Chesapeake Bay
Fiscal 2014 Budget Overview

Department of Legislative Services
Office of Policy Analysis
Annapolis, Maryland

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Analysis in Brief

Major Trends

A Clear Funding Plan Remains Elusive: A funding and responsibility roadmap for Chesapeake Bay restoration has yet to be laid out, although Maryland is still meeting its two-year milestones.

Growth Offset Strategy Postponed: A proposed growth offset strategy that was planned to be completed by December 2012 has been pushed into calendar 2013.

Issues

Capacity to Implement Watershed Implementation Plan Questioned: At the request of the Town Creek Foundation, the Harry R. Hughes Center for Agro-Ecology, Inc. conducted an assessment of the implementation capacity of Watershed Implementation Plan (WIP) teams. WIP teams raised concerns about the need to provide clear information about the consequences of not meeting Chesapeake Bay restoration requirements and, in general, feedback on WIP development. **The Department of Legislative Services (DLS) recommends that the agencies comment on the findings of the implementation capacity survey and on how the consequences, leadership, technical support, and coordination concerns may be addressed. In addition, DLS recommends that the agencies comment on the status of and any findings available from the H. John Heinz III Center for Science, Economics, and the Environment's independent capacity assessment.**

Chesapeake Bay Restoration Funding: Chesapeake and Atlantic Coastal Bays 2010 Trust Fund Allocation: The current state of Chesapeake Bay restoration funding may be reviewed at three levels: overall Chesapeake Bay restoration, two-year milestones for only nutrient and sediment reduction, and Chesapeake and Atlantic Coastal Bays 2010 Trust funding for only nonpoint sources of nutrient and sediment reduction. **DLS recommends the addition of budget bill language to request the Administration to continue to publish the overall Chesapeake Bay restoration data in the Governor's budget books and two-year milestones funding.**

Chesapeake Bay Restoration Funding Need: One of the State's most formidable bay restoration challenges is to identify new revenue sources and financing mechanisms to achieve the State's Total Maximum Daily Load (TMDL) goals. In response to this need, the General Assembly passed legislation increasing the Bay Restoration Fund fee and facilitating the development of local stormwater remediation fee revenues. While these new revenue sources will clearly help the State achieve its bay restoration goals, new funding sources and approaches are still required for this aggressive effort. **DLS recommends that the BayStat agencies comment on the status of the cost-effectiveness analysis of Chesapeake Bay restoration best management practices.**

Offsetting Future Growth in Maryland: In order to comply with the bay TMDL, bay jurisdictions must not only reduce existing pollution loads, but also *maintain* reduced pollution loads as population growth and new development occurs. The Maryland Department of the Environment (MDE) plans to develop comprehensive and coordinated policies for offsets and nutrient trading and propose associated implementing regulations. At this time, it is anticipated that implementing regulations will be adopted by the end of 2013 and programs required by the regulations will be in place by 2015. **DLS recommends that the BayStat agencies comment on how the General Assembly may be kept abreast of the development of the growth offset strategy. In addition, DLS recommends that the BayStat agencies comment on the impact of the potential growth offset strategy on projected population growth and the economy, in particular the housing industry, and how the strategy will be integrated with the State Development Plan (PlanMaryland), the State Housing Plan, and the State Transportation Plan.**

Recommended Actions

1. Add budget bill language on Chesapeake Bay restoration spending reports.

Overview

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. In an effort to identify additional steps that may warrant actions, the Natural Resources, Environment, and Transportation Workgroup within the Office of Policy Analysis recently prepared the report titled *Achieving the Chesapeake Bay Restoration Mandate in Maryland* on the current policy challenges associated with achieving bay restoration. This analysis draws heavily from that report. The current bay restoration policy framework is described below.

Executive Order

In May 2009, President Barack Obama signed an executive order that recognizes the Chesapeake Bay as a national treasure and calls on the federal government to lead a renewed effort to restore and protect the nation's largest estuary and its watershed. The Chesapeake Bay Protection and Restoration Executive Order established a Federal Leadership Committee to oversee the development and coordination of reporting, data management, and other activities by federal agencies involved in bay restoration. Pursuant to the order, in May 2010, federal agencies released a strategy document summarizing a suite of federal initiatives that could be implemented to restore and protect the bay. Among other things, the document noted that the U.S. Environmental Protection Agency (EPA) would implement a Chesapeake Bay Total Maximum Daily Load (TMDL), expand regulation of urban and suburban stormwater and concentrated animal feeding operations, and increase enforcement activities and funding for state regulatory programs.

Two-year Milestones

Concurrent with issuance of the Chesapeake Bay executive order, bay jurisdictions committed to achieving specific, short-term bay restoration milestones in order to assess progress toward achieving nitrogen, phosphorus, and sediment pollution reduction goals. As part of this effort, jurisdictions submit pollution reduction progress and program information to EPA for review every two years. This milestone process has been incorporated into the Chesapeake Bay TMDL process, which is described below, and is serving as an important periodic assessment tool.

Chesapeake Bay Total Maximum Daily Load

In December 2010, EPA established a Chesapeake Bay TMDL, as required under the federal Clean Water Act, and in response to consent decrees in Virginia and the District of Columbia. The 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 at least 60.0% of the actions completed by 2017. The final target pollution loads for the five major basins in Maryland are shown in **Exhibit 1**. As shown in **Exhibit 2**, 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
Final Target Pollution Loads for Maryland's Major Basins
(Million Pounds Per Calendar Year)

Major Basin	Nitrogen Pollution	Phosphorus Pollution	Sediment Pollution
Susquehanna	1.19	0.06	64
Eastern Shore	11.82	1.02	189
Western Shore	9.77	0.55	243
Patuxent	3.10	0.24	123
Potomac	15.29	0.94	731
Total	**41.17**	**2.81**	**1,350**

Source: Maryland's Phase II Watershed Implementation Plan

Exhibit 2
Maryland's Pollution Reduction Goals in the Bay TMDL
(Million Pounds Per Calendar Year)

Pollutant	2010 Loads	Bay TMDL Target Load	Percent Reduction
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

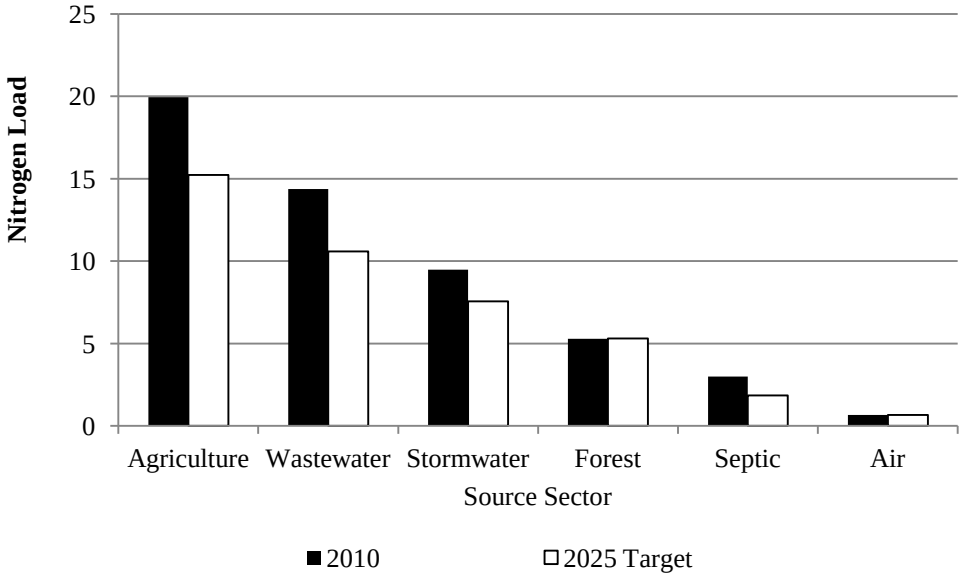
Watershed Implementation Plans

As part of the TMDL, bay jurisdictions must develop Water Implementation Plans (WIP) that identify the measures being put in place to reduce pollution and restore the bay. The WIPs (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, bay jurisdictions submitted Phase I WIPs that detail how the jurisdiction plans to achieve its pollution reduction goals under the TMDL. Maryland's Phase I WIP proposed an aggressive schedule for reducing nutrient and sediment pollution and focused on (1) developing new pollution reduction technology and approaches before 2017; (2) expanding implementation of existing strategies, such as wastewater treatment plant (WWTP) upgrades and stormwater control projects; and (3) improving regulatory requirements.

The bay jurisdictions were required to submit Phase II WIPs in early 2012 that established more detailed strategies to achieve the bay TMDL on a geographically smaller scale. In the Phase II WIP, the State allocated the final target pollution loads by county-geographic area and by source sector. **Exhibit 3** shows Maryland's current and 2025 target nitrogen pollution loads by source sector and illustrates that agriculture, wastewater, and stormwater are the major sources of pollution and are being targeted for significant load reductions. A Phase III WIP, which must be submitted to EPA in 2017, will ensure that all practices are in place by 2025 so that water quality standards can be met. EPA will modify the TMDL, if necessary, in December 2017 after all the bay jurisdictions have submitted their final Phase III plans.

Exhibit 3
Current and Target Nitrogen Pollution Loads by Source
(Million Pounds Per Year)



Source: Maryland's Phase II Watershed Implementation Plan

Accountability Framework

EPA has the discretionary authority to ensure that the bay jurisdictions develop and implement appropriate WIPs; attain appropriate two-year milestones of progress; and provides timely and complete information as part of the TMDL process. Specifically, to ensure nutrient and sediment pollution reductions, EPA may, among other things, increase oversight of state issued pollution permits, require additional pollution reductions, prohibit new or expanded pollution discharges, redirect or condition federal grant funds, and revise water quality standards to better protect local and downstream waters. EPA has used this authority to encourage more timely bay restoration action. Last summer, EPA withheld $1.2 million in federal aid from Virginia and made allocation of the funds contingent upon the state addressing specified stormwater management issues.

Progress to Date

2009-2011 Milestones Assessment

Maryland achieved its first set of two-year bay restoration milestone goals and is implementing strategies set forth in its WIP. The first set of two-year milestones required Maryland to reduce nitrogen loads by 3.75 million pounds and phosphorus loads by 193,000 pounds (relative to calendar 2008 load levels). In June 2012, it was announced that Maryland had met its 2009-2011 milestones and was on track to achieve its 2012-2013 milestones. Specifically, it was reported that Maryland:

- planted a record number of cover crops (429,818 acres), meeting about 123% of its cover crop goal for the milestone period;

- upgraded 25 of the State's largest WWTPs, meeting 165% of the wastewater nitrogen reduction goal for the milestone period;

- met 88% of its stormwater goals for the milestone period by establishing more rigorous requirements for new development and improving existing stormwater controls; and

- planted 895 acres of forest buffers to naturally remove nutrients and sediment, meeting 166% of its forest buffer goals for the milestone period.

Exhibit 4 shows the State's 2009 to 2011 pollution reduction milestones period, as reported in an EPA assessment. While the State met and even exceeded several goals, it did not meet all of its goals. For example, Maryland committed to installing 125 agricultural water control structures but only met 39% of that goal. Additionally, the State committed to stormwater management retrofits to address 119,700 pounds of nutrients but met only 88% of that goal. During the milestone period, Maryland assessed and adapted goals to reflect actual conditions and overshot its reduction goals for added security. Overall, EPA noted that Maryland "…has made significant progress in reducing pollution and moving forward with Phase I WIP commitments…"

Exhibit 4
Maryland's 2009-2011 Pollution Reduction Strategies and Milestones

	2009-2011 Commitment	% Achieved
Agriculture		
Animal Waste Management Systems, livestock/poultry (structures)*	130	109%
Animal Waste Management Systems, runoff control (systems)*	175	117%
Conservation Plans/SCWQP (acres)	257,049	58%
Cover Crops (acres/year)*	325,000	123%
Dairy and Poultry Manure Incorporation Technology (acres/year)*	2,500	190%
Forest Buffers (acres)	895	166%
Grass Buffers (acres)	2,319	155%
Heavy Use Poultry Areas Concrete Pads (farms)*	400	91%
Land Retirement (acres)	2,500	173%
Manure Transport (tons/year)	10,000	339%
Nutrient Management Plan Enforcement (acres)*	100,000	100%
Pasture Grazing/Stream Protection (acres)*	7,400	107%
Water Control Structures (structures)*	125	39%
Wetland Restoration (acres)	1,155	116%
Urban/Suburban		
Septic Retrofits (systems)	3,139	96%
Stormwater Management Retrofits (pounds)**	119,700	88%
Wastewater		
Wastewater Nitrogen (pounds reduced)	930,000	165%
Wastewater Phosphorus (pounds reduced)	39,000	367%
Air		
Maryland Health Air Act (Nitrogen pounds reduced)*	305,882	100%

SCWQP: Soil Conservation and Water Quality Plan

*Achievement data from BayStat.
**Original commitment was 90,000 acres; acres converted to pound reduction; achievement data from BayStat.

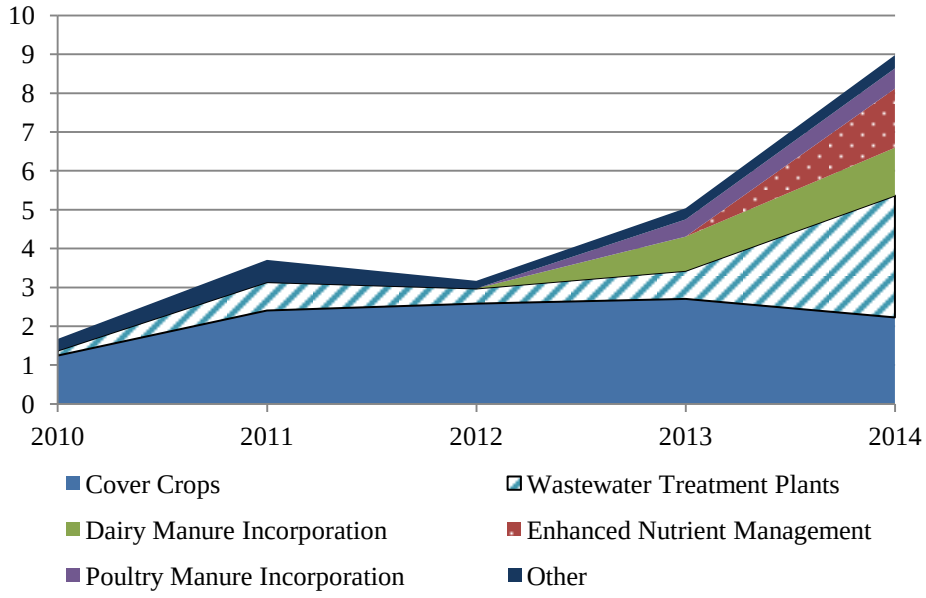
Note: For some of the best management practices above, the 2009-2011 commitment was adapted from the original commitment.

Source: U.S. Environmental Protection Agency, BayStat

2010-2014 Milestones Projections

Section 37 of the fiscal 2013 budget bill expressed the General Assembly's intent that the Department of Natural Resources (DNR), MDE, and the Department of Budget and Management (DBM) submit two reports on Chesapeake Bay restoration expenditures. The report on two-year milestones data also included nitrogen reductions by best management practice for the fiscal 2010 to 2014 time period as shown in **Exhibit 5**.

Exhibit 5
Annual Nitrogen Reduction by Best Management Practice
Fiscal 2010-2014 Estimated
(Pounds in Millions)



Source: Department of Budget and Management

As can be seen, the cover crop best management practice has provided the majority of nitrogen reductions in the years shown. However, beginning in fiscal 2013, there are substantial increases in the nitrogen loading reduced by the following best management practices (BMP): WWTPs; dairy manure incorporation; enhanced nutrient management; and, to a lesser extent, poultry manure incorporation. The increase in nitrogen loading reductions by WWTPs reflects the coming online of a number of the 67 major publicly owned WWTPs, as they are upgraded to enhanced nutrient technology and the adoption of nutrient management regulations, as noted below.

Recent Bay Restoration Policy Actions

As noted by EPA in its June 2012 assessment of Maryland's progress to date, the State appears well positioned to meet its next two-year milestones, in part because of several recent legislative and regulatory actions, which are described below.

Bay Restoration Fee Increase: Chapter 428 of 2004 established the Bay Restoration Fund (BRF), which is administered by the MDE. One of the main goals of the fund is to provide grants to owners of WWTPs to reduce pollution by upgrading the systems with enhanced nutrient removal technology. Upgrading the State's 67 major publicly owned WWTPs is a key pollution reduction strategy indentified in the State's Phase II WIP and reflected in the exhibit above. The fund also provides financing to upgrade septic systems with best available technology (BAT) to remove nitrogen and to plant cover crops that soak up excess nutrients from the soil.

The BRF's primary revenue source is a fee imposed on users of wastewater facilities, septic systems, and sewage holding tanks. At the urging of the Bay Restoration Fund Advisory Committee (which is charged with making recommendations regarding any increase in the bay restoration fee deemed necessary to meet the financing needs of the fund), Chapter 150 of 2012 generally doubled the BRF 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 67 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, the State will be better positioned to complete the WWTP upgrades by 2017. The additional funding will also support upgrades to approximately 2,600 additional septic systems through 2017 and provide cost-share assistance for farmers to plant over 440,000 additional acres of cover crops through 2017.

Best Available Technology Regulations: While nitrogen pollution loading from many sources is declining, nitrogen loading from septic systems continues to increase due to development. Thus, the State's Phase II WIP includes a strategy to upgrade approximately 46,000 additional septic systems with BAT between 2010 and 2017 and to connect nearly 8,000 septic systems to WWTPs between calendar 2010 and 2017. While Chapter 280 of 2009 already required BAT for new and replacement septic systems in the Chesapeake Bay Critical Area or the Atlantic Coastal Bays Critical Area, new regulations finalized in September 2012 expand the requirements of Chapter 280 to require BAT for all septic systems serving new construction in the Chesapeake Bay and Atlantic Coastal Bays watersheds, and in the watershed of any nitrogen impaired water body. The regulations also require BAT for any replacement system on property located in the Chesapeake Bay Critical Area and Atlantic Coastal Bays Critical Area, which is consistent with Chapter 280. Additionally, the regulations require operation and maintenance of BAT for the life of the system. The recent regulatory changes should help the State reduce nitrogen loading attributable to new development.

Local Stormwater Management Fee Authority: Due to the continued concern regarding nitrogen loading to the bay from stormwater runoff, stormwater BMP are a significant component of the State's Phase II WIP. Legislation enacted in 2007 sought to enhance the State's stormwater management program by requiring environmental site design (ESD) to the maximum extent practicable, and minimizing the use of structural stormwater management practices (*e.g.*, stormwater

ponds and open channels). The ESD relies on integrating site design, natural hydrology, and smaller controls to capture and treat stormwater runoff. Regulations implementing Chapters 121 and 122 of 2007 were approved in April 2010. As a means of assisting local governments, Chapter 151 of 2012 requires each county and municipal corporation subject to a National Pollutant Discharge Elimination System Phase I municipal storm sewer system 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.

Agricultural Nutrient Management Regulations: The Maryland Department of Agriculture (MDA) recently adopted regulations that incorporate the latest scientific research and seek to further restrict pollution from agricultural lands in order to help the State achieve its bay restoration goals. The regulations, which took effect in October 2012, establish more rigorous requirements concerning the use of manure, biosolids, and other organic nutrient sources on crop fields. Key features of the new regulations include the following:

- Beginning July 1, 2016, nutrient applications will be prohibited between November 2 and February 28 for Eastern Shore farmers and between November 16 and February 28 for Western Shore farmers.

- Organic nutrients must be incorporated into the soil within 48 hours of application.

- Farmers will be required to plant cover crops when they use organic nutrient sources in the fall.

- Beginning in 2014, farmers will be required to establish a 10 to 35 foot "no fertilizer application zone" adjacent to surface water and streams.

- Beginning in 2014, farmers will be required to protect streams from livestock traffic by providing fencing or approved alternative BMPs.

- Fall fertilizer applications for small grains must be limited.

Managing Growth: Maryland is the fifth most densely populated state, and its population of more than 5.7 million people is expected to grow by at least 15% over the next 25 years. Maintaining nutrient and sediment reductions even while the State continues to grow will, therefore, be a significant challenge.

In accordance with State law, over the past three years, the Maryland Department of Planning (MDP) has worked with State agencies, local governments, private industry, and the general public to

develop the State's first comprehensive development plan, known as PlanMaryland. PlanMaryland is a policy framework for growth and preservation in the State and a blueprint to help guide State agencies in their decisionmaking on programs and funding for growth and preservation. PlanMaryland was finalized in December 2011, and the Governor simultaneously filed an executive order which outlines a process for implementing the plan. PlanMaryland identifies three primary State planning objectives and proposes to achieve these goals by focusing State programmatic and financial assistance in specific geographic areas and streamlining State regulations and procedures. In a September 2012 PlanMaryland report submitted to the Governor, MDP noted that more than 90 implementing strategies are being refined; State agencies are working with local governments to identify areas to promote growth and protect valued resources; and an interactive mapping tool was developed to assist with the process.

To steer future residential growth toward more urban areas served by public sewer and away from undeveloped land that requires the use of septic systems, Chapter 149 of 2012 establishes a system of land use tiers which may be adopted by local jurisdictions. Beginning December 31, 2012, the Act prohibits a jurisdiction from approving a major residential subdivision served by septic systems, community sewerage systems, or shared systems unless it adopts the growth tiers. However, a jurisdiction that does not adopt a growth tier may authorize either a minor residential subdivision served by septic systems, or any subdivision in a Tier I area served by public sewer. Specific land use and sewerage criteria and restrictions apply to each of the four growth tiers. Property within minor residential subdivisions is generally restricted from further subdivision beginning December 31, 2012. The Act establishes several exceptions from these restrictions and allows for the transfer of subdivision rights among specified agricultural property owners to mitigate the effect of the Act's restrictions. Finally, the Act requires MDE to propose regulations by December 2012 that establish nutrient offset requirements for new residential major subdivisions within Tier III areas to be served by septic systems or shared systems.

Opposition to Bay Restoration Efforts

While the recent legislative and regulatory changes described earlier will help the State achieve the nutrient and sediment reduction commitments required by the TMDL, significant legal and policy challenges remain. Several legal challenges to the bay restoration effort are currently underway. In January 2011 the American Farm Bureau Federation, the National Homebuilders Association, and others filed a lawsuit against EPA alleging that by establishing the Chesapeake Bay TMDL, EPA exceeded its authority and used inaccurate or inadequate scientific information, among other things. In addition, two environmental organizations recently filed a lawsuit that seeks to prevent EPA from implementing provisions of the TMDL that allow the use of pollution trading programs. Furthermore, several local governments, with assistance from a Maryland law firm, have formed a coalition to challenge the State's bay restoration efforts, potentially through legal measures. These actions could have a significant impact on the State's bay restoration efforts.

Waterkeeper Alliance, Inc. Lawsuit

The Waterkeeper Alliance, Inc. filed a lawsuit against Alan Hudson – operator of the Hudson Farm on the Eastern Shore of Maryland near the Pocomoke River – and Perdue Farms, Inc. under the

citizen suit provision of the Clean Water Act. The court heard testimony between October 9, 2012, and October 23, 2012, concerning whether the Waterkeeper Alliance, Inc. met the burden of establishing that there was a discharge of pollution from the poultry operation on the Hudson Farm. The court found the Waterkeeper Alliance, Inc. did not meet the burden, which obviated the need to determine whether Perdue Farms, Inc. could be held responsible for the discharge of pollution.

Summary

While the State has developed detailed plans for achieving the Chesapeake Bay TMDL, these plans are not complete, and there is some concern that there is insufficient capacity to implement the WIP. Currently, the State lacks a clear strategy for (1) paying for bay restoration actions; and (2) accounting for new pollution associated with future growth. Until these two overarching policy issues are resolved, significant and lasting improvements to the bay's health are unlikely.

Issues

1. Capacity to Implement Watershed Implementation Plan Questioned

At the request of the Town Creek Foundation, the Harry R. Hughes Center for Agro-Ecology, Inc. conducted an assessment of WIP team implementation capacity. The center interviewed WIP teams and individuals involved in the process in 24 jurisdictions. The capacity assessment will eventually be included in an independent capacity assessment being conducted by the H. John Heinz III Center for Science, Economics, and the Environment. The findings are shown in **Exhibit 6.**

Exhibit 6
Watershed Implementation Planning Teams
Assessment of Capacity to Implement Plans
November 15, 2012

Topic	Description	Possible Recommendation
Consequences	Lack of clarification of consequences of not attaining TMDL reductions in terms of who imposes/enforces them, what form they will take, how long they will last, and whom they will impact.	Provide local political leaders (commissioners and councils) specific consequences for failure to adopt and implement plans.
Leadership	Lack of State leadership in support of implementation of plans.	Involve the Governor more visibly in the process.
Technical Support	Lack of technical support for review of projects may lead to local jurisdictions missing TMDL deadlines.	None provided by respondants.
Coordination	Lack of coordination between State and federal permitting agencies concerning permissible watershed restoration projects.	Ensure agreed upon protocol for projects and expedite review process.

Source: Harry R. Hughes Center for Agro-Ecology, Inc.

Under the voluntary Chesapeake 2000 Agreement, Tributary Teams led the coordination of on-the-ground work. Now that a regulatory period has been entered, it is not clear whether the same level of coordination with local governments is being conducted.

DLS recommends that the agencies comment on the findings of the implementation capacity survey and on how the consequences, leadership, technical support, and coordination concerns may be addressed. In addition, DLS recommends that the agencies

comment on the status of and any findings available from the H. John Heinz III Center for Science, Economics, and the Environment's independent capacity assessment.

2. Chesapeake Bay Restoration Funding: Chesapeake and Atlantic Coastal Bays 2010 Trust Fund Allocation

The current state of Chesapeake Bay restoration funding may be reviewed at three levels:

- **Overall Chesapeake Bay Restoration** – actions that include environmental education, land preservation, transit projects, and nutrient and sediment reduction among others;

- **Two-year Milestones** – actions for nutrient and sediment reduction only; and

- **Chesapeake and Atlantic Coastal Bays 2010 Trust Fund** – actions for nutrient and sediment reduction from nonpoint sources only using certain revenues.

Overall Chesapeake Bay Restoration

Section 37 of the fiscal 2013 budget bill expressed the General Assembly's intent that DNR, DBM, and MDE submit two reports on Chesapeake Bay restoration expenditures as follows:

- ***Overall Chesapeake Restoration Spending*** – operating and capital expenditures by agency, fund type, and particular fund source based on programs that have over 50% of their activities directly related to Chesapeake Bay restoration for the fiscal 2012 actual, fiscal 2013 working appropriation, and fiscal 2014 allowance; and

- ***Two-year Milestones*** – two-year milestones funding by agency, best management practice, fund type, and particular fund source along with associated nutrient and sediment reductions for fiscal 2011 to 2014.

The overall Chesapeake Bay restoration expenditures exhibit was first included in the Governor's budget books in fiscal 2009. The idea behind the exhibit is to be able to understand the overall scope of Chesapeake Bay restoration funding. The current version of overall Chesapeake Bay restoration funding is Appendix S of the Governor's budget books and is shown in **Exhibit 7**.

Exhibit 7
Overview of Maryland's Funding for Chesapeake Bay Restoration
Fiscal 2011-2014

Total Funds

Agency/Program	2011 Actual	2012 Actual	2013 Approp.	2014 Allowance	$ Change 2013-14	% Change 2013-14
Department of Natural Resources	$58,142,268	$55,027,356	$116,836,941	$121,111,500	$4,274,559	3.66%
Program Open Space	12,196,626	6,026,700	16,792,000	31,781,999 [1]	14,989,999	89.27%
Rural Legacy	6,318,000	4,515,000	5,622,000	19,820,000 [2]	14,198,000	252.54%
Department of Planning	6,096,402	5,225,369	5,080,657	5,287,839	207,182	4.08%
Department of Agriculture	45,000,141	42,337,956	28,549,749	30,466,340	1,916,591	6.71%
Maryland Agricultural Land Preservation Foundation	16,486,344	16,735,951	19,160,445	38,164,217 [3]	19,003,772	99.18%
Maryland Department of the Environment	226,977,532	258,648,207	362,649,280	291,186,964	-71,462,316	-19.71%
Maryland State Department of Education	919,455	919,455	919,455	1,364,556	445,101	48.41%
Maryland Higher Education	21,837,119	21,992,772	21,599,008	19,854,094	-1,744,914	-8.08%
Maryland Department of Transportation	139,924,453	177,486,653	231,725,000	160,190,000	-71,535,000	-30.87%
Total	**$533,898,340**	**$588,915,419**	**$808,934,535**	**$719,227,509**	**-$89,707,026**	**-11.09%**

[1] Adjusted to reflect $21,944,526 contingent reduction of the fiscal 2014 allowance.

[2] Adjusted to reflect $10,728,841 contingent reduction of the fiscal 2014 allowance.

[3] Adjusted to reflect $18,107,000 contingent reduction of the fiscal 2014 allowance.

Fund Type Summary

	2011 Actual	2012 Actual	2013 Approp.	2014 Allowance	$ Change 2013-14	% Change 2013-14
General Fund	38,308,494	36,297,532	34,041,686	35,719,603	1,677,917	4.93%
Special Fund	160,131,465	159,794,055	345,784,449	303,730,655 [4]	-42,053,794	-12.16%
Federal Fund	46,731,676	79,852,905	59,686,314	60,530,887	844,573	1.42%
Reimbursable Funds	14,566,133	10,017,377	11,002,078	10,652,270	-349,808	-3.18%
Current Unrestricted	8,288,400	10,227,751	11,124,143	11,921,678	797,535	7.17%
Current Restricted	13,548,719	11,765,020	10,474,865	7,932,416	-2,542,449	-24.27%
General Obligation Bonds	112,399,000	103,474,125	105,096,000	128,550,000	23,454,000	22.32%
Maryland Department of Transportation Funds	139,924,453	177,486,653	231,725,000	160,190,000	-71,535,000	-30.87%
Total	**$533,898,340**	**$588,915,418**	**$808,934,535**	**$719,227,509**	**-$89,707,026**	**-11.09%**

[4] Adjusted to reflect $50,780,367 in contingent special fund reductions noted above for the fiscal 2014 allowance.

Note: This presentation only includes State agency programs that have over 50% of their activities directly related to Chesapeake Bay restoration.

Source: Department of Budget and Management

The major changes between the fiscal 2013 working appropriation and the fiscal 2014 allowance reflected in the overall Chesapeake Bay restoration spending are as follows:

- ***DNR*** – increases primarily due to the $6.5 million in additional Chesapeake and Atlantic Coastal Bays 2010 Trust Fund allocation, which is partially offset by a decrease of $1.5 million in reduced general obligation bond funding for the same purpose.

- ***Program Open Space, Rural Legacy, Maryland Agricultural Land Preservation Foundation*** – increases due to general obligation (GO) bond replacement funding for prior year transfer tax diversions to the general fund and the retention of some special fund allocation from the transfer tax that is not reduced contingent upon actions in the Budget Reconciliation and Financing Act (BRFA) of 2013.

- ***MDA*** – increases due to a $3.8 million allocation of GO bonds to the Maryland Agricultural Water Quality Cost-Share Program, which did not receive any funding in fiscal 2013.

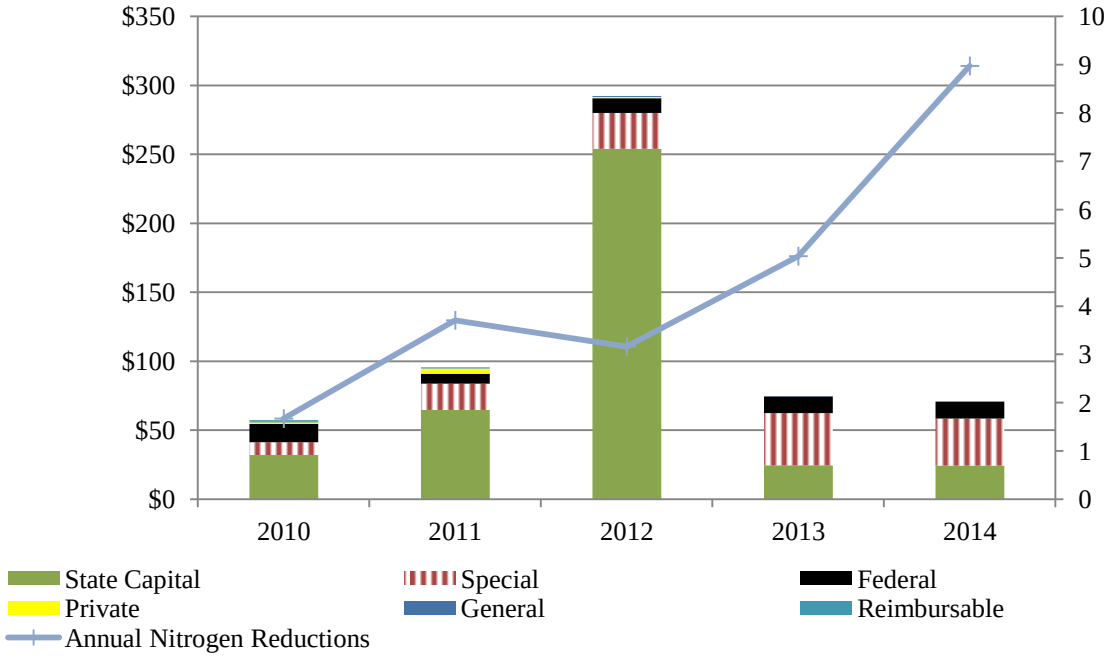
- ***MDE*** – decreases due to a reduction of $68.0 million for the Water Quality Revolving Loan Fund as a result of the planned activity level and by $7.2 million for the special fund appropriation supported by the Bay Restoration Fund also due to the planned activity level.

- ***Maryland Department of Transportation*** – decreases due to the completion or reduction of $51.5 million in funding for Maryland Transit Administration transit projects and $11.2 million in water quality projects.

Two-year Milestones Funding

As noted above, Section 37 of the fiscal 2013 budget also expressed the intent that DNR, DBM, and MDE submit information about two-year milestones funding and nutrient reduction. **Exhibit 8** reflects the funding for fiscal 2010 to 2014. The major trend reflected in the data is the coming online of a number of wastewater treatment plants in fiscal 2014, which means that the Administration is on schedule to complete the 67 major publicly owned WWTPs by calendar 2017. The major funding increase in fiscal 2012 reflects the Blue Plains WWTP upgrade, which cost $206.8 million in fiscal 2012 and will be responsible for the reduction of approximately 355,000 pounds of nitrogen loading. The other major expenditure reflected is special funds for cover crops on agricultural lands during the winter; the cover crop coverage has exceeded the 355,000-acre annual goal for the last couple of years.

Exhibit 8
Two-year Milestones Funding and Nutrient Reduction
Fiscal 2010-2014
($ and Pounds in Millions)



Source: Department of Budget and Management

Chesapeake and Atlantic Coastal Bays 2010 Trust Fund

Chapter 6 of the 2007 special session (House Bill 5) established a Chesapeake Bay 2010 Trust Fund to be used to implement the State's tributary strategy. The fund is financed with a portion of existing revenues from the motor fuel tax and the sales and use tax on short-term vehicle rentals. Subsequently, Chapters 120 and 121 established a framework for how the trust fund money must be spent by specifying that it be used for nonpoint source pollution control projects and by expanding it to apply to the Atlantic Coastal Bays.

As shown in **Exhibit 9**, there were two cancelled encumbrances in fiscal 2012 totaling $2.2 million, which resulted in a closing balance of $3.4 million. However, revenues have been coming in lower than expected for fiscal 2013. As a result, the Administration has proposed a $2.8 million general fund deficiency appropriation in DNR's budget in order to allow for the full funding of the $25.0 million in planned expenditures. Even with the proposed deficiency, once the $23.1 million transfer to the general fund is accounted for, there is anticipated to be an approximately $70,000 shortfall in the fiscal 2013 closing balance.

Exhibit 9
Chesapeake and Atlantic Coastal Bays 2010 Trust Fund History
Fiscal 2009-2014
($ in Millions)

Appropriation	2009	2010	2011	2012	2013	2014
Opening Balance	$0.00	$3.63	$5.84	$3.23	$3.40	-$0.07
Special Fund Revenue	38.23	41.50	43.10	41.79	41.81	43.08
Proposed General Fund Deficiency	0.00	0.00	0.00	0.00	2.80	0.00
Total Revenue	**$38.23**	**$41.50**	**$43.10**	**$41.79**	**$44.61**	**$43.08**
Transfers to the General Fund						
Chapter 414 of 2008	-$25.00	$0.00	$0.00	$0.00	$0.00	$0.00
Chapter 487 of 2009	0.00	-21.49	0.00	0.00	0.00	0.00
Chapter 484 of 2010	0.00	-10.50	-22.10	0.00	0.00	0.00
Chapter 397 of 2011	0.00	0.00	-0.97	-20.17	-15.08	-11.54
Chapter 1 of the First Special Session of 2012	$0.00	$0.00	$0.00	$0.00	-$8.00	$0.00
Subtotal GF Transfers	***-$25.00***	***-$31.99***	***-$23.07***	***-$20.17***	***-$23.08***	***-$11.54***
Available Revenue	**$13.23**	**$13.14**	**$25.87**	**$24.85**	**$24.93**	**$31.47**
Spending						
MDA	-$6.93	-$3.92	-$12.34	-$13.18	-$14.50	-$15.60
MDE	-1.83	-1.65	-2.10	0.00	0.00	-0.75
DNR	-0.84	-1.73	-8.20	-10.43	-10.50	-15.15
Subtotal Agency Spending	***-$9.60***	***-$7.30***	***-$22.64***	***-$23.61***	***-$25.00***	***-$31.50***
Cancelled Encumbrance MDE	**$0.00**	**$0.00**	**$0.00**	**$1.87**	**$0.00**	**$0.00**
Cancelled Encumbrance DNR	**$0.00**	**$0.00**	**$0.00**	**$0.29**	**$0.00**	**$0.00**
Available Balance	**$3.63**	**$5.84**	**$3.23**	**$3.40**	**-$0.07**	**-$0.03**

BRFA: Budget Reconciliation and Financing Act
GF: general fund
MDE: Maryland Department of the Environment
DNR: Department of Natural Resources
MDA: Maryland Department of Agriculture

Note: Under transfers, the $10.5 million transferred by the BRFA of 2010 included $8.0 million in fiscal 2010 revenues and $2.5 million in fund balance. For fiscal 2013, the Administration is seeking a $2,800,000 general fund deficiency appropriation in order to backstop an estimated decrease in revenues. Numbers may not sum due to rounding.

Source: Department of Natural Resources; Department of Legislative Services

The BRFA of 2012 increased the transfer of fiscal 2013 projected revenue from the motor vehicle fuel tax by $8.0 million for a total transfer of $23.1 million. The revenue changes reflected in the BRFA are shown in **Exhibit 10.**

Exhibit 10
Provisions for Trust Fund Transfers

Fiscal Year	To GF[1]	To BRF[2]	Total
2013	$15,076,582	$8,000,000	$23,076,582
2014	11,535,845		11,535,845
2015	8,049,199		8,049,199
2016	4,624,687		4,624,687

BRF: Budget Restoration Fund
GF: general fund

[1] Budget Reconciliation and Financing Act of 2011.
[2] Budget Reconciliation and Financing Act of 2012.

Source: Department of Legislative Services

Exhibit 11 provides an overview of the currently planned trust fund allocations for fiscal 2014 as compared with fiscal 2009 through 2013. Of note, Exhibit 11 reflects both special funds from the motor fuel tax and short-term rental vehicle tax as well as GO bond capital funding, which is provided in both fiscal 2013 and in the Governor's fiscal 2014 capital budget. Final decisions on allocations will be made by the BayStat agencies after the final funding levels have been determined.

Exhibit 11

Chesapeake and Atlantic Coastal Bays 2010 Trust Fund Planned Expenditures

Fiscal 2009-2014

($ in Millions)

	Operating Funds						Capital Funds	
	2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2013**	**2014**
Maryland Department of Agriculture								
Agency Technical Assistance	$0.85	$0.75	$0.68	$1.20	$2.60	$2.60	$0.00	$0.00
Cover Crops	3.08	1.90	10.06	11.98	8.90	10.00	0.00	0.00
Conservation Reserve Enhancement Program	0.00	0.27	0.80	0.00	0.50	0.50	0.00	0.00
Animal Waste Management	3.00	1.00	0.80	0.00	0.00	0.00	0.00	0.00
Nutrient Management Regulations (Grants to Farmers)	0.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00
Manure Transport	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00
Manure to Energy Projects (with Other Agencies)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50
Subtotal	***$6.93***	***$3.92***	***$12.34***	***$13.18***	***$14.50***	***$15.60***	***$0.00***	***$2.50***
Maryland Department of the Environment								
Urban/Suburban SWM	$1.83	$1.65	$2.10	$0.00	$0.00	$0.00	$0.00	$0.00
Stormwater Permit Expediters	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00
Sludge Storage Facility Design (Grants to Small Municipalities)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50
Subtotal	***$1.83***	***$1.65***	***$2.10***	***$0.00***	***$0.00***	***$0.75***	***$0.00***	***$0.50***
Department of Natural Resources								
Agency Direct Costs	$0.00	$0.00	$0.30	$0.35	$0.38	$0.41	$0.00	$0.00
Strategic Monitoring	0.25	0.09	0.40	0.15	0.80	0.90	0.00	0.00
Innovative Technology (with UM)	0.25	0.25	0.25	0.25	0.25	0.75	0.00	0.00
Natural Filters on State Lands	0.00	0.00	2.40	1.70	8.07	6.34	0.00	6.34

	Operating Funds						Capital Funds	
	2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2013**	**2014**
Targeted Watershed Restoration Projects	0.34	1.39	4.85	7.28	0.00	0.00	38.01	25.16
Stream Restoration Challenge	0.00	0.00	0.00	0.00	1.00	5.00	0.00	0.00
Urban Tree Canopy Projects	0.00	0.00	0.00	0.00	0.00	1.00	0.00	2.00
Field Restoration Specialists	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00
Subtotal	***$0.84***	***$1.73***	***$8.20***	***$9.73***	***$10.50***	***$15.15***	***$38.01***	***$33.50***
Total	**$9.60**	**$7.30**	**$22.64**	**$22.91**	**$25.00**	**$31.50**	**$38.01**	**$36.50**

SWM: stormwater management
UM: University of Maryland

Note: The Conservation Reserve Enhancement Program agreement was not signed until late in fiscal 2009; therefore, the $250,000 that was originally planned for MDA was not spent. Instead, this funding was used for cover crops. The $8.9 million in cover crop funding in the MDA shown for fiscal 2013 reflects a proposed budget amendment for $2.5 million to increase the current $6.4 million appropriation in order to address a funding gap. An appropriation increase will also be necessary to fund the other components of the MDA's planned fiscal 2013 spending. The $0.8 million in strategic monitoring funding in the DNR shown for fiscal 2013 reflects $400,000 for strategic monitoring with the UM, $200,000 for the IMAP implementation tracking with the Department of Information Technology, and $200,000 for monitoring out-of-State sources of nutrients and sediment. Numbers may not sum to total due to rounding.

Source: Department of Natural Resources; Department of Legislative Services

The main components of the fiscal 2014 allocation of the Chesapeake and Atlantic Coastal Bays 2010 Trust Fund are as follows:

- ***Targeted Watershed Restoration Projects*** – $25.2 million in GO bond funding for 38 stormwater projects in 7 subdivisions throughout the State;

- ***Natural Filters on State Lands*** – $12.6 million comprised of $6.3 million each of GO bond funding and special funds for implementation of riparian buffers, wetland restoration, stream and floodplain restoration, stormwater retrofits, and other bioremediation projects on State lands;

- ***Cover Crops*** – $10.0 million for cover crops in order to fund approximately half (the remainder is usually funded by the BRF) of the now $20.0 million or so annual cover crop program;

- ***Stream Restoration Challenge*** – $5.0 million in special funds for a competitive grant program open to local governments and nongovernment organizations to establish 1,000 acres of stream-side forests by 2015;

- ***Urban Tree Canopy Projects*** – $3.0 million comprised of $2.0 million in GO bond funding and $1.0 million in special funds for DNR to administer a competitive grant program for municipalities and unincorporated areas that want to implement urban tree canopy assessments and mapping of tree planting sites;

- ***Manure to Energy Projects*** – $2.5 million in GO bond funding for new innovative technologies for on-farm manure to energy projects through grants and loan guarantees for facilities that turn poultry or dairy manure into energy;

- ***Nutrient Management Regulations (Grants to Farmers)*** – $2.0 million for MDA to assist farmers with the implementation of new nutrient management regulations including manure storage structures for animal waste and manure incorporation technology;

- ***Stormwater Permit Expediters*** – $0.8 million to ensure adequate technical staff to expedite State review of qualifying stormwater and wetland restoration projects;

- ***Field Restoration Specialists*** – $0.8 million in special funds for DNR to ensure that there is adequate technical staff to assist State and local partners in identifying, engineering, designing, and providing construction and construction oversight of priority Chesapeake Bay restoration projects;

- ***Sludge Storage Facility Design (Grants to Small Municipalities)*** – $0.5 million in general obligation bond funding for MDE to solicit funding applications for the design of winter sludge storage facilities from small disadvantaged communities operating WWTPs.

DLS recommends the addition of budget bill language to request the Administration to continue to publish the overall Chesapeake Bay restoration data in the Governor's budget books and two-year milestones funding.

3. Chesapeake Bay Restoration Funding Need

One of the State's most formidable bay restoration challenges is to identify new revenue sources and financing mechanisms to achieve the State's TMDL goals. In response to this need, the General Assembly recently passed legislation – Chapters 150 and 151 of 2012 – to help generate additional funding for this purpose. Chapter 150 is estimated to increase BRF revenues by over $53 million in fiscal 2013 and by more than $55 million beginning in fiscal 2015. Chapter 151 may generate significant local stormwater remediation fee revenues that could effectively reduce or redirect State expenditures that would otherwise support these efforts. While these new revenue sources will clearly help the State achieve its bay restoration goals, new funding sources and approaches are still required for this aggressive effort, as discussed below.

Maryland's WIP Cost Estimate

Implementation of the State's Phase II WIP will demand significant resources and commitment at the federal, State, and local levels, and within both the public and private sectors. As shown in **Exhibit 12,** the total 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, among other things, the estimate does not account for financing costs, inflation, private and federal government costs (*e.g.*, industrial source upgrades and federal WWTPs), and certain ongoing programmatic costs.

Exhibit 12
Maryland's Estimated Phase II WIP Implementation Costs
($ in Millions)

Source Sector	2010-2017 Cost	Total 2010-2025 Cost
Agriculture	**$498**	**$928**
Municipal Wastewater	**$2,368**	**$2,368**
Major Municipal Plants	2,306	2,306
Minor Municipal Plants	62	62
Stormwater	**$2,546**	**$7,388**
Maryland Department of Transportation	467	1,500
Local Government	2,079	5,888
Septic Systems	**$824**	**$3,719**
Upgrades	562	2,358
Connections	237	1,273
Pumping	25	88
Total	**$6,236**	**$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 estimate released October 26, 2012.

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

The State's Phase II WIP implementation costs are allocated into four main sectors: agriculture, municipal wastewater, stormwater, and septic systems. Some of the major categories of implementation costs and the entities involved in addressing these costs are described in further detail below.

- ***Agricultural Best Management Practices* –** Funding for agricultural sector improvements represents $928 million, or 6%, of the total estimated WIP implementation cost. Currently, implementation of agricultural BMPs has been funded with private, federal, and State funding. Recent nutrient management regulations placed additional financial burden on farmers.

- ***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 BRF revenue is providing a significant portion of the funding necessary to upgrade the State's major publicly owned WWTPs over the next five years. However, the source and likelihood of the funding necessary to upgrade the majority of minor municipal WWTPs is less clear.

- ***Local Government Stormwater Management –*** Funding for local stormwater management sector improvements represents $5.9 billion, or 41%, of the total estimated WIP implementation cost. Although Chapter 151 will help generate local funding, the fiscal impact of this legislation is unknown at this time. Furthermore, current economic conditions have limited what role, if any, the State will play in mitigating some of the financial burden that will be assumed by local governments. Traditional State capital funding sources (*e.g.*, pay-as-you-go and general obligation bond funds) are likely to remain constrained in the coming years. Consequently, the ability of local jurisdictions to finance stormwater projects required by the WIP remains a concern.

- ***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 over 2,500 stormwater management facilities and nearly 17,000 lane miles of roadway located throughout the State. Many of these roadway storm drain systems must comply with federal stormwater permits that require nutrient and sediment pollution to be reduced to a specified level by retrofitting systems and/or implementing practices such as forest buffer planting, stream and wetland restoration, pavement removal, or operational practices (*e.g.*, street sweeping). The Maryland Department of Transportation's (MDOT) 2012 *Consolidated Transportation Program* (CTP) included $55.1 million in funding for SHA's WIP efforts, approximately 4% of the total $1.5 billion estimated need. MDOT's 2013 CTP includes $123.3 million in fiscal 2013 to 2017 for SHA's WIP efforts. SHA is prioritizing lower cost projects that do not involve right-of-way acquisition and deferring more costly strategies to the future. **Exhibit 13** shows the significant funding gap, as of January 2013, between the 2013 CTP and what is required to achieve the State's 2017 goal.

- ***Septic System Projects –*** 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. MDE estimates that it costs approximately $13,000 to upgrade a system to BAT and approximately $30,000 to connect a system to an advanced WWTP. The BRF provides some funding for costs associated with upgrading septic systems and sewage holding tanks. Also, the recent BAT septic system regulations effectively allocate more financial responsibility for upgrading septic systems to developers and homeowners. Furthermore, the State's final growth offset strategy will likely include new requirements for reducing pollution from new or replacement septic systems.

Exhibit 13
State Highway Administration Watershed Implementation Plan Funding
Fiscal 2013-2017
($ in Millions)

	2013	2014	2015	2016	2017	Total
CTP Funding	$24.2	$33.8	$28.8	$21.6	$14.9	$123.3
Estimated Need	30.0	50.0	100.0	200.0	200.0	580.0
Difference	**-$5.8**	**-$16.2**	**-$71.2**	**-$178.4**	**-$185.1**	**-$456.7**

CTP: *2013-2018 Consolidated Transportation Program*

Source: Maryland Department of Transportation; Department of Legislative Services

WIP Funding Shortfall

While a reliable estimate of the State's Phase II WIP implementation funding shortfall is not available, it is likely significant. In early 2012 DLS estimated the funding shortfall based on the Phase I WIP, which had a total estimated implementation cost of $11.1 billion. Specifically, DLS projected that existing State funding sources would provide approximately $2.8 billion between fiscal 2010 and 2017, leaving a projected funding shortfall of about $8.3 billion over that time period. It was further noted that WWTP and stormwater retrofits would require significant State and local government funding.

Strategy Considerations

In its Phase II WIP, Maryland distributed pollution reduction responsibility among the various pollution sources and did not necessarily propose the most cost-effective approaches. The Phase II WIP notes that the "…State's allocation of the maximum allowable load for each source is based on *equity* (fairness) rather than on *efficiency* (cost)…" and "…the allocations are based on the "polluter pays" principle in which everyone contributing to the problem must contribute to the solution." It is further argued that assigning equitable responsibility for pollution reduction helps ensure that sectors with lower cost pollution reduction practices (*e.g.*, agricultural sector) are not allocated a majority of the restoration burden. 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 best management practices at the watershed scale.

The use of marketplace strategies as a means of minimizing bay restoration costs is mentioned in the State's Phase II WIP. Specifically, it says that "…costs are expected to decrease when market

forces, and other strategy refinements, come into play in the future." It is anticipated that instead of implementing more costly practices such as septic system upgrades, individuals will be able to identify and pay for reduction from less costly sources. Specifically, the State's pending strategy for offsetting future pollution growth, which is expected to rely heavily on nutrient trading programs, may be able to harness the market and stimulate lower cost strategies. However, the potential impact of nutrient trading and other market-based strategies on overall WIP implementation costs is uncertain.

Responsibility Trends

While the likelihood of securing all of the funding necessary to implement this plan is still unclear, the allocation of funding responsibility among the various sectors is beginning to emerge. In general, the federal and State governments have taken responsibility for generating the revenue necessary to upgrade major WWTPs, with local governments assuming some of the subsidiary preconstruction costs, and the private sector assuming responsibility for minor industrial discharges. Stormwater costs are being assumed by MDOT and local governments, as recently underscored by the new requirement that local governments establish local stormwater remediation fees (Chapter 151). Agricultural costs are borne by the State through efforts such as the Maryland Agricultural Water Quality Cost-Share and Cover Crop programs, and by individual farmers with assistance from the federal government through programs such as the Environmental Quality Incentives Program. The Phase II WIP notes that more detailed agriculture funding strategies will be forthcoming. Finally, septic system upgrades are funded through BRF, to the extent funding is available, and by businesses and homeowners with septic systems.

Cost Estimate 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, among other things, (1) strategy adjustments in response to new demands and opportunities; (2) differing definitions of costs; and (3) conflicting ideas about what costs should be included. Overall, development of a reasonable cost estimate is clearly difficult. Three challenges to estimating these costs – potential fluctuations in federal funding levels, the need for monitoring and verification, and variability in best management practice implementation costs – are discussed in greater detail below.

Federal Funding – Federal funding for Chesapeake Bay restoration is allocated through a number of grants and is distributed directly to the State, local governments, nonprofit organizations, and individuals. **Exhibit 14** provides an overview of large fiscal 2013 federal funding awards for State agency bay restoration efforts. As illustrated, the largest federal grant is capitalization funding for the State's Water Quality Revolving Loan Fund, which provides low-interest loans to counties and municipalities to finance specified WWTP, septic system, and stormwater construction projects. Federal funding is also allocated directly to local governments, nonprofits, and individuals from a variety of sources, such as the $9.2 million awarded by EPA and the National Fish and Wildlife Foundation in August 2012 to community initiatives throughout the watershed.

Exhibit 14
Federal Funding for State Agency Bay Restoration Programs Equal or Greater Than $1.0 Million in Fiscal 2014
Fiscal 2012-2014

CFDA	Federal Funding Source	Recipient	2012 Actual	2013 Working	2014 Allow.
66.458	Capitalization Grants for Revolving Funds	MDE	58.8	36.0	35.8
66.466	Chesapeake Bay Program (Implementation Grant)	DNR, MDE	5.8	6.0	6.6
11.457	Chesapeake Bay Studies	DNR	0.9	1.2	2.0
15.916	Land and Water Conservation	DNR	0.7	0.5	1.9
10.912	Environmental Quality Incentives Program	MDA	0.5	1.0	1.7
15.605	Sport Fish Restoration	DNR	1.5	2.4	1.7
66.460	Nonpoint Source Implementation Grant	MDE	1.8	2.6	1.6
15.615	Cooperative Endangered Species Conservation Fund	DNR	0.0	1.7	1.5
11.452	Unallied Industry Projects	DNR	2.9	2.7	1.5
10.664	Cooperative Forestry Assistance	DNR	1.2	1.3	1.3
66.605	Performance Partnership Grant	MDE	1.0	0.7	1.2
15.614	Coastal Wetlands Planning	DNR	0.9	0.9	1.0

CFDA: Catalog of Federal Domestic Assistance
DNR: Department of Natural Resources
MDA: Maryland Department of Agriculture
MDE: Maryland Department of the Environment

Source: Department of Budget and Management; Department of Legislative Services

The State, local governments, businesses, and individuals all rely on federal funding to implement pollution reduction efforts throughout the State. However, future federal funding for bay restoration is uncertain. For example, due to lack of congressional action, the 2008 Farm Bill expired without a new bill or extension to take its place, effectively ending funding for many bay restoration related programs. Also, due to lack of congressional action on the fiscal 2013 budget, federal agencies are operating in a limited manner in accordance with the provisions of a continuing appropriations resolution. Furthermore, the still unresolved federal "fiscal cliff," due to a number of laws which (if unchanged) could result in tax increases and spending cuts, may constrain federal funding for bay restoration in the future. To the extent federal funding for pollution reduction efforts in the watershed declines, the State will be required to identify other funding sources to achieve its TMDL goals.

Monitoring and Verification Infrastructure **–** The needs and costs associated with establishing the infrastructure necessary to effectively track, monitor, and verify all of the WIP

implementation efforts are not clear at this time. While some State programs have clear monitoring and verification protocols in place, others do not. Furthermore, there has been a shift toward more rigorous monitoring/verification protocols (*e.g.*, taking photos of new installations) that involve the use of geographic information systems mapping technology. The use of mapping technology can be costly, as it requires investment in software and equipment, field personnel, and employee training, among other things.

Variability in Estimated BMP Implementation Costs – It is possible that the actual cost to implement various BMPs in the Phase II WIP will differ significantly from the estimated cost. It has been particularly difficult to document the reductions in nonpoint source pollution loads (*i.e.*, pollution from unspecified diffuse sources, such as stormwater runoff) from BMPs, potentially due to the lag time between implementation and when the effects become apparent in water quality, and natural variability in water quality. Efforts are underway at the State and federal level to better estimate the costs of implementing various BMPs. EPA is conducting a study of BMP unit costs across the Chesapeake Bay watershed that may help the bay jurisdictions make better decisions. MDE and DBM are also conducting cost-effectiveness analysis of BMPs, which is anticipated in early 2013.

Funding Strategy

While Maryland is on track to meet its short-term bay restoration goals, its long-term success depends on identifying new funding for required restoration efforts.

- The State's current $14.4 billion bay restoration cost estimate is incomplete and may change significantly in the future. The State should prioritize generating a more complete and detailed estimate of the additional revenue required for WIP implementation, to better inform future decisionmaking.

- The State must identify new revenue sources and financing strategies to generate the billions in new funding required to establish bay restoration programs by 2025. Funding for septic and stormwater sector improvements, which are among the most expensive, appear to be the greatest needs. Furthermore, the State should investigate and support environmental technologies that may reduce the bay restoration funding burden.

- Maryland's Phase II WIP sought to distribute responsibility for pollution reductions among the various sources and not prioritize implementation of the most cost-effective BMPs. The State may wish to recalibrate this approach and place additional emphasis on funding the most cost-effective strategies. For instance, the stormwater sector is allocated 16.7% of the nitrogen load reduction between calendar 2012 and the 2025 target and yet accounts for 51.3% of the overall cost with a $3,828 per pound of nitrogen reduced cost. In contrast, agriculture is allocated 40.8% of the nitrogen load reduction and is only 6.4% of the overall cost with a $196 per pound of nitrogen reduced cost.

- Many local governments in Maryland have developed extremely high Phase II WIP implementation cost estimates that are generating significant local concern. Some local governments are working together to potentially reduce their bay restoration responsibilities. Local governments require access to more financing tools and revenue sources in the future to implement their plans.

- The federal government's participation in funding and enforcing bay restoration efforts is essential to Maryland's success. A significant reduction in federal funding for bay restoration programs or for federal facilities located in the watershed may make it extremely difficult for bay jurisdictions to be successful.

- While MDOT is responsible for funding an estimated 10% of the State's restoration effort, it lacks a financing strategy to do so. MDOT has expressed the need for a significant revenue enhancement to meet this obligation along with other priorities; and to date, one has not been provided.

DLS recommends that the BayStat agencies comment on the status of the cost-effectiveness analysis of Chesapeake Bay restoration best management practices.

4. Offsetting Future Growth in Maryland

To comply with the bay TMDL, bay jurisdictions must not only reduce existing pollution loads, but also *maintain* reduced pollution loads as population growth and new development occurs. Therefore, as part of the bay jurisdictions' WIPs, EPA required each jurisdiction to include a method to account for future growth in pollution loads. Bay jurisdictions were given the option to either (1) offset any new or increased loads as they occur in the future; or (2) set aside a portion of the TMDL allocation for future growth. The State released an initial draft growth offset strategy in July 2012 for public comment that proposes aggressive new requirements for offsetting the pollution associated with development and redevelopment projects. In late October 2012, some revisions to the proposed growth offset strategy were released. These initial strategies are described below and are followed by a brief summary of the approaches being taken by the other bay jurisdictions.

Proposed July 2012 Offset Policy

Maryland's Phase II WIP requires that new or increased pollution loads be offset by reductions elsewhere, so there is no net increase in pollution entering the bay. Maryland plans to account for new pollution loads in the future by (1) upgrading pollution reduction technology at major WWTPs to accommodate sewage from new development, up to a certain amount; and (2) implementing a strategy by the end of 2013 to offset new pollution loads from development (other than specified WWTP discharges). While efforts to upgrade major WWTPs have been underway for quite some time, the State is still developing a strategy to manage pollution from new development, as described below.

MDE's July 2012 draft growth offset policy requires developers to offset new wastewater and stormwater pollution from development. Generally, the draft policy seeks to minimize nitrogen pollution from new growth, reduce existing pollution loads, and encourage local jurisdictions to concentrate growth in particular areas and utilize pollution offset strategies. Some of the specific requirements in the draft policy include:

- new development projects must meet all applicable regulations and offset the post-development nonpoint pollution by implementing various BMPs;

- redevelopment projects must satisfy applicable stormwater regulations *but are not* required to offset post-development nonpoint pollution;

- new septic systems must meet all applicable laws and regulations and fully offset the post-development wastewater pollution load; and

- new point source pollution loads and increased pollution from existing point sources above their pollution limits must be offset.

The draft growth offset policy specifies that the entire post-development load associated with specified projects must be offset, not just the "net difference" between the before and after pollution loads. In addition, the draft policy assumes that offset requirements are *in addition to* federal, State, and local laws and regulations as well as any other baseline pollution reductions required by the WIP. It is assumed that developers will offset new pollution by establishing BMPs on-site or purchasing pollution credits from Maryland's nutrient trading market place. Examples of BMPs that developers may use as offsets include but are not limited to (1) establishing forested buffers that are protected by covenants or easements recorded in the land records; (2) connecting septic systems to WWTPs with room under their maximum pollution caps; (3) upgrading septic systems to BAT; and (4) converting dry stormwater management ponds to wet ponds.

The draft growth offset policy primarily affects MDE and developers and applies to development projects that disturb one or more acres. MDE anticipates implementing the policy through rulemaking, permitting, and the development of markets for obtaining offsets. The policy applies to any development that seeks coverage under a General Permit for the Discharge of Stormwater Associated with Construction Activity or applies for an individual Discharge Permit for Stormwater Associated with Construction Activity after December 31, 2014. Developers would be required to calculate loads, obtain permanent offsets, and certify offsets when filing for a general permit.

The State's existing nutrient trading program is identified as a key tool for helping developers achieve pollution offset requirements. Currently, the State has established nutrient trading frameworks for trading (1) between point sources (*e.g.*, WWTPs), and (2) point source to nonpoint source (*e.g.*, stormwater runoff). Nutrient trading is structured through a unit of trade called a credit, which is equal to one pound of pollution per year. In accordance with current nutrient trading frameworks, credits may be traded *within* three defined areas; specifically, the Potomac basin,

Patuxent basin, and everywhere else within the State. To date, nutrient trading involving point sources has occurred; however, due to limited interest, trading between point and nonpoint sources has not occurred.

Proposed October 2012 Offset Policy

In late October 2012, in response to public feedback on the July 2012 draft growth offset policy, several adjustments were proposed to the draft policy. The proposed changes to the draft policy include:

- requiring both nitrogen and phosphorus pollution, not just nitrogen, to be offset;
- excluding development associated with most agricultural activities from the policy;
- changing applicability from development disturbances of at least one acre to those of some *de minimis* level;
- requiring offsets to last for a minimum of 30 years, instead of being permanent;
- allowing fee-in-lieu, payable to BRF, and using the fee revenue to reduce the same amount of pollution elsewhere; and
- requiring offsets to be obtained in the same county where development is located outside of Priority Funding Areas, Targeted Growth and Revitalization Areas, or locally designated growth areas.

Over the next year, MDE plans to convene a growth offset policy stakeholder group to find common ground and clarify issues. With this feedback, MDE plans to develop comprehensive and coordinated policies for offsets and nutrient trading and propose associated implementing regulations. At this time, it is anticipated that implementing regulations will be adopted by the end of 2013 and programs required by the regulations will be in place by 2015.

The Impact of Related Growth Policies

Several recent State policies will impact the State's growth offset strategy, namely, stormwater regulations, PlanMaryland, Chapter 149, and recent BAT septic system requirements. Stormwater regulations implementing Chapters 121 and 122 already require redevelopment projects to adhere to strict water quality protection requirements. Implementation of PlanMaryland is already ensuring that State growth-related programs are better coordinated and aligned. Chapter 149, which seeks to steer future residential growth toward more urban areas served by public sewer and away from areas that require septic systems, is being labeled as the first element of the State's growth offset strategy. Because recent regulations already require installation of BAT septic systems for all new development not connected to a wastewater treatment plant in the watershed, the State's growth offset

strategy will require developers to find alternative additional strategies to offset pollution from development. Thus, while the State must finalize a growth offset strategy in 2013, components of the State's strategy are already in place.

Growth Offset Strategies in Other Bay Jurisdictions

Like Maryland, other bay jurisdictions are considering and implementing a variety of strategies and practices to manage growth from development. Several growth management policy trends are emerging among the bay jurisdictions. Several jurisdictions (Delaware, Pennsylvania, and potentially New York) are developing stand alone growth strategies like those Maryland has proposed. A majority of the jurisdictions, including Delaware, New York, Pennsylvania, Virginia, and West Virginia, are using offsets as one of the primary methods to manage pollution growth. Also, several jurisdictions are creating or expanding nutrient trading programs. Furthermore, because stormwater is the fastest growing source of pollution entering the bay, all of the jurisdictions are engaged in significant efforts to reduce stormwater pollution by strengthening regulations, establishing retrofit incentives, and using offsets.

Growth Offset Strategy

- The State's potential reliance on nutrient trading as a means for offsetting future pollution presents a significant challenge. The State's existing nonpoint source pollution program has not implemented any trades to date and the State is still trying, among other things, to determine how to (1) develop a more robust trading marketplace that is characterized by adequate verification of and certification of credits, enforceability, accountability, and tracking; and (2) best distribute trading marketplace roles and responsibilities among State, local, and private entities.

- Because the Administration plans to finalize a growth offset strategy and implementing regulations over the next year, the General Assembly may wish to establish a formal reporting requirement to help promote clarity and transparency and ensure that it is a partner throughout the process.

DLS recommends that the BayStat agencies comment on how the General Assembly may be kept abreast of the development of the growth offset strategy. In addition, DLS recommends that the BayStat agencies comment on the impact of the potential growth offset strategy on projected population growth and the economy, in particular the housing industry, and how the strategy will be integrated with the State Development Plan (PlanMaryland), the State Housing Plan, and the State Transportation Plan.

Recommended Actions

1. Add the following section:

SECTION XX. AND BE IT FURTHER ENACTED, That it is the intent of the General Assembly that the Department of Budget and Management, the Department of Natural Resources, and the Maryland Department of the Environment provide two reports on Chesapeake Bay restoration spending. The reports shall be drafted subject to the concurrence of the Department of Legislative Services (DLS) in terms of both electronic format to be used and data to be included. The scope of the reports is as follows:

(1) Chesapeake Bay restoration operating and capital expenditures by agency, fund type, and particular fund source based on programs that have over 50% of their activities directly related to Chesapeake Bay restoration for the fiscal 2013 actual, fiscal 2014 working appropriation, and fiscal 2015 allowance, which is to be included as an appendix in the fiscal 2015 budget volumes and submitted electronically in disaggregated form to DLS; and

(2) two-year milestones funding by agency, best management practice, fund type, and particular fund source along with associated nutrient and sediment reductions for fiscal 2012, 2013, 2014, and 2015, which is to be submitted electronically in disaggregated form to DLS.

Explanation: This language expresses the intent that the Department of Budget and Management (DBM), the Department of Natural Resources (DNR), and the Maryland Department of the Environment (MDE) provide at the time of the fiscal 2015 budget submission and annually thereafter information on (1) Chesapeake Bay restoration spending for programs that have over 50% of their activities directly related to Chesapeake Bay restoration; and (2) two-year milestones funding.

Information Request	**Authors**	**Due Date**
Summary of Chesapeake Bay restoration spending for programs that have over 50% of their activities directly related to Chesapeake Bay restoration, and two-year milestones expenditures	DBM DNR MDE	Fiscal 2015 State budget submission and annually thereafter