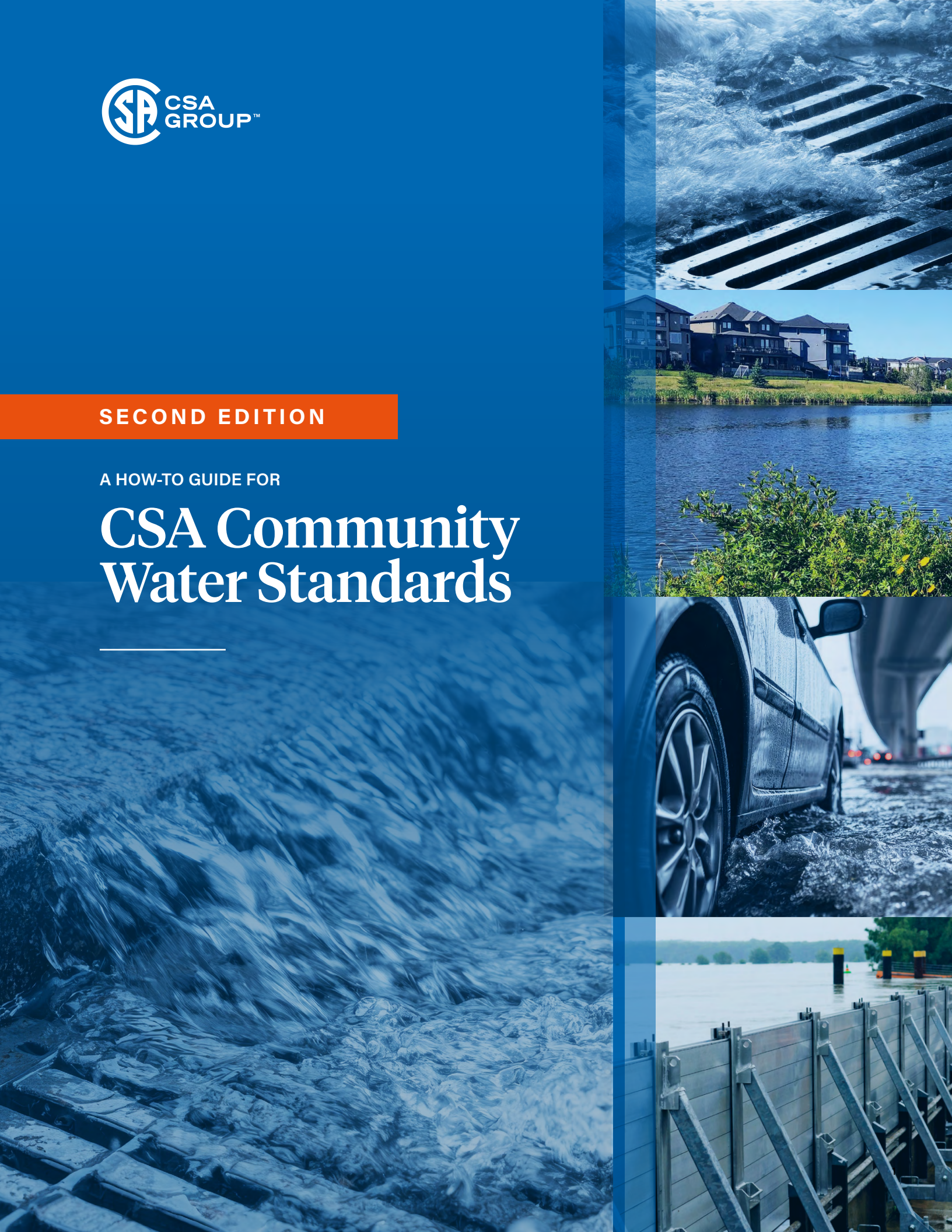
CSA GROUP™

SECOND EDITION

A HOW-TO GUIDE FOR

# CSA Community Water Standards





# The How-to Guide for CSA Community Water Standards

CSA Group (the Canadian Standards Association) is a leader in standards research, education, and advocacy. Standards development promotes safety, environmental stewardship, and economic efficiency through an open, transparent, and consensus-based development process. CSA standards are developed leveraging technical rigor and expertise of our more than 11,000 volunteer members participating in committees with balanced representation to help ensure perspectives of various stakeholders are reflected.

CSA Group's Standards Development organization delivers fully accredited solutions as well as guidance documents and workshops to meet the changing standards development needs of industries and society. Other CSA Group activities include research that explores the landscape of existing and emerging technologies and provides evidence-based recommendations for future standards development. CSA Group also promotes stakeholder education and usability of standards, and drives advocacy and public awareness for standards across various sectors.

# Acknowledgments

CSA Group continues to recognize the Councils in the following municipalities for leadership and support of this project. We are especially grateful to their Chief Administrative Officers, Directors of Planning and Engineering, and all the members of municipal staff who participated in the creation of the first iterations of this Guide. Their experiences and the materials they shared provided key input for the development of this document. Now in its second edition, the CSA Group How To Guide continues to reflect the leadership of the following councils.



The City of
**Colwood,**
**British Columbia**

**POPULATION**
**18,971***



Town of
**High River,**
**Alberta**

**POPULATION**
**14,324***



Municipality of
**Lakeshore,**
**Ontario**

**POPULATION**
**40,410***

City of
**Cambridge,**
**Ontario**

**POPULATION**
**138,479***

We would also like to thank the engineering consulting team at WSP for their contribution:

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*Statistics Canada, 2021 (https://census.gc.ca/census-recensement/index-eng.cfm)



# Overview of the Guide

The number of weather-related natural catastrophes in Canada has increased in the last few decades. Damages caused by floods and rainstorms comprise a significant portion of the financial costs associated with these events. There are several factors contributing to this trend, including a high number of properties located in flood-prone areas, loss of permeable surfaces due to urbanization, aging infrastructure, and changes in the intensity, frequency, or duration of precipitations due to climate change.

Communities shoulder the burden of responding to these events and their aftermath. They are looking for ways to protect their communities before the next catastrophe hits. The new suite of flood resiliency-focused community water standards developed by CSA Group can help support efforts toward building flood-resilient cities, towns, and hamlets – regardless of their size.

Incorporating these standards by reference into community plans and municipal bylaws can help consistently apply best practices in the design, construction, and management of water infrastructure and give the building community clarity on expectations. Using the trusted, credible CSA Group-developed resources can help communities save time, costs, and gain public confidence in measures taken to protect communities.

This Guide, **now in its second edition**, can help urban planners, managers, and community officials understand the standards they can use to support their community objectives. The Guide also includes sample language communities can use when referencing standards in their policies, bylaws, and community documents.

To develop this Guide, CSA Group **initially** collaborated with four Canadian municipalities: Colwood, British Columbia; High River, Alberta; Lakeshore, Ontario; and Cambridge, Ontario. Together with engineering consultant WSP, they shared documents and experiences that helped develop this How-to Guide. Validated by other communities from different parts of the country, this Guide provides a three-step process for incorporating CSA community water standards into community planning and approval processes.

**In updating the Guide for the second edition, CSA Group worked with WSP to update the previous content, including references to new standards. In addition, this updated guidance also incorporates further case studies and examples of additional communities taking leadership in responding to flood hazards and incorporating standards references to improve the resilience of their community.**

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# How can this guide help your community?

In response to the urgent need to build flood resilience into communities, CSA Group has facilitated the development of a suite of flood resiliency-focused community water standards to manage stormwater and the entire stormwater system as well as protect water quality.

The implementation of CSA standards and codes is commonplace in the building and electrical sectors but is an emerging approach to water management. Municipalities have called for more detailed guidance on how to apply the flood resiliency-focused water standards and integrate them into their strategic documents. To answer this call, CSA Group developed this How-to Guide.

The Guide provides a detailed framework that shows how the CSA community water standards can be integrated into community planning and approval processes and incorporated by reference into governance documents such as bylaws, policy and planning documents, development plans, requests for proposals, contracts, etc. The Guide also includes examples of policy language and suggestions for where standards can be referenced. This can supplement existing resources or provide new ones, saving communities valuable time and money.

The Guide can be used by communities of any size but may be particularly helpful to those with limited staff, expertise, or financial resources to develop similar guidance on their own. It can help managers, urban planners, development staff, and municipal officials understand how CSA standards can be leveraged to save time and money. By not "reinventing the wheel", in-house resources can be focused on other areas.

**NEW**

**Check out the NEW Appendix D showcasing case studies from across Canada on how municipalities and other levels of government are currently using the CSA community water standards.**

# What will you find in the guide?



### Descriptions

of the CSA flood resiliency-focused water standards, which include flood planning risk evaluation and prioritization, stormwater systems management, natural asset management & nature-based solutions, emergency flood protection barrier selection & deployment as well as erosion and sediment control best practices.

### Easy steps

municipalities can follow to integrate the standards into their planning and land use approval processes.

### Examples

of bylaw and policy wording to build and “cut and paste” into your documents.

## Three steps to integrating CSA standards into community planning and approval processes

**1 Assemble** your toolbox

**2 Identify** the gaps

**3 Develop** policies and guidelines

STEP 1

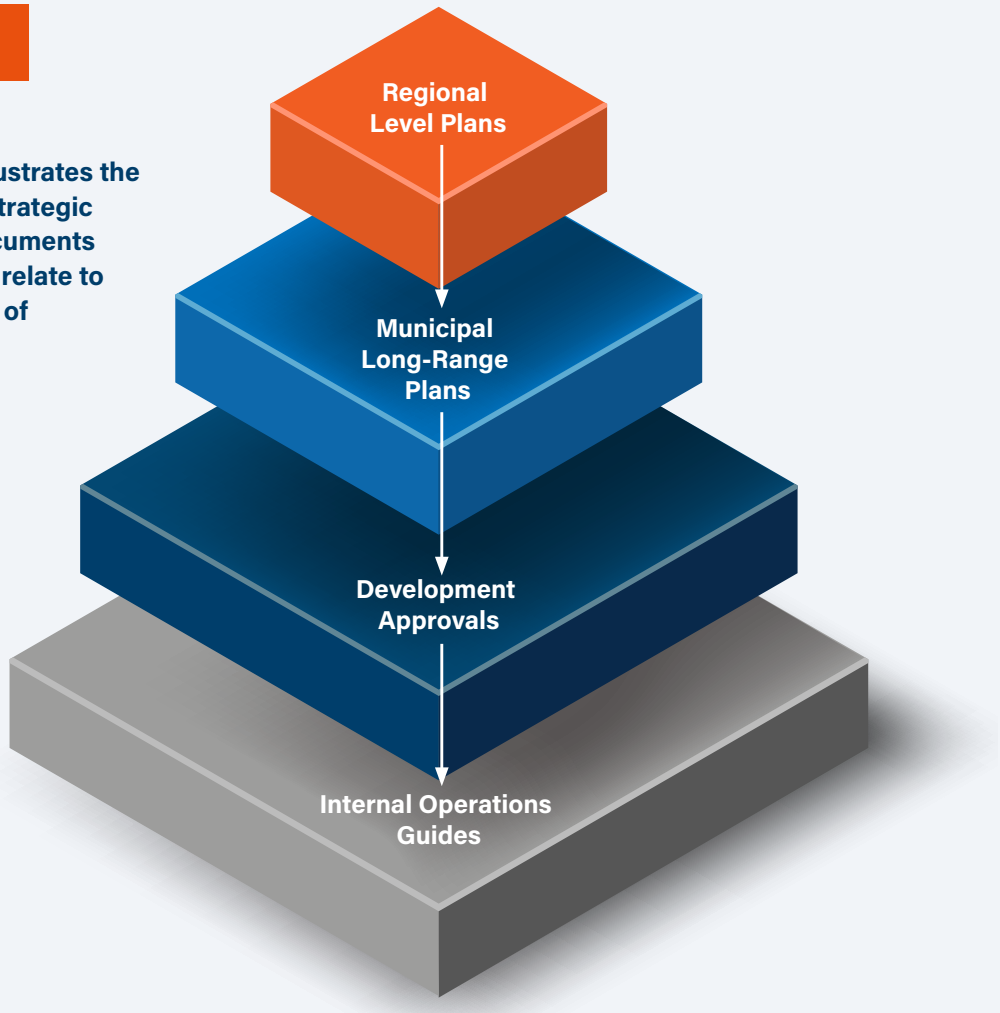
# Assemble your Toolbox

## Collect the tools you already have

Before you can fully understand how CSA community water standards can help support your community, the first step is to understand what "tools" you already have in place. By identifying existing bylaws and other strategic documents, and creating an inventory, you will have a good starting point.

## STEP 1

**This image illustrates the hierarchy of strategic municipal documents and how they relate to various levels of planning:**




### Regional-Level Plans – policy documents

- Regional Plan
- Conservation Authority Requirements (Ontario only)

### Municipal Long-Range Plans – policy documents

- Official Community Plan / Municipal Development Plan
- Zoning Bylaw / Land Use Bylaw
- Asset Management Plan
- Stormwater Management Plan
- Flood Mitigation Plan
- Development Permit Area (British Columbia only)
- Sustainability Strategies

### Development Approvals – regulatory/agreement documents

- Subdivision and Development Bylaw / Development Manual
- Subdivision Agreement / Development Agreement
- Erosion and Sediment Control Guidelines / Bylaw

### Internal Operations Guides – technical/engineering documents

- Emergency Preparedness Plan
- Operations / Maintenance Manual

*Definitions of document types are included in Appendix A. Note that there may be variations by region. Your municipality or jurisdiction may also have additional bylaws or documents not listed here.*

STEP 1

# Comparison of common municipal policy terminology

**This table lists some common document titles used for bylaws, policies, plans, and manuals in different provinces.**

| Regional Plan | Master Community Development Plan | Zoning Bylaw | Stormwater Management Plan | Flood Mitigation Plan | Subdivision Bylaw | Subdivision Agreement |
|---|---|---|---|---|---|---|
| **British Columbia** | | | | | | |
| ▪ Regional Growth Strategy | ▪ Official Community Plan | ▪ Land Use Bylaw<br>▪ Zoning Bylaw | ▪ Integrated Stormwater Management Plan | ▪ Flood Plain Bylaw | ▪ Subdivision Servicing Bylaw | ▪ Phased Development Agreement |
| **Alberta** | | | | | | |
| ▪ Regional Plan<br>▪ Intermunicipal Development Plan | ▪ Municipal Development Plan | ▪ Land Use Bylaw<br>▪ Zoning Bylaw | ▪ Stormwater Management Plan | ▪ Flood Resilience Plan<br>▪ Flood Mitigation Strategy (no standard term) | ▪ Design and Construction Standards<br>▪ Design Guidelines for Subdivision Servicing (no standard term) | ▪ Servicing Agreement<br>▪ Development Agreement (dependent on municipality) |
| **Saskatchewan** | | | | | | |
| ▪ Regional Plan | ▪ Official Community Plan | ▪ Zoning Bylaw | ▪ Stormwater Management Plan | ▪ Flood Mitigation Plan<br>▪ Flood Control Strategy | ▪ Standard Servicing Conditions | ▪ Servicing Agreement |
| **Manitoba** | | | | | | |
| ▪ Regional Plan | ▪ Development Plan | ▪ Zoning Bylaw | ▪ Stormwater Management Plan | ▪ Flood Mitigation Plan | ▪ Standard Construction Specifications | ▪ Development Agreement |
| **Ontario** | | | | | | |
| ▪ Regional Official Plan | ▪ Official Plan | ▪ Zoning Bylaw | ▪ Stormwater Management Master Plan | ▪ No standard term | ▪ No standard term | ▪ Registered Plan of Subdivision |

| Regional Plan | Master Community Development Plan | Zoning Bylaw | Stormwater Management Plan | Flood Mitigation Plan | Subdivision Bylaw | Subdivision Agreement |
|---|---|---|---|---|---|---|
| **Quebec** | | | | | | |
| ▪ Schéma d'aménage-ment et de dévelopement | ▪ Plan d'urbanisme | ▪ Règlement de zonage | ▪ Plan de gestion des eaux pluviales | ▪ Plan de protection du territoire face aux inondations | ▪ Règlement de lotissement | ▪ Règlement sur les ententes relatives à des travaux municipaux |
| **New Brunswick** | | | | | | |
| ▪ No standard term | ▪ Municipal Plan | ▪ Zoning Bylaw | ▪ Stormwater Management Plan | ▪ No standard term | ▪ Subdivision Bylaw | ▪ Subdivision Agreement |
| **Nova Scotia** | | | | | | |
| ▪ Regional Planning Strategy | ▪ Municipal Planning Strategy | ▪ Land Use Bylaw | ▪ Stormwater Management Plan | ▪ No standard term | ▪ Subdivision Bylaw | ▪ Development Agreement |
| **PEI** | | | | | | |
| ▪ No standard term | ▪ Official Plan | ▪ Land Use Bylaw | ▪ Stormwater Management Plan | ▪ No standard term | ▪ Subdivision Bylaw | ▪ No standard term |
| **Newfoundland** | | | | | | |
| ▪ No standard term | ▪ Municipal Plan | ▪ Development Regulations | ▪ Stormwater Management Plan | ▪ No standard term | ▪ No standard term | ▪ No standard term |

*Definitions of document types are included in Appendix A. Note that there may be variations by region. Your municipality or jurisdiction may also have additional bylaws or documents not listed here.*

STEP 1

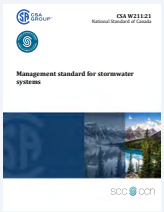
# Add new tools: CSA Community Water Standards

Get familiar with the CSA Community Water Standards and how they can fit into various provincial, municipal and community plans, policies, and guidelines.




## Stormwater Systems Management

### CSA W211:21, *Management standard for stormwater systems*



**PURPOSE:** Provide requirements and recommendations for the management of stormwater systems.

**FUNCTION:** Applies to organizations that own, manage, or operate stormwater systems.

### CSA W231:25, *Developing and interpreting intensity-duration-frequency (IDF) information under a changing climate*

NEW



**PURPOSE:** To set normative language and provide guidance to formulate and interpret IDF curves in a climate change context.

**FUNCTION:** Provide a resource for engineers involved in the mapping of floodplains and the design and build of stormwater infrastructure, as well as water resource managers involved in the operation and maintenance of such infrastructure.

## Natural Assets and Nature-Based Solutions

### CSA W200:26, *Design and construction of bioretention systems and rain gardens**



**PURPOSE:** Provide guidance for the development of three types of bioretention systems and the related construction considerations.

**FUNCTION:** Applies to those who design or evaluate bioretention systems, such as landscape architects, engineers, geotechnical professionals, arborists, etc.

### CSA W218:23, *Specifications for natural asset inventories*

NEW



**PURPOSE:** Provide guidance for the development of natural asset inventories using methods that are common for built infrastructure to facilitate the integration of natural asset management with existing practices.

**FUNCTION:** Applies to a variety of roles responsible for asset management, including asset managers, planners, regional authorities, watershed management organizations, etc.

*Note: CSA W200:18 and CSA W201:20 were merged into one standard July 2026 to become CSA W200:26*



STEP 1

## Erosion and Sediment Control

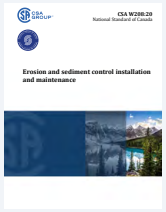
### CAN/CSA-W202-18 (R2023), *Erosion and sediment control inspection and monitoring*



**PURPOSE:** Provide minimum requirements for the inspection of erosion and sediment control measures during construction and water quality criteria.

**FUNCTION:** Applies to municipal governments (erosion and sediment control inspectors), regulatory agencies, contractors, consultants, etc.

### CAN/CSA W208:20 (R2025), *Erosion and sediment control installation and maintenance*



**PURPOSE:** Provide a framework for the installation and maintenance of erosion and sediment control measures as required by an erosion and sediment control plan.

**FUNCTION:** Applies to municipal governments (erosion and sediment control inspectors), regulatory agencies, contractors, consultants, etc.

## Flood Planning and Resiliency

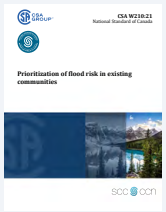
### CSA W204:19 (R2024), *Flood resilient design of new residential communities*



**PURPOSE:** Provide requirements and guidance for the flood-resilient design of new residential communities.

**FUNCTION:** Applies to a variety of roles, including building inspectors, community design consultants, developers, home builders, etc.

### CSA W210:21, *Prioritization of flood risk in existing communities*



**PURPOSE:** Provide guidance to help prioritize where flood-risk reduction work should occur within existing communities.

**FUNCTION:** Applies to a variety of municipalities and regional governments, Indigenous communities, and authorities in charge of managing and developing community infrastructure.

*continued on the next page*



STEP 1

## Flood Planning and Resiliency cont'd

### CSA W224:24, *Coastal flood risk assessment for buildings and infrastructure*

NEW



**PURPOSE:** Provide guidance on coastal flood risk assessment and inform planning and design of buildings and infrastructure potentially exposed to coastal flood hazards.

**FUNCTION:** Applies to flood risk assessments in coastal areas, including Canada's marine coasts, the Great Lakes, and other large lakes in Canada.

### CSA W229.1:25, *Airborne LiDAR data acquisition*

NEW

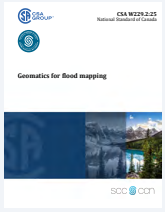


**PURPOSE:** Provide national guidelines covering the acquisition of airborne LiDAR data.

**FUNCTION:** To be used as a resource for the acquisition of elevation data from airborne LiDAR data undertaken across Canada.

### CSA W229.2:25, *Geomatics for flood mapping*

NEW



**PURPOSE:** Provide requirements for various types of local flood maps of fluvial, pluvial, and coastal flooding.

**FUNCTION:** Provide a resource for geomatics professionals and flood mapping practitioners, as well as municipal planners involved in flood protection and mitigation activities.

### CSA TS-227:26, *Temporary flood barriers – A selection guide for flood mitigation practitioners*

NEW

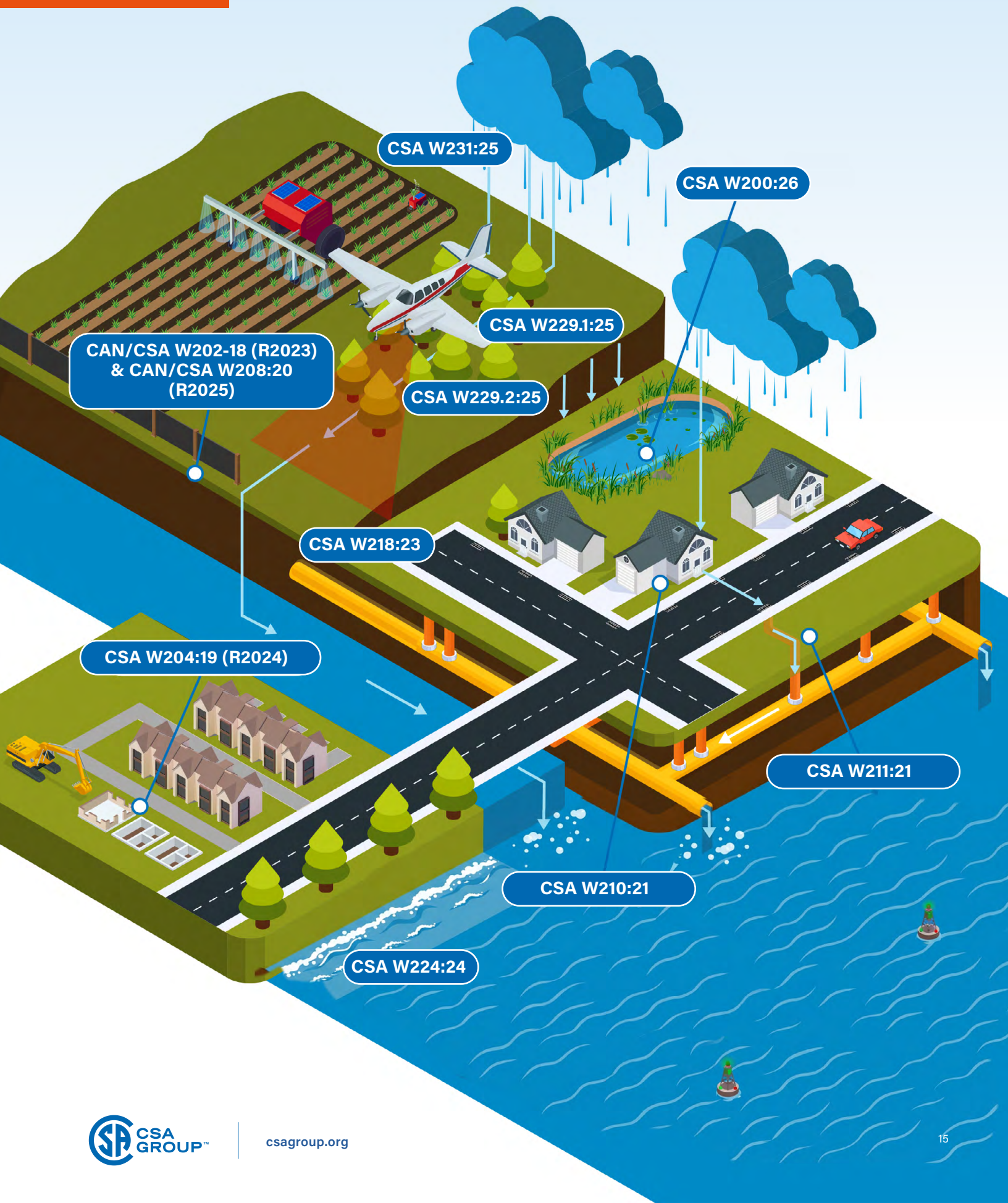


**PURPOSE:** A Technical Specification to provide a comprehensive approach to selecting, deploying, and maintaining the appropriate type of emergency flood barrier.

**FUNCTION:** Applies to a variety of roles responsible for flood emergency response such as Indigenous communities, local AHJs and provincial/territorial and federal authorities, chief administrative officers, emergency management officers, fire chiefs, infrastructure operators and managers, building or asset owners and managers, and members of the public.

*More detailed descriptions of these standards are included in Appendix B, where you can also find information on new flood resiliency-focused water standards currently in development*

## STEP 1


CSA W231:25
CSA W200:26
CSA W229.1:25
CAN/CSA W202-18 (R2023) & CAN/CSA W208:20 (R2025)
CSA W229.2:25
CSA W218:23
CSA W204:19 (R2024)
CSA W211:21
CSA W210:21
CSA W224:24

**This table illustrates how the specific CSA community water standards can be integrated into the community planning process. Additional examples of how the City of Colwood, British Columbia; Town of High River, Alberta; Municipality of Lakeshore, Ontario; and City of Cambridge, Ontario, integrated CSA Standards into their processes are available in Appendix C.**

| | Overarching Standards | |
|---|---|---|
| | Stormwater System Management | |
| **Applicable Provincial and Municipal Plans, Policies and Guidelines** | **CSA W211:21** *Management standard for stormwater systems* | **CSA W231:25** *Developing and interpreting IDF information under a changing climate* |
| **Regional Plans and Documents** | | |
| **Regional Plan** | Applicable | Probable |
| **Conservation Authority Requirements (Ontario)** | Applicable | Probable |
| **Municipal Long Range Planning Documents** | | |
| **Official Community Plan** | Probable | Probable |
| **Zoning Bylaw** | Probable | Not Applicable |
| **Asset Management Plan** | Not Applicable | Not Applicable |
| **Stormwater Master Plan** | Applicable | Applicable |
| **Flood Mitigation Plan** | Not Applicable | Applicable |
| **Development Approval Documents** | | |
| **Subdivision Bylaw or Development Manual** | Not Applicable | Probable |
| **Subdivision Agreement or Development Manual** | Applicable | Probable |
| **Erosion and Sediment Control Plans** | Not Applicable | Probable |
| **Internal Operations Documents** | | |
| **Emergency Preparedness Plan** | Not Applicable | Not Applicable |
| **Operations / Maintenance Manual*** | Not Applicable | Probable |

*If available

*continued on the next page*

Applicable
Probable
Not Applicable

| | Overarching Standards | |
|---|---|---|
| | Natural Assets and Nature-Based Solutions | |
| **Applicable Provincial and Municipal Plans, Policies and Guidelines** | **CSA W200:26** *Design and construction of bioretention systems and rain gardens* | **CSA W218:23** *Specifications for natural asset inventories* |
| **Regional Plans and Documents** | | |
| **Regional Plan** | Probable | Applicable |
| **Conservation Authority Requirements (Ontario)** | Probable | Applicable |
| **Municipal Long Range Planning Documents** | | |
| **Official Community Plan** | Applicable | Applicable |
| **Zoning Bylaw** | Probable | Probable |
| **Asset Management Plan** | Not Applicable | Applicable |
| **Stormwater Master Plan** | Applicable | Applicable |
| **Flood Mitigation Plan** | Probable | Applicable |
| **Development Approval Documents** | | |
| **Subdivision Bylaw or Development Manual** | Applicable | Probable |
| **Subdivision Agreement or Development Manual** | Applicable | Applicable |
| **Erosion and Sediment Control Plans** | Not Applicable | Probable |
| **Internal Operations Documents** | | |
| **Emergency Preparedness Plan** | Not Applicable | Not Applicable |
| **Operations / Maintenance Manual*** | Applicable | Applicable |

*If available

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Applicable
Probable
Not Applicable

| | Overarching Standards | |
|---|---|---|
| | Erosion and Sediment Control | |
| **Applicable Provincial and Municipal Plans, Policies and Guidelines** | **CAN/CSA W202:18 (R2023)** *Erosion and sediment control inspection and monitoring* | **CSA W208:20 (R2025)** *Erosion and sediment control installation and maintenance* |
| **Regional Plans and Documents** | | |
| **Regional Plan** | | |
| **Conservation Authority Requirements (Ontario)** | | |
| **Municipal Long Range Planning Documents** | | |
| **Official Community Plan** | | |
| **Zoning Bylaw** | | |
| **Asset Management Plan** | | |
| **Stormwater Master Plan** | | |
| **Flood Mitigation Plan** | | |
| **Development Approval Documents** | | |
| **Subdivision Bylaw or Development Manual** | | |
| **Subdivision Agreement or Development Manual** | | |
| **Erosion and Sediment Control Plans** | | |
| **Internal Operations Documents** | | |
| **Emergency Preparedness Plan** | | |
| **Operations / Maintenance Manual*** | | |

*If available

*continued on the next page*

**Applicable**

**Probable**

**Not Applicable**

| Applicable Provincial and Municipal Plans, Policies and Guidelines | Overarching Standards: Flood Planning and Resiliency | | | | | |
|---|---|---|---|---|---|---|
| | **CSA W204:19 (R2024)** *Flood resilient design of new residential communities* | **CSA W210:21** *Prioritization of flood risk in existing communities* | **CSA W224:24** *Coastal flood risk assessment for buildings and infrastructure* | **CSA W229.1:25** *Airborne LiDAR data acquisition* | **CSA W229.2:25** *Geomatics for flood mapping* | **CSA TS-227:26** *Temporary flood barriers - A selection guide for flood mitigation practitioners* |
| **Regional Plans and Documents** | | | | | | |
| **Regional Plan** | Applicable | Applicable | Applicable | Not Applicable | Probable | Not Applicable |
| **Conservation Authority Requirements (Ontario)** | Applicable | Applicable | Probable | Not Applicable | Applicable | Not Applicable |
| **Municipal Long Range Planning Documents** | | | | | | |
| **Official Community Plan** | Applicable | Applicable | Applicable | Not Applicable | Probable | Not Applicable |
| **Zoning Bylaw** | Applicable | Applicable | Probable | Not Applicable | Probable | Not Applicable |
| **Asset Management Plan** | Not Applicable | Not Applicable | Not Applicable | Not Applicable | Not Applicable | Not Applicable |
| **Stormwater Master Plan** | Probable | Probable | Probable | Applicable | Applicable | Applicable |
| **Flood Mitigation Plan** | Applicable | Applicable | Applicable | Applicable | Applicable | Applicable |
| **Development Approval Documents** | | | | | | |
| **Subdivision Bylaw or Development Manual** | Probable | Probable | Probable | Not Applicable | Probable | Not Applicable |
| **Subdivision Agreement or Development Agreement** | Not Applicable | Not Applicable | Applicable | Not Applicable | Probable | Not Applicable |
| **Erosion and Sediment Control Plans** | Not Applicable | Not Applicable | Probable | Probable | Probable | Not Applicable |
| **Internal Operations Documents** | | | | | | |
| **Emergency Preparedness Plan** | Not Applicable | Not Applicable | Not Applicable | Not Applicable | Not Applicable | Applicable |
| **Operations / Maintenance Manual*** | Not Applicable | Not Applicable | Applicable | Applicable | Applicable | Probable |

**Applicable**
**Probable**
**Not Applicable**

STEP 2

# Identify the Gaps

In Step 1, you assembled your toolbox using your existing planning documents and the suite of CSA community water standards. The next step is to understand the gaps in your processes and see where these Standards can be integrated.



**Understand the gaps in your processes and see where these standards can be integrated to fill those gaps.**

# STEP 2

**The following recommendations are intended to help users identify gaps and determine which CSA community water standards are applicable:**

- Identify the relevant document type listed in the Document Type column.
- Review the Recommendations column to identify how CSA standards should be applied.
- Review the Section column to identify the appropriate sections in Step 3, where examples of policy language or regulatory provisions can be found.
- Review the Relevant Standards column to identify the specific CSA standards that apply to each document type and recommendation.

**Once the document type has been identified and the recommendation reviewed, users can proceed to the corresponding section to develop or update their policy accordingly.**

| Document Type | Recommendation | Section | Relevant standards |
|---|---|---|---|
| **Regional Plan** | Regional Plans should include a policy section addressing hazard lands or areas prone to flooding. | Flood planning policy examples | ▪ CSA W204:19 (2024)<br>▪ CSA W210:21<br>▪ CSA W211:21<br>▪ CSA W224:24 |
| | Regional Plans should integrate natural asset inventories into their planning and asset-management frameworks. | Natural asset management policy examples. | ▪ CSA W218:23 |
| **Official Community Plan / Development Plan** | Official Community Plans should include a policy section addressing hazard lands, coastal lands, or other areas prone to flooding for greenfield and existing residential development. | Greenfield residential development policy examples.<br>Existing residential development policy examples. | ▪ CSA W224:24<br>▪ CSA W204:19 (2024)<br>▪ CSA W210:21 |
| | Official Community Plans should promote natural assets and nature-based solutions | Low-impact development policy examples.<br>Natural asset inventories policy examples. | ▪ CSA W224:24<br>▪ CSA W200:26<br>▪ CSA W218:23 |
| **Zoning Bylaw** | Municipal Zoning Bylaws should limit development in areas subject to flooding, and promote safer building and rebuilding. | Flood planning regulation examples. | ▪ CSA W204:19 (R2024)<br>▪ CSA W210:21 |
| **Asset Management Plan** | Municipal asset management plans should include a natural asset inventory. | Asset management plan examples. | ▪ CSA W218:23 |

## STEP 2

| Document Type | Recommendation | Section | Relevant standards |
|---|---|---|---|
| **Stormwater Management Plan** | Stormwater Management Plans should promote low-impact development and/or green infrastructure for stormwater management. | Low-impact development examples. | ▪ CSA W200:26 |
| | Municipalities should have a long-term management plan for their stormwater system. A stormwater management plan would go beyond management of stormwater and would include all the key aspects of managing the stormwater system, such as a description of existing stormwater system assets, roles and responsibilities, and identification of supporting information and plans that impact the stormwater systems. | Management standards for stormwater systems. | ▪ CSA W211:21<br>▪ CSA W218:23 |
| | Stormwater management plans should utilize best practices for data acquisition and interpretation to improve climate resiliency. | Flood resiliency examples. | ▪ CSA W229.1:25<br>▪ CSA W229.2:25<br>▪ CSA W231:25 |
| **Flood Mitigation Plan** | Flood Mitigation Plans should identify coastal flood hazards and measures to reduce risks. | Coastal flooding examples. | ▪ CSA W224:24<br>▪ CSA TS-227:26 |
| | Flood Mitigation Plans should identify fluvial and pluvial flood risks and measures for mitigation. | Fluvial and/or pluvial flooding examples. | ▪ CSA W229.1:25<br>▪ CSA W229.2:25<br>▪ CSA TS-227:26 |
| | Flood Mitigation Plans should utilize climate-aware data. | Climate resiliency examples. | ▪ CSA W231:25 |
| **Subdivision Bylaw or Development Manual** | The Subdivision Bylaw should promote low-impact development practices. | Low-impact development examples. | ▪ CSA W200:26 |
| | The Subdivision Bylaw should require erosion and sediment control measures. | Erosion and sediment control examples. | ▪ CAN/CSA-W202-18 (R2023)<br>▪ CAN/CSA W208:20 (R2025) |

## STEP 2

| Document Type | Recommendation | Section | Relevant Standards |
|---|---|---|---|
| **Subdivision Agreement or Development Agreement** | A Subdivision Agreement should address the management of erosion and sediment control during all phases of construction. | Erosion and sediment control examples. | ▪ CAN/CSA-W202-18 (R2023)<br>▪ CAN/CSA W208:20 (R2025) |
| | A Subdivision Agreement should require the developer to implement minimum standards for stormwater management. | Stormwater management examples. | ▪ CSA W200:26<br>▪ CSA W211:21<br>▪ CSA W231:25 |
| | A Subdivision Agreement should require the developer to implement minimum standards for flood resiliency. | Flood resiliency examples. | ▪ CSA W204:19 (R2024)<br>▪ CSA W210:21<br>▪ CSA W211:21<br>▪ CSA W224:24<br>▪ CSA W231:25 |
| | A Subdivision Agreement should require the developer to implement minimum standards for low-impact development. | Low-impact development examples. | ▪ CSA W200:26 |
| **Erosion and Sediment Control Plans** | An Erosion and Sediment Control Plan should be a requirement as part of a development application. | Erosion and sediment control examples. | ▪ CAN/CSA-W202-18 (R2023)<br>▪ CAN/CSA W208:20 (R2025) |
| **Subdivision or Development Permit Application** | Subdivision or development permit applications should clearly list the requirements for submission. | Subdivision application examples. | ▪ CSA W200:26<br>▪ CAN/CSA-W202-18 (R2023)<br>▪ CAN/CSA W208:20 (R2025)<br>▪ CSA W211:21 |
| **Emergency Preparedness Plan** | The Emergency Preparedness Plan should outline how the municipality will prepare for and respond to flood events. | Emergency preparedness plan examples. | ▪ CSA TS-227:26 |
| **Operations / Maintenance Manual** | The Operations or Maintenance Manual should reference CSA Community Water Standards to provide consistency, clarity, and alignment with best practices. | Infrastructure maintenance examples. | ▪ CSA W200:26<br>▪ CAN/CSA-W202-18 (R2023)<br>▪ CAN/CSA W208:20 (R2025)<br>▪ CSA W211:21 |
| | The Operations Manual should specify how to create and manage natural asset inventories. | Natural asset inventory examples. | ▪ CSA W218:23 |

# Develop Policies and Guidelines

## Sample language

In step 2, you identified your gaps and saw which specific CSA community water standards can help fill these gaps. The next step is to reference these standards where applicable, in new or existing policy or guidance documents.

Whether or not you are ready to make changes to your key policies and guidelines, being aware of and understanding how you can leverage CSA standards prepares you for such changes when an opportunity arises.

The examples in this section illustrate the most common areas where CSA community water standards can support planning and development processes. While it is not strictly necessary to implement a CSA standard in its entirety, it is recommended, when possible. Referencing the whole standard can help to make sure that all the elements of the standard needed for understanding are captured in the reference. It can also help to make sure the reference stays up to date.

The examples of policy language in this section should be considered a starting point, and should be modified to meet specific needs of your community.

**Communities are encouraged to copy and paste these examples into their strategic documents, policies, planning documents, and bylaws.**

*Definitions of document types are included in Appendix A. Note that there may be variations by region. Your community or jurisdiction may also have additional bylaws or documents not listed in this section.*




# How to use this section

This section provides sample policy and provision language to support the referencing of one or more CSA water standard(s) into community planning documents. The examples are designed to be directly copied and adapted or as a starting point to suit the community's context, including local conditions, available data, and specific objectives.

**Two types of sample policy and provision text are included:**

1. **Basic wording**
   suitable for communities seeking a simple, high-level reference to CSA standards.

2. **Detailed wording**
   appropriate for communities incorporating more detailed or technical guidance.

**All wording in this section may be customized as needed, and any CSA standards relevant to your community may be selected for inclusion.**

STEP 3

# Regional Plan

Regional plans guide development across the broader region and are intended to provide direction and context for official community plans or development plans. Communities cannot amend a regional plan directly, but they may submit recommended changes to the Region for consideration.

Regions may develop a basic or more comprehensive policy depending on local hydrology, available data, development pressures, and the needs of their planning area. By referencing CSA standards directly into the land use policies, the Region can provide a consistent and technically reliable foundation for stormwater management, flood-risk reduction, climate-responsive hydrology, and related planning processes.

## Flood planning policy examples

Standards applicable for a regional plan:

- **CSA W211:21**, *Management standard for stormwater systems*

### *Basic*

COPY, PASTE, ADAPT

*"Drainage and surface water shall be managed throughout the region in compliance with Canadian Standards Association (CSA) standards and guidelines, including **CSA W211:21, Management standard for stormwater systems**"*

### *Detailed*

*"To protect communities from the risk of flooding, development shall be restricted in areas identified as a flood risk. Within these flood risk areas:*

**a.** *Infill of existing communities may be permitted;*

**b.** *Growth shall be directed away from (low lying) wetland areas; and*

**c.** *Drainage and surface water shall be managed throughout the region using internationally recognized Canadian Standards Association (CSA) tools, including **CSA W211:21, Management standard for stormwater systems**."*

## Natural asset management policy examples:

Standards applicable for a regional plan:

- **CSA W218:23**, *Specifications for natural asset inventories*

### *Basic*

COPY, PASTE, ADAPT

*"Natural assets shall be recognized as part of the region's asset base in compliance with **CSA W218:23, Specifications for natural asset inventories**."*

### *Detailed*

*"Natural assets shall be recognized as part of the region's asset base in compliance with **CSA W218:23, Specifications for natural asset inventories**, including outlining minimum requirements for:*

**a.** *Data collection;*

**b.** *Inventory structure;*

**c.** *Documentation; and*

**d.** *Continuous improvement.*

STEP 3

# Official community plan or development plan

Official community plans or development plans describe the long-term vision of communities and guide decisions on land use. Official community plan policies impact a community's sustainability and resilience. The following are several sample policies – basic policies for greenfield and existing residential development and more comprehensive policies for greenfield and existing residential development. The Official Community Plan should also contain maps of the hazardous areas to help assure development is limited.

## Greenfield residential development policy examples:

Standards applicable for an official community plan or development plan:

- **CSA W204:19 (R2024)**, *Flood resilient design of new residential communities*

### *Basic*

COPY, PASTE, ADAPT

*"New residential development shall be designed in compliance with the CSA Group Standard **CSA W204:19 (R2024), Flood resilient design of new residential communities**."*

### *Detailed*

*"Development in the flood-prone area may be permitted provided that existing or potential hazards can be mitigated through accepted engineering techniques and resource management practices which meet the approval of the Municipality, [the relevant Conservation Authority], and the other appropriate agencies as necessary, and where the risk to public safety and other effects can be mitigated in accordance with the following policies and standards:*

**a.** *The flooding and erosion hazards can be safely addressed, and the development and site alteration is carried out in accordance with standard **CSA W204:19 (R2024), Flood resilient design of new residential communities**;*

**b.** *Existing hazards are not aggravated, or new hazards are not created;*

**c.** *No adverse environmental impacts and no negative impact on natural heritage features will result. An Environmental Impact Assessment may be required to demonstrate that no adverse environmental impacts will result; and*

**d.** *Vehicles and people have a way of safe ingress and egress during times of flooding, erosion, or other emergencies.*




## Existing residential development policy examples:

Standards applicable for an official community plan or development plan:

- **CSA W210:21**, *Prioritization of flood risk in existing communities*

### *Basic*

COPY, PASTE, ADAPT

*"Existing residential development shall be prioritized for flood protection in compliance with **CSA W210:21, Prioritization of flood risk in existing communities**"*

### *Detailed*

*"Development in the flood-prone area may be permitted provided that existing or potential hazards can be mitigated through accepted engineering techniques and resource management practices which meet the approval of the Municipality, [the relevant Conservation Authority], and the other appropriate agencies as necessary, and where the risk to public safety and other effects can be mitigated in accordance with the following policies and standards:*

**a.** *Existing developments that are prone to flooding shall implement additional flood mitigation measures.*

**b.** *Existing residential development shall be prioritized for flood protection in compliance with **CSA W210:21, Prioritization of flood risk in existing communities**"*

## Low-impact development policy examples:

Standards applicable for an official community plan or development plan:

- **CSA W200:26**, *Design and construction of bioretention systems and rain gardens*

### *Basic*

COPY, PASTE, ADAPT

*"The municipality should use innovative low-impact development design, as per **CSA W200:26, Design and construction of bioretention systems and rain gardens**, in new development and redevelopment in addition to, or as an alternative to, the required stormwater management quantity facilities."*

### *Detailed*

*"Low-Impact Development is an innovative approach to land development that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where the rain falls. Bioretention is a form of low-impact development and is an innovative stormwater management approach. It is a surface and sub-surface water filtration, infiltration, and evapotranspiration system, which uses designs for water retention above and below ground along with plant materials and underlying soils (bioretention media and native subgrade soils) to remove contaminants and reduce stormwater runoff rates and volumes.*

*The following policies are designed to promote low-impact development and the use of bioretention systems:*

**a.** *In order to reduce surface runoff, the percentage of impervious paving and building areas on a parcel shall be limited as to what is detailed in the zoning bylaw.*

**b.** *Planting of trees or other shrubbery within road allowance boulevards is encouraged and is detailed in the subdivision servicing bylaw.*

**c.** *Native trees and vegetation should be maintained to reduce the effect of rainfall on stormwater flows, where possible, at the time of approval of rezoning and other discretionary development applications.*

**d.** *Where retention of native vegetation is not possible, re-vegetation should be completed to reduce the effect of rainfall on stormwater flows, where possible, at the time of approval of rezoning and other discretionary development applications.*

**e.** *The use of bioretention systems for stormwater management shall be in compliance with **CSA W200:26, Design and construction of bioretention systems and rain gardens**, in new development and redevelopment in addition to, or as an alternative to, the required stormwater management quantity facilities."*




## Natural asset management policy examples:

Standards applicable for an official community plan or development plan:

- **CSA W218:23**, *Specifications for natural asset management*

### *Basic*

COPY, PASTE, ADAPT

*"Natural assets shall be recognized as part of the region's asset base in compliance with **CSA W218:23, Specifications for natural asset management."***

### *Detailed*

*"Natural assets shall be recognized as part of the region's asset base in compliance with **CSA W218, Specifications for natural asset management,** including outlining minimum requirements for:*

**a.** *Data collection;*
**b.** *Inventory structure;*
**c.** *Documentation; and*
**d.** *Continuous improvement.*

## Effective Reference

**Referencing hazard and/or flood mitigation standards and policies into the official community plan or development plan can elevate the importance of flood mitigation throughout the planning framework.**

STEP 3

# Zoning bylaw

Zoning bylaws implement the policies of the Official Community Plan or Development Plan with more detailed regulations and are one of the most common tools available to community planners. Flood-prone areas are typically zoned accordingly, and development is already limited within those zones. However, it is recommended that a section related to flooding be included in the general provisions section of the zoning bylaw to support the applicability of the regulation to all zones.

## Flood planning regulation examples:

Standards applicable for a zoning bylaw:

- **CSA W204:19 (R2024)**, *Flood resilient design of new residential communities*
- **CSA W210:21**, *Prioritization of flood risk in existing communities*

### *Basic*

COPY, PASTE, ADAPT

*"No new structures or buildings shall be constructed within the flood plain.*

*New greenfield (or brownfield) development shall comply with* ***CSA W204:19 (R2024), Flood resilient design of new residential communities****.*

*Existing development shall comply with* ***CSA W210:21, Prioritization of flood risk in existing communities****, where feasible."*

### *Detailed*

*"The intent of the flood regulations is to limit development in flood-prone areas and to ensure other areas are flood resilient. The following regulations apply to all zones:*

**a.** *Individual lots, buildings, and streets should be designed and located to minimize the impact on the protected lands;*

**b.** *The design should protect floodplains, wetlands, steep slopes, and shoreline and bluff impact zones from clearing, grading, filling, and construction impacts;*

**c.** *The design should avoid siting new construction on prominent hilltops or ridges;*

**d.** *Permanent structures shall be protected from flooding by raising the building site to the flood protection level, which is 60 cm above the flood level;*

**e.** *The design should protect the character of the site by retaining existing trees or native vegetation between housing and roads, setting back development from roads, or designating new landscaping as a buffer;*

**f.** *New greenfield (or brownfield) development shall comply with* ***CSA W204:19 (R2024), Flood resilient design of new residential communities****.*

**g.** *Existing development shall comply with* ***CSA W210:21, Prioritization of flood risk in existing communities****, where feasible."*

STEP 3

# Asset management plan

An asset management plan is a structured plan that details what needs to be done, when, and with what resources, to ensure the assets deliver their intended value while managing performance, risks, and costs in alignment with organizational objectives. Communities frequently adopt asset management practices to ensure their engineered assets (e.g. roads, buildings, pipes) support the provision of effective and efficient public services. A more comprehensive approach to municipal asset management would include nature for the services it provides. For example, many natural assets (e.g. forests, wetlands, rivers) provide the delivery of ecosystem services, such as flood management.

By referencing CSA standards directly into an asset management plan, the community can better manage the extent, location, and type of natural assets within its jurisdiction and the key services they provide.



## Asset management plan examples

Standards applicable for a zoning bylaw:

- **CSA W218:23**, *Specification for natural asset inventories*

### *Basic*

COPY, PASTE, ADAPT

*"The natural asset management plan shall follow the guidelines within **CSA W218:23, Specification for natural asset inventories.**"*

### *Detailed*

*"The natural asset management plan shall follow the guidelines within **CSA W218:23, Specifications for natural asset inventories**, by including information on:*

**a.** *Data gathering and processing;*
**b.** *Inventory structure requirements;*
**c.** *Documentation requirements; and*
**d.** *Requirements for maintaining and continually improving the natural asset inventory."*

STEP 3

# Stormwater management plan

A stormwater management plan is a set of drawings and other documents that comprise all the information and specifications for the programs, drainage systems, structures, concepts, and techniques intended to maintain or restore the quality and quantity of stormwater runoff to pre- development levels. Stormwater management plans may be referenced by municipalities' bylaws.

Reference to water standards in stormwater management plans, which are in turn referenced in planning and development documents, is another way to integrate standards into policy. Stormwater management plans can be referenced in official community plans, zoning bylaws, subdivision bylaws, subdivision agreement/development agreements, etc.

## Low-impact development examples:

Standards applicable for a stormwater management plan:

- **CSA W200:26**, *Design and construction of bioretention systems and rain gardens*

### *Basic*

COPY, PASTE, ADAPT

*"New development projects shall be designed and constructed using low-impact development techniques in accordance with* ***CSA W200:26, Design and construction of bioretention systems and rain gardens****."*

### *Detailed*

*"New development projects shall be designed using low-impact development techniques, which are applied early in the design process to preserve natural areas, reduce impervious cover, distribute runoff, and use pervious areas to more effectively treat stormwater runoff. Site design shall address and consider open space protection, impervious cover minimization, runoff distribution and minimization, and runoff utilization, as outlined below:*

**1. Open space protection and restoration**

- Conserve and protect existing natural areas (upland and wetland);
- Implement reforestation efforts;
- Re-establish dominant forest type;
- Restore wetlands;
- Establish or protect stream, shoreline, and wetland buffers; and
- Re-establish native vegetation into the landscape.

**2. Reduction of impervious cover**

- Reduce new impervious cover through redevelopment of existing sites and use of existing roadways, trails, etc.;
- Minimize street width, parking space size, driveway length, and sidewalk width; and
- Reduce impervious surface footprint (e.g., two-story buildings, parking structures).

**3. Distribution and minimization of runoff**

- Utilize vegetated areas for stormwater treatment (e.g., parking lot islands, vegetated areas along property boundaries, front and rear yards, building landscaping);
- Direct impervious surface runoff to vegetated areas or to designed treatment areas (roofs, parking, and driveways drain to pervious areas, not directly to storm sewer or other conveyances); and
- Encourage infiltration and soil storage of runoff through grass channels, soil compost amendment, vegetated swales, rain gardens, etc.

**4. Low-Impact Development treatment train tool**

- Utilize a connected network of pre-treatment practices and proprietary devices.

**5. Runoff utilization**

- Capture and store runoff for use for irrigation in areas where irrigation is necessary.

**6. Utilization of green infrastructure**

- Design and construction of bioretention systems in accordance with CSA W200:26, Design and construction of bioretention systems and rain gardens."






## Management standard for stormwater systems examples:

Standards applicable for a stormwater management plan:

- **CSA W211:21**, *Management standard for stormwater systems*

### *Basic*

COPY, PASTE, ADAPT

*"The planning, inspection, record keeping, and management of stormwater systems shall be done in accordance with **CSA W211:21, Management standard for stormwater systems.**"*

### *Detailed*

*"Maintenance comprises the inspection of the system, record keeping, regular maintenance, and the analysis of the data related to problems. Routine inspection, record keeping, and regular maintenance are essential for the effective maintenance of the stormwater drainage system. The maintenance of stormwater management facilities shall be done in accordance with **CSA W211:21, Management standard for stormwater systems.**"*

## Flood resiliency examples:

Standards applicable for a stormwater management plan:

- **CSA W231:25**, *Developing and interpreting IDF information under a changing climate*

### *Basic*

COPY, PASTE, ADAPT

*"Where applicable, **CSA W231:25, Developing and interpreting IDF information under a changing climate**, shall be used to support climate-responsive stormwater design due to changing climate conditions."*

# Flood mitigation plan

A flood mitigation plan develops long-term strategies for protecting people and property from flood events for areas within a community that are prone to flooding. The long-term strategies are intended to significantly reduce or eliminate the risk of flooding before it occurs.

Reference to water standards in flood mitigation plans is yet another way to integrate standards into community practices. Flood mitigation plans can be referenced in official community plans, zoning bylaws, subdivision bylaws, subdivision agreement/development agreements, etc.

## Coastal flooding examples:

Standards applicable for a flood mitigation plan:

- **CSA W224:24**, *Coastal flood risk assessment*

### *Basic*




*"Flooding associated with marine coasts and large lakes shall be assessed and managed in compliance with **CSA W224:24, Coastal flood risk assessment.**"*

## Fluvial and/or pluvial flooding examples:

**Standards applicable for a flood mitigation plan:**

- **CSA TS-227:26**, *Temporary flood barriers – A selection guide for flood mitigation practitioners*

### *Basic*




*"Fluvial and/or pluvial flood risks shall be assessed and managed in compliance with **CSA TS-227:26, Temporary flood barriers – A selection guide for flood mitigation practitioners.**"*

## Climate resiliency examples:

Standards applicable for a flood mitigation plan:

- **CSA W231:25**, *Developing and interpreting IDF information under a changing climate*

### *Basic*




*"Climate-resilient flood hazard assessment shall reference **CSA W231:25, Developing and interpreting IDF information under a changing climate**, to support floodplain mapping and emergency preparedness policies and practices."*



STEP 3

# Subdivision bylaw or development manual

To aid developers during the development process, communities may adopt a subdivision bylaw or create a development manual outlining the engineering standards and requirements for stormwater management and erosion and sediment control.

## Low-impact development examples:

Standards applicable for a subdivision bylaw or development manual:

- **CSA W200:26**, *Design and construction of bioretention systems and rain gardens*

### *Basic*

COPY, PASTE, ADAPT

*"The design and construction of bioretention systems shall be in accordance with **CSA W200:26, Design and construction of bioretention systems and rain gardens.**"*

### *Detailed*

*"Bioretention systems are designed to store and infiltrate stormwater runoff. Water quality is improved using bioretention, as particles are filtered out as water passes through the filter bed. If the underlying soil has a low infiltration rate, an under drain may be required to prevent standing water. The design and construction of these systems shall be in accordance with the guidance in **CSA W200:26, Design and construction of bioretention systems and rain gardens.**"*

## Erosion and sediment control examples:

Standards applicable for a subdivision bylaw or development manual:

- **CAN/CSA W202-18 (R2023)**, *Erosion and sediment control inspection and monitoring*
- **CAN/CSA W208:20 (R2025)**, *Erosion and sediment control installation and maintenance*

### *Basic*

COPY, PASTE, ADAPT

*"Erosion and sediment control measures required under this Bylaw shall be installed, maintained, inspected, and monitored in accordance with **CAN/CSA W202-18 (R2023), Erosion and sediment control inspection and monitoring**, and **CAN/CSA W208:20 (R2025), Erosion and sediment control installation and maintenance**."*

### *Detailed*

*"Erosion prevention is the preferred mitigation measure for eliminating and/or reducing the potential for sedimentation. The developer shall take the necessary precautions to prevent erosion and sedimentation of sewers, ditches, watercourses, culverts, slopes, and other related features both within the plan and down gradient from the plan during and after the completion of construction. The developer is responsible for the implementation of the standard on-site controls during construction and the performance of any constructed control features. The erosion and sediment controls shall be installed and maintained as per **CAN/CSA W208:20 (R2025), Erosion and sediment control installation and maintenance**."*

*"The intention of monitoring is to provide environmental protection and compliance with all applicable legislation while contributing to the overall success of a project. An effective inspection and monitoring program should include the following:*

**a.** *identification of personnel;*

**b.** *details and locations of the environmental constraints for an undertaking, including maps, reports, approvals, and permits;*

**c.** *construction drawings detailing the erosion and sediment controls installed;*

**d.** *identification of high-risk areas; and*

**e.** *inspection schedule.*

*The erosion and sediment control monitoring protocol as specified by **CAN/CSA W202-18 (R2023), Erosion and sediment control inspection and monitoring**, shall be followed."*

STEP 3

# Subdivision agreement or development agreement

The subdivision or development agreement details the obligations of both parties and lays out the various standards and conditions that will control the development of the subject property. The agreement helps ensure that the development proceeds in a manner acceptable to both the community and developer.

## Erosion and sediment control examples:

Standards applicable for a subdivision agreement or development agreement:

- **CAN/CSA W202-18 (R2023)**, *Erosion and sediment control inspection and monitoring*
- **CAN/CSA W208:20 (R2025)**, *Erosion and sediment control installation and maintenance*

### *Basic*




*"The Owner agrees to implement **CAN/CSA-W202-18 (R2023), Erosion and sediment control inspection and monitoring**, and **CAN/CSA W208:20 (R2025), Erosion and sediment control installation and maintenance**, as part of the Erosion and Sediment Control Plan."*

## Stormwater management examples:

Standards applicable for a subdivision agreement or development agreement:

- **CSA W211:21**, *Management standard for stormwater systems*

### *Basic*




*"The Owner shall provide a stormwater management strategy in accordance with **CSA W211:21, Management standard for stormwater systems**."*

### *Detailed*

*"The Owner agrees to design and implement a stormwater management strategy that supports watershed health, enhances infiltration, reduces runoff volume and peak flows, and incorporates climate-resilient design principles. This strategy shall prioritize low-impact development practices, protect natural drainage features, and align with community flood risk objectives and long-term sustainability goals. The strategy shall be done in accordance with **CSA W211:21, Management standard for stormwater systems**."*




## Flood resiliency examples:

Standards applicable for a subdivision agreement or development agreement:

- **CSA W204:19 (R2024)**, *Flood resilient design of new residential communities*
- **CSA W211:21**, *Management standard for stormwater systems*
- **CSA W231:25**, *Developing and interpreting IDF information under a changing climate*
- **CSA TS-227:26**, *Temporary flood barriers – A selection guide for flood mitigation practitioners*

### *Basic*

COPY, PASTE, ADAPT

*"To ensure the protection of areas at flood risk, the Owner agrees to implement flood mitigation measures in compliance with **CSA W000, Name of standard**."*

## Low-impact development examples:

Standards applicable for a subdivision agreement or development agreement:

- **CSA W200:26**, *Design and construction of bioretention systems and rain gardens*

### *Basic*

COPY, PASTE, ADAPT

*"The Owner shall utilize bioretention systems in accordance with **CSA W200:26, Design and construction of bioretention systems and rain gardens.**"*

### *Detailed*

*"Bioretention systems are designed to store and infiltrate stormwater runoff. Water quality is improved using bioretention, as particles are filtered out as water passes through the filter bed. If the underlying soil has a low infiltration rate, an under drain may be required to prevent standing water. The design and construction of these systems shall be in accordance with the guidance in **CSA W200:26, Design and construction of bioretention systems and rain gardens.**"*

STEP 3



# Erosion and sediment control plan

Erosion and Sediment Control Plans are the key to managing erosion and sediment on construction and subdivision sites. For example, these plans are typically submitted to a municipality at the development application stage.

## Erosion and sediment control provision examples:

Standards applicable for an erosion and sediment control plan:

- **CAN/CSA W202-18 (R2023)**, *Erosion and sediment control inspection and monitoring*
- **CAN/CSA W208:20 (R2025)**, *Erosion and sediment control installation and maintenance*

### *Basic*

COPY, PASTE, ADAPT

*"Installation and maintenance of the site shall be in accordance with **CAN/CSA W208:20 (R2025), Erosion and sediment control installation and maintenance**."*

*"Inspection of the site shall be in accordance with **CAN/CSA W202-18 (R2023), Erosion and sediment control inspection and monitoring**."*

STEP 3

# Subdivision application / Development permit application

As a requirement of an application for a subdivision or development permit, the community may require the developer to submit various documents or studies. For example, the community may require that the developer submit a stormwater management plan and an erosion and sediment control plan to ensure that the development proceeds in a manner acceptable to both the municipality and developer.

## Stormwater management examples:

Standards applicable for a subdivision application / development permit application:

- **CSA W200:26**, *Design and construction of bioretention systems and rain gardens*
- **CSA W211:21**, *Management standard for stormwater systems*

### *Basic*

COPY, PASTE, ADAPT

*"The applicant must demonstrate that the proposed development meets municipal stormwater management requirements and is in compliance with **CSA W000, Name of standard.**"*

## Erosion and sediment control examples:

Standards applicable for a subdivision application / development permit application:

- **CAN/CSA-W202-18 (R2023)**, *Erosion and sediment control inspection and monitoring*
- **CAN/CSA W208:20 (R2025)**, *Erosion and sediment control installation and maintenance*

### *Basic*

COPY, PASTE, ADAPT

*"An erosion and sediment control plan that references **CAN/CSA-W202-18 (R2023), Erosion and sediment control inspection and monitoring**, and **CAN/CSA W208:20 (R2025), Erosion and sediment control installation and maintenance**, as part of the Erosion and Sediment Control Plan is required."*

STEP 3

# Emergency preparedness plan

The plan provides details on the department that deals with a structured approach to anticipating, planning for, and managing potential emergencies. The plan provides details on the organization that deals with emergencies, its operations, individual responsibilities, notification system, and available resources. These plans also authorize a community to procure resources that are considered essential.

Many communities across Canada are subject to flooding due to severe weather, drainage system issues, rivers and streams overtopping their banks, overland flooding, and high waves or tides. Since flooding represents a major risk to persons and property, communities must carefully consider mitigation strategies and preparedness activities, ensuring that they have adequate equipment and diking operations.



## Emergency preparedness plan examples:

Standards applicable for a subdivision agreement or development agreement:

- **CSA TS-227:26**, *Temporary flood barriers – A selection guide for flood mitigation practitioners*

### *Basic*

COPY, PASTE, ADAPT

*"A comprehensive approach to selecting, deploying, and maintaining the appropriate type of temporary flood barrier shall be done in accordance with **CSA TS-227:26, Temporary flood barriers – A selection guide for flood mitigation practitioners**."*

STEP 3

# Operations or maintenance manual

A community operations or maintenance manual is a comprehensive reference document that outlines how community infrastructure, assets, and services are to be operated, inspected, and maintained. Its purpose is to ensure consistency, regulatory compliance, risk reduction, and continuity of service delivery. CSA community water standards, especially those pertaining to stormwater, flood resilience, water infrastructure, and natural asset management, ensure consistency, clarity, and alignment with best practices.

## Infrastructure maintenance examples:

Standards applicable for a subdivision agreement or development agreement:

- **CSA W200:26**, *Design and construction of bioretention systems and rain gardens*
- **CAN/CSA-W202-18 (R2023)**, *Erosion and sediment control inspection and monitoring*
- **CAN/CSA W208:20 (R2025)**, *Erosion and sediment control installation and maintenance*

### *Basic*

COPY, PASTE, ADAPT

*"Maintenance and inspections of municipal infrastructure shall be in compliance with **CSA W000, Name of standard**."*

## Natural asset inventory examples:

Standards applicable for a subdivision agreement or development agreement:

- **CSA W218:23**, *Specifications for natural asset inventories*

### *Basic*

COPY, PASTE, ADAPT

*"Natural asset inventories shall be completed in compliance with **CSA W218:23, Specifications for natural asset inventories**."*



# Other Opportunities to Use CSA Community Water Standards

To increase uptake of CSA community water standards and gain benefits associated with their use, your community may consider other options besides referencing the standards and their requirements in strategic documents, policies, planning documents, and bylaws. Provincial legislation gives local governments legal options for providing landowners and developers with incentives to meet community goals, such as utilizing a minimum standard. Finding the community the necessary momentum to get things started.

**Besides updating official policies and bylaws as outlined in Step 3, there are other ways communities can encourage the use of CSA community water standards. Here are a few examples:**

### FAST-TRACK APPLICATIONS

Give priority to review or "fast track" review of approvals that utilize CSA community water standards.

### FEE REDUCTION

Offer a fee reduction on subdivision or development permit applications if the proposed developments use and comply with CSA community water standards.




### PERFORMANCE MEASURES

The implementation of CSA community water standards could be a way to measure how well flood resilience objectives are met. Implementation of these standards can demonstrate your community's commitment to proactive flood mitigation approaches.

### INCLUSION IN CONTRACTS AND REQUESTS FOR PROPOSALS

Including the requirement for the use of bioretention standards (CSA W200:26) or erosion and sediment control standards (CAN/CSA-W202-18 (R2023) and CAN/CSA W208:20 (R2025) in all community-funded projects could be a way to introduce and encourage the use of these standards in advance of their inclusion into bylaws or other requirements.

**Get more ideas and connect with other communities and regulators on our CSA Communities. Email our team at environment@csagroup.org for more information on how to join.**

**Help us improve this Guide! Share your comments, insights, and experiences with us. Email our team at environment@csagroup.org**

# Appendix A: Standard Terms

## TERMS AND DEFINITIONS

### Regional Plans and Documents

**1 Regional Plan**

A regional plan is a framework that aligns growth, servicing, and infrastructure investment to support a growing region and economic development. A regional plan will deal with the efficient placement of land-use activities across a broader area than an individual city or town. Many regional plans contain policies related to flooding and do not permit, or limit, development within areas identified as flood-prone.

**2 Conservation Authority Requirements (applies to Ontario only)**

In Ontario, Conservation Authorities, under the *Conservation Authorities Act*, regulate development in and near rivers, streams, floodplains, wetlands, steep slopes, and shorelines. A development project in a regulated area may need a permit from the conservation authority to proceed in order to ensure it complies with provincial regulations.

### Long-Range Planning Documents

**3 Official Community Plan / Development Plan**

An Official Community Plan (OCP) or Development Plan sets a general policy direction for development and conservation in a municipality. The OCPs articulate the community's objectives and policies regarding land use, community development, and operations. OCPs may contain policies related to stormwater management, flood protection, erosion control, or climate resiliency.

The policies within an OCP assist a municipality in deciding whether a proposed development fits with a community's goals and desired pattern of land use. The OCP provides information that can guide the development sector and landowners toward the most appropriate form of development. They also help councils assess the merits of a development proposal in relation to a community's goals and objectives.

Many OCPs contain policies to restrict development in hazard land areas and to limit development within the flood fringe.

**4 Municipal Zoning Bylaw / Land Use Bylaw**

Zoning allows local governments to regulate land uses, buildings, and structures on a property, including how much of that use (density) is allowed on a specific part of the property. On a neighbourhood or site-specific level, use and density are the primary means local governments have to shape development. On a municipal, regional district, or watershed level, zoning is the primary means of preventing development in locations where it can harm sensitive ecosystems and ecosystem connectivity, directing development towards more appropriate locations. The ability to regulate use also includes the ability to prohibit use within a zone.

Zoning bylaws can include regulations for controlling surface and rainwater runoff from paved and roof areas. For example, they can establish the maximum percentage of the land that may be covered with impermeable surfaces. This will ensure that rainwater filters into the soil at its source rather than causing concentrated impacts downstream by being piped into watercourses.

**5 Asset Management Plan**

An asset management plan is a comprehensive plan incorporating inventory, lifecycle management, service levels, risk, and financial strategies.

### 6 Climate Resiliency Plan

A climate resiliency plan assesses climate vulnerabilities for critical services and infrastructure; specifies adaptation measures; describes implementation steps, roles, timelines, and resources; and establishes monitoring and continuous improvement processes to ensure systems remain resilient as climate conditions evolve.

### 7 Development Permit Area (applies to British Columbia only)

Local governments may designate Environmental Development Permit Areas (EDPAs) to protect the natural environment, its ecosystems and biological diversity, regulate the form and character of development, and influence the siting of development on a parcel. They are a more detailed tool than standard zoning for shaping how development occurs on a site. Applying to private land, EDPAs reflect the shared responsibility that landowners and a local government have for protecting the environment.

### 8 Stormwater Management Plan

A stormwater management plan is the set of drawings and other documents that comprise all the information and specifications for the programs, drainage systems, structures, concepts, and techniques intended to maintain or restore the quality and quantity of stormwater runoff to pre-development levels. It may evaluate existing infrastructure and policies, identify drainage system deficiencies, and develop an implementation plan such as the inclusion of potential funding mechanisms for a long-term sustainable program. Stormwater management plans may be adopted by bylaw.

### 9 Flood Mitigation Plan

A flood mitigation plan identifies areas within a municipality that are prone to flooding and develops long-term strategies for protecting people and property from flood events. The long-term strategies are intended to significantly reduce or eliminate the risk of flooding before it occurs.

## Development Approval Documents

### 10 Subdivision and Development Bylaw / Development Manual

A subdivision and development bylaw or development manual provides the technical framework for engineering standards and requirements with respect to infrastructure servicing and transportation planning. This bylaw addresses the required level of infrastructure servicing standards, detailed engineering design, and construction standards. Typical topics covered include subdivision, site plans, roads, water mains, sanitary and storm sewers, stormwater management, street lighting, lot grading, erosion and sediment control, and parks and community trails.

### 11 Subdivision Agreement / Development Agreement

A subdivision or development agreement is an agreement between a municipality and a developer or landowner setting out the terms under which the builder is allowed to subdivide the land. The agreement details the obligations of both parties and lays out the various policies, practices, standards, and conditions that will control the development of the subject property. The policies, practices, standards, and conditions may be related to drainage, landscaping, and erosion and sediment control.

### 12 Erosion and Sediment Control Guidelines or Plans

Municipalities have the authority to regulate and prohibit activities with regard to the soil. Local governments may, by bylaw, require a permit for removing or depositing soil and may impose fees for permits or for activities carried out under the permits. Soil removal and deposit provisions often require a sediment and erosion control plan for developments of a certain type or size, or in areas in close proximity to watercourses. Municipalities may require developers to follow an erosion and sediment control plan to ensure that sediment from the construction site is not transported beyond the limits of the active work area.

# Appendix B: CSA Community Water Standards

## Stormwater systems management

### CSA W211:21, *Management standard for stormwater systems*

Aging and inadequate infrastructure, climate change impacts, and complex oversight structure complicate stormwater systems management. CSA W211:21 provides guidance on the effective management of stormwater systems and helps increase their resiliency. The Standard outlines:

- key policies and procedures needed for effective management of a stormwater system;
- a framework for increasing public safety by identifying and mitigating environmental, social, legal, and economic risks to the system;
- requirements for a documented stormwater system management plan endorsed by top management and the owner;
- requirements for a documented organizational structure of the operator's organization, including roles, responsibilities, and authorities; and
- resources to assist in watershed planning, risk assessment, life cycle cost analysis, etc.

### CSA W231:25, *Developing and interpreting IDF information under a changing climate*

Canada is experiencing significant environmental, social, and economic impacts from climate variability and change, linked in many cases to rising greenhouse gas concentrations. To ensure infrastructure remains resilient, standards must evolve to integrate climate-related risks into planning, design, and material performance requirements. Intensity-duration-frequency (IDF) curves, which describe the likelihood and severity of extreme rainfall events, are widely used by engineers, planners, hydrologists, and policymakers when designing stormwater systems, mapping floodplains, and preparing for emergencies. Extreme rainfall can cause flooding, erosion, landslides, and major damage to buildings, bridges, and other infrastructure, making accurate IDF information essential. However, historical precipitation data no longer reliably predicts future conditions because climate change is already altering rainfall patterns and will continue to do so over the lifespan of infrastructure. This creates a challenge for calculating IDF curves, which must now incorporate projected future climate conditions rather than relying solely on past records. This standard helps to address this challenge by:

- providing methods for establishing historical IDF rainfall estimates;
- providing information on the impact of climate change on extreme rainfall; and
- providing additional information on return periods and their derivation, extreme value theory, and design storms.

## Natural assets and nature-based solutions

### CSA W200:26, *Design and construction of bioretention systems and rain gardens*

The importance of proper stormwater management has become increasingly apparent in recent years, as Canada is experiencing increases in precipitation due to climate change. Bioretention is an innovative stormwater management approach that can provide many positive outcomes in the treatment of runoff, reducing its volume and controlling its rate, and recharging groundwater. CSA W200:26 provides requirements and recommendations for the design of bioretention systems intended for the management of urban stormwater runoff. The standard covers:

- roles and responsibilities in the design and construction of bioretention systems;
- typical performance and design criteria of a bioretention system;
- criteria and constraints for bioretention site planning;
- assessing bioretention system suitability for a specific site and for cold climate;
- design criteria and construction considerations for various bioretention systems;
- design and construction considerations for operation and maintenance;
- documents and reports that might be required by local authorities;
- sequencing of construction activities; and
- erosion and sediment control measures, approaches, and requirements for erosion and sediment control plan.

### CSA W218:23, *Specifications for natural asset inventories*

Asset management enables those jurisdictions that own assets, or have authority over them, with tools to efficiently manage and maintain them over time and maximize value to their stakeholders. Robust asset management, that includes natural assets, support continued desired levels of service. CSA W218:23 provides guidance to develop natural asset inventories using methods that are common for built infrastructure to facilitate the integration of natural asset management with existing practices. The standard lays out:

- a framework for natural assets inventories including inventory design, data gathering, spatial data, delineating natural assets, condition assessment, roles, and responsibilities;
- documentation of the natural asset inventories including dates of inventories, roles and responsibilities for management, all available data, assumptions, uncertainties, and caveats;
- management and continuous improvement of the natural asset inventory including an inventory governance and management framework; and
- the process and its timing for periodic review, identification and continual review of triggers that should result in updates and consultations with key interested parties.

## Erosion and sediment control

### CAN/CSA W202-18 (R2023), *Erosion and sediment control inspection and monitoring*

Construction activities can result in soil erosion. Stormwater runoff can carry sediment from the construction area to rivers, streams, or wetlands, leading to degradation of ecosystems, loss of structural integrity and functionality of watercourses, flooding, and costly infrastructure maintenance. The National Standard of Canada, CAN/CSA W202:18 (R2023), helps prevent such adverse impacts by providing requirements and recommendations for the inspection and monitoring of erosion and sediment control (ESC) measures implemented at the construction site.

Specifically, the standard provides requirements and recommendations for:

- qualification of inspection and monitoring personnel;
- ESC measures inspections before, during, and post-construction;
- effluent discharge and watercourse monitoring to determine ESC measure performance;
- documenting compliance with an ESC plan and communication protocols; etc.

The standard also provides additional information on monitoring equipment and includes data on significant rainfall events in various regions of Canada and a sample ESC inspection report.

### CSA W208:20 (R2025), *Erosion and sediment control installation and maintenance*

Complementing the CAN/CSA-W202-18 (R2023) Standard for erosion sediment control (ESC) inspection and monitoring, the National Standard of Canada, CSA W208:20 (R2025) helps provide consistency in how ESC measures are installed and maintained at construction projects across the country.

This standard provides a framework that describes the key success factors for the installation and maintenance of ESC measures, including:

- general and product-specific installation and maintenance requirements and criteria;
- tools for a quick reference of ESC measures based on functional need and appropriate application;
- specific installation and maintenance requirements for various types of ESC implementations, including catch basin protections, check dams, hydraulically applied measures, retaining structures, sediment bags and ponds, slope drains, vegetative filter strips, wheel wash stations, etc.

## Flood planning and resiliency

### CSA W204:19 (R2024), *Flood resilient design of new residential communities*

With the growing number of weather-related natural catastrophes in Canada, it is important that new communities in Canada are designed for resiliency. Incorporating flood-resilient design measures into the planning and development of new residential communities can help improve public safety, reduce potential flood damages, and help avoid costly future infrastructure replacement and potential liability related to inadequate design standards.

CSA W204:19 outlines overarching community-level and stormwater system-specific elements that should be considered in the design of new residential communities. The standard lays out:

- roles and responsibilities in the design of flood-resilient new residential communities;
- characteristics of a flood-resilient community and general design, planning, and siting principles;
- types of rainfall events and management of runoff;
- considerations for natural infrastructure and low-impact development measures;
- major and minor stormwater systems, and their components, design objectives, and principles;
- sanitary sewer and wastewater pumping station design; and
- requirements and guidelines for operation and maintenance of public infrastructure, etc.

### CSA W210:21, *Prioritization of flood risk in existing communities*

Prioritizing flood mitigation measures and investments is difficult, particularly in existing communities. The National Standard of Canada, CSA W210:21, presents a unique framework for identifying high flood risk areas within a community. The standard offers a flexible approach that can be implemented by communities of any size and technical readiness and:

- describes the common types of flood mechanisms and challenges they present in existing communities;
- outlines a flood risk prioritization framework with foundational, intermediate, and advanced levels of flood risk assessment;
- summarizes inputs needed for the different levels of assessment and guidance on how practitioners can move from one assessment level to the next;
- identifies core hazards, proxy risk factors, and impact categories that should be considered in the vulnerability assessment;
- provides a scoring methodology to determine where flooding can have the greatest, most damaging impact in a community; and
- includes annexes with additional information on core and proxy risk factors, best practices for community-based flood resiliency in existing residential communities, and other resources.

### CSA W224:24, *Coastal flood risk assessment for buildings and infrastructure*

Canada's coastal and Great Lakes communities face growing vulnerability to flooding from extreme water levels, waves, storm surges, and tsunamis. These risks are increasing due to coastal development, population growth, and climate-related factors such as sea-level rise, erosion, and declining sea ice. As hazards intensify, Canada must adopt more robust coastal flood risk management approaches, including improved building and infrastructure design practices. The referenced standard supports this by guiding users through assessing present and future coastal flood risks and identifying appropriate design measures to reduce them. The standard includes:

- guidance on coastal flood risk assessment including defining the extents and characteristics of coastal flood events;
- information on the planning and design of buildings and infrastructure in coastal areas;
- a holistic building and infrastructure design approach to develop risk-based design criteria;
- identification of data for the flood risk assessment and associated gaps in the data;
- outline of how to determine the level of analysis for the risk assessment;
- an overall assessment of an area's vulnerability and the consequences of flooding;
- information on qualitative and quantitative risk assessments; and
- a summary of the integrated approach required to evaluate and manage coastal flood risk.

### CSA W229.1:25, *Airborne LiDAR data acquisition*

Airborne LiDAR is a key source of high-precision elevation data used for applications such as terrain modelling and flood hazard mapping, but national guidelines for its acquisition are still needed in Canada. The Standard aims to establish consistent specifications, methodologies, and best practices for LiDAR data collection, processing, validation, and deliverables. While emphasizing accuracy and data quality, it also considers innovation, emerging technologies, and project-specific or financial factors. The Standard includes:

- guidance for overall project planning;
- information to obtain high quality data collection, processing, and management;
- procedures for data quality checks; and
- additional information on obtaining LiDAR data in forested, high-relief terrain, or urban areas.

### CSA W229.2:25, *Geomatics for flood mapping*

Flood maps are essential tools for identifying flood risks and preventing damage to infrastructure, property, and communities across Canada, and they rely on accurate, accessible geospatial data. The Standard outlines technical requirements for acquiring, managing, and disseminating flood maps and their associated data, with a focus on local-scale fluvial, pluvial, and coastal flooding. The resulting maps support decision-making in disaster mitigation, emergency response, land-use planning, and public awareness by providing detailed large-scale information on flood-prone areas and related features such as topography, land cover, and infrastructure. Historically used to delineate designated flood hazard areas under federal–provincial/territorial programs, flood maps continue to guide development decisions and mitigation policies. Recent advances in hydraulic modelling, data processing, and remote sensing technologies—such as high-resolution imagery and LiDAR—have significantly improved the accuracy and resolution of modern flood maps. The Standard includes:

- general requirements for floodplain delineation;
- how to prepare flood maps including provisions for public engagement, determination of study limits, the use of climate data, etc;
- geospatial data requirements for flood mapping; and
- standards for flood maps and specific map features.

### CSA TS-227:26, *Temporary flood barriers – A selection guide for flood mitigation practitioners*

Temporary flood barriers are short-term protection systems used to shield buildings, infrastructure, and cultural assets from flood hazards before waters reach them. While they can reduce flood damage, all temporary barriers allow some level of leakage, which varies with factors such as flood depth, water currents, debris, ground conditions, barrier length, and deployment location. This Technical Specification outlines:

- the various types of flooding environments and conditions that impact the type of flood barrier selected;
- descriptions of the different types of flood barriers;
- an integrative approach to selecting a temporary flood barrier; and
- descriptions of conditions for structural barrier failure.

## New standards

### CSA TS-239:26 *Water, sediment, and soil erosion management strategies for agriculture using nature-based solutions* *(published July 2026)*

This Technical Specification provides a national framework for the planning, design, implementation, and management of agricultural nature-based solutions (Ag-NbS) to address water, sediment, and soil erosion challenges across Canada's agricultural landscapes. It supports a watershed-based approach that helps agricultural producers and land managers improve resilience to climate change while enhancing water quality, soil health, and long-term farm sustainability. Applicable to both crop and livestock operations, the Technical Specification emphasizes working with natural processes, integrating local knowledge, and using adaptive management to support effective decision-making and continuous improvement.

The Technical Specification includes:

- a step-by-step framework for assessing site conditions, identifying management challenges, selecting appropriate nature-based solutions, and evaluating performance over time;
- guidance on understanding watershed processes, climate-related risks, and the local environmental conditions that influence agricultural water, sediment, and soil management;
- recommendations for selecting, planning, and implementing Ag-NbSs; and
- monitoring and adaptive management practices that support the long-term effectiveness and sustainability of implemented solutions.

### CSA W234:26 *From strategy to implementation: A planning framework for watershed-based flood and erosion management using nature-based solutions* *(set to publish September 2026)*

This Standard provides a framework for initiating, planning, implementing, and adaptively managing nature-based solutions (NbS) to address flood and erosion risks at the watershed scale. It promotes a systems-based approach that supports evidence-based decision-making and meaningful engagement with Indigenous Rights and Title Holders, interest holders, and communities. By emphasizing the protection, restoration, and enhancement of natural assets alongside adaptive management, the Standard helps organizations improve watershed resilience, reduce flood and erosion impacts, and achieve long-term benefits.

The Standard includes:

- guidance for engaging Indigenous Rights and Title Holders, interest holders, and communities throughout the NbS project lifecycle;
- a risk-based approach for assessing watershed-specific flood and erosion risks, identifying priority locations, and evaluating opportunities for NbSs;
- recommendations for selecting, planning, and implementing NbSs within watersheds; and
- requirements for adaptive management, monitoring, and long-term stewardship to support the effectiveness and resilience of NbSs over time.

### CSA W232:27 *Management of coastal flooding and erosion using natural and nature-based solutions*

*(set to publish January 2027)*

This Standard provides a national framework for the assessment, design, implementation, and maintenance of nature-based solutions (NbS) for managing coastal flood and erosion risks. It supports a systems-based approach grounded in adaptive management, performance monitoring, and evidence-based decision-making to sustain the long-term functionality of NbS under dynamic environmental conditions. It applies to coastal environments across Canada, including marine shorelines, Great Lakes coasts, and estuarine systems.

The Standard includes:

- guidance suitable for a range of settings, from urbanized coastlines to remote or ecologically sensitive areas;
- intended use at various stages of project planning and execution; and
- guidance regarding the importance of engagement with interested parties, including Rights and Title Holders, to support inclusive, collaborative, and locally grounded decision-making.

# Appendix C: Examples of How Communities Could Integrate CSA Community Water Standards Into Their Planning Processes

| The City of Colwood, British Columbia | Overarching Standards | | |
|---|---|---|---|
| | Stormwater Management and Flood Resiliency | | |
| **Applicable Provincial and Municipal Plans, Policies and Guidelines** | **CSA W211:21** *Management standard for stormwater systems* | **CSA W204:19 (R2024)** *Flood resilient design of new residential communities* | **CSA W210:21** *Prioritization of flood risk in existing communities* |
| **Regional Plans and Documents** | | | |
| Capital Regional District Regional Growth Strategy | | | |
| **Municipal Long Range Planning Documents** | | | |
| City of Colwood Official Community Plan | | | |
| Colwood Land Use Bylaw | | | |
| **Development Approval Documents** | | | |
| Subdivision and Development of Land Bylaw | | | |
| **Internal Operations Documents** | | | |
| Operations / Maintenance Manual* | | | |

*If available

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Applicable
Probable
Not Applicable

| The City of Colwood, British Columbia | Design and Construction Standards | | |
|---|---|---|---|
| | Low Impact Development | Erosion and Sediment Control | |
| **Applicable Provincial and Municipal Plans, Policies and Guidelines** | **CSA W200:26** *Design and construction of bioretention systems and rain gardens* | **CAN/CSA-W202-18** *Erosion and sediment control inspection and monitoring* | **CSA W208:20** *Erosion and sediment control installation and maintenance* |
| **Regional Plans and Documents** | | | |
| Capital Regional District Regional Growth Strategy | | | |
| **Municipal Long Range Planning Documents** | | | |
| City of Colwood Official Community Plan | | Applicable | Applicable |
| Colwood Land Use Bylaw | | | |
| **Development Approval Documents** | | | |
| Subdivision and Development of Land Bylaw | Applicable | Applicable | Applicable |
| **Internal Operations Documents** | | | |
| Operations / Maintenance Manual* | Applicable | Applicable | Applicable |

Applicable
Probable
Not Applicable

| Town of High River, Alberta | Overarching Standards | | |
|---|---|---|---|
| | Stormwater Management and Flood Resiliency | | |
| **Applicable Provincial and Municipal Plans, Policies and Guidelines** | **CSA W211:21** *Management standard for stormwater systems* | **CSA W204:19 (R2024)** *Flood resilient design of new residential communities* | **CSA W210:21** *Prioritization of flood risk in existing communities* |
| **Regional Plans and Documents** | | | |
| South Saskatchewan Regional Plan | | | |
| Calgary Metropolitan Region Growth Plan | | | |
| **Municipal Long Range Planning Documents** | | | |
| High River Town Plan | | | |
| High River Land Use Bylaw | | | |
| High River Growth Management Strategy | | | |
| High River Utility Master Plan (Stormwater) | | | |
| **Development Approval Documents** | | | |
| High River General Engineering and Construction Standard | | | |
| Subdivision Application / Development Permit Application | | | |
| High River Development Permit Handout | | | |
| **Internal Operations Documents** | | | |
| Operations / Maintenance Manual* | | | |

*If available

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Applicable
Probable
Not Applicable

| Town of High River, Alberta | Design and Construction Standards | | |
|---|---|---|---|
| | Low Impact Development | Erosion and Sediment Control | |
| Applicable Provincial and Municipal Plans, Policies and Guidelines | CSA W200:26 *Design and construction of bioretention systems and rain gardens* | CAN/CSA-W202-18 (R2023) *Erosion and sediment control inspection and monitoring* | CSA W208:20 (R2025) *Erosion and sediment control installation and maintenance* |
| **Regional Plans and Documents** | | | |
| South Saskatchewan Regional Plan | | | |
| Calgary Metropolitan Region Growth Plan | | | |
| **Municipal Long Range Planning Documents** | | | |
| High River Town Plan | | | |
| High River Land Use Bylaw | | | |
| High River Growth Management Strategy | | | |
| High River Utility Master Plan (Stormwater) | | | |
| **Development Approval Documents** | | | |
| High River General Engineering and Construction Standard | | | |
| Subdivision Application / Development Permit Application | | | |
| High River Development Permit Handout | | | |
| **Internal Operations Documents** | | | |
| Operations / Maintenance Manual* | | | |

Applicable
Probable
Not Applicable

| Municipality of Lakeshore, Ontario | Overarching Standards | | |
|---|---|---|---|
| | Stormwater Management and Flood Resiliency | | |
| **Applicable Provincial and Municipal Plans, Policies and Guidelines** | **CSA W211:21** *Management standard for stormwater systems* | **CSA W204:19 (R2024)** *Flood resilient design of new residential communities* | **CSA W210:21** *Prioritization of flood risk in existing communities* |
| **Regional Plans and Documents** | | | |
| County of Essex Official Plan | | | |
| ERCA Environmental Impact Assessment (EIA) Guidelines | | | |
| Windsor/Essex Region Stormwater management Standards Manual | | | |
| **Municipal Long Range Planning Documents** | | | |
| Municipality of Lakeshore Official Plan (2021) | | | |
| Town of Lakeshore** Comprehensive Zoning By-law | | | |
| Town of Lakeshore** Stormwater Master Plan Phase 1 | | | |
| Shoreline Management Plan (under development) | | | |
| Charter for Flood Mitigation (under development) | | | |
| **Development Approval Documents** | | | |
| Town of Lakeshore** Development Manual | | | |
| Subdivision Agreement | | | |
| **Internal Operations Documents** | | | |
| Operations / Maintenance Manual* | | | |

*If available
**The Town of Lakeshore was renamed "Municipality of Lakeshore"

Applicable
Probable
Not Applicable

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| Municipality of Lakeshore, Ontario | Design and Construction Standards | | |
|---|---|---|---|
| | Low Impact Development | Erosion and Sediment Control | |
| **Applicable Provincial and Municipal Plans, Policies and Guidelines** | **CSA W200:26** *Design and construction of bioretention systems and rain gardens* | **CAN/CSA-W202-18** *Erosion and sediment control inspection and monitoring* | **CSA W208:20 (R2024)** *Erosion and sediment control installation and maintenance* |
| **Regional Plans and Documents** | | | |
| County of Essex Official Plan | | | |
| ERCA Environmental Impact Assessment (EIA) Guidelines | | | |
| Windsor/Essex Region Stormwater management Standards Manual | | | |
| **Municipal Long Range Planning Documents** | | | |
| Municipality of Lakeshore Official Plan (2021) | | | |
| Town of Lakeshore** Comprehensive Zoning By-law | | | |
| Town of Lakeshore** Stormwater Master Plan Phase 1 | | | |
| Shoreline Management Plan (under development) | | | |
| Charter for Flood Mitigation (under development) | | | |
| **Development Approval Documents** | | | |
| Town of Lakeshore** Development Manual | | | |
| Subdivision Agreement | | | |
| **Internal Operations Documents** | | | |
| Operations / Maintenance Manual* | | | |

Applicable
Probable
Not Applicable

| City of Cambridge, Ontario | Overarching Standards | | |
|---|---|---|---|
| | Stormwater Management and Flood Resiliency | | |
| **Applicable Provincial and Municipal Plans, Policies and Guidelines** | **CSA W211:21** *Management standard for stormwater systems* | **CSA W204:19 (R2024)** *Flood resilient design of new residential communities* | **CSA W210:21** *Prioritization of flood risk in existing communities* |
| **Regional Plans and Documents** | | | |
| Regional Official Plan | | | |
| Region of Waterloo and Area Municipalities Design Guidelines and Supplemental Specifications for Municipal Services | | | |
| GRCA Policies for the Administration of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulations | | | |
| **Municipal Long Range Planning Documents** | | | |
| Cambridge Official Plan | | | |
| City of Cambridge Zoning By-law | | | |
| City of Cambridge Stormwater Management Master Plan | | | |
| City of Cambridge Stormwater Management Policies and Guidelines | | | |
| **Development Approval Documents** | | | |
| Engineering Standards and Development Manual | | | |
| Erosion & Sediment Control Guidelines for Urban Construction | | | |
| **Internal Operations Documents** | | | |
| Operations / Maintenance Manual* | | | |

*If available

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Applicable
Probable
Not Applicable

| City of Cambridge, Ontario | Design and Construction Standards | | |
|---|---|---|---|
| | Low Impact Development | Erosion and Sediment Control | |
| Applicable Provincial and Municipal Plans, Policies and Guidelines | CSA W200:26 *Design and construction of bioretention systems and rain gardens* | CAN/CSA-W202-18 (R2023) *Erosion and sediment control inspection and monitoring* | CSA W208:20 (R2025) *Erosion and sediment control installation and maintenance* |
| **Regional Plans and Documents** | | | |
| Regional Official Plan | | | |
| Region of Waterloo and Area Municipalities Design Guidelines and Supplemental Specifications for Municipal Services | | | |
| GRCA Policies for the Administration of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulations | | | |
| **Municipal Long Range Planning Documents** | | | |
| Cambridge Official Plan | | | |
| City of Cambridge Zoning By-law | | | |
| City of Cambridge Stormwater Management Master Plan | | | |
| City of Cambridge Stormwater Management Policies and Guidelines | | | |
| **Development Approval Documents** | | | |
| Engineering Standards and Development Manual | | | |
| Erosion & Sediment Control Guidelines for Urban Construction | | | |
| **Internal Operations Documents** | | | |
| Operations / Maintenance Manual* | | | |

Applicable
Probable
Not Applicable

# Appendix D: Who is Using CSA Community Water Standards – and Why?

## Local Governments

Local governments such as a municipality or indigenous community are the primary intended users of CSA community water standards. Local governments can use the standards to support:

- stormwater and flood resilience planning;
- development review and approvals;
- infrastructure design, operation, and maintenance; and
- asset management and risk prioritization.

*Note: References to CSA W200:18 (R2023) and CSA W201:18 (R2023) are historical. These standards have been combined into one standard: CSA W200:26 Design and construction of bioretention systems and rain gardens*

### Stormwater Systems Management

#### East Hants, NS

2021 Population: **22,892**
Size Category: **Small municipality**
Document: Municipal Standards (2025)
Document Type: **Municipal Engineering Standards**

CSA Standard Referenced:
**CSA W231:25, *Developing and interpreting IDF information under a changing climate***

**Description:**

In its Municipal Standards, the Municipality of East Hants voluntarily implements **CSA W231:25** as the technical basis for incorporating climate change into stormwater system design, even though use of this standard is not mandated by provincial regulation. By requiring designers to develop climate adjusted intensity duration frequency information using **CSA W231** and a specified emissions scenario, the Municipality moves beyond historical rainfall assumptions and explicitly accounts for future extreme weather conditions.

**SUPPORTING INSTITUTIONS**

Climate Data Canada is a national online data portal developed to support climate-resilient planning and infrastructure design in Canada. It is led by the Canadian Centre for Climate Services (CCCS) within Environment and Climate Change Canada (ECCC), in partnership with provincial agencies, universities, and climate research organizations.

Best Practices for Using IDF Curves recommends following **CSA W231:25** to address a key problem: traditional IDF curves based only on historical rainfall no longer represent future climate risk. **CSA W231:25** provides a nationally consistent methodology for:

Creating historical IDF curves;

Adjusting IDF information for climate change; and

Communicating uncertainty in extreme rainfall estimates.

**Benefit:**

This approach strengthens the reliability and resilience of stormwater infrastructure by promoting consistent, transparent, and forward looking design practices, while giving the Municipality a clear and defensible basis for reviewing climate assumptions used in development proposals. Use of CSA W231:25 also helps to ensure that all submissions are grounded in a recognized and consistently applied methodology, supporting clearer expectations and more informed decision making during the review process.

### High River, AB

2021 Population: **14,324**
Size Category: **Small municipality**
Document: **High River Town Plan**
Document Type: **Official Community Plan**

CSA Standard Referenced: **CSA W211:21, *Management standard for stormwater systems***

**SUPPORTING INSTITUTIONS**

The Town Plan, in policy 1.3.2, commits to integrating CSA flood-related standards into the Town's Subdivision and Development Standards in 2026.

#### Description:

The Town Plan requires that CSA standards for stormwater management and low impact development (policy 5.3C.1) are used for all new developments and redevelopment opportunities. The purpose of this requirement is to guide municipal stormwater management and various types of low impact development using recognized best practices.

#### Benefit:

This approach helps to ensure that new developments and redeveloped areas are following recognized best practices for stormwater management and low impact development. Use of CSA standards also supports a more transparent development process.

## Natural Assets and Nature-Based Solutions

### Cambridge, ON

2021 Population: **138,479**
Size Category: **Mid sized municipality**
Document: **Engineering Standards and Development Manual**
Document Type: **Municipal Engineering Standards**

CSA Standard Referenced: **CSA W200:18, *Design of bioretention systems***

#### Description:

The City of Cambridge's Engineering Standards and Development Manual voluntarily cites CSA W200 as an endorsed technical reference to guide the design of bioretention features within low impact development and green infrastructure, in support of municipal stormwater management and water balance goals. By positioning CSA W200 as an accepted design resource, the Manual signals that proponents should rely on its guidance when incorporating infiltration based systems, helping to promote alignment in design approaches, performance criteria, and constructability considerations across projects.

#### Benefit:

This approach helps establish a common technical reference point for bioretention design within development applications, improving clarity, consistency, and defensibility in how bioretention designs are evaluated while still allowing flexibility to respond to site specific conditions.

## Guelph, ON

2021 Population: **143,740**
Size Category: **Mid sized municipality**
Document: **Development Engineering Manual (2023)**
Document Type: **Municipal Engineering Standards**

CSA Standard Referenced: **CSA W200:18 (R2023),** ***Design of bioretention systems***

### Description:

The City of Guelph Development Engineering Manual voluntarily references CSA W200:18 (R2023) to support the design of bioretention systems used in low impact development and green infrastructure as part of its broader stormwater management and water balance objectives. The Manual frames CSA W200:18 (R2023) as one of several external technical resources that proponents are expected to draw upon when proposing infiltration based features, ensuring that bioretention systems are designed with consistent assumptions, performance expectations, and construction considerations.

### Benefit:

This approach helps establish a common technical reference point for bioretention design within development applications, thereby improving clarity, consistency, and defensibility in how bioretention designs are evaluated while still allowing flexibility to respond to site specific conditions.

## Aurora, ON

2021 Population: **62,057**
Size Category: **Mid sized municipality**
Document: **Natural Capital Asset Management Plan (2024)**
Document Type: **Natural Asset Management Plan**

CSA Standard Referenced: **CSA W218:23,** ***Specifications for natural asset inventories***

### Description:

The Town of Aurora developed its Natural Capital Asset Management Plan primarily to meet Ontario's asset management planning requirements under O. Reg. 588/17, which mandate comprehensive asset inventories and documented levels of service for all municipal infrastructure, including natural assets.

### SUPPORTING INSTITUTIONS

Ontario Regulation 588/17 requires municipalities to include natural assets in their asset management plans when those assets provide municipal services.

The regulation and **CSA W218:23** align closely with their definitions, scope, and guidance. The two documents are complementary:

- The regulation details what Ontario municipalities must include and report within their asset management plans; and
- **CSA W218:23** provides a tool for consistently identifying and describing natural assets.

### Benefit:

While the regulation does not require use of CSA standards, Aurora voluntarily aligned its natural asset inventory with **CSA W218** by referencing its definitions and classification system for Natural Area Assets and Natural Enhanced Assets. This intentional use of the CSA standard helped Aurora consistently categorize and value natural assets within its broader corporate asset management framework.

## Hamilton, ON

2021 Population: **569,353**
Size Category: **Large city**
Document: **Natural Assets 2024 Asset Management Plan (2024)**
Document Type: **Natural Asset Management Plan**

CSA Standard Referenced: **CSA W218:23, *Specifications for natural asset inventories***

### Description:

In its Natural Assets 2024 Asset Management Plan, the City of Hamilton identifies itself as being at an early stage in incorporating natural assets into asset management and financial reporting, with the Plan focused on documenting available information and establishing a roadmap toward compliance with O. Reg. 588/17. **CSA W218:23** is voluntarily referenced to inform the City's emerging approach to natural asset inventories, data collection, asset categorization, and condition methodology.

### Benefit:

Hamilton draws on **CSA W218:23** concepts and sample tools, such as linkages between natural assets, ecosystem services, and community benefits, as well as ecosystem-based condition indicators, as a starting point for desktop condition assessments that are expected to evolve through future phases of the natural asset management roadmap.

## Kingston, ON

2021 Population: **132,485**
Size Category: **Mid-sized municipality**
Document: **Asset Management Plan (2025)**
Document Type: **Asset Management Plan**

CSA Standard Referenced: **CSA W218:23, *Specifications for natural asset inventories***

### Description:

The City of Kingston applies **CSA W218:23** in its Asset Management Plan as the methodological basis for developing a municipal natural asset inventory covering assets owned and maintained by the City.




## SUPPORTING INSTITUTIONS

*The Institute for International Sustainable Development (IISD)* is an independent, non-profit organization that conducts research, policy analysis, and international reporting to advance sustainable solutions at the intersection of environment, economy, and society worldwide that promotes CSA Community Water Standards in several of their reports, including:

- Funding the Future: Enabling natural infrastructure through federal infrastructure programs (2025) which provides recommendations to adjust federal infrastructure funding programs to allow natural assets to be more consistently funded alongside traditional grey assets, including establishing baselines of natural asset inventories that align with **CSA W218:23**.
- Nature That Works: Benefits and performance of natural infrastructure for water management on the Canadian prairies (2025) provides evidence on how different types of natural infrastructure provide flood mitigation, drought resilience, and water-quality services across the Canadian Prairies by highlighting how bioretention systems can improve water supply and drought mitigation by aligning with **CSA W200:18 (R2023).**

The standard is used to guide how natural assets are identified, categorized, and documented as part of the City's broader asset management reporting, providing a structured and consistent foundation for recognizing natural assets alongside traditional infrastructure.

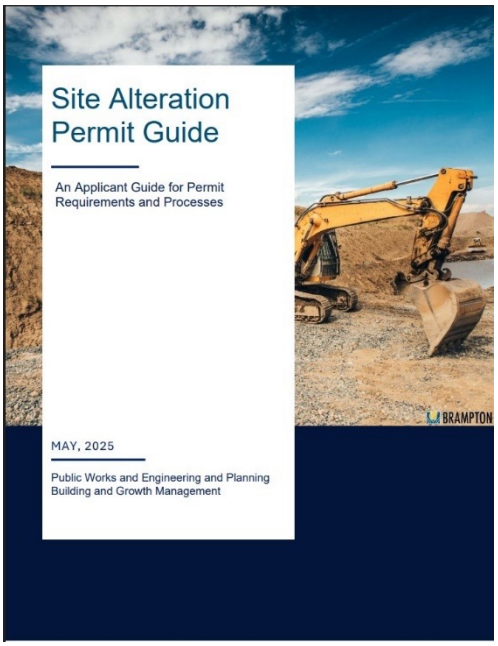
### Benefit:

In this context, **CSA W218:23** helps clearly define inventory scope and asset ownership, particularly through the exclusion of conservation authority, managed assets, supporting transparent and consistent treatment of municipally managed natural assets within Kingston's asset management activities.

## Erosion and Sediment Control

### Brampton, ON

The City of Brampton applies CSA standards strategically within its regulatory and permitting framework to translate erosion and sediment control objectives into clear, enforceable technical requirements for development and site alteration activities.




2021 Population: **656,480**
Size Category: **Large city**
Document: Site Alteration By-law 119-2024 and Site Alteration Permit Guide (2025)
Document Type: **Municipal By-law, Permit Guide**

CSA Standard Referenced: **CAN/CSA W202-18 (R2023),** ***Erosion and sediment control inspection and monitoring***

### Description:

The City of Brampton incorporates **CSA W202-18 (R2023)** directly into Site Alteration By-law 119-2024 by reference as a mandatory technical standard for managing runoff and erosion from disturbed areas.

In Brampton's Site Alteration Permit Guide, **CSA W202-18 (R2023)** is identified as a required technical standard for the preparation of Erosion and Sediment Control Plans submitted in support of site alteration permits. Applicants must demonstrate how erosion risks will be managed through inspection, monitoring, and corrective measures consistent with **CSA W202-18 (R2023)** and applicable conservation authority guidance. In this context, **CSA W202-18 (R2023)** provides the technical basis used by City staff to review applications, impose permit conditions, and assess compliance during construction activities.

### Benefit:

While the by-law establishes the legal authority, permitting framework, and enforcement mechanisms, **CSA W202-18 (R2023)** supplies the detailed requirements for inspection, monitoring, documentation, and corrective actions related to erosion and sediment controls. Although adoption of **CSA W202-18 (R2023)** is voluntary at the municipal level, compliance becomes mandatory for proponents once embedded in the by-law, allowing the City to enforce recognized technical practices through its regulatory powers.

## Cambridge, ON

2021 Population: **138,479**
Size Category: **Mid-sized municipality**
Document: **Engineering Standards and Development Manual**
Document Type: **Municipal Engineering Standards**

CSA Standard Referenced: **CAN/CSA W202-18 (R2023),** ***Erosion and sediment control inspection and monitoring***

### Description:

The City of Cambridge requires that all erosion and sediment control measures are designed, constructed, and implemented in accordance with **CAN/CSA W202-18 (R2023)** and the Toronto and Region Conservation Authority's Erosion and Sediment Control Guide for Urban Construction.

**CAN/CSA W202-18 (R2023)** applies throughout the entire construction process, requiring erosion and sediment controls to be installed before work begins, actively maintained and adjusted during construction, inspected routinely and after storm events, and promptly repaired when deficiencies are identified. By also tying final inspections to the assumption of municipal works, these requirements reinforce the standard's focus on continuous inspection and performance monitoring rather than one-time plan preparation.

### Benefit:

The Manual aligns with provincial and conservation authority requirements, while also aiming to require that inspections are systematic, defensible, adaptive, and aligned with best practices throughout the development process.

## Edmonton, AB / EPCOR

2021 Population: **1,010,899**
Size Category: **Major city**
Document: **Erosion and Sediment Control Field Manual**
Document Type: **Field Manual**

CSA Standard Referenced: **CAN/CSA W202-18 (R2023),** ***Erosion and sediment control inspection and monitoring*** **and CSA W208:20 (R2025),** ***Erosion and sediment control installation and maintenance***




### Description:

EPCOR is Edmonton's municipally owned utility that plans, delivers, and operates water, wastewater, drainage, and flood protection services across the city, using Canadian Standards Association (CSA) standards selectively to guide technical practices, support consistency, and inform both field implementation and long-term planning.

EPCOR's Erosion and Sediment Control Field Manual voluntarily references **CSA W202-18 (R2023)** and **CSA W208:20 (R2025)** as recognized technical standards supporting erosion and sediment control practices during construction activities in the City of Edmonton.

The Manual is intended for field use and provides practical guidance on the selection, installation, inspection, monitoring, and maintenance of erosion and sediment control measures, drawing on **CSA W202-18 (R2023)** for inspection and monitoring expectations and **CSA W208:20 (R2025)** for installation and maintenance practices.

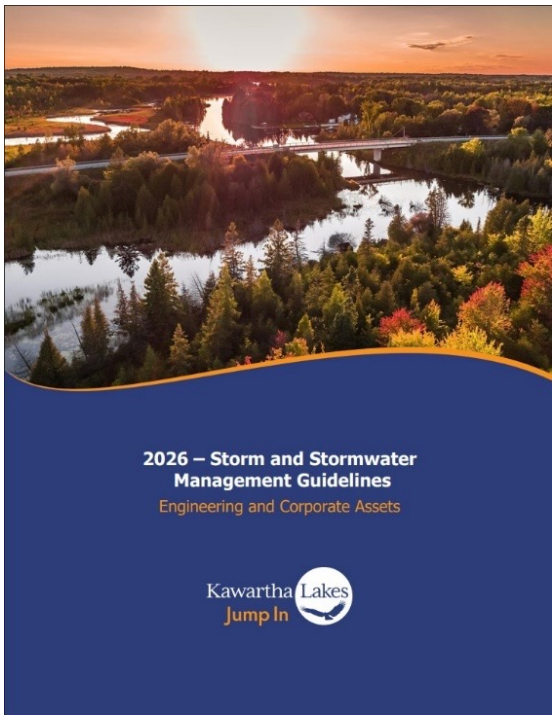
### Benefit:

Rather than reproducing the CSA standards, the Manual cites them alongside provincial, municipal, and industry guidance to establish a common technical foundation for best management practices used on urban construction sites. In this context, the CSA standards help promote consistency, quality, and due diligence in how erosion and sediment controls are implemented and managed in the field, while allowing flexibility to select measures appropriate to specific site conditions

## Kawartha Lakes, ON

2021 Population: **79,247**
Size Category: **Mid-sized municipality**
Document: **Storm and Stormwater Management Guidelines (2026)**
Document Type: **Stormwater Management Guidelines**

CSA Standard Referenced: **CAN/CSA W202-18 (R2023),** ***Erosion and sediment control inspection and monitoring*** **and CSA W208:20 (R2025),** ***Erosion and sediment control installation and maintenance***




### Description:

The City of Kawartha Lakes 2026 Storm and Stormwater Management Guidelines references **CSA W202-18 (R2023)** and **CSA W208:20 (R2025)** within the construction-phase erosion and sediment control requirements associated with development. The Guidelines require preparation and implementation of an Erosion and Sediment Control Plan, which must have regard to **CSA W202-18 (R2023)** (or equivalent conservation authority guidance) for inspection and monitoring, and CSA W208 for the installation and maintenance of erosion and sediment control measures.

### Benefit:

In this context, the CSA standards function as recognized technical references supporting consistent erosion and sediment control practices during construction within the City's broader storm and stormwater management framework.

## Flood Planning and Resiliency

### Edmonton, AB / EPCOR

2021 Population: **1,010,899**
Size Category: **Major city**
Document: **Stormwater Integrated Resource Plan**
Document Type: **Strategic Planning Framework**

CSA Standard Referenced: **CSA W204:19, *Flood resilient design of new residential communities***

#### Description:

EPCOR is Edmonton's municipally owned utility that plans, delivers, and operates water, wastewater, drainage, and flood protection services across the city, using Canadian Standards Association CSA standards selectively to guide technical practices, support consistency, and inform both field implementation and long-term planning.

Through its Stormwater Integrated Resource Plan, EPCOR engages with **CSA W204:19 (R2024)** as part of a broader, voluntary effort to align local flood mitigation planning with emerging national best practices for flood-resilient community design. The SIRP documents EPCOR's participation in the development and review of **CSA W204:19 (R2024)**, with an explicit focus on ensuring the standard supports municipal use as a tool for validating and auditing local design standards rather than replacing them.

#### Benefit:

EPCOR contributed practical input to clarify the intended audience of the standard and to expand its scope to better address operational and construction-phase flood risks in greenfield developments. This engagement demonstrates how **CSA W204:19 (R2024)** is being used strategically to inform long-term stormwater and flood mitigation planning, while ensuring compatibility with Edmonton's existing policy, design, and operational context.

#### SUPPORTING INSTITUTIONS

The Intact Centre on Climate Adaptation is an applied research centre at the University of Waterloo that helps homeowners, communities, and businesses reduce risks from climate change and extreme weather.

Under One Umbrella: Practical Approaches for Reducing Flood Risks in Canada (2020) features multiple CSA standards that would benefit local, regional, provincial, and territorial governments by providing national standards and guidelines for limiting and mitigating flood risks, including **CSA W200:18, CSA W201:2018, CSA W204:19, CSA W210:21, CSA W211:21**.

# The Federal Government

Across Canada, the federal government encourages the use of national standards as a means of translating scientific research into consistent, defensible, and implementable policy. CSA Community Water Standards function as a nationally supported mechanism for translating federal climate research and resilience objectives into consistent, locally implementable municipal practice.

CSA Community Water Standards—particularly those focused on stormwater management, flood resilience, and bioretention—align directly with federal priorities and funding opportunities related to:

- climate change adaptation,
- flood risk reduction,
- resilient public infrastructure, and
- disaster risk mitigation.

## Canadian Council of Ministers of the Environment

Document: **Natural Infrastructure Framework: Key Concepts, Definitions and Terms (2021)**
Document Type: **Natural Infrastructure Framework**

CSA Standard Referenced: **CSA W200:18 (R2024),** ***Design of bioretention systems***

### Description:

The CCME is composed of the environment ministers from the federal, provincial, and territorial governments. It is the main forum where these ministers work together on important national and international environmental issues. This document outlines key concepts, definitions, and terms to support understanding of infrastructure solutions that work more closely with natural systems.

### Benefit:

It references CSA W200 for standardized definitions of detention and retention applications, ensuring consistent terminology across sectors and jurisdictions nationwide.

## Disaster Financial Assistance Arrangements (DFAA)

Document: **List of Disaster Resilience Guidelines**
Document Type: **Financial Assistance Guidelines**

CSA standard Referenced:

- **CSA W200:26,** ***Design and construction of bioretention systems and rain gardens***
- **CSA W204:19 (R2024),** ***Flood resilient design for new residential communities***
- **CSA W210:21,** ***Prioritizing flood resiliency in existing communities***
- **CSA W211:21,** ***Management standard for stormwater systems***
- **CSA W218:23,** ***Specifications for natural asset inventories***
- **CSA W224:24,** ***Coastal flood risk assessment for buildings and infrastructure***
- **CSA W231:25,** ***Developing and interpreting intensity-duration-frequency (IDF) information under a changing climate***

### Description:

The Disaster Financial Assistance Arrangements (DFAA) support resilience by providing additional federal funding that helps communities rebuild stronger than before a disaster. The DFAA supports utilizing the latest information on improving disaster resilience, including CSA Community Water Standards.

### Benefit:

Communities can receive up to 15% extra funding for resilience upgrades.

## Ontario Ministry of the Environment

Document: **Low Impact Development Stormwater Management Guidance Manual (2022)**

Document type: **Stormwater Management Guidelines**

### Description:

The Ministry's *Low Impact Development Stormwater Management Guidance Manual* is a provincial guidance document intended to support municipalities, conservation authorities, and practitioners in the planning, design, construction, and maintenance of low impact development stormwater practices. Within this non-regulatory context, the Manual references several CSA Community Water Standards as authoritative technical resources to support consistent and credible implementation of low impact development across Ontario:

- **CSA W200:18 (R2023)** is referenced to support the design and construction of bioretention systems, providing detailed technical guidance that complements the Manual's policy-level direction;
- **CAN/CSA W202-18** and **CAN/CSA W208:20 (R2025)** are referenced to inform inspection, installation, and maintenance practices for erosion and sediment control during construction of low impact development features, supporting protection of downstream systems and long-term functionality; and
- **CSA W204:19 (R2024)** is referenced to align site-scale low impact development practices with broader flood-resilience and climate adaptation objectives in new residential communities.

## SUPPORTING INSTITUTIONS

**Consolidated Linear Infrastructure – Environmental Compliance Approval (CLI-ECA)**

An Environmental Compliance Approval is mandatory by law, and for municipal sewage collection and stormwater systems in Ontario, that approval is now delivered through the CLI-ECA framework. CLI-ECAs are issued to municipalities and set conditions under which municipalities, developers, and consultants may make changes, provided all CLI-ECA requirements and design criteria are met. Eligible stormwater work includes modifications to stormwater ponds or wetlands and low-impact development installations.

Applications must include a design report that includes an erosion and sediment control plan. To ensure consistency across the province, it is recommended that municipalities prepare an erosion and sediment control plan in accordance with **CAN/CSA W202:18 (R2023)** and **CAN/CSA W208:20 (R2025)**.

Many Ontario municipalities have stormwater Environmental Compliance Approvals, including (but not necessarily limited to):

- Caledon, ON
- Halton Hills, ON
- Kingston, ON
- Milton, ON
- Newmarket, ON
- The Blue Mountains, ON
- Toronto, ON
- Vaughan, ON

**Benefit:**

Overall, the Manual uses CSA standards selectively as recognized technical references, reinforcing best practices without establishing mandatory requirements, and enabling consistent application of low impact development within diverse local and watershed contexts.

## Ontario Conservation Authorities

### Toronto and Region Conservation Authority, Credit Valley Conservation, and Lake Simcoe Region Conservation Authority

Document: **Erosion and Sediment Control Guide for Urban Construction**

Document type: **Field manual / construction guidance**

**Description:**

The *Erosion and Sediment Control (ESC) Guide for Urban Construction* provides an updated, practical framework for assessing erosion risk and applying effective ESC best practices on urban construction sites to protect downstream water quality and infrastructure. It provides clear guidance on planning, design, installation, inspection, monitoring, and maintenance of ESC measures, including approaches for in-water works, low-impact development protection, and performance monitoring using qualitative risk assessment and turbidity targets. Developed through the Sustainable Technologies Evaluation Program (STEP), the Guide reflects current research, industry experience, and evolving regulatory expectations to support consistent, defensible, and resilient construction practice.

**SUPPORTING INSTITUTIONS**

The Sustainable Technologies Evaluation Program (STEP) is an Ontario conservation-authority led initiative that promotes the wider adoption of technologies and practices that safeguard water resources while reducing greenhouse gas emissions.

With a focus on areas such as green infrastructure, low impact development, and erosion and sediment control, STEP supports conservation authorities and municipalities by referencing **CSA W200:26, CAN/CSA W202-18 (R2023)**, and **CSA W231:25** in its technology evaluations, guidance documents, and decision-support tools, helping translate standards-based approaches into practical, on-the-ground implementation.

**Benefit:**

The Guide is beneficial for municipalities because it describes how their development standards can be met by aligning with **CSA W200:26**, and **CAN/CSA W202-18 (R2023)** which translates their technical requirements into field-ready procedures, checklists, and inspection practices suitable for day-to-day implementation on construction sites.

## Conservation Halton

Document: **Conservation Halton Guidelines for Stormwater Management Engineering Submissions (2024)**

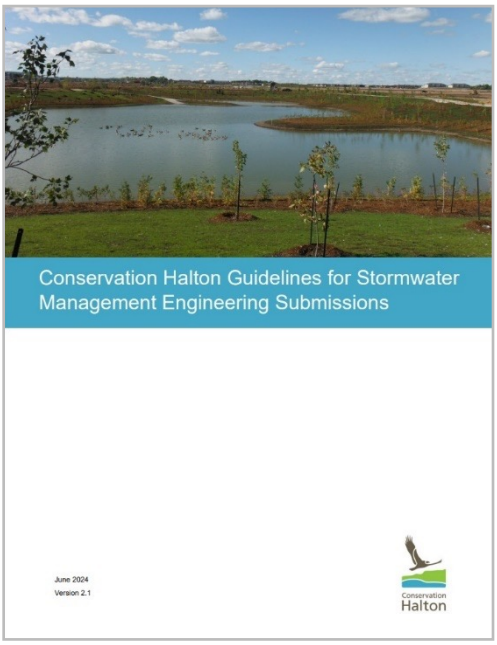
Document type: **Stormwater Management Guidelines**

### Description:

Conservation Halton's *Guidelines for Stormwater Management Engineering Submissions* set out the technical and regulatory expectations used by the conservation authority to review stormwater management reports and permit applications under Section 28 of the *Conservation Authorities Act*. Within this framework, **CAN/CSA W202-18 (R2023)** is referenced as a recognized technical standard to inform inspection and monitoring practices associated with erosion and sediment control during construction.

### Benefit:

The CSA standard is used alongside conservation authority and provincial guidance to support consistent assessment of erosion and sediment control measures as part of stormwater management submissions, helping ensure construction-phase practices adequately protect watercourses, regulated features, and downstream systems.



## About CSA Group

CSA Group is a global organization dedicated to safety, social good and sustainability. We are a leader in North American Standards Development and in Testing, Inspection and Certification around the world. Our mandate is to hold the future to a higher standard.

The mission of CSA Group's not-for-profit Standards organization is to enhance the lives of Canadians through the advancement of standards in the public and private sectors. We are a leader in standards research, development, education, and advocacy. The technical and management standards developed with our more than 11,000 members improve safety, health, the environment, and economic efficiency in Canada and beyond.

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