

Cleaning Up Local Waters and the Bay:

*Ideas and Best Management
Practices in Maryland's
Watershed Implementation
Plans*

Choose Clean Water

June 2012





The Choose Clean Water Coalition brings together more than 200 organizations from Pennsylvania, New York, Maryland, Delaware, Virginia, West Virginia and the District of Columbia, and their members to improve our local waters which will result in a cleaner Chesapeake Bay. We serve as a strong, united, effective advocate for restoring the thousands of streams and rivers flowing to the Bay by coordinating policy, message, action and accountability for clean-up success at the federal, state and local levels.

We would like to thank the Town Creek Foundation for their generous support of this project.

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EXECUTIVE SUMMARY

The Chesapeake Bay and most of Maryland's rivers and streams are polluted, which endangers public health and damages our economy. To ensure that the Chesapeake Bay meets federal clean water standards under the Clean Water Act, and is once again "fishable and swimmable," in 2010 the Environmental Protection Agency (EPA) established a mandatory Total Maximum Daily Load (TMDL) or a "pollution diet" for Maryland and the five other Bay watershed states, and the District of Columbia. This plan involves all the players, has an end date, and includes proven actions that we know can work.

To comply with this "pollution diet," Maryland and local governments have drafted Watershed Implementation Plans to reduce nitrogen, phosphorus, and sediment pollution at the local level.

Right now, counties and municipalities have an opportunity to clean local waters by identifying the best local solutions. Working with the state and federal governments, the local governments will finalize clean water plans that chart a multi-year course toward community health, a strong economy, and a high quality of life. These plans will address water pollution loads from septic systems, wastewater treatment plants, and runoff in towns and urban areas.

Watershed Implementation Plans (WIPs)

In 2010, Maryland developed its Phase I Watershed Implementation Plan, which laid out broad strategies for reducing pollution into the Chesapeake Bay. During the following year, MDE and the local governments drafted plans that explain how those strategies will be implemented at the local level. These plans put the control, and the results, of this critical undertaking into local hands.

The local jurisdictions submitted draft plans to MDE in December of 2011 and MDE submitted a final plan for the State to EPA in March 2012. MDE has asked for final revisions to the County plans by July 2nd, 2012. Plans can continue to be refined and updated through the implementation phase.

The Choose Clean Water Coalition

The Choose Clean Water Coalition brings together people and more than 230 organizations from Maryland, Delaware, Virginia, Pennsylvania, New York, West Virginia and the District of Columbia, working together to ensure clean rivers and streams flowing to a restored Chesapeake Bay. The Coalition envisions *vibrant, clean rivers and streams in all communities in the Chesapeake region*. The Coalition believes that to reach this goal, all Bay states must put protections in place for local water quality and work together to maintain clean streams, rivers and the Chesapeake Bay; elected officials at the local, state and federal level value clean water as a high-priority, non-partisan issue; and, all towns, businesses and citizens choose to take responsibility for the pollution entering their local streams and rivers.

Cleaning local waters requires local action; clear commitments are needed from every county to take meaningful action for real results. The Maryland Choose Clean Water Coalition evaluated the State-wide WIP and encouraged public comments, assessed local WIPs through County "barometers" that measured whether or not each county is on track to clean local waters, and we now publish this report for counties across the State that requested guidance and insights on what make for a good WIP.

Elements of a Good Local Watershed Implementation Plan

Based on our evaluation, the best local WIPs share three essential elements:

- They are well documented with measurable outcomes tied to specific actions or Best Management Practices (BMPs). The best WIPs provide information on reductions anticipated by pollutant (nitrogen, phosphorous, and sediment) and by source sector (e.g., wastewater treatment facilities, stormwater runoff, septics, agriculture) for each management practice.
- They address funding in a clear and unambiguous way. A successful WIP does more than simply call attention to costs – it also identifies funding shortfalls and discusses recommended funding sources.
- They provide clear short-term commitments or milestones that suggest that the county is taking seriously the requirements under the TMDL. Both implementation and programmatic milestones are essential. Implementation milestones are commitments to BMPs that have direct measurable reductions in nutrient loadings. Programmatic milestones are commitments to non-project improvements such as organizational, process, and capacity building changes that position the jurisdiction to implement the WIP.

Innovative Ideas

We identified innovative BMPs and ideas for funding local WIPs drawn from locally prepared plans, and highlight counties that are proposing new practices or new enhancements to existing practices or programs. Innovative best management practices include actions to reduce pollution efficiently in the following areas:

- Wastewater treatment – Enhanced Nutrient Removal allows sewage treatment plants to remove higher levels of nutrients and is a cornerstone of Maryland’s strategy to meet the 2017 interim target for pollution reduction. However, some of the best local WIPs are looking to do more in the wastewater sector, including “in time nutrient trading” and using a non-tidal wetland for tertiary or final wastewater treatment.
- Septics - Alternative septic technologies such as sand-lined trenches, low pressure dosed systems, sand mound systems, and drip irrigation systems, could be essential to resolving a shortfall in nutrient reductions in the septic source sector.
- Urban stormwater – This sector has the greatest variety of proposals, including tree planting and buffer programs, reducing impervious areas in floodplains, urban redevelopment, installing BMPs on public property, cooperating with municipal programs, agriculture and land conservation programs, and economic development.

Watershed Implementation Teams

For many jurisdictions, the WIP Team provides the first organized approach involving both the public sector and interested citizens in countywide planning and implementation. Several counties are working closely with municipalities within their borders while others feature open and participative WIP meetings that involve interested citizens and non-governmental organizations.

Across the board, the elements of strong WIP Teams seen at the local level are:

- They are multi-jurisdictional – involving the municipalities, counties, state and federal offices, as well as the private, non-profit and academic sectors in joint decision-making.
- They provide a forum for not only planning but also tracking and reporting progress.
- They provide a meaningful role for local citizens and citizen groups to work effectively for clean water solutions.

In Conclusion

As Maryland works alongside other Bay watershed states, the District of Columbia and the federal government to clean up the Chesapeake Bay it is critical to keep in mind the importance of implementation at the local level. Local clean water plans equal local control and local benefits, including clean, healthy water in our rivers and streams; safe places to swim and to fish; protected drinking water; local jobs; and, a thriving seafood industry.

Pollution control is local. Local leaders must be engaged in this process, for they are the ones who will play a crucial role in achieving pollution reduction goals. There are many examples of successful ideas to clean our waters. Every Maryland jurisdiction can and must ensure that we all have clean water.



1.0 Introduction and Purpose

Background

Because the Chesapeake Bay has remained polluted despite decades of voluntary agreements to clean it up, the Environmental Protection Agency's Chesapeake Bay Total Maximum Daily Load "TMDL" pollution diet sets limits on the amount of nutrients and sediments that can enter the Bay and still allow the waters to be fishable and swimmable. Under the new framework all actions are to be in place by 2025. EPA has accepted Maryland's Final Phase I Watershed Implementation Plan (WIP) submitted by the Maryland Department of the Environment (MDE) in December 2010. The Phase I WIP allocates allowable nutrient and sediment load among the source sectors, which are agriculture, wastewater treatment plants, septic, urban (stormwater), and forests. The Phase I WIP also identifies statewide strategies to reduce Bay impairments.

The second phase in the WIP process is now underway. It is intended to refine the Phase I WIP and include local input on load reduction commitments. In 2011, teams organized in each Maryland county and in Baltimore City began work on their part of the State's Phase II WIP to meet target reductions by 2025.

By the end of 2011, each county had submitted a draft WIP to MDE. About one-third of the local plans were well-developed and provided clear guidance on how and when loadings of nitrogen, phosphorous, and sediment would be reduced. Many plans, however, were incomplete. As members of the Choose Clean Water Coalition who were working on local WIP teams reached out to their respective jurisdictions, they learned that county staff members across the State were requesting guidance and insights on what makes for a good WIP.

This report was prepared in response to these requests. It is meant to be useful to county staff

and local WIP team members as they seek to more fully develop and refine their WIPs as they move into implementation. This report helps answer the question: “What makes for a good Watershed Implementation Plan?” It is drawn directly from actual draft plans prepared by counties in Maryland and submitted to MDE. A sampling of the best elements of these plans is included here with references so that anyone interested in learning more can follow up with the respective county.

It is important to note that while the findings in this report are drawn from locally prepared WIPs, these WIPs are still “draft.” The report looked at the plans submitted to MDE in December, while the counties have until July 2nd to submit edits to MDE. Also, some counties have done considerable work on their plans, including comparative analyses of best management practices (BMPs) in the Maryland Assessment Scenario Tool (MAST). MAST was a tool developed by MDE to allow Counties to run scenarios analyzing the pollution reductions of various suites of practices. Because the plans submitted in December were still in draft form, the Counties did not necessarily make that information available when they submitted their draft to MDE.

Maryland’s Phase I Watershed Implementation Plan, as well as copies of each county WIP, are available online at http://www.mde.state.md.us/programs/Water/TMDL/TMDLHome/Pages/Final_Bay_WIP_2010.aspx.

1.2 Report Organization

This report analyzes three aspects of strong WIP planning. The first describes the three essential elements of the most complete and well-documented WIPs prepared in Maryland. It shows examples from draft County WIPs that demonstrate clarity and commitment with respect to expected outcomes, funding, and short-term commitments.

The second addresses innovative best management practices and ideas for funding local WIPs. It should be noted that most counties that prepared well-developed plans addressed the same practices within the principal source sectors (excluding agriculture and forests). All counties with completed plans, for example, proposed upgrading septic systems with best available technology (BAT), septic system pump out programs, connecting failing systems to local wastewater treatment plants (WWTPs), and upgrading WWTPs to use enhanced nutrient removal technology (ENR). Therefore, these proven but standard actions are not necessarily highlighted. We have highlighted counties that are proposing new practices or new enhancements to existing practices or programs.

The third describes how some WIP teams are structured for success. For example, several counties are working closely with municipalities within their borders. Others feature open and participative WIP meetings that involve interested citizens and non-governmental organizations.

2.0 Elements of Successful WIPs

The best local WIPs share three essential elements: First, they are well documented with measurable outcomes tied to specific actions or Best Management Practices (BMPs). Second, they address funding in a clear and unambiguous way. Third, they provide clear short-term commitments or milestones that suggest that the county is taking seriously the requirements under the TMDL.

2.1 Measurable Outcomes

Are expected target load reductions resulting from selected BMPs estimated? Does the plan demonstrate a clear path toward meeting the 2017 and 2025 targets?

The best WIPs provide information on the reductions anticipated by pollutant (nitrogen, phosphorus and sediment) and by sector for each management practice. These WIPs can be easily read by elected officials and interested citizens who wish to find a clear sense of how target load reductions will be achieved and/or where likely shortcomings yet remain. Large and small counties alike have demonstrated that the WIP can be definitive and focused on meeting actual targets.

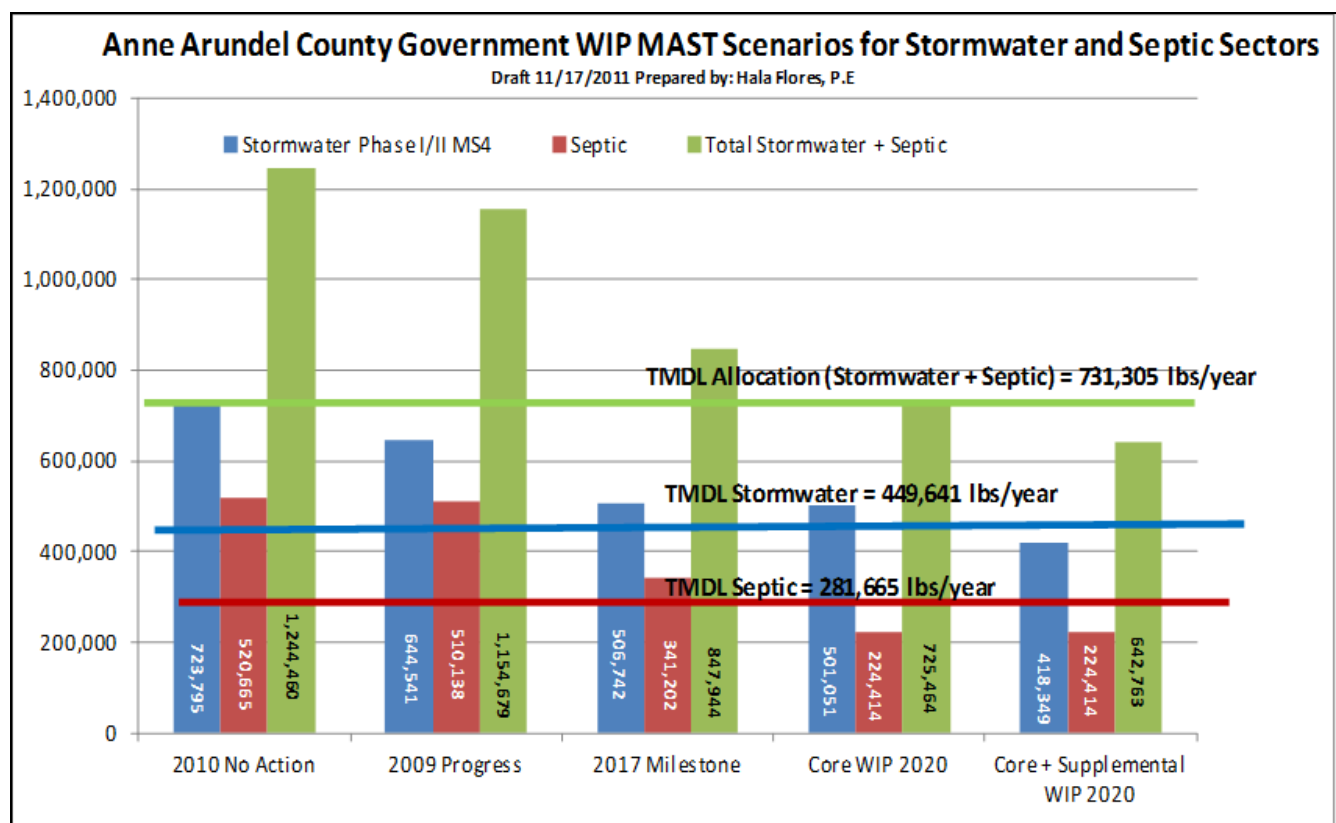
The graph demonstrates how Anne Arundel County projected its expected reductions over time against TMDL target reductions. The chart on page 8 shows how the County accounts for reductions from each of its “implementation” milestones. The precision and clarity in this latter chart should be the standard for all counties.

2.2 Funding

Does the WIP do more than simply call attention to costs? Are funding shortfalls identified and are recommended funding sources discussed?

Listing actions and their estimated costs and sequencing costs with the key time frames, for example 2010-2011 and 2012-2017, provides clarity. It also provides guidance to decision makers about implementation. As shown on page 9, St. Mary's County provides a chart with actual projects that could fit into future Capital Improvement Programs and/or the general budget. This is emerging as a fine resource and an implementation-tracking tool.

The Dorchester County WIP goes one step further: it not only estimates the costs of proposed BMPs and the actions needed to



Anne Arundel County Chesapeake Bay TMDL Phase II Watershed Implementation Plan, Submitted November 17, 2011

Anne Arundel County Government WIP -- Two Year Milestones (2012 -2013)

IMPLEMENTATION ACTION MILESTONES (2012-2013)	BMP Type	# of Projects	TN Efficiency ⁽²⁾	TP Efficiency ⁽²⁾	TSS Efficiency ⁽²⁾	Units	Units Available	TN Load Reduction	TP Load Reduction	TSS Load Reduction	Impervious Acres Treated	Unit Cost (\$/lbs of TN)	Line Item Cost
Urban and Suburban Stormwater ⁽¹⁾													
Connect incised perennial streams to floodplain using instream weirs	Stream Conventional	4	0.02	0.0035	2.55	Linear Feet	10016	200	35	13	244	\$ 31,475	\$ 6,305,000
Restore perennial degraded and severely degraded	Stream Wetland	5	40	60	85	Acres	587	678	131	14	227	\$ 13,529	\$ 9,239,516
Restoring zero order ephemeral streams and pipe outfalls with Step Pool Storm Conveyance (filtering systems)	Ephemeral Filtration	17	50	60	90	Acres	1015	516	99	11	399	\$ 24,266	\$ 12,524,327
Retrofit pre-2002 ponds as Shallow Wetland	Pond wetland/filtration	11	40	60	85	Acres	280	210	38	3	84	\$ 14,123	\$ 2,968,946
Street Sweeping (closed section road)	Street Sweep	TBD	4	4	22	Acres	967	349	349	1918	967	\$ 1,663	\$ 580,043
Inlet cleaning	Inlet Clean	TBD	10	2	56	Acres	2371	2137	427	11966	1660	\$ 534	\$ 1,141,326
Stormwater to the MEP for County Schools	SW to MEP	3	50	60	90	Acres	35	156	187	281	14	\$ 4,604	\$ 719,075
Watershed Organization Projects ⁽³⁾	LID N/GD	N/A	50	60	90	Acres	1045	4709	5650	8475	418	Cost not incurred by County	
Stormwater to the MEP for County Facilities	LID Facilities	16	50	60	90	Acres	41	185	222	333	16	\$ 4,604	\$ 850,608
Upland Tree Plantings	Plantings	N/A	66	77	57	Acres	60	357	416	308	N/A	\$ 9,430	\$ 1,500,000
TOTAL								9,495	7,549	23,322			\$ 29,523,941
Waste Water Treatment Facilities													
ENR Upgrade to Annapolis WRF	ENR	1	N/A	N/A	N/A	N/A	N/A	158,388	47,524	0	N/A	\$126	\$20,000,000
TOTAL								158,388	47,524	0	N/A		\$20,000,000
Septic Systems													
OSDS NRU Strategy													
Reduction Act of 2009 ⁵	Residential Septic	360	50	0	0	each	360	4,378	0	0	0	\$12,500	\$4,500,000
Implementation of the Bay Restoration Fund Program	Residential Septic	260	50%	0	0	each	260	3,162	0	0	0	\$12,500	\$3,250,000
Implementation of the Code (subdivision and development)	Residential Septic	72	50%	0	0	each	72	547	0	0	0	\$12,500	\$900,000
Code in Critical Areas & Bog Protection Areas ⁶	Residential Septic	80	50%	0	0	each	80	456	0	0	0	\$12,500	\$750,000
Groundwater Protection Plan (Outside Critical Areas) ⁷	Residential Septic	80	50%	0	0	each	80	456	0	0	0	\$12,500	\$750,000
OSDS Public Sewer Connection Strategy													
Connection to Public Sewer via Petition Project (Deale Road)	Residential	35					35	851	0	0	0		
Wastewater Extension Petition Project ⁸	Commercial	14		0			14	1,770	0	0	0		
TOTAL								11,184	0	0	0		
PROGRAM DEVELOPMENT ACTION MILESTONES (2012-2013)													
Urban Stormwater													
Establish MDU with SHA for implementation of urban stormwater projects													
Draft & adopt legislation to create a stormwater utility enterprise fund													
Coordinate with Fed/State regulators to reduce permitting time													
Continue investigating options for nutrient trading as a tool to offset future loads from new development.													
Waste Water Treatment Facilities													
Refine costs for design/construction of pump station upgrades													
In 2012, revise Water and Sewer Master plan to incorporate areas outside of the Sewer Service Areas that are intended to be connected as part the WIP. Develop new requirements and boundaries for the proposed Cluster Treatment Areas to incorporate them into the Water and Sewer Master Plan. Develop Policies and Procedures to promote public sewer in management areas designated as high priority and for capital improvement projects.													
Septic Systems													
Request FY12 County budget appropriation for Septic Implementation Plan													
Execute contract for Septic Implementation Plan													
Continue to refine sewer extension and cluster treatment system implementation plans and cost estimates.													
Determine long term funding methods to pay for connection of existing OSDS to public sewer and cluster treatment systems. Develop mechanisms and policies to achieve funding, may require legislation actions. Begin planning for long term implementation of these funding policies.													
Continue researching more cost effective alternatives to serve the proposed cluster treatment areas. Initiate a pilot project to serve a cluster treatment area in 2013.													
Develop a tracking and reporting system to follow the progress of OSDS conversion and upgrades.													
Develop Policies and Procedures for handling Operation and Maintenance for upgraded OSDS													
Develop approach for prioritization of OSDS upgrades.													
Determine Staffing requirements and receive position authorizations.													
Develop policies to reduce nutrient loading due to future growth of OSDS.													
Review and Clarify legal and administrative policies to connect existing OSDS to public sewer and cluster treatment systems.													
Review and Clarify permitting requirements to connect existing OSDS to public sewer and cluster treatment systems.													
Develop Countywide Public Relations Strategy													
Footnotes													
⁽¹⁾ Urban Stormwater pollutant reduction strategy reported for FY-12 and FY-13 is based on currently programmed County CIP projects and does not imply that all projects will be fully constructed by the end of FY13. These projects are currently in various levels of implementation from concept design and project initiation to under construction. Construction completion is contingent upon permitting, right of way, availability of capital and grant funds, and other factors.													
⁽²⁾ All Urban and Suburban stormwater strategy efficiencies with the exception of wetland creation systems are based on MDE's June 2011 document "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated." In this document MDE utilizes a similar efficiency for wetland creation and wet ponds, which deviates from efficiencies reported in earlier publications. The pollutant reduction computations reported in this spreadsheet are based on TN = 40%, TP=50%, and TSS=85%, which is consistent with "Center for Watershed Protection, 2007a. National Pollutant Removal Performance Database, Version 3. Ellicott City, MD, September 2007. Available at: http://www.cwp.org/Downloads/bmpwrtup_092007_v3.pdf ".													
⁽³⁾ Watershed Organization Projects represents the total pollutant reduction from all type of restoration strategies (Stream, outfalls, ponds, LID, plantings, shoreline stabilization, etc.). Refer to the specific project list table for Watershed Organization projects for more detail on the individual BMP efficiencies and reductions.													
⁽⁴⁾ reserved													
⁽⁵⁾ This includes both new, repaired, and replaced OSDS													
⁽⁶⁾ Assumes that this only includes those OSDS within the Bog Protection Areas and outside of the Critical Area, those in the Critical Area would be under the Chesapeake Bay Nitrogen Reducing Act of 2009													
⁽⁷⁾ Assumes that these areas are within the 50% Delivery Ratio													
⁽⁸⁾ Assumed that average flow rate for commercial properties = 1300 gpd. This equals approximately 1300/250 = 5.2 EDUs per Commercial Property. TN Load Reductions will be included in the Broadwater WRF capacity													

Sector	Strategy	Description	Units	2010 -	2011	2012 -	2013	Total	Estimated Cost	In a CIP or Budget
Proposed Implementation through 2017 based on existing commitments										
Point Sources	Major WWTPs	Upgrade Marlay-Taylor Wastewater Treatment Plant to Maryland's Enhanced Nutrient Removal (ENR) standards (Status: in design, to be online in 2014, operation at 4 mg/l for 6 mg/day) (currently 8	Plants			1	1	1	\$36,087,500	<input checked="" type="checkbox"/>
Point Source	Major WWTPs	Marlay-Taylor Wastewater Treatment Plant: Methane Power Co-generation and Digester Upgrade FY10 upgrade to use methane to produce electricity to produce enough rejected heat to supply the digesters heating requirements).	Plants	1				1	\$3,943,000	<input checked="" type="checkbox"/>
Point Sources	Major WWTPs	Water Reuse of 10-12 million gallons of treated effluent for: 350 acres of irrigation on ag land, 9-11M gallons for golf course irrigation 0.25M gallons or cooling towers and industrial testing processes Off-site irrigation for parks, athletic fields, fire protection systems, and dual plumbed buildings.	Millions of gallons reduced for effluent at average 6 mg/l for Nitrogen			11	11	11	\$4,095,000	<input checked="" type="checkbox"/>
Point Sources	Major WWTPs	Upgrade Leonardtown's WWTP to Maryland's ENR Standards (Status: In design phase, to be online in June, 2014. Current permit 4 mg/L for 680,000 gpd plant. Design to ENR standards of 3 mg/L.)	Plant			1	1	1	\$6,000,000	<input checked="" type="checkbox"/>
Point Sources	Major or Minor WWTPs: Sewer system expansion to serve planned service areas	Accommodate limited growth (including possible connection of OSDS to sewer)	Systems			1	1	1	\$1,789,000	<input checked="" type="checkbox"/>
Point Sources	Major or Minor WWTPs: Sewer system expansion to serve planned service areas	FY 2015-FDR Boulevard Sewer main (32 EDU's)	Systems			1	1	1	\$37,000	<input checked="" type="checkbox"/>
Point Sources	New Large Minor Municipal WWTPs (0.1-0.5 MGD)	Charlotte Hall/ New Market Sewer (status: FY2015 capital project for Biolac Waste water treatment system and rapid infiltration basins)	Plants			1	1	1	\$5,332,500	<input checked="" type="checkbox"/>
Point Sources	New Large Minor Municipal WWTPs (0.1-0.5 MGD)	Leonardtown spray irrigation (status: Tentative project 0.3 mg) Note: IN CIP for future possibility of land application or water re-use system - No current plans to build before 2017 (8/30/2011 BCC meeting)						1		<input checked="" type="checkbox"/>
Point Sources	New Large Minor Municipal WWTPs (0.1-0.5 MGD)	St Clements Shores WWTP (spray irrigation) FY 2015 capital project for expansion of existing system to serve failed systems only (149 EDU's)	Plants					1	See connectivity of failed septic systems	<input checked="" type="checkbox"/>
Point Sources	Major or Minor WWTPs: Sewer system expansion to serve planned service areas	ENR Retrofits at Webster Field minor Federal WWTP: (Status: Permit for 45,000/day actual discharge 50% of permitted; average discharge for 2007 thru 2011 222 lbs/yr P& 1380 lbs/yr N. Discharges to St. Mary's River, Pretreatment installed waiting final permit criteria)	Plants	1					Implemented	<input checked="" type="checkbox"/>

Excerpt from page 1 of "Attachment A: Draft Strategy Table for St Mary's County Phase II WIP Submission," Submitted November 18, 2011

achieve targeted reductions but also states an intention to fund estimated shortfalls. For example, it notes that some septic funding will be provided by the State; the remainder could be generated by a proposed local enterprise fund tied to a septic management district. In the urban stormwater sector, it also notes that both County and municipal capital improvements funding will help pay for BMPs needed to achieve targets.

2.3 Milestones

Are the milestones clear and meaningful or are they vague? Does the County demonstrate what it intends to achieve in the milestone period?

The milestones are the two-year commitments. There are two types of milestones: implementation and programmatic. Implementation milestones are commitments to

BMPs that have direct measurable reductions in nutrient loadings. Programmatic milestones are commitments to non-project improvements such as organizational, process, and capacity building changes that position the jurisdiction to implement the WIP. Both are essential. For example, Calvert County's WIP lists programmatic milestones for the 2012-2013 timeframe including: adopt a stormwater management fee (or impact fee) and hire six staff people to administer septic and stormwater improvements.

About half of Maryland's counties provided meaningful milestones in the draft WIPs. The summary list of Dorchester County's implementation milestones is provided on the following page. Note the focus on quantifiable actions. In the next iteration of the plan, one

Table 3-3: 2-Year Milestone Restoration Targets and Associated Nitrogen and Phosphorus Reductions

Strategy	Type*	Acres/Linear Feet July 1, 2011—June 30, 2013	Nitrogen Reduction	Phosphorus Reduction
Estimated Progress to June 30, 2011			3,325	1,648
Stream Restoration	C	63,174 feet	1,263	221
Shoreline Erosion Control	C	5,190 feet	830	571
SWM Retrofit/Conversions	C	669 acres	2,694	233
Street Sweeping	A	Current Rate	4,238	1,629
Storm Drain Cleaning	A	Current Rate	734	284
Nutrient Management 1998	A	6,125 acres	4,565	204
SSO Elimination	C	20% reduction	230	76
Upland Reforestation	C	100 acres	399	15
Riparian Buffer Reforestation	C	10 acres	98	6
Urban Tree Canopy Planting	C	1,400 acres	56	2
Redevelopment	C	200 acres	915	106
Watershed Association Projects	C	Current Rate	155	15
Higher Credit for Stream Restoration			11,371	4,075

Baltimore County July 1, 2011 – June 30, 2013 Milestones, draft November 2011

should expect more detail about these projects milestones including location. For now, however, this list from Dorchester, and others like it, provides a basis for accountability at the local level.

Two-Year Milestones: Dorchester County

- *Complete city WWTP upgrade*
- *Complete city CSO elimination.*
- *Complete conversion of 45 septic systems to sewer in Christ Rock area.*
- *Complete 300 septic system upgrades in Critical Area.*
- *Complete construction of 12.6 acres of wetlands (Elliott Island Road project).*
- *Complete Woolford-Madison project with conversion of 350 septic systems to sewer.*
- *Complete 4.5 acres of riparian shoreline buffers.*
- *Complete 4 acres of forest area restoration.*

- *Increase cover crop by 30%.*
- *Increase HUA pads by 15%.*
- *Increase streamside grass buffers by 7%.*
- *Increase industrial pretreatment enforcement at Hurlock WWTP.*

(Dorchester County Phase II WIP, draft submitted November 18, 2011)

A more thorough approach was provided in Baltimore County. The County's draft plan contains an entire chapter devoted to milestones. It provides a detailed discussion of each implementation milestone. The summary table the County WIP provides on restoration projects alone is shown on the previous page. Note for each milestone, the County provides an expected nutrient load reduction. The narrative in the milestone chapter describes relevant details for each project; this is a useful guide for interested

3.2.2 Stormwater Programmatic Actions

There are a number of programmatic actions necessary to enable the county to meet the urban stormwater load reduction allocations. These can be broken down as:

- Work with the State of Maryland to develop adequate mechanisms to fund the increased restoration pace and the staff needed to meet the urban stormwater reduction allocations by 2020.
- Develop tracking and reporting mechanisms for redevelopment and revitalization to assess load reductions.
- Develop tracking and reporting mechanisms for green field development to assess load increases.
- Work with MDE, Baltimore County, Anne Arundel County, and Howard County to define each jurisdiction's share of the remaining capacity of the WWTPs.
- Work with MDE, Baltimore City, Anne Arundel County, and Howard County to refine the concept of Trading-In-Time and develop formal agreements, if it is determined that the contingency is needed to meet the overall nutrient reductions.
- Continue working with the Chesapeake Bay Program—Urban Stormwater Workgroup expert panel to determine new stream restoration pollutant load reduction credits.
- Develop a reforestation program funded through capital funds.
- Coordinate between the Departments of Public Works and Environmental Protection and Sustainability to target street sweeping and storm drain cleaning in neighborhoods identified through the Neighborhood Source Assessment in the Small Watershed Action Plans.
- Continue to work with the Farm Trust to determine if there are pollutant load reduction credits associated with Preservation Programs.
- Continue to explore the possibility of pollutant load reduction credits as a result of Baltimore County's land use planning through the implementation of the 2020 Master Plan.
- Continue to work with the State and the Chesapeake Bay Program to find solutions to the Watershed Model technical data deficiencies identified in Chapter 6 below.

- Baltimore County July 1, 2011 – June 30, 2013 Milestones, draft November 2011

citizens to track progress. It also provides a means for local residents in various parts of the County to see actual implementation take place over time. Montgomery and Anne Arundel Counties provide comparable levels of detail and clarity.

Some counties did a fine job describing programmatic activities. On page 10 is a list of the stormwater-related programmatic milestones from Baltimore County. One can see from this list (and the same applies to several other counties) that programmatic milestones necessarily change the approach and administration of local water quality planning. The list below indicates that the County will enter into new multijurisdictional efforts, create new internal tracking and documentation procedures, and develop a new reforestation program. Calvert County's WIP, mentioned above, states its intention to hire new staff and adopt an impact fee over the next two years.

3.0 Innovative BMP Ideas

Some counties advanced innovative best management practice ideas. Some suggested solutions that may be viable but are not yet recognized by MDE as acceptable BMPs. Baltimore County for example has proposed a suite of innovative urban stormwater strategies that are not currently approved for pollutant removal credits. With few exceptions, the strategies noted herein are implementation strategies. Programmatic strategies are by and large locally derived and reflect the status of each county's capacity to complete the implementation work.

3.1 Wastewater Treatment

The essential requirement is the ongoing and programmed conversion of wastewater treatment plant (WWTP) technology to Enhanced Nutrient Removal (ENR), which allows facilities to

remove higher levels of nutrients. ENR technology represents one of the most cost-effective approaches for reducing nutrients into the Bay and is a cornerstone of Maryland's strategy to meet the 2017 interim target for pollution reduction. Some of the best local WIPs are looking to do even more in the wastewater sector. Baltimore County has introduced the concept of "in time nutrient trading." Under this concept, the surplus reductions achieved in this sector through plant upgrades would be credited against the reductions needed in the urban stormwater sector, which are far more difficult to achieve for the County.

Harford County has proposed to pursue with its County Board of Education the reconnection of the outfall of the minor wastewater treatment plant serving the North Harford High School to a non-tidal wetland for final treatment of wastewater. Several years ago, when the wetland was established, as a school project for treatment of the effluent, the students at the school were able to demonstrate a significant reduction in nutrient levels. Partnerships to address "minor" waste water treatment plants like this one may represent a good opportunity for cost-effective nutrient reductions in localities.

3.2 Septic

Each county that has completed a draft WIP focused on the standard proven reduction strategies supplied by MDE and credited through the use of MAST. Queen Anne's County has proposed a number of alternative septic technologies that it finds are suitable and is awaiting word from MDE as to their eligibility for reduction credits. These include sand-lined trenches, low pressure dosed systems, sand mound systems, and drip irrigation systems. While MDE may or may not accept these specific technologies as effective under the WIP, they stand as examples of the important role that local out-of-the-box-thinking will play in meeting pollution reduction targets. In the case of Queen Anne's County, the local WIP Team

determined that these technologies were essential to resolving a shortfall in nutrient reductions in the septic source sector.

3.3 Urban Stormwater

It is in this sector that the greatest variety of proposals was found. The EPA's Chesapeake Model designates loading contributions in nine specific urban sub-sectors. The sub-sectors that are principally addressed by the local WIPs are urban Municipal Separate Storm Sewer Systems (MS4), county MS4, and non-regulated urban.

3.3.1 Tree Planting

Allegany County has proposed to continue its effective back yard buffer program in which trees are provided for free to homeowners to be planted in riparian buffers. Under the program the Department of Natural Resources, Forest Service provides sixty bundles of twenty-five trees each to homeowners who own properties with streams that are currently not buffered. These trees are provided free of charge to homeowners. This program is budgeted at \$2,000 per year and the County estimates that it accounts for three acres per year of new urban stream buffers.

Baltimore County proposes a rural residential tree-planting program in low-density rural areas where single-family homes are located on five or more acre lots. This action would reduce nutrient and sediment runoff by converting land use from turf grass or open fields to forest. EPA watershed model land use loading factors for turf grass versus forest will provide the nutrient and sediment benefits. The County also proposes to use its urban tree canopy program to capture nutrient and sediment reductions. Under its program, the County conducts two "big tree" sales a year of high value canopy trees to its citizens and expects 700 trees a year to be planted through this program.

3.3.2 Impervious Surface Reduction

Allegany County currently administers a Flood Buyout Program that results in impervious area reductions in the floodplain. In the last five (5) years, the County has purchased and demolished 28 homes in the floodplain, resulting in approximately three (3) acres of impervious area reduction. Once structures are demolished, these properties are stabilized with vegetation and remain undeveloped. This is an excellent example of how a local jurisdiction has linked an existing local program to water quality improvement through the WIP.

Baltimore County is developing an approach to track and report nutrient reductions that are tied to urban redevelopment. Under State stormwater management regulations, redevelopment is defined as development on a site that has greater than 40 percent impervious cover. These redevelopment projects are required to remove 50 percent of existing impervious area or provide equivalent treatment. However, there are many sites that are redeveloped, but do not have 40 percent impervious cover and these are required under State regulations to achieve full treatment as though they were green-field developments. This will have obvious water quality benefits so the County intends to develop a tracking and reporting mechanism to be able to receive credits for these types of activities. This is an excellent example of how a local jurisdiction has linked its comprehensive planning policies—aimed at redevelopment—to water quality improvements through the WIP.

3.3.3 BMPs on Public Property

Talbot, Caroline, and Harford Counties stand out as examples of places that have committed to identifying publically owned buildings and properties suitable for BMP demonstration/education project sites. For example, Harford County has proposed to restore a buried and engineered section of Plum Tree Run, which traverses a public park. The element that

differentiates these counties from others is that their BMP projects are intended to demonstrate techniques that are applicable to private property owners. The objective is to both make measureable reductions in pollutant loadings and inspire private property owners to undertake similar projects.

Within Harford County, the City of Aberdeen is committing to review and revise its road ordinance to bring about reductions in impervious surface coverage and reintroduce open swale treatment and conveyance of stormwater in the public right-of-way. Calvert County is proposing to convert approximately 200 miles of grass swales to bioswales and install an additional 160 miles of new grass swales along county and private roadways.

Talbot County is proposing to better manage public road rights-of-way where agricultural runoff enters roadside ditches. The County and other stakeholders are exploring a partnership with the agricultural sector that would enhance the roadside ditch network with complementary BMPs to simultaneously manage both urban and agricultural stormwater. This could improve ditch stability and nutrient uptake efficiency in the swales while providing a cost-effective and targeted approach to local nutrient reduction efforts. The County also proposes to reduce the frequency of roadside ditch mowing to help restore vegetative uptake of nutrient and reduce sediment transport in the ditches.

3.3.4 Municipal Cooperation

Caroline County has proposed to initiate a multi-jurisdictional street sweeping and storm drain clean out program at the municipal level but that is funded in part by the County. This under-represented option is available to many rural counties throughout the State, especially where there are multiple towns that can participate and share in the cost. This program element has the added benefit of promoting the essential and cost-effective maintenance and upkeep of municipal

infrastructure and at the same time enhances the appearance of local streets and neighborhoods.

Queen Anne's County proposes to initiate a program whereby it and the towns in the County will work under a cooperative program to target and implement BMPs such as stream restoration and urban stream buffers cost effectively. Though as yet little detail is suggested in the County's draft WIP, the Queen Anne's County Council of Governments provides an excellent venue for initiating this. This proposal is a good example of how a local jurisdiction County can leverage existing inter-jurisdictional relationships to advance clean water through its WIP.

3.3.5 Other

Queen Anne's County has proposed to consider the use of its successful agricultural land preservation program to target and acquire easements to establish buffers along streams and along roadside ditches. In a similar way, Baltimore County proposes to collaborate with its local Farm Trust to determine if there are measurable nutrient reductions derived from land conservation.

Caroline County proposes to develop a program to tie economic development to pollutant reduction projects, effectively creating local expertise in the community for installing and maintaining best management practices. It proposes to work with towns to develop a resource list of contractors, potential labor pools, volunteer organizations, and schools willing to partner students with projects. These and related programmatic initiatives can build the local capacity to advance local clean water projects and help remove obstacles to implementing future WIP milestone commitments.

4.0 Promising Developments for Implementation – WIP Teams

At its core, implementation is about bringing people together so that their interactions produce successful outcomes. One of the most important elements of a successful long-term Watershed Implementation Plan therefore is getting the organization right. For many local jurisdictions, the WIP Team provides the first organized approach involving both the public sector and interested citizens in planning and implementation on a countywide long-term endeavor. For others some organizational structure may already be in place. Carroll County, for example, has a strong inter-governmental coordination committee on water and water resources. This strong committee structure provides it the capacity to design and implement a solid WIP and to advance innovations in water quality planning.

Cooperation on implementation can occur between the local jurisdiction and other agencies of government, its citizen volunteers and citizen groups. Citizen involvement and leadership can be an important element of WIP implementation. Cecil County has organized its WIP team into sub teams in which concerned citizens can impact the direction of the WIP. St. Mary's County incorporates the advice and research of local water resource scientists and scholars and the County's WIP features programmed commitments to well documented stream restoration projects drawn from local studies. Across the board, the elements of strong WIP Teams seen at the local level are:

- They are multi-jurisdictional – involving the municipalities, counties, state and federal offices, as well as the private, non-profit and academic sectors in joint decision-making.
- They provide a forum for not only planning but also tracking and reporting progress.

- They provide a meaningful role for local citizens and citizen groups to work effectively for clean water solutions.

Moving forward, based on the outcomes of some of the counties to date, it is reasonable to conclude the successful local WIP teams will also provide an ongoing forum for defining priorities and guiding the allocation of funding, staff, and other resources and for linking previously un-related efforts such as comprehensive planning, infrastructure maintenance, and the use of geographic information systems, etc. to water quality implementation. They will also help bring about new ways of connecting and tracking non-governmental initiatives with water quality implementation.

5.0 Conclusion

Right now, counties and municipalities have an opportunity to meet local needs by figuring out how to clean local waters with the best local solutions. Working with the state and federal governments, the local governments must finalize clean water plans that chart a multi-year course toward community health, a strong economy, and a high quality of life.

We hope that this report will enable Maryland counties to review and commit to their local implementation plans. It is critical for counties to step up and finalize their own plans in their own way. We encourage local jurisdictions to continue to evaluate and refine their plans during the implementation phase.

We hope that this report provides counties with some additional resources about the elements of a successful WIP, best practices that can be adopted or adapted, and the importance of WIP teams. For additional information or assistance, please contact Jennifer Bevan-Dangel at jennifer@friendsofmd.org or (410) 385-2910.