# Best Management Practices in Phase III WIP Development and Toxic Contaminants

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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

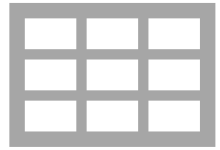
**Removal of Toxic Contaminants from Agriculture, Wastewater, and Urban Sectors (Chesapeake Stormwater Network)**

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:**

Toxics Work Group
Chesapeake Bay Partnership

**Prepared by:**

Tom Schueler and Anna Youngk
Chesapeake Stormwater Network

**Date: March 15, 2016**

# BMPs with the highest impact on toxic contaminants

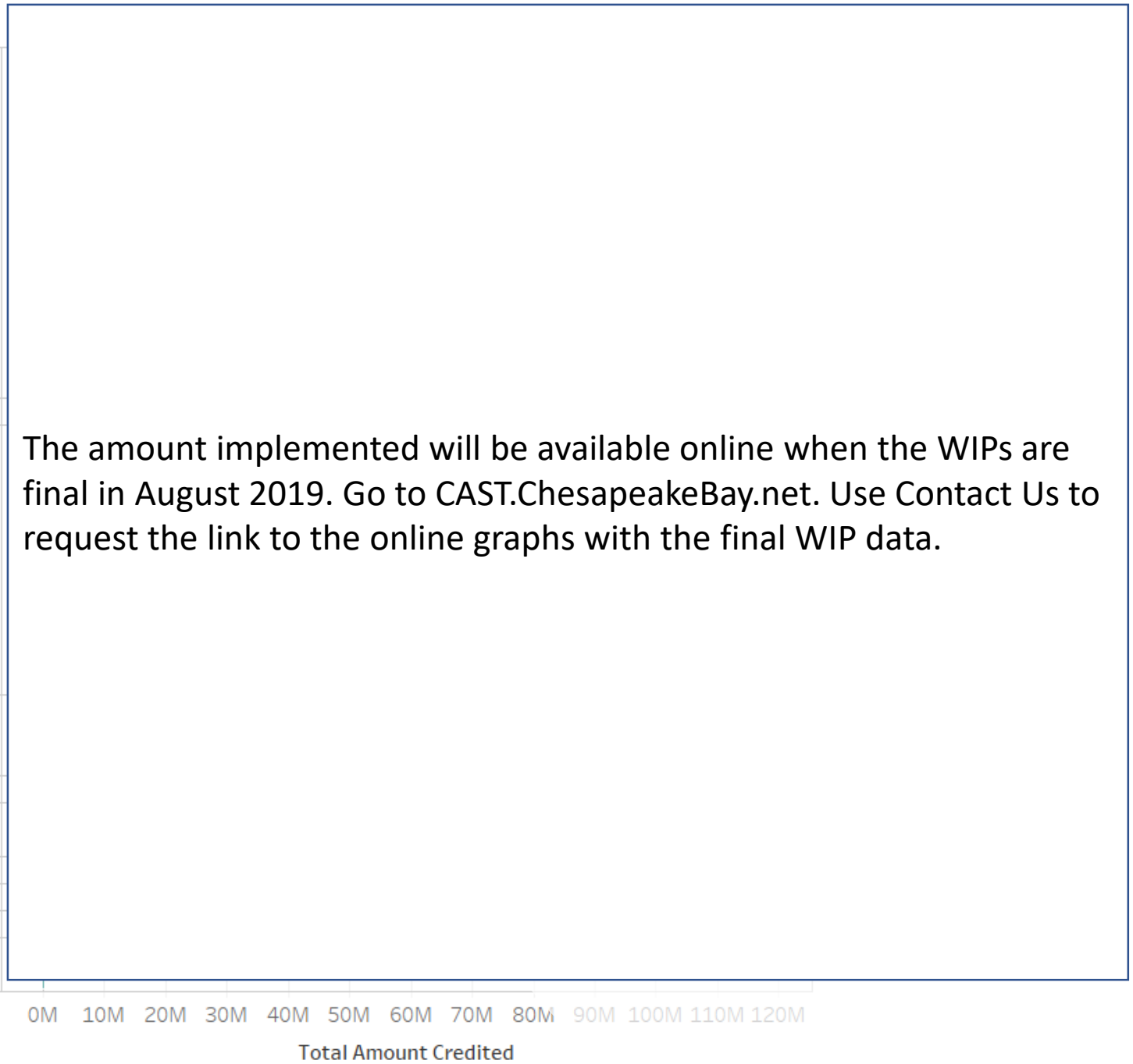
| Sector | BMP Name | Toxic Contaminants Policy and Prevention |
|---|---|---|
| Agriculture | Forest Buffer | Higher |
| Septic | Septic Connections | Higher |
| Agriculture | Ag Shoreline Management | Moderate |
| Agriculture | Amendments for the Treatment of Agricultural Waste | Moderate |
| Agriculture | 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

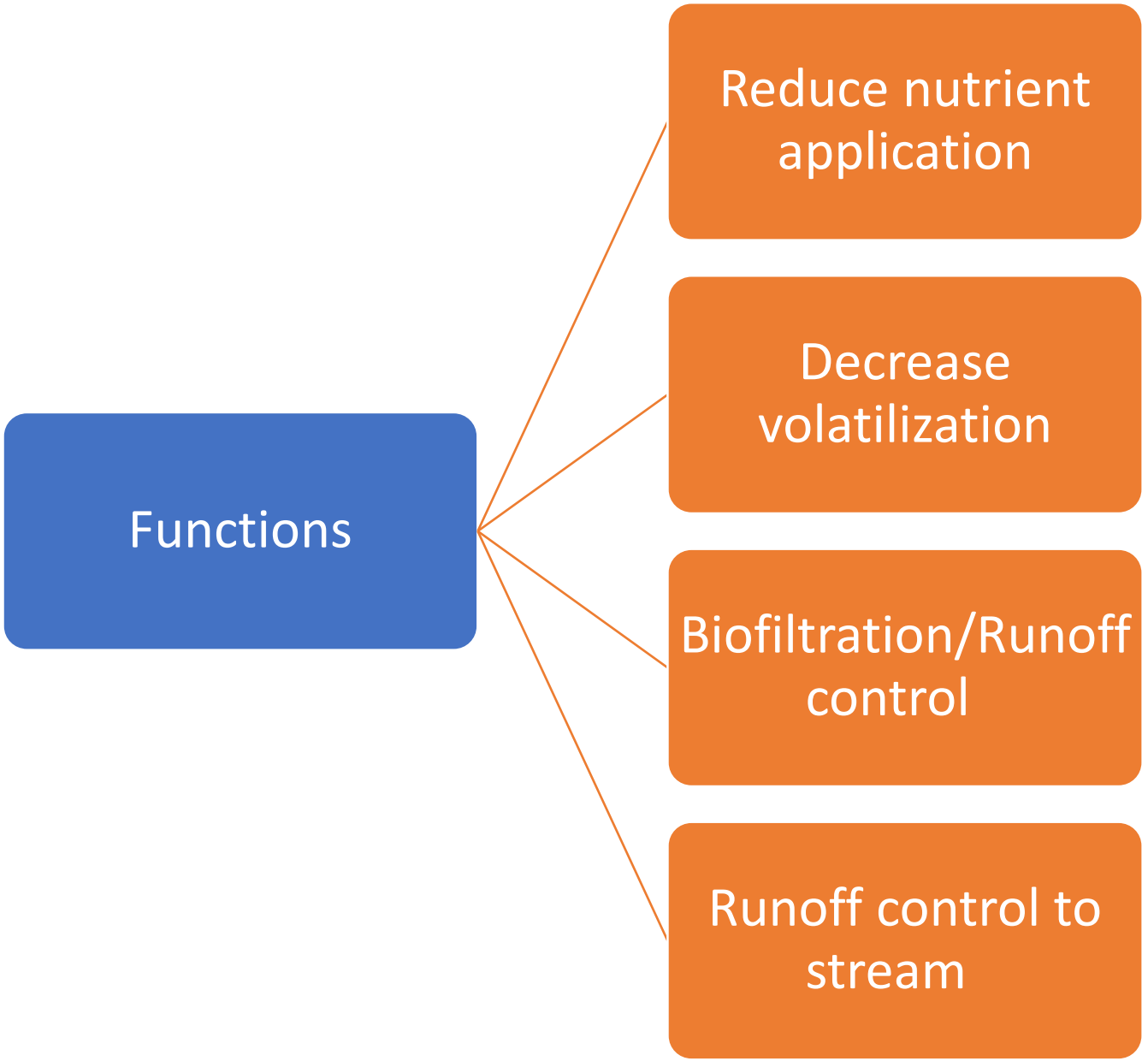
| Sector | BMP Name | Toxic Contaminants Policy and Prevention |
|---|---|---|
| Agriculture | Cover Crops | Negative Impact |
| Agriculture | Biofilters | No Impact |
| Agriculture | Land Retirement to Hay or Pasture | No Impact |
| Agriculture | Cropland Irrigation Management | No Impact |
| Agriculture | 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 |



Classifying BMPs allows evaluation of overall impact on the landscape



# Integrating Co-Benefits into CAST

Chesapeake Bay Program
Science. Restoration. Partnership.

## Toxics Contaminants Research Outcome

### Management Strategy

2015–2025, v.2

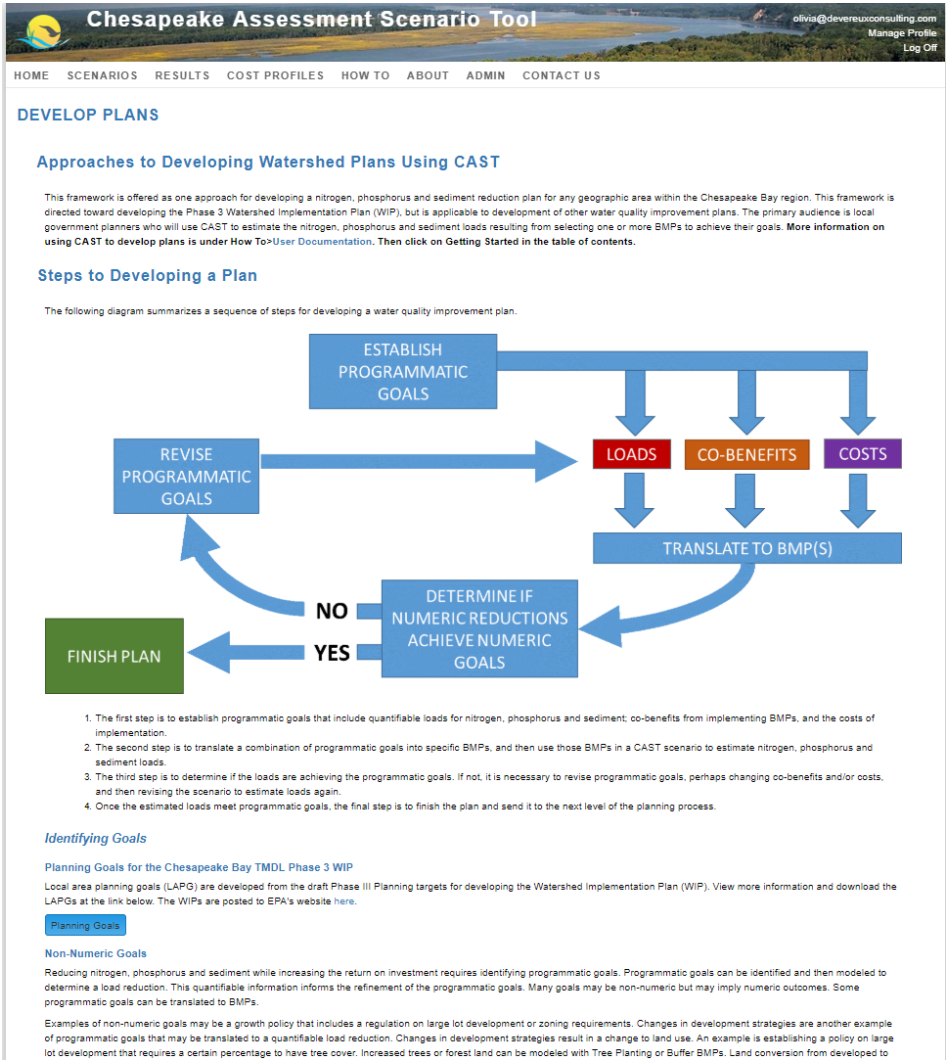
**Approach: Provide science to help mitigate contaminants, and emphasize the co-benefits with nutrients and sediment reductions**

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.





# Move from qualitative to quantitative assessments

# Questions?

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