



Best Management Practices in Phase III WIP Development and Toxic Contaminants

Olivia Devereux

Devereux Environmental Consulting

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Overview

Assessments of BMPs' impact on toxic contaminants

BMP implementation proposed in the Draft Phase III WIPs

Classifying BMPs by function

Integration with the CAST model and management tool

Assessments of BMPs' Impact on Toxic Contaminants



Removal of Toxic Contaminants from Agriculture, Wastewater, and Urban Sectors (Chesapeake Stormwater Network)

Urban

- Toxic contaminants bond to TSS
- Use BMPs effective at TSS trapping to control contaminant movement to streams

Agriculture

- Toxic contaminants sources are manure and pesticides
- Use BMPs to limit application and runoff of manure and pesticides



BMP Impact Score Matrix (Tetra Tech)

Shows the qualitative impact of BMPs on multiple co-benefits, including toxic contaminants

Impacts are both positive and negative

Potential Benefits of Nutrient and Sediment Practices
to Reduce Toxic Contaminants
in the Chesapeake Bay Watershed

Part 1: Removal of Urban Toxic Contaminants

FINAL REPORT

Prepared for:

Toxics Work Group
Chesapeake Bay Partnership

Prepared by:

Tom Schueler and Anna Youngk
Chesapeake Stormwater Network



Potential Benefits of Nutrient and Sediment Practices
to Reduce Toxic Contaminants
in the Chesapeake Bay Watershed

Report 2:
Removal of Toxic Contaminants from the
Agriculture and Wastewater Sectors

Prepared for:

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Chesapeake Bay Partnership

Prepared by:

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Chesapeake Stormwater Network



Date: March 15, 2016

BMPs with the highest impact on toxic contaminants

Sector	BMP Name	Toxic Contaminants Policy and Prevention
Agriculture	Forest Buffer	Higher
Septic	Septic Connections	Higher
Agriculture	Ag Shoreline Management	Moderate
Agriculture	Amendments for the Treatment of Agricultural Waste	Moderate
Agriculture	Animal Waste Management Systems	Moderate
Agriculture	Barnyard Runoff Controls	Moderate
Agriculture	Grass Buffer	Moderate
Agriculture	Manure Treatment Technology	Moderate
Urban	Abandoned Mine Reclamation	Moderate

BMPs with negative or neutral effects on toxic contaminants

Sector	BMP Name	Toxic Contaminants Policy and Prevention
Agriculture	Cover Crops	Negative Impact
Agriculture	Biofilters	No Impact
Agriculture	Land Retirement to Hay or Pasture	No Impact
Agriculture	Cropland Irrigation Management	No Impact
Agriculture	Dirt & Gravel Road	No Impact
Agriculture	Heavy Use Poultry Area Concrete Pads	No Impact
Agriculture	Horse Pasture Management	No Impact
Agriculture	Irrigation Water Capture Reuse	No Impact
Agriculture	Lagoon Covers	No Impact
Agriculture	Loafing Lot Management	No Impact
Agriculture	Poultry Litter Treatment (e.g., alum)	No Impact
Agriculture	Precision Intensive Rotational/Prescribed Grazing	No Impact
Agriculture	Vegetative Environmental Buffer for Poultry	No Impact

Most Implemented BMPs

Unit	BMP (group)
Acres	Ag Nutrient Mangement
	Barnyard Runoff Control
	Cover Crop
	Land Retirement
	Manure Incorporation
	Soil Conservation and Water Quality Plans
	Street Sweeping
	Tillage Management
	Tree Planting
	Urban Nutrient Management
	Wetland Creation and Restoration
	Wetland Enhancement & Rehabilitation
	Other
Acres in Buffers	Forest and Grass Buffers
Acres Treated	Bioretention/raingardens
	Bioswale
	Conservation Landscaping Practices
	Dry Ponds
	Filter Strip
	Infiltration Practices
	Permeable Pavement
	Stormwater Performance Standards
	Vegetated Open Channels
	Other
Animal Units	Animal Waste Management System
	Dairy Precision Feeding and/or Forage Management
	Other
dry tons	Manure Treatment and Transport
Feet	Dirt & Gravel Road
	Stream Restoration and Shoreline Erosion Control
Lbs of Nitrogen	Other
Lbs of Phosphorus	Other
Lbs of Sediment	Other
Number of Systems	Septic Connection
	Septic Pumping

The amount implemented will be available online when the WIPs are final in August 2019. Go to CAST.ChesapeakeBay.net. Use Contact Us to request the link to the online graphs with the final WIP data.

0M 10M 20M 30M 40M 50M 60M 70M 80M 90M 100M 110M 120M

Total Amount Credited

Classifying
BMPs allows
evaluation of
overall impact
on the
landscape

Functions

Reduce nutrient
application

Decrease
volatilization

Biofiltration/Runoff
control

Runoff control to
stream

Integrating Co-Benefits into CAST



Toxics Contaminants Research Outcome

Management Strategy

2015–2025, v.2

Approach: Provide science to help mitigate contaminants, and emphasize the co-benefits with nutrients and sediment reductions

This management approach will provide science to help the TCW, and other partners including those on the WQ Goal Team, to identify and prioritize mitigation options to help mitigate contaminants and the potential co-benefits with nutrient and sediment reductions.

Both PCBs and mercury have widespread extent and severity and cause fish consumption advisories, so they are being addressed first for mitigation options. Science to support PCB reductions is further described in the Policy and Prevention Strategy and work plan, while information to better inform mercury is described in first management approach of this strategy.

For other contaminants and their mixtures, the TCW will depend on information learned in different from landscape settings, and several additional activities to help identify and prioritize mitigation options. The additional activities will include:

- Studies of mitigating contaminants in different landscape settings
- Determine the efficiencies of some management practices to reduce selected contaminants
- Explore the use of existing nutrient and sediment tools (such as CAST and watershed model) to address selected contaminants.
- Interact with WQ GIT teams on opportunities to achieve co-benefits between nutrient and sediment practice and contaminant reductions.

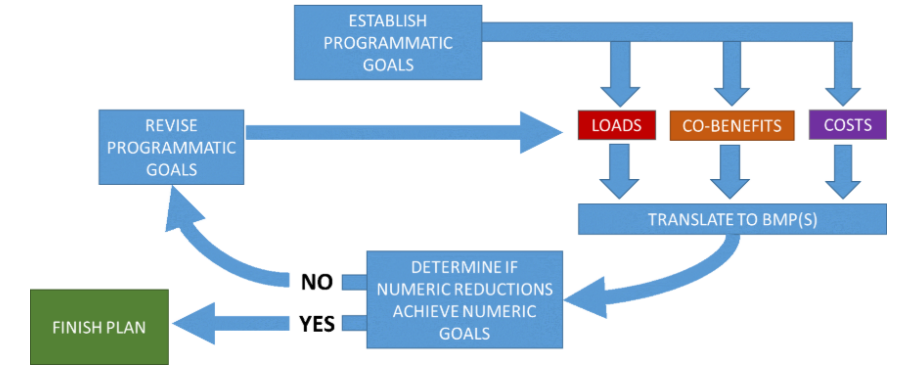
DEVELOP PLANS

Approaches to Developing Watershed Plans Using CAST

This framework is offered as one approach for developing a nitrogen, phosphorus and sediment reduction plan for any geographic area within the Chesapeake Bay region. This framework is directed toward developing the Phase 3 Watershed Implementation Plan (WIP), but is applicable to development of other water quality improvement plans. The primary audience is local government planners who will use CAST to estimate the nitrogen, phosphorus and sediment loads resulting from selecting one or more BMPs to achieve their goals. More information on using CAST to develop plans is under [How To>User Documentation](#). Then click on [Getting Started](#) in the table of contents.

Steps to Developing a Plan

The following diagram summarizes a sequence of steps for developing a water quality improvement plan.



1. The first step is to establish programmatic goals that include quantifiable loads for nitrogen, phosphorus and sediment; co-benefits from implementing BMPs, and the costs of implementation.
2. The second step is to translate a combination of programmatic goals into specific BMPs, and then use those BMPs in a CAST scenario to estimate nitrogen, phosphorus and sediment loads.
3. The third step is to determine if the loads are achieving the programmatic goals. If not, it is necessary to revise programmatic goals, perhaps changing co-benefits and/or costs, and then revising the scenario to estimate loads again.
4. Once the estimated loads meet programmatic goals, the final step is to finish the plan and send it to the next level of the planning process.

Identifying Goals

Planning Goals for the Chesapeake Bay TMDL Phase 3 WIP
Local area planning goals (LAPG) are developed from the draft Phase III Planning targets for developing the Watershed Implementation Plan (WIP). View more information and download the LAPGs at the link below. The WIPs are posted to EPA's website [here](#).

Planning Goals

Non-Numeric Goals
Reducing nitrogen, phosphorus and sediment while increasing the return on investment requires identifying programmatic goals. Programmatic goals can be identified and then modeled to determine a load reduction. This quantifiable information informs the refinement of the programmatic goals. Many goals may be non-numeric but may imply numeric outcomes. Some programmatic goals can be translated to BMPs.

Examples of non-numeric goals may be a growth policy that includes a regulation on large lot development or zoning requirements. Changes in development strategies are another example of programmatic goals that may be translated to a quantifiable load reduction. Changes in development strategies result in a change to land use. An example is establishing a policy on large lot development that requires a certain percentage to have tree cover. Increased trees or forest land can be modeled with Tree Planting or Buffer BMPs. Land conversion from developed to



Move from qualitative to quantitative assessments



Questions?

Olivia Devereux

Devereux Consulting

Olivia@DevereuxConsulting.com