



# Stormwater Best Management Practices for PENNSYLVANIA

Pennsylvania is continuing work with neighboring states to clean up shared waters that run to the Chesapeake Bay. This effort is part of the Phase 3 Watershed Implementation Plan (Phase 3 WIP). The state believes that the path to success starts at the local level, and stormwater management is an important part of the solution. By using Stormwater Best Management Practices (BMPs), stormwater managers can continue to improve local water quality.

Below are recommendations for stormwater management BMPs from the Phase 3 WIP Stormwater Workgroup. Each recommendation includes watershed BMP goals and estimates for the total annual cost and expected reductions in Nitrogen and Phosphorus.



## Meet Current MS4 Permit Requirements

**Action:** MS4s permittees meet stormwater permit requirements by 2023.

**Goal 1:** MS4s in the Chesapeake Bay watershed implement BMPs in current MS4 NPDES Permits by 2023.  
**Estimated annual cost:** \$74,033,000

Nitrogen runoff reduced by 179,000 lbs or 0% of PA's Goal

Phosphorus runoff reduced by 34,000 lbs or 1% of PA's Goal

## New Riparian Forest Buffers

**Action:** Plant trees and shrubs along streams.

**Goal 1:** MS4s plant 450 acres of new riparian forest buffers by 2025  
**Estimated annual cost:** \$68,000

Nitrogen runoff reduced by 7,000 lbs or 0% of PA's Goal

Phosphorus runoff reduced by 1,000 lbs or 0% of PA's Goal

## Residential Pools and Car Washing

**Action:** MS4 communities develop permits for these activities.

**Goal 1:** MS4s create ordinances for permitting of residential pool draining by 2022.  
**Goal 2:** MS4s create ordinances for permitting of residential car washing by 2022.  
**Estimated annual cost:** \$898,000

Nitrogen runoff reduced by 3,000 lbs or 0% of PA's Goal

Phosphorus runoff reduced by 150 lbs or 0% of PA's Goal

## Industrial Stormwater

**Action:** Industrial stormwater dischargers take new measures to reduce pollutants of concern.

**Goal 1:** Industrial stormwater dischargers implement BMPs onsite or contribute to MS4 efforts offsite.  
**Goal 2:** 250 acres of industrial impervious surface to pervious cover.  
**Estimated annual cost:** \$3,553,500

Nitrogen runoff reduced by 2,000 lbs or 0% of PA's Goal

Phosphorus runoff reduced by 100 lbs or 0% of PA's Goal

## Fertilizer Legislation

**Action:** SB762 signed into law.

**Goal 1:** Fertilizer application in PA complies with SB762.  
**Estimated annual cost:** Unknown

Nitrogen runoff reduced by 105,000 lbs or 0% of PA's Goal

Phosphorus runoff reduced by 4,000 lbs or 0% of PA's Goal

## Cumulative Results of Recommended BMP Implementation

Expected outcomes if the recommendations are implemented in PA's Bay watershed counties.  
Estimated annual cost: \$78,552,000

Nitrogen runoff reduced by  
**296,000 lbs or 1% of PA's Goal**  
Phosphorus runoff reduced by  
**39,250 lbs or 2% of PA's Goal**

## Recommendations for the 2023 MS4 Permit\*

Action: Revise the 2023 MS4 permit to include the recommendations below.

Goal 1: Expanded Focus on Green Infrastructure  
Goal 2: Maintain/restore Orphan BMPs  
Goal 3: Provide funding for Conservation Easements on private land  
Goal 4: Hire staff to provide technical assistance to MS4s.  
Estimated annual cost: **\$101,560,000**

Nitrogen runoff reduced by  
**1,045,000 lbs or 2% of PA's Goal**  
Phosphorus runoff reduced by  
**56,000 lbs or 3% of PA's Goal**

*\*The Department will consider these recommendations for the next MS4 permit term as it would other public comments, but cannot commit to changing the MS4 permit prior to engaging in the normal public process for reissuing the MS4 permit.*

## Cumulative Results Including 2023 MS4 Permit Changes

Expected outcomes if the recommendations are implemented in PA's Bay watershed counties and changes are made to the 2023 MS4 permit.  
Estimated annual cost: \$180,112,000

Nitrogen runoff reduced by  
**1,341,000 lbs or 3% of PA's Goal**  
Phosphorus runoff reduced by  
**95,250 lbs or 5% of PA's Goal**

## Additional Recommendations

The primary workgroup recommendations provide only limited pollutant load reductions. Significant additional reductions are possible if the following Phase 3 WIP Stormwater Workgroup recommendations are implemented:

- Expand the area regulated by MS4 permits.\*** MS4 permits currently regulate 34% of the developed land.
  - 100% of Developed Lands have an MS4 Permit.** This scenario would reduce Nitrogen by 583,159+ lbs/year and Phosphorus by 42,863+ lbs/year. Up to an additional 849 municipalities could become regulated, including small municipalities with limited resources. Under this scenario the Workgroup recommends a regional permitting approach be considered.
  - >34% but <100% of the developed lands have an MS4 Permit.** A limited expansion of the permit based on population or groundcover would also lead to significant reductions (e.g. Setting the trigger for permit issuance by population at 2,500+ would bring 161 currently unregulated PA municipalities in the Chesapeake Basin into the program). Under this scenario the Workgroup recommends a regional permitting approach be considered.
  - MS4 Permitting is not expanded.** If the MS4 permit coverage is not increased, the Workgroup recommends the state identify BMPs outside the currently-regulated area, verify their operability, and report them to EPA for Chesapeake Bay model credit. Nitrogen could be reduced by 10,180 lbs/year and Phosphorus by 1,233 lbs/year.
- Chapter 102 permitting and Act 167 Improvements.** The workgroup recommends: developing and implementing pre-to-post water quality analysis for BMPs, requiring new developments to meet load allocation requirements, improving Chapter 102 BMP data collection and verification, and enforcing the Stormwater Management Act (Act 167). The Chesapeake Bay model cannot calculate potential pollutant load reductions for these suggestions.

*\*The Department will consider these recommendations for the next MS4 permit term as it would other public comments, but cannot commit to changing the MS4 permit prior to engaging in the normal public process for reissuing the MS4 permit.*

## Challenges

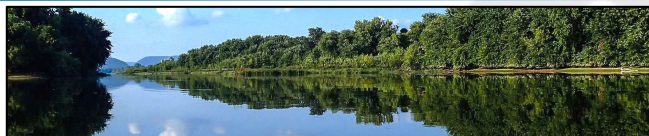
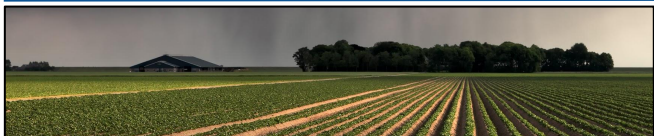
To reach these goals, the state, partners, and local governments will have to overcome some challenges. The Phase 3 WIP Stormwater Workgroup offers the following recommendations for how to do that:

1. **Communication.** The focus of the DEP Municipal Stormwater website is largely technical, directed to municipal officials and engineers. It should be expanded to provide information which better describes the purpose and methods of the MS4 program, for use by local officials and the public. DEP should also consider a more active distribution of stormwater information to the media, targeting specific audiences, not unlike what MS4 permittees are required to do on a local scale.
2. **Staff & Training.** The DEP Municipal Stormwater website has only limited details (like examples) of exactly what activities MS4s should pursue to satisfy the Minimum Control Measures. It should be expanded to provide that information. DEP should also provide listening sessions, training and train-the-trainer events across the state to improve program understanding, and to better understand the constraints encountered by MS4s. Some of that work could be done by the proposed DEP “outreach” staff.
3. **Cultural.** Rain gardens and wet stormwater ponds can be considered “messy” by the general public. Informational signage and quality maintenance can help. Some MS4s have done a great job overcoming cultural constraints; that work should be expanded.
4. **Timing.** MS4 permits have been around a long time but the limited DEP technical assistance and enforcement cause the program to be weak in many communities. The 2018 MS4 permit was more aggressively delivered, but improvements will take time. Consideration of the Workgroup recommendations should become a part of 2023 permit development, and training should be provided on that future permit statewide, with emphasis on any changes relative to the 2018 permit.
5. **Finances.** DEP can expect to continue to struggle with limited staff resources, as will local governments. Local governments should however press for cost savings through collaborative efforts, and should develop reliable sources of revenue such as from stormwater fee systems.
6. **Tracking.** The BMPs proposed in MS4 Pollutant Reduction Plans must in many cases have their planning refined, then they need to be designed and constructed. MS4s need to an effective way to plan and track that work to ensure that the BMPs are operational within 5 years after permit issuance.
7. **Scale.** The issuance of permits to separate municipalities is a major obstacle to compliance with the MS4 permit in Pennsylvania. It is difficult and expensive for small municipalities to maintain sufficient staff expertise, and difficult and expensive to locate, install and maintain BMPs within those same municipalities. A solution is to require some form of regional MS4 permit.
8. **Awareness.** The general public has limited understanding of the impact of urban development on water quality. MS4 permittees are required to promote public education, but in most municipalities the effect has been limited. MS4s cannot be expected to generate adequate resources until there is better local support. MS4s can do a better job involving local environmental groups in their programs.

## Resource Needs

To reach these goals, the state, local partners, and local governments will need additional support. The Phase 3 WIP Stormwater Workgroup offers the following recommendations for how to do that:

1. **Compliance (Permitting, Compliance Assurance, Inspection, Enforcement).** Compliance with the MS4 permit by Pennsylvania municipalities has been inconsistent. That needs to change.
2. **Technical Assistance for BMP Design, Oversight and Implementation.** DEP resource constraints will limit the number of outreach staff made available for this purpose. The Workgroup recommends three staff persons, to be located in the south-west, south-central, and south-east areas of the state.
3. **Financial Assistance for BMP Design and Implementation.** It cannot be assumed that sufficient grant funding will be available to pay for the required pollutant load reductions. The limited grants that are developed will be highly competitive and will be provided with the intent to educate the public and to demonstrate the technology. MS4s are encouraged to avoid heavy reliance on grants, focusing instead on cost-effective solutions.



# Action Steps

The Phase 3 WIP Stormwater Workgroup recommends the following action steps to support nutrient reduction efforts:

1. **Communications and Outreach.** Rfffff
2. **Funding and Resources.** ttt.
3. **Expanding Capacity for Technical Assistance.** lssss.
4. **Reporting and Tracking.** fff
5. **Compliance.** Tjjjj

