



The picnic area of Toronto's Sunnybrook park is flooded after heavy rains.

Adaptation Strategy

Ontario's provincial and municipal governments must adapt stormwater management practices and infrastructure to accommodate higher water flows.

BY JULIE ABOUCHAR

IN 2013, damage from the growing number of extreme weather events resulted in insurance companies paying out a record \$3.2 billion to Canadian policyholders. The June 2013 flooding that devastated southern Alberta was the largest and most expensive natural disaster in Canada's history. This resulted in insurance damage of \$1.74 billion. On July 8, 2013, Toronto reported 126 millimetres of rain, breaking the previous single-day rainfall record for the city set by Hurricane Hazel in 1954. This flooding event was touted as the most expensive insured natural disaster in Ontario's history, resulting in \$940 million in damages. These increasingly more common and costly weather events have forced both municipal and provincial governments to reconsider traditional stormwater management practices and re-evaluate stormwater infrastructure.

Combined sewer overflow

The 2013 Toronto flood overflowed both the city's wastewater treatment plants

and stormwater systems. As a result, close to one billion litres of sewage flowed into Toronto's rivers and Lake Ontario. One of the challenges for municipalities in adapting to these storms is dealing with municipal sewer overflow of untreated contaminated water.

In the 1950s, Ontario municipalities began replacing combined sewer systems with separate sanitary and stormwater sewer systems. In most newly developed areas, municipalities provide storm sewers for runoff drainage and sanitary sewers for sewage flow. This approach was adopted to avoid problems associated with wastewater being flushed into receiving waters during flooding events. Although some combined sewer systems still exist in older areas of the province, Ontario stopped approving combined sewer systems in about 1985.

Recently, the Canadian Council of Ministers of the Environment (CCME) released its Canada-Wide Strategy for the Management of Municipal Wastewater Effluent 2014 Progress Report. The strategy was endorsed by a majority of

the members of the CCME in 2009 and included 11 commitments that were to be completed by 2014. One of the commitments required the provinces to "ensure that combined sewer overflows and sanitary overflows will not increase in frequency due to development, unless it occurs as part of an approved long-term management plan." The report concluded that Ontario has met this commitment. The report noted that Ontario's policies for combined sewer systems and guidelines for the design of sewage works do not allow the construction of new combined sewers.

Municipalities' role

Ontario municipalities are responsible for urban surface water runoff that is collected in separate municipal storm sewers. Municipalities develop strategies and policies to reduce stormwater pollution at the source by managing the application of fertilizers to lawns and salt to roads. For example, the City of Kitchener recently adopted a stormwater credit policy. In 2012,

the City of Kitchener began providing incentives to property owners who use best management practices to reduce the quantity and improve the quality of stormwater runoff entering the municipal stormwater system. Property owners in Kitchener are now able to apply for stormwater credits of up to 45 per cent of the stormwater share of their utility bill.

Ontario's role

Although stormwater management falls predominately under municipal jurisdiction, many provincial ministries and agencies provide oversight for

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stormwater management and surface drainage. For example, the Ministry of the Environment and Climate Change (MOECC) is responsible for issuing Environmental Compliance Approvals (ECA) for stormwater management systems. In 2003, the MOECC released the Stormwater Management, Planning and Design Manual to assist ECA applicants with planning, designing, and operating stormwater management facilities. The MOECC manual is also the primary source of technical guidance for the MOECC staff issuing ECAs for stormwater management facilities.

The 2009 Ontario Expert Panel on Climate Change Adaptation report emphasized the province's responsibility to provide leadership for climate change adaptation. The expert panel recommended a comprehensive review of stormwater management throughout the province.

In 2010, the MOECC completed a review of its policies, acts, and regulations that deal with municipal stormwater management systems to evaluate their ability to adapt to climate change.

In 2014, the MOECC released its Policy Review of Municipal Stormwater Management in the Light of Climate

Change – Summary Report.

The MOECC's summary report was developed in response to an Application for Review submitted under the *Environmental Bill of Rights*, 1993, Part IV. The summary report concluded that "the *Ontario Water Resources Act* and the *Environmental Protection Act* are anticipated to provide a sufficient legislative framework for implementing adaptation to climate change for municipal stormwater management, through approvals, general prohibitions, orders, penalties, and regulation making authority for environmental protection."

However, the summary report found that the MOECC approvals process for municipal stormwater management "requires review to include identifying measures to encourage source control best practices for municipal stormwater management." In addition, the summary report addressed the need to update the 2003 Stormwater Management, Planning and Design Manual to include additional best practices for climate change adaptation for municipal stormwater management.

Moving forward

As severe weather events increase in frequency, experts predict that insurance rates will rise and that some weather liabilities will not be covered at all. The majority of Ontario's stormwater infrastructure is old and municipalities face a deficit of close to \$7 billion for the repair and replacement. Moving forward, an effort from both Ontario's provincial and municipal governments is needed to ensure that stormwater management practices and infrastructure adapt to accommodate higher anticipated water flows from extreme weather. WC



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