

CLEANING UP THE CHESAPEAKE BAY: MARYLAND'S CURRENT POLICY FRAMEWORK, PROGRESS, AND IMPLEMENTATION COSTS



DEPARTMENT OF LEGISLATIVE SERVICES 2014

**Cleaning Up the Chesapeake Bay:
Maryland's Current Policy Framework,
Progress, and Implementation Costs**

**Department of Legislative Services
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Annapolis, Maryland**

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DEPARTMENT OF LEGISLATIVE SERVICES
OFFICE OF POLICY ANALYSIS
MARYLAND GENERAL ASSEMBLY

Karl S. Aro
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Director

November 6, 2014

The Honorable Thomas V. Mike Miller, Jr., President of the Senate
The Honorable Michael E. Busch, Speaker of the House of Delegates
Members of the Maryland General Assembly

Ladies and Gentlemen:

Under the Chesapeake Bay Total Maximum Daily Load (TMDL), Maryland is required to establish pollution reduction measures to meet specific water quality standards; all reduction measures must be in place by 2025, with measures in place to achieve at least 60% of pollution reductions by 2017. The U.S. Environmental Protection Agency's most recent evaluation of Maryland's progress and commitments indicates that the State will have enough measures in place by 2017 to achieve 60% of the necessary pollution reductions under the TMDL. However, while the State is meeting its short-term bay restoration goals, long-term success will depend on continued investment and implementation of pollution reduction measures across all pollution sectors.

In an effort to provide a timely update on Maryland's bay restoration efforts and progress, this report will (1) provide an overview of the current policy framework and Maryland's progress toward achieving bay restoration goals; (2) discuss potential implementation costs; and (3) identify policy gaps that may need further consideration.

We trust this report will prove useful to the General Assembly in better understanding the current status of bay restoration in Maryland. If you would like additional information regarding this report, please contact Ryane M. Necessary at (410) 946-5350.

Sincerely,

Warren G. Deschenaux
Director

WGD/RMN/seb

cc: Mr. Karl S. Aro

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Cleaning Up the Chesapeake Bay: Maryland's Current Policy Framework, Progress, and Implementation Costs

Past efforts to restore the Chesapeake Bay watershed, which includes parts of Delaware, the District of Columbia, Maryland, New York, Pennsylvania, Virginia, and West Virginia, have resulted in insufficient progress and continued poor water quality. However, a regional restoration initiative, required by the federal government and characterized by accountability measures and shorter term program evaluation, is underway.

This report provides an overview of the current policy framework and Maryland's progress toward achieving restoration goals, a discussion of potential implementation costs, and the identification of policy gaps that may need further consideration.

The Overarching Goal: Chesapeake Bay Total Maximum Daily Load

In December 2010, the U.S. Environmental Protection Agency (EPA) established a Chesapeake Bay Total Maximum Daily Load (TMDL), as required under the federal Clean Water Act and in response to consent decrees in the District of Columbia and Virginia. This TMDL sets the maximum amount of nutrient and sediment pollution the bay can receive and still attain water quality standards. It also identifies specific pollution reduction requirements; all reduction measures must be in place by 2025, with measures in place to achieve at least 60.0% of pollution reductions by 2017. As shown in **Exhibit 1**, the State must establish pollution control measures by 2025 that, based on 2010 levels, will reduce nitrogen loads to the bay by 22.0%, phosphorus loads by 14.9%, and sediment loads by 1.9%.

Exhibit 1
Maryland's Pollution Reduction Goals in the Bay TMDL
(Million Pounds Per Year)

<u>Pollutant</u>	<u>2010 Loads</u>	<u>Bay TMDL Target Load</u>	<u>Percent Reduction</u>
Nitrogen	52.76	41.17	22.0%
Phosphorus	3.30	2.81	14.9%
Sediment	1,376.00	1,350.00	1.9%

TMDL: Total Maximum Daily Load

Source: Maryland Department of the Environment; U.S. Environmental Protection Agency

Achieving the Goal: An Accountability Framework for Jurisdictions in the Bay Watershed

Watershed Implementation Plans

As part of the Chesapeake Bay TMDL, bay jurisdictions must develop watershed implementation plans (WIP) that identify the measures being put in place to reduce pollution and restore the bay. WIPs are submitted to EPA for their review and evaluation and (1) identify pollution load reductions to be achieved by various source sectors and in different geographic areas; and (2) help to provide “reasonable assurance” that sources of pollution will be cleaned up, which is a basic requirement of all TMDLs. In 2010, each bay jurisdiction submitted a Phase I WIP that details how the jurisdiction plans to achieve its pollution reduction goals under the TMDL. In 2012, the bay jurisdictions submitted Phase II WIPs that establish more detailed strategies to achieve the bay TMDL on a geographically smaller scale. A Phase III WIP, which must be submitted to EPA in 2018, will ensure that all practices are in place by 2025 so that restoration goals can be met.

Two-year Milestones

President Barack H. Obama issued an executive order in May 2009 that directed the federal government to lead a renewed effort to restore and protect the bay and its watershed. At the same time, the bay jurisdictions committed to achieving specific, short-term bay restoration “milestones” in order to assess progress toward achieving nitrogen, phosphorus, and sediment reduction goals. Generally, milestones are goals to be reached in two-year increments; they include implementation actions (best management practices (BMP) and program enhancement actions. As a part of this effort, bay jurisdictions must submit pollution reduction progress and program action information to EPA. Although the bay jurisdictions developed the milestones prior to the establishment of the TMDL, the milestones have been incorporated into the TMDL process as a series of checkpoints for assessing progress toward achieving the pollution reduction goals in the TMDL.

Federal Review and Contingency Actions

EPA reviews each jurisdiction’s progress toward its two-year milestones. If a jurisdiction’s plans are inadequate or if its progress is insufficient, EPA may take action to ensure pollution reductions, including increasing oversight of state-issued pollution permits, requiring additional pollution reductions, prohibiting new or expanded pollution discharges, redirecting federal grants, and revising water quality standards to better protect local and downstream waters.

Chesapeake Bay Watershed Agreement

In June 2014, a new Chesapeake Bay Watershed Agreement was signed by representatives from the bay jurisdictions, as well as the Chesapeake Bay Commission and EPA. This agreement sets forth a collaborative plan for restoring and protecting the bay watershed and its living resources. Among other things, the agreement sets a goal to reduce pollutants to the bay by meeting the 2017 and 2025 restoration goals and improving the capacity for monitoring and assessing progress. The agreement indicates that strategies for implementing the agreement's goals should be developed by June 2015.

See **Appendix 1** for a timeline of major bay policy developments.

Reaching the Goal: Progress to Date

2009-2011 Milestone Assessment

Maryland achieved its 2009-2011 milestone pollution reduction goals, which set out to reduce nitrogen loads by 3.75 million pounds and phosphorus loads by 193,000 pounds (relative to calendar 2008 load levels). While the State did not meet all of its individual milestone goals, Maryland was able to achieve its pollution reductions, in part, through the planting of a record number of cover crops, wastewater treatment plant upgrades, and the planting of forest buffers. Overall, EPA noted that Maryland "has made significant progress in reducing pollution and moving forward with Phase I WIP commitments." More information on the 2009-2011 milestones assessment can be found in *Achieving the Chesapeake Bay Restoration Mandate in Maryland* at http://dls.state.md.us/data/polanasubare/polanasubare_natresenvntra/Achieving-the-Chesapeake-Bay-Restoration-Mandate-in-Maryland.pdf.

2012-2013 Milestone Assessment

For the 2012-2013 milestone periods, Maryland was ahead of schedule by more than 3.5 million pounds for nitrogen reductions; by nearly 147,000 pounds for phosphorus reductions; and by nearly 90.0 million pounds for sediment reductions. EPA attributes Maryland's achievements largely on the planting of a record number of cover crops, timely upgrades to wastewater treatment plants, and the implementation of the Fertilizer Use Act of 2011.

While the State met and even exceeded several goals for the 2012-2013 milestones period, it did not meet all of its goals. For example, Maryland committed to installing 2,453 agricultural water control structures, but only met 37% of that goal. Additionally, the State committed to stormwater management retrofits to address 35,000 pounds of nutrients, but met only 77% of that goal. **Exhibit 2** shows various pollution reduction achievements for the 2012-2013 milestone

Exhibit 2
Maryland's 2012-2013 Pollution Reduction Strategies and Milestones

	<u>2012-2013 Commitment</u>	<u>Percent Achieved</u>
Agriculture		
Animal Waste Management Systems, Livestock/Poultry (Animal Units)	4,256	445%
Animal Waste Management Systems, Runoff Control (Acres)	153	84%
Conservation Plans/SCWQP (Acres/Year)	826,000	120%
Cover Crops (Acres/Year)	355,000	115%
Dairy and Poultry Manure Incorporation Technology (Acres/Year)	27,854	328%
Forest Buffers/Tree Planting (Acres)	251	364%
Grass Buffers (Acres)	538	615%
Land Retirement (Acres)	5,894	64%
Manure Transport (Tons/Year)	37,000	131%
Nutrient Management Plan Compliance (Acres)	1,219,566	75%
Pasture Grazing/Stream Protection (Acres)	5,256	146%
Water Control Structures (Structures)	2,453	37%
Wetland Restoration (Acres)	610	106%
Urban/Suburban		
Septic Retrofits (Systems)	1,200	113%
Stormwater Management Retrofits (Pounds)	35,000	77%
Wastewater		
Wastewater Nitrogen (Pounds Reduced)	750,000	134%

SCWQP: Soil Conservation and Water Quality Plan

Source: Maryland Department of the Environment; BayStat

period. Overall, EPA noted that Maryland's 2012-2013 milestone progress ensures that "[WIP] implementation is occurring even though all of the milestone goals were not achieved."

Future Milestones and Targets

EPA primarily evaluates progress toward meeting the TMDL by reviewing a jurisdiction's combined pollution reductions among the various pollution sources. **Exhibit 3** shows pollution loads for 2010 and 2013 and illustrates Maryland is making progress toward achieving the 2017 and 2025 target nitrogen and phosphorus loads and has more than achieved sediment target loads. EPA also evaluates a jurisdiction's progress within each source sector. **Exhibit 4** illustrates Maryland's nitrogen pollution reduction progress by source sector. EPA's most recent evaluation of Maryland's progress and commitments indicates that the State will have enough measures in

Exhibit 3
Maryland's 2010, 2013, and Target Pollution Loads
 (Million Pounds Per Year)

<u>Pollutant</u>	<u>2010 Loads</u>	<u>2013 Loads</u>	<u>2017 Target</u>	<u>2025 Target</u>
Nitrogen	52.76	47.57	45.48	41.17
Phosphorus	3.30	3.00	3.01	2.81
Sediment	1,376.00	1,253.00	1,367.00	1,350.00

Source: BayStat; The Chesapeake Bay Total Maximum Daily Load Tracking and Accounting System

Exhibit 4
Maryland's Nitrogen Pollution Loads by Pollution Source
 (Million Pounds Per Year)

<u>Source</u>	<u>2010 Loads</u>	<u>2013 Loads</u>	<u>2017 Target</u>	<u>2025 Target</u>
Agriculture	19.95	17.15	17.03	15.22
WWTPs	14.37	11.95	11.85	10.58
Stormwater	9.48	9.53	8.34	7.55
Septic	3.00	2.95	2.30	1.85

WWTP: Wastewater Treatment Plant

Note: The 2010 and 2013 nitrogen loads do not include loads from forests and air deposition. It is anticipated that forests and air deposition will contribute approximately 5.9 million pounds of nitrogen annually through 2025.

Source: BayStat

place by 2017 to achieve 60% of the necessary nutrient pollution reductions. However, those commitments include actions that have not yet been implemented, including adopting regulations to implement a new Phosphorus Management Tool (PMT), renewing the general discharge permit for animal feeding operations, developing a tracking system for accounting for new growth, and funding upgrades for minor wastewater treatment plants. Additionally, EPA encourages each jurisdiction to enhance the tracking, verification, and reporting of BMPs to ensure the most accurate estimates of load reductions are reported.

Watershed Implementation Plan Costs

Maryland's Watershed Implementation Plan Cost Estimate

Implementation of the State's Phase II WIP continues to demand significant resources and commitment at the federal, State, and local level and within both the public and private sectors. As shown in **Exhibit 5**, the estimated cost of implementing Maryland's Phase II WIP, covering calendar 2010 through 2025, is approximately \$14.4 billion. While this cost estimate provides helpful information, it is incomplete and may change significantly. For example, the estimate excludes costs associated with financing, inflation, combined sewer and sanitary overflows, and Healthy Air Act implementation. Additionally, Maryland's Phase II WIP allocates pollution reduction responsibility to various sectors (agriculture, municipal wastewater, stormwater, and

Exhibit 5 Maryland's Estimated Phase II WIP Implementation Costs (\$ in Millions)

<u>Source Sector</u>	<u>Total 2010-2025 Cost</u>
Agriculture	\$928
Municipal Wastewater	\$2,368
Major Municipal Plants	2,306
Minor Municipal Plants	62
Stormwater	\$7,388
Maryland Department of Transportation	1,500
Local Government	5,888
Septic Systems	\$3,719
Upgrades	2,358
Connections	1,273
Pumping	88
Total	\$14,403

WIP: Watershed Implementation Plan

Note: The exhibit does not reflect costs associated with controlling combined sewer and sanitary overflows or the implementation of the Healthy Air Act. The exhibit reflects the final Phase II WIP cost estimate released October 26, 2012.

Source: *Phase II Watershed Implementation Plan*, Maryland Department of the Environment

septic systems) based on equity and feasibility rather than cost efficiency. As such, the Phase II WIP does not account for the implementation of alternative, lower cost strategies such as cross-sector trading (*i.e.*, nonpoint-to-nonpoint source trading).

Exhibit 6 shows the share of the nutrient reductions assigned to each sector in relationship to the share of the total Phase II WIP implementation costs. For example, funding for the agriculture sector costs represents 6% of total estimated WIP implementation costs while this sector is expected to achieve 41% of the nitrogen reductions and 39% of the phosphorus reductions.

Exhibit 6
Maryland's Nitrogen and Phosphorus Reductions and Estimated Phase II WIP Implementation Costs by Source Sector

<u>Source Sector</u>	<u>Percent of Reduction for Nitrogen</u>	<u>Percent of Reduction for Phosphorus</u>	<u>Percent of Total Estimated Costs</u>
Agriculture	41%	39%	6%
Municipal Wastewater	33%	17%	16%
Stormwater	17%	44%	51%
Septic	10%	0%	26%

WIP: Watershed Implementation Plan

Note: Percentages may not sum to 100% due to rounding.

Source: BayStat

The State's Phase II WIP implementation costs are also allocated into those four main sectors. Some of the major categories of implementation costs and recent policy actions aimed at addressing the State's Chesapeake Bay restoration goals are described in further detail below.

Agricultural BMPs: Funding for agriculture sector improvements represents \$928.0 million, or 6%, of the total estimated WIP implementation cost. Currently, implementation of agricultural BMPs has been funded with private, federal, and State funding. In October 2012, the Maryland Department of Agriculture (MDA) revised its nutrient management regulations to modify how a farm's nutrient management plan is developed and change the way that organic nutrient sources and other materials are managed. Also, in January 2013, MDA published additional regulations implementing the PMT that is used to identify where there is a high potential for phosphorous pollution and to help farmers evaluate management options. However, the regulations were withdrawn due to concerns raised by farmers and environmental groups about the implementation and unknown impacts of the regulations. In an effort to obtain additional

information regarding the potential cost of the PMT to farmers, the fiscal 2015 budget bill included language prohibiting MDA from expending funds, except for funds related to the cost of an economic impact analysis, for the final development and submission of PMT regulations until MDA submits an economic analysis of the impact of the proposed regulations. MDA advises that the economic impact analysis will be complete in fall 2014.

Municipal Wastewater Treatment Plant Upgrades: Funding for municipal wastewater sector improvements represents \$2.4 billion, or 16%, of the total estimated WIP implementation cost. State Bay Restoration Fund revenue is providing a significant portion of the funding necessary to upgrade the State's 67 major publicly owned wastewater treatment plants (WWTP). At the urging of the Bay Restoration Fund Advisory Committee, Chapter 150 of 2012 generally doubled the bay restoration fee beginning July 1, 2012, in order to address a significant funding shortfall that would have made it very difficult to complete the upgrades to the major publicly owned WWTPs by calendar 2017, as required by the WIP. Chapter 150 also made several other changes, such as establishing additional uses for the fund beginning in fiscal 2018. As a result of Chapter 150, the State will be better positioned to complete its WWTP upgrades by 2017.

Local Government Stormwater Management: Funding for local stormwater management sector improvements represents \$5.9 billion, or 41%, of the total estimated WIP implementation cost. During the 2007 special session and the 2008 regular session, the General Assembly passed legislation that established the Chesapeake and Atlantic Coastal Bays 2010 Trust Fund in an effort to provide additional State funding for nonpoint source pollution control projects. The Chesapeake and Atlantic Coastal Bays 2010 Trust Fund, which is administered by the Department of Natural Resources, provides State funding for various nonpoint source pollution control projects and local stormwater projects. Despite the establishment of the fund, it was clear that additional funding was needed for stormwater management.

As a result, the General Assembly passed Chapter 151 of 2012, which required each county and municipal corporation subject to a National Pollutant Discharge Elimination System (NPDES) Phase I municipal separate storm sewer system (MS4) permit (currently, Baltimore City and the nine most populous counties) to adopt local laws or ordinances necessary to establish an annual stormwater remediation fee and a local watershed protection and restoration fund by July 1, 2013. These funds are to be used to provide financial assistance for the implementation of local stormwater management plans. Money derived from the fee is to be used only to support additional (not existing or ongoing efforts) improvements for stormwater management, including stream and wetland restoration projects; operation and maintenance of systems and facilities; and monitoring, inspection, and enforcement activities. Preliminary estimates indicate that fiscal 2014 stormwater remediation fee revenues will total approximately \$109.8 million for the 10 jurisdictions. In addition, the Budget Reconciliation and Financing Act of 2014 (Chapter 464), authorized Carroll and Frederick counties to enter into a memorandum of understanding with the Maryland Department of the Environment (MDE) to develop an alternative source of financing, instead of a stormwater remediation fee, for the purpose of meeting the requirements of each jurisdiction's federal stormwater permit.

Transportation Stormwater Management: Funding for stormwater management sector improvements associated with State transportation infrastructure represents \$1.5 billion, or 10%, of the total estimated WIP implementation cost. The State Highway Administration (SHA) owns more than 2,500 stormwater management facilities and nearly 17,000 lane miles of roadway located throughout the State. After many years of discussion regarding the lack of transportation funding for new infrastructure, Chapter 429 of 2013 (the Transportation Infrastructure Investment Act) was enacted. Chapter 429 increased transportation funding by increasing motor fuel taxes and transit fares. Chapter 429 also required that the Governor include specified annual appropriations in the budget bill (between fiscal 2015 and 2019) totaling \$395.0 million for SHA to use to comply with the WIP. SHA reports that, as a result of Chapter 429, there will be sufficient funding available to meet its WIP obligations through 2020.

Septic Systems: Funding for septic system sector improvements represents \$3.7 billion, or 26%, of the total estimated WIP implementation cost. Septic system projects are among the most costly BMPs. While Chapter 280 of 2009 already required best available technology (BAT) for new and replacement septic systems in the Chesapeake Bay Critical Area and the Atlantic Coastal Bays Critical Area, new regulations, finalized in September 2012, expanded the requirements of Chapter 280 to require BAT for all septic systems serving new construction in the Chesapeake and Atlantic Coastal Bays watersheds and in the watershed of any nitrogen impaired water body in the State.

Additionally, in order to steer future residential growth toward more urban forms of development served by public sewer and away from the sprawling development on previously undeveloped lands that would be required to use septic systems, Chapter 149 of 2012 (the Sustainable Growth and Agricultural Preservation Act) established a system of land use tiers, which may be adopted by local jurisdictions. Chapter 149 prohibits a jurisdiction from approving a major residential subdivision served by on-site sewage disposal systems, community sewage systems, or shared systems unless it also adopts the growth tiers established by the Act. The recent statutory and regulatory changes should help the State reduce nitrogen loading attributable to new development.

WIP Funding Challenges

Because the Phase II WIP incorporates dozens of strategies involving multiple partners across the State, it has been challenging to estimate the State's bay restoration funding needs. Estimating restoration costs has also been complicated by many factors, including strategy adjustments that are made by the State and local governments in response to new demands and opportunities. Two major areas of ongoing uncertainty that may have significant impact on the State's WIP cost estimate are (1) nutrient trading; and (2) local stormwater management.

Nutrient Trading

How It Works: Nutrient trading is a market-based approach that involves the exchange (buying and selling) of nutrient reduction credits (*i.e.*, pollution allocations) between sources in order to protect and improve water quality. These credits have a monetary value that may be paid to the seller for installing BMPs to reduce nitrogen or phosphorous. Nutrient trading involves (1) establishing a total amount of allowable pollution in a specified area and allocating this amount among the participating sources; and (2) allowing sources to trade in ways that meet local and watershedwide water quality goals. Once pollution allowances are allocated, sources with low-cost pollution reduction options have an incentive to reduce nutrient loadings beyond what is required of them and to sell the excess credits to sources with higher control costs. To achieve a desired load reduction, trades can take place between point sources (*e.g.*, WWTPs), between point and nonpoint sources (*e.g.*, a WWTP and a farming operation), or between nonpoint sources (*e.g.*, a farming operation and urban stormwater sites or systems).

Nutrient trading is an innovative approach to help offset pollutant discharges and offers an interesting alternative for achieving greater environmental protection than through existing regulatory programs. Generally, proponents of nutrient trading argue that it is more efficient than government regulation. As a market-based approach, nutrient trading reduces the overall cost of compliance through increased efficiency and cost effectiveness that are achieved by letting the market determine costs.

Maryland's Nutrient Trading Policy: In Maryland, both MDE and MDA are involved in implementing nutrient trading policies and programs. While MDE is generally responsible for verification, enforcement, and transparency of point sources involved in the permitting process, MDA has assumed responsibility for certification, verification, and registration of agriculture sector credits. Maryland's existing nutrient trading program addresses (1) point-to-point source trading; (2) the generation of credits by the agriculture sector; and (3) trading between septic systems and WWTP. While the State's current nutrient trading policy framework addresses the reallocation of loads between sectors, it does not provide an avenue for sectors to achieve their TMDL nutrient load reduction targets. The State's cross-sector trading policy will authorize select nonpoint source sectors to achieve reductions toward their WIP targets by purchasing credits for reductions that are achieved at a lower cost.

Maryland is currently in the process of developing a draft cross-sector trading policy that outlines the process by which certain sectors may purchase credits from other sectors. According to MDE, the State's cross-sector policy will not only serve as a statement of principle that specified sectors may achieve their TMDL goals via trading, but will also provide initial guidance on which sectors may purchase credits generated by the agriculture sector. The sources identified in this policy include non-NPDES regulated stormwater, septic systems, and Phase II MS4 permittees.

Next Steps: It is unclear to what extent the State is relying on the implementation of cross-sector trading to help mitigate WIP implementation costs. Section 1.10.2 of Maryland's Phase II WIP states that "it is expected that, over time, alternative lesser cost agreements will be

identified and sorted out.” The WIP further states that “costs are expected to decrease when market forces, and other strategy refinements, come into play in the future.” Currently, MDE does not have a specific timeframe for when the new policy will be implemented. However, MDE reports that as part of its December 2014 report to the budget committees on historical and projected Chesapeake Bay restoration spending, the department will include a revised Phase II WIP cost estimate that incorporates the potential cost savings associated with the State’s cross-sector trading policy. According to MDE, its goal is to gain sufficient experience with cross-sector trading to help inform the development of Maryland’s Phase III WIP, which is due to EPA in 2018.

Local Stormwater Management

How It Works: Stormwater, or polluted runoff, is rain after it picks up pollutants (such as animal waste, oils, and chemicals) and runs into local streams and rivers. Polluted stormwater runoff is commonly transported through MS4s from which it is often discharged untreated into local water bodies. An MS4 is defined as a conveyance or system of conveyances that is (1) owned by a state, city, town, village, or other public entity that discharges to waters of the United States; (2) designed or used to collect or convey stormwater (including storm drains, pipes, ditches, *etc.*); (3) not a combined sewer; and (4) not part of a WWTP. To prevent pollutants from being washed or dumped into an MS4, operators must obtain an NPDES permit and develop a stormwater management program.

Under the NPDES permit program, medium and large cities or certain counties with populations of 100,000 or more are required to obtain NPDES permit coverage for their stormwater discharges. MDE began issuing the NPDES municipal stormwater permits in 1993. Generally, the NPDES permits, which are updated every five years, require the MS4 jurisdictions to restore a percentage of the jurisdiction’s untreated impervious surfaces. “Untreated impervious surface” usually refers to the extent of land within an MS4 jurisdiction that is covered by impenetrable land cover that has not already been restored to the “maximum extent practicable” as defined by the State’s stormwater laws and regulations. Currently, 10 local jurisdictions in Maryland are subject to the NPDES Phase I MS4 permit due to their population: Anne Arundel, Baltimore, Carroll, Charles, Frederick, Harford, Howard, Montgomery, and Prince George’s counties and Baltimore City. SHA is also subject to a Phase I MS4 permit.

Local Stormwater Remediation Fees: Local jurisdictions play an important role in managing stormwater discharges and are required to make significant investments to remediate the amount of untreated impervious surface within each jurisdiction. As previously discussed, to assist local governments in meeting their stormwater management obligations, the General Assembly passed Chapter 151, requiring local jurisdictions subject to a Phase I MS4 permit to establish a fee to help cover stormwater remediation costs. Under the Act, each jurisdiction has the flexibility to decide the level and structure of the fee, how it is collected, and other details of the fee and fund, subject to specified requirements.

While no jurisdiction established a fee under Chapter 151 that was capable of fully supporting local stormwater program costs through fiscal 2018 without other revenue sources, establishing a fee capable of fully supporting local stormwater management programs was not necessary given that each jurisdiction had already supported their stormwater programs through general funds or other types of charges prior to the effective date of the law. Multiple jurisdictions reported that they are planning to fully cover such costs through authorized bond issuances, existing fund balances, and other revenue sources, as needed.

Despite new stormwater fee revenue and existing funding sources, it appears that several of the jurisdictions still face long-term shortfalls for local stormwater management programs. However, these shortfalls may be reduced by (1) lower cost projections made possible by better planning and learning from interjurisdictional communication; (2) approved sector allocation amendments to local WIPs or changes to the State WIP; (3) future revenues that may be available and reprogrammed for supporting stormwater costs; or (4) additional bonding capacity within the local capital improvement program. More information on local government stormwater remediation fees can be found in “*Stormwater Remediation Fees in Maryland: Local Implementation of House Bill 987 of 2012*” at http://dls.state.md.us/data/polanasubare/polanasubare_natresenvntra/Stormwater-Remediation-Fees-in-MD.pdf.

Next Steps: To date, it remains unclear to what extent the stormwater remediation fees established under Chapter 151 will help to alleviate some of the local jurisdictions’ costs for complying with the WIP. In accordance with Chapter 151, beginning July 1, 2014, local jurisdictions are required to report on the amount of money deposited into the watershed protection and restoration fund for the previous two fiscal years and the percentage of funds spent on each of the purposes authorized by the bill. While most of the 10 jurisdictions have not yet released final fiscal 2014 stormwater remediation fee revenues, many jurisdictions have included year-end estimates that should closely approximate the actual revenues for fiscal 2014. Based on the preliminary information that is currently available, it appears that fiscal 2014 stormwater remediation fee revenues will total approximately \$109.8 million, which is slightly higher than the fiscal 2014 estimate generated in fall 2013 of \$103.0 million. Further, it remains to be seen whether other local jurisdictions will follow Carroll and Frederick counties to successfully pursue the ability to develop an alternative source of financing for stormwater management.

As local jurisdictions make the reports required under Chapter 151 publicly available in the coming years, we will continue to learn more about local stormwater management expenditures. However, to the extent that the State is able to rely more heavily on other, lower cost sectors for nutrient reductions to meet the bay TMDL (*e.g.*, cross-sector trading), some of the stormwater costs for complying with the WIP could be mitigated.

Significant Policy Gaps

While the State is meeting its two-year milestones for many pollution reduction measures, EPA notes that Maryland's long-term success for TMDL achievement is dependent on continuing implementation in all sectors. The following issues will likely need to be addressed in order to keep Maryland on track to meet the 2017 pollution reduction targets and ultimately achieve the TMDL:

- **Growth Strategy:** In order to comply with the TMDL, Maryland must not only reduce existing pollution loads, but also *maintain* reduced pollution loads as population growth and new development occurs. Maryland has not yet adopted a clear strategy for accounting for new pollution associated with future growth. EPA has directed the State to develop and submit to EPA a detailed schedule for adopting accounting for growth regulations during Maryland's 2014-2015 milestones period.
- **Phosphorus Management Tool:** Developed by scientists at the University of Maryland, the PMT is used to identify agricultural lands where the soil is saturated with phosphorus and has a high risk of runoff. The PMT is a component in the State's WIP that will be used to reduce phosphorus loads. It was first proposed in 2013, but has yet to be adopted by regulation. In addition, fiscal 2015 budget language restricted MDA funding for final development and submission of the PMT regulations until MDA submitted a full economic analysis of the impact of the proposed regulations. Although the analysis was released November 2014, further delays in adopting the PMT may impact Maryland's ability to meet its required phosphorus reductions.
- **Financing Restoration Activities:** The State's current \$14.4 billion restoration cost estimate is incomplete and may change significantly in the future. A more complete and detailed estimate of the additional revenue required for WIP implementation, as well as the potential costs savings associated with nutrient trading strategies, is warranted to better inform future decisionmaking.
- **Pollution Reduction Strategy:** Maryland's Phase II WIP distributes pollution reduction responsibility among the various pollution sources and does not prioritize implementation of the most cost-effective BMPs. The State may wish to adjust this strategy and place additional emphasis on funding the most cost-effective approaches. Pursuing the most cost-effective approaches has received attention in the past. In 2004, the federal-state Chesapeake Bay Watershed Blue Ribbon Finance Panel recommended establishing a regional financing authority to fund the most cost-effective BMPs at the watershed scale.
- **Milestone Achievement:** With respect to the 2013-2014 milestones, Maryland exceeded its goal in a variety of practices, including animal waste management systems, forest buffers, and grass buffers. Arguably, more ambitious goals could be set for these practices.

Timeline of Major Bay Policy Developments

<u>Date</u>	<u>Action</u>
1983	The first Chesapeake Bay Agreement is signed setting forth broad restoration objectives and establishing an executive council to establish policy.
1987	The second Chesapeake Bay Agreement is signed setting forth more far-reaching objectives including reducing nitrogen and phosphorus loads to the bay by 40% by the year 2000.
1992	The 1987 agreement is amended to establish nutrient reduction targets for the bay's major tributaries.
1999	As a result of lawsuits, the Environmental Protection Agency (EPA) is required by consent decree, to develop Total Maximum Daily Load (TMDL) measurements for certain segments of the bay by 2011.
2000	The Chesapeake 2000 Agreement is signed, seeking to remove the bay from EPA's impaired waters list by 2010.
January 2009	A lawsuit is filed against EPA to compel a stronger federal role in the cleanup of the bay (<i>Fowler v. EPA</i>).
May 2009	President Barack H. Obama signs Executive Order 13508 that directs the federal government to lead a renewed effort to restore and protect the bay and its watersheds. The Chesapeake Executive Council sets the first two-year milestone for reducing pollution.
May 2010	The plaintiffs in <i>Fowler v. EPA</i> enter into a settlement agreement with EPA, creating a legally binding commitment that EPA take specific actions under its current authority to restore the bay including creating a baywide TMDL.
November 2010	The bay states and the District of Columbia submit Phase I watershed implementation plans (WIP) to EPA.
December 2010	EPA releases a final bay TMDL.
2011	In January, the American Farm Bureau Federation and the Pennsylvania Farm Bureau file a lawsuit against EPA challenging the bay TMDL. The National Association of Home Builders files a similar lawsuit in June.
March 2012	Phase II WIPs are submitted to EPA.
September 2013	The U.S. District Court rules EPA acted within its authority to establish the TMDL. The plaintiffs file an appeal in January 2014.
June 2014	A new Chesapeake Bay Watershed Agreement is signed, setting forth a more comprehensive plan for restoring and protecting the bay watershed and its living resources.

<u>Date</u>	<u>Action</u>
2017	Interim target loads must be achieved.
June 2018	Draft Phase III WIPs are due to EPA.
December 2018	Final Phase III WIPs are due to EPA.
2025	All practices needed to fully restore the bay and its tidal waters must be in place.