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2014 Municipal Water Policy on Stormwater

Convention Policy Paper



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1. Background

Stormwater management is the planning, design and operation of systems that store, convey, and treat stormwater runoff. By controlling runoff, mitigating flooding and preventing pollutants from entering water bodies, effective stormwater systems can minimize adverse impacts to communities and the natural environment.

With fast-paced population growth, loss of natural areas, and increased development being a common reality for many Alberta communities, concerns related to stormwater management have heightened. With development, more land coverage by impermeable surfaces contributes to increased runoff rates, volumes, and pollutant loadings. These changes can contribute to the degradation of water quality and aquatic ecosystems, urban flooding, erosion and sedimentation, infrastructure deterioration, property damage, and public health risks.

Policy Objective

The objective of the municipal stormwater policy is to create an enabling environment for municipalities to more effectively manage stormwater to protect local communities and the natural environment by:

- restoring natural drainage capacity to pre-development levels;
- protecting water quality, aquatic ecosystem health, and minimizing impacts on downstream water users; and
- mitigating flooding.

2. Policy Statements

Stormwater Management Guidelines for the Province of Alberta

Concerns of Municipalities

The provincial Stormwater Management Guidelines are intended to support stakeholders in managing stormwater systems that allow development to proceed while protecting communities and the environment. Since the Guidelines were last updated in 1999, municipalities are concerned that they do not provide adequate guidance on recently evolved best practices and design approaches. This is a concern as many municipalities rely heavily on these Guidelines as a source of advice and resources.

Municipalities also expressed concerns about information gaps in the Guidelines, suggesting that increased direction be provided on: water quality and volume targets, erosion and sediment control, appropriate levels of service for the current Alberta context, and design methods that consider climatic changes.

Policy

- 1) AUMA urges the Government of Alberta to update and strengthen the provincial Stormwater Management Guidelines by:
 - a) providing updated information specific to Alberta on best management practices and appropriate design standards; and
 - b) outlining comprehensive performance based targets that address water quality, volume control, and rate control.

Municipal Government Act

Concerns of Municipalities

The Municipal Government Act (MGA) enables municipalities to regulate development by enforcing legislative tools and to acquire contributions towards stormwater systems through the assessment of levies and taxes. While the MGA does not directly regulate stormwater, it allows municipal authorities to protect water bodies by designating land as environmental reserves.

As per section 664 (1) of the MGA, an area of land may be designated as environmental reserve if it consists of:

- a) a swamp, gully, ravine, coulee or natural drainage course,
- b) land that is subject to flooding or is, in the opinion of the subdivision authority, unstable, or
- c) a strip of land, not less than 6 metres in width, abutting the bed and shore of any lake, river, stream or other body of water for the purpose of
 - i. preventing pollution, or
 - ii. providing public access to and beside the bed and shore

While section 664 (1) (a) enables municipalities to designate a natural drainage course as an environmental reserve, there is often disagreement between municipalities and development proponents as to what landscape features constitute a natural drainage course. In addition, the defined purpose does not recognize the function of environmental reserves in protecting riparian areas and their services.

Municipalities are also concerned that the minimum buffer width of 6 metres identified in section 664 (1) (c) is insufficient to adequately protect water bodies where runoff is discharged. Determination of appropriate buffers is dependent on site-specific parameters such as water body type, purpose, geology, and vegetative cover. While the MGA gives municipalities the authority to increase setbacks, there is a need for increased guidance to determine appropriate buffers that are scientifically and legally defensible.

Policy

- 2) AUMA advocates that the Municipal Government Act be amended to strengthen the definition of environmental reserve by:
 - a) clarifying the definition of natural drainage course as cited in section 664 (1) (a).
 - b) adding 'protecting the function of riparian areas' to the list of purposes outlined in section 664 (1) (c).
- 3) AUMA will work with the Government of Alberta to provide municipalities with increased guidance and tools to determine appropriate environmental reserve dedications based on flood risk and other scientifically and legally defensible data.

Stormwater Reuse

Concerns of Municipalities

Stormwater reuse has the potential to decrease reliance on drainage infrastructure, reduce runoff volumes and flow rates, and to result in more efficient use of water resources. However, there are regulatory barriers to overcome to enable reuse, particularly in non-residential applications.

Under the Water Act, stormwater reuse is interpreted as a diversion requiring authorization from the province as it may result in changes to the flow of water to receiving water bodies and downstream users. This is a barrier to reuse in areas of the province that face challenges due to the increase in runoff due to urbanization but where there is a moratorium on new diversion licences. However, impacts on discharge will vary between municipalities and depend on the specific reuse application and watershed being considered.

Another barrier to reuse in Alberta is that where the National Plumbing Code is applicable, non-residential reuse projects are categorized as alternative uses and are evaluated on a case-by-case basis. Municipalities must submit proposals for reuse projects that demonstrate achievement of defined performance levels in order to receive variances under the code. Municipalities are concerned that the complexity of steps required to approve projects renders them unfeasible. In the absence of formal guidelines, municipalities have also expressed confusion over the regulatory pathway for approving and implementing projects.

Policy

- 4) AUMA urges the Government of Alberta to review water licence and return flow requirements under the Water Act to establish a regulatory framework that is more supportive of the adoption of stormwater reuse projects.
- 5) AUMA urges the Government of Alberta to develop formal guidelines for non-residential reuse projects to clarify the processes that must be adhered to in preparing proposals and implementing projects.

Wetlands

Concerns of Municipalities

Wetlands provide valuable ecosystem services to municipalities and natural stormwater management functions by removing pollutants and slowing and retaining runoff. Wetlands also support habitat and biodiversity protection while offering aesthetic and conservation values. While constructed wetlands cannot fully replicate the function of natural wetlands, they are among the most effective engineered stormwater practices.

Unfortunately, approximately 64% of wetlands in Alberta have been lost in the last century. To preserve their important stormwater functions and prevent further losses, it is critical that supportive policy frameworks are in place to enable municipalities to protect wetlands.

Policy

- 6) AUMA urges the Government of Alberta to implement the recommendations outlined in AUMA's 2013 Municipal Wetlands Policy given their role as critical components of stormwater management systems.

Urban Flooding

Concerns of Municipalities

Urban flooding results when the designed capacity of stormwater systems is exceeded. This may occur due to aging infrastructure, inadequate design, or when system performance is compromised. When urban flooding occurs, stormwater may flow through neighbourhoods in an uncontrolled fashion, causing overland flooding, property damage due to sewer backup and building seepage.

In response to the 2013 floods, the Government of Alberta has developed a suite of mitigation strategies, funding programs, and legislative amendments to reduce the risk of flood damage and support disaster recovery. The focus of these initiatives is on riverine flooding. However, research has indicated that on average, Canadian losses due to urban flooding have historically exceeded riverine flooding. In addition, the interconnectivity of stormwater systems to water bodies may result in synergistic impacts and failures. As a result, it is critical that the provincial approach to flood mitigation addresses both riverine and urban flooding and that municipalities have adequate financial support to implement mitigation strategies.

Policy

- 7) AUMA urges the Government of Alberta to strengthen the provincial approach to flood mitigation by creating a complementary strategy to mitigate urban flooding.
- 8) AUMA advocates that the Governments of Alberta and Canada collaborate to provide dedicated funding to mitigate urban flooding.

Climate Change

Concerns of Municipalities

Municipalities rely on historic climate data to develop models used to design stormwater systems. Changes in climate and in particular the severity of storms have important implications on the design of infrastructure. Stormwater infrastructure is typically designed based on local rainfall Intensity Duration Frequency (IDF) curves. IDF curves for 30 locations across Alberta are available through Environment Canada and provide information on the expected frequency of storms of varying intensities and durations.

For many climate stations in Alberta, IDF curves are dated, typically incorporating historic rainfall data from the 1960s to 1990s. This is an issue as climate is not stationary, and recent research suggests that the intensity and duration of extreme storms will be different than historically observed. Use of updated curves is imperative to ensure that appropriate standards are used to design and manage infrastructure that accommodates current and future rainfall events. Further, with only 30 climate stations being used to produce IDF curves, municipalities may lack the information needed to forecast localized storm trends.

In addition to IDF curves, long-term precipitation databases made available through Environment Canada are used to conduct water balance analysis and modeling. It is critical that these datasets are updated regularly and error-checked to minimize uncertainty.

Policy

- 9) AUMA advocates that the Governments of Alberta and Canada collaborate to regularly update IDF curves, precipitation databases, and to increase the number of climate stations.

Low Impact Development

Concerns of Municipalities

To complement, address limitations, and reduce strain on conventional stormwater infrastructure, low impact development (LID) practices may be implemented. LID is an approach to land development and design for stormwater management that mimics nature. The premise of LID is that the way to achieve cost-effective control with the most benefit is to manage precipitation close to where it is generated, using natural features and processes wherever possible. LID designs seek to firstly prevent runoff and then to evaporate, infiltrate, store, and treat runoff close to the source through conservation and controls that replicate natural processes. LID practices may reduce reliance and expenditure on hard infrastructure by reducing water volumes and rates, and pollutant concentrations.

Municipalities have indicated strong support for the use of LID practices in their stormwater management regimes. However, to be successful in implementing LID, municipalities require engineering expertise and guidance on their successful implementation under local climate, soil, and hydrological conditions.

Policy

- 10) AUMA will work with relevant organizations to provide municipalities with greater access to low impact development education and expertise.

Research and Development

Concerns of Municipalities

The design and management of sustainable stormwater systems requires municipalities to optimize site design and selection of various control practices. There are numerous practices that can be utilized, and selection of best management practices (BMPs) for a given area therefore requires careful consideration of management objectives and local hydrologic, climatic, and geologic conditions.

Ongoing research and development are critical to assessing BMP performance to verify their applicability in Alberta. Previously, Natural Resources Canada and the Canada Mortgage and Housing Corporation (CMHC) jointly funded the EQUilibrium Communities Initiative which provided funding for neighbourhood development projects that improve and showcase performance in the areas of water and stormwater, energy, natural areas protection, land use and housing, and transportation. This is an example of the type of support for research and development that is needed, but unfortunately funding was limited and the program is no longer active.

Policy

- 11) AUMA urges the Governments of Alberta and Canada to develop a dedicated funding program for local research and demonstration projects that improve stormwater management.

Infrastructure Assessment and Planning

Concerns of Municipalities

To meet desired service levels and to address aging infrastructure and capacity issues, municipalities must understand the life-cycle, value, and condition of all natural and engineered components of stormwater systems. A holistic approach that considers both natural and engineered assets is needed to ensure that their collective contributions to drainage are accounted for in infrastructure planning. This information is

needed to understand investment and replacement priorities, to support asset management and full cost accounting, and to protect natural areas that contribute to stormwater management. However, limited financial resources, staff, time, and data accessibility often inhibit municipalities from proactively assessing, inventorying and managing their stormwater assets.

Policy

- 12) AUMA will work with relevant organizations to provide education and tools to enable municipalities to proactively assess, integrate, and manage natural and engineered components of stormwater systems.