

Floodplain and Stormwater Management

The [2009 State Water Plan Principles](#) provided an in-depth assessment of floodplain and stormwater management in Pennsylvania as it stood during that time. The 2009 Principles presented a detailed examination of issues framing problems, programs addressing the problems, identification of gaps and roadblocks, and recommendations in addressing flood control and stormwater management, much of which remains valid today. While many of the challenges previously reported in the 2009 Principles report remain today, significant accomplishments were made during the interim years that have helped meet the life-threatening, environmental, and economic effects of flooding. Some examples include:

- Development of an update in 2018 to the [All-Hazard Mitigation Plan](#) by the Pennsylvania Emergency Management Agency (PEMA)
- Construction of Flood Mitigation Projects provided through grants from the [Department of Community and Economic Development \(DCED\) under Act 13 of 2012](#)
- Since 2009, DEP initiated eleven flood control projects valued more than \$39.5 million with seven of the projects completed
- A transfer in 2019 of responsibilities for coordination of the National Flood Insurance Program from DCED to PEMPA
- The completion in early 2020 by DEP of a statewide Probable Maximum Precipitation (PMP) study that updated the methodology for determining theoretical maximum rainfall amounts for dam design criteria

For the 2022 State Water Plan Update, the Stormwater Management and Floodplain Management Workgroup of the statewide Committee examined the prior background and action items from the 2009 State Water Plan Update as part of their understanding of the past, the present, and the future issues of floodplains and stormwater management. A primary part of this workgroup's work was to determine which prior recommendations were already accomplished, identify those that have yet to be addressed, and present new recommendations whenever appropriate. Solutions formulated by the Stormwater Management and Floodplain Management Workgroup generally fell into categories such as:

- Enhancing Commonwealth agency capabilities with revised policies, authorities, and permitting changes
- Encouraging financial opportunities for floodplain and stormwater projects
- Directing support to local actions based on holistic approaches
- Encouraging legislative funding to support programs in meeting goals
- Providing technical guidance and educational training
- Recommending administrative changes to agencies and governments to achieve a higher level of cooperation, and to refine the authorities, responsibilities, reviews, and enforcement of existing regulations

While the workgroup recognized and appreciated the valuable steps achieved since the last State Water Plan, the workgroup also emphasized that evolving effects of climate change on water resources have significantly added to ongoing problems. The workgroup recommends embracing a coalescence of approaches, such as integrated water resources management, implementation of climate adaptation

strategies, and use of green infrastructure. These combined strategies will ensure that stormwater management, floodplain management, and flood protection programs will be of sufficient strength and resilience to meet the challenges the Commonwealth faces now and into the future.

It is for these reasons that the statewide committee offers the following recommendations.

Flood Control Recommendations

1. Request ~~the Pennsylvania Emergency Management Agency (PEMA)~~, with consultation of other state agencies, review and update elements of the Pennsylvania Enhanced All-Hazard Mitigation Plan that address flooding.
2. ~~Provide-Encourage~~ funding to PEMA to invest in an enhanced Flood Forecasting and Warning Systems Mesonet, (or other applicable method) for all major river basins, utilizing a partnership of federal, state, and local governments.
3. Request PEMA, with consultation of other state agencies, support the Federal Emergency Management Agency's (FEMA's) efforts to update Flood Insurance Rate Maps.
- ~~4. Through legislative action, amend the Flood Control Act to provide DEP with general authority to indemnify federal agencies for water resources projects and provide funding for any indemnification.~~
4. Through executive action, appoint a Commonwealth Flood Coordinator (CFC) charged with coordinating flood prevention and recovery activities among state agencies. The ~~Commonwealth Flood Coordinator~~CFC would also serve as the primary point of contact for federal, interstate, Commonwealth, and local officials on flood-related matters. This coordinator should be autonomous from DEP and other agencies, and report directly to the Governor's office.
5. Increase efforts to protect ~~the Pennsylvania's~~ floodplains:
 - The General Assembly should enact amendments to the Flood Control Act to provide authority to DEP and other appropriate state agencies to consider and implement all potential flood control solutions, including non-structural alternatives and preventive approaches to reduce the risk of flooding; and allow all types of flood control solutions to be funded through the capital budget process.
 - Pennsylvania should encourage Congress and FEMA to review and evaluate the Federal Flood Insurance Program to identify policies, such as the buy-out option, which can be enhanced with floodplain restoration to decrease the likelihood of future damage to communities.
 - DEP, in consultation with PEMA, should evaluate and provide recommendations to the General Assembly to enact amendments to Section 301(a) of the Flood Plain Management Act to consider expanding the list of floodplain obstructions that present a special hazard to public health and safety, that may cause significant pollution or that may endanger life and property or rebuild within the floodplain should include provisions for restoration and remediation of the floodplain to minimize future flood losses.
6. Increase efforts to enhance community recovery assistance following flood events.
 - All involved state agencies should ensure that existing programs are coordinated and provide incentives for floodplain protection and restoration. Public funds used for flood recovery and rebuilding should target floodplain and carrying capacity restoration and obstruction

removal. Retrofitting existing development with facilities designed to minimize flood losses should be considered where appropriate.

- To the maximum extent allowable under applicable law, FEMA, PEMA and other involved state agencies should prioritize flood recovery funds for activities that protect the flood carrying capacity of the floodplain, including stream, floodplain, and wetland restoration projects, inclusive of restoring riparian corridor herbaceous and forested cover and other green infrastructure. Invest funds effectively and reasonably to restore the floodplain and to reduce future losses.
 - FEMA and PEMA should cooperate in revising existing post-flood recovery funding programs to require post-disaster assessments and mitigation investigations and emphasize increased efforts on floodplain restoration and restoration of flood carrying capacity. (trees/vegetation within restorations)
 - The Governor, General Assembly and all state agencies should evaluate and adjust state funding programs to assure they offer a preference for locating or relocating structures outside the floodplain. Where this approach is not feasible, approval to build or rebuild within the floodplain should include provisions for restoration and remediation of the floodplain to minimize future flood losses.
7. Request PEMA, DEP, and DCED to establish an information center/clearinghouse providing education and training to local government officials, municipal solicitors, municipal engineers, and the design community that emphasizes the importance of embedding integrated stormwater and floodplain management considerations into related municipal decisions.
 8. In connection with integrated water resources planning, local governments should be encouraged to include floodplain management and floodplain regulation into local integrated water resources planning. During their planning processes, county and local governments should consider provisions with preferences towards achieving floodplain restoration and relocations, where practicable.
 9. Request DEP seek advisory (non-regulatory) comments from PEMA and the CFC for all Joint Permit (404/105) permit applications, which have floodplain-floodplain-limiting components, within the established review timelines. Request DEP provide notice of all Chapter 105 General Permit authorizations to the same for inventory and mapping.
 10. Request DEP ~~and PEMA~~, in coordination with the Pennsylvania Fish and Boat Commission (PFBC), establish technical design guidance for new encroachments and obstructions including:
 - Aquatic Organism Passage (AOP) design standards
 - Construction materials and standards
 - Design storm sizing – including recommendations for the Department of Transportation, (PennDOT) and Municipal road crossings
 - Stream simulation design standards
 - Other items deemed necessary for resilient safe conveyance of flood waters
 11. Encourage county planning commissions, in consultation with local municipalities, county conservation districts, and DEP, to establish floodplain studies for non-FEMA detailed study of Waters of the Commonwealth surface waters with drainage areas greater than 100 acres in tributary area, which are zoned for non-agricultural uses and not part of an existing detailed FEMA study. Additionally, enact local ordinances which require those engaged in development to provide such studies.

Provide adequate grant opportunities based on regional need and hazard potential for these studies.

12. Encourage county planning commissions, in consultation with local municipalities, county conservation districts, and DEP, to map existing floodplain obstructions and encroachments within the statutory floodway of ~~Waters of the Commonwealth~~ surface waters.

Provide adequate grant opportunities based on regional need and hazard potential for these studies.

13. Encourage county planning commissions, in consultation with DEP and PEMA, to incorporate existing floodplains, proposed floodplain management areas, stream restoration priorities, and riparian buffer corridors into overall comprehensive planning efforts and adopted plans for both county and municipal levels.
 - Consider density and use variances for projects which incorporate significant regional floodplain management\restoration within the subject tracts of land to incentivize public-private-partnerships.
 - Consider ways of addressing the “loss of tax base” for the municipality associated with floodplain restoration and relocations.
14. Encourage county planning commissions, in consultation with DEP and PEMA, to require all municipalities to enact and enforce a floodplain ordinance consistent with DEP, PEMA, and FEMA standards.
15. Encourage the General Assembly to provide adequate budget funding for agency (DEP, CFC, PEMA) efforts and project funding and grants needed to meet the above floodplain goals and recommendations.
16. Encourage the General Assembly to provide adequate budget funding for DEP to provide grants needed to meet annually required structural improvements to existing flood control project infrastructure.

Stormwater Management Recommendations

1. Through appropriate administrative and structural changes within DEP, provide a streamlined and more efficient stormwater management program for the regulated community.
2. Request DEP establish an information center/clearinghouse (Clean Water Academy or other as deemed appropriate) providing education and training to local government officials, municipal solicitors, engineers/designers, and the regulated community on related permitting, design, maintenance, reporting of stormwater infrastructure, and planning.
3. Encourage the General Assembly to authorize by legislation, ~~regulation, or policy~~ the creation and operation of local authorities, utilities, or management districts and/or other entities that are able sustainable funding sources that enable entities to collect reasonable fees and generate sustainable revenues dedicated to planning, constructing, monitoring, maintaining, improving, expanding, operating, inspecting and repairing public and private stormwater management infrastructure. Fee

arrangements should be structured to avoid being classified as a “tax,” and should provide appropriate exemptions or credits to entities who have implemented appropriate and effective stormwater control and management methods that address the impact of their lands and activities. Currently, Section 2705 of Act 62 of 2016 provides some specificity as to the assessment of such fees for second class townships. Recent bills seek to amend the statutes governing other kinds/classes of local governments (e.g., first class townships, boroughs, third class cities) to specifically/explicitly authorize “stormwater fees”.

4. Encourage the General Assembly to fund, promote, and support water resource restoration projects through appropriate legislation, ~~regulation, and administrative changes~~. Water resource restoration projects to fund, promote, and support include, but are not limited to, the following:
 - Projects that reconnect streams to an active floodplain
 - Projects that remove anthropogenic impairments such as legacy sediments along streams
 - Projects that reestablish wetlands and restore degraded wetlands, especially in floodplains and in headwater areas
 - Projects that remediate actively eroding streambanks and use native woody and herbaceous vegetation best management practices to stabilize soils and trap sediments
 - Projects that restore riverine forms and processes while providing geomorphic stability, prevent head-cuts, bed scour, and other forms of channel degradation

Support for these types of projects should consider, but not be limited to, the following:

- Increased funding to support DEP’s in-lieu fee program, including funds to establish initial credit-generating projects and for additional staff needed to administer the program
- ~~Expedited/prioritized review and permit authorization by county and state agencies~~
- Increased density or Land Use zoning considerations at a local level
- Longer term tax incentives or grant opportunities

~~5.—Request DEP regularly evaluate permitting fees for Chapter 102 and 105 programs as they relate to the actual effort spent by staff for review authorization. Adjust permitting fees as needed to fund adequate staffing and infrastructure for efficient standard permit and expedited/priority reviews and enforcement.~~

5. Adequately fund regular updates and addenda to the Pennsylvania Stormwater Best Management Practices Manual to reflect changes to computational methodologies\processes, design\construction practices, proprietary products, maintenance needs, and the best available and current technologies.
 - Technical design guidance should include, but not be limited to:
 - Resilient structural practices to accommodate changing precipitation patterns within the Commonwealth
 - Special guidance on special projects such as large-scale energy projects; brownfields; oil and gas; mining; timber harvesting; etc
6. Encourage the General Assembly to adequately fund DEP to continue to maintain and update the Stormwater Management Model Ordinance to reflect Manual revisions and statutory amendments
 - Provide provisions for county and watershed level special protection initiatives, as deemed appropriate by the county’s commissioners

- Promote watershed-based stormwater management technical reviews for consistency with watershed planning efforts
7. ~~Encourage the General Assembly to fund Request-DEP provide-to enable~~ adequate auditing and enforcement of municipalities such that proper operation and maintenance of existing and newly constructed ~~post-post~~-construction stormwater management practices are assured for Municipal Separate Storm Sewer System (MS4) documentation and Chapter 102 compliance.
 8. Through appropriate structural and administrative changes within DEP and county administrations, to the greatest extent practical, ~~establish-continue opportunities for~~Chapter 102 and 105 delegated county conservation districts ~~to implement Chapters 102 and Chapter 105 permitting and to support~~for watershed-based local technical reviews, authorizations, and enforcement. DEP through its regional offices should continue to provide technical assistance, oversight, and training for the county conservation districts to assure statewide standardization of Chapter 102/105 regulatory compliance.
 9. Encourage DEP through appropriate regulatory action to adopt technical safety standards for embankments of applicable stormwater facilities, not otherwise subject to Chapter 105 Dam Safety regulatory criteria, in accordance with technical recommendations outlined by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS).
 10. Encourage the General Assembly to provide adequate budget funding for DEP efforts, project funding, and grants needed to address stormwater management goals and recommendations through Integrated Water Resource Planning by way of the Act 167 program.