GREAT LAKES WATER INFRASTRUCTURE PROJECT ISSUE BRIEF:

WATER POLLUTION

SUMMARY

Combined sewer overflows are a primary water pollution concern for nearly 800 communities nationwide.[1] Of these, 180 are located in Great Lakes states. In one year alone, approximately 22 billion gallons of untreated combined sewage was discharged annually from combined sewer systems into the Great Lakes. Best practices for reducing pollution and overflow events include incorporating green infrastructure; switching to decentralized wastewater treatment systems; and employing advanced treatment technologies.

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ISSUE

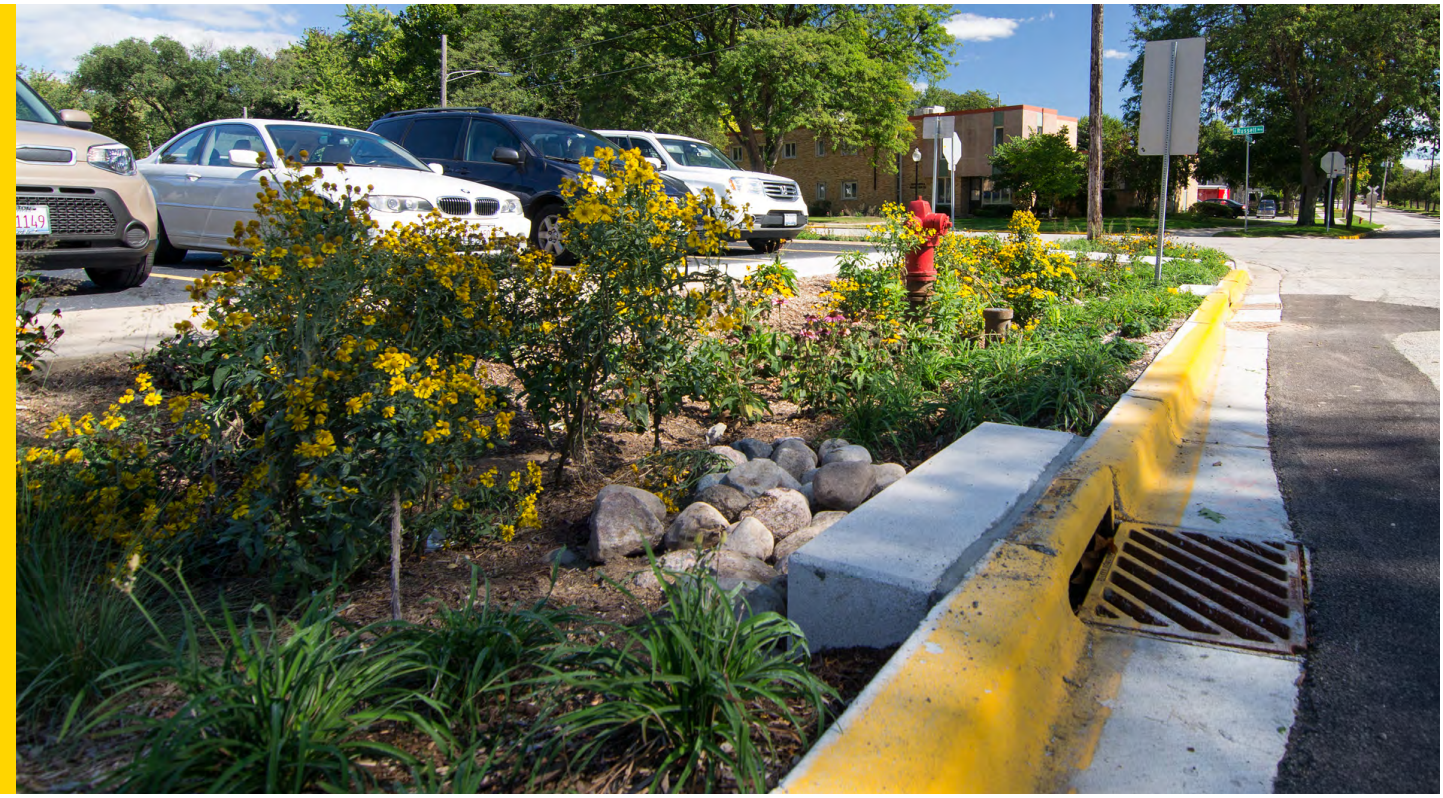
Combined sewer overflow ("CSO") events occur when combined sewer pipes (pipes which carry both sewage and stormwater runoff) are overwhelmed during heavy rains, and send untreated sewage into water bodies or residents' basements.[2] Separated sewer systems (systems which have separate pipes for sewage and stormwater runoff) can also overflow, as groundwater seeps in through cracked pipes, or flows in from illegal building connections to stormwater pipes.[3]

CSOs are a primary water pollution concern for approximately 770 communities nationwide.[4] Of these, 180 are located in Great Lakes states. In 2014, approximately 22 billion gallons of untreated combined sewage was discharged from combined sewer systems into the Great Lakes.[5] According to the American Society of Civil Engineers, it could cost Great Lakes states $200 billion over the next 20 years to bring drinking and wastewater infrastructure to a state of good repair.[6] While some federal funding is available, much of the infrastructure spending depends on local government revenue.[7] Historically, many communities have not been able to adequately invest in infrastructure maintenance, resulting in today's overdue bill.

POLICY CONTEXT

The 1972 Clean Water Act authorizes the US Environmental Protection Agency (US EPA) to regulate facilities that discharge pollutants into water bodies. Polluting facilities include sewer systems that overflow to a water body during a CSO event. The National Pollutant Discharge Elimination System (NPDES) program issues a discharge permit for each such sewer system, specifying requirements for pollution discharge limits, monitoring and reporting.[8] The US EPA may also issue a consent decree to the sewer authority operating the infrastructure; the consent decree specifies the terms of reaching compliance with the Clean Water Act.

The 1994 US EPA CSO Control Policy provides guidance to permittees and seeks to coordinate relevant parties.[9] Although US EPA does not have a specific policy for separate sewer systems, separate sewer overflows ("SSOs") are prohibited unless authorized by an NPDES permit. Moreover, SSOs are likely the result of improper operation and maintenance of the sewer system, and may violate NPDES permit conditions.[10]



BEST PRACTICES

Several communities are incorporating green infrastructure as an element of a CSO control program. Green infrastructure practices, such as rain gardens and porous pavement, use natural processes to infiltrate or slow stormwater before it enters the sewer system. This reduces the number of CSO events, while also lowering the operational and capital costs of the sewer system.[11]

Decentralized wastewater infrastructure, such as septic systems, can be a cost-effective solution for smaller communities.[12] These systems also provide a more flexible and adaptive response to changing population size and climate impacts.[13] Decentralized wastewater systems can help a municipality "right size" their sewer services through decommissioning underutilized portions of the centralized network. However, resizing the footprint of the system can affect residents in several ways. Utilities considering decommissioning part of the system should first initiate a robust community participation process to explore possible impacts.[14]

Investing in advanced wastewater treatment technologies can result in substantial water quality benefits. Advanced technologies include nitrogen control, biological phosphorous control, coagulation-sedimentation, and carbon adsorption.[15]

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