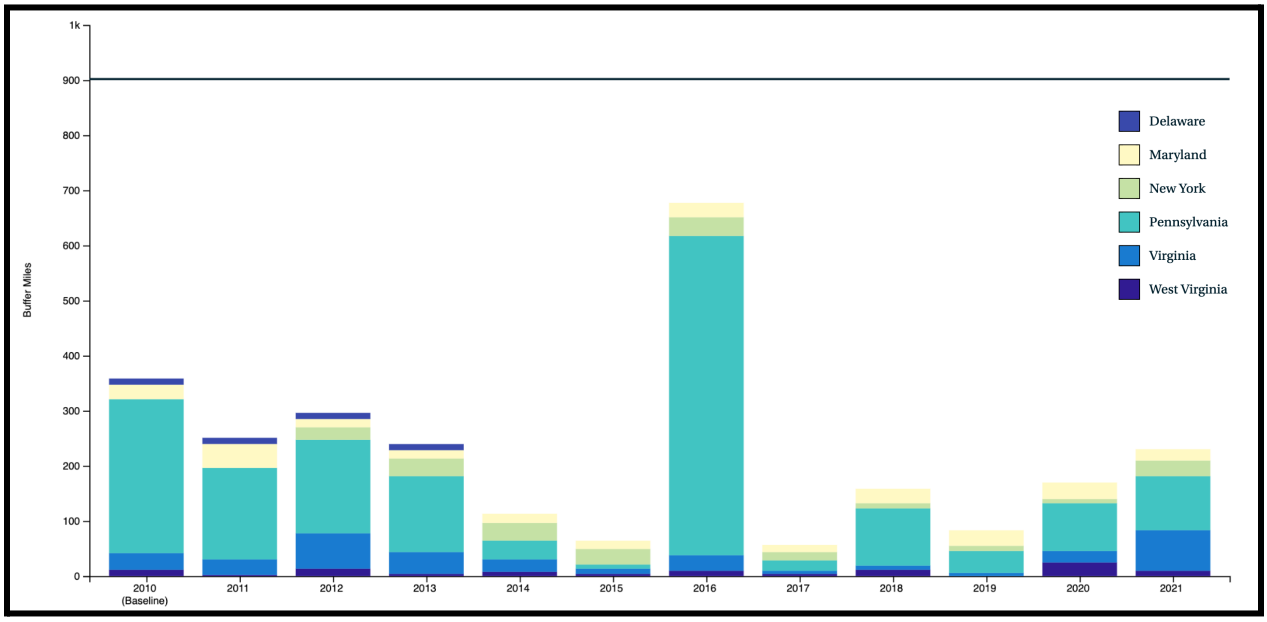
Goals and Progress in the Chesapeake Bay

Riparian forest buffers have long been recognized for the environmental benefits they confer in the Chesapeake Bay. Under the 2014 Chesapeake Bay Watershed Agreement, the states established a Forest Buffer Outcome goal of restoring 900 miles of riparian forest buffer annually so that 70% of riparian areas in the Bay watershed would be forested by 2025.[2] In 2018, riparian areas in Maryland were

[2] https://d18lev1ok5leia.cloudfront.net/chesapeakebay/Chesapeake-Bay-Watershed-Agreement-Amended.pdf

estimated as 58% forested[3] and it and all the other states have not met the 900 miles per year target of riparian forest buffers restored/planted in the Chesapeake Bay since 2010 (Figure 1).

Figure 1: Miles of new riparian forest buffers planted annually by Chesapeake Bay states (2010-2021)



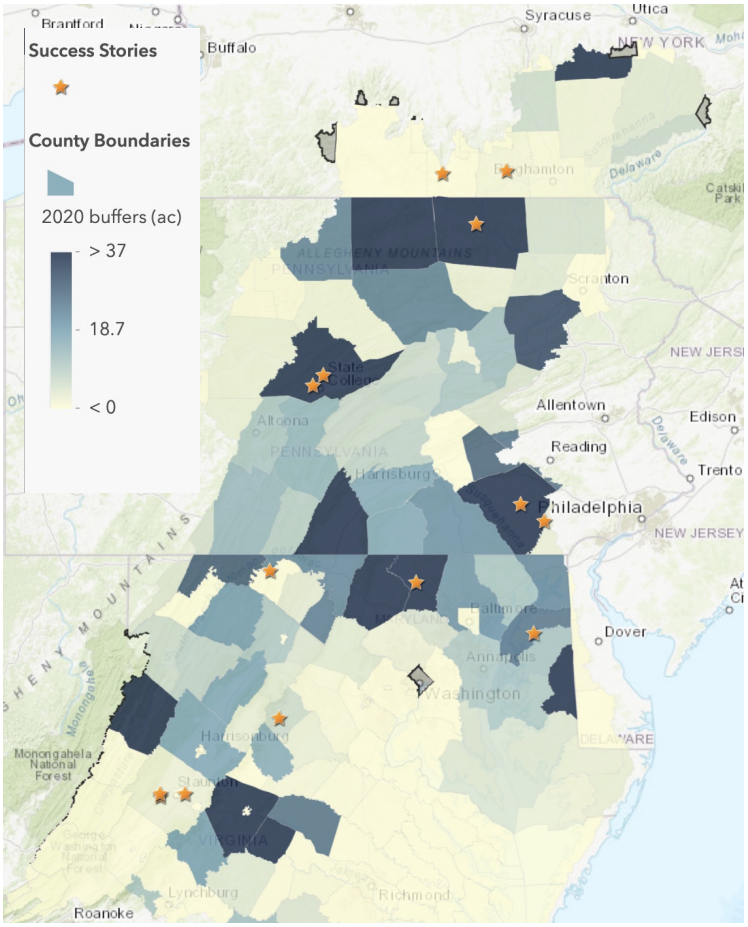
Source: Watershed Agreement-related data reported on Chesapeake Progress.

Note: Buffers reported to the CBP range between 35 feet (minimum width to be credited) to 300 feet in width, with an average width of 95 feet.

[3] https://www.chesapeakeconservancy.org/mdforeststudy2022

At the county level, there is also variation in the extent to which counties across the Bay states are implementing buffers under the Watershed Agreement (Figure 2).

Figure 2. Map of Chesapeake watershed showing forest buffer establishment by county as of 2020. Darker blue counties have the highest concentration of buffers.



(Source: CAST model data on https://chesapeakeforestbuffers.net/)

Another potential driver for riparian forest buffer implementation is the 2010 TMDL set for the Bay watershed by the US EPA, through which the Bay states and the District of Columbia must develop and implement Watershed Implementation Plans (WIPs) that detail the strategies and actions each state and the District will take to meet pollution reduction limits established by the TMDL by 2025. While the Watershed Agreement is broad in terms of the focal areas the Chesapeake Bay Partnership cares about, the TMDL is more singularly focused on nutrient pollution reductions. In addition, the TMDL does not specify the practices that must be implemented in order to meet pollution reduction limits, so while the TMDL is a potential driver for riparian forest buffer implementation in theory given the nutrient reduction benefits of forest buffers, it is not a regulatory driver and does not result in guaranteed demand for forest buffers. However, within their WIPs, states may include forest buffers to meet reductions. Maryland has goals for riparian forest buffers on public and agricultural lands in its Phase III WIP (2019-2025).

Currently, the Bay states are behind on the pollution reduction limits set by the TMDL. In the 2017 Midpoint assessment of progress to TMDL goals, Maryland was on track to meet the 2025 phosphorus and sediment goals but not the nitrogen goal; for this reason, the state's Phase III WIP focuses on strategies and actions to achieve the nitrogen goal.[4] Data from BMP certification reports indicate that by 2020, Maryland was 88% of the way towards achieving the State's Phase III WIP goal for forest buffers on agricultural lands, and 76% of the way to achieving the state's WIP goal for forest buffers in urban areas (CC MD Forest Report).

Across states, variation exists in the degree to which progress is being achieved for riparian forest buffers when assessed against the state-level WIP goals (Table 1). Maryland and West Virginia are farther along in progress towards the WIP III goals (87% and 48%, respectively), while New York (32%), Delaware (21%), Pennsylvania (12%), and Virginia (6%) are farther behind. Overall, Maryland needs around 2,600 acres of additional riparian forest buffer acres to meet its WIP III goals; the Bay states together need a total of 152,325 acres to reach their total WIP III goals.

Table 1: WIP III goals and progress by state for riparian forest buffers (acres) [Source: CAST Model 2021 Progress Run]

Riparian Forest Buffers (acres)	DE	MD	NY	PA	VA	WV	TOTAL
Cumulative total	143	17,193	2,822	11,659	3,538	2,820	38,175
WIP III goal	692	19,821	8,743	96,971	58,375	5,898	190,500
Progress	21%	87%	32%	12%	6%	48%	
Acres needed to reach goal	549	2,628	5,921	85,312	54,837	3,078	152,325

Barriers to Riparian Forest Buffer Planting

There are several barriers to scaling up riparian forest buffer planting (Table 2). Each barrier is due to an underlying issue in one or more of the following areas: policy, capacity, attitudes, and funding or cost.

[4] Under the Bay TMDL, Maryland's 2025 targets are 45.8 million pounds of total nitrogen annually and 3.68 million pounds of total phosphorus annually. MD Phase III Watershed Implementation Plan, 2019: https://mde.maryland.gov/programs/water/TMDL/TMDLImplementation/Documents/Phase-III-WIP-Report/Final%20Phase%20III%20WIP%20Package/Phase%20III%20WIP%20Document/Phase%20III%20WIP-Final_Maryland_8.23.2019.pdf

Table 2: Barriers to Scaling up Riparian Forest Buffer Planting in the Chesapeake Bay

Barriers	Policy	Capacity	Attitudes	Funding/ Cost
Lack of regulatory drivers	✔			
Insufficient county/MS4 capacity		✔		
Hurdles of existing public sources of funding				✔
Preference for other BMPs	✔	✔	✔	✔
Lack of contractors/planting capacity		✔		
Ineffective programs for private landowners			✔	✔
Lack of initial capital for new projects				✔

Lack of regulatory drivers: Anti-pollution regulations require that conservation and mitigation actions are taken. The Maryland Department of the Environment (MDE) is the delegated authority for EPA to administer the MS4 program under the Clean Water Act (CWA) in the state. However, riparian forest buffers as a practice are not mandated by MDE or mandated under any existing Chesapeake Bay programs, so while there are drivers for practices that improve water quality, there is not an express regulatory driver for riparian forest buffer restoration or planting specifically. Rather, MS4s select their preferred BMPs to satisfy their permits; this has resulted in a range of practices including stream restoration and wet ponds, in addition to riparian forest buffers.

Insufficient capacity at counties and MS4s: County and MS4 budgets are limited so hiring and retaining enough personnel to scope new projects, build partnerships, raise funds and carry out projects is limited. In particular, the short term nature of grant funding is a deterrent to filling permanent positions.

Insufficient technical assistance capacity. Technical support for edge-of-field practices and high quality service providers may be insufficient to encourage landowners to consider riparian forest buffers and then to plant and maintain them.

Public funding: Multiple sources of public funding exist that can support riparian forest buffer project implementation in Maryland[5], however these programs have not to date resulted in the states meeting

[5] The Chesapeake Riparian Forest Buffers Network has compiled a list of potential funding sources for riparian forest buffers at the federal and state level that help landowners pay for projects. Federal sources of funding include CREP and EQIP; state sources in MD include the Maryland Agricultural Water Quality Cost Share (MACS) Program (MD Department of Agriculture); the Backyard Buffers program

their riparian forest buffer goals. Understanding the reasons why is beyond the scope of this business plan, but is an area of future inquiry included in the Next Steps for Operationalizing the Business Plan Appendix (Appendix 3).

Preference for other BMPs: Many jurisdictions have invested in wet ponds and stream restoration because these practices are familiar, have lower up-front costs, and are often seen as less risky investments overall. In addition, riparian forest buffer projects have largely already been implemented on available publicly owned lands. With the majority of Maryland's lands in private ownership, the next challenge (and opportunity) will be installing BMPs on private lands. Furthermore, while Maryland's FFIT tool[6] suggests riparian forest buffers are cost-effective for MS4s (as compared with other BMPs), land costs, which can be substantial, are often the biggest hurdle. Costs of riparian forest buffers include opportunity costs, land costs, site preparation, trees, planting tools, and long-term maintenance. Opportunity costs include, for example, the cost associated with taking land out of agricultural production for a farmer.

Lack of contractors/planting capacity: Another challenge is the availability of nurseries, plants and root-stock. If a planting plan requires larger trees, it takes time to grow them big enough; smaller/younger trees are easier to procure. Another issue is seasonality. Tree planting is seasonal, with typical planting happening during a couple of months in the spring and the fall. This means there are limitations to how much work can be accomplished in any season or year. The May-September season is best for monitoring because planting is not occurring during this period.

Ineffective programs for private landowners: Private landowners including homeowners, farmers, churches and other private institutions have reasons why they are unsure about pursuing riparian forest buffer projects. Hesitations around implementing buffers include up-front capital and maintenance costs, attitudes about preferred land uses, and loss of revenue (for agricultural lands in particular). For farmers, riparian forest buffers are edge-of-field practices, and farmers may need to compromise on yields and/or profitability; farmer payments need to compensate for this. Farmers may hold traditional attitudes that farming edge-to-edge is the only way to farm and that lower per acre yield is undesirable even if overall profits increase. Farmers may also not want to take land out of production to plant riparian forest buffers, particularly when crop commodity prices are high. These dynamics become more complex when farmers are leasing land from private landowners who want rental rates to remain high, while farmers prefer lower rents.

Lack of initial capital for new projects: Up-front costs for most projects must be paid out of cash on hand. Projects are often eligible for other sources, but the process of pursuing loans or grants to cover those costs can be expensive, slow, and/or cumbersome.

(Maryland Department of Natural Resources (DNR) Forest Service and Potomac Conservancy); the Conservation Buffer Initiative (MD Department of Agriculture); the Chesapeake and Atlantic Coastal Bays Trust fund (MD Department of Natural Resources); and Healthy Forests Healthy Waters (Alliance for the Chesapeake Bay).

[6] The **MD Forest Financing Implementation Tool (FFIT)** in Maryland is helping bring more attention to the cost-effectiveness and other benefits of riparian forest buffer restoration/planting. https://mde.maryland.gov/programs/water/tmdl/datacenter/pages/tmdlstormwatertoolkit.aspx

Incentives and Drivers

While barriers to riparian forest buffer planting exist as identified above, numerous incentives and drivers for scaling up riparian forest buffer planting likewise exist (Table 3). Recent data suggests that there is ample opportunity to plant these buffers in the state: forested riparian areas have been identified through mapping at various jurisdictional scales in Maryland, and a variety of data point to the opportunities for additional tree planting and riparian forest buffer restoration/planting across the state. For example, a recent study identified roughly 370,000 acres of land that could be afforested or reforested on non-agricultural land in the state, noting the opportunity to meet the state's tree planting goals.[7] (CC MD Forest Report)

Incentives for riparian forest buffers (Table 3) provide regulatory (law/policy) and financial drivers that can encourage riparian forest buffer planting.

Table 3: Incentives and Drivers for Riparian Buffer Planting

Incentives and Drivers	Law	Policy	Funding/ Cost
1991 Forest Conservation Act (FCA)	✔		
2022 MD Conservation Finance Act (CFA)	✔		
MS4 NPDES permits		✔	
MD: New riparian forest buffer efficiency ratio		✔	
WIP and TMDL goals		✔	
MD Clean Water Commerce Act (CWCA)	✔		✔
PA Clean Water Procurement Program (CWPP)	✔		✔
Conowingo WIP		✔	✔

[7] The study noted that cost, landowner willingness to plant and other factors make these estimates potential higher bounds of plantable acres. It is important to note, however, that the study was limited to potential planting on non-agricultural land in the state, and did not call out riparian plantable areas specifically. Agricultural lands are an important nexus for increasing riparian forest buffer acres and information will be required on which acres are plantable in riparian areas specifically. For this reason, we suggest that additional research be conducted into the planting opportunity in riparian areas and on agricultural lands to more fully understand the market opportunity in Maryland.

There are many other places where forest and tree conservation, restoration and afforestation are included in Maryland's legal code.[8] These legal provisions provide important regulatory and voluntary drivers that can support greater riparian forest buffer planting.

The MD Forest Conservation Act (FCA) of 1991 requires that developers mitigate impacts to forests that occur when land is developed. The MDNR Forest Service administers FCA but the FCA is implemented at the local level and while counties must implement the FCA as the minimum requirement, counties can impose stricter requirements. In 2023, the FCA was revised for the first time since 1991 (SB 526) to strengthen the law's ability to stem forest loss. The new law simplifies and increases mitigation requirements: rather than following complicated formulas to determine replanting requirements, the revised law requires developers to replant most forest lost to development acre for acre. The law also set a statewide goal for forest and tree canopy acres, and gave local governments more options to halt net forest loss in their jurisdictions. Hydrologically sensitive areas - streams, wetlands, and rivers - are the highest priority for preservation and planting.

The FCA has enabled development of forest mitigation banks from which developers can comply with their restoration and afforestation requirements. Currently, banks exist in 15 of the 18 counties in Maryland. The FCA is therefore a potential area of demand for riparian forest buffer restoration/planting, but riparian forest is not required for mitigation; non-riparian forests count equally. The FCA is a particularly important nexus in those counties that are growing rapidly - such as Frederick County, which has strong buffer requirements due to rapid growth (Frederick Country grew 11% from 2010 to 2019, making it the fastest growing county in Maryland).

MS4 jurisdictions are another nexus of potential opportunity for riparian forest buffer implementation, covering roughly 70% of the state, but, similar to FCA requirements, MS4s are not required to implement riparian forest buffers as a BMP in order to fulfill their NPDES permit requirements. Through research into MS4 Financial Assurance Plans (FAPs) and interviews, it appears that MS4s prefer other BMP options, such as wet ponds, as they are seen as easier and less risky investments. The FFIT tool suggests that riparian forest buffers are a cost-effective alternative for permit compliance, and these buffers have important co-benefits that MS4 jurisdictions can leverage. For example, when counties are MS4 jurisdictions - such as Howard County - implementing riparian forest buffers to meet NPDES permit requirements can have important benefits to other county initiatives, such as climate mitigation included in county-level climate action plans. In these cases, land/easement costs are highly variable depending on location; land cost and permanence requirements can impact the cost-effectiveness of riparian forest buffer implementation for MS4s.

An opportunity for MS4s to consider riparian forest buffer restoration/planting is the **new Equivalent Impervious Acres (EIA) efficiency credit for riparian forest buffer implementation** provided through the updated Wasteload Allocations (WLA) for riparian forest buffers in 2021. The 2014 WLA Guidance

[8] Forest Preservation Act of 2013 (MD NR Code § 5-101(2021)/HB 706 2013); Maryland Reforestation Law of 1989 (MD NR Code § 5-103); Greenhouse Gas Emissions Reduction Act (GGRA) - Reauthorization of 2016 (SB 323); Climate Solutions Now Act of 2022(SB0528/CH0038); Conservation Finance Act of 2022 (HB653/SB348); Tree Solutions Now Act of 2021 (HB991)

provided an 0.38 EIA/acre credit for this practice for Phase I MS4s; in 2021, revised WLA Guidance increased this credit to 1.5 EIA/acre for riparian forest buffers.

State spending on environmental outcomes purchases is an innovative financing mechanism currently being implemented in Maryland (the Clean Water Commerce Act or CWCA) as well as in Pennsylvania (the Clean Water Procurement Program or CWPP). In Maryland, the 2022 Conservation Finance Act has provided an enabling environment for the increased use of outcomes purchasing in the state. For example, $10 million of the program has gone to stream restoration on agricultural lands which likely includes major investment in replanting forests along those streams.

Proposal: Outcomes Purchase Fund

Fund Overview

Based on the analysis of constraints and opportunities, an outcomes fund could make a new contribution to expressly address the challenge of developing riparian forest buffer projects at scale. The business plan lays out a structure for a new outcomes purchase fund with a **mission to incentivize accelerated riparian forest buffer planting through pay for success in order to meet the riparian forest buffer outcome goal of the Chesapeake Bay Agreement.**

The riparian buffer outcomes fund would have the following core features:

- **Simplified "one-stop shop".** It is managed by a single entity that could hold and administer funds from state, local and federal sources and distribute that money into projects, as a "one-stop shop" for project bidders.
- **Flexible contracting.** It can enter into contracts with, and distribute funds to, any kind of project developer,[9] whether nonprofit or for-profit, that delivers measurable and verifiable outcomes.
- **Guaranteed source of demand for riparian forest buffers.** It is the buyer of last resort for riparian forest buffers, effectively creating a price floor. It exclusively takes bids on riparian forest buffer projects and selects them primarily on the cost-effectiveness of the outcomes being delivered (measured in acres of riparian forest buffer established).
- **Built-in accountability for outcomes.** It pays project developers at predetermined intervals throughout the life of project implementation, with final payments tied to verified tree survival, not only to initial tree planting.
- **Broad application.** It has a mission to support both urban and rural/agricultural projects so these categories are not competing with one another.
- **Market creation for riparian forest buffers.** It could also sell outcomes to secondary buyers who are interested in purchasing either compliance or voluntary outcomes. It could catalyze supply and facilitate linking with demand.
- **Flexibility for project developers.** Project developers could use any technique they choose, with no fund approval or review needed, as long as the projects generate an outcome that could be measured in established riparian forest.
- **Outcomes-based procurement.** Project developers would not be reimbursed for expenses but rather paid for delivery of verified outcomes.

At present, most projects to plant riparian forest buffers are being developed by entities who receive payment at the time of planting, without a requirement for outcomes to be measured and verified. That is, payment is made on the basis of reimbursement for project costs, without certainty that trees will survive. By contrast, the outcomes fund model would ensure that final payments are not made until acres of riparian forest buffer are considered "established." Therefore, if project developers want to sell outcomes to the fund, those outcomes must be measured and verified before they can invoice for full payment, and this creates accountability for the project developers.

[9] A project developer is any entity that submits bids to–and/or contracts with–the fund in order to plant riparian forest buffers to sell outcomes to the fund.

The proposed outcomes fund would use pay for success (PFS), a mechanism that uses public funding to catalyze investment in a range of environmental projects, by project developers. PFS contracting, also known as pay for performance or outcomes-based contracting, is a procurement strategy that defines desired outcomes and invites the private sector to deliver those in advance of payment to ensure outcomes are achieved. Instead of traditional invoicing and payment that happens on a regular basis (monthly, quarterly, etc.), a significant amount of the total payment for PFS contracts are paid only when the project has been completed, which means project developers are held accountable for achieving outcomes.[10] The private sector takes on the risk of achieving project outcomes, and grant funding goes much farther by buying just the outcomes, rather than being used to reimburse for time and materials.

With a clear source of demand - a fund expressly designed to purchase buffer outcomes - project developers would have a central place where they can bid on new projects and they have an incentive to deliver outcomes in a cost-effective manner. This could drive innovation, unique partnerships and new engagement by landowners, to plant riparian forest buffers on the thousands of acres available across the Chesapeake Bay.

This pay for success approach could serve multiple purposes: First, it means that public funding would create an incentive for project developers to deliver measurable outcomes that go beyond the current model of paying only for tree planting. That means a higher likelihood of tree survival and sustainable forest buffers. Second, it would mean more forest buffer projects get in the ground because of the special focus on buffers, which creates the incentive for these project types. Third, it attracts project developers because it requires very minimal bureaucratic intervention and oversight. Project developers would not have their plans scrutinized - they would simply be paid when key milestones and outcomes were delivered. And that means the funding would not get used up on projects that don't deliver outcomes. Finally, it saves taxpayer dollars and time by giving project developers the flexibility to design projects that are the most cost-effective, by explicitly incentivizing cost effectiveness.

This fund draws from several model PFS programs: Anne Arundel County (and others) offer full delivery contracts, which also means they don't pay project developers based on the costs of time and materials, but rather for a final outcome; the Soil & Water Outcomes fund and the New York Outcomes fund, which finance annual farm practices like cover crops so that farmers can sell carbon and nutrient reduction outcomes to corporate and public entity buyers; and the Wisconsin Water Quality Trading Clearinghouse, which facilitates the connection between wastewater treatment plants and generators of nutrient reduction credits. The first example above spends public funds to purchase outcomes; the second and third examples above generate a profit for the fund managers.

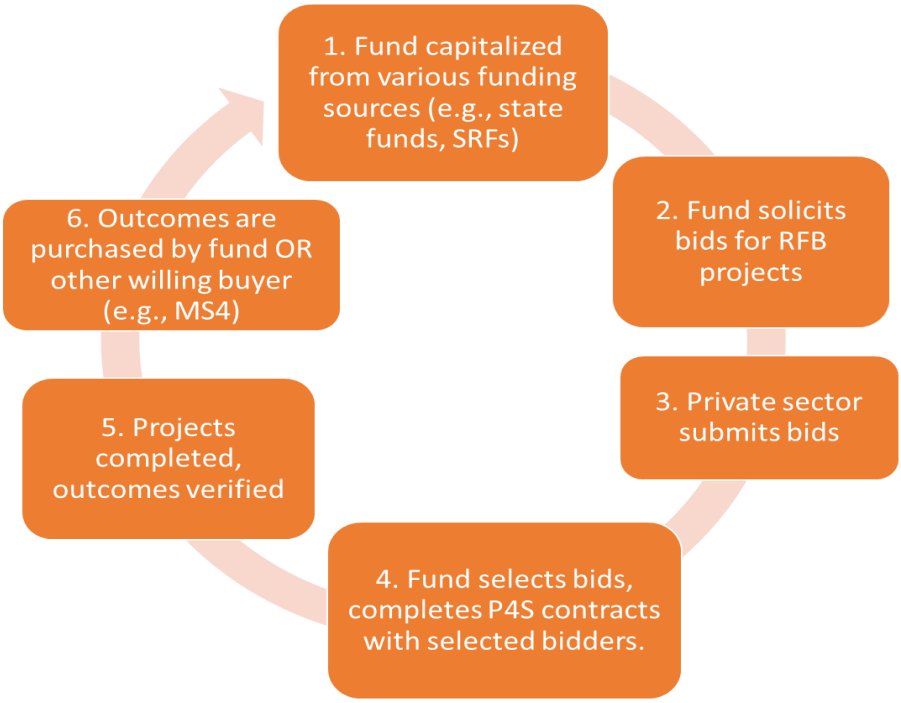
The proposed outcomes fund would be most similar to the first of these, but with a couple of ways to potentially generate revenues. The primary revenue source would be investing the fund's dollars in interest-bearing accounts until those dollars need to be used to buy outcomes. Additionally, the fund could sell some of the outcomes it purchases to secondary buyers who are interested in supporting the

[10] For example, in 2016, the State of California issued an RFP for a large-scale coastal marsh habitat creation project and awarded $12 million in contracts to carry out the work. The contract was structured such that the contractors would be paid as they successfully delivered on various milestones established by the state around the success of restoration, with 50 percent of payments reserved for after construction is complete and ecological success criteria are met. This approach helped California avoid costs and risks associated with using multiple contracts to pay up front before evidence of successes.

establishment of riparian forest buffers, and it could potentially charge a fee to do so. These secondary buyers would be any entities that want to contribute toward the planting of verified acres of riparian forest buffers. They could be cities and counties, states, or corporations. For instance the 1t.org initiative asks private corporations to make tree-planting pledges. Why couldn't their signatories buy acres of riparian forest buffer outcomes from this fund to fulfill these pledges?

The fund would (see Figure 4 below) put out requests for proposals (RFPs) for project bids, select bids based on a scoring rubric, and once projects are completed and outcomes are verified, purchase project outcomes measured in acres of riparian forest buffers established (riparian forest buffers must be established following the appropriate BMP code under the Chesapeake Bay Program; verification of these outcomes should follow the Chesapeake Bay Program Forestry Workgroup's BMP Verification Guidance).

Figure 4: Fund strategy - steps for soliciting and purchasing buffer outcomes.



The fund could initially serve the state of Maryland, and eventually the regional Chesapeake Bay states. It could be adapted to incentivize riparian forest buffers in all kinds of circumstances: urban, suburban, rural, near existing stream restorations, on agricultural lands, etc. Before launching across Maryland, the fund should ideally be prototyped in a couple of counties in order to first test it and learn from early experiences. Then, it could be adapted and improved.

Barriers the Fund Addresses and How

The Introduction lists key barriers that are standing in the way of increasing riparian forest buffer plantings, at least in Maryland. The fund aims to address as many of them as possible:

- **Lack of regulatory drivers:** the fund would fill this gap by creating a predictable annual source of demand *specific to riparian forest buffer plantings*.
- **Insufficient county/MS4 capacity:** the fund would help localities by creating replicable templates, contracts and processes AND by catalyzing a source of outcomes that counties or localities can purchase directly, without having to do all the groundwork.
- **Hurdles of existing public sources of funding:** through its structure, the fund should streamline all aspects of its operations to avoid the kinds of paperwork and process hurdles that have stymied public funding programs. The fund puts project development squarely into the hands of successful project bidders, for-profit and nonprofit, non-public firms and organizations. Bidders who know they can sell outcomes to the fund at a previously agreed-upon price would work directly with landowners on securing land access, contracts and any other arrangements needed through direct contracts that don't necessitate the participation of public funding sources.
- **Preference for other BMPs:** the fund would generate specialized demand for riparian forest buffers to expressly increase those practices in more places; of course the market can still develop other BMPs to meet other sources of demand, but our focus is increasing demand expressly for riparian forest buffers
- **Lack of contractors/planting capacity:** by establishing predictable annual demand, the fund should spur contractors to maintain their businesses such that they can sell outcomes to the fund; there might still be supply chain challenges in obtaining root stock or other raw materials, but at least contractors can predict a steady demand for their work. This can eventually contribute to more forward contracting deals that support new or expanding nurseries.
- **Ineffective programs for private landowners:** this is probably the hardest barrier to overcome, but one of the most critical; a well-designed outcomes purchase fund would drive the private sector to deliver outcomes. Costs for things like easement payments and other landowner incentives can be built into outcomes pricing. Given that most new opportunities are with private lands, the fund can generate significant new demand for those projects, driving investment across the private sector through landowner outreach and engagement to overcome landowner trepidation.
- **Lack of initial capital for new projects:** the establishment of a guaranteed buyer with a predictable annual demand would give comfort to lenders that they will be repaid. Private lenders and banks should be willing to finance projects, and the State Revolving Funds and other impact investors would ideally crowd private investors into the market as a result of a new predictable buyer.

Capitalizing the Fund

There are many local, state and federal funding sources that align well with the intention of this fund: to see more riparian buffers established in the Chesapeake Bay. However, each program is administered separately, and often does not create the conditions to incentivize additional investment of private capital into the market to catalyze new projects the way outcomes contracts can.

For a fund established in Maryland or at the regional level, ideal funding sources will have the authority to move money and to put it toward a fund like this (and for whom is it politically feasible to do so), and where there is excess funding capacity that makes it possible to avoid unintended consequences of moving dollars from one source to another. One option might be to expand Maryland's Clean Water Commerce Program for additional dollars to purchase riparian forest buffer outcomes (in addition to the

$20 million-a-year purchase of nitrogen reduction outcomes). Other Maryland state funding sources include: Chesapeake & Atlantic Coastal Bays Trust fund, State ARPA funds, State of MD Reforestation Fund, Bay Restoration Fund, and Clean Streams Fund.

Local options include bonds, Forest Conservation Act fee-in-lieu, MS4 funds and local resilience authorities. At the federal level, while there are many potentially suitable sources, they come with a wide range of strings attached, grant deadlines/timeframes and application processes, and historically, they have not been used for outcomes-purchase-type programs. Finally, private foundations are potentially a strong fit, especially for the prototype.

Financing Options for Project Bidders

The fund would not offer financing for up-front costs directly to bidders. However, many sources of financing are available to support projects that would ultimately sell their outcomes to the fund. Something the fund is designed to do is establish a predictable market for riparian forest buffer outcomes, and this should help successful bidders acquire financing. The certainty that they will have a buyer for their riparian forest buffer outcomes–enshrined in a purchase agreement or contract–means they have a primary source of repayment for loans.

An extensive list of local, state and federal funding and financing avenues for forestry projects was presented in the FFIT Tool presentation in April, 2022 (many are linked directly within slides from the presentation). These would likely all be applicable for riparian forest buffer projects. Notably, some of these funding sources have allocations specific to disadvantaged communities. For example, the IIJA allocated new money for State Revolving funds and required that 49% of this new funding be deployed as grants or forgivable loans to disadvantaged communities.

Some sources seem particularly relevant here:

- Traditional bank loans and debt. Any bidder who plans to develop a project could self-finance those projects through borrowing. Bank and other loans are traditional forms of financing that private companies and nonprofit organizations can turn to for assistance. Loans (i.e., debt) typically carry lower interest rates than equity investments. There are even some forms of 'patient capital' and 'impact investors' who are willing to take very low rates. Such loans could be secured by fund contracts to purchase outcomes.
- Clean Water State Revolving funds (SRFs) with a focus on protecting and investing in clean water infrastructure are a worthwhile financing source to pursue given the connection between riparian forest buffers and clean water. Pennsylvania is one of several states that also offer pass-through lending from their Clean Water SRF, which allows the SRF program to allocate funding to an entity–usually a government agency–that can then relend to a bundle of green infrastructure projects within that jurisdiction.
- Maryland's Low Interest Loans for Agricultural Conservation (LILAC) might be appropriate for projects on agricultural land. MARBIDCO offers similar financing.

Alternative Concepts

We considered some other financing approaches and strategies for driving riparian forest buffer installation in the Chesapeake Bay based on examples of other programs that have been and are being implemented (see Case Studies section). Ultimately, we conclude that the biggest barrier to overcome for increasing plantings is the lack of a reliable buyer who can generate consistent demand for high

quality riparian forest buffer projects. Therefore, revolving loan funds to finance new projects[11], disparate efforts by locality, and approaches that rely on voluntary buyers of carbon credits will not have the same degree of impact that an outcomes purchase fund that buys acres of riparian forest buffers established can have. Our fund focuses on establishing certainty in the market through creating a reliable source of demand for riparian forest buffer acres established. We also considered what it might look like to establish individual programs by localities, including pay for success and full delivery contracts but ultimately, any program that can purchase outcomes is inherently scalable and localities would benefit from the economies of scale offered by a centralized fund.

Administering a fund involves risk evaluation, contracting, verification services, marketing/communications, and administrative support, so for each community to build that capacity is a lot of work - there is value to centralizing some of the expertise needed. Finally, carbon credit markets require large projects, or aggregated smaller projects, so developing a program that relies on carbon markets to source funding for riparian forest buffers would be a large undertaking and not appropriate to the scope of the solicitation we responded to.

While we ultimately recommend an outcomes purchase fund that is publicly funded, there are other ways to structure a program. One might be as a revolving outcomes purchase fund structure. Such an approach would revolve the funds by re-selling some or all credits to 'back-end buyers'. In this scenario, contracts with project bidders drive new projects, and some of the initial funding is recouped by the reselling of as many credits as possible to other buyers like MS4s or states. In order to assess the viability of this approach, we need to determine, through additional data collection and analysis and interviews:

- What is the true landscape of 'back-end buyers' who would potentially purchase outcomes from the fund?
- Are MS4s, voluntary buyers, or mitigation-motivated buyers numerous enough and likely enough to buy outcomes such that the fund could revolve much of its fund corpus by purchasing outcomes and then reselling those to a variety of buyers?
- What if a fund like this could only sell 20% of the credits purchased to another buyer and the remainder could not be revolved? What about 50%?

Other approaches to consider for additional research include:

1. Using the fund to develop projects that can sell different outcomes such as Nitrogen, carbon or biodiversity credits. Given there is limited demand expressly for riparian forest buffers, and other markets like water quality, carbon and biodiversity are all developing, it would be worth designing the program in a way that allows credit developers to sell to a broader array of interested buyers.
2. Rather than a fund, establish a mitigation bank with a special exemption that allows other types of buyers–besides developers–to purchase RFB credits for purposes besides mitigation.
3. A funding carveout from the Bay Restoration fund or the Clean Water Commerce Program to expressly buy acres of RFBs.

[11] A revolving loan fund could provide an additional source of financing for new riparian forest buffer projects; however, without certainty of a buyer, a revolving loan fund doesn't necessarily increase the number of projects being completed.

Marketing Plan

The fund could market itself as offering the following values:

- **Predictability:** the most important feature of the fund is that it becomes a one-stop shop that establishes consistent and centralized demand for riparian forest buffer projects.
- **Fair pricing:** the fund would buy outcomes based on project bids, which can include all costs of establishing outcomes, as well as a profit margin for bidders.
- **Flexibility:** by purchasing outcomes (rather than paying for practices) and selecting projects scored to incentivize the best pricing and co-benefits, the fund offers flexibility to bidders.
- **Simplicity via focus on riparian forest buffers:** the unique and sole focus on a single outcome (acres of riparian forest buffers established) keeps things simple and creates an incentive for potential bidders.

This fund would issue solicitations, or RFPs. Marketing to potential bidders would be carried out prior to the solicitation, with limited communication during and after the solicitation.

Bidder Outreach Strategy

The bidders to the fund are largely expected to be environmental restoration companies and organizations (both for-profit and nonprofit) that implement activities such as tree planting, stream restoration, wetland mitigation banking, engineering, monitoring, and consulting as part of restoration projects. Within Maryland and the Chesapeake watershed, the restoration sector is robust, with many firms specializing in activities such as planting trees, stream restoration, and engagement with agricultural landowners to implement BMPs. A review of firms available to carry out projects that qualify for Maryland's Clean Water Commerce Act found at least thirteen firms (see Appendix 1). The Forest Conservation Act also spurred a list of numerous firms, many of whom might not do direct planting, but who can facilitate projects and find subcontractors.[12]

The bidder outreach strategy should consist of direct email outreach to leaders from these companies as well as presentations at existing events. The Ecological Restoration Business Association is a national trade association for these businesses, and Chesapeake Watershed Restoration Professionals is a local trade association with significant overlap but a greater proportion of members coming from small businesses that work more on implementation (relative to larger organizations that include engineering). The fund would present at regular meetings of these associations to keep members informed and to educate them on the benefits and mechanics of applying.

The fund should also conduct outreach directly to any other relevant bidders via existing outcomes-based programs like the Clean Water Commerce Program and Anne Arundel County's stormwater program.

[12] Additional entities that have built out technical and planting assistance include the Alliance for the Chesapeake Bay, the Chesapeake Bay Foundation, USDA's Natural Resource Conservation Service, and State forestry agencies.

Outreach to Secondary Buyers

While the fund would primarily exist to be a buyer of outcomes and a one-stop shop for bidders, it would also become a source of verified outcomes that might be purchased by other interested buyers. These secondary buyers (e.g., MS4s, cities, states, or companies interested in environmental outcomes to satisfy corporate commitments) could purchase outcomes either directly from bidders or from the fund, with varying degrees of risk and level of effort to the buyer depending on when in the project cycle the contract changes hands from the fund to a secondary buyer. Figure 3 lays out the ways in which buyers can engage with buying outcomes - they can contract directly with winning bidders, but the lowest-risk approach would be for buyers to purchase fully validated outcomes from the fund (the column on the right). Over time, this could mean growth in the market for acres of riparian forest buffer established because the fund could catalyze demand from secondary buyers through providing off-the-shelf riparian forest buffer acres.

The fund's website and outreach materials should include FAQs for these secondary buyers, information on how to buy outcomes, and a publicly available, transparent platform where buyers can see details on project geography, contract prices ($/acre), and other relevant details so they can decide which outcomes to buy.

Figure 3: Buyers' Options. Other buyers can purchase outcomes either through directly contracting with the bidder, through taking over the signed contract from the fund or through purchasing outcomes from the fund.

Secondary Buyers' Options			
	Direct Contract with Bidder	**Transfer Contract from fund**	**Direct Purchase from fund**
Timing	Day 0	Day 0 -> end Yr 3	After final payment (yr 3)
Risk to Buyer	Highest	Variable	Lowest
Level of effort	Highest	Variable	Lowest
Payments	All payments to project developer	Pro rata based on contracted schedule	Single payment to fund
Who Earns $.01	Project developer	Project developer and fund	fund

Partner & Landowner Outreach

Difficulties in private landowner engagement is one of the greatest existing barriers to adoption of riparian forest buffers. One of the crucial advantages of the outcomes-based fund model is creating a profit motive for bidders to work directly with landowners. Most landowner outreach is expected to be conducted by the bidders who have an incentive to find or develop trusted partners for landowners and other potentially novel strategies to increase adoption. Specifically, the bidders would be responsible for easement sign-up and they can incorporate any associated costs of these easements into their big prices.

The fund could conduct some general outreach to trusted partners of landowners, including farmers. For example, trade associations for agricultural producers, such as county Farm Bureaus and the state Grain

Producers Association, should be educated on the fund so otherwise-hesitant farmers can use them as resources. Similarly, the fund should conduct education of government technical assistance providers such as with the Natural Resources Conservation Service, University of Maryland Extension, and county agriculture marketing professionals and business development specialists.

The Soil and Water Outcomes fund and the recently-launched New York Outcomes fund both offer models of outreach to agricultural landowners.

Operations Plan

Prototyping

Prototyping the fund strategy would help iron out many details related to costs, pricing, contracting, technical assistance levels, staffing levels and more. The initial pilot could aim to work with a wide variety of project implementers, community types (urban and rural), and carry out a formal reflection process that leads to adaptive management of the fund.

The fund could launch via a multi-county pilot in Carroll and Howard Counties. Howard County has established a need and desire for increased riparian forest buffer plantings to meet MS4 requirements, and Carroll County has a vast rural area opportunity, plus some work currently underway with the Alliance for the Chesapeake Bay. Launching in a couple of counties would narrow the number of variables the newly-formed fund has to deal with, support developing early partnerships and examples, and build on existing riparian forest buffer strategy. The idea behind such a prototype would be to observe how outcomes pricing shakes out (i.e., do bids seem too low or too high?), assessing real staffing costs, revealing unexpected expenses and tasks that need to be built into a scaling plan and fund rollout, etc.

Harford and Baltimore Counties have also been suggested as potentially worth exploring for pilots.

The funding sources that may be more appropriate for a prototype might differ from the sources more appropriate for funding the entire regional fund so that riparian forest buffer goals can be reached. For the prototype, a funding source that is comfortable being an early mover, interested in the focal geography, and has a track record of funding similar projects is an ideal fit. This category could include private foundation grants and NFWF-administered grants under the Chesapeake Bay Stewardship fund–especially the Innovative Nutrient and Sediment Reduction Grants Program and Small Watershed Grants Program. The local nature and water quality benefits of the prototype might also lend themselves to funding from downstream users such as water utilities, watershed groups and industries/private sector firms that rely on clean water (e.g., breweries). Local ARPA funding is another source worthy of consideration, and expenditures are publicly available. For instance, Howard County was awarded $63 million and they have allocated about half of it.

Potential Fund Managers

As of this draft version of the business plan, no fund manager has been formally identified. The draft business plan has been shared with a preliminary list of potential managers and project developers. An important element of selecting a fund manager is to avoid a structure that involves the opportunity for that manager to enrich itself. Therefore, any firm that would likely develop credits to sell to the fund

should not also manage the fund. Here are several entities who could be *theoretically* be fund managers or project developers:

Potential project developers:

- Chesapeake Conservancy
- i2 Capital
- Alliance for the Chesapeake Bay

Potential fund managers (no commitment has been made by any of these entities):

- Earth Recovery Partners (has expressed interest pending more analysis and inputs on the potential fund structure)
- Ecosystem Investment Partners (EIP)
- RES
- Propagate
- Quantified Ventures

Maryland-focused organizations and firms (not ideal for scaling to other states):

- Maryland Agricultural & Resource-Based Industry Development Corporation (MARBIDCO)
- Maryland Department of Environment
- Maryland Department of Agriculture

If these entities are not a fit, it might be necessary to launch a new entity or formalize a partnership among existing organizations, and contract out roles and responsibilities to firms that offer key expertise.

Staffing Plan

Depending on which organization or partnership takes on management of the fund, these positions might be housed in-house, through contracts, or through partnerships among organizations. There is no one way to staff the fund, but key roles and tasks that need to be managed include those listed here.

Those roles include:

1. **Executive Director** – One individual should have responsibility for ensuring the fund has strategic vision, clear success metrics and goalposts, and who can manage the overall fund operations. Such a position would be expected to also update funders, coordinate with state and regional water quality agencies, and otherwise ensure the fund is capable of achieving its mission to support the goals of Chesapeake Bay water quality improvement.
2. **Procurement and contracts** - Procurement of outcomes through PFS contracts is a key function of the fund. This role requires at least one person with procurement experience and responsibility, but is not necessarily required to be housed within the fund. It might be possible for procurement and contracting to be handled through a contract with an entity that specializes in this area of work. However, the closer this function is to the core functions of the fund, the easier it will be to handle amendments and adjustments to contract language. If you have a procurement and contracts role that is too separate from accounting and finance roles, that would likely create slow-downs and even poor coordination and alignment on key objectives.
3. **Verification and reporting** - Verification of outcomes is critical to the fund's success. Verification of BMPs like riparian forest buffers is a well-established practice in Maryland and this task should be relatively straightforward to fill. The fund should track the number of outcomes purchased, dollars spent, and also keep track of co-benefits of each purchased acre. An annual report should

be published online noting these figures. A mechanism to report the implemented acres to Maryland state agencies (MDE, MDA or MD DNR as appropriate) should be established so the state can include those acres in submissions to the Chesapeake Bay Program for Bay Agreement outcomes and annual Progress Scenarios for the Bay TMDL. It would be appropriate for each state's natural resources department to give final approval of verification reports.

4. **Funder engagement and reporting** - Given the potential for several different types of funding to capitalize the fund, and the likely demands each funder will have for tracking outcomes, this 'funder engagement' role would be essential to smooth operation and ongoing support of the fund.
5. **Marketing and business development** - The fund should support maintaining a website, doing presentations to potential bidders and landowners and carrying out other marketing tasks such as developing advertising videos, print ad placements, maintaining a social media presence (if deemed appropriate for the intended audience) or other communications as needed.

Requests for Proposals and Payment Structure

Request for Proposals (RFP)

General Structure & Proposed Timelines

For the initial prototype, the fund would issue a Request for Proposals (RFP) with a 3-month opportunity to submit proposals. An informational webinar would be hosted for those interested in submitting a proposal at the beginning of this window.

Contract terms may be negotiated for no more than an additional three months, with the anticipated contract start date to be three months after the solicitation closes.

Table 4: Example Solicitation Timeline

Solicitation Opens	October 1
Pre-Proposal Webinar	Early October
Solicitation Closes	January 15
Solicitation Scoring & Contract Negotiations	January 15 - March 31
Estimated Contract Start Date	April 15

After the pilot has concluded and necessary adjustments have been made, the fund could accept proposals on a rolling basis. By keeping the solicitation open, local communities have the opportunity to purchase outcomes (by outbidding the fund) outside of restricted grant cycles, working around other constraints they are bound by. We have heard from multiple localities that grant cycle timelines can be problematic and that additional flexibility would be appreciated.

Key Components of the RFP

The RFP structure would be generally modeled after Anne Arundel County's existing outcomes-based program which has been well-received by the private sector. This program has gone through iterations

and improvement over the last 5+ years, based on lessons learned, so building off of this success makes sense and prevents reinventing the wheel.

The fund application should have a simplified structure, given that the purchase of agreed-upon outcomes requires less in reporting and budget transparency than traditional procurement.

Key Components of the RFP include:

- **Offer Qualifications:** Bidders must show that they have experience in completing successful projects relevant to the one they're proposing; ability to secure, and/or history of securing, appropriate financing; two references demonstrating the offeror's successful projects in design, installation, and maintenance capabilities.
- **Price:** Offerors must include their proposed price per unit of outcomes provided (i.e., price per acres of riparian forest buffers established). Price per outcome is weighted heavily in the scoring criteria, but should not be the sole determinant of successful bids.
- **Alternate Buyer Clause:** All contracts resulting from this RFP should include a clause that allows the contractor to sell the outcomes resulting from these contracts to another entity. Eligible entities include local governments (i.e., MS4 Holders), companies/businesses, and NGOs. Such a clause establishes the outcome fund as a buyer of last resort.
- **Project Co-Benefits:** Along with the specific outcomes included in the RFP, bidders are encouraged to share other ecological, social, and health benefits that would be a direct, and measurable, result from their proposal. Co-Benefits should be a consideration when scoring proposals (see scoring criteria below).
- **Justice & Equity Considerations:** The fund recognizes that securing capital needed to complete projects may be prohibitive for smaller, more rural communities as well as minority-owned project deliverers. The section below titled, "Small, Minority and Women-Owned Business Enterprises" outlines additional considerations for proposals that fit either category.

Proposal Scoring

A minimum of three reviewers should score each proposal independently using the following scoring matrix. Reviewers can include, but are not limited to, fund managers, experts in relevant fields, state and local government employees, and members of academic institutions.

This matrix was developed as a hybrid model, combining elements of the Maryland Clean Water Commerce Act Application, Anne Arundel County's Stormwater Program and the need to address specific demands of the fund. We suggest the fund revisit the scoring criteria after the completion of a pilot round of solicitations to ensure it is creating incentives that deliver a balance of projects across urban and rural geographies and a range of project sizes, and that it does not exacerbate environmental injustices.

Table 5: Proposal Scoring Criteria*

Solicitation Scoring Criteria	Max Points (total of 100)

Cost Effectiveness (price per acre per year)** Bid should include: 1. Number of acres established (outcomes) 2. Total project cost 3. Project term (i.e., permanent protection, 15 year contract, etc.)	50
Bidder Qualifications Bid should include: 1. Letters of reference 2. Team leadership resumes 3. List of prior projects 4. Other materials to substantiate bidder qualifications.	20
Co-Benefit 1: Alleviating environmental harms and risk by disadvantaged communities[13] To be substantiated as projects: 1. located in communities identified by a Socioeconomic Score (Distribution Across Maryland) of 80 or higher using MDE's Environmental Justice Tracking Tool 2. located on land owned or operated by a producer classified as historically underserved by USDA	10
Co-Benefit 2: Enhancing adaptation against climate change Examples include: 1. flood control and mitigation 2. disaster resilience	10
Co-Benefit 3: Contributing towards attainment of local water quality standards (i.e., to prioritize impaired waterways)	10

**To be refined following initial fund prototype; co-benefits or measures may need to be added and point weights may need to be redistributed, etc. See MD's CWCA Application for details on how co-benefits would be measured.*

***We propose a calculation that takes project term into account and assumes project life is 100 years for projects that have permanent easements to protect the land. This would create a significant preference for projects that have permanent protection.*

Small, Minority and Women-Owned Business Enterprises

Along with scoring bonuses given to projects alleviating environmental harms in disadvantaged communities, the burden of securing financing could be prohibitive to smaller and minority-owned

[13] The Chesapeake Bay has an Environmental Justice and Equity Dashboard that can inform the inclusion of equity and environmental justice benefits. Furthermore, the federal Justice40 initiative sets a high bar for ensuring 40% of spending on a range of federal environmental programs are directed to disadvantaged communities.

project developers. Contractors who are woman-owned, minority-owned, or considered small businesses by the Small Business Administration could apply for up to 50% of the total contract cost up front in the event a purchase contract is insufficient to gain financing. Remaining payments could be adjusted equally, such that the payment schedule for these entities would be 50% paid upon contract signing, 25% paid upon planting, and 25% paid upon 3 years of verified maintenance.

Award Announcement & Tracking

All awards would be made publicly available via an online dashboard maintained by the fund manager. Public record would include geographic location of the project, price per outcome, and the main point of contact for the contracting entity. Per the contract agreement, local and state governments have the opportunity to outbid the fund by $0.01 to meet their own compliance requirements or voluntary environmental goals. The online dashboard would denote progress made throughout the project, including elements like land acquisition, securing proper permits, etc.

Outcomes Measurement and Verification

Outcomes would be measured in **acres of riparian forest buffer established**. These acres must align with minimum standards expected of riparian forest buffers that "count" toward Bay Program goals, as defined by the Chesapeake Bay Program Guide and discussed in the Introduction to the business plan. This means, for instance, a recommended buffer width of 100 ft, 35 ft minimum. Verification of outcomes should follow the Chesapeake Bay Program Forestry Workgroup's BMP Verification Guidance. Verification methods for rural/agricultural projects are further detailed in the Chesapeake Bay Program Resource Improvement Practice Definitions and Verification Visual Indicators Report (see pp 19-20).

Some buyers would need outcomes or credits with stricter standards. Under some of the alternative scenarios mentioned above, it would be prudent to ensure that outcomes always come with permanent land protection or other key verifiable attributes. One strategy for addressing the issue of duration of the practice would be to transfer the acres to a public agency for permanent protection after completion of the contract.

Payments

Contracts issued under this fund should utilize the **Full Delivery approach** where the contractor takes responsibility for all elements of the project from design to maintenance. Payment is contingent on the contractor delivering verified acres of riparian forest buffers established. Broken into at least three phases, 30% of the payment could be delivered at the time of planting, 30% of the payment after 1-2 years of maintenance, with the remaining 40% reserved after 3 years of maintenance. At each time, verification of the outcome should be assessed. This differs from traditional procurement where reimbursements for time and materials are paid out at regular intervals (monthly, quarterly, etc.). Full Delivery does not require the contractor to submit itemized budgets and receipts, rather an invoice for the agreed upon price once outcomes have been successfully delivered. The prototyping process should endeavor to clarify if this is the right breakdown of payments.

The payment scheme of full delivery contracts, where payment is reserved for the delivery of outcomes, is known as pay for success contracting (PFS). The fund's contracts would be structured this way because PFS creates positive economic pressure, allowing the private sector to take on the risk of achieving project outcomes, which means more work can be accomplished for less public funding.

Not only are PFS contracts paid out upon delivery of successful outcomes, there is evidence that this innovation takes significantly less time. In Florida, traditional procurement has taken up to three phases funded over 16 years, compared to a new PFS contract that is shaving off a decade from the process. Not only are they faster, they can also be cheaper: RFPs in Maryland show PFS contracts costing one third of past procurement.

5-year Financial Projections

Financial projections are based on several assumptions:

- The fund would purchase outcomes - measured as acres of riparian forest buffer established - based on bid prices that incorporate the full cost of delivering those outcomes. The heavy scoring of cost effectiveness should incentivize bidders to keep margins reasonable, but no minimum or maximum margin, or bid price, would be dictated by the fund.
- The fund aims to incentivize the achievement of co-benefits, so this cost must be built into projects where co-benefits are present.
- The fund could generate interest from investing any funds that are NOT being used to purchase outcomes into interest-bearing accounts at appropriate risk levels to preserve the fund corpus for future outcomes purchases. The interest rate might be assumed, therefore, to be quite low, at perhaps 3%. However, it could be much higher in practice. The fund implementer should engage investment advisors regarding how a fund such as this, which generates no other revenues, should invest the corpus of the fund. The larger the invested corpus, the higher the annual interest-based revenues.
- Urban and rural cost models would differ - outcomes from urban areas are likely to be much more expensive than those in rural areas.
- Pricing schedule is something that should be tested during the prototyping phase and adjustments could be made for future years and scaling up of the fund. As mentioned in the Payments section, funding would be broken into three phases: 30% of the payment delivered at the time of planting, 30% after 1-2 years of maintenance, and the remaining 40% after 3 years of maintenance. At each time, verification of the outcome would be assessed. Doing two outcomes verifications increases overall costs of delivering outcomes, so a single verification point may be more efficient. Some projects might require the fund to pay 50% of project price at the time of contract signing (see above re: Small, Minority and Women-Owned Business Enterprises).

The total cost of establishing enough riparian forest buffers to meet Maryland's goals might range from about $80 million to $120 million. This range is based on the following assumptions:

1. The number of riparian forest buffer acres needed to meet the goal is 2,628 total new established acres.
2. Rural outcomes will likely cost approximately $12,000-20,000/acre, depending on the length of site protection (i.e., presence of a conservation easement). Rural areas might account for as much as 60-80% of the fund's purchased outcomes.

3. Urban and suburban outcomes will cost approximately $20,000-86,000/acre, depending on land costs. Suburban areas might deliver about 30% of the fund's purchased outcomes and urban areas might deliver just 10-20% of the fund's purchased outcomes.
4. For the purposes of this initial set of projections, we assume about 50% of acres will have permanent protection (easements).
5. Pricing will likely increase over time as land prices increase, so this should be included in projections.

Assumptions: Price, acreage and cost	**Full delivery price/acre of RFB established (including bidder margin)**	**Acres needed (60% rural, 30% suburban, 10% urban)**	**Total**
Rural/ag - 15 year contract	$12,000	788	$9,460,800
Rural/ag - w/ conservation easement	$20,000	788	$15,768,000
Suburban - 15 year contract	$20,000	394	$7,884,000
Suburban - w/ conservation easement	$86,327	394	$34,030,103
Urban - 15 year contract	$45,000	131	$5,913,000
Urban - w/ conservation easement	$86,327	131	$11,343,368
Total needed to meet MD WIP goal (2,628 acres)			**$84,399,271**

However, initial fund capitalization at a lower level, such as $10-12 million, would be appropriate and sufficient to test assumptions, and to account for the fact that many other buyers might ultimately purchase outcomes, leaving the fund itself to generate new projects but not be the sole outcomes buyer.

DRAFT FINANCIAL PROJECTIONS

These draft projections assume all outcomes are purchased directly by the fund, and that about 20% are re-sold to secondary buyers. They also assume all outcomes are paid at a rate of 30% in year one, 30% in year 2 and 40% in year 3. Personnel and other expenses are very rough figures and require updating based on vetting with local or industry experts. With updated assumptions and costs, they will become more realistic.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Fund size (Assets)						
Fund size yr beginning	$20,000,000	$18,887,548	$15,624,261	$9,376,538	$5,367,131	
Credit sales	0	0	$1,561,931	$2,252,352	$2,953,487	
New grants				$5,000,000		
Fund spending on outcomes	$1,112,453	$3,263,286	$7,809,654	$11,261,759	$14,767,436	$38,214,588
Fund size at yr end	$18,887,548	$15,624,261	$9,376,538	$5,367,131	-$6,446,818	
Invested/earning interest at:	$600,000	$566,626	$468,728	$281,296	$161,014	$2,077,664
FUND SPENDING (offset balance sheet assets - not expenses)						
Outcomes purchased						
Rural acres contracted (30% pmt yr 1)	50	100	150	200	250	750
Rural acres (30% pmt yr 2)		50	100	150	200	
Rural acres verified (40% pmt yr 3)	0	0	50	100	150	
Avg cost/ rural acre	$16,000	$16,480	$16,974	$17,484	$18,008	
Suburban acres contracted (30% pmt yr 1)	30	60	90	120	150	450
Suburban ac - 30% pmt yr 2	0	30	60	90	120	
Suburban acres verified (40% pmt yr 3)	0	0	30	60	90	
Avg cost/suburban acre	$53,164	$55,822	$58,613	$61,543	$64,621	
Urban acres contracted (30% pmt yr 1)	20	30	40	50	50	190
Urban acres (30% pmt yr 2)	0	20	30	40	50	
Urban acres verified (40% pmt yr 3)	0	0	50	50	50	
Avg cost/ urban acre	$65,664	$67,633	$69,662	$71,752	$73,905	
Subtotal - outcomes purchased	**$1,112,453**	**$3,263,286**	**$7,809,654**	**$11,261,759**	**$14,767,436**	

CREDIT SALES (to back-end buyers)	0	0	0	$2,252,352	$2,953,487	
REVENUES						
Interest earned	**$600,000**	**$566,626**	**$468,728**	**$281,296**	**$161,014**	
EXPENSES						
Personnel						
Executive Director	$130,000	$132,600	$135,252	$137,957	$140,716	
Procurement	$100,000	$102,000	$104,040	$106,121	$108,243	
Verification/reporting	$100,000	$102,000	$104,040	$212,242	$432,973	
Funder engagement	$50,000	$51,000	$51,000	$51,000	$51,000	
Contracts/attorneys, etc	$50,000	$100,000	$150,000	$150,000	$150,000	
Personnel - subtotal	**$430,000**	**$487,600**	**$544,332**	**$657,319**	**$882,932**	
Marketing	$200,000	$204,000	$208,080	$212,242	$216,486	
Travel	$20,000	$20,400	$20,808	$21,224	$21,649	
Office/equipment	$10,000	$10,000	$10,000	$10,000	$10,000	
Subtotal expenses	**$660,000**	**$722,000**	**$783,220**	**$900,785**	**$1,131,067**	$4,197,073
Net profit	**$ (60,000)**	**$ (155,374)**	**$ (314,492)**	**$ (619,489)**	**$ (970,053)**	

Appendix 1: SWOT analysis

When considering any new business project, a SWOT (Strengths, Weaknesses, Opportunity and Threats) analysis is valuable to put the business concept into context. Strengths and weaknesses are those of the fund itself, related to the fund's business model, management, structure, and relationships. Opportunities and threats come from external sources, including the current landscape of funding sources, policy, supply chain, customers, etc.

In Appendix 3, we touch on areas of additional research and data collection/analysis that would be valuable to do before launching the fund. Some of those have to do with the weaknesses and threats identified in this assessment.

Strengths

- Project has buy-in from many parties across MD who have been working to expand riparian forest buffer plantings for years
- Initial funding should/can be substantial based on existing public funding sources, and fund has no existing debt obligations
- Straightforward, simple mission
- Non-governmental or public/private ownership would lend credibility and make room for flexible structure and ongoing adaptability [structure is not yet known because we haven't identified the fund operator yet - it might be public, but it should aim to be quasi- or non-governmental to allow flexibility and overcome landowner trepidation]

Weaknesses

- Lack of track record for a riparian forest buffer product
- Lack of track record of fund management (although, this could be addressed by selecting a reputable entity to manage this fund)
- Lack of certainty regarding size of market opportunity (mapping studies are incomplete in MD, and even more so in other Chesapeake states)

Opportunities

- Large commitments by states and the Chesapeake Bay region to plant riparian forest buffers
- This fund fills a gap in the market; there's no regulatory driver that creates demand for riparian forest buffers
- Substantial water quality-oriented public funding that can capitalize the fund

Threats

- Landowners are wary of conservation projects on their private lands, especially if there is a perceived or real impact to productive agricultural yield. Compensating landowners for easements or land restrictions could become costly, pricing the fund out of this market
- Market changes in the value of riparian forest buffers could impact the effectiveness and opportunity of the purchase fund
- Riparian forest buffers are not perceived as very cost effective (as compared with stream restoration, e.g.)

- The size of the field of project developers to build projects that deliver measurable outcomes is unknown and could be insufficient to generate enough projects to help the fund realize its goals
- Not all Chesapeake states have the same ways of calculating outcomes, which could mean they don't all 'count' the same way; what works in MD won't necessarily work in PA (an issue for scaling up)
- The supply of root stock and seedlings is limited and nurseries struggle to meet current demand

Appendix 2: Restoration Firms Eligible for Clean Water Commerce Act

Ecosystem Investment Partners	Baltimore, MD
Greenvest	Baltimore, MD
Resource Environment Solutions, LLC	Columbia, MD
Ecosystem, Planning & Restoration	
Ecological Restoration & Management	Cockeysville, MD
Environmental Quality Resources, LLC	Millersville, MD
Ecotone Ecological Restoration	Forest Hill, MD
Resource Restoration Group, LLC	Tracys Landing
EcoHaven	Prince Frederick, MD
Bourn Environmental	Mitchellville, MD
Native Terrain	Fallston, MD
Empire Landscape	Silver Spring, MD
Maryland Environmental Services	Millersville, MD

Appendix 3: Next Steps / Operationalizing the Plan

In order to operationalize the business plan, additional areas of research and analysis will be required. These areas include deeper research and analysis on the market opportunity, fund design, and fund implementation. Outstanding questions associated with each of these categories are listed below.

- Market opportunity:
    - Can landowners sell carbon or other credits/outcomes units from their acres of riparian forest buffer established? Are there other benefits that landowners can monetize that are relevant to making the financial case for RFBs?
    - How much land is actually available for planting riparian forest buffers in Maryland? Across all Chesapeake Bay states? Understanding the answer to this question would involve a plantable areas/mapping exercise to ground truth the total potential market size and the realistic landscape for planting riparian forest buffers. Some of this mapping was underway concurrently with writing this business plan but the final analysis wasn't available in time to incorporate into this plan.

- Fund design:
    - How closely should the outcome unit (acres of riparian forest buffer established) align with pre-existing programs such as Maryland's Forest Conservation Act so that all acres are 'counted' in the same way? This kind of alignment might make the fund's outcomes more expensive, but it could also reduce market confusion and ensure project developers have one standard to work from.
    - Who should invest in the fund's initial capitalization and how will operational costs be covered? Will these be the same or different sources of funding?
    - What methods can be used to incentivize wider buffers, projects with higher water quality outcomes, and other priority co-benefits? Some of this will be worked out in the prototype phase, but over the long term, clarifying how design leads to the best outcomes could take a few iterations. One of these methods could be through the scoring matrix through giving higher scores for wider buffers or projects in certain areas where the water quality benefits would be higher.

- Fund implementation:
    - What parties will lead and be involved in implementing the fund?
    - An area of potential friction involves existing sources of funding for riparian forest buffer implementation. The majority of entities supporting riparian forest buffers are funding projects but not buying outcomes. With the outcomes fund, landowners and project developers will still require sources of capital to implement the riparian forest buffer projects and develop verifiable outcomes. How will existing sources of funding be aligned with the fund to optimize all dollars on the landscape? Answering this question likely requires a detailed analysis of the way landowners could potentially participate in different programs like CREP or CWCA while also selling outcomes to the fund.

Appendix 4: Case Studies

There are many examples of outcomes-based programs already in the Chesapeake Bay. In a 2021 report on conservation finance in the Chesapeake Bay, Environmental Policy Innovation Center highlighted thirty-two different state and regional programs for financing and purchasing conservation outcomes. Some model programs that are most relevant to this business plan - and which influenced its development - include Maryland's Clean Water Commerce Act, Anne Arundel County's outcomes purchase program for water quality, Pennsylvania's Brandywine-Christina Healthy Water fund, Washington, D.C.'s SRC Price Lock program. In addition to these, Wisconsin's Water Quality Trading Clearinghouse and the Soil and Water Outcomes fund are useful case studies of programs that include the development, verification, sale and purchase of conservation outcomes such as improved water quality and carbon sequestration.

Wisconsin's Water Quality Trading Clearinghouse

In 2020, Wisconsin passed a law to establish a clearinghouse to match buyers and sellers of water quality trading credits for total dissolved solids and phosphorus. In 2021, the state issued an RFP to find a contractor to manage the clearinghouse. The RFP made clear that the contractor would not be paid to operate the clearinghouse but could charge a percentage fee on each transaction in order to maintain it with financial solvency. In 2023, the clearinghouse went live, hosted by a company that is a fully owned subsidiary of RES, the nation's largest restoration firm.

This clearinghouse allows buyers who need water quality credits for compliance purposes, such as wastewater treatment plants, to find sellers and purchase the credits they need. The clearinghouse itself is responsible for working with credit developers and credits certified by the WI Department of Natural Resources may be sold through the clearinghouse to any buyer.

Clearinghouse Roles and Responsibilities		
Contract Clearinghouse Manager	**Wisconsin Dept of Natural Resources**	**Wisconsin Department of Administration**
Establishes contract terms	Certifies credits prior to sale (including number and duration of credits)	Contracts out clearinghouse administration to contractor with 5 year term
Documents and enforces transactions	Take over clearinghouse administration if the contractor ceases operations for some reason.	
Carries insurance or otherwise handles risk management in the event of default by a party to an agreement, including by holding excess credits	Evaluate clearinghouse contract in year 4; report to Dept of Admin	
Solicits transactions		

Signs contracts with entities who are reducing pollutants and generating credits		
Manages a credit bank and registry		

One critique of this program has been that the contractor managing the clearinghouse, RES - via its wholly owned subsidiary, Wisconsin Clearinghouse, LLC - is also eligible to develop credits for sale via the clearinghouse. Therefore, there is a potential for conflict of interest. This has been addressed in a couple of ways: (1) There is not a rule that anyone must use the clearinghouse to do water quality trades - trades can also happen outside the clearinghouse. (2) RES has established an internal firewall between the credit development side and the person who facilitates the clearinghouse. There is no information-sharing regarding pricing between the credit generation function and the clearinghouse function.

Soil and Water Outcomes fund

The Soil and Water Outcomes fund launched in 2020 with an Iowa SRF investment of $7.5 million to purchase verified carbon sequestration and water quality (i.e., nutrient reduction) outcomes from farmers in the US Midwest on an annual basis. Water quality outcomes (specifically, nitrogen and phosphorus reductions) have been purchased by cities like Ames and Cedar Rapids Iowa for NPDES permit compliance. Carbon credits have been sold to voluntary corporate buyers. The SRF investment was intended to be repaid through revenues from credit sales.

Farmers are paid 50% up front, when they sign their contracts with the fund, and the remaining 50% when outcomes are verified at year-end. According to a case study of the fund, “Most participating farmers implement a mix of in-field management practices that at least include cover crops and some form of conservation tillage.”

AgOutcomes (an Iowa Soybean Association subsidiary) manages the fund, and it was originally launched together with an additional partner, ReHarvest Partners (a Quantified Ventures subsidiary), which handled the SRF investment.

Conowingo Watershed Implementation Plan (CWIP)

Another relatively recent and additional example of an outcomes-based program in the Chesapeake Bay Region is developing under the Conowingo Watershed Implementation Plan (CWIP). The CWIP was put in place to address additional nutrient loads being delivered to the Chesapeake Bay due to sedimentation behind the Conowingo Dam. EPA’s Chesapeake Bay Program has distributed this additional load across the states of Maryland, Pennsylvania, and New York.

Maryland is addressing its additional load reductions by allocating $25 million appropriated by the Maryland General Assembly for purchasing nitrogen load reductions under a Pay-for-Success (PFS) financing strategy. PFS was authorized by the 2022 Conservation Finance Act (CFA) in the state and was the basis for the state’s Clean Water Commerce Act (CWCA), another state-level outcomes purchase funding effort. Under this PFS model, a reverse auction will be implemented in which restoration projects with verified nitrogen reductions submit bids for a cost per pound of nitrogen reduced, and

cost-effective bids are selected. Nitrogen reductions purchased by Maryland to meet requirements under the CWIP will be quantified using the CAST model and verified using the Chesapeake Bay Program's BMP verification guidance.

The Susquehanna River Basin Commission (SRBC) is implementing the PFS program and will award at least $10 million in contracts in the first RFP round. The contracts can be up to twenty years in length.