

IX. Reasonable Assurance and Accountability Framework

Section 303(d) of the CWA requires that a TMDL be “established at a level necessary to implement the applicable water quality standard (WQS).” Federal regulations [40 CFR 130.2(i)] also define a TMDL as “the sum of the individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background.” Section 7 of the 2010 Chesapeake Bay TMDL requires jurisdictions to provide reasonable assurance that they will achieve nonpoint source component of the TMDL and the LAs. EPA does this to ensure that the expected voluntary nonpoint source reductions are realistic and achievable and that the regulatory WLA is set at the appropriate level to achieve WQS.

Balanced Approach of Regulations and Incentives

Maryland uses a balanced approach of regulations and incentives to ensure that the State meets WQS and that the TMDL allocations are achievable. On the regulatory side, Maryland has tools under both the Federal CWA and State law that set numeric permit limits, restoration conditions, or other requirements for the regulated community. Some examples across sectors include:

- Federal NPDES permit limits on WWTP pollution discharges;
- Federal and State restoration requirements for areas under municipal separate storm sewer permits (MS4s), which require stormwater management retrofit practices;
- State requirements for agricultural nutrient management plans;
- State BAT requirements for onsite (septic) systems in the Critical Area (within 1,000 feet of tidal shorelines).

The State backs these regulatory requirements with effective compliance and enforcement programs that, where necessary, can implement legal backstops to ensure restoration progress.

Also, Maryland has pollution sources that do not have regulatory cleanup requirements, such as small communities with no Bay restoration requirements for pre-law stormwater discharges (non-MS4s). These non-regulated pollution sources play an essential role in achieving Bay restoration targets. Due to budgetary constraints and a lack of funding sources, financial incentives are critical drivers of restoration progress for these non-MS4 jurisdictions. Some examples of incentive programs to drive restoration progress through voluntary efforts include: Maryland's cover crop program supported through the BRF; local stormwater remediation projects funded through the Trust Fund; operations and maintenance incentives to improve wastewater treatment performance beyond regulatory requirements; and, BRF to upgrade failing septic systems outside of the Critical Area.

Moreover, restoration progress, whether driven through regulations or incentives, is not even across sectors. Accelerated pollution reductions through wise use of enhanced technology and capacity at WWTPs, as well as on farms, are the primary drivers of Maryland's success in meeting its 2025 Bay restoration targets. Challenges in the stormwater and septic sector, including numerous distributed systems over large areas, private property interests, longer implementation horizons, and required engineering plans and approvals limit the pace of restoration. Therefore, continued steady progress in

both the stormwater and septic sectors is necessary to ensure that pollution reductions keep pace with increased loads from climate change and growth. Phase 1 and 2 MS4 permits now cover over 90 percent of Maryland's developed landscape and are legally enforceable mechanisms to ensure steady restoration progress. The State ensures continued steady progress in the septic sector through upgrades, sewer hookups, and the recent septic stewardship law that helps local jurisdictions with septic maintenance through pumpouts.

Locally-Driven Restoration and Leveraging Co-benefits

County governments, municipalities, soil conservation districts, farmers, citizens, and NGOs are the boots on the ground implementing restoration practices through permits or grant/incentive programs. Sufficient local capacity and close collaboration with these local partners ensures successful Chesapeake Bay restoration. To ensure continued local progress, restoration practices must be cost-effective, achievable, and provide benefits to communities while addressing local challenges, like flooding. State agencies work with local partners to develop strategies that address barriers through two-year milestones and progress evaluations. These adaptive strategies accelerate implementation that is cost effective and meets local needs. Already, Maryland is forming a workgroup to improve technical assistance delivery to local partners, as well as working with those partners to develop a strategic implementation plan for addressing local restoration challenges.

Financial Assurance, Creating a Restoration Economy and Driving Innovation

In FY00–18, Maryland spent approximately \$8.4 billion on Chesapeake Bay restoration activities (Table 10), \$3 billion of which the State appropriated within the last three years. This amount includes funding for activities that directly reduce nutrient and sediment inputs to the Bay (e.g., cover crops and WWTP upgrades), activities that indirectly support Bay restoration (e.g., monitoring, education, outreach), and activities that prevent or minimize future degradation of the Bay (e.g., land conservation).

Recent actions that are important to highlight are:

1. Full funding of the Trust Fund;
2. Increased focus on cost efficiency in both the BRF and Trust Fund;
3. Development of an operational Water Quality Trading Program;
4. Passage of the Clean Water Commerce Act;
5. Progress on addressing the impacts of the pond behind the Conowingo Dam reaching its long term sediment and nutrient trapping capacity.

Table 10: Fiscal Year 2000 - Fiscal Year 2018 Maryland Bay restoration funding summary.

Category	Total Fiscal Year 00 - Fiscal Year 18 Funding Amount (millions)*
Bay Cabinet Agencies (DNR,MDE,MDA,MDP,) Bay Restoration Funds	\$4,774 M
Land Conservation(POS and Rural Legacy)	\$615 M
Agricultural Land Preservation	\$487 M
GO Bonds ²¹	\$1,583 M
Transportation ²²	\$1,534 M
Education	\$101 M
Total	\$8,414 M

Important caveats and approximations must be recognized in interpreting Table 10:

- 1. Data is not consistent over time:** Records are less accessible and, therefore, reported funding amounts are less reliable for the beginning of this period than more recent years.
- 2. Not all funding goes directly to reducing pollutant loads to Chesapeake Bay:** Bay Restoration involves a diversity of vital functions beyond reducing nitrogen, phosphorus, and sediments entering the Bay. For example, water quality monitoring is essential to track progress and direct future actions to the most cost-effective practices; education and outreach are essential to providing Maryland students and citizens with access to and appreciation for a restored Bay; and smart growth and land conservation programs minimize growth impacts and protect the Bay from future degradation. All of these examples, among others, are essential aspects of restoration but do not directly result in reductions in pollutant loadings. As a result, it is inappropriate to divide the total cost presented in this report by the number of pounds pollutant reduction to get a dollar amount per pound reduced.
- 3. Judgment calls are necessary for identifying a program as Bay Restoration:** Many state agency programs and budget categories contribute to restoration, as well as other non-Bay related efforts. For consistency, this analysis only contains those programs that are estimated to have more than 50 percent of their activities related to Chesapeake Bay restoration.

While total Bay restoration funding by State agencies varies, the total restoration funds have increased significantly over the last decades. To illustrate, the first three years of the evaluation, FY00-FY02, total

²¹ Includes Maryland Department of the Environment Revenue Bonds issued in FY 2016.

²² Includes Maryland Department of Transportation spending from FY 2009 through FY 2018.

funds were around \$800 million. Conversely, the past three evaluated years, FY16-FY18, funding was over \$2.5 billion, an increase of over 200%. This increase was driven, in part, by the creation and subsequent funding increases in the two primary Bay restoration Special Funds: The Bay Restoration Fund, and the Chesapeake and Atlantic Coastal Bays Trust Fund.

Table 11 presents the preliminary estimates of overall State costs for key Phase III WIP strategies by sector. These amounts do not account for the estimated \$1.6 billion that local governments will spend through 2025 to complete the current Phase 1 and 2 MS4 permits. Phase 1 jurisdictions are required to develop financial assurance plans demonstrating the financial capacity to achieve their stormwater permit requirements. This table also does not include federal funding sources for Chesapeake Bay restoration, such as Chesapeake Bay Restoration and Accountability Grants, Chesapeake Bay Implementation Grants, or federal funding for the Chesapeake Bay Program.

Table 11: Preliminary estimates of annual State implementation costs by sector to achieve Bay restoration targets.

Sector	State’s Estimated Sector Costs for Key Strategies*
Wastewater	\$110-million/yr
Stormwater (does not include transportation)	\$90-million/yr
Septic	\$11.4-million/yr
Natural Lands	\$7.4-million/yr
Agriculture	\$54.2-million/yr
Total	\$273-million/yr

*Costs compiled from Table 1 WIP strategy costs

Table 12 identifies State funding programs for in-ground Chesapeake Bay restoration practices. Comparing this funding to the costs above suggests that Maryland has enough fiscal capacity to assure it will meet Chesapeake Bay’s WQS. However, it is important to realize these are preliminary estimates based on current year funding and estimated implementation costs. This analysis also does not factor in the substantial federal and local funding sources that fund implementation efforts to achieve Maryland’s TMDL targets. An analysis of current and projected Bay funding will be done by Maryland's Bay Cabinet on an annual basis to confirm Maryland's continued fiscal capacity to achieve and sustain our 2025 WIP targets.

Table 12: Key State funding programs and amounts for Chesapeake Bay restoration projects.

Program(s) Name	State's 2019 Program Funding Levels
Bay Restoration Fund Wastewater & Water Quality Revolving Loan Fund	\$306-million/yr*
Bay Restoration Fund Septic	\$15-million/yr
Clean Water Commerce Act	\$6-million/yr
Chesapeake and Atlantic Coastal Bays Trust Fund	\$53-million/yr
Maryland Agricultural Cost Share	\$9-million/yr
Total	\$389-million/yr

*Includes \$150-million in revenue bonds. Successive years anticipated to be \$22-million

In addition to traditional funding approaches, the Hogan administration is pursuing market-based strategies that are designed to stimulate a restoration economy and reduce costs. Nutrient trading is one such tool that allows an entity to purchase non-mandated pollution reductions from another entity. This nutrient trading creates a marketplace that drives innovation across sectors to develop the most cost-effective pollution reduction practices. Moreover, other innovative financing strategies, like the Clean Water Commerce Act and the CWIP, drive innovation by creating funding streams for the most cost-effective practices and by developing collaborative funding models, like public-private partnerships, to reduce public costs of restoration. Aligning Maryland's GHG reduction actions with Bay restoration actions that also significantly sequester carbon can leverage and diversify financing to accelerate pollution reduction practices. Additionally, Maryland is pursuing water reuse technologies that benefit its citizens with long term water supply sustainability, while also reducing pollution loads to the Chesapeake Bay²³.

Accounting for and Leveraging Conservation and Protection Programs

Protecting Maryland's ecologically significant lands, aquatic resources, and wildlife are among the most effective ways to sustain Bay restoration. Protecting these lands ensures the lowest levels of pollution loading by preventing them from being converted to higher pollution land uses, such as new development, that would set Maryland further behind in its restoration goals. Maryland is ensuring its land conservation programs are fully accounted for in the Bay restoration and if fully funding land conservation programs for future acquisitions. Additionally, the State is reviewing current conservation and protection program effectiveness, through monitoring results and other measures, in achieving goals. Maryland is evaluating these programs to further leverage restoration opportunities on conserved and protected lands.

²³ mde.maryland.gov/programs/Water/waterconservation/Pages/water_reuse.aspx

Holistic Ecosystem Management

Although Maryland’s Phase III WIP is designed to maintain consistency with EPA’s expectations and achieve the TMDL nitrogen, phosphorus, and sediment targets, Maryland is also strongly committed to the broader goals outlined in the current (2014) Chesapeake Bay Agreement²⁴. Included in these Bay agreement goals are sustainable fisheries, vital habitats, reducing toxic contaminants, healthy watersheds, land conservation, stewardship, public access, environmental literacy, and climate resiliency. These watershed goals provide critical feedback loops that improve water quality. These improvements can be through aquatic resources, such as restored fisheries providing nutrient uptake and water filtration services, or nitrogen and carbon uptake in the plant tissue of submerged aquatic vegetation. Water quality improvements can also come from land-based practices, including wetlands and forest buffers, which capture and process nutrients before they enter surface waters. Maryland’s commitment to this broader ecosystem management framework helps the State achieve its TMDL restoration targets while maintaining the productivity of the Bay’s living resources that strengthen local economies.

Accountability and Adaptive Management Framework

As part of the accountability and adaptive management framework, the Chesapeake Bay Program (CBP) partners develop short term goals, called milestones, to ensure restoration progress. Milestones identify the restoration practices, programs, policies, and resources that jurisdictions commit to implementing over two-year periods. EPA evaluates jurisdictions’ progress toward achieving their milestone commitments and takes appropriate federal actions, as necessary, to help jurisdictions remain on track.

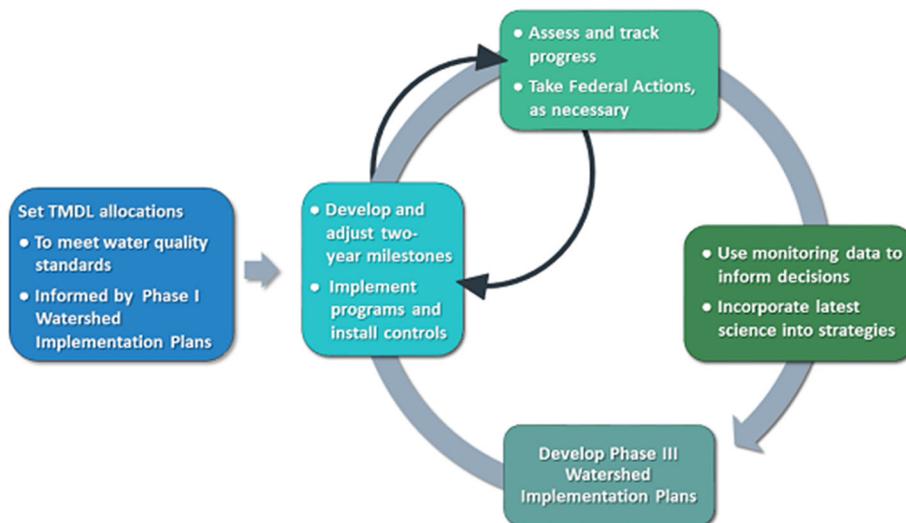


Figure 13: Chesapeake Bay TMDL Accountability Framework. Graphic courtesy of the EPA Chesapeake Bay Program web site at epa.gov/chesapeake-bay-tmdl/ensuring-results-chesapeake-bay.

²⁴ chesapeakebay.net/what/what_guides_us/watershed_agreement

Maryland submitted its 2018-2019 milestones to EPA in January 2018 and expects to submit 2020-2021 milestones in January 2020. These milestones serve as essential checkpoints along the path to restoring the Bay by 2025 and include annual evaluations to gauge progress. Milestones provide Maryland the opportunity to adaptively manage the restoration process, incorporate new science on restoration practices performance, and apply key lessons learned from the successes or failures of Phase III WIP. Chesapeake Bay water quality and living resources data are also used to ensure that results are being seen in the Bay, as well as to adjust, as necessary, to new science or changing conditions.