

National Municipal Separate Storm Sewer System  
(MS4) Needs Assessment  
Survey Results

○ Executive Summary

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The WEF Stormwater Institute gratefully acknowledges the following individuals for their contribution to the development and deployment of the survey, as well as the analysis of the results. The survey would not have been possible without their generous offering of time and ideas through work team meetings and reviews of the survey and report. Any errors, omissions, or differences of opinion are conveyed by WEF.

Further, the Stormwater Institute would like to thank and acknowledge the SWI Subscribers, whose funding made the survey possible. A complete list of the Subscribers can be found at the back of this report.

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# NATIONAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) NEEDS ASSESSMENT SURVEY RESULTS EXECUTIVE SUMMARY

## BACKGROUND

In mid-2018, the Water Environment Federation’s (WEF) Stormwater Institute (SWI) conducted a national survey of municipal separate storm sewer system (MS4) permittees. The primary objectives of this survey were to identify the information and technical resource needs of MS4 permittees and to better understand MS4 stormwater program challenges. Additionally, some of the information collected from the survey will support WEF’s ongoing effort to establish stormwater as a sector in the American Society of Civil Engineers (ASCE) Infrastructure Report Card<sup>®</sup>.

## RESPONDENTS

In total, the survey received 622 responses from 48 states, including the District of Columbia. Approximately 25% and 65% of respondents represented Phase I and II MS4 permittees, respectively. Non-traditional Phase II permittees and state transportation departments (DOT) accounted for 7% and 3% of the survey sample, respectively. Respondents were generally representative of the geographic distribution of MS4s across the United States.

## MS4 PROGRAM CHALLENGES

Phase I and II MS4 respondents ranked lack of funding or availability of capital, aging infrastructure, and increasing or expanding regulations as their most important stormwater program challenges (Figure 1). Aging workforce, lack of technical expertise, and lack of information/training on best practices are the least important challenges for this group.

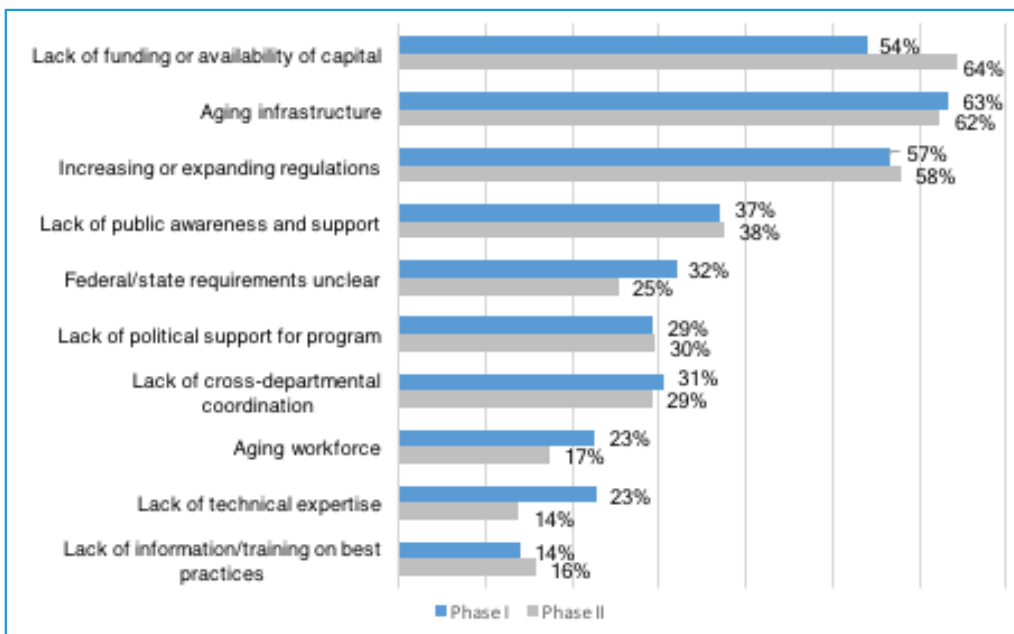


Figure 1. Fairly or extremely significant program challenges, Phase I and II MS4 respondents

Non-traditional and state DOT respondents provided very similar ratings for program challenges. However, aging infrastructure seems to be less of a challenge for state DOTs than for other permittees.

<sup>1</sup> Sample of municipal respondents is statistically significant at the 95% confidence interval, with a 5% margin of error.

<sup>2</sup> Non-traditional MS4s cover county, state, or federally owned separate sewer systems operated by such entities as universities, airports, hospitals, or prisons. State DOT responses are reported separately from other non-traditional MS4s because of their unique nature.

## INFORMATION AND RESOURCE NEEDS

Survey respondents indicated their need for additional information and technical resources related to six broad stormwater topic areas, which generally reflected the priorities outlined in SWI's *Rainfall to Results: The Future of Stormwater*. Respondents were also asked about information and technical resource needs related to the six minimum control measures and other aspects of permit compliance.

Of the six broad stormwater topic areas, both Phase I and Phase II MS4 respondents indicated the greatest need for information and technical resources related to funding and financing (Figure 2). This was followed

by green infrastructure (GI) and innovative best management practices (BMPs). For Phase II MS4 respondents, the need for information and resources on asset management also ranks as a relatively high priority.

Non-traditional and state DOT respondents also indicated the greatest need for information and resources related to funding and financing. In addition, these respondents showed a relatively high need for information and resources related to asset management, total maximum daily load (TMDL) compliance, and GI and other innovative BMPs.

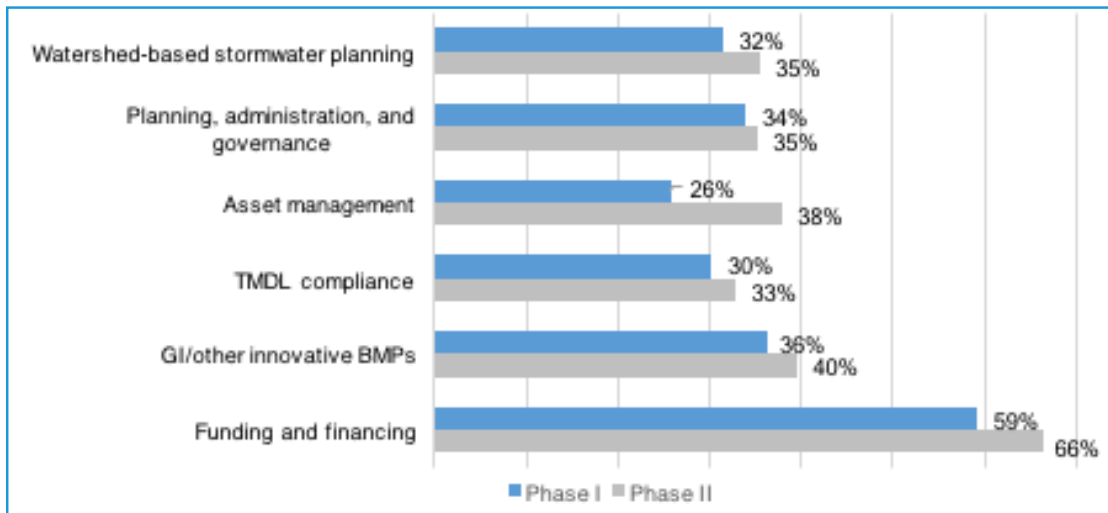


Figure 2. Phase I and Phase II MS4 respondents indicating a high or very high need for information and resources related to key stormwater topic areas

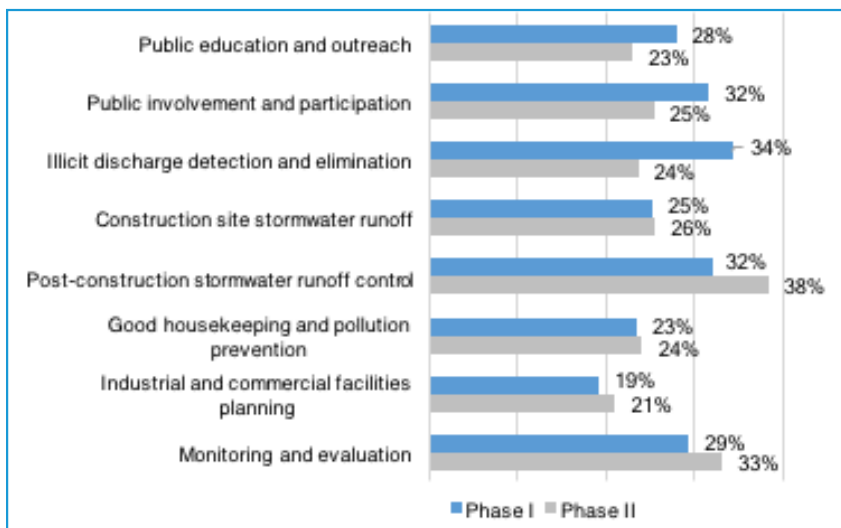


Figure 3. Phase I and Phase II MS4 respondents indicating a high or very high need for information and resources related to permit compliance

Overall, Phase I and II MS4 respondents indicated less need for information and resources related to topics associated with permit compliance (Figure 3). However, Phase II MS4 respondents identified a high need for information and resources related to post-construction stormwater runoff. Most non-traditional and DOT respondents indicated a low need for information and resources related to permit compliance, with a few exceptions, including post-construction stormwater runoff control and monitoring and evaluation.

Respondents who indicated a moderate, high, or very high need for information and resources related to either the broader stormwater topics or compliance-related categories were asked to provide additional details by indicating their level of need for a series of “sub-topics”. Table 1 shows the sub-topics identified as most important for the highest ranked categories.

**Table 1. Highest ranked sub-topics under information and resource need priority categories**

Stormwater topic	Phase I (PI) and II (PII) communities	Non-traditional Phase II (NT)/state DOT
Funding and financing	<ul style="list-style-type: none"> <li>• Leveraging additional sources of funding based on co-benefits</li> <li>• Inventory of available funding sources (PI)</li> <li>• Analysis of stormwater funding needs (PII)</li> </ul>	<ul style="list-style-type: none"> <li>• Leveraging additional sources of funding based on co-benefits</li> <li>• Analysis of stormwater funding needs (DOT)</li> <li>• Inventory of available funding sources (NT)</li> </ul>
GI and other innovative BMPs	<ul style="list-style-type: none"> <li>• Policies and incentives that encourage GI on private property</li> <li>• Development standards and incentives that encourage GI/innovative BMPs</li> <li>• Monitoring/quantifying BMP effectiveness (PII)</li> </ul>	<ul style="list-style-type: none"> <li>• Monitoring/quantifying BMP effectiveness (NT)</li> <li>• BMP maintenance requirements (NT)</li> <li>• BMP life-cycle cost analysis (DOT)</li> <li>• Screening/evaluation of new technologies (DOT)</li> </ul>
Post-construction stormwater runoff control	<ul style="list-style-type: none"> <li>• Post-construction inspection and enforcement</li> <li>• Stormwater manuals and design templates for developers, especially for innovative BMPs</li> </ul>	<ul style="list-style-type: none"> <li>• Financial incentives/disincentives to encourage contractor compliance</li> <li>• Erosion and sediment control compliance</li> </ul>
Asset management	<ul style="list-style-type: none"> <li>• Cost estimating/cash flow analysis for capital expenditures</li> <li>• Evaluating life-cycle costs of stormwater control measures (PII)</li> <li>• Prioritizing stormwater asset maintenance and replacement (PI)</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluating BMP life-cycle costs</li> <li>• Developing condition assessments (NT)</li> <li>• Prioritizing asset maintenance and replacement (NT)</li> <li>• Creating inventory/database of stormwater assets (DOT)</li> </ul>

## ANNUAL PROGRAM BUDGETS AND ADDITIONAL NEEDS

Overall, 48% of respondents indicated that they did not have enough money in their program budget to meet their stormwater program goals. Phase I MS4 communities and state DOTs have the largest stormwater program budgets. These respondents indicated less need for additional budget (percentage-wise) compared to Phase II MS4s and non-traditional

permittees (Table 2). Of the Phase I and II MS4 permittees that indicated a need for additional funding, the total need increases with size of population served. For example, the average additional annual need for permittees serving 50,000 people or less is approximately \$1.2 M compared to \$9.6 M for communities serving 500,000 people or more.

	Average estimated 2018 program budget	Percent of respondents that do not have enough money to meet program goals	Additional annual budget needed to meet all program goals	Annual budget increase needed (%)
Phase I municipal (n = 128)	\$10,968,000	47%	\$5,719,000	52%
Phase II municipal (n = 324)	\$1,367,000	49%	\$1,862,000	136%
Phase II non-traditional permittee (n = 36)	\$ 429,500	41%	\$ 1,005,000	234%
State DOT (n = 11)	\$ 22,165,000	57%	\$ 2,563,000	12%

**Table 2. Annual program budgets and budget needs by MS4 type**

## CONCLUSIONS

The survey shows that many MS4s face significant challenges implementing their stormwater programs. Across all permittees, respondents identified lack of program funding and availability of capital as a significant challenge, along with aging infrastructure and increasing or expanding regulations.

Respondents revealed a need for information and technical resources to help address these challenges. There is a clear need for information and resources related to funding and financing of stormwater programs, including analysis of funding sources and needs as well as information on co-benefits. This information could help permittees leverage or establish alternative funding sources and educate decision makers on the importance of stormwater investments.

Identified information and resource needs related to GI and innovative BMPs, post construction stormwater runoff control, and asset management also highlight key challenges for MS4s. For example, the interest in incentives and policies that encourage GI on private

property underscores the need to leverage private investment in stormwater management. There is also a clear need for information on BMP effectiveness and life cycle costs, which will enable program managers to prioritize investments and ensure compliance with increasingly stringent regulations.

Nearly half of all survey respondents indicated that they need additional funding to meet their stormwater program goals. It is difficult to know how well this estimate represents the actual percentage of MS4s with additional budget needs, and there are reasons to suspect this percentage is not fully representative. For example, MS4s may be discouraged from discussing the need for additional budget to avoid questions about the budget-setting process or whether they are meeting all aspects of regulatory compliance. However, this survey represents an important first step to better understanding total funding needs and supporting the effort to establish stormwater as a sector in ASCE's quadrennial Infrastructure Report Card.



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Thank you to these subscribers for taking a leadership role in developing stormwater solutions for the Stormwater Institute.

With the support of dedicated industry leaders, the Water Environment Federation (WEF) has the stormwater sector covered through access to stormwater news, education, and training opportunities, as well as policy support and advocacy. Building on these efforts, the WEF Stormwater Institute fills the vacuum of national stormwater leadership and advanced support of professionals in a water sector poised for major growth.

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