

Water Environment Federation Position Statement

21st Century Stormwater Management

Adopted by WEF Board of Trustees: May 7, 2011

Summary of WEF Position

Update EPA Stormwater Regulations

WEF believes that EPA should update CWA-related regulations that oversee stormwater-generated flows by adopting a number of the recommendations provided by the 2009 NRC report. Updates should include the following items:

- Utilization of a volume-based approach for stormwater treatment while allowing flexibility in programs to address solutions that best fit the specific climate, dominant soils, vegetative cover and other pertinent aspects of stormwater management.
- Support for green infrastructure in stormwater management efforts in conjunction with traditional downstream solutions to encourage the use of this emerging paradigm that not only addresses water quality treatment but also provides many other social, economic and environmental benefits.
- Incorporate flexibility into regulatory framework by allowing off-sets or payment-in-lieu for situations where stormwater treatment cannot be obtained. Adaptive management approaches should be integrated into the permitting process in recognition of the complex nature of stormwater solutions and permitting cycles should respect the timescale required for watershed-wide stormwater solutions to become established and functional.
- Increase funding for stormwater management through increases in the State Revolving Fund (SRF) or other Federally-leveraged funding mechanisms as well as the development of local fee-based frameworks, such as stormwater utilities. Also, all dischargers, including the Federal government, should share in the payment of stormwater collection, management and treatment.
- Recognize the effects of climate change and support sustainable solutions, such a green infrastructure, which provides the resiliency required to adapt to changing climatic conditions.
- Support for stormwater monitoring efforts and associated costs for local communities and research programs to document the performance of stormwater control measures. The results from these programs will inform more effective future solutions for this growing field.

- Integration of watershed-based approach into permitting alternatives in order to address all contributors. A creative permitting structure, such as cross-jurisdictional umbrella permits using water-quality trading markets, can more effectively target treatment of pollutants causing downstream waterbody impairments.

INTRODUCTION

WEF and Stormwater

The Water Environment Federation (WEF) has been involved in the U.S. Environmental Protection Agency's (EPA) stormwater regulatory program since its inception in the early 1990s. In 1992, the WEF Board of Trustees adopted a policy statement that focused on stormwater as a point source to be consistent with the current regulatory environment while recognizing the impacts associated with nonpoint stormwater discharges. During the past two decades, these impacts have increased, and EPA has expanded the universe of stormwater dischargers subject to the National Pollutant Discharge Elimination System (NPDES) and imposed increasingly more stringent controls on these dischargers. In 2009, EPA announced plans to initiate a new national rulemaking to "improve and strengthen" its stormwater program in response to a 2009 report¹ on urban stormwater released by the National Research Council (NRC). EPA's efforts, coupled with those at the state level, have created an opportunity for WEF to renew its focus on stormwater management.

Nature of Issue

Stormwater runoff has been identified as a principal contributor to water quality problems in U.S. waters. In addition to conveying chemicals, sediment, and microbial contaminants, increased stormwater runoff changes the velocity and volume of receiving streams in a manner that affects both the physical habitat and function of these waterways. The most recent survey of the quality of the nation's water is the 2004 National Water Quality Inventory². This document cites three stormwater-related sources that have an impact on water quality: urban runoff/stormwater, agriculture, and unspecified nonpoint sources. According to the document, the percentages of these three sources combined that cause impairments in streams and rivers, lakes, and estuaries are 60%, 28%, and 50%, respectively. Contrast these percentages to impairments caused by municipal discharges/wastewater (15%, 6%, 33%), and it is evident that nonpoint source impacts are significant and in some cases growing, as in the Chesapeake Bay, while point-source impacts remain constant or are decreasing.

Stormwater runoff is varied and diffuse in nature, as is reflected in the complex regulatory framework associated with this type of discharge. EPA regulates some sources of runoff as

¹ National Research Council (2009). *Urban Stormwater Management in the United States*. Washington, D.C.: National Academies Press.

²U.S. Environmental Protection Administration (2009). *National Water Quality Inventory: Report to Congress, 2004 Reporting Cycle*. EPA 841-R-08-001. Washington, D.C.: EPA Office of Water.

point-source dischargers under the NPDES permitting program (*e.g.*, industrial facilities, municipal separate storm sewer systems (MS4s), and construction sites) but not others (*e.g.*, agricultural lands, urban areas outside of MS4s, and privately owned storm sewer systems).

BACKGROUND

Legal Framework

In 1987, Congress amended the Clean Water Act (CWA) to add Section 402(p), directing EPA to extend its NPDES permitting program to certain municipal and industrial stormwater dischargers, to study other sources of stormwater discharges, and to promulgate additional regulations, as needed, to address these other sources.

EPA developed its stormwater regulations under Section 402(p) in two phases. Phase I, promulgated in 1990, established NPDES permit requirements for stormwater discharges from medium and large MS4s, as well as 11 categories of industrial activity (including discharges from large construction sites). Phase II, promulgated in 1999, established corresponding NPDES requirements for small MS4s and small construction sites. The MS4 program also established the performance standard “Maximum Extent Practicable” that outlined the level of stormwater treatment required by practices used in these programs.

To facilitate implementation of its Phase I and II rules, EPA has developed a series of NPDES general permits — one for industrial activities, another for construction activities, and yet another for MS4s. These general permits apply in the few jurisdictions in which EPA continues to serve as the NPDES permitting authority. They serve as models for delegated states, many of which have adopted identical permits.

Given the tens of thousands of stormwater discharges subject to NPDES permitting, EPA and states rely on general permits. In some cases, individual permits are needed to address site-specific impacts (*e.g.*, at complex industrial facilities and some larger Phase I municipalities).

In addition to discharges designated for permit coverage in Section 402(p), Congress provided residual authority to EPA and states to require a permit for other discharges that are determined to contribute to a violation of water quality standards or are a significant contributor of pollutants to waters of the United States. This so-called residual designation authority was used infrequently, if at all, in the past two decades, but now is being asserted in different regions and watersheds around the country.

The total maximum daily load (TMDL) program under Section 303(d) of the CWA also has served to focus attention on the water quality impacts of stormwater runoff. A TMDL is required for any water identified as impaired (*i.e.*, not attaining water quality standards). A TMDL essentially defines the assimilative capacity of a waterbody (*i.e.*, how much pollutant loading a waterbody can receive and still attain standards). In developing a TMDL, a regulator must identify all sources and causes of the pollutant at issue (whether or not they are subject to regulation) and then assign allowable loadings to each such source and cause. Through this exercise, stormwater frequently is identified as a source necessitating pollutant load reductions.

This identification process can be a powerful tool for regulators, but it also is inherently limited by the structure of the CWA. Under the CWA, regulators only have the power and duty to impose TMDL-based requirements on point sources subject to NPDES permitting. By contrast, they have no power or duty to impose such requirements on unregulated nonpoint sources (except through the grant funding program under Section 319 of the CWA, or separate state authority). In TMDL proceedings in which nonpoint sources are the sole or dominant source of the problem, this statutory limitation has caused some stakeholders to question whether additional regulatory authority over unregulated nonpoint sources is needed beyond residual designation.

New Direction from EPA

In recent years, EPA has faced growing criticism about the effectiveness of its stormwater regulatory program to address the corresponding water quality impacts. These impacts are significant and affect all portions of the country. For instance, while urban areas cover only 3% of the land mass in the United States, regulatorily permitted urban stormwater discharges are listed as the primary source of impairment for 8% of all rivers, 7% of all lakes, and 12% of all estuaries³. Some environmental advocates have pressed EPA to impose numeric limits instead of the non-numeric stormwater controls that are common to all three of EPA's general stormwater permits. In 2009, EPA completed a national rulemaking to establish technology-based numeric limits for regulated stormwater dischargers in the construction and development point-source category. Some states have done the same. To date, EPA has resisted across-the-board imposition of water quality-based numeric limits based on an interim policy adopted in 1996. However, EPA has faced mounting pressure to apply such limits, and in fact has done so in a growing number of individual permit proceedings.

To better assess its existing regulatory program, EPA asked the National Research Council to review the program and provide suggestions for improvement. After a 26-month study, the council released its report, *Urban Stormwater Management in the United States*, in early 2009. The report was critical of many aspects of EPA's regulations, and concluded that "[r]adical changes ... are necessary to reverse degradation of fresh water resources and ensure progress toward the Clean Water Act's goal of 'fishable and swimmable' waters."

Partly in response to the council's criticisms and recommendations, EPA announced in December 2009 that it would initiate a new national rulemaking to "improve and strengthen" its stormwater program. This rulemaking is expected to focus on stormwater discharges from new development and redevelopment, as well as from MS4s. EPA expects to complete the new rulemaking by November 2012.

³U.S. Environmental Protection Administration (2009). *National Water Quality Inventory: Report to Congress, 2004 Reporting Cycle*. EPA 841-R-08-001. Washington, D.C.: EPA Office of Water.

WEF POSITION

As a leading organization of professionals involved in every aspect of water quality and water management, WEF is pleased to offer the following principles and recommendations that it believes will result in an improved national stormwater program.

Update EPA Stormwater Regulations

WEF believes that EPA should update CWA-related regulations that oversee stormwater-generated flows by adopting a number of the recommendations provided by the 2009 NRC report. These recommendations recognize the complexity in treating and regulating stormwater due to the variable nature of flows and spatial distribution of control points as well as interrelated impacts on the water quality, biological integrity, and habitat function of receiving waterbodies. These updates also should recognize the anticipated impacts of climate change on water systems as well as the significant role that unregulated nonpoint sources play in degraded water quality conditions across the country⁴.

Utilize a Volume-based Approach for Stormwater Treatment

EPA has expressed an interest in pursuing a volume-based approach to managing and regulating stormwater. Under this approach, the discharge would not be regulated “end-of-pipe” as is commonly the case in the NPDES program. Rather, the discharge would be regulated using a volume-based performance standard (*e.g.*, estimated post-development runoff must mirror predevelopment hydrology, as defined by EPA) as opposed to a pollutant-based focus. This change reflects the understanding that hydrologic recharge through infiltration and other means not only will reduce the amount of pollutant delivery to downstream waterbodies, but also will decrease the overall volume of stormwater runoff generated in a watershed. WEF recognizes the technical advantages of managing stormwater in this manner, particularly because of its inherently universal applicability and flexibility to differing hydrologic conditions around the country. Factors to be considered when shaping this treatment policy include:

- Ways in which “baseline” predevelopment conditions will be defined.
- Modeling platforms and predictive tools and guidance that will be required to estimate and compare pre- to post-development hydrology to ensure consistency and fairness in the regulatory process.
- Flexibility to allow for regional and local conditions in the volume-based approach.

⁴Water Environment Federation. “Clean Water Act Modernization.”
<http://www.wef.org/GovernmentAffairs/PolicyPositionStatement/CWAModernization/>

Support Green Infrastructure in Stormwater Management Efforts

WEF believes that the use of green infrastructure distributed across the landscape in conjunction with traditional downstream solutions should serve as the foundation for effective stormwater management. WEF supports effective integration of green infrastructure as an emerging method for the management of wet weather flows⁵, and believes that this tool can best be implemented through integrated stormwater controls, such as bioretention facilities, swales, and infiltration. By capturing and treating stormwater before it enters major drainage and collection systems, these practices will encourage groundwater recharge and water quality improvement through a variety of physical, chemical, and biological filtration processes. Other practices to consider include green roofs, pervious pavement, and rainwater harvesting techniques. Stormwater runoff reduction and water quality treatment will be maximized when these practices are employed effectively.

In addition to improving water quality, green infrastructure will increase groundwater recharge, restore baseflows in riverine systems, reduce the amount of physical degradation to headwater streams, and decrease stormwater runoff delivered to often-overwhelmed municipal drainage systems that can cause localized flooding and an increase in sanitary sewer overflow (SSO) and combined sewer overflow (CSO) events. WEF believes that this technique is a cost-effective method of addressing stormwater treatment needs and wastewater capacity problems that should be encouraged through regulatory flexibility and local technical support.

Incorporate Flexibility into Regulatory Framework

Given the inherent variability of stormwater flows and impacts, WEF strongly supports flexibility in how these flows and impacts are managed and regulated. By way of example, when considering redevelopment projects, EPA should provide compliance alternatives for permittees that are unable to meet this standard onsite. One alternative could be to allow the permittee to offset post-development impacts through improvements to another site or through some other performance or payment in-lieu program. Adaptive management allowances, which would allow for flexibility through the duration of the permit, also should be included.

Increase Funding for Stormwater Management

As noted in the 2009 NRC report, increased funding to regulate stormwater flows is essential if the United States is to successfully meet the goals of protecting, preserving, and restoring the quality of its receiving waterbodies and their ecosystems. Funding must go to capital improvements and the research that will be required to meet the demands related to future regulatory expectations. A significant increase in NPDES permittees is anticipated in response to expected regulatory changes. Similarly, costs for the operation and maintenance of the systems that are vital to effective stormwater management are expected to increase as permitting cycles become shorter and regulations become more and more strict. Other costs include water quality monitoring to ensure that practices implemented to address stormwater are performing as

⁵Water Environment Federation. "Management of Wet Weather Flows."
<http://www.wef.org/GovernmentAffairs/PolicyPositionStatements/WetWeatherPolicy/>

expected, as well as retrofits of existing stormwater controls that may be required to meet more stringent regulatory demands.

Funding from the state revolving funds should be increased and targeted to support the watershed approach to stormwater management⁶. State legislation should be developed to remove barriers to the establishment of local fee-based structures, such as stormwater utilities or other similar financial frameworks, to empower communities to recover the full cost of stormwater management. Consideration should be given to utilizing municipal entities responsible for water distribution, collection, and treatment when identifying an entity to manage stormwater fee-based structures. All parties that generate stormwater runoff, including federal facilities, should participate in these fee-based structures. Other potential funding mechanisms include water quality trading programs (including surrogates, such as stormwater runoff volume or flow) between point sources as well as point- and nonpoint-source partners, stormwater banking, and pay in-lieu programs for dischargers that cannot meet stormwater demands for their project onsite.

Recognize the Effects of Climate Change

WEF strongly encourages EPA to consider the long-term effects of climate change on various water systems when developing a new regulatory framework. It is anticipated that episodic events (*e.g.*, flooding and drought) will increase across the country⁷, which will place a strain on an infrastructure system that is already under great stress. Recognition of these facts along with an adaptive management approach to environmental permitting and application review will aid in the development of a reasonable and flexible regulatory environment. WEF encourages the use of innovative techniques such as green infrastructure and water reuse that will help to mitigate these effects as they are inherently adaptive and sustainable practices⁸.

Support Stormwater Monitoring Efforts and Associated Costs

Consistent with the 2009 NRC report, WEF believes that monitoring of stormwater controls and their impacts on water quality, biological integrity, and physical stability is a fundamental need, which will serve to both validate effective controls and highlight ineffective measures. Monitoring and funding for monitoring research will serve to calibrate expectations for what can be accomplished meaningfully by different stormwater control measure combinations to treat various pollutant sources within the watershed context. Performance assessments of stormwater controls, both structural and nonstructural, should be developed in order to verify stormwater control effectiveness. These assessments may take the form of a series of academically based studies or as part of a local government monitoring program. Consideration to cost should be made when determining the frequency and methods of monitoring, sampling, and assessment.

⁶Water Environment Federation. "Financial Sustainability for Water Infrastructure." <http://www.wef.org/GovernmentAffairs/PolicyPositionStatement/WaterInfrastructure/>

⁷Pachauri, R.K. and A. Reisinger, Eds. (2007). *Climate Change 2007: Synthesis Report*. Geneva, Switzerland: Intergovernmental Panel on Climate Change.

⁸Water Environment Federation. "Protecting Water Resources and Infrastructure From the Impacts of Climate Change." <http://www.wef.org/GovernmentAffairs/PolicyPositionStatement/ProtectingWRClimateChange/>

Integration of Watershed-based Approach into Permitting Alternatives

WEF supports the management of stormwater in a watershed context. When regulating stormwater discharges, EPA should identify all such discharges within a given watershed (both regulated and unregulated) and then derive controls suitable to restore and protect water quality within the watershed in a fair and equitable manner for all contributors. In so doing, EPA needs to be thoughtful about how best to manage particular overlapping problems. One example is the separation of combined sewers to reduce overflows. EPA often accepts this action as a long-term control strategy, and while separation may address the control of overflows and their frequency, receiving stream water quality may suffer because of related impacts from the separated system.

This approach should be reflected in a regulatory framework that places an emphasis on watershed-based permit structures that may bypass political and jurisdictional boundaries. For instance, this watershed-based, or collective, approach could be successful under an umbrella structure with a lead municipal permittee working with a number of co-permittees. This system could promote local control in efforts to address stormwater issues within a watershed, which include the use of market-based approaches to meet permit requirements.

WEF believes that equity in addressing all sources is central to success. Otherwise, regulated point sources will be forced to bear an unfair and unmanageable burden.

SUMMARY

WEF recognizes the importance of effective stormwater management in the pursuit of protecting, preserving, and restoring the quality of receiving waterbodies and their ecosystems. WEF also recognizes that innovative and nontraditional approaches are needed to address the stormwater management challenges of the 21st century. WEF believes that for these new approaches to be effective, they must address the dimensions of affordability, flexibility, site-specific constraints, performance assessment, feasibility of implementation, emerging practices such as green infrastructure, and the authorities and limitations of the existing legal framework.

About the Water Environment Federation

Formed in 1928, the Water Environment Federation® (WEF®) is a not-for-profit technical and educational organization with 36,000 individual members and 75 affiliated Member Associations representing water quality professionals around the world. WEF and its Member Associations proudly work to achieve our mission of preserving and enhancing the global water environment.
www.wef.org