APPENDIX B - LEGISLATIVE AUTHORITY AND TECHNICAL DISCUSSION OF REGULATED FEATURES

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1.0 INTRODUCTION

This appendix provides more in-depth information regarding the legislative authority of Conservation Authorities (CA), additional pieces of legislation that govern the role and responsibilities of CA's and comprehensive discussion on the various features regulated under the Conservation Authorities Act (CA Act) and O. Reg. 41/24.

This document was created with the best intentions of remaining consistent with the information in previous Quinte Conservation Policies and Procedures Manuals (2023) as well as other CA and Provincial Technical documents. To that end the following were sourced for this document:

- Cataraqui Region Conservation Authority "Guidelines for Implementing Ontario Regulation 148/06: Development, Interference with Wetlands, and Alteration to Shorelines and Watercourses" (2017)
- Central Lake Conservation Authority "Policy and Procedural Document for Land use Planning and Regulation – Made Pursuant to the requirements of Section 12 of Ontario Regulation 41/24" (2024)
- Conservation Ontario "Interim Guidelines to Support Conservation Authority Administration of "Ontario Regulation 41/24" (2024)
- Conservation Ontario and Ministry of Natural Resources "Draft Guidelines to Support Conservation Authority Administration of the "Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation" (2008)
- Crowe Valley Conservation Authority "Watershed Planning and Regulations Manual" (2014)
- Ganaraska Region Conservation Authority "Policies and Guidelines for the Administration & Implementation of the Conservation Authorities Act and Ontario Regulation 41/24 – Made Pursuant to Section 12 of Ontario Regulation 41/24" (2025)
- Kawartha Conservation "Watershed Planning and Regulations Policy Manual" (2012)
- Ministry of Natural Resources "Policy and Procedures for Conservation Authority Plan Review and Permitting Activities" (2010)
- Nottawasaga Valley Conservation Authority "Planning and Regulation Guidelines" (2009)
- Lower Trent Conservation "Policies and Procedures Manual" (2005)
- Otonabee Conservation "Watershed Planning and Regulations Policy Manual" (2012)
- Toronto and Region Conservation Authority "The Living Cities Policy" (2013)

2.0 BACKGROUND

2.1 HISTORY OF QUINTE CONSERVATION

Quinte Conservation is located in eastern Ontario and covers a watershed area of over 6,000 square kilometers with a population of over 117,000 people. The Moira River Conservation Authority (MRCA) and the Napanee Region Conservation Authority (NRCA) were formed in 1947 and the Prince Edward Region Conservation Authority (PERCA) was formed in 1965. In 2006, the three separate Conservation Authorities merged to form a corporate body and in 2009, Quinte Conservation was legally deemed an Authority.

The watershed area includes the drainage basins of the Moira, Napanee and Salmon Rivers and all of Prince Edward County and includes 18 municipalities. Quinte Conservation owns over 12,140 hectares of land ranging from small parcels at some of our 39 water control structures, to large tracts of over 400 hectares, many with significant natural features.

2.2 ROLE OF CONSERVATION AUTHORITIES

Ontario's 36 Conservation Authorities have a number of important responsibilities:

Conservation Authorities are corporate bodies created by the province at the request of two or more municipalities in partnership with the province and in accordance with the requirements of the *Conservation Authorities Act*. As watershed-based resource management agencies, each Conservation Authority is governed by the *Conservation Authorities Act* and by a Board of Directors whose members are appointed by municipalities located within the CA's jurisdiction.

Conservation Authorities have a legislated responsibility under S.28 of the Conservation Authorities Act to regulate development activity in areas of natural hazards including flooding, erosion, dynamic beaches and unstable soil and bedrock, as well as areas associated with river or stream valleys. Additionally Conservation Authorities are responsible for regulating the interference or alteration of a watercourse or wetland.

Conservation Authorities also have delegated responsibilities from the Minister of Natural Resources and Forestry (MNRF) to represent provincial interests regarding natural hazards identified in Section 3.1 of the Provincial Policy Statement, 2020. This delegation is detailed in a Memorandum of Understanding (MOU) between Conservation Ontario (CO), MNRF and the Ministry of Municipal Affairs and Housing (MMAH). These delegated responsibilities require CAs to review and provide comments on:

policy documents (Official Plans and Comprehensive Zoning By-laws); and,
applications submitted under the *Planning Act* as part of the Provincial One-Window Plan Review Service.

Conservation Authorities as 'public bodies' pursuant to the *Planning Act*, are circulated of policy documents and planning and development activity applications as prescribed under the Act. CAs may comment as per their mandate to the municipality/planning approval authority on these documents and applications.

Conservation Authorities may perform a technical advisory role to municipalities, as determined under the terms of a service agreement with participating municipalities which may include, but is not limited to, matters related to the assessment or analysis of environmental impacts, watershed science and technical expertise associated with activities near or in the vicinity of: sensitive features such as wetlands, river and stream valleys, fish habitat or significant woodlands; hydrogeology and storm water studies; and, in some cases, septic system reviews.

Individual Conservation Authorities may also enter into agreements with provincial and federal ministries and with municipalities to undertake specific regulatory/approval responsibilities (e.g. Fisheries Act Section 35; septic tank approvals under the Ontario Building Code).

Conservation Authorities are landowners and as such, may become involved in the planning and development process, either as an adjacent landowner or as a proponent/applicant.

2.3 OVERVIEW OF LEGISLATIVE FRAMEWORK

2.3.1 CONSERVATION AUTHORITIES ACT

CA's have a long and distinguished history in Ontario. The *Conservation Authorities Act* was created in 1946 in response to erosion and drought concerns, recognizing that these and other natural resource initiatives are best managed on a watershed basis.
In 1956, in response to the severe economic and human losses associated with Hurricane Hazel (1954), amendments to the *Conservation Authorities Act* first empowered CAs to make Regulations to prohibit filling in floodplains. These Regulations were broadened in 1960 to prohibit or regulate the placing or dumping of fill in defined areas where, in the opinion of the CA, the control of flooding, pollution or the conservation of land may be affected. In 1968,

amendments to the *Conservation Authorities Act* further extended the Regulations to prohibit or control construction and alteration to waterways, in addition to filling.

In 1998, the *Conservation Authorities Act* was amended as part of the Red Tape Reduction Act (Bill 25), to ensure that Regulations under the Act were consistent across the province and complementary to provincial policies. Significant revisions were made to Section 28, which led to the replacement of the "Fill, Construction and Alteration to Waterways" Regulation with the "Development, Interference with Wetlands and Alterations to Shorelines and Watercourses" Regulation (97/04). While some CAs had been regulating wetlands, shorelines and inter-connecting channels for years, the amendments required all CAs to regulate Great Lakes shorelines, inter-connecting channels, large inland lakes and wetlands in addition to the areas and features each CA historically regulated.

In subsequent years numerous amendments have been made to Section 28 of the CA Act and associated Regulations. Ontario Regulation 686/21, among other provisions, requires that an Authority shall provide programs and services to ensure that the Authority satisfies its duties, functions and responsibilities to administer and enforce the provisions of Parts VI and VII of the Act and any regulations made under those Parts." O. Reg. 686/21, s. 16.
In 2024, a new Regulation was developed, Ontario Regulation 41/24: Prohibited Activities, Exemptions and Permits. This regulation replaces the individual CA Regulations approved in 2006.

The current legislative structure includes requirements for the administration of PART VI of the CA Act in both the CA Act and O. Reg. 41/24. CA staff and their legal counsel must refer to both pieces of legislation to make decisions and develop policies and guidelines related to CA Act permit applications.

2.3.1.1 PROHIBITED ACTIVITIES

Section 28 of the *Conservation Authorities Act*, includes the following section:

> ***28*** *(1) Subject to subsections (2), (3) and (4) and section 28.1, no person shall carry on the following activities, or permit another person to carry on the following activities, in the area of jurisdiction of an authority:*
> *1. Activities to straighten, change, divert or interfere in any way with the existing channel of a river, creek, stream or watercourse or to change or interfere in any way with a wetland.*

2. Development activities in areas that are within the authority's area of jurisdiction and are,

i. hazardous lands,

ii. wetlands,

iii. river or stream valleys the limits of which shall be determined in accordance with the regulations,

iv. areas that are adjacent or close to the shoreline of the Great Lakes-St. Lawrence River System or to an inland lake and that may be affected by flooding, erosion or dynamic beach hazards, such areas to be further determined or specified in accordance with the regulations; or,

v. other areas in which development should be prohibited or regulated, as may be determined by the regulations. 2017, c. 23, Sched. 4, s. 25.

The Province established a legislative framework that includes most of the requirements for the implementation of section 28 of the CA Act. This ensures CAs and their legal counsel can rely on the CA Act for any matters that may be challenged. The Regulations established under the CA Act provide further requirements such as: identification of some natural hazard areas and definitions, requirements for CA policies, and other actions related to processing permit applications etc. Therefore, CAs must ensure that they are using both the CA Act and Regulation 41/24 to prepare or update their CA policies.

For example, the CA Act prohibits development in a wetland and the Regulation defines the wetland and includes a reference to the 'other areas' next to the wetland. Table 1 below provides a summary on the details of the regulatory components for Section 28.

Table 1: Legislation and Regulatory References

Regulated Area	Feature	CA Act	Regulation	Regulation Description
River or Stream Valleys	Apparent (Confined) Valley, stable slopes	ss. 28 (1) pp 2. iii.	ss. 2(1) pp.1	Apparent River or Stream Valley, stable slope…plus 15 m each side
	Apparent (Confined) Valley, unstable slopes	ss. 28 (1) pp 2. iii.	ss. 2(1) pp.2	Apparent River or Valley, unstable slope…plus 15 m each side

	Not Apparent (Unconfined) Valley	ss. 28 (1) pp 2. iii.	ss. 2(1) pp.3	Not apparent river or stream valley
	Floodplain	ss. 28 (1) pp 2. iii.	ss. 2(1) pp.3(i) A &B	Flood Event Standard
	Floodplain Allowance	ss. 28 (1) pp 2. iii.	ss. 2(1) pp.3(ii)	Allowance of 15m both sides *
Floodplain Standards	Floodplain Standards	ss. 28 (1) pp 2. iii.	Schedule 1	Technical Standards
Shoreline of the Great Lakes- St. Lawrence, inland lakes	Shoreline Flood Hazard	ss. 28 (1) 2. iv	ss. 2(a)(i)	100 yr flood level plus appropriate allowance for wave uprush, etc
	Shoreline Erosion Hazard	ss. 28 (1) 2. iv	ss. 2 (2)(a)(ii)	Predicted long-term stable slope…
	Dynamic Beach	ss. 28 (1) 2. iv	ss. 2 (2)(a)(iii)	Where a dynamic beach is associated with waterfront lands, and allowance of 30 m inland….
	Additional Allowance	ss. 28 (1) 2. iv	ss. 2 (2)(b)	Additional 15 m allowance inland.
Hazardous Lands		ss. 28 (1) pp.2. i	ss. 1(1)	Definition of Hazardous Lands includes: flooding, erosion, dynamic beaches, or unstable soil or bedrock
	Flooding	s.28 (1) 2 i. (also in s. 28 (1) 2 iii)	Hazardous Lands in CA Act only	
	Erosion	s.28 (1) 2 i. (also in s. 28 (1) 2 iii)	Hazardous Lands in CA Act only	
	Dynamic Beaches	"s. 28 (2) i. (also in s. 28 (1) 2. iv)	Hazardous Lands in CA Act only	
	Unstable Soil: Marine Clay	s.28 (1) 2. i	Hazardous Lands in CA Act only	

2.3.1.2 EXCEPTIONS UNDER THE *CONSERVATION AUTHORITIES ACT* AND O. REG. 41/24

Section 28 (2) of the *Conservation Authorities Act* includes the following section specific to exceptions:

> ***Exception, aggregates***
> *(2) The prohibitions in subsection (1) do not apply to an activity approved under the Aggregate Resources Act after December 18, 1998, the date the Red Tape Reduction Act, 1998 received Royal Assent. 2017, c. 23, Sched. 4, s. 25.*
>
> ***Same, prescribed activities***
> *(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. 2017, c. 23, Sched. 4, s. 25.*
>
> ***Same, prescribed areas***
> *(4) The prohibitions in subsection (1) do not apply to any activity described in that subsection if it is carried out,*
> *(a) in an area that is within an authority's area of jurisdiction and specified in the regulations; and*
> *(b) in accordance with any conditions specified in the regulations. 2017, c. 23, Sched. 4, s. 25.*

Further, O.Reg 41/24 includes the following section specific to exceptions:

> ***Exceptions***
> ***5.*** *Paragraph 2 of subsection 28 (1) of the Act does not apply to,*
> *(a) the construction, reconstruction, erection or placement of,*
> *(i) a seasonal or floating dock that,*
> *(A) is 10 square metres or less,*
> *(B) does not require permanent support structures, and*
> *(C) can be removed in the event of flooding,*
> *(ii) a rail, chain-link or panelled fence with a minimum of 75 millimetres of width between panels, that is not within a wetland or watercourse,*

(iii) agricultural in-field erosion control structures that are not within and that do not have any outlet of water directed or connected to a watercourse, wetland or river or stream valley,

(iv) a non-habitable accessory building or structure that,

(A) is incidental or subordinate to the principal building or structure,

(B) is 15 square metres or less, and

(C) is not within a wetland or watercourse, or

(v) an unenclosed detached deck or patio that is 15 square metres or less, is not placed within a watercourse or wetland and does not utilize any method of cantilevering;

(b) the installation of new tile drains that are not within a wetland or watercourse, within 30 metres of a wetland or within 15 metres of a watercourse, and that have an outlet of water that is not directed or connected to a watercourse, wetland or river or stream valley, or the maintenance or repair of existing tile drains;

(c) the installation, maintenance or repair of a pond for watering livestock that is not connected to or within a watercourse or wetland, within 15 metres of a wetland or a watercourse, and where no excavated material is deposited within an area where subsection 28 (1) of the Act applies;

(d) the maintenance or repair of a driveway or private lane that is outside of a wetland or the maintenance or repair of a public road, provided that the driveway or road is not extended or widened and the elevation, bedding materials and existing culverts are not altered;

(e) the maintenance or repair of municipal drains as described in, and conducted in accordance with the mitigation requirements set out in the Drainage Act and the Conservation Authorities Act Protocol, approved by the Minister and available on a government of Ontario website, as it may be amended from time to time; and

(f) the reconstruction of a non-habitable garage with no basement, if the reconstruction does not exceed the existing footprint of the garage and does not allow for a change in the potential use of the garage to create a habitable space.

2.3.1.2.1 CROWN ACTIVITIES

It is noted that the *Conservation Authorities Act* does not contain a subsection that specifically "binds the Crown". Therefore, activities of Provincial Ministries, Federal Departments and Crown Agencies or "Crown Corporations" are not bound by the Act and these entities are not legally required to obtain a permit under the *Conservation Authorities Act*.

Determining whether a particular body is an agent of the Crown depends on the specific functions of the body and the degree of control exercised over that body by the Crown. In some circumstances, changes to a corporation's ownership may result in the corporation's status changing from a crown corporation to a private entity. For example, Hydro One and its affiliates no longer hold status as crown corporations. CO and Hydro One developed an updated MOU (2021), acknowledging the new requirement for Hydro One and its affiliates (Hydro One Telecom Inc. and Hydro One Sault Ste. Marie LP) to obtain a CA permit under Section 28 of the CA Act for their work. This MOU outlines protocols and best practices that streamline the review process. (See CO website members section for the 2021 Memorandum of Understanding between Conservation Ontario and Hydro One Networks Inc.)

While the *Conservation Authorities Act* does not bind Crown proponents for activities taking place on Crown land, a third-party proponent, not acting on behalf of the Crown would be subject to the Act and Section 28 regulations.

Voluntary compliance with the review process requirement is always a possibility for the Crown and its Agencies. Through their policies, the CAs may invite the Crown and/or its Agencies to voluntarily submit proposals for works through the permit review process. Although best practice suggests they comply to ensure sufficient technical review of their activity, they are within their legal rights to refuse to participate in the voluntary review process.

2.3.2 PERMITS

Section 28.1 of the CA Act outlines the legal requirements for CA decisions for a permit application. The Act includes two subsections that provide the 'tests' or criteria that a permit application must meet to the satisfaction of the CA. These include:

28.1 (1) An authority may issue a permit to a person to engage in an activity specified in the permit that would otherwise be prohibited by section 28, if, in the opinion of the authority,

(a) the activity is not likely to affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock;

(b) the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property; and

(c) any other requirements that may be prescribed by the regulations are met. 2017, c. 23, Sched. 4, s. 25."

To receive permission for proposed works in regulated areas the proponent must submit a permit application to QC for approval prior to any works. A summary of the permit approval process is discussed in further detail in Section 3.4 of this document.

Permission from QC will be given in the form of a formal permit. For any type of application, submission of technical studies may be necessary. These technical studies must be carried out by a qualified professional with recognized expertise in the appropriate discipline and must be prepared using established procedures and recognized methodologies to the satisfaction of QC. These established procedures should be in keeping with MNRF's Technical Guides for Natural Hazards (MNR, 2002a; MNR, 2002b; MNR, 1996a; MNR, 1996b; and MNR 1996c), other Provincial guidelines and/or guidelines approved by the QC Board. QC may request that technical studies be carried out at the expense of the applicant. Where technical expertise within QC is not available, it may be requested that the study be peer-reviewed by a qualified professional at the expense of the applicant.

Currently, there are no additional requirements under 28.1(1)(c). Below is a summary of the clauses in s. 28.1 (2) to (26). It is important to note that CAs and legal counsel must refer to the CA Act for the exact requirements.

2.3.2.1 APPLICATION/HEARING

Sections 28.1 (2) to (5) include sections that relate to: the requirement to apply for a permit, enabling a CA to include conditions in a permit, and the right to a hearing where an application may be refused, or conditions are being contested.

2.3.2.2 RENEWABLE ENERGY PROJECTS

Renewable energy projects (28.1 (6)) limit the 'tests' that may be applied to a CA consideration of a permit application and the conditions that can be attached to these permits. A CA shall not refuse an application unless it is of the opinion that it is necessary to do so to control flooding, erosion, dynamic beaches or unstable soil or bedrock; and the CA shall not attach conditions to the permit unless the conditions relate to controlling flooding, erosion, dynamic beaches or unstable soil or bedrock. In other words, the test broadly related to health or safety and found in 28.1 (1) (b) does not apply to these permits. As with similar applications, the applicant has a right to a hearing where an application may be refused, or conditions are being contested. After a hearing the CA shall provide an applicant with written reasons for the decision.

2.3.2.3 REQUEST FOR MINISTER'S REVIEW

Sections 28.1 (8) to (19) outline, in detail, the steps and requirements in the process if an applicant appeals the decision of the CA or conditions attached to a permit. In general, these sections outline the hearing process, appeal timelines, the Minister's review process and timelines associated with that review (includes requirements for the CA and the applicant). The Minister is required to publish on the Environmental Registry a notice of the Minister's intention to review a decision made by an authority and shall do so within 30 days of giving a reply that a review will be undertaken. Upon the completion of the review, the Minister may confirm or vary the authority's decision or make any decision that the Minister considers appropriate, including issuing the permit subject to conditions. The decision made by the Minister in this process is final.

2.3.2.4 APPEAL TO TRIBUNAL

Sections 28.1 (20) to (26) outline, in detail, the steps, requirements and timelines associated with appeals to the Minister and the Ontario Land Tribunal (OLT).

Figure 1 provides a general overview of the potential Permit processes outlined in s. 28.1 including the Minister's Review and Ontario Land Tribunal. It is important to note that CAs and legal counsel must refer to the CA Act for the exact requirements.

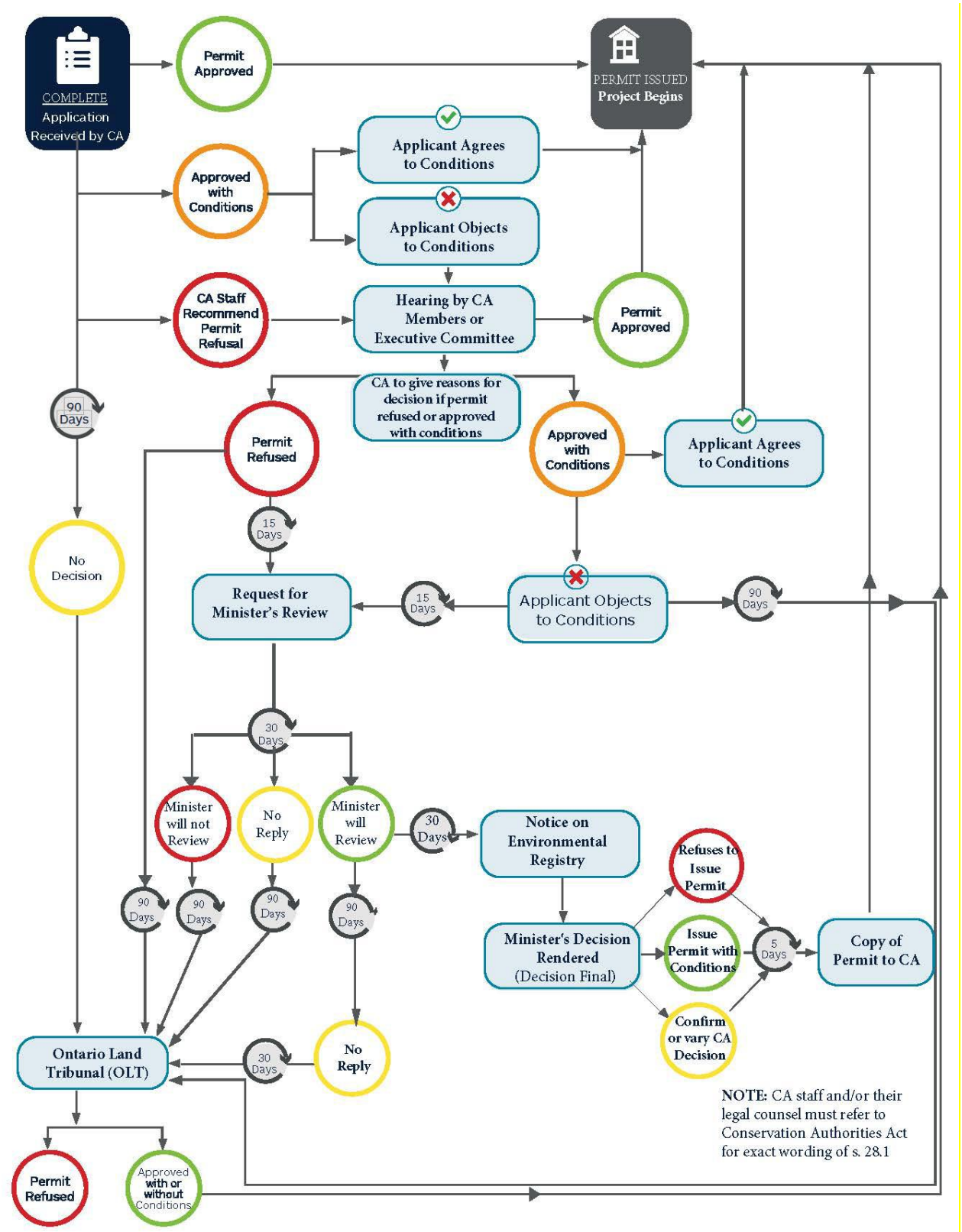

Figure 1: Permit process, potential Minister's Review and OLT

Further details on how to conduct a hearing under Part VI of the CA Act are available through the Conservation Ontario Conservation Authorities Act Hearing Guidelines (2021 as may be amended).

2.3.3 PERMITS ISSUED BY MINISTER

Section 28.1.1 of the CA Act outlines the powers of the Minister to issue an Order related to Section 28 permits. A general summary of this portion of the CA Act is included in this document and CAs and their legal counsel should refer to the CA Act if an Order under this section of the Act is received from the Minister.

The Minister may, by order, direct the CA not to issue a permit to a person (28.1.1(1)(a)). In addition, the Minister may direct a CA or CAs not to issue a permit for a type or class of activities for a specified period of time (28.1.1(1)(b)). If an order is made, the Minister can issue a permit for any activity in the order "if, in the Minister's opinion, the criteria described in clauses 28.1 (1) (a), (b) and (c) are satisfied...." The order(s) apply before or after applications have been received by the CA(s) and decisions are pending. Section 28.1.1 (5) outlines the notice provisions i.e., notice will be given to the applicable CA(s), applicants who submitted an application before the order was made and a decision is pending, and that it will be posted on the Environmental Registry within 30 days of being made.

Sections 28.1.1 (6) to (11) outline, in detail, the steps and requirements which generally include responsibilities of the CA and the applicant with respect to the order and information that they may have that will be provided to the Minister within the timelines specified by the Minister. It also includes application requirements and consultation process for permits to be considered by the Minister, conditions of an approval, and written reasons for a decision of the Minister. The CA shall receive a copy of the permit that includes the date of validity.

Sections 28.1.1 (12) to (14) identify the decision and appeal process. The Minister's decision is final. The application must comply with other sections of the CA Act (s. 28.1 (3) or clause 28.1.1 (7) (a)) and the applicable Regulation e.g., complete application. However, in specific circumstances the decision may be appealed to the Ontario Land Tribunal i.e., no notice of a decision from the Minister within 90 days of the application being made. Subsections 28.1 (24), (25) and (26) apply with necessary modifications to an appeal to the Tribunal. These sections include an appeal of non-decision by the Minister, notice of appeal and hearing requirements of the Tribunal.

2.3.4 MANDATORY PERMITS, ZONING ORDERS

In 2020 changes were made to the *Conservation Authorities Act* **t**hat require Conservation Authorities to issue permits when a zoning order has been made by the Minister of Municipal Affairs and Housing under section 34.1of the *Planning Act*. The Planning Act (s. 34.1) gives the Minister of Municipal Affairs and Housing the authority to control the use of any land in the Province. Zoning orders can be used to protect a provincial interest or to help overcome potential barriers or delays to critical projects. This includes an order for Community Infrastructure and Housing accelerator projects. This order authorizes **a** development project under the *Planning Act* even if the proposal does not comply with other requirements of the *Conservation Authorities Act*. Conservation Authorities cannot refuse to issue these permits under a Minister's Zoning Order, hence the term "mandatory permit", but can require conditions to be placed on the permission.

The CA Act requires the implementation of a Zoning Order as outlined in Section 28.1.2. (1). A general summary of this section of the CA Act is included in this document and CAs and their legal counsel should refer to the CA Act if a permit application is received related to a zoning order made by the Minister of Municipal Affairs and Housing under section 34.1 or 47 of the Planning Act. (see Figure 2)

The zoning order received by the CA will apply to a 'development project' as defined by the CA Act provided that this project is not located in the Greenbelt Area under section 2 of the Greenbelt Act, 2005. The CA shall issue the permit if all of the requirements in Section 28.1.2 (1) (a)-(c) are satisfied. The CA shall not refuse a permit despite the prohibitions a. 28(1) or the 'tests' or criteria in s. 28.1.(1). The CA may include conditions of approval on the permit as outlined in s. 28.1.2 below:

> *(6) Subject to subsection (7), an authority may attach conditions to the permit, including conditions to mitigate,*
>
> *(a) any effects the development project is likely to have on the control of flooding, erosion, dynamic beaches or unstable soil or bedrock;*
>
> *(b) any conditions or circumstances created by the development project that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property; or*
>
> *(c) any other matters that may be prescribed by regulation. 2020, c. 36, Sched. 6, s. 17.*

Sections 28.1.2 (7) to (13) outline the process and timeline associated with attaching any conditions to a permit associated with a zoning order. In general, these clauses require a CA to provide a Hearing before the Authority and the applicant may appeal the CA's decision on a condition(s) to the Minister. The permit holder must submit their request for the Minister to conduct a review of the CA conditions within 15 days of the reasons being given under subsection (8). The Minister may amend the conditions and will consider the same mitigation criteria or tests noted above in their review. In the case of this review, the Minister's decision is final.

Alternatively, or in addition, Sections 28.1.2 (14) to (16) outline, in detail, the appeal process to the Ontario Land Tribunal and criteria and timelines required in this process.
Subsection (14) states

> *A permit holder who objects to any conditions attached to the permit by an authority may, within 90 days of the reasons being given under subsection (8), appeal to the Ontario Land Tribunal to review the conditions if,*
>
> *(a) the permit holder has not submitted a request under subsection (9) to the Minister to review the conditions; or*
>
> *(b) the permit holder has submitted a request to the Minister to review the conditions under subsection (9) and,*
>
> *i. 30 days have elapsed following the day the permit holder submitted the request and the Minister did not make a reply in accordance with subsection 28.1 (9), or*
>
> *ii. the Minister made a reply in accordance with subsection 28.1 (9) indicating that the Minister refused to conduct the review. 2020, c. 36, Sched. 6, s. 17.*

If the Minister is conducting a review of the conditions as outlined in earlier sections (28.1.2(9)), and the Minister's decision has not been provided within 90 days of the start of that review, the permit holder may, within 30 days, appeal this non-decision on the CA conditions directly to the Ontario Land Tribunal. The permit holder and the Tribunal are required to follow the notice requirements in s. 28.1 (24) and (25). The powers of the tribunal include the authority to take evidence, to refuse the permit or to order the authority to issue the permit, with or without conditions (Subsection 28.1 (26)).

Subsections (17) to (18) outline the Agreement requirements. The CA shall enter into an agreement with the permit holder for the development project and they may add other parties to this agreement. The agreement under subsection (17) shall set out actions or

requirements that the permit holder must complete or satisfy in order to compensate for ecological impacts and any other impacts that may result from the development project.

Subsections (19) and (19.1) outline the timing of the implementation of the 'development project' and the agreement with the CA. Subsection (19) includes *"No person shall begin a development project until an agreement required under subsection (17) has been entered into. 2020, c. 36, Sched. 6, s. 17."* However, subsection (19.1) includes *"If a regulation made under subsection 40 (4) provides that a development project may begin prior to entering into an agreement under subsection (17), but an agreement is not entered into by the date identified in the regulation, no person shall carry out the development project until such time the agreement is entered into. 2022, c. 21, Sched. 2, s. 10 (10)."* It is anticipated that the regulation for a 'development project' will be limited to a specific project. The Province has the ability to create a regulation that permits the development project to begin prior to entering into an agreement.

The CA should also identify additional requirements that may apply to any application for a development project within a regulated area where a zoning order has been made by the Minister of Municipal Affairs and Housing under s. 34.1 or 47 of the Planning Act which authorizes the development project. These requirements may include information related to:

- costs e.g., administrative and legal, compensation, monitoring CA permit shall be granted for development projects subject to zoning orders in accordance with s. 28.0.1 of the Act conditions that comply with s. 28.1.2 requirements and tests
- any requirement for an agreement compensation for ecological impacts and any other impacts that may result from the development project (individual CAs should develop compensation guidelines) compensation monitoring and reporting.

Figure 2 provides a general overview of the permit process related to Mandatory Permits or a Zoning Order outlined in s. 28.1.2.

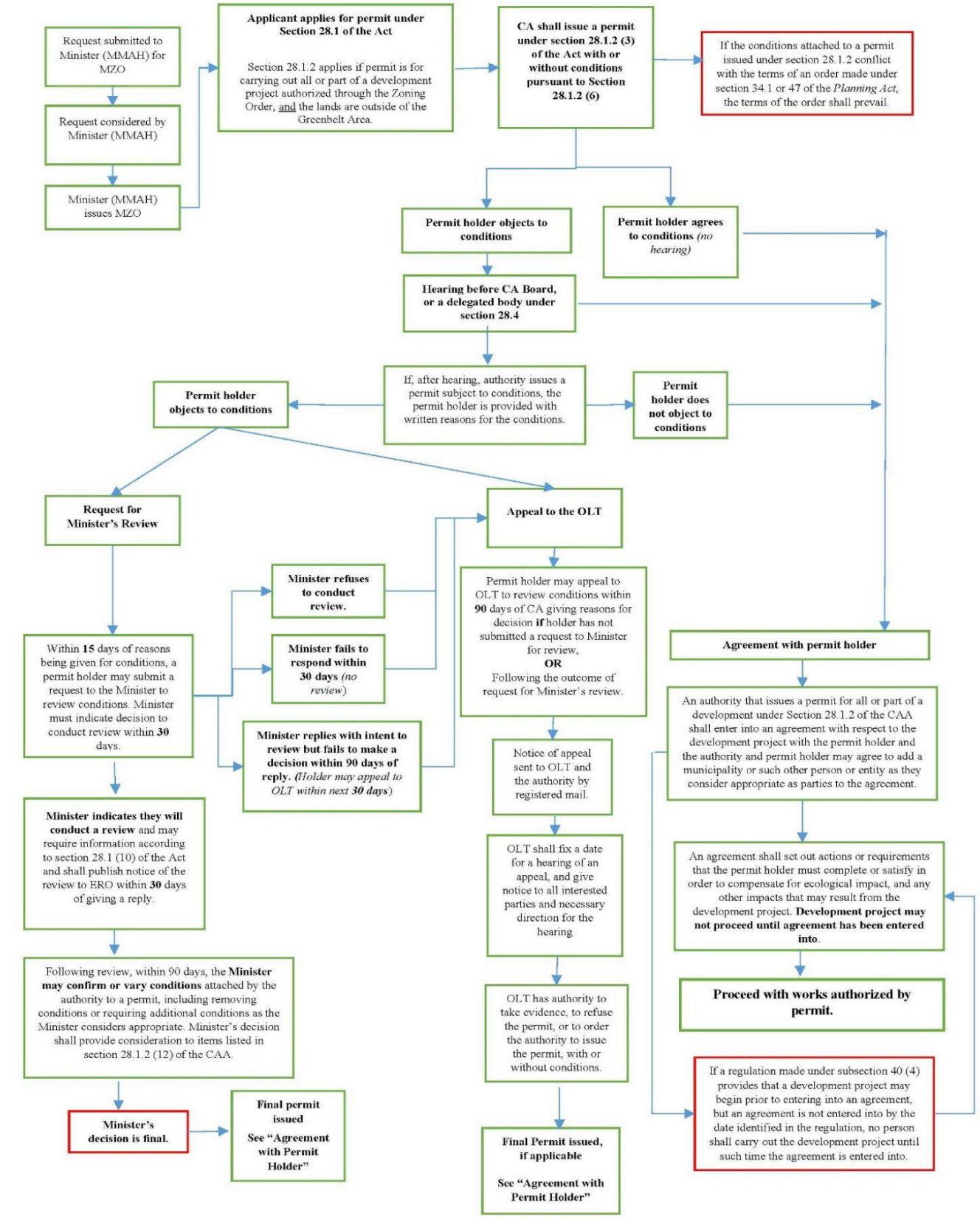

Figure 2: Mandatory Permits, Zoning Orders, OLT

2.3.5 CANCELLATION OF PERMITS

Section 28.3 enables the CA with the option to cancel a permit issued if it is the CA's opinion that the conditions of the permit have not been met or that the circumstances that are prescribed by regulation exist. This section outlines the process the CA shall follow to cancel a permit. This includes notice requirements (intent to cancel, specified date, permit holder hearing request). Within 15 days of receiving the CA notice of intent to cancel, the permit holder must submit a written request for a hearing. The hearing will be scheduled within a reasonable time frame. The CA may confirm, rescind or vary the decision to cancel the permit. If the CA confirms the cancellation of the permit or varies the permit in such a way that the permit holder objects, the permit holder may, within 90 days of receiving notice of the authority's decision, appeal the decision to the Ontario Land Tribunal. The permit holder is required to send their notice of appeal to the Tribunal and the CA by registered mail.

2.3.6 DELEGATION OF POWER

Section 28.4 of the CA Act states *"An authority may delegate any of its powers relating to the issuance or cancellation of permits under this Act or the regulations, or to the holding of hearings in relation to the permits, to the authority's executive committee or to any other person or body, subject to any limitations or requirements that may be prescribed by regulation. ..."*

QC has delegated the approval and issuance of all permits to their regulations staff and this has been approved by the CA Board through the CA By-law or a report to the Board of Directors. Decisions that may be appealed e.g., the cancellation of a permit or a hearing where the CA staff are recommending refusal should be determined by the Authority Board or Executive Committee.

2.3.7 CA BOARD APPROVED POLICIES

Board-approved CA policies are required as outlined in the CA Act and in s. 12 of O. Reg. 41/24 to provide a decision-making framework for the review of applications. In general, policies ensure a consistent, timely and fair approach to the review of applications, staff recommendations and Board decisions. They also facilitate the effective and efficient use and allocation of available resources.

The hierarchy of legislation and policies described in this section is depicted in Figure 3 below.

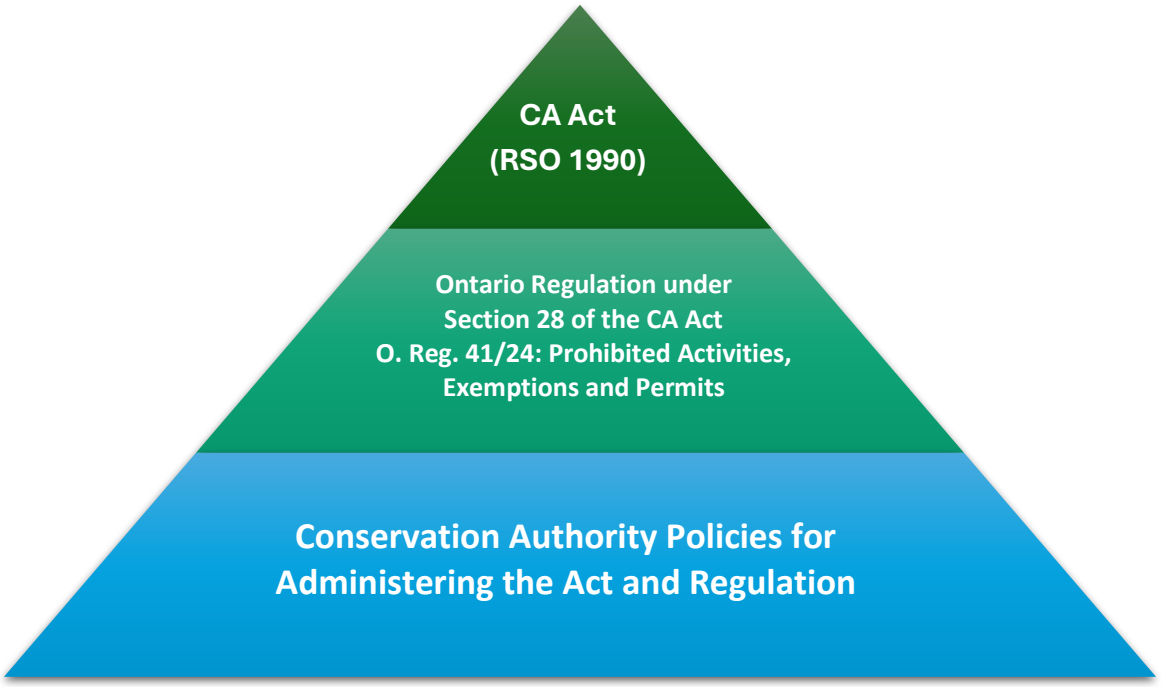

Figure 3 Hierarchy of Legislation/Regulation/Policy

To receive a permit for a development activity, it must be demonstrated to the satisfaction of the CA, in the application that the activity is not likely to affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property. The control of dynamic beaches is generally applicable to the Great Lakes shorelines and large inland lakes regulated areas.

Additionally, and depending on the application, it must be demonstrated to the satisfaction of the CA that interference in any way with a watercourse or change or interference in any way with a wetland is acceptable. The CA review may include the hydrologic functions of the watercourse and all components of the definition of a wetland. See Section 7.0 for additional information on wetlands.

A permit from a CA may be in the form of a formal permit or a letter of permission. For either of these types of applications, submission of technical studies may be necessary.

Technical studies must be carried out by a qualified professional with recognized expertise in the appropriate discipline and must be prepared using established procedures and recognized methodologies to the satisfaction of the CA. CAs may have technical guidelines that should be used by qualified professionals for studies, plans etc. for a permit application. Where the CA does not have technical guidelines, the applicant should consider MNRF's Technical Guides for Natural Hazards (MNRF, 2023, MNRF, 2002a; MNRF, 2002b; MNRF, 1996a; MNRF, 1996b; and MNRF 1996c), and other Provincial guidelines and/or guidelines approved by the CA Board. The CA may request that technical studies be carried out at the expense of the applicant.

Currently there are no provincial Technical Guides developed specifically for use in evaluating change or interference with a wetland. The Recommendations for Conducting Wetland Environmental Impact Studies (EIS) for Section 28 Regulations Permissions (Beacon) may be a helpful resource for CAs, while acknowledging that this document was prepared to assist with the implementation of the 2006 individual CA Section 28 Regulations.

Expertise for reviewing technical studies varies among CAs. Where expertise within the CA is not available, the CA may request that the study be peer-reviewed by a qualified professional at the expense of the applicant.

For an application to be refused or where the applicant objects to the conditions of approval, the *CAA* requires that the applicant be given the opportunity to a hearing by the local CA Board or Executive Committee (sitting as a Hearing Board). The Conservation Ontario Section 28 Conservation Authorities Act Model Hearing Guidelines (2021) as may be amended, provides a step-by-step process for conducting hearings required under s. 28.1 (5) s. 28.1.2 (7) and s. 28.3 (4) of the Conservation Authorities Act or as required by Ontario Regulation 41/24. QC will conduct a hearing under the Regulation in a manner consistent with these guidelines. The Hearing Board is empowered by law to make a decision, governed by the Statutory Powers Procedures Act. It is the purpose of the Hearing Board to evaluate the information presented at the hearing by both the CA staff and the applicant and to decide whether the application will be approved with or without conditions or refused.

A description of the appeal processes available to the applicant is outlined in detail in other sections of this document.

2.3.8 REGULATIONS UNDER THE CA ACT

2.3.8.1 ONTARIO REGULATION 97/04

Revisions to the *Conservation Authorities Act* resulted in a new directive: Ontario Regulation 97/04 that requires all Conservation Authorities to update their regulations to conform to a model developed by the Province. Ontario Regulation 97/04 "Content of Conservation Authority Regulations under Subsection 28(1) of the Act: Development, Interference with Wetlands and Alterations to Shorelines and Watercourses" (i.e. Generic Regulation) was approved in May 2004 following a prescribed public consultation process. This Regulation established the content requirements to be met in a Regulation made by a Conservation Authority under Subsection 28(1) of the *Conservation Authorities Act*.

The objectives of the regulation are:

- Minimize the potential for loss of life and property damage;
- Reduce the necessity for public and private expenditures for emergency operations, evacuation and restoration of properties subject to flooding;
- Regulate flood plain and hazardous lands development that could limit channel capacity and increase flood flow, leading to emergency and protective measures;
- Make information available regarding flood prone or hazardous lands areas;
- Regulate the draining or filling of wetlands which may reduce natural water storage capacity;
- Regulate development on or adjacent to potentially hazardous slopes;
- Reduce soil erosion from valley slopes; and
- Minimize water pollution or degradation of water quality associated with filling, development activity, and alteration activities.

2.3.8.2 ONTARIO REGULATION 319/09

In 2006, the Minister of Natural Resources approved the "Development, Interference and Alteration Regulations" (individual Conservation Authority Regulations) for all Conservation Authorities consistent with Ontario Regulation 97/04 of the *Conservation Authorities Act*. Each Authority was then given a new regulation number. It is important to recognize that the general intent of the regulation did not change. The intent of the regulation update was to provide consistency between and within Conservation Authority jurisdictions, as well as to more closely support the Provincial Policy Statement. The three previously individual Conservation Authorities that now make up Quinte Conservation each had a regulation known historically as the Fill, Construction and Alteration to Waterways Regulation (MRCA

Ontario Regulation 260/92; NRCA Ontario Regulation 160/90; PERCA Ontario Regulation 417/94). In 2009 further amendments were made, and Quinte Conservation was granted a new regulation number for an amalgamated Authority – Ontario Regulation 319/09.

2.3.8.3 MANDATORY PROGRAMS AND SERVICES - ONTARIO REGULATION 686/21

Further to the *Conservation Authorities Act* s, 21.1, in October 2021, the provincial government defined the Mandatory Programs and Services to be offered by Conservation Authorities in a new regulation under the *Conservation Authorities Act*. O.Reg. 686/21 came into effect on January 1, 2022. This regulation requires CAs to provide mandatory programs and services related to the risk of natural hazards (see s.1-8). (Category 1 Program or Service). CAs are required to satisfy their duties, functions, and responsibilities to administer and enforce the provisions of Part VI and VII of the CA Act and any regulations made under those Parts. Programs and services related to the risk of natural hazards include:

- Comment re applications, proposals (ss. 6. (1) and ss. 6. (2))
- Plan Review, comments (ss. 7 (1) and ss. 7 (2))
- Administering and enforcing the Act (s 8)

In addition to Part VI regulatory responsibilities, CAs that fulfil an additional legal responsibility will administer their responsibilities for these duties under the applicable legislation.

Applications or projects under other legislation may be the earliest opportunity for CAs to provide input on natural hazards. In the review of these applications or proposals, CAs should identify natural hazards and attempt to resolve any issues with the proposal that may arise due to natural hazards. This will result in a streamlined CA permit application or remove the need for a permit.

Under s. 6. (1) CAs shall provide programs and services to enable the authority to review applications or proposals to comment on the risks related to natural hazards arising from the proposal made under the Acts noted below:

1. *The Aggregate Resources Act*
2. *The Drainage Act*
3. *The Environmental Assessment Act*
4. *The Niagara Escarpment Planning and Development Act*

Subsection 7 (1) of Ontario Regulation 686/21 outlines the requirements for CAs to review and provide comments on policy documents (e.g., Official Plans and comprehensive Zoning By-laws) and applications submitted pursuant to the *Planning Act* in accordance with the Mandatory Programs and Services Regulation.

CAs provide technical support and advisory services to municipalities for planning applications for natural hazards (not including hazardous forest types for wildland fire). In this capacity, CA staff provide technical input regarding potential natural hazard impacts and advice about how negative impacts can be avoided or minimized.

Subsection 7 (2) 1 to ss. 7 (2) outline additional responsibilities of CAs for natural hazard land use planning related matters. These include providing comments, technical support, information, notice and/or training to municipalities or planning boards, as well as providing comments and other support to the Ministry of Municipal Affairs and Housing and MNRF when requested to do so.

2.3.8.4 PRESCRIBED ACTS – ONTARIO REGULATION 596/22

In 2022, the CA Act was amended, and the Province included an exception to the services a CA may provide.

Municipal programs and services

Subsection 21.1.1 (1); Subject to subsection (1.1), an authority may provide, within its area of jurisdiction, municipal programs and services that it agrees to provide on behalf of a municipality situated in whole or in part within its area of jurisdiction under a memorandum of understanding, or such other agreement as may be entered into with the municipality, in respect of the programs and services. 2020, c. 36, Sched. 6, s. 8 (1). 2022, c. 21, Sched. 2, s. 3 (1).

Exception, prescribed Acts

Subsection 21.1.1(1.1); An authority shall not provide under subsection (1), within its area of jurisdiction, a municipal program or service related to reviewing and commenting on a proposal, application or other matter made under a prescribed Act. 2022, c. 21, Sched. 2, s. 3 (2).

Ontario Regulation 596/22: Prescribed Acts enabled under the CA Act s. 21.1.1 (1.1) and s. 21.1.2 (1.1)) came into effect on January 1, 2023. This regulation stipulates that CAs shall

not provide a Municipal (Category 2) or Other (Category 3) program or service related to reviewing and commenting on proposals, applications, or other matters under a prescribed Act.

The prescribed Acts include:

- *Planning Act*
- *Aggregate Resources Act*
- *Condominium Act*
- *Drainage Act*
- *Endangered Species Act*
- *Environmental Assessment Act*
- *Environmental Protection Act*
- *Niagara Escarpment Planning and Development Act*
- *Ontario Heritage Act*
- *Ontario Water Resources Act*

Under the Mandatory Programs and Services Regulation (O. Reg. 686/21) which includes natural hazards, the CAs continue to provide review and comments on applications related to natural hazards and regulatory requirements. O. Reg. 596/22 does not affect the CA provision of mandatory (Category 1) programs or services related to the prescribed Acts. Subject to the individual legislative and regulatory requirements, applications made under Acts including the *Planning Act, Environmental Assessment Act, Drainage Act, Niagara Escarpment Planning and Development Act* etc. must continue to be circulated for mandatory program and service delivery for CAs to review and provide comments.

2.3.8.5 ONTARIO REGULATION 41/24: PROHIBITED ACTIVITIES, EXEMPTIONS, AND PERMITS

Ontario Regulation 41/24 was approved on April 1, 2024.

Quinte Conservation regulates all components noted in s. 28 of the Act within its jurisdiction and the Regulation includes some components of the regulated areas. QC will use the CA Act as well as Ontario Regulation 41/24 in the administration of the permit process. Quinte Conservation regulates:

Development in river or stream valleys, wetlands, shorelines and hazardous lands and associated allowances;

The straightening, changing, diverting or interfering in any way with the existing channel of a river, creek, stream, watercourse or for changing or interfering in any way with a wetland; and Other areas where, in the opinion of the Minister, development should be prohibited or regulated or should require the permission of the Authority.

2.3.9 OTHER RELATED LEGISLATION

2.3.9.1 THE *PLANNING ACT*

The principle of development is established through the *Planning Act* process and CAs' are involved in the review of planning applications under the *Planning Act* primarily in three ways: as an agency with delegated responsibilities for the review of natural hazards; as a technical advisor; and as a commenting agency.

Ontario Regulation 41/24 complements the Natural Hazard (Section 3.1), policies of the 2020 *Provincial Policy Statement* under the *Planning Act*. Delegated responsibility for a Conservation Authority for providing input with respect to provincial interests under the PPS-2020 is limited to Section 3.1 – Natural Hazards. This delegation of responsibility requires Quinte Conservation to review and provide comments on policy documents (Official Plans and comprehensive Zoning By-laws) and applications submitted pursuant to the *Planning Act* as part of the Provincial One Window Planning Service. Natural hazards include:

- Floodplain management;
- Hazardous slopes;
- Great Lakes shorelines; and
- Unstable soils and erosion hazards.

As noted in the Memorandum of Understanding on Procedures to address Conservation Authority Delegated Responsibility (Appendix F), Quinte Conservation may also provide technical advisory services to member municipalities for planning applications. In this capacity, Quinte Conservation staff provides technical input regarding potential environmental impacts and advice about how negative impacts can be avoided or minimized. Quinte Conservation comments could apply to a range of matters including, but not limited to, natural hazards, natural heritage, and water quality and quantity.

In addition, regulations under the *Planning Act* (O.Reg. 545/06, 543/06 and 200/96) require municipalities to give notice to Quinte Conservation regarding planning applications and changes to policy documents. In its capacity as a commenting agency, Quinte Conservation

may provide additional advisory comments which relate to its goals and objectives for watershed management.

In addition, the *Planning Act* limits conservation authority input on appeal unless it is related to natural hazard policies as outlined in s. 1 (4.1). Regulations under this Act (e.g., O. Reg. 545/06, 543/06 and 200/96) require municipalities to give notice to CAs regarding planning applications and changes to policy documents. CAs may comment on natural hazard matters as outlined in the CA Act and *Planning Act*. Consistent with its watershed-based resource management strategy, a CA may provide observations which relate to its goals and objectives for watershed management.

One of the main differences between the PPS and O.Reg. 41/24 is that the *Planning Act* establishes the principle of development and the Regulation and this policy document, much like a building permit, identifies specific site requirements prior to activities taking place. Prior to the review of a Regulation application, QC will often see the proposal through their Plan Review process including applications under the *Planning Act* (e.g., severances, site plan, subdivision applications). Although QC permission for an application under our regulations may not be issued for many years after the planning application, QC endeavours to ensure, through its comments on the planning application, that the requirements under the Regulation process can be fulfilled at the time an application under the Regulation is received.

If an application under the *Planning Act* does not meet the QC Board approved policies (for its regulations), staff should work with the municipality and the proponent to modify the application. As previously noted, the principle of development is established through the *Planning Act* process. Therefore, it is not acceptable to recommend approval of a planning application and then recommend refusal of a regulatory permission, unless the applicant refuses to meet the specific requirements under the Regulation. If an issue remains unresolved, QC should not recommend approval of the *Planning Act* application and assess the option of making an appeal to the Ontario Land Tribunal (OLT).

Alternatively, it is also recognized that there may be historic planning approval decisions that were made in the absence of current technical information or prior to the establishment of the current regulations and policies, which would now preclude development. In these situations, innovative efforts may be necessary to address the site constraints and accommodate the development. However, in some cases approval should not be granted.

2.3.9.2 UNRESOLVED *PLANNING ACT* APPROVALS

Applications for development activity which still require a *Planning Act* approval (re-zoning/severance/minor variance) to be resolved within the applicable municipality will not be accepted.

2.3.9.3 *ENVIRONMENTAL ASSESSMENT ACT*

Through the Mandatory Program and Service Regulation, CAs review proposals under the *Environmental Assessment Act* (EA) for the purpose of commenting on the risks related to natural hazards. Where an EA was approved and the CA was satisfied with the natural hazard evaluation(s) and the preferred alternative in the EA, the CA may consider evaluations completed through this process as part of their review of a permit application. In some cases, the text or recommendations included in the EA may outline additional studies that may be required as part of the final design process.

2.3.10 OTHER LEGISLATION

There are many other pieces of legislation that address various water and related resource management activities. Some of the key pieces of legislation include:

- *Fisheries Act* (Fisheries and Oceans Canada)
- *Lakes and Rivers Improvement Act* (MNRF)
- *Public Lands Act* (MNRF)

It is important to note that CA Section 28 permission, if granted for work, does not exempt the applicant from complying with any or all other approvals, laws, statutes, ordinances, directives, regulations, etc. that may affect the property or the use of same. Alternatively, complying with or obtaining all other approvals, laws, statutes, ordinances, directives, regulations, etc. does not exempt the applicant from obtaining permission under Section 28 of the *Conservation Authorities Act*.

2.4 DEFINITIONS AND INTERPRETATIONS

The following sections outline the key definitions and interpretations recommended for implementing the CA Regulation. Section 28 of the *CAA* and the Regulation allows CAs to prohibit or restrict activities as noted above. The *CAA* and the Regulations do not provide definitions for many of these terms. Therefore, other relevant documents were reviewed to

establish interpretations for those terms not defined in the *CAA* and Regulation. It is important to note that where definitions are provided in the *CAA* and Regulation these definitions (e.g., "development activity") prevail for the implementation of the Regulation, even if other definitions exist in other relevant documents. In addition to this section there are definitions of common terms throughout the document and in Appendix A.

2.4.1 DEFINITIONS FROM THE CONSERVATION AUTHORITIES ACT AND O.REG 41/24

Section 28.1.2 (2)) of the *Conservation Authorities Act* provides the following definition in relation to Mandatory Permits Zoning Orders:

"Development project" means development activity as defined in subsection 28 (5) or any other act or activity that, without a permit issued under this section or section 28.1, would be prohibited under section 28.

Therefore 'development activity' is used throughout this document.

Ontario Regulation 41/24 includes, for the purposes of Section 28 of the Act, the following terms with the following meanings:

Definitions
(1) In section 28 of the Act and in this Regulation,

"**development activity**" means,

(a) the construction, reconstruction, erection or placing of a building or structure of any kind,

(b) any change to a building or structure that would have the effect of altering the use or potential use of the building or structure, increasing the size of the building or structure or increasing the number of dwelling units in the building or structure,

(c) site grading, or

(d) the temporary or permanent placing, dumping or removal of any material, originating on the site or elsewhere.

"hazardous land" means land that could be unsafe for development activity because of naturally occurring processes associated with flooding, erosion, dynamic beaches or unstable soil or bedrock;

“watercourse” means a defined channel, having a bed and banks or sides, in which a flow of water regularly or continuously occurs;

"wetland” means land that,

(a) is seasonally or permanently covered by shallow water or has a water table close to or at its surface,

(b) directly contributes to the hydrological function of a watershed through connection with a surface watercourse,

(c) has hydric soils, the formation of which has been caused by the presence of abundant water, and

(d) has vegetation dominated by hydrophytic plants or water tolerant plants, the dominance of which has been favoured by the presence of abundant water,

(2) The definition of “wetland” in subsection (1) does not include periodically soaked or wet land used for agricultural purposes which no longer exhibits a wetland characteristic referred to in clause (c) or (d) of that definition.

Although each of the natural hazards included in the ‘hazardous land’ definition are not included in the definition section of the regulation, the regulated area of some of these terms are included in other sections of the Regulation such as the River and Stream Valley or Shoreline e.g., flooding, erosion, dynamic beaches.

2.4.2 DEFINITIONS FROM THE PROVINCIAL POLICY STATEMENT (PPS) 2020

To assist CA staff, this guideline provides a description of some natural hazards that are included in the Provincial Policy Statement (PPS). The 2024 PPS provides the following definitions.

Erosion Hazard means *the loss of land, due to human or natural processes, that poses a threat to life and property. The erosion hazard limit is determined using considerations that include the 100 year erosion rate (the average annual rate of recession extended over a one hundred year time span), an allowance for slope stability, and an erosion/erosion access allowance.*

NOTE: This definition should be used for defining the Erosion Hazard as it applies to the CA Regulation. The Regulation includes an allowance of 15 metres outside of the limit of the natural hazard. CAs should ensure that an appropriate setback from the Erosion Hazard is maintained within the allowance. Access standards for an erosion access allowance may be

a consideration in the CA's review of an application pursuant to S 28.1 (1) (b) "the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property".

Flooding Hazard *means the inundation, under the conditions specified below, of areas adjacent to a shoreline or a river or stream system and not ordinarily covered by water:*

a) along the shorelines of the Great Lakes - St. Lawrence River System and large inland lakes, the flooding hazard limit is based on the one-hundred year flood level plus an allowance for wave uprush and other water-related hazards;

b) along river, stream and small inland lake systems, the flooding hazard limit is the greater of:

1. the flood resulting from the rainfall actually experienced during a major storm such as the Hurricane Hazel storm (1954) or the Timmins storm (1961), transposed over a specific watershed and combined with the local conditions, where evidence suggests that the storm event could have potentially occurred over watersheds in the general area;

2. the one-hundred year flood; and

3. a flood which is greater than 1. or 2. which was actually experienced in a particular watershed or portion thereof as a result of ice jams and which has been approved as the standard for that specific area by the Minister of Natural Resources and Forestry;

except where the use of the one hundred year flood or the actually experienced event has been approved by the Minister of Natural Resources and Forestry as the standard for a specific watershed (where the past history of flooding supports the lowering of the standard).

Note: Flood Event Standards that CAs shall use are outlined in Schedule 1 of O. Reg. 41/24. The Regulation also outlines, in text, the extent of the flood plain regulated area (see River or Stream Valleys Section 4.0 and Great Lakes-St. Lawrence System or Inland Lakes Section 5.0 in this document).

Dynamic Beach Hazard means:

… areas of inherently unstable accumulations of shoreline sediments along the Great Lakes – St. Lawrence River System and large inland lakes, as identified by provincial standards, as amended from time to time. The dynamic beach hazard limit consists of the flooding hazard limit plus a dynamic beach allowance.

Hazardous Lands: *means property or lands that cold be unsafe for development due to naturally occurring processes Along the shorelines of the Great Lakes-St. Lawrence River System, this means the land, including that covered by water, between the international boundary, where applicable, and the furthest landward limit of the flooding hazard, erosion hazard or dynamic beach hazard limits Along the shoreline of large inland lakes, this means the land, including that covered by water, between a defined offshore distance or depth and the furthest landward limit of the flooding hazard, erosion hazard or dynamic beach hazard limits. Along river, stream and small inland lake systems, this means the land, including that covered by water, to the furthest landward limit of the flooding hazard or erosion hazard limits.*

Hazardous Sites *means property or lands that could be unsafe for development activity and site alteration due to naturally occurring hazards. These may include unstable soils (sensitive marine clays [leda], organic soils) or unstable bedrock (karst topography).*

2.4.3 ADDITIONAL INTERPRETATIONS

In addition, the *Conservation Authorities Act*, O. Reg. 97/04 and O. Reg. 41/24 do not define "interference" nor was any definition found in any other planning document; hence, the interpretation below was developed by the Conservation Ontario Section 28 Peer Review and Implementation Committee with representatives from the MNRF. Under the Regulation, "interference" only applies to projects within watercourses and wetlands.

Interference in any way is interpreted as:
"any anthropogenic act or instance which hinders, disrupts, degrades or impedes in any way the natural features or hydrologic and ecologic functions of a wetland or watercourse" (March 2008).

The common uses of words in this interpretation can be found in the Oxford Dictionary as follows:

Hinder means to delay or impede
Disrupt means to interrupt or disturb (an activity or process)
Degrade means lower the character or quality of
Impede means to delay or block the progress or action of

2.4.4 HEALTH OR SAFETY

Conservation Authorities have historically considered the health or safety of people and emergency responders in the evaluation of permits. Typically, this included the evaluation of an application under the 'tests' of flooding, erosion, dynamic beach etc. and may have included other tests that are no longer part of the CA Act (e.g., pollution, conservation of land). In addition to the current tests of: *"the activity is not likely to affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock;"* the province has included an additional test of *"the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property;"* (CA Act S. 28 (1) (a)-(b)).The latter section reflects the decision of the Court of Appeal for Ontario that confirms CAs consider health or safety and damage or destruction of property in their decisions (Gilmor v. Nottawasaga Valley Conservation Authority).

The sections below (2.4.4.1 - 2.4.4.4) outline some factors that address the health and/or safety of people and the potential for damage or destruction of property. These factors should also be considered relative to, and building upon, the sections of this document which speak to specific natural hazards. Currently, there is no legislative or regulatory definition or legal interpretation of the scope of 'health' as it relates to the *Conservation Authorities Act*.

Health may include the physical health of people such as injury and/or the potential for loss of life/fatality. Under the test of 'health', CAs may consider detrimental social disruption or short- and long-term mental health effects on people in the event of a natural hazard, and the potential for injury to a landowner, future landowner/occupant, or an emergency responder. The potential loss of life is more commonly considered under the 'safety' test but CAs may consider it under 'health' as well. Factors that may be considered include direct impacts (e.g., a fatality due to flooding in a basement or elevator, vehicle submerged in flood waters) or indirect factors (e.g., a fatality due to the inability for emergency responders to reach a person in a medical emergency during a natural hazard).

It is important to note that CAs rely on the best available information at the time of reviewing a permit application. This may include technical studies and plans prepared by a qualified professional and CA staff technical and policy opinions. The final decision is determined when, in the opinion of the CA, they have 'reasonable grounds' to approve, approve with conditions, or recommend refusal of a permit application.

2.4.4.1 CONSIDERATION OF ACCESS (INGRESS/EGRESS)

The ability for the landowner, future landowners/occupants, public and emergency operations staff (police, firefighters, ambulance, municipal flood response teams etc.) to safely access a site during an emergency, such as a flooding or erosion event, is an important factor when considering any application for development activities. A permit application must be reviewed to ensure access to the proposed development is safe and appropriate for the proposed use. The applicant shall provide to the satisfaction of the CA, studies and/or plans that demonstrate how pedestrians, vehicles, emergency responders and equipment can gain access to and from the regulated feature in the event of a natural hazard. This includes ingress/egress that meets the access standards in these circumstances: during an event, for maintenance or repair, and/or construction of new remedial works.

In the context of new development activities, the risks should be controlled by prohibiting development in potentially dangerous or inaccessible portions of the regulated feature.
For existing development, safety risks are a function of the occupancy of structures, the susceptibility of the structure and the access routes to the structure. For existing development, the following factors should be considered:

- The degree of risk with the use of the existing access;
- The ability to modify the existing private or public access or construct a new safe access;
- The ability to find and use the access during an emergency;
- The ability and willingness of the municipality to allow staff and emergency vehicles to use the access (confirmation in writing may be considered); and
- The access will be in place prior to the completion of the development activity.

The risk can also be controlled by limiting the size (and therefore limiting the occupancy) of additions or reconstruction projects. If the risk is determined to be too great, no modifications/alterations/reconstructions of existing structures should be considered.

Where applications propose development within areas that have ingress/egress issues, it is recommended that the CA work with the applicant to ensure that safe access is achieved. Where safe access is not demonstrated or is not possible based on the proposed permit application, the CA should advise the applicant and try to work with the applicant to identify alternative options (if available).

If safe access cannot be ensured to the satisfaction of the CA, consideration should be given to recommending refusal of the permit application.

Safe access is defined as conforming to the depth and velocity criteria for pedestrians and vehicles in the following table.

Acceptable Vehicle Depths	Acceptable Pedestrian Depths	Acceptable Velocities
0.1m	0.1m	1.7 m/s (max allowable)
0.2m	0.2m	1.7 m/s
0.3m (max. allowable)	0.3m	1.3 m/s
	0.4m	1.0 m/s
	0.5m	0.8 m/s
	0.6m	0.7 m/s
	0.7m	0.6 m/s
	0.8m (max. allowable)	0.5 m/s

Table 2: Depth and Velocity Criteria (Source: Provincial Flood Plain Planning Policy Statement (1988))

-depth for vehicle access may not exceed 0.3 metres

The MNRF Technical Guide: River & Stream Systems: Flooding Hazard Limit (2002) and Technical Guide: River &Stream Systems: Erosion Hazard Limit (2002) include further guidance regarding access.

2.4.4.2 FLOODPROOFING

The PPS provides a definition of floodproofing standard. "*Floodproofing standard: means the combination of measures incorporated into the basic design and/or construction of buildings, structures, or properties to reduce or eliminate flooding hazards, wave uprush and other water related hazards along the shorelines of the Great Lakes-St. Lawrence River System and large inland lakes and flooding hazards along river, stream and small inland lake systems*."

Floodproofing includes alteration to the design of specific buildings, raising of ingress and egress roadways and driveways, the construction of dikes, flood control channels, etc. The variety of floodproofing options and requirements are too detailed and extensive to include in a policy guideline. For more guidance, CAs should consult Appendix 6: "Floodproofing" of the "Technical Guide – River and Stream Systems: Flooding Hazard Limit" (MNRF, 2002 as may be amended). It is noted that there have been advances in floodproofing methodologies

since this guide was prepared. QC may consider other technical or construction options prepared by a qualified professional.

2.4.4.3 INTERNAL RENOVATIONS

The definition of development in Ontario Regulation 41/24 includes: ... *1. (1) (b) any change to a building or structure that would have the effect of altering the use or potential use of the building or structure, increasing the size of the building or structure or increasing the number of dwelling units in the building or structure"*.

Repairs and renovations to an existing building within the existing roofline and exterior walls and above the existing foundation within a hazard area would generally not require a permit of the CA, unless the proposal is associated with a change in use or increases the number of dwelling units (see definition of 'development activity'.) When reviewing internal renovation proposals QC will consider other changes that may be associated with an internal renovation e.g., upgrades or replacement of a septic system, new openings for doors or windows etc. These additional activities may meet the definition of development activity and may be considered under the health or safety tests e.g., increase to the risk of injury or fatalities, social disruption, or result in damages from the hazard. QC may consider establishing limits on the size and number of proposed works.

2.4.4.4 CUMULATIVE IMPACTS

Following guidance from Conservation Ontario QC's review of permit applications and the assessment of impacts will include the potential for cumulative impacts of applications in the watershed or drainage system. Where necessary, QC may restrict development that may, singularly or cumulatively, affect the natural hazards or impact other properties. Examples of cumulative impact are: development activities that restrict riverine channel capacities to pass flood flows or reduce storage capacity in floodplains and wetlands resulting in increased flood levels and creation of a potential danger to upstream and downstream landowners, and alterations to shorelines and watercourses to address erosion that may disrupt the channel or shoreline natural processes for erosion and deposition of material.

2.5 PROVINCIAL PERSPECTIVE ON NATURAL HAZARDS

The MNRF is responsible for natural hazard management in Ontario. Where CAs have been established, the responsibility for natural hazard management has been delegated to them. The Province, however, continues to provide the overall direction, guidance and technical

standards with respect to natural hazard management. The following is an executive summary of the Province's approach to natural hazard management in Ontario.

Natural, physical environmental processes that occur near or at the surface of the earth can produce unexpected events of unusual magnitude or severity. Such occurrences are generally regarded as natural hazards. The outcome can be catastrophic, frequently resulting in damage to property, injury to humans and other organisms, and tragically even loss of life. In these cases, natural hazards are considered natural disasters.
(Excerpt from MNR (2001) – p. 4)

The management of natural hazards involves a combination of four main program components:

Prevention – of new development locating within areas subject to loss of life and property damage from natural hazards;
Protection – of existing development from natural hazards through the application of structural and non-structural measures/acquisition;
Emergency Response – to evacuate and mitigate existing residents through flood forecasting and warning including disaster relief; and
Co-ordination – between natural hazard management and planning and development.

2.5.1 PRINCIPLES

The guiding principles behind natural hazard management are:

- Proper natural hazard management requires that natural hazards (flooding, erosion, dynamic beaches, leda clay, organic soils, karst bedrock) be simultaneously recognized and addressed in a manner that is integrated with land use planning and maintains environmental and ecosystem integrity;

- Effective floodplain management can only occur on a watershed and littoral reach basis with due consideration given to development effects and associated environmental and ecosystem impacts;

- Local conditions vary along floodplains and shorelines including depth, velocity, littoral drift, seiche, fetch, accretion, deposition, valleyland characteristics, etc., and accordingly must be taken into account in the planning and management of natural hazards;

- New development which is susceptible to natural hazards or which will cause or aggravate the hazards to existing and approved land uses or which will cause adverse environmental impacts must not be permitted to occur unless the natural hazard and environmental impacts have been addressed; and

- Natural hazard management and land use planning are distinct yet related activities that require overall co-ordination on the part of Municipalities, CAs, the Ministry of Natural Resources and Forestry, and the Ministry of Municipal Affairs and Housing.

There are two reports that provide an overview of the perspective of the Province on flooding, one of the natural hazards. In 2019 the Province released "Protecting people and property: Ontario's flooding strategy" (Flooding Strategy). Prior to this strategy, they released a commissioned report "Ontario's Special Advisor on Flooding Report to Government An Independent Review of the 2019 Flood Events in Ontario" which also provides an overview of the provincial perspective on flooding hazards (see Chapter 5). Although these reports are focused on flooding hazards in general, the principles may be considered for other natural hazards.

2.5.1.1 ONTARIO'S FLOODING STRATEGY

The flooding strategy includes the following provincial goals, priorities and objectives. As noted above, these are focused on flooding, however they generally align with CA regulation of activities in all natural hazards. It's important to note that CAs are focused on the hazard areas and environmental damage is limited to the scope of the CA Act and Ontario Regulation 41/24.

Goals

1. Increase public health and safety
2. Reduce property and environmental damage
3. Reduce economic losses
4. Reduce social disruption
5. Reduce public and private expenditures
6. Reduce critical infrastructure disruption

Priorities

1. Understand flood risks
2. Strengthen governance of flood risks

3. Enhance flood preparedness
4. Enhance flood response and recovery
5. Invest in flood risk reduction

Objectives

1. Keeping people and property out of high-risk areas and not creating new, or aggravating existing, flood risks;
2. Reducing the impacts of flooding on existing communities;
3. Ensuring Ontarians are aware of flood risks and are taking steps to prepare for them;
4. Ensuring efficient and effective services are in place to respond to flood-related emergencies when they occur; and
5. Ensuring Ontarians impacted by flooding can get back on their feet as soon as possible.

2.5.1.2 CLIMATE CHANGE

The Ontario's Flooding Strategy, Priority # 2 - Strengthen Governance of Flood Risks, includes an activity to update existing (provincial) technical guidelines (see page 21). Conservation Ontario and CAs have provided input to the province that the series of technical guidelines for natural hazards should be updated, and it's anticipated any update would include information regarding the impacts of climate change and guidance on the provincial approach to address this significant issue. When the updated guidelines or bulletins are completed for each natural hazard, they will inform CA policies and technical review of permits in relation to climate change. Individual CAs may also develop policies and technical criteria for the review of a permit to address climate change considerations.

2.5.1.3 ONTARIO'S SPECIAL ADVISOR ON FLOODING REPORT

Chapter 5 of the Special Advisor report outlines in more detail Ontario's approach to managing flood risk. The section below is an excerpt from this report and CA staff should review the text in the original document. Note: the original report Section numbers have been removed. An important element of this report is the inclusion of 'Prevention' in managing flood risks: This report includes the following information:

"Ontario's current approach to managing risks associated with flooding is based on the five core components of emergency management: 1) Prevention; 2) Mitigation; 3) Preparedness; 4) Response; and 5) Recovery. Management is achieved through the use of a series of provincial acts, regulations, policies and technical guides that are implemented through

partnerships with a number of provincial ministries, municipalities, First Nations and conservation authorities.

The objectives with this approach are to save lives and money, protect property, public health and the environment, maintain economic stability, help assure the continuance of critical infrastructure, and reduce social disruption associated with emergencies.

Prevention

Prevention includes actions taken to prevent flood-related emergencies or disasters from occurring and includes land use planning and regulatory restrictions to keep development activity out of the floodplains and other hazardous areas. While we cannot prevent flooding from occurring, keeping people and property out of flood-prone areas helps ensure naturally occurring flood events do not result in local emergencies.

As an overall principle for flood management, the MNRF prioritizes the use of non-structural and land use planning measures as its preferred approach to manage flood risks. This includes the identification of hazardous areas, including floodplains. Municipalities can then plan to prohibit/limit activities, including development, in these areas. The main legislative tools used to together with the Provincial Policy Statement and the *Conservation Authorities Act*. support this approach include the *Planning Act* together with the Provincial Policy Statement and the *Conservation Authorities Act*.

Mitigation

Mitigation includes actions taken to reduce the effects of flooding and includes the use of structural measures and floodproofing standards to protect development. Structural measures can include dams, dikes, channels, diversions and other flood control works. Floodproofing standards can include a combination of measures incorporated into the basic design and/or construction of buildings, structures or properties to reduce or eliminate flooding hazards, wave uprush and other water-related hazards. Examples include constructing the lowest occupancy floor of dwellings, water shut off and electrical control panel above the design flood level and having water resistant electrical systems.

Preparedness

Preparedness includes the use of flood forecasting and warning to assess the potential for flooding, predict when and where flooding will occur, and help ensure an effective response (e.g. Any required evacuations or mitigative activities).

The Province conducts flood forecasting and warning via the MNRF's Surface Water Monitoring Centre, which monitors weather, rainfall and stream flows, and provides advisories and a suite of products and tools (e.g., weather panels, snow survey reports) to conservation authorities (CAs), municipalities and MNRF district offices on flood potential. The monitoring of flood conditions occurs seven days a week, and the Province is able to contact CAs and other stakeholders immediately with updates.

Local scale flood forecasting and warning is provided by MNRF district offices and conservation authorities. Many of the CAs conduct more detailed flood forecasting and warning for their respective jurisdictions.

Response

Response includes actions taken to respond to flood emergency, such as the use of emergency services (e.g. providing sandbags, community evacuations, etc.) to protect people and property during flood events. Response can also include training for emergency response staff and meeting with stakeholders/partners to ensure an effective response. It also includes providing logistical support and social and health services.

The Emergency Management and Civil Protection Act (EMCPA) establishes Ontario's legal basis and framework for managing emergencies (see Section 5.2.4)2. It does this by defining the authority, responsibilities and safeguards accorded to provincial ministries, municipalities and specific individual appointments, such as the Commissioner of Emergency Management

Recovery

Recovery includes actions taken to recover from a flood emergency, such as the use of disaster financial assistance to restore property to pre-flood conditions.

Provincially, financial assistance is delivered through two programs—the Disaster Recovery Assistance for Ontarians (DRAO) program for homeowners, tenants, small owner-operator businesses and farms, and not-for-profit organizations; and the Municipal Disaster Recovery Assistance (MDRA) program for municipalities. These programs provide funds for eligible expenses following a natural disaster to help Ontarians and municipalities recover from extraordinary costs. …"

Acts, Regulations, Policies and Technical Guides

"Ontario's preventative approach of directing development activity away from floodplains and other hazardous areas is highly effective in preventing property damage." Property damage associated with the same storm event are often exponentially lower in Ontario than they are in Great Lakes states, with the differences in losses primarily attributed to differences in floodplain management policies and approaches.

Provincial policies have been shown to reduce capital and operating costs associated with managing flooding and other natural hazards, reducing pressure on provincial and municipal infrastructure debts. The existing policies have been estimated to reduce costs associated with ongoing flood and natural hazard management, including costs associated with the operation and maintenance of flood and erosion control infrastructure by 20 to 80% depending on differences in urban density and property values.

These policies have been credited with keeping losses associated with flooding in Ontario lower than losses seen in other Canadian provinces. Responsibility for keeping development activity out of floodplains is a shared responsibility between municipalities (enforced through municipal planning) and Conservation Authorities (enforced through the CA Act and regulations made under ss. 40(4) of the CA Act).

These policies will be increasingly valuable in protecting Ontarians from flooding and other natural hazards. Losses associated with flooding and other natural hazards continue to increase because of increasing property values and income levels, urbanization, ongoing loss of wetlands and other green infrastructure, and the increasing frequency and intensity of extreme rainfall events. As these losses rise, so does the value of Ontario's floodplain and broader hazard management policies. …"

"These [CA] regulations are a critical component of Ontario's broader natural hazard management framework and are designed to achieve the following policy objectives:

- Preventing loss of life, minimizing property damage and social disruption;
- Reducing public and private expenditure for emergency operation, evacuation, restoration and protection measures;
- Regulating development which, singularly or collectively, impact upon existing flood levels, and increasing potential risks to upstream and downstream landowners;
- Control interference with natural storage areas such as wetlands;
- Conserving land through the control of development on existing or potentially unstable valley slopes or shoreline bluffs; and

- Controlling development impacts as they relate to pollution (including erosion & sedimentation) or other degradation of existing and water resources, including groundwater."

The provincial natural hazards technical guides available on the Conservation Ontario Section 28 program webpage includes, but is not limited to, the following documents: Understanding Natural Hazards (2001), which provides the planning concepts to address natural hazards.

1. Technical Guide – River & Stream Systems: Flooding Hazard Limit (2002), which documents standardized approaches to manage flood susceptible lands across the province. It outlines the three flood event standards used in Ontario and outlines hydrologic and hydraulic work needed to conduct floodplain analysis and delineate flood-prone areas.

2. Procedures for Approval of New Special Policy Areas (SPAs) and Modifications to Existing SPAs Under the Provincial Policy Statement, 2005 (PPS, 2005), Policy 3.1.3 – Natural Hazards – Special Policy Areas. The procedural document that supersedes and replaces the information in Part B of Appendix 5 of the Technical Guide – River & Streams: Flooding Hazard Limit (2002).

3. Technical Guide – River & Stream Systems: Erosion Hazard Limit (2002) which has the purpose of providing a consistent and standardized procedure for the identification and management of riverine erosion hazards in Ontario.

4. Great Lakes-St. Lawrence River Shorelines: Flooding, Erosion and Dynamic Beaches (2001), which focuses on documenting standardized approaches to shoreline management and land use planning and management to address shoreline flooding, erosion and dynamic beaches, with a focus on the need to better understand the system, particularly its formation, evolution and potential impacts. f) Technical Guide for Large Inland Lakes Shorelines: Flooding, Erosion and Dynamic Beaches (1996), which addresses effective shoreline management and land use management approach for addressing shoreline natural hazards.

5. Hazardous Sites – Technical Guide (1996), which provides technical support in Identifying areas of unstable soils, including sensitive marine clays and organic soils as well as unstable bedrock, including karst bedrock.

3.0 AREAS SUBJECT TO THE REGULATION

Ontario Regulation 41/24 sets out areas where development is prohibited as well as setbacks from various environmental features. All areas within the jurisdiction of the Authority that are described in this section are delineated on the online GIS Viewer as the "Conceptual Regulated Area". The features that are encompassed by the regulation are as follows:

1. River or Stream Valleys
2. Great Lakes – St. Lawrence River Shorelines and Inland Lakes
3. Hazardous Lands
4. Lakes, Rivers, Creeks, Streams and Watercourses
5. Wetlands and Areas within 30m of a Wetland

3.0.1 FLOOD EVENT STANDARDS

The Regulation defines the flood standards that shall be used by CAs in Ontario. The flood standards are specific to each CA and include rivers and streams as well as lakes e.g., Hurricane Hazel, 100-year flood event standard, Timmins flood event, 100-year flood level plus wave uprush etc. The regulation states:

> ***3.****The applicable flood event standards with respect to an authority, for the purposes of paragraph 3 of subsection 2 (1) and to determine the maximum susceptibility to flooding of lands or areas in the area of jurisdiction of an authority are the standards specified in Schedule 1*

The regulatory standard for the Quinte Conservation watershed is the 1:100-year event. All watercourses, rivers and lakes, including Lake Ontario and the Bay of Quinte are assessed and regulated using this standard unless otherwise noted below.

3.0.1.1 LAKE ONTARIO AND THE BAY OF QUINTE

The flood hazard for Lake Ontario and the Bay of Quinte is based on the 100-year flood limit that is comprised of the 100-year flood level plus wave uprush. The erosion hazard is based on the potential for erosion in a 100-year time frame and a stable slope allowance. These hazards along with the dynamic beach hazards for Lake Ontario and the Bay of Quinte were identified in 2021 through the Quinte Conservation Shoreline Management Plan (SMP) (June 21, 2021, Zuzek). The study, completed in partnership with Cataraqui Conservation, encompassed the entire shoreline of the Bay of Quinte within the QC watershed, the shoreline of Prince Edward County, including inland bays, West Lake and East Lake, and the

portion of the Napanee River that flows from the downstream side of the Springside Dam to the Bay of Quinte. In recognition of the broad geography and varying shoreline conditions throughout the study area, the QC shoreline was sub-divided into 16 reaches with updated shoreline hazard mapping and shoreline management recommendations developed for each. The resulting 100 year combined (still water and wind setup) flood level for each reach is detailed in Fig. 4 below. A standard setback of 15m to account for varying wave uprush considerations determines the entire Flood Hazard delineation.

Figure 4: Reach Locations for Quinte SMP

The Erosion Hazard has been calculated using a 100-year erosion allowance plus a stable slope allowance measured horizontally from the toe of the slope. A standard stable slope allowance of 1.75(H):1.0(V) was used for slopes equal to or greater than 2m in height. For slopes less than 2m in height or with a slope flatter than 1.75(H):1.0(V) a 10m setback was used from the top of the existing shoreline as the 100-year recession rate. For slopes and shorelines that are comprised of soil a 3.0(H):1.0(V) was used for the stable slope allowance. In specific conditions where less weathered or "stronger" solid bedrock exists, the stable slope allowance may be reduced to 1.4(H): 1(V).

There are 13 individual dynamic beach areas identified on the Lake Ontario shoreline and the standard setback of 30m from the 100-year flood level plus the wave uprush is applied to establish the Dynamic Beach Hazard. The standards for establishing the natural hazard areas have been applied as per MNRF Technical Guidelines for Large Inland Lakes, 1996.

3.0.1.2 OTHER LAKES AND WATERCOURSES

Not all lakes and watercourses in the QC watershed have delineated floodplains, however the following areas have floodplain elevations associated with them. The lake or waterbody names and the date of the associated reports are listed below. All floodplains have been delineated with the 100-year event unless otherwise noted.

Table 3: Floodplain Reports in QC Watershed

Watershed	Waterbody/Watercourse	Date	Storm Event
Prince Edward Region	Marsh Creek	Aug 1981	Timmins
	Lane Creek	April 2022	1:100
	Bloomfield Creek	Oct 1983	1: 100
	Slab Creek	Dec 1980	Timmins
	Consecon Creek	April 1982	1: 100
	Hospital Creek	Dec 1986	1: 100
	Consecon Lake	April 1982	1:100
	Roblin Lake		1:100
Napanee River	Napanee River	June 1978	1: 100
	Salmon River	Jan 1979	1: 100
	Marysville Creek	Nov 1980	1: 100
	Selby Creek	Nov 1980	1: 100
	Napanee River - Upstream Lakes	Nov 1980	1: 100
	Howes/Verona/Hambly Lake	June 1978	1:100
	Potspoon Lake		
	Thirteen Island Lake		
	Thirty Island Lake		
	VanLuven Lake		
	Varty Lake		
	Salmon River - Upstream Lakes	Oct 1980	1: 100
	Hungry Lake	Dec 1978	1:100
	Kennebec Lake		
	Big Clear Lake		
	Sheffield Lake		
	Beaver/White Lake		
Moira River	Bay of Quinte	May 1989	1: 100
	Deer Creek	April 2022	1: 100

	Moira River (South of Hwy 401)	July 1987	1: 100
	Moira River	May 1983	1: 100
	Bell Creek (North of Airport Road)	Nov 1988	1: 100
	Bell Creel (South of Airport Road)	March	1: 100
	Potter Creek	April 1992	1: 100
	Nor-belle Creek	Jan 1995	1: 100
	No Name Creek	July 1977	1:100
	Skootamatta Lake	May 2011	1:100
	Stoco Lake	1983	1:100
	Moira Lake	1983	1:100

4.0 RIVER OR STREAM VALLEYS

This component of the Regulation applies to development within river and stream valleys that have depressional features associated with a river or stream, whether or not they contain a watercourse. See Section 4.0 of the policy document for policy guidance on River or Stream Valleys. Ontario Regulation 41/24 includes the legal description of the river or stream valley. The regulation states:

> ***2***. *(1) For the purposes of subparagraph 2 iii of subsection 28 (1) of the Act, river or stream valleys include river or stream valleys that have depressional features associated with a river or stream, whether or not they contain a watercourse, the limits of which are determined as follows:*
>
> ***1.*** *Where the river or stream valley is apparent and has stable slopes, the valley extends from the stable top of bank, plus 15 metres, to a similar point on the opposite side,*
>
> ***2.*** *Where the river or stream valley is apparent and has unstable slopes, the valley extends from the predicted long term stable slope projected from the existing stable slope or, if the toe of the slope is unstable, from the predicted location of the toe of the slope as a result of stream erosion over a projected 100-year period, plus 15 metres, to a similar point on the opposite side,*
>
> ***3.*** *Where the river or stream valley is not apparent, the valley extends,*
>
> *(i) to the furthest of the following distances:*
>
> *A. the distance from a point outside the edge of the maximum extent of the flood plain under the applicable flood event standard to a similar point on the opposite side; and*
>
> *B. the distance from the predicted meander belt of a watercourse, expanded as required to convey the flood flows under the applicable flood event standard to a similar point on the opposite side; and*
>
> *(ii) an allowance of 15 metres on each side, except in areas under the jurisdiction of the Niagara Peninsula Conservation Authority.*

4.1 DISCUSSION OF RIVER OR STREAM VALLEYS

To provide guidance in regulating river and stream valleys, it is necessary to highlight their hydrological and ecological functions. It should be noted that inland lakes are considered to be within or a part of the river or stream valley.

To define the regulation limits for river and stream valleys, it is important to understand the landforms through which they flow. While there are many different types of systems, the application of the regulation limit for rivers and stream systems is based on two simplified landforms, as explained in the technical guides for river and stream systems (MNR, 2002a; and MNR, 2002).

River and stream systems also provide physical, biological and chemical support functions for sustaining ecosystems. These functions are directly associated with the physical processes of discharge, erosion, deposition and transport which are inherent in any river and stream system. The interplay between surface and ground water and the linkages, interactions and inter-dependence of aquatic environments with terrestrial environments supply hydrologic and ecological functions critical to sustaining watershed ecosystems.

Furthermore, river and stream systems are part of larger overall drainage watersheds, and the river and stream mechanics are linked to the watershed processes. The natural importance of river and stream systems in providing physical, biological and chemical support functions for sustaining ecosystems (including that of humans) is well established. These support functions are strongly associated with the physical processes of discharge (flow), erosion, deposition and transport that are inherent in any fluvial system. Given that ecological sustainability is based on the dynamic nature of these systems, it is essential that their physical processes (i.e., flow dynamics) be allowed to function in a natural state.

River or stream valleys are shaped and re-shaped by the natural processes of erosion, slope stability and flooding. Erosion and slope stability are two natural processes that are quite different in nature yet often linked together. Erosion is essentially the continual loss of earth material (i.e. soil or sediment) over time as a result of the influence of water or wind. Slope stability, usually described in terms of the potential for slope failure, refers to a mass movement of earth material, or soil, sliding down a bank or slope face as a result of a single event in time.

The degree and frequency with which the physical change will occur in these systems depends on the interaction of a number of interrelated factors including hydraulic flow, channel configuration, sediment load in the system, storage and recharge functions, and the stability of banks, bed and adjacent slopes. The constant shaping and re-shaping of the river and stream systems by the physical processes results in hazardous conditions which pose a risk to life and cause property damages.

River and stream systems can exhibit erosion potential of the actual river and stream bank, as well as potential slope instability issues related to valley walls. Slopes steeper than 3:1 (horizontal: vertical) with a height greater than 3 metres are generally considered potentially unstable. Slopes in sandy soil areas may be unstable if the slope is steeper than 5:1 (horizontal: vertical). Erosion hazards and slope instability pose a threat to life and property through the loss of land due to human or natural processes.

The erosion hazard limit is determined using the 100 year erosion rate (the average annual rate of recession extended over a hundred year time span), and includes allowances for toe erosion, meander belt, and slope stability. The erosion hazard component of river and stream systems is intended to address both erosion potential of the actual river and stream bank, as well as erosion or potential slope stability issues related to valley walls.

Flooding of river or stream systems typically occurs following the spring freshet and may occur again as a result of extreme rainfall events. Rivers naturally accommodate flooding within their valleys. Historically, development occurred in floodplain areas because of the availability of water for power, transportation, energy, waste assimilation, and domestic and industrial consumption. However, floodplain development is susceptible to flooding which can result in property damage and/or loss of life.

In Ontario, either storm centred events, observed events, or a flood frequency based event may be used to determine the extent of the Regulatory floodplain, as prescribed by each individual CA Regulation.

4.2 DEFINING THE RIVER OR STREAM VALLEY

River or stream valleys are described in the Regulation as “depressional features associated with a river or stream, whether or not they contain a watercourse”. The limit of the river or stream valley is the furthest extent of the erosion hazard or flooding hazard plus an allowance. For the purpose of administering the The Regulation inland lakes that do not

meet the definition of "large inland lake" (i.e., waterbody that has a surface area equal to or greater than 100 square kilometers where there is no measurable or predictable response to a single runoff event) should be treated in a manner similar to a river or stream valley. QC does not have any large inland lakes in the watershed.

While there are many different types of systems, the application of the Regulation Limit for rivers and stream systems is based on two simplified landforms, as explained in the Technical Guides for River and Stream Systems (MNRF, 2002a; and MNRF, 2002b). The following sections describe how the various components of a river or stream valley are determined.

Apparent[1] (confined) river and stream valleys: are ones in which the physical presence of a valley corridor containing a river or stream channel, which may or may not contain flowing water, is visibly discernible (i.e. valley walls are clearly definable) from the surrounding landscape by either field investigations, aerial photography and/or map interpretation. The location of the river or stream channel may be located at the base of the valley slope, in close proximity to the toe of the valley slope (i.e. within 15 metres), or removed from the toe of the valley slope (i.e. greater than 15 metres).

Not Apparent (unconfined) river and stream valleys: are ones in which a river or stream is present but there is no discernible valley slope or bank that can be detected from the surrounding landscape. For the most part, unconfined systems are found in fairly flat or gently rolling landscapes and may be located within the headwater areas of drainage basins. The river or stream channels contain either perennial (i.e. year round) or ephemeral (i.e. seasonal or intermittent) flow and range in channel configuration from seepage and natural channels to detectable channels.

4.2.1 APPARENT/CONFINED VALLEYS

Where the physical presence of a valley corridor containing a river or stream channel, which may or may not contain flowing water, is visibly discernible (i.e. valley walls are clearly definable) from the surrounding landscape, the regulated area (or Regulation limit) for apparent/confined valley systems takes into account the following three considerations:

- toe erosion;
- a stable slope limit; and

[1] The individual CA Regulations describe river or stream valleys as "apparent" and "not apparent". Provincial Technical Guides utilize the terminology "confined" and "unconfined", respectively.

- a 15 metre allowance.

The limit of the regulated area associated within an apparent/confined valley is based on whether or not the valley slopes are stable, unstable, and/or subject to toe erosion.

Valley slopes are considered stable when the valley is not subject to toe erosion, the valley walls are no more than 3 metres in height, and the existing slope angle is no steeper than 3:1 (horizontal: vertical units). The valley slopes in these circumstances typically resist slumping and rotational slippage but may become unstable as a consequence of the increased loading forces of development, depending on the soil structure and underlying geology. The regulated area includes the river or stream and the valley walls extending landward to the stable top of bank plus an allowance of 15 metres. (Figure 5)

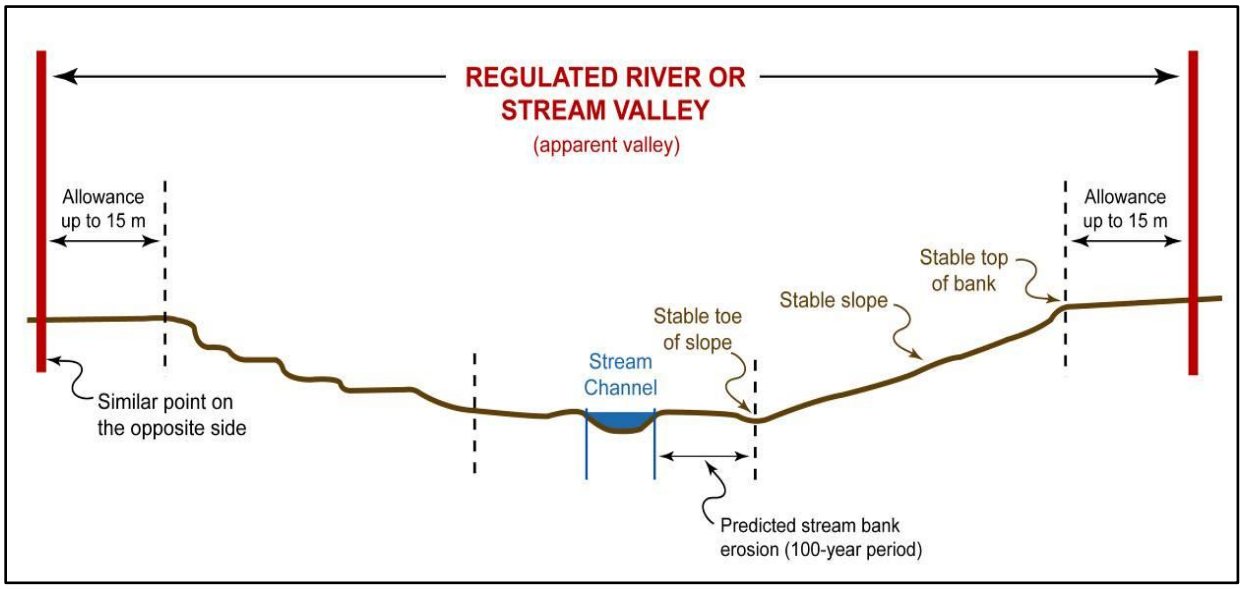

Figure 5: Apparent River or Stream Valley (Where the Valley Slopes are Stable)

Valley slopes are considered unstable when the valley slope may be impacted by toe erosion and/or slope instabilities (i.e. existing slope angle steeper than 3:1 (horizontal: vertical units) and/or greater than 3 metres in height). The regulated area includes the river or stream and the valley walls extending landward to the predicted long term stable top of slope projected at a 3:1 (horizontal: vertical) (or 5:1 (horizontal: vertical) for sandy soils) slope ratio from the predicted stable toe of slope (taking into consideration a toe erosion allowance of 15 metres, unless otherwise determined through a technical analysis) plus an allowance of 15 metres. (Figure 6 and 7)

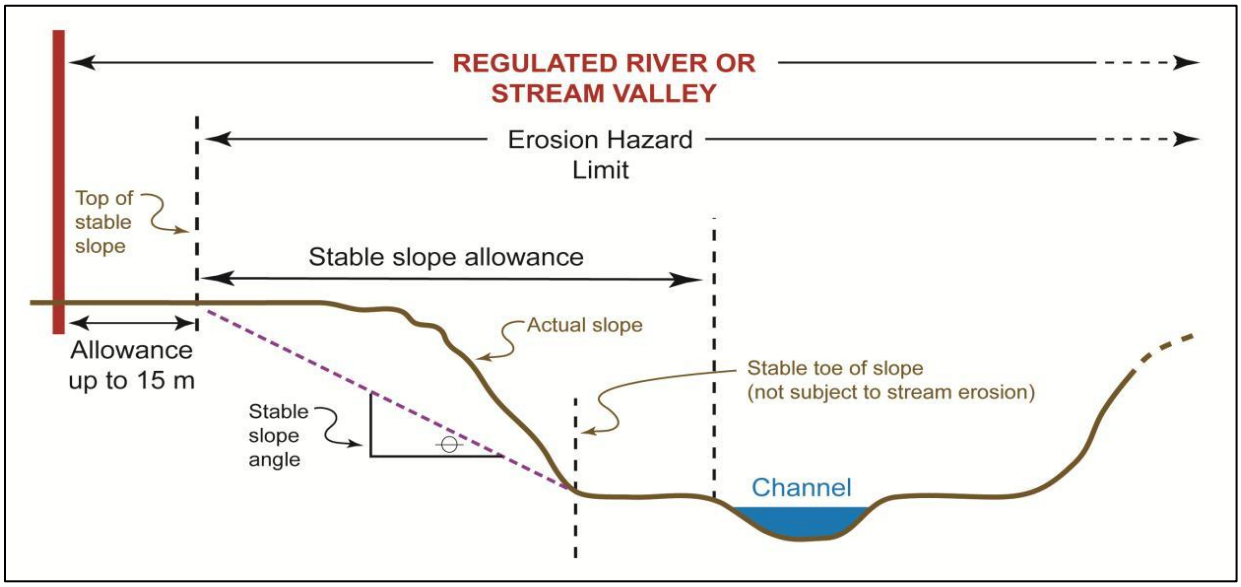

Figure 6: Apparent River or Stream Valley (Valley Slope Unstable with Stable Toe)

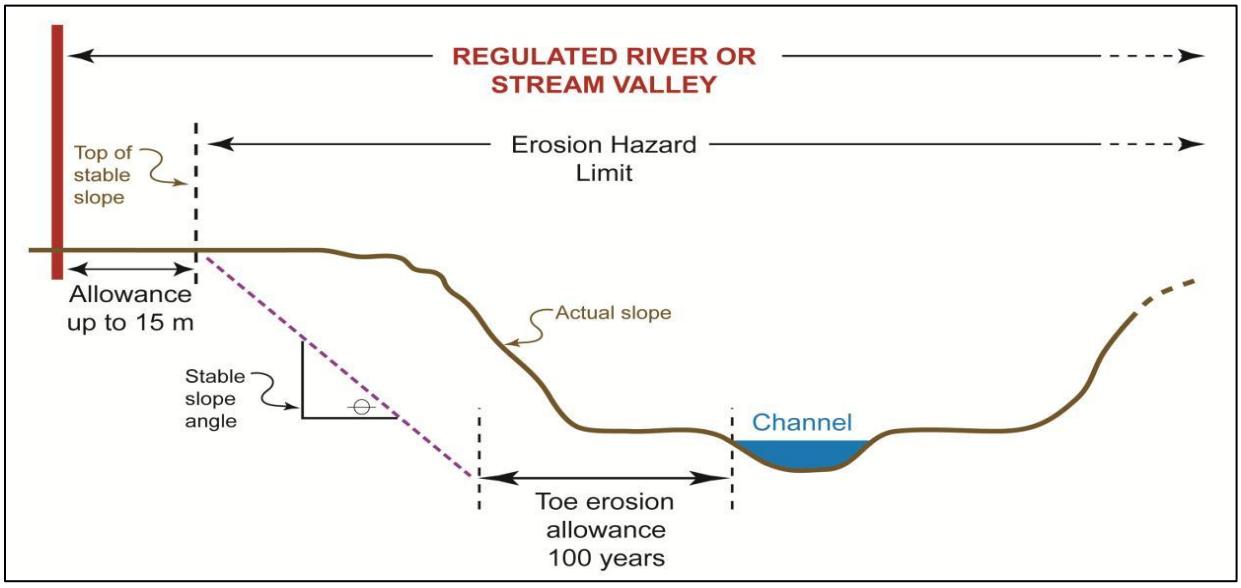

Figure 7: Apparent River or Stream Valley (Where Valley Slopes are Unstable with Active Toe Erosion)

4.2.2 NOT APPARENT/UNCONFINED VALLEYS

Where a watercourse is not contained within a clearly visible valley section (that is, a river or stream is present but there is no discernible valley slope or bank that can be detected from the surrounding landscape), the flow of water is free to shift across the shallower land. Although toe erosion and slope stability are not deemed potential hazards, consideration of the meandering (erosion potential) tendencies of the system must be taken into account. In these valley systems, the regulated area consists of the maximum extent of whatever is greater: the floodplain or the predicted meander belt width (erosion hazard) of the river or stream plus an allowance of 15 metres. (Figure 8)

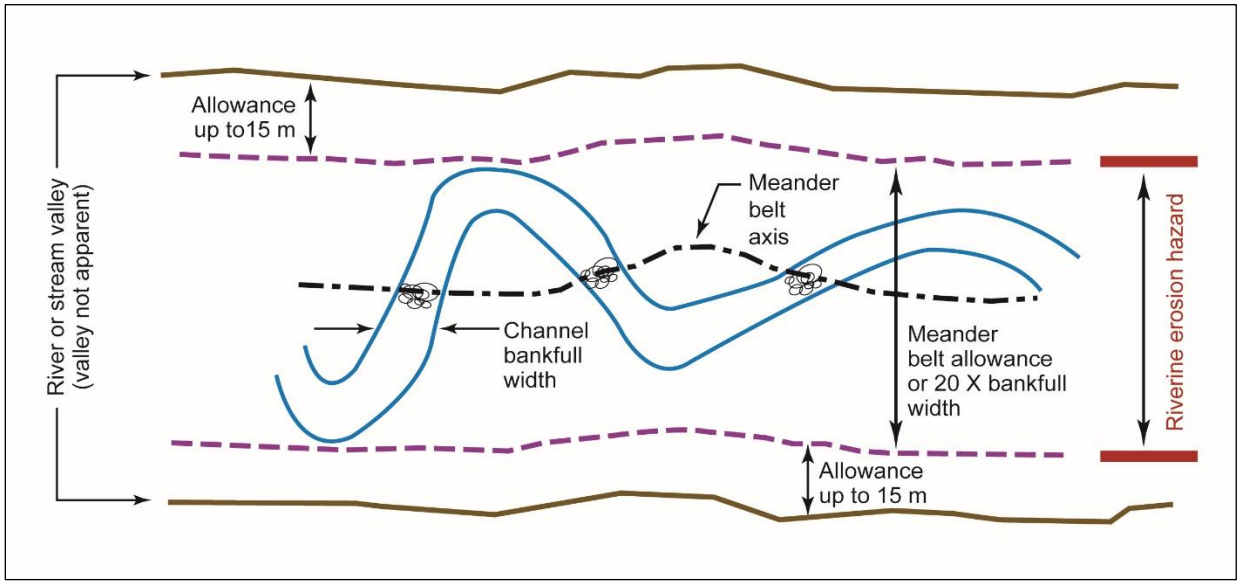

Figure 8: Not Apparent River or Stream Valley (Meander Belt)

River or stream systems may contain lands that are not subject to flooding or erosion. Examples of these non-hazardous lands include isolated flat plateau areas or areas of gentle slopes (see Figure 9). In these situations, the CA shall determine the applicability of the Regulation.

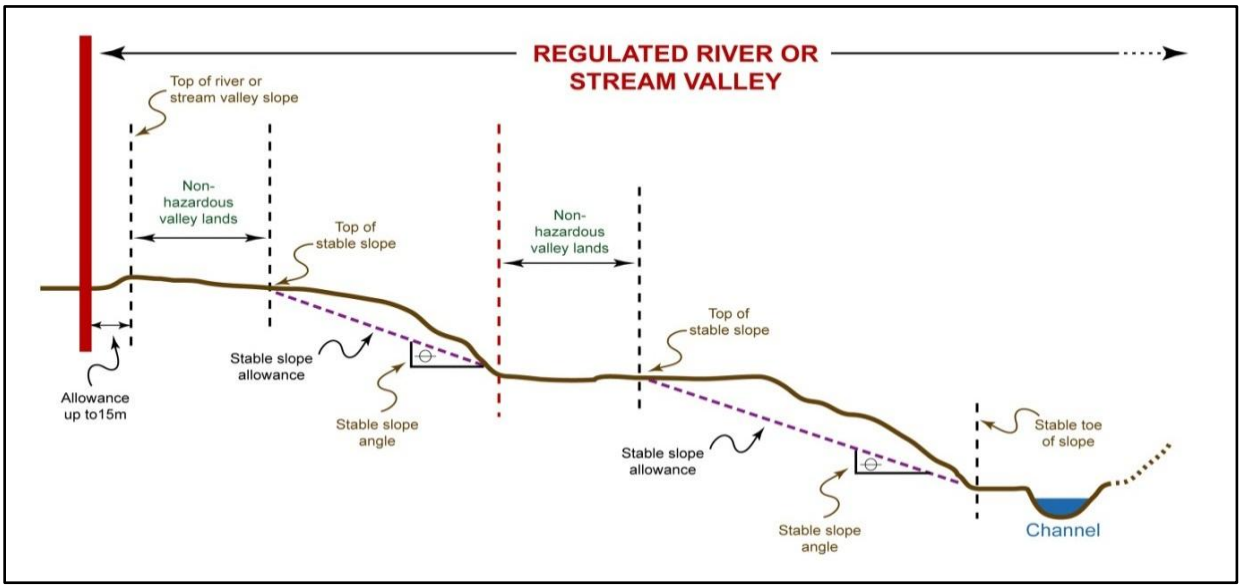

Figure 9: Regulated River or Stream Valley Containing Non-Hazardous Valley Lands

4.3 DEFINING THE EROSION HAZARD AND ASSOCIATED REGULATED AREA

The erosion hazard is that area of a watercourse bank and lands adjacent to a watercourse (i.e. a watercourse valley) where erosion is actively occurring and/or where development could create slope stability issues. The erosion hazard addresses both the erosion potential of the actual watercourse bank and the potential slope instability related to valley walls.

Development adjacent to valley slopes can cause increased loading forces on the top of slope, compromise slope stability or increase erosion of the slope face, and result in the loss of stabilizing vegetation. Where there is no apparent valley the regulated area associated with an erosion hazard is comprised of the meander belt (i.e. the meander belt width). Where the valley is apparent the regulated area associated with an erosion hazard is comprised of the stream bank and slope erosion (i.e. the toe erosion allowance and the stable slope allowance).

4.3.1 TECHNICAL ANALYSIS FOR EROSION HAZARDS

Frequently, technical analysis is required to determine the appropriate toe erosion, slope stability, and meander belt allowances. Technical studies should be carried out by a qualified professional, with recognized expertise in the appropriate discipline, and should be prepared using established procedures and recognized methodologies to the satisfaction of

QC. With respect to riverine erosion hazards, technical studies should be in keeping with the "Technical Guide – River and Stream Systems: Erosion Hazard Limit" (MNR, 2002b) and must demonstrate that there is no increased risk to life or property.

The Technical Guide provides four methods of determining the toe erosion allowance. The technical guide also states that toe erosion rates are best determined through long-term measurements and that a minimum of 25 years of data is recommended for erosion assessment rates. Sections 3.0, 3.1, 4.1, and 4.3 of the Technical Guide are particularly relevant in this regard. It is essential that qualified professionals properly characterize the watercourse in question to identify what processes are occurring. For channels where processes indicative of instability, such as downcutting, are identified, very detailed fluvial geomorphic analyses would likely be required to predict erosion rates. As well, watercourses in catchments experiencing rapid land use change where the sedimentation and hydrologic regimes are changing could be experiencing erosion rates that are shifting in response, and that rate of change may not be quantifiable without significant detailed analysis.

Sections 3.0, 3.2, 4.1, and 4.3 of the Technical Guide provide important direction with respect to slope stability analysis. Slope stability analysis should also be undertaken in accordance with the Geotechnical Principles for Stable Slopes (Terraprobe Limited and Aqua Solutions, 1998). Recognized analytical methods should be utilized. An appropriate Factor of Safety should be incorporated into all designs/analysis based on the consequences or risks to land use or life in the event of a slope failure. Recommended minimum Factors of Safety are provided in the Technical Guide based on land use above or below the slope (Table 4.3, Page 60, MNR, 2002b). These Factors of Safety should also be increased when necessary to account for the reliability of the information available for the technical analysis due to aspects such as natural soil variability in the subject area, limited site work due to constraints, etc.

The determination of the appropriate meander belt allowance usually involves a wide range of study areas such as geomorphology, engineering, and ecology. The existing and the ultimate configuration of the channel in the future must be considered. Due to the challenges in assessing meander belt widths, more than one method of determining the meander belt width may be required for any given application. Sections 3.0, 3.3 and 4.4 of the Technical Guide and the supporting documentation entitled "Belt Width Delineation Procedures" (Prent and Parish, 2001) provide further details.

Within non-apparent valleys, there may be on occasion areas within the meander belt allowance that are not actually susceptible to erosion within a 100-year planning horizon. These areas may arise for a variety of reasons such as, but not limited to, soil type, hydraulic regime changes, implementation of publicly owned erosion protection works, etc. In these areas, some development, particularly development associated with existing uses, may be considered as the development would not be susceptible to actual stream erosion over the 100-year planning horizon.

When assessing an application for development within any type of valley system, consideration must be given to the ability for the public and emergency operations personnel to safely access through the valley system for emergency purposes, regular maintenance to existing structures or to repair failed structures.

As part of the review of an application, QC may request an environmental impact assessment (EIA) to address development within erosion hazards in order to assess pollution and/ or. An EIA is a mechanism for assessing impacts to determine the suitability of a proposal. The submission of an EIA does not guarantee approval of the works. An EIA must be carried out by a qualified professional, with recognized expertise in the appropriate area of concern and shall be prepared using established procedures and recognized methodologies to the satisfaction of QC.

4.3.2 DETERMINING THE EROSION HAZARD OF AN APPARENT (CONFINED) RIVER OR STREAM VALLEY

The following method will be used to determine the erosion hazard for an apparent (confined) river or stream valley:

1. In general, where there is an apparent river or stream valley, the erosion hazard will consist of a toe erosion allowance plus a stable slope allowance. The toe erosion allowance is determined in accordance with Table 2 below (or as determined by a study using accepted geotechnical and engineering principles). The stable slope allowance is defined as being no steeper than 1(h):1(v) for bedrock shorelines and no steeper than 3(h):1(v) for all other situations (or as determined by a study using accepted geotechnical principles);

2. Notwithstanding point 1., a scoped erosion (recession) study and/or geotechnical analysis may be completed by a qualified professional using accepted scientific and engineering principles to re-evaluate the erosion hazard allowance for

development proposals. These studies are to be done at the applicant's expense and must be completed to the satisfaction of QC staff.

Table 4: Determination of Toe Erosion Allowance

Minimum Toe Erosion Allowance – River Within 15m of Slope Toe*				
Type of Material Native Soil Structure	**Evidence of Active Erosion** OR Bankfull Flow Velocity > Competent Flow Velocity*** RANGE OF SUGGESTED TOE EROSION ALLOWANCES**	**No Evidence of Active Erosion ** OR Bankfull Flow Velocity < Competent Flow Velocity*****		
		Bankfull Width		
		<5m	**5-30m**	**>30m**
1. Hard Rock (granite)*	0-2m	0m	0m	1m
2. Soft Rock (shale, limestone) Cobbles, Boulders*	2-5m	0m	1m	2m
3. Stiff/Hard Cohesive Soil (clays, clay silt), Coarse Granular (gravel) Tills*	5-8m	1m	2m	4m
4. Soft/Firm Cohesive Soil, loose granular (sand, silt) Fill*	8-15m	1-2m	5m	7m

*Where a combination of different native soil structures occurs, the greater or largest range of applicable toe erosion allowances for the materials found at the site should be applied.

**Active Erosion is defined as: bank material is exposed directly to stream flow under normal or flood flow conditions where undercutting, oversteepening, slumping of a bank or down stream sediment loading is occurring. An area may have erosion but there may not be evidence of "active erosion" either as a result of well rooted vegetation or as a result of a condition of net sediment deposition. The area may still suffer erosion at some point in the future as a result of shifting of the channel. The toe erosion allowance presented in the right half of the table are suggested for sites with this condition.

***Competent Flow Velocity is the flow velocity that the bed material in the stream can support without resulting in erosion or scour.

Source: Technical Guides for River and Stream Systems (MNRF, 2002a; and MNRF, 2002b)

4.3.3 DETERMINING THE EROSION HAZARD OF A NON-APPARENT (UNCONFINED) RIVER

The following method will be used to determine the erosion hazard for a non-apparent (unconfined) river or stream valley:

1. In general, the erosion hazard of a non-apparent river or stream valley (meander belt) or predicted meander belt allowance is determined by multiplying 20 times the

bankfull channel width centred over the meander belt axis (or as determined by a study using accepted engineering principles);

2. Notwithstanding point 1), a scoped erosion (recession) study and/or geotechnical analysis may be completed by a qualified professional using accepted scientific and engineering principles to re-evaluate the erosion hazard (predicted meander belt allowance) for development proposals. These studies are to be done at the applicant's expense and must be completed to the satisfaction of QC staff.

4.4 DEFINING THE FLOOD HAZARD AND ASSOCIATED REGULATED AREA

In Ontario, either storm-centred events, flood frequency based events, or an observed event may be used to determine the extent of the Regulatory floodplain[2]. These events are:

A **storm-centred event**, either Hurricane Hazel storm (1954) or Timmins storm (1961). A storm-centred event refers to a major storm of record which is used for land use planning purposes. The rainfall actually experienced during a major storm event can be transposed over another watershed and when combined with the local conditions, Regulatory floodplains can be determined. This centering concept is considered acceptable where the evidence suggests that the storm event could have potentially occurred over other watershed in the general area;

100 year flood event is a frequency based flood event that is determined through analysis of precipitation, snow melt, or a combination thereof, having a return period (or a probability of occurrence) of once every 100 years on average (or having a 1% chance of occurring or being exceeded in any given year). The 100 year flood event is the minimum acceptable standard for defining the Regulatory floodplain; and

An **observed event**, which is a flood that is greater that the storm-centred events or greater that the 100 year flood and which was actually experienced in a particular watershed, or

[2] High points of land not subject to flooding but surrounded by floodplain or "flooded land" are considered to be within the flood hazard and part of the regulated floodplain.

portion thereof, for example as a result of ice jams[3], and which has been approved as the standard for that specific area by the Minister of Natural Resources.

The Province has adopted standards for addressing floodplain management. Unless otherwise approved by the Minister of Natural Resources, the regulatory flood standard is the Hurricane Hazel (1954) standard for the south and central part of the province, the Timmins Storm (1961) for the central and northern part of the province and the 100 year flood for the eastern part of the province (Figure 10). An observed event may take place in any part of the province, exceeding either the storm-centred events or the 100 year frequency based flood. These standards may be increased by the Minister of Natural Resources if a known flood (maximum observed) exceeds these criteria (Natural Hazards Technical Guidelines, 2002 (MNRF) – Section 7.0, River and Stream Systems of Understanding Natural Hazards and River and Stream Systems Flooding Hazard Limit Technical Guide). Based on a Board of Directors decision, the entire QC watershed uses the 1:100 year flood event.

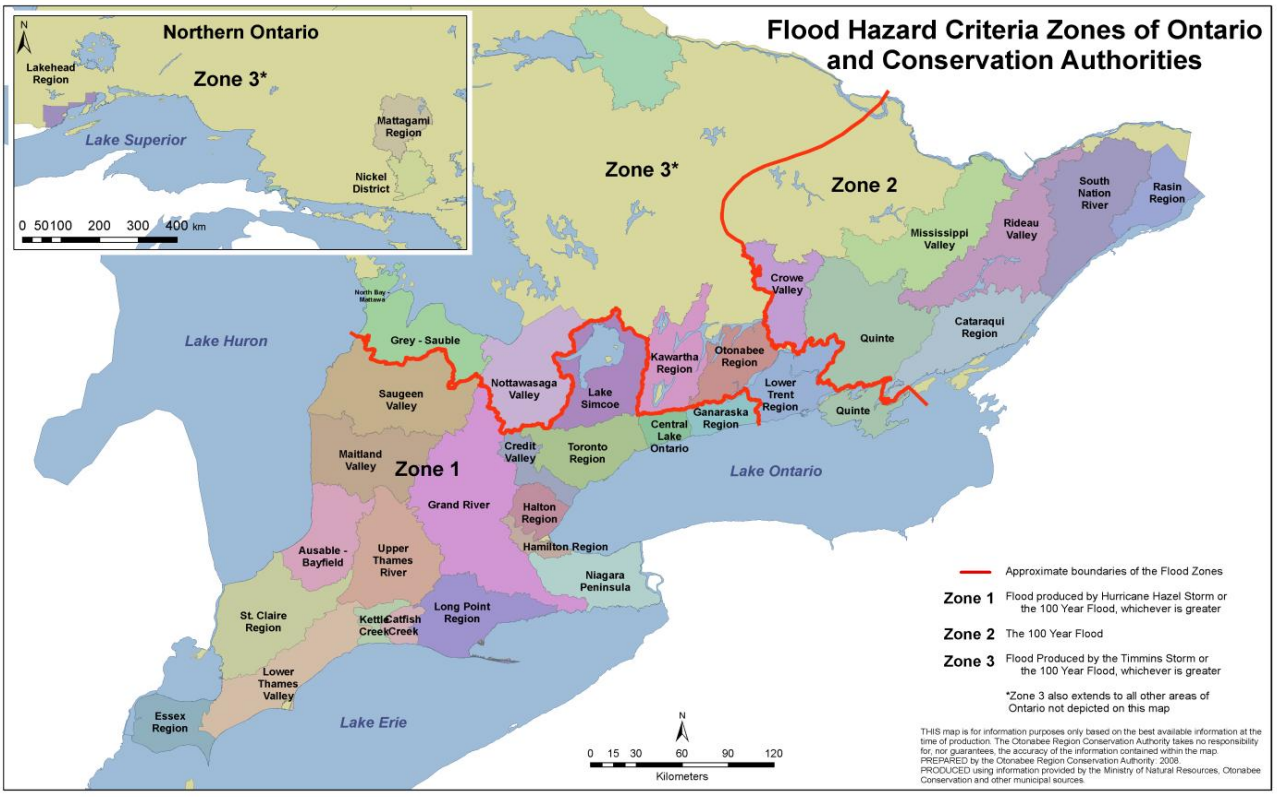

Figure 10: Flood Hazard Criteria Zones of Ontario

[3] However, localized chronic conditions (e.g. ice or debris jams) related to flood prone areas may be used to extend the regulated area beyond the Regulatory Flood limit without the approval of the Minister of Natural Resources. It will be necessary to inform the property owner(s) as well as ensuring that the revised limits are reflected in the appropriate municipal documents at the first opportunity.

Thus, the Regulatory floodplain for river or stream valley systems is defined as the area adjacent to the watercourse which would be inundated by a flood event resulting from either Hurricane Hazel, the Timmins Storm, an observed event, or by the 100 year frequency based event. The regulated area includes the floodplain and for not apparent valley systems, an allowance. The allowance is not to exceed 15 metres from the hazard (Figure 11).

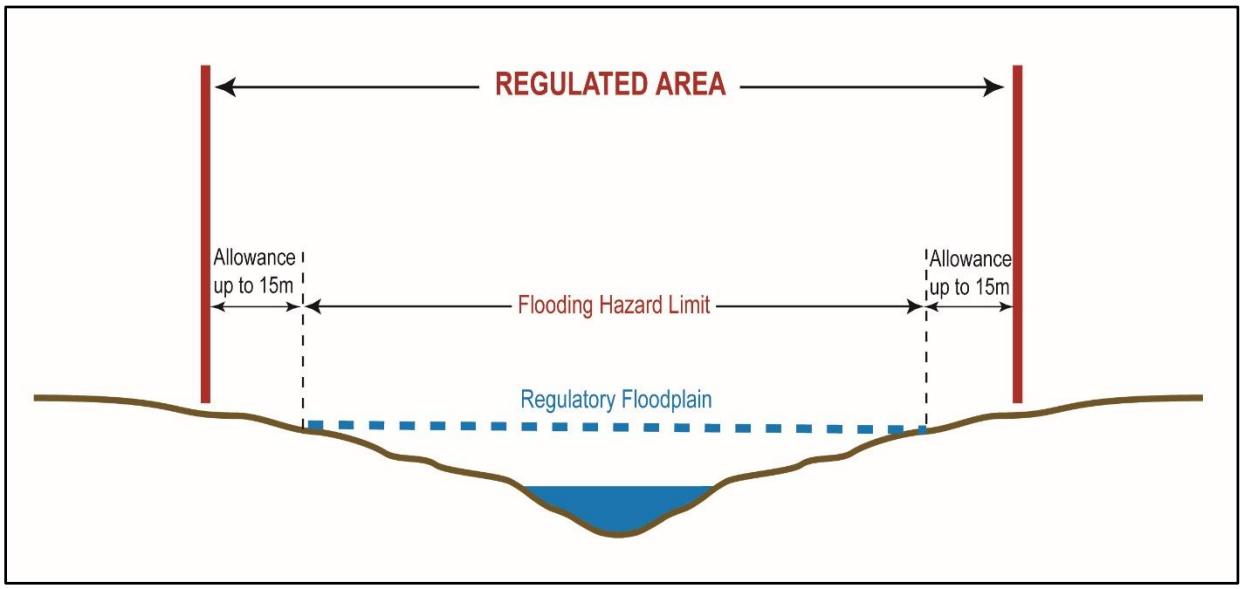

Figure 11: Regulated Area of Floodplain

Quinte Conservation uses the 1:100 year flood to delineate its regulated area. According to MNRF and CO Guidelines for Developing Scheduled Areas (2005), the flooding hazard is applied to all watercourses and lake systems in the QC watershed.

4.4.1 ONE ZONE CONCEPT

Under the one zone approach the flooding hazard limit is based on the 100 year flood event and development/site alteration within this area is prohibited. This one zone concept is the preferred approach for the management of flooding hazards within river and stream systems as it provides the most cost effective means of minimizing potential threats to life and risks of property damage and social disruption. Where the one zone concept is applied, the entire flood plain or the entire flooding hazard limit defines the floodway.

Using the one zone approach, construction activities are restricted within the Regulatory Flood Plain. Permitted development may include reconstruction or minor additions to existing structures as well as extension to existing agricultural operations. Other uses, such as open space, that is not likely to create damage to other properties from floodwater, or cause a threat to public safety, or are not of a polluting nature may be permitted within the

flood plain. Examples of uses or structures that would create adverse impacts in the flood plains of our riverine systems include, but are not limited to, new buildings, swimming pools, filling activities, septic tile fields and tanks, as well as manure storage and handling facilities.

The One Zone Concept of floodplain management is applied throughout the entire Quinte Conservation jurisdiction.

4.4.1.1 FLOODPLAIN SPILL ZONES

Spill areas are locations where flood waters may leave the flood plain of a watercourse and "spill" into surrounding lands, rejoining the watercourse at a distance downstream or moving into another watershed. In the past, it was not possible to map spills since available technology could not accurately determine where the water would flow and at what speed and depth. With new tools and technologies, spill areas can be more accurately defined. Spills are considered flood hazards/hazardous lands and permission should be required to develop or redevelop these areas. CAs have identified spill zones as floodplain in the past and/or may consider these areas as hazardous lands.

4.4.2 TECHNICAL STANDARDS FOR THE FLOODING HAZARD

The ability for the public and emergency operations personnel (police, firefighters, ambulance etc.) to safely access the flood plain during regulatory flood events is a paramount consideration in any application for development within the riverine flood plain. Ingress and egress should be "safe" pursuant to Provincial floodproofing guidelines (MNR, 2002a). Depths and velocities should be such that pedestrian and vehicular emergency evacuations are possible. For minor additions and re-development on existing lots as a minimum, access should achieve the maximum level of flood protection determined to be feasible and practical based on existing infrastructure. In the absence of a site-specific detailed analysis, it is recommended that the depths for safe access not exceed 0.3 metre and velocities not exceed 1.7 metres per second. Despite provincial guidance, QC can be more restrictive based on the abilities of local emergency responders to access flooded lands and undertake emergency evacuation.

Safety risks are a function of the occupancy of structures as well as the flood susceptibility of the structures and the access routes to those structures. Risk should be controlled by limiting the size and type of additions or reconstruction projects in the regulatory flood plain. Floodproofing measures should be in keeping with the standards of Appendix 6 of the "Technical Guide – River and Stream Systems: Flooding Hazard Limit" (MNR, 2002a).

QC may also request a hydrology / hydraulic study to be prepared by a qualified professional using accepted scientific and engineering principles. These studies must be completed to the satisfaction of QC staff.

All technical studies in support of development proposals are to be completed at the applicant's expense.

4.4.3 DETERMINING THE REGULATORY FLOOD PLAIN (HAZARD) OF RIVER OR STREAM VALLEYS

The following method will be used to determine the flood hazard for river and stream valleys:

In general, the regulatory flood plain for inland river and stream valleys is determined by:

I. using engineered flood plain mapping tools where available;
II. where engineered flood plain mapping tools are not available, by using the best available data (i.e. maximum recorded water level), by estimating the extent of the regulatory flood plain using accepted scientific and engineering principles, or by undertaking a scoped engineering study performed by a qualified professional using accepted scientific and engineering principles to determine the extent of the regulatory flood plain. These studies are to be done at the applicant's expense and must be completed to the satisfaction of QC staff; and
III. where an observed event has exceeded the flood plain mapping tools and/or best available data noted above, the observed flood event is utilized to define the regulatory flood plain.

4.5 REGULATION ALLOWANCES

River or stream valley allowances allows QC to regulate development adjacent to erosion and flooding hazards in a manner that provides protection against unforeseen or predicted external conditions that could have an adverse effect on the natural conditions or processes of the river or stream valley. Allowances give QC the opportunity to protect access to and along a valley and/or floodplain. This access may be required for emergency purposes, regular maintenance to existing structures or to repair failed structures.

Development within the allowance must be regulated to ensure that existing erosion and flooding hazards are not aggravated, that new hazards are not created, and to ensure that pollution and the will not be affected. The allowance provides QC with the opportunity to

maintain and enhance the natural features and ecological functions of the river or stream valley. Regulation of development in the allowance is also required to deal with issues related to accuracy of the modeling and analysis tools utilized to establish the limits of the erosion and flooding hazards.

QC requires that all development be setback a minimum of 30 metres from an apparent unstable slope or an unapparent valley with no known erosion or flood hazard. A setback of 15 metres is applied to an apparent stable slope or an unapparent valley with a known erosion or flood hazard. Any reduction in these setbacks must be supported by an appropriate study completed to the satisfaction of QC staff.

To provide access and protection against unforeseen conditions, provincial guidelines recommend that development should generally be set back a minimum of 6 metres adjacent to erosion and flooding hazards (Sections 3.0 and 3.4, Erosion Access Allowance, Technical Guide – River and Stream Systems: Erosion Hazard Limit (MNRF, 2002b)). MNRF recommends that this setback not only be applied to the erosion hazards but also adjacent to the flooding hazard because of the potential for erosion throughout the flooding hazard as a result of the flow of water during significant runoff events. For those situations where additional study is warranted to determine the development setback required to provide the required public safety and access, a study should be undertaken using accepted scientific, geotechnical, and engineering principles.

Protection of public safety and access, however, may not be sufficient to provide for all of the above noted requirements or purposes for the allowances. Additional technical studies by qualified professionals may be required to establish the appropriate extent and location of development within the allowance. QC may also determine that a reduced development setback is appropriate where the existing development already encroaches within the recommended 6 metre setback, and where further development will not aggravate the erosion or flooding hazard.

In order to ensure that valley systems can preserve the functionality of their physical processes it is important to maintain their natural state in order to prevent property damage and/or loss of life resulting from hazards associated with erosion, slope instability and flooding. For this reason, QC encourages development to take place outside of the regulated area associated with any river or stream valley.

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5.0 GREAT LAKES-ST. LAWRENCE RIVER SHORELINES AND INLAND LAKES

This component of the Regulation applies to development adjacent or close to the shoreline of the Great Lakes - St. Lawrence River System or to inland lakes that may be affected by flooding, erosion, dynamic beaches or unstable soil and bedrock. See Section 5.0 of the policy document for policy guidance on the Great Lakes-St. Lawrence River Shorelines and Inland Lakes. Ontario Regulation 41/24 includes the legal description for these natural hazards. The regulation states:

> ***2.*** *(2) For the purposes of subparagraph 2 iv of subsection 28 (1) of the Act, areas adjacent or close to the shoreline of the Great Lakes-St. Lawrence River System or to inland lakes that may be affected by flooding, erosion or dynamic beaches include,*
>
> *(a) the area starting from the furthest offshore extent of the Authority's boundary to the furthest of the following distances:*
>
> *(i) the 100-year flood level, plus the appropriate allowance for wave uprush, and, if necessary, for other water-related hazards, including ship generated waves, ice piling and ice jamming;*
>
> *(ii) the predicted long term stable slope projected from the existing stable toe of the slope or from the predicted location of the toe of the slope as that location may have shifted as a result of shoreline erosion over a 100-year period; and*
>
> *(iii) where a dynamic beach is associated with the waterfront lands, an allowance of 30 metres inland to accommodate dynamic beach movement; and*
>
> *(b) the area that is an additional 15 metres allowance inland from the area described in clause (a).*

5.1 DISCUSSION OF SHORELINE HAZARDS

Shorelines are comprised of three components which affect the processes and functions along a shoreline:

- Flooding Hazards;
- Erosion Hazards; and

- Dynamic Beach Hazards.

In general, flooding is a phenomenon influenced by and sensitive to water level fluctuations. Inundation of low-lying Great Lakes –St. Lawrence River System shorelines in and of itself does not necessarily constitute a significant hazard. The hazard is dependent on the type, design, location and density of any development in or near the flood inundated shorelines. However, where flooded lands are coupled with storm events, the cumulative impact can and frequently does pose significant degrees of risk. Of importance in managing a potential flood susceptible shoreline is the need to understand the interrelationship between pre-storm flooding, storm setup, wave height, wave uprush and other water related hazards (e.g. wave spray, ice). If the area of inundation is a wetland or an undeveloped area, the resultant "damage" caused by a storm event may be minimal if measured in terms of human losses (i.e. property and life). Indeed, periodic flooding of wetland complexes have been found to be beneficial for the continued maintenance and enhanced diversity of wetland vegetation itself, by helping to eliminate the invasion of water sensitive upland vegetation into low-lying shorelines during periods of low water levels.

In terms of human use and occupation of the low-lying Great Lakes – St. Lawrence River System shorelines, development decisions based on or during periods of low water levels can present the most serious problem. During lower water levels, the potential flood hazard to homes, cottages and other development often goes unrecognized. Consequently, when water levels return to long-term averages or high-water levels, flood damages are sustained. These damages are frequently quite significant (MNR, 1996b).

Erosion within the Great Lakes – St. Lawrence River System is a concern, particularly within the lower Great Lakes. Erosion rates are dependent upon a number of lake and land processes as well as the composition and morphology of the shore. In general terms, identification of erosion susceptible shorelines is rather simple in that erosion of bedrock and cohesive shores involves a unidirectional process. In the absence of human intervention and/or the installation of remediation measures, once material is removed, dislodged or extracted from the shore face and near shore profile it cannot reconstitute with the original material and is essentially lost forever. Even with the installation of remedial measures (i.e. assumed to address the erosion hazard), the natural forces of erosion, storm action/attack and other naturally occurring water and erosion related forces may prove to be such that the remedial measures may only offer a limited measure of protection and may only reduce or address the erosion hazard over a temporary period of time.

Given the naturally complex and dynamic nature of the beach environment, determining hazard susceptibility of a given beach formation requires careful assessment of a wide range of parameters. Over the short term, beach environments, impacted by flood and erosion processes, may undergo alternating periods of erosion and accretion as they attempt to achieve a dynamic equilibrium with the forces acting upon them. Over the long term, beaches experiencing a positive sediment budget (i.e. more sand and gravel is incoming than outgoing) are generally in fact accreting shore forms while those experiencing a negative sediment budget are eroding. As such, the depiction and evaluation of the hazard susceptibility of dynamic beaches should be dependent on the level of information, knowledge and understanding of the beach sediment budget and the cross-profile width over which most of the dynamic profile changes are taking place.

5.1.1 SHORELINE FLOOD HAZARD

The variable nature of water elevations of the Great Lakes is apparent from historical records. Of the two key factors influencing long-term and short-term changes in lake levels, natural phenomena (i.e. rainfall, evaporation, wind, storms, etc.) by far, cause the greater magnitudes of changes, than does human intervention (i.e. diversions, water control structures, etc.).

The most familiar changes in lake levels are seasonal fluctuations as evidenced by average differences of about 0.6 to 1.1 metres in lake levels between the summer and winter months. Superimposed on these seasonal fluctuations are some extremely short periods of significantly larger magnitudes of lake level changes. The most temporary of these are caused by storm winds which blow over the lake surfaces pushing the water to the opposite side or end of the lake. These “wind setups”, or “storm surges” have frequently caused total differences of more than 4 metres and occasionally as high as 5 metres in lake levels at opposite ends of some of the Great Lakes.

The shoreline refers to the furthest landward limit bordering a large body of water. Factors to be addressed in the areas susceptible to flooding along the shoreline include: the 1:100 year flood level; and flood allowance for wave uprush and/or other water related hazards (Figure 12).

The 1:100 year flood level is the water level due to the combined occurrences of mean monthly lake levels and wind set up having a 1% chance of occurring during any year.
The 1:100 year wave uprush level is based on mean monthly lake levels, wind setup and wind generated waves.

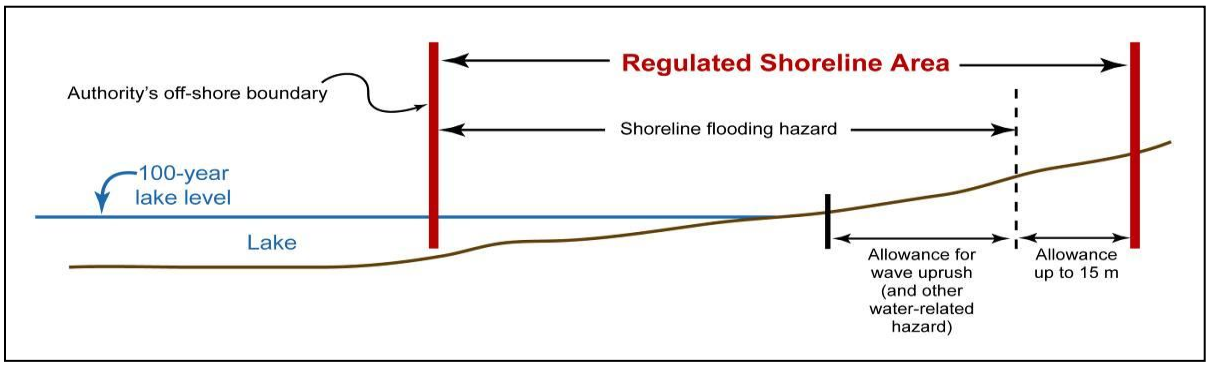

Figure 12: Lake Flooding Hazard

In areas susceptible to wave action, shoreline flood hazards extend landward beyond the 100 year flood level to the limit of wave action. All shorelines should be considered susceptible to wave action unless site specific studies using accepted engineering principles demonstrate that wave action is not significant.

Wave action includes wave uprush, wind setup, wave overtopping and/or wave spray. Wind setup is the mean increase in the water level caused by the onshore transport of water due to waves breaking at the shoreline, while wave uprush is the distance that the water will run-up on the shoreline. For straight, uniform shoreline reaches without protection works, the landward limit of wave action can be represented by the maximum sum of wind setup and wave uprush.

In areas where waves act on shore protection works and other structures, and in areas with irregular shorelines, the wave action may include wave overtopping and wave spray which are more difficult to determine and may require detailed study.

Wave overtopping essentially occurs when the height of the natural shoreline, or of the protection work, above the still water line is less than the limit of the wave uprush. As a result, wave overtopping the shoreline or protection work can cause flooding of the onshore area and can threaten the structural stability of protection works.

Wave spray has been observed passing over structures (e.g. houses) and well past them. The landward extent and quantity of wave spray depends on such factors as the type of shore, nearshore bathymetry, type of protection works, size of incident waves and wind conditions. Generally, during storms a significant amount of wave spray will occur behind structures that are near vertical and subjected to large breaking waves.

All shoreline areas and connecting channels form an ice cover. There are two types of ice which impact on shoreline features: drift ice (slush, frazil, pancake, floe and composite ice) and shorefast ice (anchor ice). The impact on the shoreline by drift ice is dependent on the physical orientation and composition of the shoreline, wave action, wind setup and duration of ice action as the ice is transported alongshore and thrown onshore and then drawn offshore by wave action. Anchor or shorefast ice action on a shoreline has a horizontal and vertical impact on shoreline features as the stationary ice grows or diminishes in response to the temperature fluctuations over the winter period.

Ice piling results from wind blowing over the ice, pushing the ice landward. This can produce ridging and a large build–up of ice at the shore. This shore ice can then scour sections of the beach and nearshore as well as destroy structures close to the shore. The moving ice can also remove boulders from the shallow areas, thereby reducing the level of shore protection provided by the boulders.

Ice jamming, the build-up of ice at the outlets of the lakes into the connecting channels, can cause extensive damage to shore structures and nearshore profiles. At the same time, ice jams frequently pose problems by impeding water flows outletting from the lakes and into the connecting channels causing varying magnitudes in lake level increases depending on the size and duration of the ice jam blockage.

Depending on the shoreline configuration and slope characteristics, ship generated waves can rush up the shoreline past the 100 year flood level. In addition to ship generated wave uprush, the subsequent ship generated wave drawdown can scour and damage a shoreline or protection work.

High points of land not subject to flooding but surrounded by the shoreline flood hazard or “flooded land” are considered to be within the flood hazard and part of the shoreline flood hazard.

5.1.2 SHORELINE EROSION HAZARD

Many geological, topographical and meteorological factors determine the erodibility of a shoreline. These include soil type, surface and groundwater, bluff height, vegetation cover, shoreline orientation, shoreline processes, wind and wave climate and lake level fluctuations. Erosion over the long-term is a continuous process influenced by these lakeside (e.g. wave action, water levels) and landside factors (e.g. surface/subsurface drainage, loading/weight of buildings; removal of surface vegetation).

The rate of erosion may be heightened during severe storm events, resulting in large losses of land over a very short period of time. These large losses, which are more readily visible immediately following major storm events, at times can obscure the more continuing long-term processes.
The risk of erosion is managed by planning for the 100 year erosion rate (the average annual rate of recession extended over a one hundred year time span). The extent of the shoreline erosion hazard limit depends on the shoreline type: bluff or beach.

The shoreline erosion hazard limit includes the following as seen in Figure 13:

Stable toe of slope (as may be shifted as a result of erosion over a 100 year period);
Predicted long term stable slope projected from the stable toe of slope; and
An allowance inland of 15 metres on large inland lakes or 30 metres on the Great Lakes.

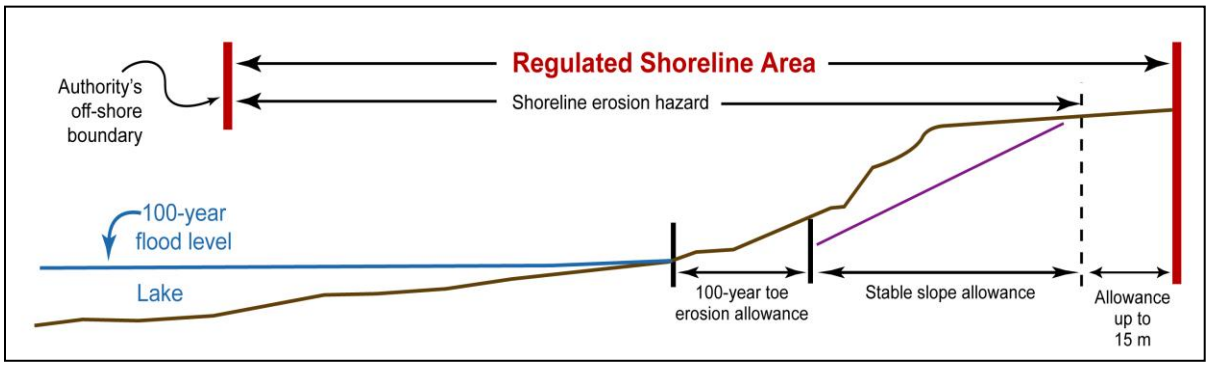

Figure 13: Lake Erosion Hazard

To slow the erosion of shorelines, structures such as breakwaters, seawalls and revetments have been used. However, even with the installation of remedial measures (i.e. assumed to address the erosion hazard), the natural forces of erosion, storm action/attack and other naturally occurring water and erosion related forces may prove to be such that the remedial measures may only offer a limited measure of protection and may only reduce or address the erosion hazard over a temporary period of time. Even if the shoreline is successfully armoured, the near shore lake bottom continues to erode or down cut eventually on all shorelines. This process is more active typically on cohesive shorelines. Eventually the lakebed down cutting will undermine the shoreline armouring causing the structure present to ultimately fail (Figure 14). The failure and ultimate property loss may extend back to the point at which the natural shoreline occurs. The natural shoreline position is typically not the present waterline or break wall interface, but actually some point inland from the armoured shoreline position.

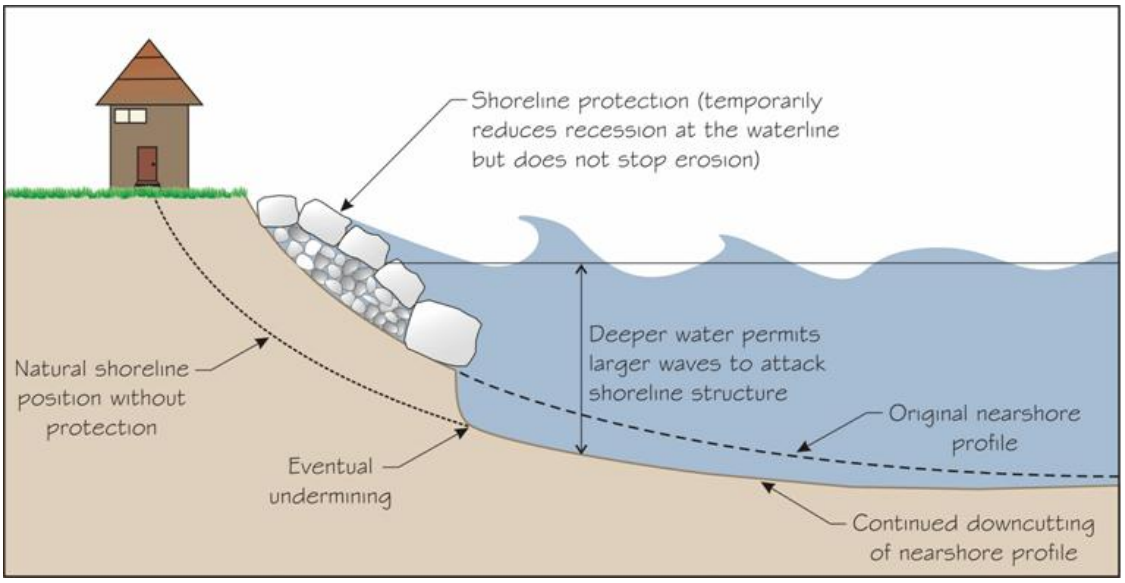

Figure 14: Lake Erosion Down Cutting

These problems usually occur on updrift and/or downdrift properties, aggravating existing off-site hazards, and/or posing unacceptable detrimental impacts on a wide array of environmental components of the shoreline ecosystem (e.g. fisheries, wetlands, water quality). The natural movement of the shoreline due to erosion can be aggravated by human activities and attempts to harden the shoreline and the impact of the activity can be transferred some distance from the impact site.

Therefore, it is recommended as a general principle, that measures which harden the shoreline be avoided. Further, it is recommended that Shoreline Management Plans be undertaken to assist in development of shoreline specific policies and, specifically to evaluate whether the implementation of erosion protection structures (revetments, seawalls, etc.) are appropriate in the context of the overall shoreline processes (MNR, 1987).

5.1.3 DYNAMIC BEACH HAZARD

To define a dynamic beach, the flooding hazard limit must be known. The flooding hazard limit combines the 100 year flood elevation plus wave uprush. In dynamic beach areas, elevations can change quite dramatically from season to season and year to year due to build up and erosion of sand, cobbles and other beach deposits. A dynamic beach is considered an unstable accumulation of shoreline sediments generally along the Great Lakes – St. Lawrence River System and large inland lakes. In dynamic beach areas, topographic elevations can change quite rapidly due to the accumulation or loss of beach

materials through the effects of wind and wave action. These changes can occur seasonally or yearly and, at times, quite rapidly and dramatically.

If considered as an elevation, the location of the 100-year lake level will move with the accretion or loss of beach materials. For example, during a period of low lake levels, it is expected that the accretion of beach materials would occur. If established as an elevation, the 100-year lake level (and the subsequent flood hazard) would move lakeward. Under this approach the Regulation Limit could be construed as also moving lakeward. This area of accretion could rapidly be lost during a storm or when lake levels return to normal. Development permitted under this standard would be at risk.

Historic information about the location of the farthest landward extent of the 100-year lake level will be an important consideration for the long term management of dynamic beach hazards. The 1988 mapping created under the Flood Damage Reduction Program is an example which provides a historic location of the 100-year lake level for Lake Huron.

When topographic elevations change, so does the location of the flooding hazard limit. This is an especially important consideration, because in times of low lake levels, (as has recently been the case on the Great Lakes), the near shore areas that have been submerged under normal or high lake levels are now exposed, subjected to accretion and erosion processes. It may seem that the landward extent of the dynamic beach has changed, thereby introducing potential for development or expansion of existing development. Historic information about the farthest landward extent of flooding will be an important consideration for good long-term management of dynamic beach hazards. The balance of various coastal processes, which allows for the state of dynamic equilibrium for these beach areas, only exists in the natural environment. Human intrusion within these areas can significantly and negatively impact on the form and function of the dynamic beach. Development should only be considered in limited defined areas outside of the dynamic beach hazard, following the appropriate level of scientific investigation and assessment

The dynamic beach hazard is applied to all shorelines of the Great Lakes – St. Lawrence River System where there is an accumulation of surficial sediment landward of the stillwater line (defined at the time of mapping under non-storm conditions), such that action by waves and other water and wind-related processes can lead to erosion of the sediments and a resultant landward translation of the shore profile.

The dynamic beach hazard is only applied where:

1. Beach or dune deposits exist landward of the water line (i.e. land/water interface);
2. Beach or dune deposits overlying bedrock or cohesive material are equal to or greater than 0.3 metres in thickness, 10 metres in width and 100 metres in length along the shoreline; and
3. Where the maximum fetch distance measured over an arc extending 60 degrees on either side of a line perpendicular to the shoreline is greater than 5 kilometres (this normally does not occur where beach or dune deposits are located in embayment's, along connecting channels and in other areas of restricted wave action where wave related processes are too slight to alter the beach profile landward of the waterline).

The criteria used to define and classify a section of shoreline as a dynamic beach are intended to be applied over a stretch of shoreline on the order of 100 metres or more in length. Where shorter sections of sediments occur on a rocky or cohesive shoreline they are likely to be transitory. Beach width and thickness should be evaluated under calm conditions and at water levels between datum (International Great Lakes Datum (IGLD)) and the average annual low water level. When lake level conditions are higher, consideration should be given to the submerged portion of the beach. If possible, mapping should not take place during high lake level conditions. It is expected that the person carrying out the mapping will exercise judgment, based on knowledge of the local area and historical evidence, in those areas where the beach width is close to the suggested criteria for defining a dynamic beach.

The Dynamic Beach Hazard as shown in Figure 15 includes the following:

- 1:100 year flood level;
- An allowance for wave uprush, and if necessary, an allowance for other water related hazards, including ship generated waves, ice piling and ice jamming; and
- An allowance inland of 30 metres to accommodate for dynamic beach movement on the Great Lakes and, in the case of large inland lakes, this allowance is 15 metres.

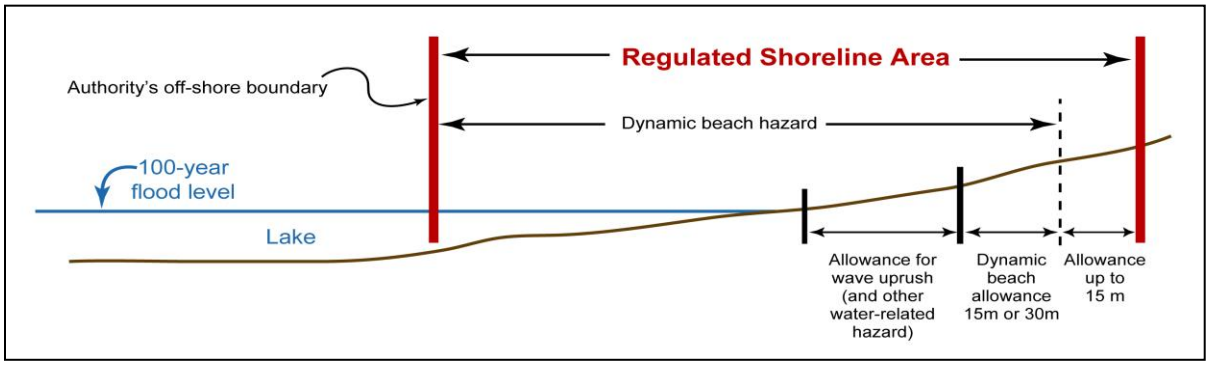

Figure 15: Dynamic Beach Hazard

5.2 REGULATION ALLOWANCES

The allowances adjacent to shoreline flood, erosion and/or dynamic beach hazards allow QC to regulate development in these areas in a manner that:

- Provides protection against unforeseen or predicted external conditions that could have an adverse effect on public safety, property damage and the natural conditions or processes of the shoreline;
- Protects access to and along the shoreline hazard areas. Access may be required for emergency purposes, regular maintenance to existing structures or to repair failed structures;
- Ensures that existing erosion, flooding and dynamic beach hazards are not aggravated and that new hazards are not created;
- Ensures that the control of pollution and the will not be affected;
- Maintains and enhances the natural features and ecological functions of shorelines; and
- Addresses issues related to accuracy of the modeling and analysis tools utilized to establish the limits of the flooding, erosion and dynamic beach hazards.

A 6m access allowance is added to all shoreline hazards along Lake Ontario and the Bay of Quinte.

6.0 HAZARDOUS LANDS

This component of the legislation applies to development within hazardous lands which is defined under Section 28 of the *CA Act* as land that could be unsafe for development due to naturally occurring processes associated with flooding, erosion, dynamic beaches, or unstable soil or bedrock. Unstable soil and bedrock include, but is not limited to sensitive marine clays, organic soils, and karst topography. Sensitive marine clays are not identified within the QC watershed. Organic soils are normally formed by the decomposition of vegetative and other organic materials. Peat soils are the most common type of organic soil in Ontario. Karst topography may be present in limestone or dolomite bedrock and are extremely variable in nature. See Section 6.0 of the policy document for policy guidance on hazardous lands.

6.1 DISCUSSION OF HAZARDOUS LANDS

Hazardous Lands are defined in the *Conservation Authorities Act* as land that could be unsafe for development because of naturally occurring processes associated with flooding, erosion, dynamic beaches and/or unstable soil or bedrock. If the activity is located within unstable soil and/or unstable bedrock hazardous lands, then this chapter applies, otherwise refer to Section 4 - Lake Ontario-St. Lawrence River Shoreline and Inland Lakes and Section 5 - River and Stream Valleys for policies on other hazards including flooding, erosion and dynamic beaches.

Any development activity within hazardous lands requires permission from QC.

6.2 IDENTIFICATION OF THE HAZARD LIMIT – UNSTABLE SOIL OR BEDROCK

Due to the specific nature of areas of unstable soil or unstable bedrock, it is difficult to identify these hazards. The potential for catastrophic failures in some areas of unstable soil and unstable bedrock warrant site specific studies to determine the extent of these hazardous lands, and therefore the appropriate limits of the hazard and Regulation Limits. The regulated area is based on the conclusions and recommendations of such studies.

In cases where development is proposed within or adjacent to hazardous lands associated with unstable soil or unstable bedrock, QC will require that the applicant (or agent) provide

appropriate technical reports identifying a precise boundary associated with the limit of the unstable soil or bedrock to the satisfaction of QC. The QC Karst (Unstable Bedrock) Investigation Guidelines (2023) should be consulted to ensure Karst verification and boundary delineation is completed appropriately.

Development within areas deemed as hazardous is considered through the "development" provision of the Regulation. Activities proposed within unstable soil and unstable bedrock hazardous lands must therefore meet the definition of "development" in the *Conservation Authorities Act* to be regulated.

6.2.1 UNSTABLE SOIL

Unstable soil includes but is not necessarily limited to areas identified as containing sensitive marine clays (e.g. leda clays) or organic soils (MNRF & CO, 2005).

6.2.1.1 SENSITIVE MARINE CLAYS (LEDA CLAY)

Sensitive marine clays, also known as leda clays, are clays that were deposited as sediment during the last glacial period in the Champlain Sea. Undisturbed, the clays can appear as solid and stable. But when disturbed by excessive vibration, shock or when they become saturated with water, the clays can turn to liquid (MNRF, 2001). The resulting failures or earthflows can be sudden and catastrophic.

Sensitive marine clays are restricted to specific locations in the province, however, are not restricted to just along rivers and streams In addition to the mapping that individual CAs may have developed or obtained, information is also available from Geological Survey of Canada and the MNRF.

To determine Regulation Limits, it is recommended that site specific studies be undertaken to determine the full extent of the sensitive marine clays and their full potential for retrogressive failures. While useful standards for defining the limits of the hazardous lands are provided within the "Understanding Natural Hazards" (MNRF, 2001) document and Hazardous Sites Technical Guide (MNRF, 1996a), it is crucial to recognize that these standards only address a first occurrence of slope failure. As such, the Guidelines for Developing Schedules of Regulated Areas recommend the use of a site/area specific study in defining the appropriate hazard (and therefore the Regulation Limit) to account for the potential of subsequent failures.

Section 3.0 of the Hazardous Sites Technical Guide (MNRF, 1996a) provides important guidance with respect to assessing marine sensitive clays and the potential for development within this type of hazardous lands.

6.2.1.2 ORGANIC SOILS

Organic soils are normally formed by the decomposition of vegetative and organic materials into humus, a process known as humification. A soil is organic when the percentage weight loss of the soil, when heated, is five to eighty per cent (MNRF, 2001).

As a result, organic soils can cover a wide variety of soil types. Peat soils, however, are the most common type of organic soil in Ontario. Therefore, a CA's wetland inventory may provide guidance in the location of organic soils. In addition, maps by the Geological Survey of Canada, MNRF, Ministry of Northern Development & Mines, and the Ministry of Agriculture, Food and Rural Affairs may provide additional information on the location of organic soils.

Due to the high variability of organic soils the potential risks and hazards associated with development in this type of hazardous land are also highly variable. As such, assessment of development potential in areas of organic soils is site specific. Section 4.0 of the Hazardous Sites Technical Guide (MNRF, 1996a) provides important guidance in this regard.

6.3.2 UNSTABLE BEDROCK

Unstable bedrock includes but is not necessarily limited to areas identified as karst formations. Karst formations may be present in limestone or dolomite bedrock, and are extremely variable in nature. Local, site-specific studies are required for identifying karst formations. Air photo interpretation of surface features such as sink holes may provide an indication of karst formations (MNRF and CO, 2005).

As with unstable soils, the potential for development to be undertaken safely in an area of unstable bedrock is site specific. Section 5.0 of the Hazardous Sites Technical Guide (MNRF, 1996a) provides important guidance in this regard.

The regulated area associated with unstable soil or bedrock includes the maximum extent of the unstable soil or bedrock.

Any development on unstable soil or unstable bedrock requires permission from QC.

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7.0 WATERCOURSES AND SMALL INLAND LAKES

This component of the legislation applies to the straightening, changing, diversion, or interference in any way with the existing channel of a watercourse, including lakes and their shorelines that are within the QC watershed. See Section 7.0 of the policy document for policy guidance on watercourses.

This component of the Regulation does not apply to dug-out or isolated ponds located outside of any wetland or area of interference with a wetland, river or stream valley, hazardous land associated with unstable soil or bedrock, and/or the applicable regulated allowance. For small islands it is assumed that the entire island is regulated.

7.1 DISCUSSION OF WATERCOURSES

As identified earlier in this document, watercourse means “a defined channel, having a bed and banks or sides, in which a flow of water regularly or continuously occurs”. These policies must be read in conjunction with the River or Stream Valleys section.

To provide guidance in the Regulation of watercourses, it is necessary to highlight the functions of watercourses.

7.2 FUNCTION OF WATERCOURSES

Watercourses transport both water and sediment from areas of high elevation to areas of low elevation. Watercourses also transfer energy (e.g. heating and cooling of stream waters) and organisms (e.g. movement of mammals, fish schooling and insect swarming) and provide habitat for fish and other species either in-stream or at the air-water interface. Moreover, watercourses provide a source of water supply for wildlife and livestock.

From a human perspective, watercourses provide social and economic values such as water supply, food resources, recreational opportunities (canoeing and fishing), hydro generation, land drainage, education experiences, and aesthetics.

Watercourses are dynamic, living systems with complex processes that are constantly undergoing change. The structure and function of watercourses are influenced by channel morphology, sediment characteristics (soil type, bedrock, and substrate characteristics) and the nature of the riparian vegetation both on the overbank and rooted in the bed of the

watercourse. Any changes to one of these influences can have significant impacts upon other parts of the system. One of the key influences on the structure and function of a watercourse is related to the hydrology of the stream and its normal hydrograph. Changes in the volume, peaks and timing of flows can significantly impact the stream morphology, sediment transport and even riparian vegetation.

Changes to channel morphology reduce the ability of the watercourse to process sediment causing erosion and changing the amount or size of bed load being moved. Loss of riparian vegetation results in more pollutants and run-off being transferred from the land to the water, impacting water quality and flooding downstream reaches. These changes, in turn, degrade near shore and aquatic habitat and impair the watercourse for human use.

7.2.1 DISCUSSION OF SHORELINES

Shorelines are the interface where land meets a body of water. Shorelines are dynamic in nature and are subject to fluvial and coastal processes. They act as a natural water quality filter for surface runoff and often absorb certain nutrients and contaminants, as well as trap sediment.

Naturalized shorelines with an abundance of vegetation provide erosion protection by assisting with the mitigation of surface runoff. Plant and tree root systems also play a role in binding the soil in place preventing further erosion of earthen material that is often lost due to natural processes such as wave action or changes in water level.
Applicants and their agents should be advised that where any in water or near water works are being proposed, there may be restrictions relating to the timing of activities (e.g. Seasonal restrictions) that may be required by MNRF and/or Fisheries and Oceans Canada.

Permits and/or authorization may also be required from the MNRF and DFO.

8.0 WETLANDS AND AREAS WITHIN 30 METRES OF A WETLAND

This component of the Regulation applies to development within a wetland or interference in any way with a wetland.

See Section 8.0 of the policy document for policy guidance on wetlands and adjacent lands. O. Reg. 41/24 includes the definition of a wetland and the legal description for the regulated 'other area' within 30m of a wetland. The regulation states:

> ***2.(****3) For the purposes of subparagraph 28(1) 2.v. of the Act, no person shall carry out development activities in areas that are within an authority's area of jurisdiction and are within 30 metres of a wetland.*

8.1 FUNCTIONS OF WETLANDS

Wetlands provide functions that have both ecosystem and human values. From an ecosystem perspective these include primary production, sustaining biodiversity, wildlife habitat, habitat for species at risk, maintenance of natural cycles (carbon, water) and food chains. From a human perspective, wetlands provide social and economic values such as flood attenuation, recreation opportunities, production of valuable products, improvement of water quality and educational benefits.

Wetlands retain waters during periods of high water levels or peak flows (i.e. spring freshet and storm events) allowing the water to be slowly released into the watercourse, infiltrate into the ground, and evaporate. As well, wetlands within the floodplain of a watercourse provide an area for the storage of flood waters and reduce the energy associated with the flood waters.

Wetlands retain and modify nutrients, chemicals and silt in surface and groundwater thereby improving water quality. This occurs temporarily in the plants of the wetland but long term in the organic soils.

In addition, wetlands provide a variety of hydrologic functions. Over 60 potential hydrological functions have been identified for wetlands when developing the Southern Ontario Wetland Evaluation System (OWES). However, confirmation of many of these functions requires hydrological experts and field studies by qualified hydrologists.

Therefore, the OWES utilizes easily identifiable features and measures as surrogate values for these hydrological features.

8.1.1 ADDITIONAL DEFINITIONS AND INTERPRETATIONS

Hydrologic Function in the Provincial Policy Statement means: the functions of the hydrological cycle that include the occurrence, circulation, distribution and chemical and physical properties of water on the surface of the land, in the soil and underlying rocks, and in the atmosphere, and water's interaction with the environment including its relation to living things.

This is a comprehensive definition for the hydrologic cycle, which allows many factors to be considered when reviewing a change or interference to wetlands. The Southern Ontario Wetland Evaluation System (pg. 85 MNRF, 2022) states "it must be recognized that many of the non-hydrological functions of a wetland depend, in part, on the wetland's hydrological setting and that changes in the basin beyond the boundaries of the wetland could have an effect on the ecological value of the wetland."

The 'Guidelines for Developing Schedules of Regulated Areas, October 2005' approved by MNRF and CO includes the following "The requisite function of a wetland - `... directly contributes to ... hydrological function/through connection with a surface watercourse...' is deemed to exist for all wetlands. Where a surface connection between a wetland and surface watercourse is not apparent, it is assumed that a groundwater connection exists between them, unless there is information to the contrary." (pg. 27). CAs may continue to use this interpretation and require the applicable studies to assess the application e.g., hydrological, hydrogeological, geotechnical study.

It should be noted that the *Conservation Authorities Act* and the CA Regulation uses the wording "in any way" when describing change or interference with a wetland. Activities proposed within the wetland boundary that could interfere in any way with the wetland, including both those activities that meet the definition of "development activity" and those that do not necessarily meet the definition of "development activity". An example of an activity that does not strictly meet the definition of "development activity" and could represent "change or interference" is the removal of hydrophytic or water tolerant plants in the wetland.

‘Natural features’ include vegetation as outlined in the definition of a wetland “…(d) has vegetation dominated by hydrophytic plants or water tolerant plants, the dominance of which has been favoured by the presence of abundant water, …”.

8.2 DEVELOPMENT AND INTERFERENCE

Applications to undertake a development activity must be assessed with respect to the “tests” outlined in the Conservation Authorities Act.

There are three ways through which the *Conservation Authorities Act* and the CA Regulation addresses wetlands and other areas within which development and other activities may interfere with a wetland (includes all components of the definition of a wetland) (Figure 16):

1. Development activities within the wetland boundary (Section 28 (1) 2. ii. of the CA Act)
2. Development activity within the ‘other areas’ 30 metres from the wetland (Section 28 (1) 2. v. of the CA Act)

To be regulated, the activities must meet the definition of development activity. See below for definition of “other areas” (Section 2. (3) of O. Reg 41/24.

3. Activities to change or interfere in any way with a wetland (Section 28 (1) 1. of the CA Act)

The activity must constitute a change or interference in any way with the wetland and to be regulated, the ‘activity’ should occur within the wetland boundary. Applications that include change or interference may be assessed with respect to the natural features (e.g., hydrophytic plants) and hydrologic functions etc.

Given the proximity of the ‘other area’ to a wetland i.e., 30m it is likely that most development activities in these areas will interfere with the adjacent wetland, subject to the scale of the proposed activities in this area. Applications for development activity or change or interference must be assessed using the three components of the definition of a wetland in the Regulation e.g., the effect a permit application may have on the hydrology, hydrologic functions maintaining the wetland, effect on hydrophytic plants etc.

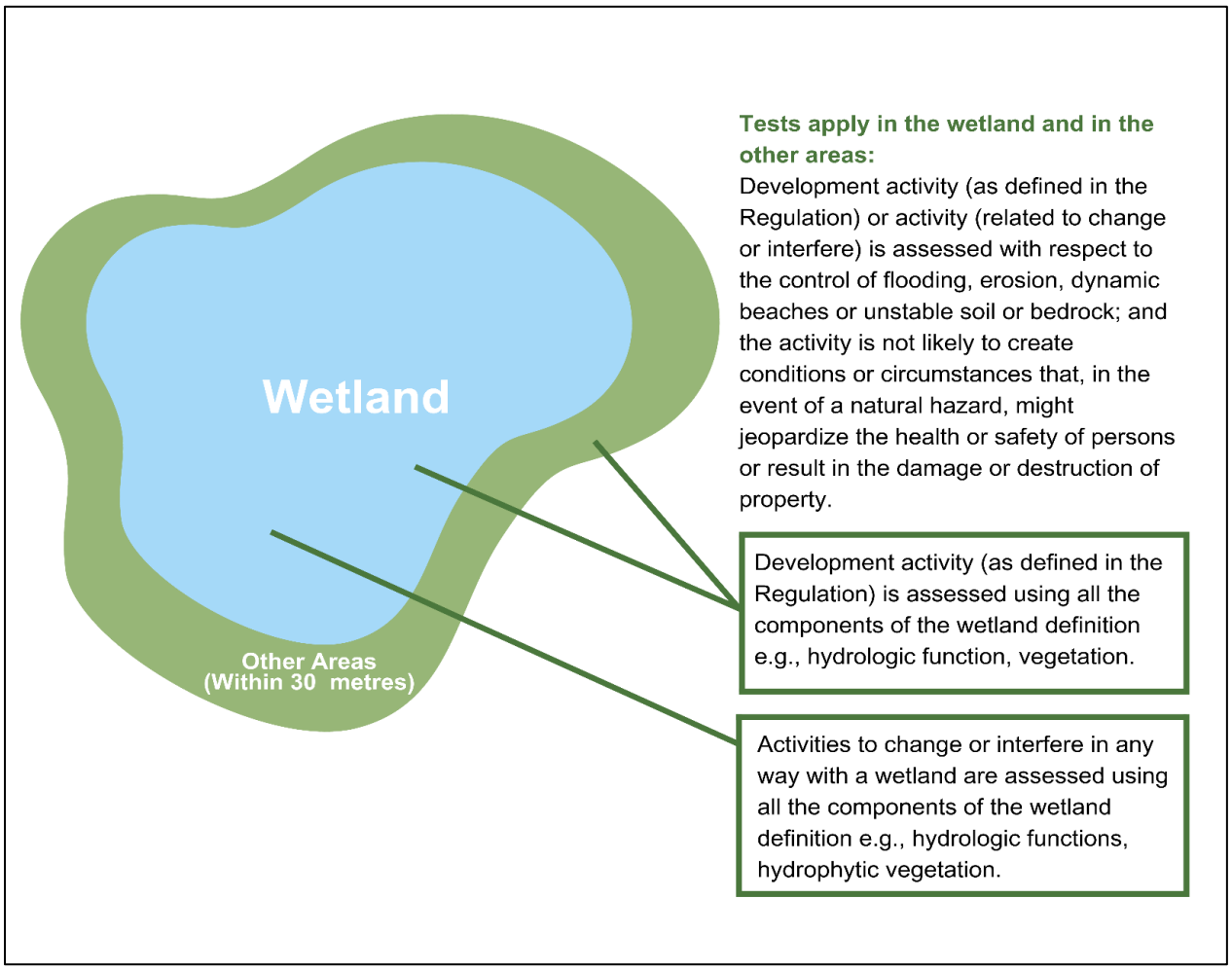

Figure 16: Wetlands and Other Areas

CAs assessment of the application may consider, depending upon the scope of the proposal, the following direct or indirect effects for activities that may change or interfere with the wetland:

- changes to the hydrologic function e.g., quantity or depth of water based on the existing hydrology and hydroperiod, retention of water; water regime maintaining the wetland (e.g., surface or groundwater, water balance, recharge and/or discharge);
- water quality during or after the activity will not result in filling the wetland or "other areas" with sediment etc. or affect the hydrophytic vegetation;
- impacts to the hydroperiod (seasonally);
- impact to the hydric soils or vegetation (e.g., removal);
- the potential for damage to a wetland or a watercourse associated with the wetland on an adjacent property; and
- other criteria identified by the CA.

To receive a permit for activities associated with wetlands, it must be demonstrated in an application that interference on all components of the definition of a wetland as noted above, are not likely to be affected by any activities of the application (site preparation, during construction and long term).

Portions of wetlands may also be regulated due to presence of hazardous lands such as regulated floodplains or unstable soils. The applicable sections of this document should be referenced with respect to these hazards.

Removal, filling, dredging, or changing the hydrologic regime of wetlands (e.g., ponds or drains) can result in reducing the capacity of wetlands to retain water. This can result in higher flows in watercourses with resulting increases in flooding and erosion. As well, with no ability to retain water, the ability to recharge the aquifer is reduced, and the hydrologic cycle is modified.

Many wetlands develop on organic soils and, as a result, when reviewing development within a wetland the soil composition should be reviewed. Where the soil is organic Section 5.0 (Hazardous Lands) should also be reviewed and the policies from this section should be incorporated in the decision making of the CA.

When reviewing an application with respect to change or interference, or development, the evaluation done under the OWES may be used as an information resource because it identifies the features and functions of the wetland. It should be noted that when reviewing an application with respect to development activity under the Regulation, the significance of the wetland as determined by the Ontario Wetland Evaluation System is not a reason to deny or approve the application. The application must be reviewed with respect to the following: the activity is not likely to affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property.

Determining what represents a change or interference can be very challenging and is dependent on a variety of parameters such as the type and the scale of activity. The legal and practical implications associated with regulating change or interference will require ongoing discussions and court decisions over the upcoming years.

Many individual and cumulative hydrologic impacts to a wetland commonly occur within the catchment area of the wetland. It is important to consider the linkages between small wetlands and headwater areas, stormwater, and upstream constrictions to flow.

Impacts to the components of a wetland e.g., hydrologic function of a wetland due to development within the "other areas" may also result from changes in imperviousness/infiltration due to a removal or change in vegetation, soil compaction during construction, disruption, or alteration of groundwater flow paths due to underground construction, etc.

8.2.1 WETLAND BOUNDARY IDENTIFICATION

There are a variety of sources for identifying wetlands. Many wetlands have been identified through the provincial wetland evaluation program and municipalities. A CA may have identified wetlands through a Natural Heritage or Subwatershed Study or technical assessments and site visits. Conservation Authorities may also identify wetlands as part of other natural hazard programs. Soils mapping (OMAFRA) may be useful in identifying organic soils which would indicate the potential for wetlands.

The Province uses the Ontario Wetland Evaluation System (OWES), originally developed in 1983, to identify and evaluate wetlands primarily to support land use planning processes under the *Planning Act*. The OWES currently consists of two manuals: the Southern Ontario Wetland Evaluation System and the Northern Ontario Wetland Evaluation System (MNRF, 2022). Wetlands identified and evaluated using the OWES can be a valuable resource for implementing Section 28 of the *Conservation Authorities Act*, however, it is important to note that a wetland must meet the definition of 'wetland' within O. Reg. 41/24.

For development proposals where a wetland is present on or adjacent to lands subject to the development proposal, QC may require on-site wetland boundary delineation/staking completed by an OWES qualified professional. The boundary delineation shall be illustrated on a Reference Plan or Site Plan. Where a wetland boundary identified on-site differs from the approved MNRF Provincially Significant Wetland (PSW) boundary, the proponent will be responsible for obtaining acceptance of the new wetland boundary from the MNRF.

8.2.2 ENVIRONMENTAL IMPACT STUDY

The definition of a wetland contains multiple components. Any activity that affects one or more components of the definition may be considered change or interference. In many

circumstances the activity will also meet the definition of development activity and CA staff should consider reviewing the application using that definition.

As part of the review of a permit application, a CA may request a study(ies) that addresses all components of the wetland definition as well as the CA Act and Regulation requirements related to a change or interference with a wetland. Studies are a mechanism for assessing impacts and to determine the suitability of a proposal. The submission of a technical study does not guarantee approval of the works. The study must be carried out by a qualified professional, with recognized expertise in the appropriate area of concern and shall be prepared using established procedures and recognized methodologies to the satisfaction of QC staff.