City of Guelph

Stormwater Management Master Plan

Appendix A – Policy Review

March 2023

Prepared for:
The City of Guelph

Stormwater Management Master Plan

Appendix A: Stormwater Management Policy Review

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1.0 Introduction

This policy review is part of the City of Guelph's Stormwater Management Master Plan (SWM-MP). The SWM-MP will provide the city with a stormwater management strategy that will protect and enhance natural features, ecological function and biophysical integrity by restoring natural hydrologic function and mitigating the impact of urbanization on local wetlands, creeks and rivers. The plan will assist staff in appropriately managing risks through the establishment of environmental targets for water quality, water quantity, erosion, infiltration (water balance) and guidance with respect to the protection of natural features. The stormwater master plan will also address infrastructure issues, such as urban flooding, and form part of the overall asset management program. The plan will establish stormwater management policy and guidelines and will also address stormwater infrastructure and identify and prioritize identified works.

1.1 Purpose

As a component of the SWM-MP, this Stormwater Policy Review has been completed to identify existing policies, guidelines, and legislation that relate to stormwater management in the City of Guelph. This review includes the following sections:

Overview: This section defines key terms and differentiates between Policies, Acts and Regulations.

Legislative Framework: This section identified Policies, Acts and Regulations that impact the management of stormwater management. The section is divided into Federal, Provincial and Local subsections.

Summary of Policy Implications & Guidelines for Stormwater Management: This section provides a summary relevant federal and provincial stormwater management guideline documents and associated policy implications.

1.2 Context

Since the 1980s, there has been an evolution in stormwater management in an effort to address downstream conditions resulting from urbanization. In the early 1980s, stormwater management focused solely on controlling the quantity of runoff and providing flood protection through rapid conveyance measures. By the early 1990s, water quality and downstream erosion control were given additional focus. Today, with improvements in watershed management and our understanding of the watersheds themselves, stormwater management now addresses a broad suite of issues including stream morphology, the protection of groundwater resources, fish habitat, and terrestrial habitat (primarily wetlands).

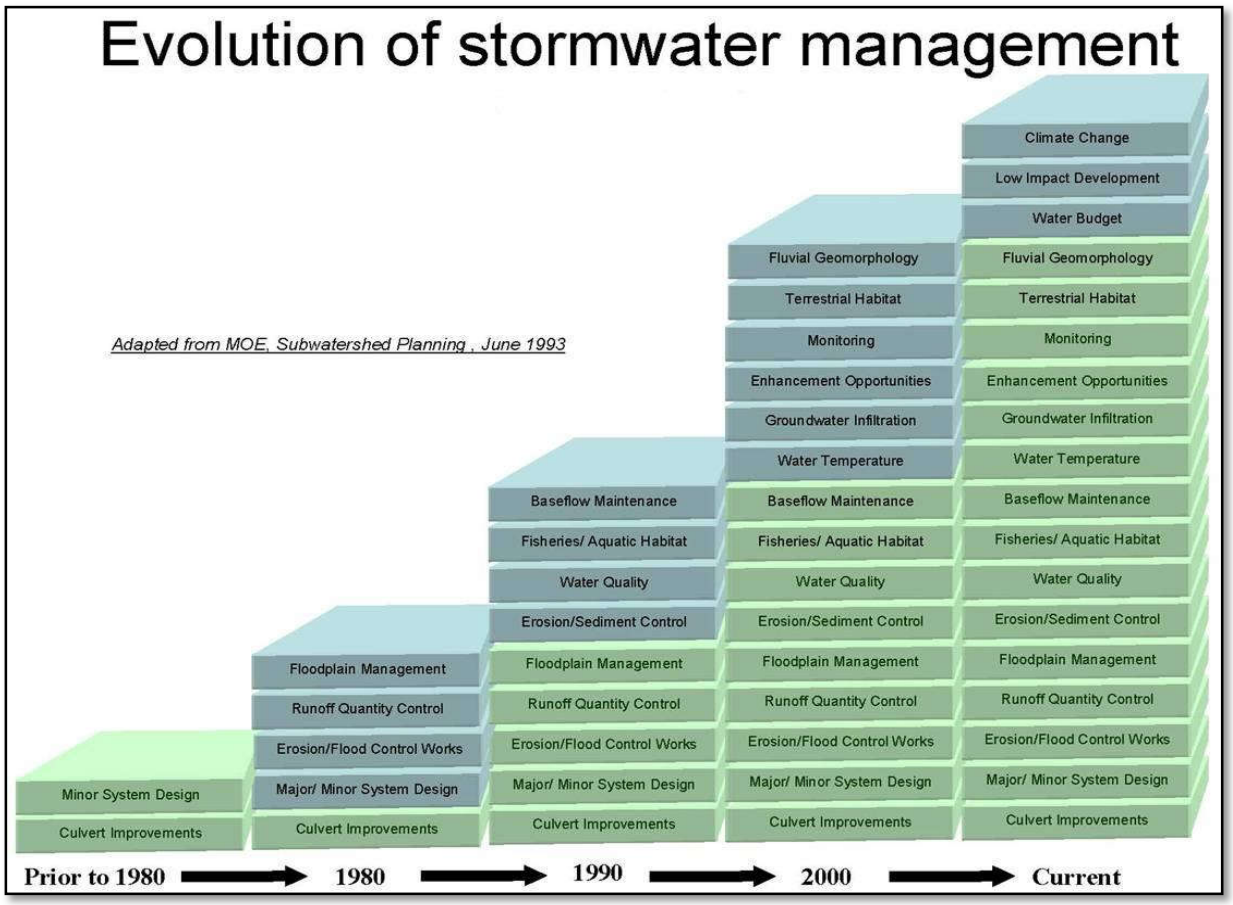


Figure 1.1: The evolution of storm water

Stormwater runoff from urban areas may degrade the environment both during construction activities and post-development. Post construction pollutant loadings from urbanized areas are significant. Common pollutants include heavy metals from automobiles and air emissions, nutrients, fertilizers, chlorides from road de-icers, bacterial contamination from animal wastes, and toxic contamination from a variety of commercial and industrial sources. These pollutants, when conveyed to the receiving water bodies, impact the environment in many ways. The particulates (those that can be settled) and dissolved contaminants stress aquatic ecosystems by depleting oxygen, covering habitat, or through the bioaccumulation or bio-concentration of contaminants in the tissues of various aquatic species. In addition, receiving waters can also be affected by thermal impacts resulting from an increase in ambient water temperatures.

Rigorous scientific research, evaluating the range of stormwater management treatment strategies, has produced an overwhelming amount of evidence that pipe and pond stormwater treatment strategies do not meet general water quality and erosion objectives and are resulting in longer periods of elevated flow, thermal enrichment of surface water bodies and increased pollutant loadings. Many recent Subwatershed studies and Master Drainage Plans themselves recognized this shortcoming, and are recommending overall water management strategies that meet the goals, objectives and targets using a combination of stormwater management practices distributed across a catchment, which include source controls, the maximization of pervious surfaces and therefore infiltration, conveyance, and end-of-pipe controls as part of a holistic strategy.

As such, future stormwater management strategies will require an innovative, state of the art approach to stormwater management by first and foremost treating runoff (precipitation) at its source, as a resource to be managed and protected rather than a waste. In this regard, the emphasis in managing runoff is to retain/maintain the existing infiltration of water into the ground using best management practices (BMPs) that are consistent with the treatment train approach to stormwater management supported by the Ministry of Environment, Conservation and Parks (MECP), the TRCA/CVC Low Impact Development Stormwater Planning and Design Guide, and others.

Table 1.1 lists the policies and acts applicable to stormwater management planning, design, permitting and best management practices under key federal, provincial, and local legislations. Regulations that are particularly pertinent to stormwater management are also listed under some Acts, but this is not intended to be an exhaustive list of regulations that apply to stormwater management. **Table 1.2** lists the guidelines applicable to stormwater management planning and best management practices under federal and provincial levels. **Table 1.3** identifies local policies relevant to stormwater management.

Table 1.1: Summary of Policies, Acts, Regulations, and Plans Relating to Stormwater Management

Level of Government	Name of Management Tool: Policy/Act/ Plan/By-law	Type of Tool	Purpose and Relevance to Stormwater Management
Federal	Federal Fisheries Act	Act	Purpose of this Act is to ensure the conservation and protection of fish and fish habitat.
	Canadian Navigable Waters Act	Act	This Act prohibits dumping of wastes that may interfere with navigation. Prohibits construction in navigable waters.
	Migratory Birds Convention Act	Act	This act focuses on the protection of migratory songbirds and their nests from disturbance or destruction. Includes: C.R.C., c.1035.
	Species at Risk Act	Act	This Act focuses on the protection of wildlife species at risk and recovery plans.
	Canadian Environmental Protection Act (CEPA)	Act	The goal of the Canadian Environmental Protection Act (CEPA) is to contribute to sustainable development through pollution prevention and to protect the environment, human life and health from the risks associated with toxic substances.
	Impact Assessment Act	Act	The Act replaces the former Canadian Environmental Assessment Act and outlines the federal process for impact assessments and the prevention of significant adverse environmental effects.
	Canada Water Act	Act	An Act to provide for the management of the water resources of Canada, including research and the planning and implementation of programs relating to the conservation, development and utilization of water resources. Authorizes agreements with provinces for the delineation of flood plains and hazardous shorelines for flood and erosion control. In 2010–2011 the governments of Canada and Ontario extended the Canada–Ontario Agreement to June 2012, and added six new commitments to maintain momentum on the restoration, protection and conservation of the Great Lakes, while negotiations proceed between the federal governments of Canada and the United States to amend and strengthen the Great Lakes Water Quality Agreement. The Canadian Federal Great Lakes Program, a partnership of federal departments, provides the framework for working toward Canada's commitments under the Great Lakes Water Quality Agreement. Canada's activities are integrated with those of Ontario through the Canada–Ontario Agreement Respecting the Great Lakes Basin Ecosystem, which outlines how the two governments will cooperate and coordinate their efforts to restore, protect and conserve the Great Lakes Basin ecosystem. Highlights of actions in 2010–2011 include a wide range of research, monitoring and restoration projects in Great Lakes Areas of Concern through the Great Lakes Action Plan and the Cooperative Science and Monitoring Initiative; projects to reduce the amount of nutrients, solids and bacteria entering watercourses; and research in support of Canada–U.S. Lakewide Management Plans (LaMP).
Provincial	Water Management Policies, Guidelines and Provincial Water Quality Objectives (PWQO) The "Blue Book"	Policy	These policies are for surface (and groundwater) quality management in Ontario. Surface water objectives for individual pollutants are for the protection of aquatic life.
	Provincial Policy Statement (PPS)	Policy	The PPS is issued by the Ministry of Municipal Affairs and Housing under Section 3 of the Planning Act. It requires that decisions affecting planning matters in Official Plans *"shall be consistent with"* the PPS. The PPS provides *"for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of the natural environment"*. The PPS focuses growth within settlement areas and away from significant or sensitive resources. It directs planning authorities to identify and promote opportunities for intensification and redevelopment where this can be accommodated, taking into account existing building stock, including existing or planned infrastructure. The PPS provides a higher degree of protection for employment lands against conversions to residential uses. The new policies also provide for intensifications and brownfields development to ensure the maximum use of sewer, water and energy systems, roads and transit. The Official Plan is the most important tool to implement the PPS. Section 2.2 of the PPS addresses water, stating that planning authorities shall protect, improve or restore the quality and quantity of water, using the watershed as the ecologically meaningful scale for planning. Planning authorities shall ensure that stormwater management practices minimize stormwater volumes and contaminant loads, and maintain or increase the extent of vegetative and pervious surfaces.
	Integrating Water Management Objectives into Municipal Planning Documents	Policy	This policy manual focusses on the integration of watershed management practices into municipal planning documents.
	The Growth Plan for the Greater Golden Horseshoe, 2019	Policy	This document outlines policies associated with the Greenbelt Plan, Oak Ridges Moraine Conservation Plan, and the Niagara Escarpment Plan to provide key growth management goals for the region. This policy was approved under the Places to Grow Act. O.Reg. 416/03 also applies.
	Environmental Assessment Act	Act	This act outlines measures for the protection, conservation and management of the environment in Ontario. Per this Act, retrofits of stormwater facilities may be carried out as a Class EA subject to the selection of the appropriate schedules under the Municipal Engineers Association (2000, as amended in 2019).
	Drainage Act	Act	This Act provides a regulatory framework for drainage practices in Ontario.
	Clean Water Act	Act	Policies and plans have been developed under the Clean Water Act to define and to clarify roles and responsibilities, define permissible actions and identify land uses. For SWM, non-structural BMPs that use infiltration must consider the relevance of site locations with respect to WHPA, the source of runoff and whether groundwater threats have been identified within the relevant Provincial or Regional documents. Includes O.Reg. 284/07 and O.Reg. 287/07.

Level of Government	Name of Management Tool: Policy/Act/ Plan/By-law	Type of Tool	Purpose and Relevance to Stormwater Management
	Lakes and Rivers Improvement Act	Act	The Lakes and Rivers Improvement Act gives the Ministry of Natural Resources and Forestry the mandate to manage water-related activities, particularly in the areas outside the jurisdiction of Conservation Authorities. Includes O.Reg. 454/96.
	Endangered Species Act	Act	This Act provides for the protection for species at risk and their habitats. Includes O.Reg. 230/08.
	Conservation Authorities Act	Act	This Act provides the legislative framework for Conservation Authority regulations and relates to the prevention of the loss of life and property due to flooding and erosion; and the conservation and enhancement of natural resources. Any projects within the regulated area of the respective CA or that impact wetlands will require the acquisition of a permit pursuant to Policies for the Administration of the Development Interference with Wetlands and Alterations to Shorelines and Watercourse Regulation. Locally, the Grand River Conservation Authority enforces this Act through Ontario Regulation 150/06.
	Ontario Water Resources Act	Act	The Ontario Water Resource Act deals with the powers and obligations of the Ontario Clean Water Agency, as well as an assigned provincial officer, who monitors and investigates any potential problems with regards to water quality or supply. There are also sections on wells, water works, and sewage works (including stormwater management facilities) involving their creation and operation. Includes O.Reg. 525/98.
	Environmental Protection Act	Act	The purpose of this Act is to provide for the protection and conservation of the natural environment. Act prohibits discharge of contaminants having an adverse effect. Includes O.Reg. 153/04, O.Reg. 255/11, and O.Reg. 406/19.
	Endangered Species Act	Act	This Act enforces the protection of Endangered, Threatened and Special Concern species (provincial) and their habitats; regulates activities which may affect these species, and provides for development of Recovery Strategies.
	Fish and Wildlife Conservation Act	Act	The *Fish and Wildlife Conservation Act* enables the Ministry of Natural Resources and Forestry (MNRF) to provide sound management of the province's fish and wildlife.
	SWM in light of Climate Change	Policy Review	This document investigates the need for a new policy, act, or regulation to deal with municipal SWM systems in light of climate change
	Bill 127, Ontario Water Resources Amendment Act (Source Water Protection)	Act	The Bill amends the *Ontario Water Resources Act* in regard to the availability and conservation of Ontario water resources. Specifically, the Bill requires the Director to consider the Ministry of Environment, Conservation and Parks statement of environmental values when making any decision under the Act. The Bill also requires that municipalities and conservation authorities are notified of applications to take water that, if granted, may affect their water sources or supplies.
	Water Opportunities Act	Act	The purposes of the Act are: a) to foster innovative water, wastewater and stormwater technologies, services and practices in the private and public sectors; b) to create opportunities for economic development and clean-technology jobs in Ontario; and, c) to conserve and sustain water resources for present and future generations. The Minister of the Environment may, to further the purposes of this Act, establish aspirational targets in respect of the conservation of water and any other matter the Minister considers advisable.
	Safe Drinking Water Act	Act	This Act provides for the protection of human health and the prevention of drinking water health hazards through the control and regulation of drinking water systems and drinking water testing.
	Brownfields Statute Law Amendment Act	Act	This Act facilitates public access to information contained in records of site condition and to other information filed in accordance with this Act and the regulations.
	Oak Ridges Moraine Conservation Act	Act	This Act provides legislative framework for the Oak Ridges Moraine Conservation Plan.
	The Greenbelt Act	Act	This Act enables the creation of a Greenbelt Plan to protect about 1.8 million acres of environmentally sensitive and agricultural land in the Golden Horseshoe from urban development and sprawl.
Local	Stormwater Management Master Plan	Plan	The existing Stormwater Management Master Plan developed a long-term plan for the safe and effective management of stormwater runoff from urban areas while improving the ecosystem health and ecological sustainability of the Eramosa and Speed Rivers and their tributaries.
	Grand River Source Protection Plan	Plan	The Source Protection Plan (SPP) is intended to protect municipal wells and surface water intakes from specific activities that could pose a threat to drinking water sources.
	City of Guelph Official Plan	Plan	The City of Guelph's official plan serves as a roadmap for long-range land use and development through 2031.
	Stormwater Disposal Bylaw (1993-14515)	Bylaw	The bylaw sets out the requirements for stormwater disposal and management systems.
	Property Standards Bylaw (2000-16454)	Bylaw	The bylaw highlights various property standards, including requirements for stormwater disposal.
	Stormwater Rate Bylaw (2019-20447)	Bylaw	The bylaw sets the new Stormwater Rate Base Charge for 2020.

Table 1.2: Guidelines applicable to Stormwater Management at Federal and Provincial Levels

Level of Government	Guideline Document	Purpose and Relevance to Stormwater Management
Federal	Canadian Water Quality Guidelines for the Protection of Aquatic Life	The Canadian Water Quality Guidelines consist of a set of recommended "safe limits" for various polluting substances in raw (untreated) drinking water, recreational water, water used for agricultural and industrial purposes, and water supporting aquatic life. They are designed to protect and enhance the quality of water in Canada. The guidelines apply only to inland surface waters and groundwater's and not to estuarine and marine waters.
	Canadian Water Quality Guidelines for the Protection of Agricultural Water Uses	The Canadian Water Quality Guidelines consist of a set of recommended "safe limits" for various polluting substances in raw (untreated) drinking water, recreational water, water used for agricultural and industrial purposes, and water supporting aquatic life. They are designed to protect and enhance the quality of water in Canada. The guidelines apply only to inland surface waters and groundwater and not to estuarine and marine waters.
	Guidelines for Canadian Drinking Water Quality	This document was developed to provide a national guideline for the protection of drinking water.
	Guidelines for Canadian Recreational Water	This document was developed to provide a national guideline for the protection of recreational waters used for primary contact recreation such as swimming, windsurfing and water skiing and for secondary contact recreation activities including boating and fishing.
	Canada/Ontario Agreement Respecting Great Lakes Basin Ecosystems	Since 1971, Canada-Ontario Agreements Respecting the Great Lakes Basin Ecosystem have guided the Parties in their work to improve the environmental quality of the Great Lakes Basin Ecosystem.
Provincial	Stormwater Management Planning and Design Manual	This document provides practical guidance that can be used as a baseline reference document for the review of stormwater management applications for approval under Section 53 of the Ontario Water Resources Act. It includes: • Providing direction for sizing of the stormwater quality control component of stormwater management facilities in order to achieve water quality objectives which provide protect fisheries habitat; • Incorporating in-stream erosion control and water balance objectives in addition to flood and water quality objectives into the selection and design of Stormwater Management Practices (SWMPs); • Providing information on SWMPs such as sand filters, bioretention filters, wet swales and hybrid wet pond/wetlands; • Providing design examples for SWMPs; • Providing an appendix which deals with integrated planning for stormwater management.
	Technical Guide, River & Stream Systems: Flooding Hazard Limit	The technical guide has been developed to assist in the understanding of the Provincial Policy Statement. It describes approaches consistent with the PPS. This guide serves in an advisory role and should be read in conjunction with the PPS and other flood related implementation guides. The 2002 Technical Guide updates the 1986 Flood Plain Management in Ontario Technical Guidelines. The primary purpose of this document is to *"provide a consistent and standardized procedure for the identification and management of riverine erosion hazards in the Province of Ontario."*
	Natural Heritage Reference Manual for the Natural Heritage Policies of the Provincial Policy Statement	This manual provides guidelines for the implementation of the PPS by planning authorities.
	Significant Wildlife Habitat Technical Guide	Significant Wildlife Habitat has been identified as one of the natural heritage feature areas under the Provincial Policy Statement. This document provides detailed information on the identification, description and prioritization of significant wildlife habitat.
	Protection and Management of Aquatic Sediment Quality in Ontario	The purpose of the sediment quality guideline is to protect the aquatic environment by setting safe levels for metals, nutrients and organic compounds.
	Guidelines for Evaluating Construction Activities Impacting on Water Resources	These guidelines were developed to protect the receiving environment according to the physical, the chemical and the biological quality of the material being dredged.
	Incorporation of the Reasonable Use concept into MOEE Groundwater Management Activities	This guideline establishes the basis for the reasonable use of groundwater on property adjacent to sources of contaminants and for determining the levels of contaminants acceptable to the MECP (formerly MOEE).
	Watershed Management on a Watershed Basis	This manual provides guidance on watershed management practices.
	Redside Dace – Ontario Recovery Strategy	The Redside Dace was uplisted as endangered species in 2009 under the Endangered Species Act. This strategic document protects both the species and its habitat, prohibiting damage or destruction of the habitat without authorization by the Ministry of Natural Resources and Forestry (MNRF).
	Draft Guidance for Development Activities in Redside Dace Protected Habitat	This guidance document assists in describing Redside Dace habitat, the protection afforded under, requirements for review and permitting and BMPs to mitigate impacts.
	Water Management Policies, Guidelines and Provincial Water Quality Objectives (PWQO) – The "Blue Book"	Contains the MECP (formerly MOEE) policies and guidelines for the management of the province's water resources. It gives direction on how to manage the quality and quantity of both surface and ground waters.
	Preserving and Protecting our Environment for Future Generations: A Made-in-Ontario Environment Plan	The plan outlines how the government intends to protect air, land and water; reduce litter and waste; lower greenhouse gas emissions; and help communities prepare for climate change.
	Low Impact Development Stormwater Planning and Design Guide	The guide was developed to provide engineers, ecologists and planners with up-to-date information and direction on landscape-based stormwater management planning and low impact development stormwater management practices, and thereby help ensure the continued health of the streams, rivers, lakes, fisheries and terrestrial habitats in the CVC and TRCA watersheds. It is also intended to help streamline and focus the design and review process, as well as ensure that the goals, objectives and targets outlined in watershed and subwatershed studies are being met.

	Designer's Guide for Low Impact Development Construction	This guide provides guidance on the approaches and criteria to be applied during construction.
	Protection and Management of Aquatic Sediment (Guidelines B-1-3)	The guidelines provided in this document were developed for use in evaluating sediments throughout Ontario, and replace the Open Water Disposal Guidelines (published by the Ministry in 1976) currently used for sediment evaluation.
	Evaluation of Construction Activities Impacting Water Resources (Guidelines B-5)	This document is used in the assessment of the environmental impact of construction activities.

Table 1.3: Local Studies, Plans, Strategies, and Guidelines relevant to Stormwater Management

Local Studies, Plans, Strategies, and Guidelines

• City of Guelph Development Engineering Manual (2019)
• Stormwater Management Master Plan (2012)
• Stormwater Management Facilities Inventory, Assessment, and Maintenance Needs Study Report (2015)
• City of Guelph Official Plan (2018)
• Grand River Source Protection Plan (2016)
• Stormwater Service – Rebate and Credit Program (2017)
• Guidelines for Development of Contaminated or Potentially Contaminated Sites (2016)
• Linear Infrastructure Standards (2020)
• Design Guidelines and Supplemental Specifications for Municipal Services - DGSSMS (2020)
• Natural Heritage Action Plan (2018)
• Secondary Plans:
  ○ Clair-Maltby Secondary Plan
  ○ Downtown Secondary Plan
  ○ Guelph Innovation District Secondary Plan

2.0 Overview

There exists a hierarchy of authority, described as policies, statutes, regulations, plans and guidelines, all of which must be considered during a review of the current City of Guelph stormwater policy. Legislative terms and principles are described below in order to provide a baseline context and shed light over basic definitions, what is enforceable and how. Relevant fundamental definitions are listed below.

A **Policy** is a statement of intent or a commitment to achieve a goal, for which decision-makers can be held accountable. For example, within a municipality, policies like the Provincial Policy Statement (PPS) are enacted through the Official Plan.

An **Act** is a written law to declare a policy, and typically commands or prohibits something.

Examples:

- Ontario Water Resources Act (OWRA)
- Bill 6: Great Lake Protection Act (1st Reading)

A **Regulation** is a subordinate legislation, passed pursuant to an Act. Because legislatures are reluctant to become embroiled in technical matters, regulations are delegated to an executive or technical branch, which provides details, measures or procedures for implementing the Act. A regulation is a rule that creates, limits, or constrains a right or a duty. Regulations are enacted to produce outcomes which might not otherwise occur or to prevent outcomes that might otherwise occur, usually with specific time frames. Regulations can impose sanctions if they are disregarded.

Examples:

- O. Reg. 150/06 made under the Conservation Authorities Act: Grand River Conservation Authority, Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses.
- O. Reg. 454/96 made under Lakes and Rivers Improvement Act: Construction.
- O. Reg. 284/07 made under the Clean Water Act: Source Protection Areas and Regions.

A **Plan** (or **Strategy**) is list of steps (with requirements for timing and resources) that will be taken to achieve a desired objective. It is a set of intended actions through which a goal can be achieved or a policy implemented. For example, a plan (such as an Official Plan) provides direction for land uses within a particular area and for mitigating the corresponding environmental impacts. A plan defines where and how Regulations or Acts are applied.

Examples:

- Municipal Official Plan
- Ontario Recovery Strategy Series for Redside Dace (for species at risk under the Endangered Species Act)
- GRCA Fisheries Management Plan
- Great Lakes Protection Plan

A **Guideline** is a statement of intent that determines a desirable course of action, which directs a process according to sound, predictable and high-quality practices or procedures. By definition, guidelines are not mandatory, not binding and are not legally enforceable. However, many regulators consider guidelines (especially numerical guidelines) as *de facto* minimum standards to be enforced.

Examples:

- MECP Stormwater Management Plan and Design Manual (2003)

There have been significant amendments to several pieces of legislation over the past three years, due to the change in federal government in 2015 and in provincial government in 2018. The most significant changes relevant to stormwater management were found in the following:

Federal

- Fisheries Act
- Impact Assessment Act (replaced Canadian Environmental Assessment Act)
- Canadian Navigable Waters Act (formerly Navigation Protection Act)

Provincial

- Ontario Water Resources Act
- Endangered Species Act
- Environmental Assessment Act

3.0 Legislative Framework

In Canada, environmental issues including stormwater planning and management are predominantly regulated through a multi-level legislative framework. Under the legislative framework for stormwater planning and management within the City of Guelph, there are several jurisdiction levels that interact and apply based on many factors including geographical scale, and administration role.

3.1 Federal Level

The federal government exercises jurisdiction over a group of environmental issues related to stormwater planning and management including fish and fish habitat, navigable waters, environmental impact assessments, toxic substance releases, and some wildlife issues. More specifically, the main pieces of legislation that deal with stormwater are:

- The Fisheries Act
- The Canada Water Act;
- The Canadian Environmental Protection Act
- The Impact Assessment Act
- The Migratory Birds Convention Act
- The Species at Risk Act
- Canadian Navigable Waters Act

3.1.1 Fisheries Act (1985, Amended 2019)

Amendments to the Fisheries Act in 2012 and 2019 have each significantly impacted the Act. After the 2019 amendment, the Fisheries Act focuses on the protection of fish and fish habitat. It prohibits the deposit (direct discharging, spraying, releasing, spilling, leaking, seeping, pouring, emitting, emptying, throwing, dumping or placing) of deleterious substances into waters frequented by fish or where the deleterious substances can enter waters frequented by fish.
A deleterious substance can also be stormwater, wastewater, or other effluent that contains a substance in such quantity or concentration that it would, if deposited to waters frequented by fish, degrade or alter fish or fish habitat (DFO, 2006). This definition remains unchanged by recent amendments.

Recent Modifications/ Amendments
On August 28, 2019, amendments to the Fisheries Act came into force. The new Fisheries Act:

- Protects all fish and fish habitat;
- Restores prohibition against "harmful alteration, disruption or destruction of fish habitat" (HADD);
- Provides clearer permitting for development projects;
- Indigenous traditional knowledge is to be used to inform habitat decisions;
- Requires authorization for the harmful alteration, disruption or destruction of fish habitat from the Ministry;
- Enables the prohibition of fishing to conserve and protect marine biodiversity; and
- Promotes the restoration of degraded fish habitat for the conservation and protection of fish and fish habitat.

Effective in November 2013, Ontario Conservation Authorities no longer have Review Agreement with Fisheries and Oceans Canada (DFO) and are no longer undertaking reviews under the *Fisheries Act* on behalf of DFO. As a result, it is up to the proponent to ensure that their projects meet the DFO requirements under the self-assessment process.

This self-assessment process applies to any on-going projects currently under review with the local CAs, applications where permits have not yet been issued and any future permit applications that would normally have involved CA review under the *Fisheries Act*.

3.1.2 Canada Water Act (1985, Amended 2014)

The Canada Water Act (last amended in 2014) is divided into three parts:

1. Comprehensive Water Resource Management;
2. Water Quality Management; and
3. General.

Guidelines originally issued under this part of the Act are now listed under Canadian Environmental Protection Act. These include the Canadian Drinking Water Quality Guidelines and the Guidelines for Effluent and Waste Water Treatment at Federal Establishments. The final part focuses on administration and enforcement of the Act.

3.1.3 Canadian Environmental Protection Act (1999, Amended 2019)

The Canadian Environmental Protection Act (CEPA) is administered by Environment Canada and Health Canada and is "An Act respecting pollution prevention and the protection of the environment and human health in order to contribute to sustainable development."

Applicable provisions

Section 64 of CEPA states "a substance is toxic if it is entering or may enter the environment in a quantity or concentration or under conditions that:

a) Have or may have an immediate or long-term harmful effect on the environment or its biological diversity;
b) Constitute or may constitute a danger to the environment on which life depends; or
c) Constitute or may constitute a danger in Canada to human life or health."

Section 95 states that when a toxic substance is released, or may be released, into the environment, the person responsible must report the release, take measures to prevent the release, and mitigate any danger to the environment or public safety.

The focus of the CEPA is pollution prevention and the protection of the environment, primarily through the control of toxic substances. The CEPA applies indirectly to SWM through Section 95 which outlines that there are duties to report and take remedial measures in the event of a spill of a listed toxic substance. If stormwater contains a listed toxic substance and is released, it could be considered a reportable offence (Department of Justice Canada, 1999). For example, salt was recommended to be included as a toxic substance in Schedule 1 under CEPA.

3.1.4 Impact Assessment Act (2019)

The Impact Assessment Act (IAA) created the Impact Assessment Agency of Canada and repealed the Canadian Environmental Assessment Act (CEAA). The IAA aims to prevent significant adverse environmental effects, and requires:

- Early planning and engagement, including with Indigenous peoples, the public and stakeholders;
- Decisions to be based on science, evidence and Indigenous knowledge;
- A broad scope that includes positive and negative environmental, economic, social, and health impacts; and
- Indigenous engagement and participation throughout the project.

3.1.5 Migratory Birds Convention Act (1994, Amended 2017)

The Migratory Convention Birds Act deals with the protection of migratory game birds. Its relevance to stormwater is based on the protection of water that may be used by migratory birds. Like the Fisheries Act, it prohibits the direct discharging, spraying, releasing, spilling, leaking, seeping, pouring, emitting, emptying, throwing, dumping or placing of harmful substances in waters or an area frequented by migratory birds. The Act also provides for the protection and conservation of migratory bird habitat.

C.R.C., c. 1035 outlines permitting requirements under the Act.

3.1.6 Species at Risk Act (2002, Amended 2019)

Environment and Climate Change Canada is the lead federal government department responsible for issues concerning species at risk, however Fisheries and Oceans Canada is responsible for the protection of aquatic species and habitat at risk.

The Species at Risk Act is a key federal government commitment to prevent wildlife species from becoming extinct and secure the necessary actions for their recovery. It provides for the legal protection of wildlife species and the conservation of their biological diversity. The Act applies on federal lands, including national parks, and other protected heritage areas administered by Parks Canada, species protected under the Migratory Birds Convention Act, or aquatic species as defined in the Fisheries Act, SARA applies automatically on provincial and territorial lands and waters as well.

Applicable Provisions include Section 58: no person shall destroy any part of the critical habitat of any listed endangered species or of any listed threatened species – or of any listed extirpated species if a recovery strategy has recommended the reintroduction of the species into the wild in Canada – if:

a) the critical habitat is on federal land, in the exclusive economic zone of Canada or on the continental shelf of Canada;
b) the listed species is an aquatic species; or
c) the listed species is a species of migratory birds protected by the Migratory Birds Convention Act, 1994.

The relevance to stormwater is founded on surface runoff from different sources and land uses that may carry contaminants, adversely affecting physical habitat and water quality.

3.1.7 Canadian Navigable Waters Act (1985, Amended 2019)

The Canadian Navigable Waters Act is administered by Transport Canada and is designed to protect the public right of navigation in Canadian waters. The Act prohibits unauthorized "work" involving construction or placement in, on, over, under, through, or across any navigable water.

Applicable Provision
Section 21 states "no person shall throw or deposit or cause, suffer or permit to be thrown or deposited any sawdust, edging, slabs, bark or like rubbish of any description whatever that is liable to interfere with navigation in any water, any part of which is navigable or that flows into any navigable water." In addition, Section 22 states “No person shall throw or deposit or cause, suffer or permit to be thrown or deposited any stone, gravel, earth, cinders, ashes or other material or rubbish that is liable to sink to the bottom in any water, any part of which is navigable or flows into any navigable water, where there is not a minimum depth of 36 metres of water at all times”.

The relevance to stormwater is based on the inclusion of sediment under Section 21 of this legislation from stormwater facilities, uncontrolled releases or as a result of excessive stream erosion.

In 2019, the Act was amended to include:

- A new definition of navigable water;
- Distinguishing between major and minor works on navigable waters:
    - Minor works may be constructed, placed, altered, rebuilt, removed, or decommissioned in, on, over, under, through, or across any navigable water;
    - Major works, and works other than minor works regarding the waters listed in Schedule 1, requires approval from Transport Canada if the work interferes with navigation; and
    - Transport Canada must be notified prior to the implementation of major works, and works other than minor works regarding the waters listed in Schedule 1, that don't interfere with navigation.
- A requirement to consider adverse effects on Indigenous peoples when making a decision under the Act;
- Indigenous knowledge is to be considered when determining whether to issue an approval; and
- Prohibition of dewatering a navigable water to a depth that prevents vessels from navigating the water.

3.2 Provincial Level

In regard to water resources and stormwater related issues, Provincial legislative powers include, but are not limited to:

- Flow regulation;
- Authorization of water use development;
- Water supply; and
- Pollution control

Ontario legislative mechanisms (e.g., policies and guidelines) to regulate water quality and quantity are primarily administered by:

- **Ministry of the Environment, Conservation and Parks (MECP):**
    - The Blue Book;
    - Water Resources Act;
    - Clean Water Act;
    - Environmental Protection Act;
    - BMP for Excess Soil Management;
    - Water Opportunities Act; and
    - Safe Drinking Water Act
- **Ministry of Natural Resources and Forestry (MNRF)**
    - Lakes and Rivers Improvement Act; and
    - Endangered Species Act
- **Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA):**
    - Drainage Act; and
    - Nutrient Management Act
- **Ministry of Municipal Affairs and Housing (MMAH)**
    - The Planning Act and the Provincial Policy Statement; and
    - The Municipal Act

- **Ministry of Infrastructure and MMAH**
  - The Places to Grow Act
- **General**
  - Policy Review of Municipal Stormwater Management in the Light of Climate Change
  - Environmental Assessment Act (EAA)
  - Environmental Bill of Rights
  - Great Lakes Protection Act
  - Safeguarding and Sustaining Ontario's Water Act
  - Sustainable Water and Waste Water Systems Improvement and Maintenance Act
- **Provincial, Watershed, SWM and LID Guidance**
  - Stormwater Management Planning and Design Manual
  - Low Impact Development Stormwater Planning and Design Guide
  - Designer's Guide for Low-Impact Development Construction
  - Low Impact Development Stormwater Management Guidance Manual
  - Protection and Management of Aquatic Sediment (Guidelines B-1-3)
  - Evaluation of Construction Activities Impacting Water Resources (Guidelines B-5)

3.2.1 Water Management: Policies, Guidelines, Provincial Water Quality Objectives – The "Blue Book" (MECP, 1994, reprinted 1999)

The "Blue Book" was issued by the MECP under the authority of the Ontario Water Resources Act and the Environmental Protection Act. It provides direction on how to manage the quality and quantity of both surface water and ground water. It provides a framework but not procedures; for example, how the policy is applied to pollutant discharge limits is a matter of local choice or conditions or other pollutant management strategies.

The Provincial Water Quality Objectives (PWQO) form an integral part of the policy. The PWQO are set at levels that are protective of aquatic life and aquatic life cycles during indefinite exposure to water, in addition to recreation. The PWQO are guidelines to making rational water quality decisions. In addition to the PWQO, other objectives and guidelines may be used that relate to specific uses. Section 3.5.1 sets out procedures for effluent requirements. Of interest is the determination of effluent requirements are expressed as "waste loadings and/or concentrations". Meeting the PWQO "***should be determined from data that adequately reflect the spatial and temporal variations of the quality of the waterbody under consideration***". This must be accomplished through stormwater quality analyses of event mean concentration (EMC) values for various representative pollutants.

The general policies that relate to Stormwater are listed below:

> **Policy #1**: "In areas which have water quality better than the PWQO, water quality shall be maintained at or above the Objectives."
>
> **Policy #2**: "Water quality which presently does not meet the PWQO shall not be degraded further and all practical measures shall be taken to upgrade that water quality to the Objectives."
>
> **Policy #3**: To "prevent the release, in any concentration, of hazardous substances that have been banned."

Policy #4: "Ensure that special measures are taken on a case by case basis to minimize the release of hazardous substances that have not been banned."

Policy #5: Refers to a mixing zone as an area of water contiguous to a point source or definable diffuse source where water quality does not comply with one or more PWQO. It states "Mixing zones should be as small as possible and not interfere with beneficial uses. Mixing zones are not to be used as an alternative to reasonable and practical treatment."

Policies of most relevance to this study are Policy #1 and #2.
These policies are enforceable when incorporated into control documents, such as Environmental Compliance Approvals issued by the MECP through the Environmental Protection Act and the Ontario Water Resources Act, which regulate stormwater. The Conservation Authorities Act mandates Conservation Authorities to protect and regenerate natural systems and to maintain the quality, safety and sustainability of water resources.
The application of the policy is as follows:

1. The water management policies and guidelines supporting the Provincial Water Quality Objectives (PWQO) are the basis for establishing acceptable limits for water quality and quantity that protect aquatic ecosystems and groundwater. They are equally applicable to a local site-specific situation, an entire watershed or to the Great Lakes Basin.

2. The policies and guidelines do not have any formal legal status but, by their successful use over the years, are now accepted as a standard code of practice for water resources management.

3. Meeting the policies related to the PWQO is the minimum requirement.

3.2.2 Ontario Water Resources Act (MECP, 1990, Amended 2019)

The Ontario Water Resources Act (OWRA) is designed to conserve, protect and manage Ontario's waters and for their efficient and sustainable use. The act focuses on both groundwater and surface water throughout the province.

The Ontario Water Resources Act regulates works related to water supplies, the distribution of water and stormwater management and conveyance infrastructure. The act provides for the protection and conservation of water, and the control of the quality of drinking water supplied to the public. Under the Act, stormwater is included in the definition as sewage and, as such is required to be managed properly. Accordingly, the act regulates sewage disposal and sewage works and prohibits the discharge of polluting materials that may impair water quality.

Key stormwater-related issues addressed within the Water Resources Act are:

- Prohibiting the discharge of polluting material in or near water;
- Prohibiting or regulating the discharge of sewage;
- Enabling the issuance of orders requiring measures to prevent, reduce or alleviate impairment of water quality;
- Enabling the designation and protection of sources of public water supply;
- Imposing a duty on corporate officers and directors to take all reasonable care to prevent the corporation from discharging materials into or near water that may impair water quality.

Applicable Provisions

Section 30(1): Offence to discharge any material of any kind into or in any waters or shore or bank thereof or in any place that may impair the quality of the water of any waters

Section 30(2): Person who discharged or caused or permitted the discharge to forthwith notify the Minister

Section 110: The following are considered Aggravating Factors when imposing Sentencing Considerations:

- Offence caused impairment of water quality;
- Defendant committed the offence intentionally or recklessly;
- Defendant was motivated to increase revenue or decrease costs;
- Defendant committed the offence despite having been warned by the Ministry of circumstances that became the subject of the offence;
- After the commission of the offence, the defendant:
    - Attempted to conceal the commission of the offence;
    - Failed to co-operate with the Ministry or other public authorities;
    - Failed to take prompt action to mitigate the effects of the offence; or
    - Failed to take prompt action to reduce the risk of similar offences being committed in the future.

Exemptions

In general, the need for, and nature of, an approval depends on the site and the activity. However, specific exemptions for certain types of sewage works equipment, system and application have been granted through legislation. The OWRA and Approval Exemption Regulation (O.Reg. 525/98) exempt minor sewage works from the approval requirements of the Act. Additionally, O.Reg. 525/98 states that Subsections 53(1) and (3) of the Act do not apply to the establishment, alteration, extension or replacement of or a change in a stormwater management facility that:

a) Is designed to service one lot or parcel of land;
b) Discharges into a storm sewer that is not a combined sewer;
c) Does not service industrial land or a structure located on industrial land; and
d) Is not located on industrial land O. Reg 525/98, s. 3.

Industrial lands are defined as lands used for the production, processing, repair, maintenance or storage or goods or materials, or the processing, storage, transfer or disposal of waste, but does not include lands used primarily for the purpose of buying or selling,

a) goods or materials other than fuel, or
b) services other than vehicle repair services

Other approval exemptions under Section 53 include:

a) sewage works from which sewage is not to drain or be discharged directly or indirectly into a ditch, drain or storm sewer or a well, lake, river, pond, spring, stream, reservoir or other water or watercourse;
b) drainage works under the Drainage Act or a sewage works where the main purpose of the works is to drain land for the purposes of agricultural activity;
c) drainage works under the *Funeral, Burial and Cremation Services Act*, the *Public Transportation and Highways Improvement Act* or the *Railways Act;*

d) sewage works that have a designed capacity of 10,000L/day or less and are whole contained within the boundaries of the lot or parcel of land on which is located the facility served by the works. Note: these are approved under the *Building Code* by municipalities.

In all other circumstances beyond the aforementioned exemptions, an ECA from the MECP is required. If unsure about the exemption of your stormwater works, a pre-consultation meeting with the ministry is recommended.

3.2.3 Clean Water Act (MECP, 2006, Amended 2019)

The Clean Water Act 2006 was enacted to protect existing and future sources of drinking water. The Act specifies that drinking water source protection plans (SPP) be developed as a result of an overall assessment report and that the SPP sets forth policies that prevent activities from becoming a significant drinking water threat to surface and groundwater drinking supplies.

Specifically, the regulations define threatened areas to include highly vulnerable aquifers, significant groundwater recharge areas (SGRA), wellhead protection areas (WHPA), and surface water intake protection zones (IPZ). Furthermore, Ontario Regulation 287/07 (as amended), lists 22 prescribed drinking water threats. Several of these prescribed activities relate to stormwater management and may impact where infiltration of water is promoted, specifically:

- Activity 2: A system that collects, stores, transmits, treats or disposes of sewage, including stormwater;
- Activity 12: The application of road salt, including salt transmitted in stormwater runoff;
- Activity 13: The handling and storage of salt, including salt treated or disposed in stormwater; and,
- Activity 14: The storage of snow, including snow stored in or near stormwater management facilities.

O.Reg. 284/07 places the City of Guelph in the Grand River Source Protection Area, and therefore in the Lake Erie Source Protection Region.

3.2.4 Environmental Protection Act (MECP, 1990, Amended 2019)

The Environmental Protection Act is Ontario's key legislation for environmental protection. The act grants the MECP broad powers to deal with the discharge of contaminants which cause negative effects. Under this legislation, a contaminant is defined as “any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of them resulting directly or indirectly from human activities that causes or may cause an adverse effect.” The Environmental Protection Act was enacted to protect the natural environment and animal and human health from adverse effects of pollution contamination.

Applicable Provisions

Section 14(1): prohibits the discharge of any contaminants into the environment which cause or are likely to cause adverse effects. In the case of some approved contaminants, the Act requires that they must not exceed approved and regulated limits.

Section 92: Requires the controller of a spilled pollutant and/or the person that caused the spill to report the spill if it is abnormal in quality or quantity. Agencies need to report if not certain it has been reported.

Section 93: Requires the owner and/or person in control of a spilled pollutant to clean up and restore the natural environment.

Key stormwater-related applications include:

- Forbidding the discharge of contaminants into the natural environment in an amount, concentration or level in excess of that prescribed by the regulations;
- Allowing the issuance of binding administrative orders to prevent, control, minimize or remediate discharges of contaminants into the natural environment;
- Imposing duties to report and clean up pollutant spills and imposes civil liability for loss or damage arising from spills; and
- Imposing a duty on corporate officers and directors to take all reasonable care to prevent the corporation from causing or permitting unlawful discharges of contaminants into the natural environment.

O.Reg. 153/04 describes the requirements for Records of Site Condition, Phase I and II Environmental Site Assessments, and Risk Assessments. Sewage works, including stormwater management facilities, need to be detailed in these reports.

O.Reg. 255/11 describes the application process and requirements for Environmental Compliance Approvals, which are necessary for stormwater management facilities.

O.Reg. 406/19 describes the requirements for on-site and excess soil management, including excess soil that is removed from a stormwater management facility. A sampling and analysis plan will be required when removing this soil.

3.2.5 Water Opportunities Act (MECP, 2010, Amended 2019)

The Water Opportunities Act established in 2010 lays the foundations for new jobs in Ontario and develops new technologies and services for water conservation and treatment. The Act has an overarching objective to improve the efficiency of municipal infrastructure using the following key initiatives:

- Identifying innovative, cost effective solutions for drinking water, wastewater and stormwater system challenges;
- Optimizing systems and improving water conservation; and
- Identifying opportunities to demonstrate and carry out new and emerging Ontario water technologies, services and practices.

3.2.6 Safe Drinking Water Act (MECP, 2002, Amended 2019)

The Safe Drinking Water Act, passed in 2002, has a main purpose to "provide for the protection of human health and the prevention of drinking water health hazards through the control and regulation of drinking water systems and drinking-water testing."

3.2.7 Lakes and Rivers Improvement Act (MNRF, 1990, Amended 2019)

Under the Lakes and Rivers Improvement Act, review and approval are required by the MNRF to permit work on watercourses and shore-lands. The purposes of this Act are to provide for,

a) the management, protection, preservation and use of the waters of the lakes and rivers of Ontario and the land under them;
b) the protection and equitable exercise of public rights in or over the waters of the lakes and rivers of Ontario;
c) the protection of the interests of riparian owners;
d) the management, perpetuation and use of the fish, wildlife and other natural resources dependent on the lakes and rivers;
e) the protection of the natural amenities of the lakes and rivers and their shores and banks; and
f) the protection of persons and of property by ensuring that dams are suitably located, constructed, operated and maintained and are of an appropriate nature with regard to the purposes of clauses (a) to (e).

Applicable Provisions
Section 36(1): Offence to deposit or discharge any substance or matter into water (including water covered by ice)

Section 36(2): Minister may order removal of any substance or matter from lake, river or from the shore or bank, as the case may be

In accordance with existing regulatory administration and approval agreements, the Conservation Authority (i.e. GRCA) would conduct reviews of proposed works pertaining to watercourses and shore-lands under this act.

O.Reg. 454/96 describes the approvals to make alterations, improvements or repairs to a dam that holds back water in a river, lake, pond or stream.

3.2.8 Endangered Species Act (MNRF, 2007, Amended 2019)

The Endangered Species Act came into effect in 2007 and provides for broader protection for species at risk and their habitats. In general, the purpose of the act includes the preservation and rehabilitation of habitat and the enhancement of other areas so that they can become habitat. Under the act, habitat may be described by specific boundaries, features or "in any other manner" and may prescribe areas where species live, used to lie or is believed to be capable of living and beyond.

Applicable Provisions
Section 10: A person shall not damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario List (O.Reg. 230/08) as an endangered or threatened species, or as an extirpated species if the species is prescribed by the regulations.

Policies under this legislation have relevance to urban development and stormwater management. As an example, the impacts to habitat can be as a result of:

- Alteration to hydrologic regimes (increased runoff, flow regime change, and decreased infiltration) and increased water temperature (through increasing impervious surfaces and end-of-pipe discharges);
- Increased sedimentation and erosion through site grading and excavation;
- Releases of untreated stormwater which carry pollutants; and
- General habitat losses through the loss of riparian vegetation, in-stream habitat features, wetland and groundwater sources.

Section 4.4 of the Ministry of Natural Resources Guidance for Development Activities in Redside Dace Protected Habitat, (March 2016) provides the first example of stormwater management direction under this act. The Guidance for Development Activities in Redside Dace Protected Habitat provides the following as it relates to development within or adjacent to Redside Dace streams:

- Emphasis on a "treatment train approach" - source, conveyance and end-of-pipe controls;
- Maximization of at source infiltration;
- Maximum threshold for TSS should not exceed 25mg/L above background levels;
- Stormwater discharges to Redside streams should not exceed 24°C and a minimum dissolved oxygen content of 7mg/l;
- Post development water balance should match pre-development water balance (no runoff from rainfall events between 5-15 mm, dependent on subwatershed recommendations and local soils);
- Hybrid end-of-pipe stormwater management facilities (extended detention wetlands/wet ponds) are recommended adjacent to Redside habitat; and

Suggests the use of Low Impact Development techniques to prevent habitat degradation.

3.2.9 Conservation Authorities Act, 1990, Amended 2019 (Specifically Ontario Regulation 150/06 as enforced by the Grand River Conservation Authority, Amended 2013)

A Conservation Authority's regulatory powers are granted under Section 28 of the Conservation Authorities Act.

Applicable Provisions

Section 28(3) – A regulation may provide for permission to be granted subject to conditions and for the cancellation of the permission if conditions are not met

Section 28(16) – Every person who contravenes a regulation or the terms and conditions of a permission of an authority is guilty of an offence

Section 28(17)- Upon conviction the court may order the removal of the development or the rehabilitation of the watercourse or wetland.

Any and all end-of-pipe and outfall retrofit works as well as any stream restoration works will require consultation and permits under this legislation.

2017 Proposed Changes

On a day to be named by proclamation of the Lieutenant Governor, the existing section 28 of the Act is repealed and a new section 28 substituted. Relevant changes include:

- Section 28(3) – The prohibitions in subsection (1) do not apply to an activity or a type of activity that is prescribed by regulation and is carried out in accordance with the regulations.
- Section 30.5(1) – Every person is guilty of an offence if he or she contravenes,
    (a) Subsection 28(1) or a regulation made under subsection 28(3) or under section 28.5;
    (b) The conditions of a permit that was issued under section 28.1 or under a regulation made under clause 28.5(1)(c); or
    (c) A stop order issued under section 30.4.

- Section 30.7(1) – Upon conviction, the court may order the removal, at the convicted person's expense, any development and take such actions to repair or rehabilitate the damage that results from or is in any way connected to the commission of the offence.

The relevance to the City and stormwater management is Ontario Regulation 150/06 for the Grand River Conservation Authority (GRCA). The regulation establishes 'Regulated Areas' where development could be subject to flooding, erosion or dynamic beaches, or where interference with wetlands or alterations to watercourses might have an adverse effect.

Ontario Regulation 150/06 defines the permitting process for the regulation of development and placement of fill within the regulated area, construction within the floodplain and/or alteration of a watercourse (including obtaining stormwater outlets), disturbance to a wetland, shoreline or water body and/or the development in the vicinity of hazardous lands. Through this legislation, Conservation Authorities regulate flood and erosion control policies in their watershed.

The GRCA operates under the Conservation Authorities Act of Ontario. It is a corporate body, through which municipalities work cooperatively to manage the water and natural resources in the watershed for everyone's benefit. The GRCA has the responsibility to regulate activities in natural and hazardous areas in accordance with the policies of Ontario Regulation 150/06 in order to:

- Prevent the loss of life and property due to flooding and erosion; and,
- Conserve and enhance natural resources.

3.2.10 Drainage Act (OMAFRA, 1990, Amended 2019)

The Drainage Act regulates the construction and maintenance of municipal drains. More specifically, under Section 74 of the Drainage Act, municipalities are responsible to maintain municipal drainage systems within their jurisdiction.

Various jurisdictions are exploring the use of the Drainage Act "as a tool for property aggregation to support wide scale adoption of LID on private property in urban areas" as described by the Sustainable Technologies Evaluation Program white paper "Making Green Infrastructure Mainstream: Exploring the Use of the Drainage Act for Decentralized Stormwater Management on Private Property." The white paper states that use of the Drainage Act would:

- Enable public and private landowners to design, construct and maintain communal infrastructure together;
- Be a cost-effective approach for stormwater management, as it would not require the purchase of land specifically for stormwater works;
- Facilitate economies of scale by implementing systems at a neighbourhood-level instead of a site-level;
- Allow for local municipal knowledge to be incorporated; and
- Protect drainage features and allow for appropriate recourse if works are damaged.

3.2.11 Nutrient Management Act (OMAFRA, 2002, Amended 2019)

The purpose of this Nutrient Management Act is to provide for the management of materials containing nutrients in ways that will enhance protection of the natural environment and provide a sustainable future for agricultural operations and rural development. The Nutrient Management Act regulates the

use, storage and disposal of fertilizers and farm wastes with the objective of protecting surface water and groundwater quality.

3.2.12 The Planning Act (MMAH, 1990, Amended 2019) and the Provincial Policy Statement (MMAH, 2020)

The Provincial Policy Statement is issued by the Ministry of Municipal Affairs and Housing under Section 3 of the Planning Act. The Planning Act sets out the ground rules for land use planning in Ontario and describe how land uses may be controlled, and who may control them.

It requires that decisions affecting planning matters in Official Plans "shall be consistent with" the PPS. The PPS provides "for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of the natural and built environment". The PPS focuses growth within settlement areas and away from significant or sensitive resources. It directs planning authorities to identify and promote opportunities for intensification and redevelopment where this can be accommodated, taking into account existing building stock, including existing or planned infrastructure. The PPS provides a higher degree of protection for employment lands against conversions to residential uses. The new policies also provide for intensifications and brownfield development to ensure the maximum use of sewer, water and energy systems, roads and transit. The Official Plan is the most important tool to implement the PPS.

Section 2.2 of the PPS addresses water, stating that planning authorities shall protect, improve or restore the quality and quantity of water, using the watershed as the ecologically meaningful scale for planning. Planning authorities shall ensure that stormwater management practices minimize stormwater volumes and contaminant loads, and maintain or increase the extent of vegetative and pervious surfaces.

The PPS acknowledges that, in addition to approvals under the Planning Act, necessary infrastructure may require approvals under the EA, IAA, EPA, OWRA, the Conservation Authorities Act and the Safe Drinking Water Act, and provincial plans (e.g. Niagara Escarpment Planning & Development Act or the Oak Ridge Moraine Conservation Act). Conservation Authorities have Memoranda of Understanding with municipalities to ensure that the quality and quantity of water are protected through proper planning.

Applicable Provisions of the Planning Act

- Section 24: Zoning By-law,
- Section 41: Site Plan Control Areas and
- Section 51: Plan of Subdivision Approvals.

The relevance to stormwater, is in regards to Site Plan and Subdivision Approvals at the municipal level. Site Plan and Subdivision Approvals are:

- Subject to Conditions
    - Grading and alterations to land, including storm and surface waters
    - Sediment and erosion control requirements
- Criteria for conservation of natural resources and flood control
- Requires entry into legal agreements
- Requires compliance with imposed conditions
- Can impose financial securities

- Linked to other regulatory approvals (i.e. Conservation Authorities)

3.2.13 The Municipal Act (MMAH, 2001, Amended 2017)

Ontario's Municipal Act, 2001 is the main statute governing the creation, administration and government of municipalities in the province of Ontario.

The Municipal Act empowers municipalities to enact and enforce by-laws on water-related matters including industrial discharges into municipal sewers and water rates. With respect to stormwater planning and management, municipalities have the responsibility to:

- Promote current and future economic, social and environmental well-being of the municipality;
- Manage and preserve the public's assets of the municipality;
- Provide services considered necessary or desirable for the effective management of stormwater; and
- Participate and deliver in provincial programs and initiatives.

3.2.14 Places to Grow Act (MMAH & MOI, 2005, Amended 2012)

This Act maintains that municipalities that share an inland water source and/or receiving water body should coordinate their planning for potable water, stormwater, and wastewater systems to ensure that water quality and quantity is maintained or improved. In conjunction with conservation authorities, municipalities are encouraged to prepare watershed plans and use these plans to guide development decisions and water and wastewater servicing decisions. Finally, municipalities are encouraged to implement and support innovative SWM actions as part of redevelopment and intensification (Ministry of Public Infrastructure and Renewal, 2006).

In May 2019, A Place to Grow: Growth Plan for the Greater Golden Horseshoe was approved under the Places to Grow Act. The Growth Plan was developed to inform decision making regarding growth management and environmental protection in the Grater Golden Horseshoe. It includes definitions, schedules and policies to help guide development while ensuring the protection and effective use of finite resources. The City of Guelph is considered to be part of the "outer ring" of the Greater Golden Horseshoe (O.Reg. 416/05).

3.2.15 Environmental Assessment Act, (MECP, 1990, Amended 2019)

The Environmental Assessment Act applies to projects being carried out by the Province, municipalities, or public bodies (for example, Conservation Authorities and the Ontario Realty Commission). The EA Act may also apply to major commercial or business enterprises or activities or proposals, plans or programs, as set out in subsection 3(b) and 3(c) of the EA Act. The EA Act requires that proponents of major projects outline the details of the project and identify how construction, location and ultimate utilization will affect current and future uses of that area. Water quality effects, biological effects, and social and economic factors must be considered.

The purpose of this Act is "betterment of the people of the whole or any part of Ontario by providing for the protection, conservation and wise management in Ontario of the environment." A class environmental assessment must contain the following information:

1) A description of the class of undertakings to which it applies;
   1.1) A description of any undertakings within the class that are proposed to be exempt from this Act and the basis for the proposed exemption;

2) A description of the reasons for using a class environmental assessment with respect to undertakings in the class;
3) A description of the similarities and differences to be expected among the undertakings in the class;
4) A description of the expected range of environmental effects that may result from proceeding with undertakings in the class;
5) A description of measures that could be taken to mitigate against adverse environmental effects that may result from proceeding with undertakings in the class;
6) A description of the process to be used by a proponent of a proposed undertaking to consult with the public and with persons who may be affected by the undertaking;
7) A description of the method to be used to evaluate a proposed undertaking with respect to the matters described in paragraphs 4 to 6; and
8) A description of the method to be used to determine the final design of a proposed undertaking based upon the evaluation described in paragraph 7.

3.2.16 Bill of Rights, (MECP, 1993, Amended 2019).

The Environmental Bill of Rights (EBR) allows Ontarians the opportunity to participate in decisions that could impact Ontario's air, water. Land and wildlife by ensuring Provincial ministries develop a Statemen of Environmental Values (SEV) and take reasonable steps to consider their SWVs when making decision that might significantly affect the environment. The purposes of this Act are,

1) to protect, conserve and, where reasonable, restore the integrity of the environment by the means provided in this Act;
2) to provide sustainability of the environment by the means provided in this Act; and
3) to protect the right to a healthful environment by the means provided in this Act.

Under the EBR, Ontarians may:

- comment on specified environmental government proposals
- ask ministries subject to the act for either a new policy, act, or regulation, or to review of an existing policy, act, regulation or instrument
- ask certain ministries to investigate an alleged harm to the environment
- seek leave (permission) to appeal ministry decisions on certain instruments, such as permits, licences, approvals or orders
- in some cases, sue someone for causing harm to the environment
- get whistleblower protection

Through the EBR a searchable, online database was created to consult the public on certain provincial government decisions that might affect the environment. The registry is used to let people know about environmental matters in the province and allows for comment on policies, acts, regulations and instruments (for example, approvals, permits, licenses and orders).

3.2.17 Great Lakes Protection Act (MECP, 2015)

The purposes of this Act are,

1) to protect and restore the ecological health of the Great Lakes-St. Lawrence River Basin; and;
2) to create opportunities for individuals and communities to become involved in the protection and restoration of the ecological health of the Great Lakes-St. Lawrence River Basin.

The Great Lakes Protection Act allows he Minister of the Environment and Climate Change, in consultation with other Great Lakes Ministers, communities and stakeholders, to set specific or general targets for local and lakewide areas. The act also provides the Minister of Natural Resources and Forestry with authority to establish one or more targets for preventing the loss of wetlands.
The ability to set clear targets through this act is essential in helping all partners work towards common restoration and protection outcomes. Setting targets will also help Ontario to manage the cumulative impacts of activities on the Great Lakes, including climate change, and respond to specific areas when needed.

3.2.18 Bill 198, Safeguarding and Sustaining Ontario's Water Act (MECP, 2007)

This legislation is aimed at strengthening the management, protection and conservation of the Great Lakes and all of Ontario's Water Resources. Bill 198 acts to amend the Ontario Water Resources Act in two fundamental ways implementing the Great Lakes – St. Lawrence River Basin Sustainable Water Resources Agreement, which was agreed to on December 13, 2005, and which bans diversions of water out of the Great Lakes-St. Lawrence River Basin and prohibits new or increased transfers of water from one Great Lakes watershed to another unless strictly regulated criteria are met; and authorizing regulations requiring the payment of regulatory charges for commercial and industrial water use, whether or not connected to a municipal system.

3.2.19 Bill 13, Sustainable Water and Waste Water Systems Improvement and Maintenance Act (MECP, 2010)

This Act repeals the Sustainable Water and Sewage Systems Act, 2002. The purposes of this Act are,

1) to ensure that public ownership of water services and waste water services is maintained;
2) to promote full-cost recovery and full-cost accounting of water services and waste water services;
3) to encourage an increase in scale and capacity in the provision of water services and waste water services to minimize costs to the public;
4) to improve transparency in the provision of water services and waste water services to the public through the establishment of publicly-owned corporations; and
5) to create an independent economic regulator with the expertise and authority to administer this Act.

3.2.20 Stormwater Management Planning and Design Manual (MECP, 2003)

The 2003 Stormwater Management Planning and Design Manual (SWMPDM) is a more comprehensive set of stormwater management guidelines than its 1994 predecessor. The focus of this document includes water quantity, water quality and erosion considerations. The 2003 SWMPDM provides technical and procedural guidance for the planning, design, and review of stormwater management practices. The focus of the manual was broadened to incorporate the current multi-objective approach to stormwater facility planning to address targets related to hazards, water quality, fish habitat and recreation.

Fundamental SWM objectives include:

- Groundwater and baseflow characteristics are preserved;
- Water quality will be protected;
- Watercourse will not undergo undesirable and costly geomorphic change;
- There will not be any increase in flood damage potential; and ultimately,

- That an appropriate diversity of aquatic life and opportunities for human uses will be maintained.

A central theme of the SWMPDM is the application of a "treatment train", a term that is used to describe the combination of controls usually required in an overall stormwater management strategy to ensure that aforementioned objectives are achieved. The SWMPDM states that:

> *"the recommended strategy for stormwater management is to provide an integrated **treatment train approach** to water management that is premised on providing control at the lot level and in conveyance (to the extent feasible) followed by end-of-pipe controls. This combination of controls is the only means of **meeting the multiple criteria for water balance, water quality, erosion control and water quantity**."*

3.2.21 Policy Review of Municipal Stormwater Management in the Light of Climate Change (MECP, 2011)

The document reviews the need for a new policy, act, or regulation to deal with municipal SWM systems in light of climate change. The key findings of the policy review include:

- Adaptation to climate change is best priority;
- The Ontario Water Resources Act (OWRA) and the Environmental Protection Act (EPA) are anticipated to provide a sufficient legislative framework for climate change adaptation;
- The 2003 Stormwater Management Planning and Design Manual requires updating to include additional best practices for climate change adaptation for municipal stormwater management;
- The MECP approvals process requires review to include identifying measures to encourage source control best practices;
- Data collection and information management systems are necessary to track the performance of SWM systems in order to assess vulnerability to climate change;
- Public education, demonstration projects and incentives are necessary to support SWM resilient systems; and
- It is recommended that ministries work together to collaboratively seek solutions.

3.2.22 Preserving and Protecting our Environment for Future Generations: A Made-in-Ontario Environment Plan (MECP, 2019)

The Environment Plan reflects the government's commitment to addressing pressing environmental challenges in the province, but does not include specific policies. The key parts of the plan that relate to stormwater include:

- Minimize environmental impacts from road salt use, including working with municipalities, conservation authorities, the private sector and other partners to promote best management practices, certification and road salt alternatives;
- Ensure the knowledge gained through the drinking water source protection program helps inform our water management programs;
- Update policies related to municipal wastewater and stormwater to make them easier to understand. Consider how wastewater and stormwater financing could be updated to improve investment and support new and innovative technologies and practices;
- Review land use planning policies and laws to update policy direction on climate resilience. This will help make the way communities are planned and designed more responsive and adaptive to changing weather conditions, such as improving the way that stormwater is managed; and

- Work with federal and municipal governments through the green stream of the Investing in Canada Infrastructure Program to invest up to $7 billion in federal, provincial and municipal funding over the next 10 years. Examples include improvements to stormwater systems.

3.2.23 Low Impact Development (LID) Stormwater Management Guidance Manual (MECP, Draft 2017)

Since the publication of the 2003 SWMPDM, advancements have been made in the approaches used to manage stormwater and the technologies available to the stormwater practitioner. To meet the multiple objectives of stormwater management on a broad-scale, it is expected that a combination of source, conveyance and end of pipe controls will be required within Ontario's urban stormwater systems. To encourage stormwater solutions that treat stormwater as a resource and that mimic the natural that hydrologic pathways of infiltration and evapotranspiration, the Province has developed a suit of policies, incentives and legislation that promote the implementation of LID practices. These include the Lake Simcoe Protection Plan (2009), the Water Opportunities Act (2010), the Policy Review of Municipal Stormwater Management in Light of Climate Change (2010), Ontario's Great Lakes Strategy (2014) and the Showcasing Water Innovation grant program.

The draft Low Impact Development Stormwater Guidance Manual was developed to complement the 2003 Stormwater Management Planning and Design Manual, with a focus on source and conveyance controls. Similar to the 2003 manual, this document should be used as a tool for understanding the design criteria and performance requirements of stormwater management projects and not as a rulebook or design manual for stormwater management solutions. The 2003 manual is still to be used as a tool for the end of pipe stormwater management criteria and design recommendations while the new LID SWMGM provides volume control requirements. The release date of the draft LID manual is unknown.

3.2.24 Management of Excess Soil – A Guide for Best Management Practices (MECP, 2014)

The best management practices in this document provide guidance on how to handle excess soil beginning at the place where the soil is excavated (a "Source Site"), during the transportation of the excess soil, and through to a site where the excess soil can be reused for a beneficial purpose (a "Receiving Site").

This document also includes recommendations for temporary storage of excess soil at an intermediate site, between the Source Site and Receiving Site, where the intermediate site (a "Temporary Storage Soil Site") is owned or leased by the owner/operator of the Source Site or Receiving Site, for temporary storage of the excess soil.

The best management practices are not intended to be applied to small, low-risk construction or maintenance activities that are limited to single-dwelling residential properties, or activities associated with minor municipal road work or sewer/water main construction or repair. However, those involved in these smaller-scale projects and smaller-scale soil management activities are encouraged to consider whether the best practices may be useful, and to consult with any applicable approval authorities and Receiving Site owners/operators on reuse or disposal options before moving excess soil from a Source Site to a Receiving Site or Temporary Soil Storage Site.

All those who create, manage, transport, receive or store excess soil are responsible for ensuring that the excess soil is managed in an environmentally sound manner. They must also meet all applicable legal requirements, including current provincial and federal regulatory requirements, such as: site alteration, noise and traffic by-laws and permitting regimes established by municipalities and Conservation Authorities; the soil management provisions in Ontario Regulation 153/04 that relate to the submission and filing of a Record of Site Condition; and, when excavated soil and other excavated materials are being managed as a waste, the EPA and waste regulations.

3.3 Local Level

Local legislative level is defined here as the level that includes regional and municipal government, and the conservation authority (i.e. GRCA).

3.3.1 Stormwater Management Master Plan (City of Guelph, 2012)

The purpose of the Stormwater Management Master Plan (SWM-MP) was to develop a long-term plan for the safe and effective management of stormwater runoff from urban areas while improving the ecosystem health and ecological sustainability of the Eramosa and Speed Rivers and their tributaries. The objectives of the plan were:

- Water quality
    - Improve sediment, surface water and groundwater quality;
    - Minimize pollutant loadings to groundwater and surface water; and
    - Improved aesthetics of creeks and rivers through the elimination of garbage/litter,
    - algae growth, turbidity, and odours.
- Water quantity
    - Preserve and re-establish the natural hydrologic process to protect, restore and replenish surface water and groundwater resources;
    - Reduce the impacts of erosion on aquatic and terrestrial habitats and property; and
    - Minimize the threats to life and property from flooding.
- Natural environment
    - Protect, enhance and restore natural features and functions such as wetlands, riparian and ecological corridors; and
    - Improve warmwater and coldwater fisheries if appropriate.

Key recommendations from the plan included, but were not limited to, the following:

- Address the top 25 storm sewer upgrades based on a priority ranking, with other upgrades conducted as possible with consideration of other City capital projects;
- Implement a mandatory downspout disconnection program in five high-priority drainage networks, with other networks disconnected when possible;
- Implement LID measures in five high-priority drainage networks in conjunction with the downspout disconnections;
- Rainfall and flow monitoring should be expanded to improve modelling accuracy and support future IDF updates;
- Develop strategies to deal with storm sewers on private property;
- Address overland flow deficiencies when completing roadway capital projects;
- Implement seven proposed stormwater quantity control facilities;
- Implement 19 stormwater quality retrofits;

- Begin an OGS inspection and maintenance program;
- Establish a City-wide monitoring program to determine the success of stormwater management and the impact of development on water quality;
- Increase funding for inspection and maintenance for SWM facilities, OGS units and storm sewers. Funding could come from the general tax base, development charges, stormwater user pay rates, grant opportunities, or a combination of these sources; and
- Create a Stormwater Management Policy and Design Criteria and Guidelines document, incorporating the current Stormwater Management Design Principles, portions of the Subdivision Design requirements, and policies from the Official Plan.

Subsequent studies, changes to legislation and guidelines, technological advancements, and work completed by the City have all resulted in changes to the stormwater context within the City of Guelph, and have therefore prompted the development of a new SWM-MP.

3.3.2 Grand River Source Protection Plan (Lake Erie SP Committee, Effective July 1/2016, Amended August 16/2019)

The Grand River Source Protection Area Assessment Report, which serves as the scientific base for the Source Protection Plan (SPP), was prepared for the City of Guelph by the Grand River Source Protection Committee and approved by the MECP on August 16, 2012, with amendments approved on March 11, 2019. The SPP for the Grand River Source Protection Area was approved by the MECP on November 26, 2015 and became effective on July 1, 2016, with amendments approved on August 16, 2019. The SPP describes watershed characteristics, identifies the vulnerable areas related to drinking water sources, identifies the types and number of significant threats to water quality and quantity and outlines the policies and programs to manage or remove significant threats, and to prevent new significant threats from developing.

Figure 3.1 identifies vulnerability scores associated with WHPAs in the City of Guelph.

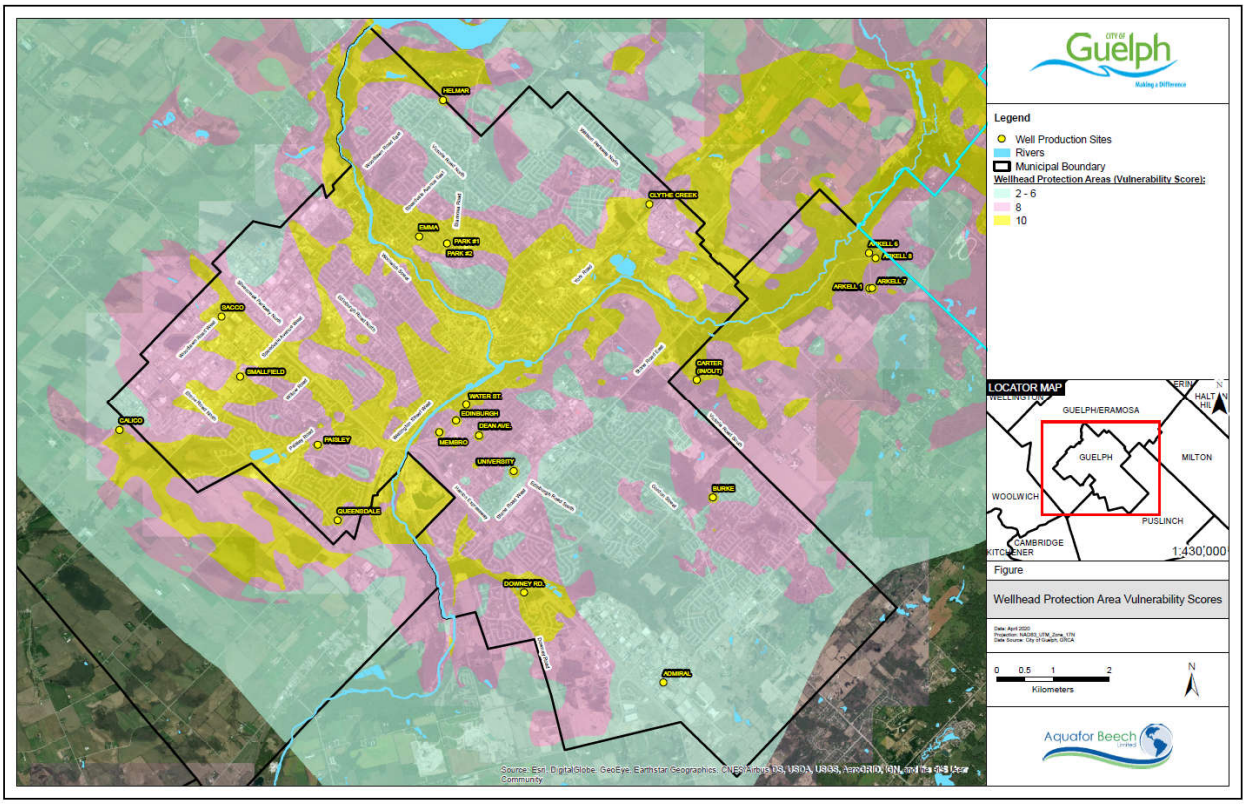
The specific policies addressing drinking water activities can be found within the Grand River Source Protection Plan, available online at https://www.sourcewater.ca/en/source-protection-areas/Grand-River-Source-Protection-Plan.aspx.

Relevant Grand River Source Protection Plan Policies (2016)
Listed in **Table 3.1** are the relevant Source Protection Plan Policies relating to Stormwater Management.

Table 3.1: Grand River Source Protection Plan Policies related to Stormwater Management

Sewage System or Sewage Works – Discharge from a Stormwater Management Facility	
CG-MC-15 *Existing/Future Prescribed Instr. WHPA-A-v.10; WHPA-B-v.10; ICA(NIT)*	For the existing or future discharge from a stormwater management facility within vulnerable areas where this activity is or would be a significant drinking water threat, the Ministry of the Environment, Conservation and Parks shall ensure that the Environmental Compliance Approval that governs the stormwater management facility includes appropriate terms and conditions to ensure that the activity ceases to be and/or never becomes a significant drinking water threat.

Figure 3.1: WHPA Vulnerability Scores



3.3.3 City of Guelph Official Plan (City of Guelph, March 2018 Consolidation)

The City of Guelph's Official Plan (OP)) is a long-range, comprehensive municipal planning document that outlines a framework for land use decision-making for the City of Guelph. The OP contains a vision, guiding principles, strategic goals, objectives, and policies to manage future land use patterns that have a positive effect on the social, economic, cultural and natural environment in the City to the year 2031.

Specific objectives relevant to this Master Plan outlined in the OP are:

a) To protect, maintain, enhance and restore the quality and quantity of surface water and groundwater resources through sound stormwater management;
b) To implement an integrated watershed planning approach in the design of stormwater management such that Watershed Plans, Subwatershed Plans and Stormwater Management Master Plans serve to guide site-specific development;
c) To implement stormwater management practices that: maintain the predevelopment hydrologic cycle; maintain or enhance the quantity and quality of stormwater runoff discharged to receiving natural watercourses, wetlands and infiltration facilities; and minimize erosion, flooding, wildlife and fisheries impacts;
d) To recognize stormwater runoff as an important resource rather than a waste product; and
e) To ensure Subwatershed Plans for the various subwatersheds of the city are kept up to date.

There are several policies in the OP that relate specifically to stormwater management. These policies are summarized in **Table 3.2**.

Figure 3.2 identifies WHPAs in and around the City of Guelph as outlined in the OP.

Table 3.2: City of Guelph Official Plan Policies applicable to Stormwater Management

Policy Number	Policy Topic	Summary of policy in relation to stormwater management
3.19	Water, Wastewater and Stormwater Systems	1. Development will be planned and coordinated relative to a program for infrastructure planning, asset management and infrastructure investment that is focused on the orderly extension, repair and upgrading of municipal trunk storm and sanitary sewers and watermains. 2. Construction of new, or expansion of existing, municipal or private communal water and wastewater systems should only be considered where the following conditions are met: i) strategies for water conservation and other water demand management initiatives are being implemented in the existing service area; and ii) plans for expansion or for new services are to serve growth in a manner that supports achievement of the intensification and density targets of this Plan.
4.3.1	Watershed Planning	3. Watershed/subwatershed studies will be used: i) to identify surface water features, groundwater features, hydrologic functions and natural heritage features and linkages which are necessary for the ecological and hydrological integrity of the watershed; ii) to ensure linkages and related functions among surface water features, groundwater features, hydrologic functions and natural heritage features are maintained; iii) as the basis for stormwater management plans, augmenting natural heritage feature protection, restoration and enhancement where applicable and the requirements for major municipal infrastructure; iv) to provide guidance for monitoring, mitigation measures and alternative development approaches within the watershed with the intended purpose of maintaining and enhancing the health and quality of surface water and groundwater features, natural heritage features and associated ecological and hydrological functions within the subwatershed; and v) to inform and assist in the land use planning process.
4.3.2	Water Resource Protection and Conservation	1. The City will protect, improve or restore the quality and quantity of water by: i) minimizing potential negative impacts, including cross-jurisdictional and cross-watershed impacts; ii) implementing necessary restrictions on development and site alteration to protect all municipal drinking water supplies and designated vulnerable areas; iii) promoting efficient and sustainable use of water resources, including practices for water conservation and sustaining water quality; and iv) ensuring stormwater management practices minimize stormwater volumes and contaminant loads. 6. The City will encourage and implement Low Impact Development (LID) where appropriate.
4.3.3	Source Protection	1. The entire city area is considered to be a recharge area for municipal drinking water supply. To protect this valuable water resource, the City will introduce conditions of development approval that: i) protect wetlands and other areas that make significant contributions to groundwater recharge; ii) ensure that stormwater management systems protect water quality and quantity; iii) require all storage of liquid waste, petroleum, fuels, solvents, fertilizers and related chemicals be provided for in properly designed and engineered containment areas in accordance with all applicable policies, guidelines, technical standards and legislation; iv) restrict the placement of underground chemical/fuel storage tanks; v) require impact studies and risk management plans where proposed development has the potential to affect the quantity or quality of groundwater resources; vi) require that contaminated properties be restored to the appropriate condition in compliance with applicable Provincial legislation and regulations; vii) place restrictions on land use in areas of greatest risk to contamination of groundwater resources. Uses that may be restricted include, but are not limited to: industrial landfills, lagoons, waste disposal facilities, asphalt and concrete batching plants not associated with mineral aggregate operations, the storage or processing of chemical products, gasoline or oil depots and service stations, and vehicle salvage, maintenance, service yards and other activities identified as significant drinking water threats; and viii) may require risk management measures for specific land uses and prescribed drinking water threat activities, in Wellhead Protection Areas A, B and C identified on Schedule 7. 2. The City's Wellhead Protection Areas, Intake Protection Zones and Issues Contributing Areas extend into the County of Wellington and the Region of Halton. The City will work co-operatively with the upper and lower tier municipalities within Wellington County and Halton Region to develop source protection policies to ensure the long-term protection of the water resources of all these municipalities. 3. The City may require that technical studies be prepared by a qualified professional to assess and mitigate the potential impacts of a proposed development application within the City's wellhead protection areas as part of a complete application. These studies may include but are not limited to a Disclosure Report, detailed Hydrogeological Study and a Spill Prevention and Contingency Plan. 4. Interim Risk Management Plans may be required to reduce the risk of significant drinking water threat activities identified through the Assessment Reports or by other means.
6.4	Stormwater Management	1. All development shall occur in accordance with Subwatershed Plans or Stormwater Management Master Plans, as approved by the City of Guelph and the Grand River Conservation Authority. 2. Where Subwatershed Plans have not been completed or approved, the City may, in limited situations, consider development proposals where:

Policy Number	Policy Topic	Summary of policy in relation to stormwater management
		i) a stormwater management plan is prepared to address impacts to water quantity, quality, water balance, major and minor conveyance system (both on and off-site), grading and drainage, erosion and sediment control; and ii) a Scoped Environmental Impact Study is prepared to address potential negative impacts of the proposed development, including but not limited to impacts to water temperature, base flow, wildlife and fisheries habitat and mitigation measures. 3. Development shall require the preparation of a detailed Stormwater Management and Engineering Report in accordance with policies 6.4.1 or 6.4.2 above, to the satisfaction of the City and the Grand River Conservation Authority, where applicable, that addresses the following matters and other issues as may be required by the City: i) demonstrate how the design and construction of the stormwater management facility will protect, improve or restore the quality and quantity of surface and groundwater resources; ii) demonstrate how the proposed stormwater management design will be consistent with and implement the recommendations of the appropriate watershed, subwatershed or Stormwater Management Master Plans, as approved by the City for the subject area; iii) geotechnical and hydrogeologic information to identify soil infiltration rates, depths to the seasonally high water table and deeper regional aquifers beneath the site and in the surrounding area; iv) information on the potential impacts in terms of quality and quantity of any proposed stormwater management techniques on the City's groundwater resources; and v) demonstration that pre-development stormwater flows from the site match post-development stormwater flows for a given storm event. 4. The City will require appropriate use of on-site infiltration measures, within the stormwater management design. 5. The City encourages the use of landscape-based stormwater management planning and practices (also referred to as Low Impact Development) including rainwater harvesting, green roofs, bioretention, permeable pavement, infiltration facilities and vegetated swales in the design and construction of new development where site conditions and other relevant technical considerations are suitable. 6. The City encourages approaches to stormwater management that include a combination of lot level, conveyance and end-of-pipe stormwater controls to maintain the natural hydrologic cycle, protect water quality and quantity and minimize erosion and site alteration and flooding impacts. 7. All development shall be required to adhere to any approved City policies, guidelines and standards including the Stormwater Management Master Plan (2011) and the Design Principles for Stormwater Management (1996). These plans and guidelines are intended to augment the Ontario Ministry of the Environment's Stormwater Management Practices Planning & Design Manual, as amended from time to time and are intended to achieve the highest level of utilization, aesthetics, environmental benefits and ease of maintenance for stormwater management facilities. 8. Stormwater management facilities are permitted in all land use designations on Schedule 2. The City will generally discourage detention and retention facilities in municipal parks except where identified in the Stormwater Management Master Plan (2011). Detention and retention facilities are not permitted in natural heritage features or in buffers to natural heritage features, except as provided for under the Natural Heritage System policies of this Plan. The City recognizes that controlled discharge from stormwater facilities to receiving wetlands and watercourses is required to ensure the water quality and quantity of the receiving waterbody is maintained or enhanced. 9. Watercourses regulated by the Grand River Conservation Authority should be left in an open and natural state unless approval to alter the watercourse is obtained from the Grand River Conservation Authority. The enclosure of open watercourses or their channelization into open concrete channels will be prohibited. 10. The City will explore opportunities to restore watercourses that have been enclosed or channelized to open and natural watercourses. 11. Approvals from the City, Grand River Conservation Authority and other relevant agencies shall be required prior to the alteration of any watercourse, the design and construction of any stormwater management facility or the commencement of any grading or filling.

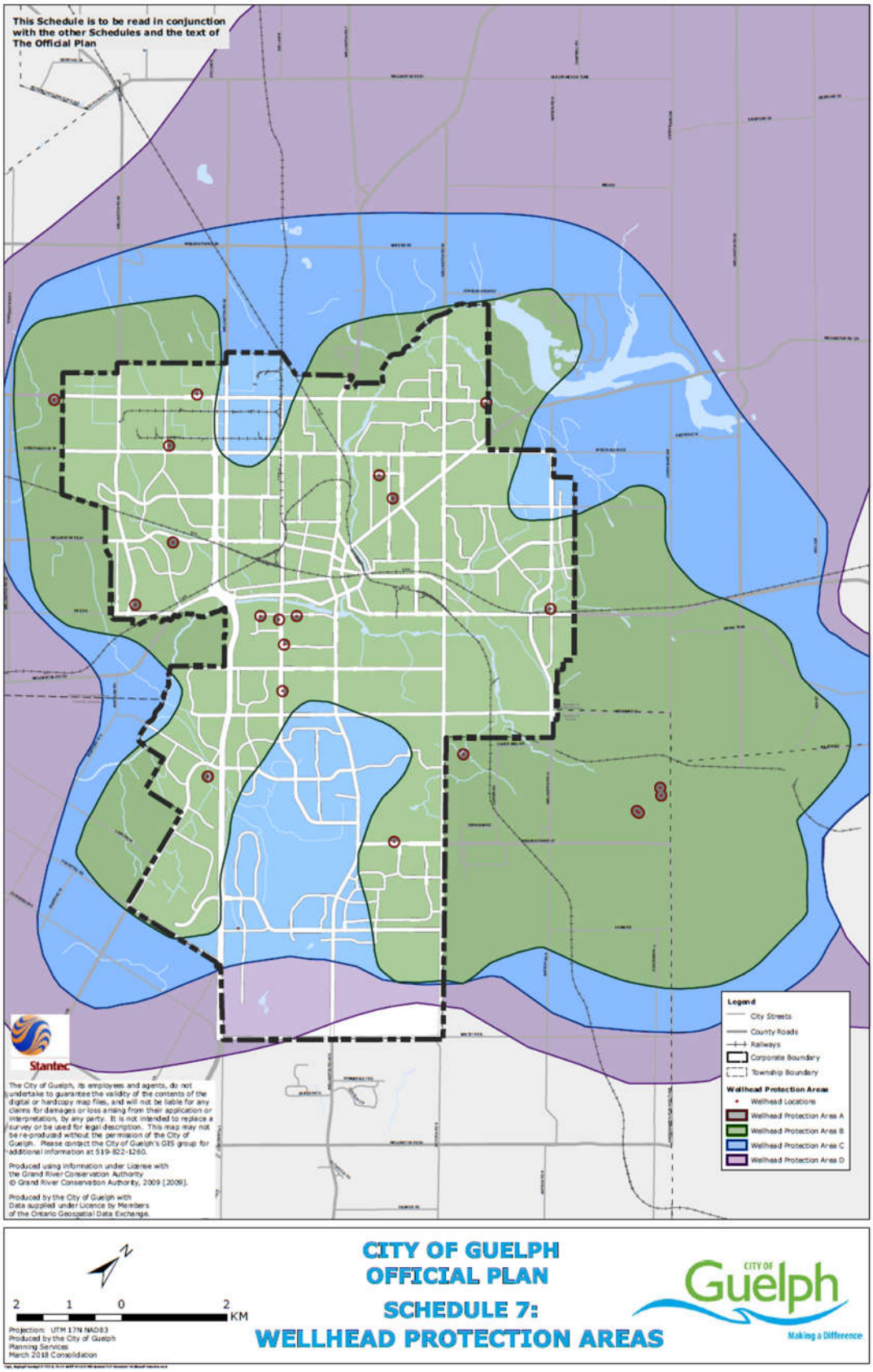


Figure 3.2: Wellhead Protection Areas (Source: City of Guelph Official Plan)

3.3.4 Stormwater Disposal Bylaw 1993-14515 (City of Guelph, 1993)

The bylaw sets out the requirements for stormwater disposal and management systems. Key requirements include:

- Separating the storm water systems from the sanitary sewage system; and
- Runoff from private lands shall discharge to a storm water system that connects to a municipal storm drainage facility, although alternatives can be considered if no municipal facility exists.

The bylaw also highlights requirements for catch basins, maintenance holes, interceptors, roof runoff, foundation drainage, and stormwater system maintenance.

3.3.5 Property Standards Bylaw (City of Guelph, 2000)

The bylaw highlights various property standards, including requirements for stormwater disposal. These requirements include:

- Maintaining the storm water disposal system in the condition for which it was designed;
- Storm water shall be disposed of to a storm water disposal system or municipal storm drainage system, unless neither is available; and
- Sump pumps are to be discharged to a storm water disposal system. If not available, the sump pumps shall be discharged to the rear or front yard.

3.3.6 Stormwater Rate Bylaw (City of Guelph, 2019)

The bylaw sets the new Stormwater Rate Base Charge for 2020, increasing it to $5.80 per month.

3.3.7 Development Engineering Manual (City of Guelph, 2019)

The City of Guelph's Development Engineering Manual (2019) is a reference guide to assist with land development in the City of Guelph. It outlines engineering requirements, guidelines, specifications, and standards governing the development process and for obtaining engineering approvals related to the design, construction and maintenance of the associated works.

The document includes design criteria specific to the City of Guelph, but these should be considered as the minimum requirements for the efficient design and approval of development engineering related works.

Chapter 5 of the Development Engineering Manual outlines the criteria and standards required for the Plan of Subdivision. Specific policies related to:

Erosion and Sediment Control Requirements: All sediment and erosion control devices must be designed in accordance with the current Greater Golden Horseshoe Area Conservation Authorities' Erosion and Sediment Control Guideline for Urban Constructions. Additional standards are provided in the Linear Infrastructure Standards, which state that "suitable techniques and construction practices in order to control erosion and prevent silt and sediments from entering sewers or water courses, to meet the requirements of the authorities having jurisdiction."

Stormwater Management: Lot level source control, conveyance control, and end-of-pipe control are all approved by the City. Lot level control is encouraged where appropriate, using LID practices. Stormwater management encompasses the following:

- ***Water Quantity Control:*** If no watershed study criteria are available, post-development peak flow should be controlled to the pre-development levels for the 2-year through 100-year events;
- ***Water Quality Control:*** Enhanced level of protection is a minimum requirement (80% TSS removal);
- ***Oil and Grit Separators:*** Oil and grit separators (OGS) must be verified by the Canadian Environmental Technology Verification (ETV) program. OGS units are to be used as pre-treatment devices as part of a treatment train approach;
- ***Erosion Control:*** Extended detention of the 4-hour, 25 mm Chicago distribution rainfall event for 24 hours is required;
- ***Thermal Impacts:*** Stormwater management systems should assess, prevent and mitigate thermal impacts to the receiving body; and
- ***Water Balance:*** The pre-development recharge rate, volume and hydroperiods should be maintained during post-development. LID practices should be used to mitigate the impacts of development on the water balance.

Storm Sewer Design: Design standards include, but are not limited to:

- 100-year hydraulic grade line
- Design time of concentration for pipe design
- Design rainfall intensities
- Design rainfall return periods
- Minimum runoff coefficients for varying land uses
- Minimum pipe diameters
- Minimum grades
- Allowable flow velocities
- Catch basin and manhole requirements
- Allowable surface ponding depths

Hydrogeological Assessment: A hydrogeological assessment over four seasons is necessary to determine the seasonal high groundwater table.

Chapter 6 of the Development Engineering Manual outlines the criteria and standards required for the Site Plan. Specific policies relate to:

Stormwater Management: A Stormwater Management Report shall summarize the stormwater management design, and include:

- Hydrologic and hydraulic modeling (Rational Method acceptable on sites less than 2 ha);
- Storm drainage catchment area plan;
- Schematic for stormwater model;
- Hydrogeological report, if infiltration is proposed;
- Stage-storage calculations;
- Quality and quantity control device specifications and sizing;
- Water budget with infiltration calculations, where applicable;
- Roof runoff is considered clean and shall be infiltrated where appropriate; and
- Certification that the stormwater management system was built as approved and that it is functioning properly.

3.3.8 Plans, Strategies, and Guidelines

In addition to local acts and policies, there are strategy and planning documents that are related to stormwater management within the City of Guelph. These strategies and plans include:

1. 2014 Stormwater Management Facilities Inventory, Assessment, and Maintenance Needs Study Report (2015)
2. Urban Design Manual (2017)
3. Stormwater Service – Rebate and Credit Program (2017)
4. Transportation Master Plan (In Progress)
5. Parks and Recreation Master Plan (In Progress)
6. Grand River Water Management Plan – Stormwater, GRCA (2014)
7. Guidelines for Development of Contaminated or Potentially Contaminated Sites (2016)
8. Linear Infrastructure Standards (2020)
9. Design Guidelines and Supplemental Specification for Municipal Services (2020)
10. Natural Heritage Action Plan (2020)
11. Secondary Plans:
    a. Downtown Secondary Plan
    b. Guelph Innovation District Secondary Plan
    c. Clair-Maltby Secondary Plan
12. Subwatershed Studies and Environmental Assessments:
    a. Hanlon Creek Watershed Plan (1993)
    b. Torrance Creek Subwatershed Study (1998)
    c. Eramosa-Blue Springs Watershed Study (1999)
    d. Hanlon Creek State of the Watershed Study (2004)
    e. Ward One Stormwater Management EA (2007)
    f. East Side Subwatersheds Study (2010)
13. Relevant Documents from External Jurisdictions

3.3.8.1 2014 Stormwater Management Facilities Inventory, Assessment, and Maintenance Needs Study Report (City of Guelph, 2015)

In 2014, 115 stormwater management ponds and 25 stormwater conveyance channels were assessed to gauge their performance. One wet pond was dry; 19 dry ponds had large quantities of standing water; and 12 greenways had standing water and cattails at the time of the assessment. Other deficiencies were also noted. Recommended activities for each SWM pond and conveyance channel were provided. Additionally, it was recommended to clean out two SWM ponds annually.

3.3.8.2 Urban Design Manual (City of Guelph, 2017)

The City's Urban Design Manual:

- Highlights the importance of urban design;
- Establishes general urban design objectives and principles for specific areas of Guelph;
- Provide a consistent approach for urban design in Guelph based on the City's Official Plan;
- Elaborates and expand on the design vision of the Official Plan for the physical evolution and development of the City while providing guidance for implementing policies and regulations to guide growth and change; and,
- Nurtures a culture of urban design.

One priority action arose from the Urban Design Manual related to stormwater management: "Update engineering standards to enable compact and innovative streetscape and community design, including

street trees, stormwater management, cycling infrastructure and pedestrian amenities." This was specifically applied to Neighbourhood Infill and Residential Development.

3.3.8.3 Stormwater Service – Rebate and Credit Program (City of Guelph, 2017)

As of 2018, the Seasonal Rainwater Harvesting Rebate Program was enhanced and stormwater credits were made available to non-residential and some multi-residential property owners. The goal of these measures is to reduce runoff quantity and improve runoff quantity being discharged from private property. The one-time Rainwater Harvesting Rebate is $0.50 per litre of storage up to a maximum of $1,000, plus up to $100 for system delivery. Stormwater credits will apply for four years, at which point they must be renewed to ensure adequate maintenance is occurring. There are four categories available for obtaining stormwater credits, up to a 50% credit, including:

- Peak flow reduction (15% credit)
- Runoff volume reduction (40% credit)
- Water quality treatment (15% credit)
- Non-structural operations and activities (15% credit)

3.3.8.4 City of Guelph Master Plans

The City of Guelph is in the process of updating a number of master plans, including the Transportation Master Plan, Parks and Recreation Master Plan, Solid Waste Management Master Plan, Water and Wastewater Servicing Master Plan, Water Supply Master Plan, and Trails Master Plan. Master Plans relevant to stormwater are described below.

3.3.8.4.1 Transportation Master Plan (City of Guelph, In Progress)

The Transportation Master Plan (TMP) will be an update to the 2005 Guelph-Wellington Transportation Study. The TMP will set a direction for sustainable transportation planning by integrating policies with a focus on walking, cycling and transit use.

Integrating stormwater management functions is crucial to properly functioning transportation networks. Stormwater management was not mentioned in the 2005 Transportation Study nor in the 2017 draft framework for the TMP. As the Transportation Master Plan is still in progress, this represents an opportunity to integrate stormwater management planning with transportation planning.

3.3.8.4.2 Parks and Recreation Master Plan (City of Guelph, In Progress)

The 2009 Recreation, Parks & Culture Strategic Master Plan is being updated as the Parks and Recreation Master Plan (PRMP). The new PRMP will include long-term goals and objectives related to Open Space Planning, Parks Operations and Forestry, and Recreation Services, and will identify service standards for recreation and parks facilities and services. The 2009 Master Plan identifies a key objective to have "coordinated stewardship and management of parks, the natural environment, and the watershed" but makes no specific reference to stormwater management.

Incorporating stormwater management facilities into park space is an option that was considered in the 2012 Stormwater Management Master Plan, although it is discouraged by the Official Plan in all parks other than those identified in the SWM-MP.

3.3.8.4.3 Water and Wastewater Servicing Master Plan (City of Guelph, In Progress)

The updated Water and Wastewater Servicing Master Plan will determine optimal replacement schedules for water and wastewater infrastructure. Aligning the replacement of this infrastructure with the replacement of storm sewers would represent significant capital cost savings.

3.3.8.4.4 Water Supply Master Plan (City of Guelph, In Progress)

The existing Water Supply Master Plan contextualizes water supply in the need for water resource protection, which includes practicing effective stormwater management in order to maintain or enhance water resources of the Guelph area. The new Master Plan will update the water demand forecast and the existing system capacity to deliver an adequate supply of water through 2041 while maintaining environmental sustainability. The effective use and/or re-use of stormwater can help reduce the demand on existing drinking water sources, and provides an opportunity to integrate water supply planning with stormwater management planning.

3.3.8.4.5 Trails Master Plan (City of Guelph, In Progress)

The existing Trails Master Plan identifies that trails are often installed around stormwater management facilities, so the trails need to consider user comfort and safety. The plan also provides trail design for trails in the vicinity of SWM facilities. The updated Master Plan will innovate trail design guidelines, revise routes, create new trail facilities and promote trail use in the community.

3.3.8.5 Guidelines for Development of Contaminated or Potentially Contaminated Sites (City of Guelph, 2016)

These guidelines provide a procedure for dealing with contaminated or potentially contaminated sites within the City. These guidelines relate to stormwater management in that they help protect the City's water resources under the Provincial Policy Statement, Safe Drinking Water Act, and Clean Water Act. Since land within the City is within the 5-year travel time to municipal drinking water wells, all groundwater must be deemed potable for completing remediation or a risk assessment.

3.3.8.6 Linear Infrastructure Standards (City of Guelph, 2020)

The Linear Infrastructure Standards describes the scope of work for maintaining storm flow, completing work on storm sewers, and replacing maintenance holes. In addition, it provides standard drawings for stormwater infrastructure.

3.3.8.7 Design Guidelines and Supplemental Specifications for Municipal Services - DGSSMS (Region of Waterloo and Area Municipalities, 2020)

The DGSSMS is a common set of design guidelines and contract specifications to facilitate the design and construction of municipal services in the area municipalities, including the City of Guelph. The DGSSMS contains design guidelines for storm sewers, maintenance holes, and catchbasins, including materials and construction specifications. Standard drawings and forms are also provided for storm services.

3.3.8.8 Natural Heritage Action Plan (City of Guelph, 2020)

The Natural Heritage Action Plan (NHAP) is the implementation framework for the natural heritage system and watershed planning policies outlined in the Official Plan. In conjunction with other municipal plans, the NHAP guides the management of the City's natural heritage system and water resources. The guiding objective of the NHAP is from the Official Plan and is to practice and encourage effective management of stormwater in order to maintain or enhance the water resources of the city. Key recommendations from the NHAP that relate to stormwater include:

- Enhance and expand the stormwater management monitoring program to assist in improving the hydraulic performance of stormwater management facilities and downstream health of receiving watercourses;
- Create an operations protocol based on the City's existing wildlife refuge practice for stormwater pond clean outs;

- Develop Guelph-specific LID standards for stormwater management to assist development and capital projects in integrating alternative designs for supporting water quality and quantity protection consistent with the Ministry of Environment, Conservation and Parks LID companion document to the Stormwater Management Planning and Design Manual; and
- Review and update the City's design principles for stormwater management, demarcation and park naturalization policies in the context of the City's current natural heritage, urban forest and parks and recreation objectives.

3.3.8.9 Grand River Water Management Plan – Stormwater (GRCA ,2014)

With respect to stormwater management relevant to the City of Guelph, the most recent draft document of the Grand River Water Management Plan (2014) discusses the following environmental issues:

- Flood Damage: the plan recommends the following actions that are relevant to SWM:
  - maintaining flood control infrastructure safe and ready for floods;
  - recommending that municipalities undertake stormwater major system assessment;
  - improving floodplain management, emergency preparedness planning and flood damage assessment.
- Rural Stormwater Quality: issues include elevated sediment and phosphorus loadings in rural subwatersheds and catchments; and
- Urban Stormwater Quality: issues are mostly related to road salt application, heavy metal, sediment following construction activities, and to a certain extent nutrient and phosphorus from upstream sources.

The Water Management Plan also discusses pollution from point and non-point sources.

- In rural areas, the Rural Water Quality Program promotes the adoption of best management practices to mitigate nonpoint source pollution; and
- In urban areas, the focus is on urban pollutants (including heavy metals, salt, and sediment) and urban drainage system (including ponds and their location within the drainage system). The Plan also discusses in-river water quality and fish habitat issues including turbidity, fish barriers, thermal regime, and stream erosion.

3.3.8.10 Secondary Plans

3.3.8.10.1 Downtown Secondary Plan (City of Guelph, 2018)

Figure 3.3 illustrates the location of the Downtown Secondary Plan. Additional information on the Downtown Secondary Plan can be found in Chapter 11.1 of the Official Plan (https://guelph.ca/wp-content/uploads/Official-Plan-Consolidation-March-2018.pdf).

Principle 7 of the Downtown Secondary Plan is to Embody Guelph's Green Ambitions. To achieve this, the following objectives were developed:

- Promote energy-efficient buildings, re-use of existing buildings and low impact development;
- Promote green roofs and sustainable landscaping practices;
- Promote water conservation, the re-use of stormwater and the reduction of stormwater runoff; and
- Increase the amount of green space and the number of trees Downtown.

One of the targets is therefore to decrease overall stormwater running off impermeable surfaces into sewers and increase water infiltration and recycling.

Policies applicable to stormwater management include:

- Low Impact Development (LID) measures intended to minimize stormwater run-off and recharge groundwater systems, including rainwater harvesting and reuse systems, bio-swales or water features, infiltration measures, permeable paving materials and green roofs, shall be encouraged;
- The City will explore opportunities to integrate end-of-pipe stormwater management storage and treatment facilities, including constructed wetlands/ponds, and LID measures into the public realm areas such as open space, amenity areas and right of ways, where feasible and appropriate; and
- All new buildings shall be encouraged to install rainwater harvesting and recirculation/reuse systems for outdoor irrigation and outdoor water uses.

3.3.8.10.2 Guelph Innovation District Secondary Plan (City of Guelph, 2018)

Figure 3.4 illustrates the location of the Guelph Innovation District Secondary Plan. Additional information on the Guelph Innovation District Secondary Plan can be found in Chapter 11.2 of the Official Plan (https://guelph.ca/wp-content/uploads/Official-Plan-Consolidation-March-2018.pdf).

Principle 2 of the Guelph Innovation District Secondary Plan is to Create Sustainable and Energy Efficient Infrastructure. One objective related to stormwater management is to develop a model community that showcases sustainable, green, low impact development. Policies to support this objective include:

- Development within the Guelph Innovation District (GID) shall be in accordance with the watershed planning and water resources policies, and stormwater management policies of the Official Plan and the following:
    - Low Impact Development (LID) measures intended to minimize stormwater run-off and recharge groundwater, including but not limited to rainwater harvesting and reuse systems, bio-swales or water features, infiltration facilities, permeable pavement and green roofs, shall be encouraged; and
    - The City will explore opportunities to integrate LID measures into the public realm areas such as open space, amenity areas and right-of-ways, where feasible and appropriate.
- Development within the GID shall address how pre-development standards may be achieved to maintain the hydrological cycle of the area under post development conditions. This will be achieved through the completion of a stormwater management assessment and/or analysis that includes, but is not limited to, the establishment of water quality, water quantity, water balance, erosion control and natural environment objectives and criteria. These analyses may be used in establishing stormwater management design requirements for development in the GID.

3.3.8.10.3 Clair-Maltby Secondary Plan (City of Guelph, In Progress)

Figure 3.5 illustrates the location of the Clair-Maltby Secondary Plan. Additional information on the Clair-Maltby Secondary Plan can be found here: https://guelph.ca/plans-and-strategies/clair-maltby-secondary-plan/.

While the Clair-Maltby Secondary Plan (CMSP) is not yet completed, several interim documents have been produced, including the Policy Directions: Framework for the Clair-Maltby Secondary Plan (May 2019). Key policy directions and objectives related to stormwater management include:

- Integrate innovative stormwater management, water conservation and reuse, and other green infrastructure practices in the CMSP area; and
- Design SWM areas to be multi-functional where possible. This may include providing passive recreation/park areas and/or restoration areas.

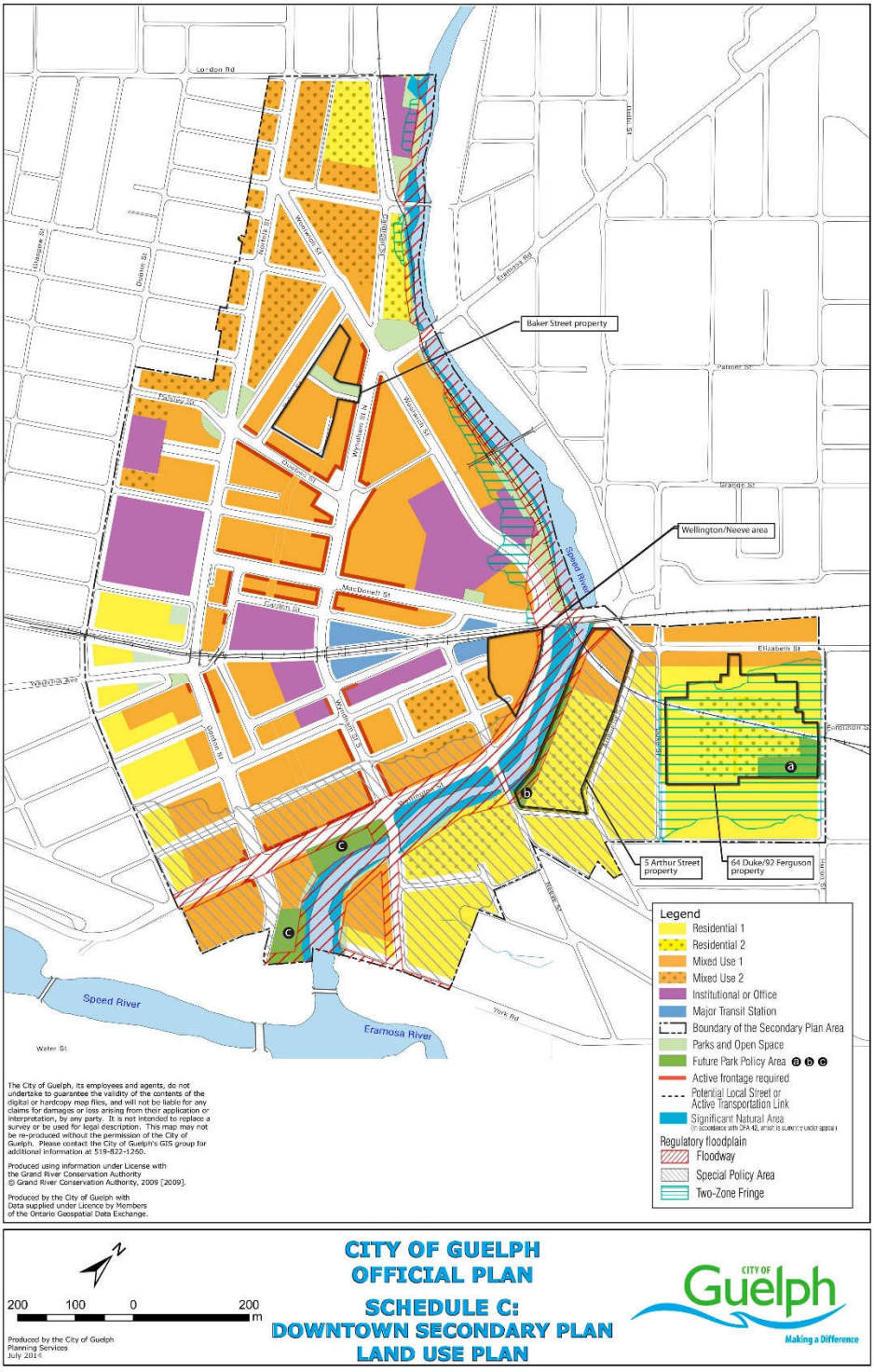


Figure 3.3: Downtown Secondary Plan (Figure from Official Plan Consolidated Nov. 2016)

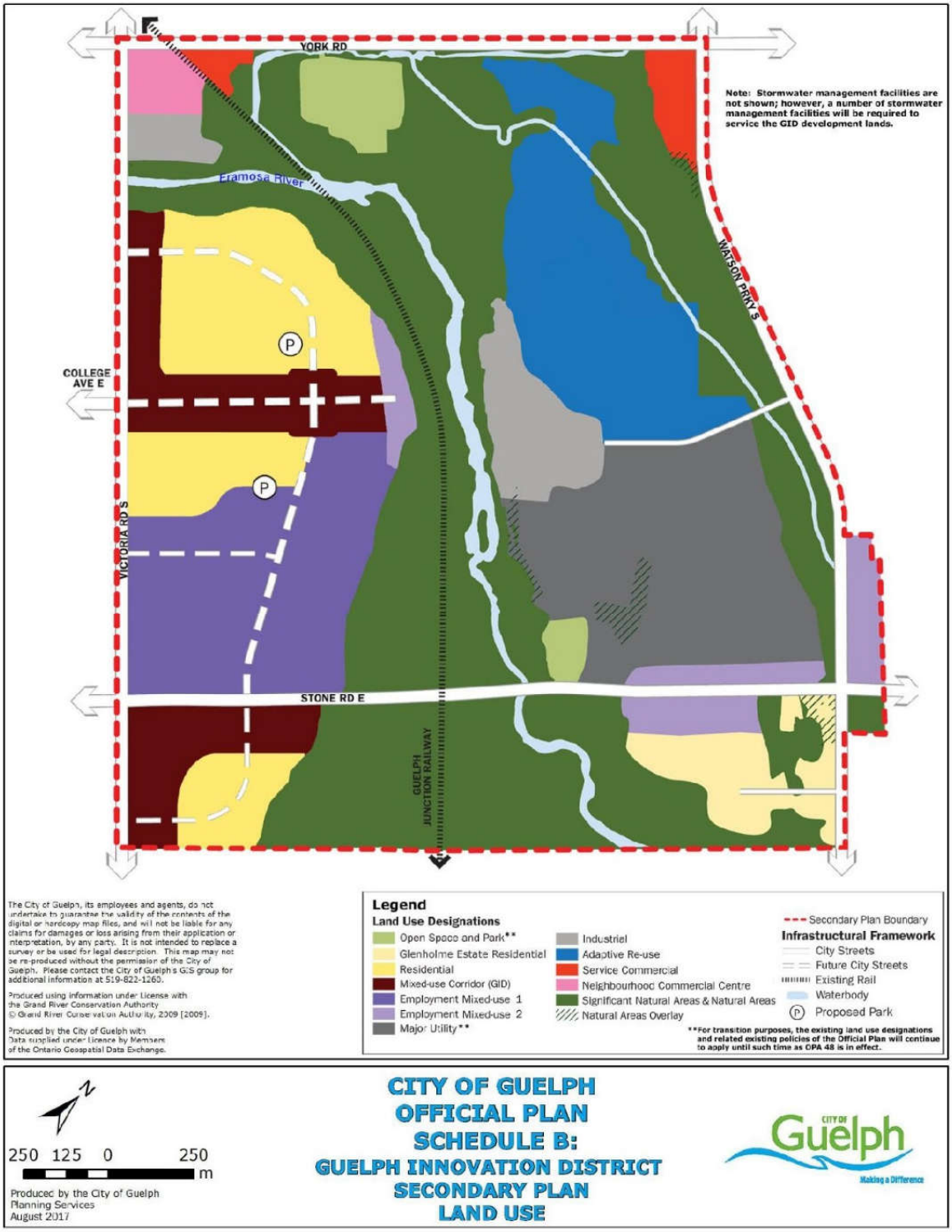


Figure 3.4: Guelph Innovation District Secondary Plan

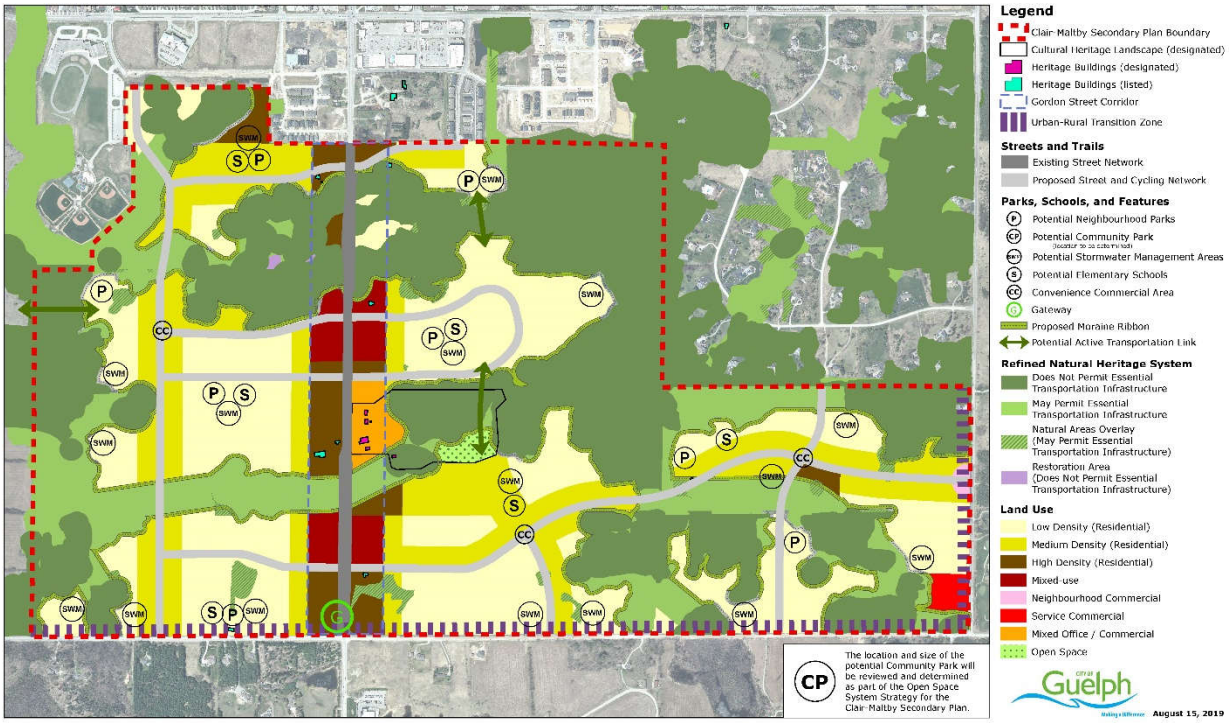


Figure 3.5: Clair-Maltby Secondary Plan

3.3.8.11 Subwatershed Studies

A number of subwatershed plans have been developed for subwatersheds within the City of Guelph. The levels of analysis and management strategies vary across the subwatersheds, based upon the watershed characteristics and provincial policies in existence at the time of the study. Generally, each management strategy addresses stormwater management control requirements for both quantity and quality. The criterion reflects the needs of the subwatershed and may be more stringent and supersede general Provincial or City requirements. With respect to quality control, requirements are generally based upon protection of fishery resources as well as overall water quality. Quantity control requirements are based upon downstream capacity and flood protection.

Watershed and Subwatershed studies undertaken within the City are:

- Hanlon Creek Watershed Plan (1993)
- Torrance Creek Subwatershed Study (1998)
- Eramosa-Blue Springs Watershed Study (1999)
- Hanlon Creek State of the Watershed Study (2004)
- Ward One Stormwater Management EA (2007)
- East Side Subwatersheds Study (2010)

3.3.8.12 Relevant Documents from External Jurisdictions

Although the following documents are written for jurisdictions outside of the City of Guelph, they are relevant examples of approved stormwater guidance documents which encourage an innovative approach to stormwater management and can largely be applied within the City of Guelph.

3.3.8.12.1 CVC and TRCA Stormwater Management Criteria

The TRCA and CVC criteria documents provides guidance in the planning and design of stormwater management infrastructure for developers, consultants, local municipalities, and landowners, and outlines the processes and infrastructure needed to address flooding, water quality, erosion, water balance, and natural heritage. While these documents address SWM throughout CVC's and TRCA's jurisdiction, a review of site specific conditions is recommended to ensure that any necessary variations on these requirements are identified early in the planning and design process, through thorough consultation with all affected agencies and stakeholders, to maintain sound engineering and environmental practices.

The respective Stormwater Management Criteria documents articulate a SWM planning framework, with associated criteria, to be applied at the various stages of the planning process, ranging from Official Plan and Secondary Plan studies through to plans of subdivision and site plans. Together the planning process and the design criteria provide a procedure for the selection of the most appropriate approaches to SWM.

3.3.8.12.2 Credit Valley Conservation Stormwater Management Criteria (2012)

The purpose of this document is to reference and build upon current design guidelines and requirements relating to SWM, and provide additional and specific detail for those areas within CVC's jurisdiction. Referenced documents include the MECP's Stormwater Management Planning and Design Manual (SWMPD, 2003), the CVC/TRCA Low Impact Development Stormwater Management Planning and Design Guide, Version 1.0 (CVC/TRCA, 2010), CVC Study Report: Thermal Impacts of Urban Stormwater including Preventative and Mitigation Techniques (CVC, 2011), and CVC's Planning and Development Administrative Procedural Manual (CVC, 2011). The criteria document covers flood protection, erosion control, water quality and water balance.

3.3.8.12.3 Toronto Region Conservation Stormwater Management Criteria (2012)

This Stormwater Management Criteria document has been prepared to supplement the TRCA's Planning and Development Procedural Manual (PDP Manual, 2007) with more detailed direction regarding the Stormwater Management (SWM) component of development approvals.

The purpose of this document is to consolidate and build upon current design guidelines and requirements relating to SWM from watershed plans and hydrology studies, and provide additional and specific detail for those areas within TRCA's jurisdiction. Referenced documents include the Ministry of the Environment's Stormwater Management Planning and Design Manual (SWMPD, 2003), the TRCA/CVC Low Impact Development Stormwater Management Planning and Design Guide, Version 1.0 (TRCA/CVC, 2010) and TRCA's PDP Manual, noted above.