Toronto and Region Conservation Authority

2026 Flood Contingency Plan Manual

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Engineering Services, Development and Engineering Services

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SUMMARY

The responsibility for dealing with flood contingency planning in Ontario is shared by municipalities, Conservation Authorities (CAs) and the Ministry of Natural Resources (MNR), on behalf of the province. As with all emergencies, municipalities have the primary responsibility for the welfare of residents and should incorporate flood emergency response into municipal emergency planning. The Ministry of Natural Resources and the Conservation Authorities are primarily responsible for operating a forecasting and warning system, and the province may coordinate a response in support of municipal action.

The Conservation Authorities of the Greater Toronto Area (GTA) all operate a Flood Forecasting and Warning Program for the municipalities and residents within their respective jurisdictions and watersheds, including the shoreline of Lake Ontario, Lake Simcoe and Georgian Bay. The purpose of the program services is to reduce risk to life and damage to property by providing local agencies and the public with notice, information and advice so that they can respond to potential flooding and flood emergencies.

This Flood Contingency Plan is intended for all local and regional municipality officials and agency staff likely to play a role in the prevention, mitigation, preparedness, response and recovery pertaining to flood events. This version of the Flood Contingency Plan provides general information on the Flood Forecasting and Warning program for each GTA Conservation Authority, as well as specific information and contacts for municipalities within TRCA's jurisdiction.

The Conservation Authorities of the Greater Toronto Area include Conservation Halton (HC), Credit Valley Conservation (CVC), Toronto and Region Conservation Authority (TRCA), Lake Simcoe Region Conservation Authority (LSRCA), Central Lake Ontario Conservation Authority (CLOCA), Ganaraska Region Conservation Authority (GRCA), Nottawasaga Valley Conservation Authority (NVCA) and Kawartha Conservation (KC). **Figure 1** illustrates the jurisdiction of each GTA Conservation Authority.

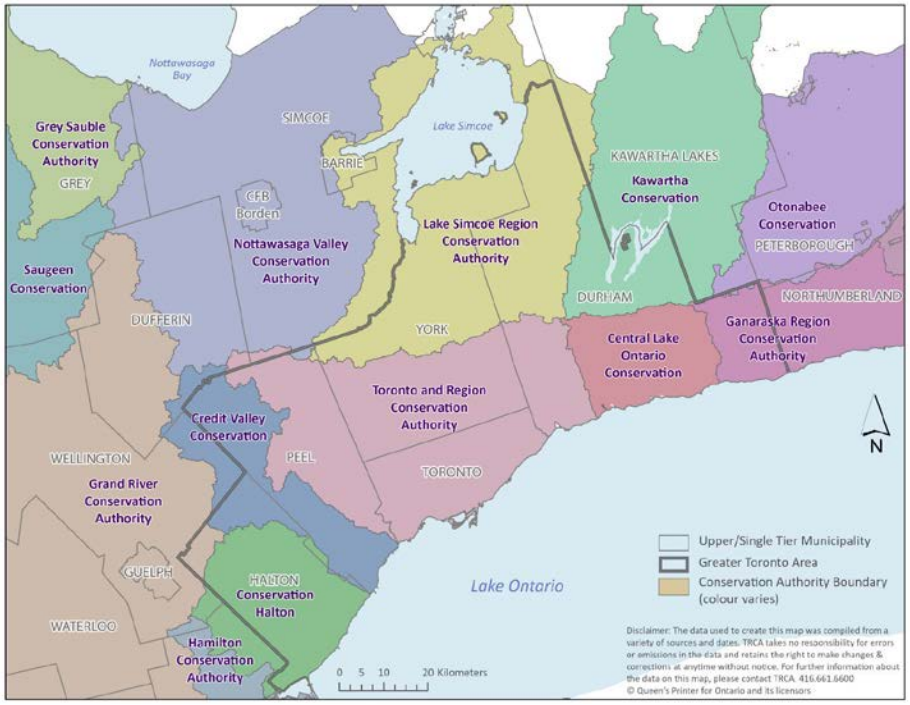


Figure 1: Greater Toronto Area Conservation Authority and Regional Municipalities

Emergency Management and Civil Protection Act

The overall legal framework for emergency management in Ontario is addressed primarily within the *Emergency Management and Civil Protection Act* (EMCPA, 2006), which sets out requirements for the development, implementation and maintenance of municipal and ministry emergency management programs. These comprehensive emergency management programs are based on the five principles of emergency management: prevention, mitigation, preparedness, response, and recovery. All municipalities and provincial ministries must have an emergency management program, as well as an emergency management plan, according to their respective hazard identification and risk assessment (HIRA) as set out in the EMCPA. The overall purpose of the Act is to provide for emergency management to safeguard the health, safety, welfare and property of the people of Ontario, to facilitate coordination as part of emergency management, and to provide for emergency powers.

While the Ministry of Natural Resources is the provincial lead for flood emergencies, which includes flood forecasting and warning as well as flood control operations, flood emergency management responsibilities are also assigned to municipalities, as set out in the EMCPA. Where a Conservation Authority exists, the province relies on the Conservation Authority to assist them in their assigned responsibilities for flooding, as described in the MNR's *Ministry Emergency Response Plan* (MERP) and the *Conservation Authorities Act*, O. Reg. 686/21.

TRCA's Flood Forecasting and Warning program provides vital service to our municipal partners within its jurisdiction to ensure that the flood aspects of the municipality EMCPA components are met.

1.) ROLES AND RESPONSIBILITIES

This section outlines the respective roles and responsibilities of municipalities, Conservation Authorities, and the Province of Ontario in preparing for and responding to flooding and flood emergencies. It describes how these organizations work together to monitor conditions, issue flood messages, and coordinate effective emergency response actions.

Municipal Role

Under the *Emergency Management and Civil Protection Act* (Ontario Regulation 380/04), the province of Ontario and municipalities have the primary responsibility and authority for providing emergency management to protect the health, safety, welfare and property of the people of Ontario, under any type of emergency, including flooding and flood emergencies. In order to fulfill this responsibility, municipalities should ensure that emergency management plans are kept current and tested on a regular basis. **Figure 2** illustrates the interaction of agencies.

Upon receiving a Flood message, municipalities shall (as appropriate):

1. Notify appropriate municipal officials, departments and agencies in accordance with their municipal emergency management plan. Municipalities are also responsible for sharing these messages and issuing warnings to residents and businesses that may be at risk due to flooding.
2. Determine the appropriate response to a flood threat and, if warranted, deploy municipal resources to protect life and property.
3. If required, declare a flood emergency and implement their emergency response plan.
4. Request provincial assistance under the *Emergency Management and Civil Protection Act*, if municipal resources are inadequate to respond to the emergency.
5. Maintain liaison with Conservation Authority Flood Duty Officers.

Conservation Authority Role

Conservation Authorities have several areas of responsibility for flooding and flood emergencies, but act primarily in an advisory capacity to:

1. Support municipal flood emergency planning by providing technical advice pertaining to flood risk (e.g., hydrology, hydraulics, flood vulnerable areas, etc.) and where applicable, engage in flood mitigation projects to reduce flood risk prior to flood events.
2. Maintain a local monitoring network, collect data, and monitor watershed and weather conditions daily in order to provide timely warning of anticipated or actual flood conditions (i.e., operate a flood forecasting and warning system).
3. Provide updated current and forecasted local watershed conditions and flood potential, as well as supporting other technical or advisory data pertaining to flood conditions under their jurisdiction, to member municipalities during an event.
4. Issue flood messages to municipalities and other appropriate agencies within their jurisdiction, including the media and the public, to advise of potential flooding when appropriate, as per respective flood message distribution lists.
5. Monitor and operate Conservation Authority dams and flood control structures in accordance with established operating plans, to reduce the effects of flooding when appropriate.
6. Maintain communications with municipalities and the MNR Surface Water Monitoring Centre during a flood event.

Provincial Role (Surface Water Monitoring Centre)

Operate and maintain a provincial data management system for hydro-meteorological data and monitor observed water levels and flows across the province.
Provide analysis and knowledge of the watershed conditions, as well as daily flood potential by disseminating information from models and tools across the province.
Receive flood messages from CAs, MNR Districts and other agencies and provide analysis and information that is used to guide the MNR's response to a flood.
Issue standard provincial flood messages to CAs and MNR Districts and maintain the Ontario Flood Page with active provincial and local scale flood messages.
Maintain communications with the provincial ministries regarding province-wide flood potential and watershed conditions, as well as situational awareness information related to water levels and flows.
Assists the MNR Districts located outside of CA jurisdiction in the preparation of river response forecasts, daily planning cycles, and the monitoring of local storm conditions.

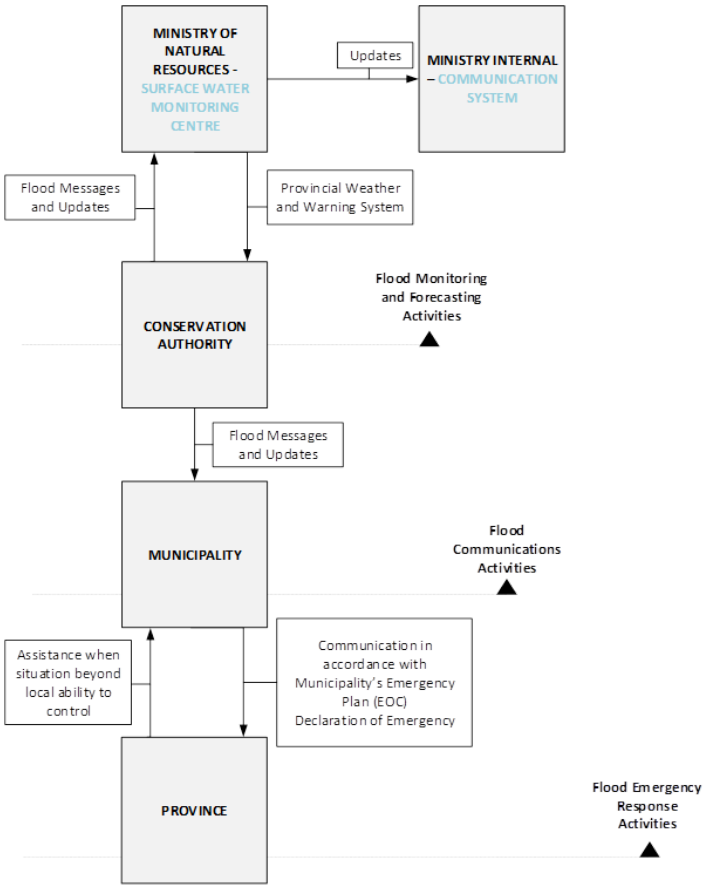


Figure 2: Interaction of Agencies – Overview

2.) FLOOD MESSAGES

A flood is defined as a situation where water levels in a watercourse exceed the channel banks. Each Conservation Authority operates a flood forecasting and warning program that monitors weather forecasts and watershed conditions on a continuous basis when conditions warrant. However, a Flood Duty Officer is accessible 24/7 during all weather and watershed conditions. The weather and watershed information is used to assess the potential for flooding. When spring melt or severe storms are anticipated, the Conservation Authority estimates the severity, general location, and approximate timing of possible flooding, and provides these forecasts to local agencies.

When conditions warrant, Conservation Authorities will communicate with local agencies using one of the following types of flood messages for river or shoreline based flooding (Appendices A and B provide additional details): Conditions Statements, Flood Watch, or Flood Warning. The standard content of a flood message includes:

- Identification of sender (Conservation Authority and name of Flood Duty Officer)
- The date and time of issuance
- General recipient list
- Summary of weather forecast (expected precipitation, temperature, timing, etc.)
- Description of potential flood magnitude, a general assessment of flooding implications, identification of potentially unsafe areas, or early notice of the potential for flooding
- Any recommended actions that should be considered by recipients
- Effective dates for the flood message and/or the date and time of next update
- Conservation Authority contact for additional information

Also, the Surface Water Monitoring Centre (SWMC) of the MNR provides continual weather monitoring and forecasting, as well as performing a daily (or more frequent if required) provincial flood hazard identification risk assessment for Ontario as part of their Provincial Warning System. SWMC will issue a flood message when weather and watershed/shoreline conditions warrant for Ontario. The SWMC flood messages are distributed to MNR districts (both districts with and without CAs), MNR Internal as well as other key agencies and CAs.

SWMC flood messages include information about the type of message being issued (i.e. Watershed Conditions Statement), the weather situation and potential risks as well as noting the affected districts, CAs. SWMC flood messages also identify the flood messages already issued by any of the CAs.

The SWMC also maintains the Provincial Warning System to alert MNR Districts and Conservation Authorities of potential meteorological events that could create flood hazard.

2.1 The Flood message levels issued by Conservation Authorities are as follows:

Normal (Green)

A **"Normal"** condition is defined as a general notice that no flooding conditions exist.

Watershed Conditions Statement (Yellow)

A "Watershed Conditions Statement" is defined as a general notice that potential conditions exist that pose a risk to personal safety or which have the potential to lead to flooding.

There are two variations of this message:

Watershed Conditions Statement – Water Safety Statement is issued when high flows, unsafe banks, melting ice or other factors could be dangerous for recreational users such as anglers, canoeists, hikers, children, pets, etc. Flooding is not expected.

Watershed Conditions Statement – Flood Outlook Statement is early notice of the potential for flooding based on weather forecasts calling for heavy rain, snow melt, high wind or other conditions that could lead to high runoff, cause ice jams, lakeshore flooding or erosion.

Flood Watch (Orange)

A **Flood Watch** is defined as a notice that flooding is possible in specific watercourses or municipalities. Municipalities, emergency services and individual landowners in flood-prone areas should prepare.

Flood Warning (Red)

A **Flood Warning** is defined as a notice that flooding is imminent or already occurring in specific watercourses or municipalities. Municipalities and individuals should take action to deal with flood conditions. This may include road closures and evacuations. **A Flood Watch or Warning may be updated depending upon weather and runoff conditions and will be followed by a notice of cancellation once the potential for flooding has passed.*

Lake Ontario Shoreline Flood Messages

Shoreline messages are similar in category to the riverine flood messages, however, are only applicable to a specific waterbody shoreline within a CA's jurisdiction.

Lake Ontario Shoreline Conditions Statement is a general notice that potential conditions are forecasted to pose a risk to public safety with flooding and erosion possible along lakeshore areas due to above normal water levels and wave activity.

Lake Ontario Shoreline Flood Watch is a notice that critical high water levels and waves are possible, which could result in shoreline flooding and/or erosion.

Lake Ontario Shoreline Flood Warning is a notice that critical high water levels and waves are imminent and/or occurring, which could result in shoreline flooding and/or erosion.

TRCA's Lake Ontario shoreline jurisdiction include the municipalities of the City of Toronto, City of Pickering and the Town of Ajax.

2.2 Thresholds for Flood Messages

How Riverine Flood Risk is Assessed

Riverine flood risk is assessed daily through ongoing monitoring and evaluation of weather, watershed, and river conditions by CA Flood Forecasting and Warning Program (FFWP) on-call staff. This assessment supports decision making by the on-call Flood Duty Officer (FDO) when determining whether a flood message is required.

Key parameters considered include forecasted and observed precipitation, seasonally high temperatures during the winter season that may contribute to snowmelt, and current and anticipated watershed conditions such as soil saturation, snowpack, ice conditions, and river levels. The timing of the weather system, including the time of day it is expected to affect the jurisdiction, is also reviewed, as it can influence runoff rates and response capacity.

Regional conditions are taken into account by reviewing the status of riverine flooding and flood messaging issued by neighbouring Conservation Authorities, or the Surface Water Monitoring Centre. Weather alerts issued by Environment and Climate Change Canada are also factored into the assessment.

How Shoreline Flood Risk is Assessed

Shoreline flood risk is assessed by monitoring lake water levels, wave conditions, and forecasted weather that may contribute to coastal flooding or erosion along the Lake Ontario shoreline within the CA's jurisdiction. Shoreline flood messages may be issued when lake water levels reach critical thresholds and/or when wave heights are sufficient to cause flooding, erosion, or damage to shoreline infrastructure.

For TRCA's Lake Ontario shoreline, which include the municipalities of the City of Toronto, City of Pickering and the Town of Ajax, critical water level references for the Toronto Waterfront and Toronto Islands begin at 130 cm (75.5 m International Great Lakes Datum [IGLD] 1985). In addition to these thresholds, lower severity shoreline flood messages may be issued when Lake Ontario water levels are above average (90 cm or greater, or above 75.1 m IGLD 1985) and are combined with forecasted offshore wave heights exceeding 2.0 m.

Table 1: Critical Water Levels and Wave Heights for Lake Ontario & Georgian Bay Georgian Bay

Section	**Critical Water Levels** **(cm above chart daum, IGLD, 1985)**	**Wave Height (metres)**
Niagara Region (Stoney Creek)	160cm	>1.5 m
Stoney Creek (Burlington)	130 cm	>2.0 m
Oakville (Port Credit)	170 cm	>2.0 m
Toronto (Waterfront/Toronto Islands)	130 cm (watch only 150 cm (warning only)	>2.0 m Shoreline conditions statement only
Whitby (Bowmanville)	170 cm	>2.0 m
Port Hope	160 cm	>2.0 m
Port Hope (Prequ'ile)	170 cm	>2.0 m
Prince Edward County	170 cm	>2.0 m
Georgian Bay (Collinwood/Wasaga)	130 cm	>1.0 m

Notes:

i. Shoreline flood messages for the Hamilton/Burlington Beach strip of Lake Ontario are issued if either critical water levels or wave criteria are met.
ii. Wave criteria apply only when Lake Ontario's static water level is 90 cm above chart datum, IGLD 1985.
iii. IGLD (International Great Lakes Datum) is the elevation reference system used to define water levels within the Great Lakes - St. Lawrence River system because of movement of the earth's crust. The reference system is adjusted every 25-35 years.

2.3 Coordinating Issuance of Flood Messages

Conservation Authorities utilize an array of technologies to disseminate flood messages. The GTA CAs will issue flood messages with various methods such as but not limited to; a web-based e-mail service, text messages, social media, RSS feed, as well as website technologies. Messages are sent to designated individuals within municipalities and other local agencies. These individuals, in turn, are responsible for relaying the message to relevant individuals and departments within their organizations and activating their role as defined by their organization's Emergency Response Plan.

Conservation Authority jurisdictions are based on watershed boundaries, not regional or municipal boundaries. Therefore, in many areas, local governments may be serviced by two or more Conservation Authorities. To streamline and coordinate communication with local agencies, a primary Conservation Authority has been assigned for each region and municipality. The remaining CAs within the municipality are assigned as Secondary CAs for that municipality. Both the primary and secondary CAs are responsible for issuing flood messages (Conditions Statements, Flood Watches, and Flood Warnings) directly to the

municipality/agency through the established designated contacts. The messages issued by each conservation authority are specific to the watersheds under their jurisdiction. During extreme weather events, when resources are stretched, the designated primary CA for each region and municipality will be responsible for direct communication and will coordinate incoming information from all relevant CAs to their primary region/municipality.

During most storm events, municipalities, local agencies, and residents requiring information or assistance should contact the local Conservation Authority having jurisdiction for the area of interest. **Appendix C** displays the primary and secondary Conservation Authorities for each municipality in the GTA.

3.) FLOOD RESPONSE PROCEDURES

As previously mentioned, during an actual flood event the primary responsibility for the welfare of residents and protection of property rests with the municipality. Upon receiving a flood message, municipalities should monitor their local conditions and determine the appropriate actions, which may include activating their Emergency Response Plan.

Where a flood emergency is beyond the capacity of a municipality, provincial assistance can be requested in accordance with the municipality's Emergency Response Plan.

Conservation Authorities will provide updated information as well as technical advice on flood monitoring and where the CA has capacity, flood mitigation to partner municipalities and local agencies before, during and after a flood event. These actions support our municipal partners and assist in achieving standardized response goals, which include:

- Provide for the safety and health of responders
- Save lives
- Reduce suffering
- Protect public health
- Protect government infrastructure
- Protect property
- Protect the environment, and
- Reduce economic and social losses

During the emergency, the Conservation Authority representative will continue to advise the MNR Surface Water Monitoring Centre of the status of the situation. The Surface Water Monitoring Centre will be responsible for updating and relaying information related to the emergency to MNR district offices.

3.1 Communications and operations related to Municipal Emergency Operations Centres

The Province of Ontario, through its *Emergency Management and Civil Protection Act* legislation, requires all municipalities to have valid emergency management plans and procedures in place. One component of this requirement is the need to have a defined Emergency Operations Centre (EOC) where municipal activities can be undertaken in the event of an emergency. Under normal flooding operations where there is no need to activate the EOC, each GTA Conservation Authority will provide information as requested by their local municipalities. This section defines how the GTA Conservation Authorities will operate (e.g., continue to provide advice and information to municipalities) in the case where EOCs are activated.

The primary Conservation Authority (as defined in **Appendix C**) will present one or more members of staff at the EOC (if resources permit). Staff will coordinate flood related information and advice on behalf of all of the CAs that service the given local and/or regional Emergency Operations Centre (EOC/REOC). If multiple municipal emergency operations centres are activated, for which a single CA is the primary CA, the CA should direct staff to the regional/upper-tier municipal Emergency Operations Centre for which they are the primary CA.

As several Conservation Authorities may manage watercourses within the jurisdiction of an individual municipality or region, the primary Conservation Authority staff assigned to attend the EOC/REOC will be required to provide advice on watersheds which would not be within their normal area of expertise. To ensure that this system of information coordination and sharing proceeds in a seamless manner, the following procedures are to be in effect during those occurrences:

1. The primary Conservation Authority will be responsible for coordinating communications between their assigned local or regional emergency preparedness staff and all other CAs with watercourses within the municipal EOC service area. They will discuss the need to begin the emergency response process and whether a need exists for the regional/municipal EOC group to assemble. The decision to assemble the Emergency Control Group is determined by the local or regional emergency preparedness staff and will be based on the level and degree of flood threat which may be affecting the municipality and/or region.
2. The primary Conservation Authority will coordinate with secondary Conservation Authorities to develop and schedule telephone conferences or discussions to ascertain specific flood related information as well as updated weather forecast information.
3. The secondary Conservation Authorities will consolidate flooding and weather information into a briefing note which will be forwarded to their representative at the Regional EOC at the agreed upon designated times (or as required).
4. All GTA Conservation Authorities will ensure that their internal operations manuals/procedures reflect the requirements outlined above.

To ensure the effectiveness of the above procedure, each GTA CA will develop a working relationship with the emergency management offices of each of their municipal/regional partners.

APPENDIX A: WEATHER AND FLOOD TERMINOLOGY

A.1 Environment Canada Alerts

Weather forecasts often include extra details to help explain what to expect. Precipitation terms may be combined with words and numbers that describe:

Factors	Description
Rain or Snow (precipitation)	Intensity (light, moderate, heavy)
Amount	millimetres of rain or centimetres of snow expected
Timing or duration	over several hours or days
Location or proximity	expected in specific locations or across a wider area

Environment and Climate Change Canada's Ontario Storm Prediction Centre (OSPC) is staffed by highly trained meteorologists and is the authoritative source for weather information in Ontario. A weather alert provides information that helps the public take appropriate action to keep safe.

A.1.1 Environment and Climate Change Canada Alerts

Environment and Climate Change Canada has several types of alerts, including advisories, watches and warnings and recently launched their new colour coded weather alerts in 2025. Weather Watches and Warnings will appear on either a yellow, orange or red banner to show the weather events severity. Weather advisories will always have a yellow banner.

Alert colours	Description
	Hazardous weather may cause damage, disruption, or health impacts Impacts are moderate, localized and/or short-term Yellow alerts are the most common
	Severe weather is likely to cause significant damage, disruption, or health impacts Impacts are major, widespread and/or may last a few days Orange alerts are uncommon
	Very dangerous and possibly life-threatening weather will cause extreme damage and disruption Impacts are extensive, widespread, and prolonged Red alerts are rare

Source: www.canada.ca/weather-alerts/colour-coded

Alert Type	Description
Watches	*Issued when there is the potential for severe weather*
Advisories	*Issued for certain types of weather that are less severe but still significant*
Warnings	*Issued when severe weather is happening or will happen*
Special Weather Statements	are not alerts. They are issued to let you know when weather conditions are unusual or may cause potential concern.

Source: www.canada.ca//weather-alerts

A.1.2 Rainfall Alerts

Environment and Climate Change Canada's Ontario Storm Prediction Centre (OSPC) strives to issue Rainfall Warnings related to larger scale weather systems, with limited lead time of 12 hours. For smaller scale rainfall events, OSPC strives to issue Rainfall Warnings with a lead time of 2 hours.

Environment and Climate Change Canada's Ontario Storm Prediction Centre (OSPC) Rainfall Warnings: The following rainfall amounts/durations were the previous criteria for the issuance of a rainfall warning. Since the start of colour-coded alerts in November of 2025, other factors such as ground absorption capacity, urban vs rural considerations and other antecedent conditions would influence whether a rainfall warning would be issued and the colour it would be assigned.

Short Duration	50 mm or more of rain expected within 1 hour (similar to Severe Thunderstorm Warning but where no thunder is present or expected)
General Summer Case	50 mm or more of rain expected to fall within 24 hours or 75 mm or more of rain expected to fall within 48 hours
Winter (Saturated or Frozen Ground)	25 mm or more of rain expected to fall within 24 hours. Note: The 25 mm criterion for winter conditions is generally discussed with the MNR Surface Water Monitoring Centre before OSPC issues a warning (for consistency)

A.1.3 Thunderstorm Alerts

Thunderstorm alerts can be issued wherever thunderstorms capable of producing damaging winds, large hail, heavy rain, or other severe conditions are imminent or occurring. A severe thunderstorm **watch** is issued when conditions are favourable for the development of severe thunderstorms. The watches normally have a lead time of up to 6 hours. A severe thunderstorm **warning** is issued when a severe thunderstorm is thought to be imminent or occurring. **Warnings** usually have lead times on the order of minutes to up to an hour. In many cases, a **watch** will precede a **warning** but on some rapidly developing days, a **warning** may be issued without a prior **watch.**

Difference Between a Thunderstorm Watch and Warning

Thunderstorm Watch	Issued when the potential exists for the development of severe thunderstorms, which are capable of producing Large hail (2.5 cm or more in diameter), Damaging winds (Gusts 90 km/h or greater) and/or Heavy rain (50mm or more per hour). Lead time is normally on the order of 2 to 6 hours.

Thunderstorm Warning	Issued when significant evidence exists of a severe thunderstorm developing or already occurring (radar, lightning detection network, surface observation, etc.). Lead time is normally on the order of minutes to over an hour.

A.2 Flood Forecasting Terminology and Definitions

A.2.1 Understanding Flood Severity Levels

Conservation Authorities may use the following terms in the flood messages to describe the severity and potential impacts of flooding. Decisions about emergency response actions, including evacuations, road closures, park trail access, etc., are determined by the Region, municipality or emergency services (Fire and Police). Utility agencies are also responsible for any physical impacts or service disruptions that may occur due to a flood.

No Flooding	Water levels stay within the river or stream banks.
Nuisance Flooding	Flooding may occur in floodplains and low-lying areas.
Minor Flooding	Possible basement flooding, and may cause road or access route issues, evacuations are not expected.
Major Flooding	Widespread flooding is possible. Significant road closures and access issues are likely.
Flash Flooding	Rapid flooding of low-lying areas, like streets, caused by extremely heavy rainfall, with little warning, creating dangerous, fast-moving torrents that sweep away objects and pose a significant hazard.
Severe Flooding	Extensive flooding is expected, with many buildings affected. Major disruptions to roads, utilities, and essential services are likely. Evacuations are expected due to risks to life and property. Flooding may also cause environmental harm, such as sewage overflows or spills of hazardous materials.

A.2.2 Common precipitation terms

Weather forecasts are an important part of how Conservation Authorities monitor flood risk and issue flood messages. Weather forecast information is obtained from professional meteorological sources such as Environment and Climate Change Canada (ECCC) via the Meteorological Service of Canada (MSC) or through the Surface Water Monitoring Centre department of Ministry of Natural Resources. To help people understand flood messages, commonly used weather and precipitation terms are explained below. When flood messages include weather related terms, they are paired with clear details, such as how much precipitation is expected and over what period of time so the information is easy to understand during rapidly changing conditions. For example: 50mm of rain is forecasted over the next 12 hours.

Precipitation	Precipitation is a liquid or solid form of water falling from the atmosphere to the earth's surface. Examples include rain, freezing rain, hail, and snow.
Drizzle	Light precipitation made up of very small water drops, often appears mist-like- and falls slowly. Drops less than 0.5 mm in diameter.
Showers	Rain that starts and stops suddenly and can change intensity quickly. Showers often affect small areas and may be heavy for short periods.

Thunderstorms	Storms that include lightning and may also generate strong winds, hail and heavy rain. Thunderstorms can produce very heavy rainfall in a short time and may also bring other severe weather, such as tornadoes.
Rain	Precipitation that falls as water droplets larger than a drizzle. Drops larger than 0.5 mm in diameter.
Snow	Precipitation that falls as ice crystals, commonly seen as snowflakes.
Ice Pellets	Precipitation in the form of small, transparent or translucent ice pellets. Forms when raindrops pass through a cold layer of air and freeze before hitting the ground.
Freezing Rain	Rain that falls as liquid but freezes upon contact with cold surfaces, forming a coating of ice.

Source: Weather and meteorology glossary - Canada.ca

A.2.3 Rainfall Intensity

This table shows how rainfall intensity is estimated based on how fast rain is falling, usually measured in millimeters per hour. Rainfall intensity helps explain how quickly water reaches the ground, which is important because fast falling rain can overwhelm drainage systems and floodplains.

Intensity	Criteria
Light *(Light rain falls slowly and is unlikely to cause flooding on its own)*	Up to 2.5 mm per hour; maximum 0.25 mm in 6 minutes.
Moderate *(Moderate rain can lead to localized ponding, especially in low-lying areas)*	2.6 mm to 7.5 mm per hour; more than 0.75 mm in 6 minutes.
Heavy *(Heavy rain falls quickly and can cause rapid runoff, increasing the risk of flash flooding, basement flooding, and road closures)*	More than 7.6 mm per hour; more than 0.75 mm in 6 minutes.

A.2.4 What Forecast Rainfall Amounts Mean

When a forecast says an area may receive 25mm of rain, this does not mean every location will get exactly that amount. It means that across the broader region, rainfall totals around that amount are possible if conditions remain similar. When a range is given, such as 10-20mm it reflects uncertainty about the exact path or strength of the storm. Different weather models may show different outcomes, so forecasters use a range to account for those possibilities.

A.2.5 Probability of Precipitation

Forecasts often include a probability of precipitation (POP), shown as a percentage. This number describes how likely it is that measurable precipitation will occur somewhere in the forecast area during the forecast time period (i.e. today, tonight, next day). Environment and Climate Change Canada only use 30, 40, 60 or 70 percent for POP values.

A.2.6 What does this mean for Riverine Flood risk?

Even when the probability of precipitation is low, short period of intense rain, especially from thunderstorms can still cause localized and sometimes flash flooding. This is why flood messages may be issued event when rain is not expected in the entire jurisdiction.

Forecasting rainfall is not exact. Weather forecasts are based on computer models that cover large areas and actual rainfall can vary widely from place to place. Rainfall depend on how the weather system behaves as it moves across the landscape. Local features such as lakes, rivers, hills, and urban areas can cause rainfall to be heavier in some locations and lighter in others, even over short distances. Meteorological conditions locally can also make a difference in rainfall total amounts in one area due to parameters such as relative humidity, dew point, air temperature, wind, as well as antecedent soil moisture conditions (referred to as AMC) which impacts how much water runs off the land versus soaking into (or infiltrating) the ground.

A.2.7 Common Wind and Wave Terms Explained

Wind plays a major role in shoreline flooding by pushing water toward the shore and increasing wave height and energy. The following terms are also used when describing wind velocities and their influence on critical wave heights.

Wind Direction	**the direction from which the wind is blowing**
Wind Setup	the vertical rise above normal water level on the leeward site of a body of water caused by wind stresses on the surface of the water
Leeward	the direction toward which the wind is blowing, the direction toward which waves are traveling
Wave Height	the amplitude measured from wave trough to wave crest, for offshore areas, outside the breaker line

When high water levels, strong winds, and large waves occur together, shoreline flooding can happen quickly. Shoreline flood messages help residents, municipalities, and emergency services prepare for these condition.

APPENDIX B: Flood Message Definitions and Examples

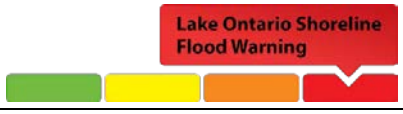
B. 1 Flood Message Definitions

The Flood message levels issued by Conservation Authorities are as follows:

Riverine Flood Message Definitions

Flood Message Description	Flood Message Level
Normal (Green)	
Watershed Conditions Statement – Water Safety Statement is issued when high flows, unsafe banks, melting ice or other factors could be dangerous for recreational users such as anglers, canoeists, hikers, children, pets, etc. Flooding is not expected.	
Watershed Conditions Statement – Flood Outlook Statement is early notice of the potential for flooding based on weather forecasts calling for heavy rain, snow melt, high wind or other conditions that could lead to high runoff, cause ice jams, lakeshore flooding or erosion.	
A **Flood Watch** is defined as a notice that flooding is possible in specific watercourses or municipalities. Municipalities, emergency services and individual landowners in flood-prone areas should prepare.	
A **Flood Warning** is defined as a notice that flooding is imminent or already occurring in specific watercourses or municipalities. Municipalities and individuals should take action to deal with flood conditions. This may include road closures and evacuations.	

Lake Ontario Shoreline Flood Message Definitions

Flood Message Description	Flood Message Level
Lake Ontario Shoreline Conditions Statement is a general notice that potential conditions are forecasted to pose a risk to public safety with flooding and erosion possible along lakeshore areas due to above normal water levels and wave activity.	
Lake Ontario Shoreline Flood Watch is a notice that critical high water levels and waves are possible, which could result in shoreline flooding and/or erosion.	
Lake Ontario Shoreline Flood Warning is a notice that critical high water levels and waves are imminent and/or occurring, which could result in shoreline flooding and/or erosion.	

B. 2 Flood Message Examples

Sample Watershed Conditions Statement – Water Safety Example

FLOOD FORECASTING AND WARNING PROGRAM

WATERSHED CONDITIONS STATEMENT

WATER SAFETY

DATE: Friday, June 18th, 2025
TIME: 3:30 PM
ISSUED TO: School Boards, Municipalities, Local Conservation Authorities, Local Police, Emergency Services, Media and the Public

Note: A Water Safety Watershed Conditions Statement may be issued when there are high flows, unsafe banks, melting ice or other factors that could be dangerous for recreational users such as anglers, canoeists, hikers, children, pets, etc. Flooding is not expected.

WEATHER CONDITIONS

Toronto and Region Conservation Authority advises that Environment Canada has forecasted a Special Weather Statement for a weather system that may bring 10-20 mm amount of rainfall to all of TRCA watersheds. Rain is forecasted to begin Friday night around 11:00pm and continue throughout the day on Saturday, June 19th, 2025, and may end on Sunday, June 20th, 2025 around 6:00am. The potential for multiple thunderstorms to occur in the same location and could result in locally higher amounts of rainfall of up to 5 mm.

ISSUES

Flooding is not expected in TRCA watersheds, however due to the total rainfall expected, and thunderstorm risk, all rivers may rivers may rise and flow faster than usual for the next three days. Heavy rain from thunderstorms could cause water to pool or collect in flood plains and low-lying areas that do not drain well. Due to the weather forecast, all rivers and streams in the TRCA's jurisdiction should be considered dangerous, as it may cause rapidly changing water levels, faster and stronger flows, and unstable riverbanks.

ACTIONS

- Stay safe around water by avoiding rivers, streams, and nearby trails and by keeping children and pets away from fast moving water and slippery banks.
- Consider postponing recreational activities during this time due to potential high river water levels and flows and unstable riverbanks.
- Travel with caution by allowing extra time for commuting, and watching for ponding on roads, in low-lying areas and underpasses, or near storm drains.
- Stay informed by following local weather forecasts, and public alerts from Environment Canada.
- Share flood safety information by keeping neighbours informed, especially those without internet access.
- Municipalities and emergency services are encouraged to monitor water conditions and share safety information about public safety hazards such as high flows and unstable riverbanks.

This Water Safety, Watershed Conditions Statement will be in effect through Sunday, June 20th, 2025 at 12:00pm. To report a flooding incident from a watercourse, please leave a message on TRCA's floodline listed below. If you are in danger, call 911 immediately.

Flood Duty Officer **Chief Flood Duty Officer**

Previous Flood Messages issued for the same storm event: *No previous flood message issued for the same storm event.*

Sample Watershed Conditions Statement- Flood Outlook Example

FLOOD FORECASTING AND WARNING PROGRAM

WATERSHED CONDITIONS STATEMENT

FLOOD OUTLOOK

DATE: Friday July 18th, 2025
TIME: 3:30 PM
ISSUED TO: School Boards, Municipalities, Local Conservation Authorities, Local Police, Emergency Services, Media and the Public

Note: A Water Safety Watershed Conditions Statement may be issued when there are high flows, unsafe banks, melting ice or other factors that could be dangerous for recreational users such as anglers, canoeists, hikers, children, pets, etc. Flooding is not expected.

WEATHER CONDITIONS

Toronto and Region Conservation Authority advises that Environment Canada has issued a rainfall warning for a weather system that may bring 20-40 mm amount of rainfall to all of TRCA watersheds. Rain is forecasted to begin Friday night around 11:00pm and continue throughout the day on Saturday, July 19th, 2025, and may end on Sunday, July 20th, 2025 around 6:00am. Very high rainfall intensities are expected and there is a potential to exceed 10 mm of total rainfall in 1 hour.

ISSUES

Current weather forecast suggests a higher potential for flooding from TRCA river systems due to the possible significant amounts of rain, that could cause large amounts of water to flow into and overflow the rivers. If the forecasted rainfall happens, all rivers may rise above their normal water levels with stronger and faster flows for the next three days. Flooding and water pooling may occur in flood plains and low-lying areas that do not drain well, especially if significant amounts of rainfall is received over 24 hours. All shorelines, rivers, and streams in TRCA jurisdiction should be considered dangerous as this rainfall may cause rapidly changing water levels and stronger and faster flows in TRCA rivers.

ACTIONS

- Stay safe around water by avoiding rivers, streams, and nearby trails and by keeping children and pets away from fast moving water and slippery banks.
- Keep children and pets away from fast moving water, slippery and unstable riverbanks and consider postponing recreational activities due to these hazards until conditions improve.
- Travel with caution by allowing extra time for commuting. Never drive, walk, or bike through floodwater since water can be deeper or faster than it looks, and watch for ponding in low-lying areas and underpasses, or near storm drains. Follow all detour and road closure signage.
- Stay informed by following local weather forecasts, and public alerts from Environment Canada.
- Share flood safety information by keeping neighbours informed, especially those without internet access.
- Municipalities and emergency services should consider reviewing flood preparedness protocols and increase monitoring in known flood vulnerable areas for changing conditions.

This Flood Outlook, Watershed Conditions Statement will be in effect through Sunday, July 20th, 2025 at 12:00pm. To report a flooding incident from a watercourse, please leave a message on TRCA's floodline listed below. If you are in danger, call 911 immediately.

Flood Duty Officer **Chief Flood Duty Officer**

Previous Flood Messages issued for the same storm event: *No previous flood message issued for the same storm event.*

Sample Flood Watch Example

WATERSHED CONDITIONS STATEMENT

FLOOD WATCH

DATE: Friday, March 18th, 2025
TIME: 3:30 PM
ISSUED TO: School Boards, Municipalities, Local Conservation Authorities, Local Police, Emergency Services, Media and the Public

Note: A Flood Watch is a notice that flooding is possible in specific watercourses or municipalities (due to stream conditions and expected weather). Municipalities, emergency services and individual landowners in flood-prone areas should prepare.

WEATHER CONDITIONS

Toronto and Region Conservation Authority (TRCA) has upgraded its previous Flood Outlook and advises that Environment and Climate Change Canada (ECCC) has issued a Rainfall Warning for a weather system that is expected to bring warm air temperatures and bring 40-60 mm] of rainfall to all of) TRCA watersheds. Rain and warm air temperature is forecasted to begin tonight, Friday, March 18th, 2025 at 11:00pm and continue throughout Sunday March 20th, 2025. Air temperatures are will continue to be above freezing throughout Friday, March 18th, 2025, reaching a maximum of 10 degrees Celsius.

ISSUES

Flooding is possible in TRCA watersheds due to forecasted rain coming, partially frozen ground conditions, and higher than normal water levels in rivers and streams. TRCA rivers have not yet reached their highest water levels and are expected to keep rising for the next 3 days, especially in the Humber Watershed. Due to the combined amounts of rain and melting snow, flooding and water pooling may occur in flood plains and low-lying areas that do not drain well. All TRCA shorelines, rivers, and streams especially in the Humber Watershed, are dangerous right now. Water flows are higher, and water levels can change fast, as well as create unstable riverbanks. The weather and watershed conditions make it likely that river ice will break and move. This can cause ice jams and flooding in low-lying areas during this event. Moving river ice may cause ice jams and flooding with little warning. Ice jams can form anywhere along a river, mostly near culverts, bridges, bends, or river mouths. It is difficult to predict where and when flooding from ice jams will occur.

ACTIONS

- Stay safe around water by avoiding rivers, streams, shorelines, trails, and low-lying crossings, as conditions may become dangerous with rapidly rising water levels.
- Keep children and pets away from fast moving water and avoid all water related recreational activities until conditions improve.
- Travel with caution by allowing extra time for commuting. Never drive, walk, or bike through floodwater since water can be deeper or faster than it looks, and watch for ponding in low-lying areas and underpasses, or near storm drains. Follow all detour and road closure signage.
- Stay informed by following local weather forecasts, and public alerts from Environment Canada and by watching for changing river conditions as inclement weather continues.
- Share flood safety information by keeping neighbours informed, especially those without internet access.
- Flooding is possible, municipalities and emergency services are encouraged to increase preparedness measures and communications with emergency operational groups.

This Flood Watch will be in effect through Sunday March 20th, 2025 at 12:00pm. To report a flooding incident from a watercourse, please leave a message on TRCA's floodline listed below. If you are in danger, call 911 immediately.

Flood Duty Officer **Chief Flood Duty Officer**

Previous Flood Messages issued for the same storm event: *No previous flood message issued for the same storm event.*

Sample Flood Warning Example

WATERSHED CONDITIONS STATEMENT

FLOOD WARNING

DATE: July 16th, 2024
TIME: 11:30 AM
ISSUED TO: School Boards, Municipalities, Local Conservation Authorities, Local Police, Emergency Services, Media and the Public

Note: A Flood Warning is a notice that flooding is imminent or occurring in specific watercourses or municipalities. Municipalities and individuals should take action to deal with flood conditions. This may include road closures and evacuations.

WEATHER CONDITIONS

Toronto and Region Conservation Authority (TRCA) has upgraded its previous Flood Watch and advises that Environment and Climate Change Canada (ECCC) have continued a Thunderstorm Warning for a weather system that is expected to bring 125 mm amounts of rainfall to all of TRCA watersheds. Rain is forecasted to begin today at 1:30pm and continue throughout the evening, with additional rainfall expected for July 17 (tomorrow at 10:00am). The forecast includes the potential for multiple thunderstorms to occur in the same location and could result in locally higher amounts of rainfall of up to 50 mm.

ISSUES

Flooding in TRCA's watersheds is happening now in the City of Toronto at the Don Valley Parkway, between Dundas and Queen Street, due to a forecasted weather system with thunderstorms. All rivers, streams, and shorelines, should be considered dangerous due to flooding occurring in flood plain and low-lying areas, creating dangerous conditions.

TRCA watersheds have already received between 81 mm of rain. Some rivers in TRCA watersheds have reached flood levels, the water has gone over the riverbanks and spilled onto nearby low-lying areas and flood plains. This has made the ground saturated which will limit the ability to absorb more rainfall.

ACTIONS

- Avoid all areas currently experiencing flooding.
- Stay safe around water by avoiding riverbanks, streams, shorelines, parks, trails, and low-lying areas, as flooding may have made these areas unstable or dangerous.
- Keep children and pets away from fast moving water and avoid all water related recreational activities at this time.
- Check traffic conditions before heading out and where possible, limit travel unless absolutely necessary. Never drive, walk, or bike through floodwater since water can be deeper or faster than it looks, and watch for ponding in low-lying areas and underpasses, or near storm drains. Follow all detour and road closure signage.
- Stay informed by following local weather forecasts, and public alerts from Environment Canada and remaining aware of rapidly changing conditions in your area, especially near rivers and streams.
- Share flood safety information by keeping neighbours informed, especially those without internet access.
- If asked to evacuate, follow the official instructions of emergency responders and your local municipality.
- Flooding is imminent or already occurring, and municipalities and emergency services should prioritize public safety and critical infrastructure by implementing emergency response plans.

TRCA will issue an update or cancellation to this Flood Warning by July 17th at 9:00am. To report a flooding incident from a watercourse, please leave a message on TRCA's floodline listed below. If you are in danger, call 911 immediately.

Flood Duty Officer **Chief Flood Duty Officer**

Previous Flood Messages issued for the same storm event: Flood Watch Issued 2024/07/15 – 15:01 & Flood Outlook Issued 2024/07/15 – 9:05.

Sample Lake Ontario Shoreline Conditions Statement Example

LAKE ONTARIO WATERSHED CONDITIONS STATEMENT

DATE: July 16th, 2025
TIME: 11:30 AM
ISSUED TO: School Boards, Municipalities, Local Conservation Authorities, Local Police, Emergency Services, Media and the Public

> ***Note:*** *A Lake Ontario Shoreline Conditions Statement is a general notice that potential conditions are forecasted to pose a risk to public safety with flooding and erosion possible along lakeshore areas due to above normal water levels and wave activity.*

WEATHER CONDITIONS

Toronto and Region Conservation Authority (TRCA) advises that Environment and Climate Change Canada (ECCC) has forecasted a Special Weather Statement for a weather system that is expected to bring 10-15 mm amounts of rainfall and strong winds to or all of TRCA Lake Ontario shoreline areas. Easterly winds with gusts up to 55 km/h are forecasted to begin July 16th, 2025 at 1:30pm and continue until July 18th, 2025. Wave heights along the Lake Ontario shoreline near Toronto may reach or exceed 2.0 metres.

ISSUES

Lake Ontario water levels are higher than normal, which will increase the risk of flooding and erosion along the shoreline, due to strong winds and large waves. The current average water level on Lake Ontario is 75.93 metres (IGLD, 1985), which is approximately 0.43m above normal for this time of year and is overall rising as part of the normal seasonal pattern.

Forecasted winds can cause strong waves to occur and push water over shoreline trails, walls, and lead to ponding in low-lying areas and locations that do not drain well. Lake Ontario shorelines in TRCA jurisdiction should be considered dangerous, as current conditions can lead to flooding and erosion and cause dangerous conditions for public safety.

ACTIONS

- Stay safe around water by avoiding all shorelines and nearby trails during periods of strong winds and higher Lake Ontario water levels.
- Keep children and pets away from the shoreline, as high water levels and wave action can create dangerous conditions.
- Consider postponing water related recreational activities on and near the lake during this time due to higher waters and strong waves.
- Stay informed by following local weather and marine forecasts, and public alerts from Environment Canada.
- Share flood safety information by keeping neighbours informed, especially those without internet access.
- Municipalities and emergency services are encouraged to monitor shoreline conditions and share safety information about public safety hazards such as higher water levels, strong waves and erosion.
- The International Lake Ontario–St. Lawrence River Board (ILOSRB) provides forecasts for Lake Ontario. More information can be found here: **ijc.org/en/loslrb**

This Lake Ontario Shoreline Conditions Statement will be in effect through July 18th, 2025 at 12:00pm To report a shoreline flooding incident, please leave a message on TRCA's floodline listed below. If you are in danger, call 911 immediately.

Flood Duty Officer **Chief Flood Duty Officer**

Sample Lake Ontario Shoreline Flood Watch Example

LAKE ONTARIO SHORELINE FLOOD WATCH

DATE: July 16th, 2025
TIME: 11:30 AM
ISSUED TO: School Boards, Municipalities, Local Conservation Authorities, Local Police, Emergency Services, Media and the Public

> ***Note:*** *A Lake Ontario Shoreline Flood Watch is a notice that critical high water levels and waves are possible, which could result in shoreline flooding and/or erosion.*

WEATHER CONDITIONS

Toronto and Region Conservation Authority (TRCA) advises that Lake Ontario water levels have reached levels that are higher than normal, and in combination with waves, will likely result in shoreline flooding and erosion for the next two days. Easterly winds with gusts up to 75 km/h are forecasted to begin July 16th, 2025 at 1:30pm and continue until July 18th, 2025. Additionally, wave action along the Lake Ontario shoreline near Toronto will continue to be an issue due to the significantly elevated water levels of Lake Ontario.

ISSUES

Lake Ontario water levels are much higher than normal, which will continue to pose a risk of flooding and erosion along the shoreline, due to strong winds and large waves. The current average water level on Lake Ontario is *75.93* metres (IGLD, 1985), and is overall rising as part of the normal seasonal pattern. There remains a possibility that water levels on Lake Ontario could reach similar levels to 2019 *(75.95m respectively)*. Across TRCA's jurisdiction, impacts may include shortened beaches, damage to land and infrastructure, and trail or boardwalk closures. Forecasted winds can cause strong waves to occur and push water inland over shoreline trails, walls, and lead to flooding in low-lying areas. Frequent wave action can also make erosion worse. Even as lake levels begin to drop, strong winds and large waves will continue to create dangerous conditions. High water levels on Lake Ontario may reduce the ability of rivers and streams to flow into the lake during heavy rain, which can increase the chance of local flooding. Lake Ontario shorelines in TRCA jurisdiction should be considered dangerous, as current conditions are causing flooding and erosion and dangerous conditions for public safety.

ACTIONS

- Stay safe around water by avoiding Lake Ontario shoreline areas within TRCA's jurisdiction and nearby trails, especially during periods of strong winds and keep children and pets away at this time as these areas remain dangerous.
- While the special Notice of Caution for the Scarborough Bluffs is no longer in effect, all signage must be obeyed, and the public is not permitted in areas that are not explicitly designated as public access areas.
- Postpone all water related recreational activities on and near the lake during this time due to higher waters and strong waves.
- Stay informed by following local weather and marine forecasts, and public alerts from Environment Canada.
- Share flood safety information by keeping neighbours informed, especially those without internet access.
- Flooding is possible, therefore, municipalities and emergency services are encouraged to increase preparedness measures and communications with emergency operational groups.
- The International Lake Ontario–St. Lawrence River Board (ILOSRB) provides forecasts for Lake Ontario. More information can be found here: ijc.org/en/loslrb

TRCA will issue an update or cancellation to this Lake Ontario Shoreline Flood Watch by July 18th, 2025 at 12:00pm. To report a shoreline flooding incident, please leave a message on TRCA's floodline listed below. **If you are in danger, call 911 immediately.**

Flood Duty Officer **Chief Flood Duty Officer**

Sample Lake Ontario Shoreline Flood Warning Example

LAKE ONTARIO SHORELINE FLOOD WARNING

DATE: July 16th, 2025
TIME: 11:30 AM
ISSUED TO: School Boards, Municipalities, Local Conservation Authorities, Local Police, Emergency Services, Media and the Public

> ***Note:*** *A Lake Ontario Shoreline Flood Warning is a notice that critical high water levels and waves are imminent and/or occurring, which could result in shoreline flooding and/or erosion.*

WEATHER CONDITIONS

Toronto and Region Conservation Authority (TRCA) advises that Lake Ontario water levels have reached critical levels, and in combination with waves, will result in more shoreline flooding and erosion. Easterly winds with gusts up to 100 km/h are forecasted to begin July 16th, 2025 at 1:30pm and continue until July 18th, 2025. Additionally, wave action along the Lake Ontario shoreline near Toronto will continue to be an issue due to the significantly elevated water levels of Lake Ontario.

ISSUES

Lake Ontario water levels remain high, causing ongoing flooding and erosion along the shoreline within TRCA's jurisdiction. The current average water level on Lake Ontario is *75.93* metres (IGLD, 1985), and is overall rising. Levels on Lake Ontario [have reached similar levels to 2019 *at 75.95m respectively*. Some beaches, trails, and boardwalks are damaged or closed due to flooding and erosion. The areas currently being impacted are in City of Toronto within Toronto Islands. Strong winds and large waves are currently pushing water inland overprotective berms and walls, shoreline trails, and low-lying areas resulting in flooding and unsafe conditions. Frequent wave action will continue to make erosion worse and even when lake levels begin to drop, strong winds and large waves will continue to create dangerous conditions. High water levels on Lake Ontario may reduce the ability of rivers and streams to flow into the lake during heavy rain, which can increase the chance of local flooding.

ACTIONS

- Avoid all areas currently experiencing flooding.
- Stay safe around water by avoiding Lake Ontario shoreline areas within TRCA's jurisdiction and nearby trails, especially during periods of strong winds.
- Keep children and pets away from fast moving water and slippery or unstable riverbanks until conditions improve.
- While the special Notice of Caution for the Scarborough Bluffs is no longer in effect, all signage must be obeyed, and the public is not permitted in areas that are not explicitly designated as public access areas.
- Contact your local municipality 311 line for updated information on park and beach operations and consider postponing water related recreational activities on and near the lake during this time due to higher waters and strong waves.
- Limit travel in shoreline areas unless absolutely necessary. Never drive, walk, or bike through floodwaters, as it may be deeper or faster moving than it appears. Follow all detour and road closure signage.
- Stay informed by following local weather and marine forecasts, and public alerts from Environment Canada.
- Share flood safety information by keeping neighbours informed, especially those without internet access.
- Flooding is imminent or already occurring, and municipalities and emergency services should prioritize public safety and critical infrastructure by implementing emergency response plans.
- The International Lake Ontario–St. Lawrence River Board (ILOSRB) provides forecasts for Lake Ontario. More information can be found here: **ijc.org/en/loslrb**

TRCA will issue an update or cancellation to this **Lake Ontario Shoreline Flood Warning** by July 18th, 2025 at 12:00pm. To report a shoreline flooding incident, please leave a message on TRCA's floodline listed below. **If you are in danger, call 911 immediately.**

Flood Duty Officer **Chief Flood Duty Officer**

APPENDIX C: PRIMARY CONSERVATION AUTHORITIES

Key:

P	***Primary Conservation Authority*** *Contact for Watershed Conditions Statement, Flood Watch, Flood Warning Messages and Contact List Updates*
S	***Secondary Conservation Authority*** *shares a portion of a Municipality with Primary CA*
KRCA	*Kawartha Region Conservation Authority*
HRCA	*Halton Region Conservation Authority*
CVCA	*Credit Valley Conservation Authority*
TRCA	***TORONTO AND REGION CONSERVATION AUTHORITY***
LSRCA	*Lake Simcoe Region Conservation Authority*
CLOCA	*Central Lake Ontario Conservation Authority*
GRCA	*Ganaraska Region Conservation Authority*
NVCA	*NOTTAWASAGA VALLEY CONSERVATION AUTHORITY*

DESIGNATED CONSERVATION AUTHORITIES

Municipality	HRCA	**TRCA**	CVCA	NVCA	LSRCA	CLOCA	GRCA	KRCA
DUFFERIN COUNTY			P					
Town of Orangeville			P					
Township of East Garafraxa			P					
Township of Mono			S	P				
Township of Mulmur				P				
Township of Melancthon				P				
Township of Amaranth				P				
GREY COUNTY								
Municipality of Grey-Highlands				P				
Town of the Blue Mountains				P				
DURHAM REGION		S			S	P	S	
City of Pickering		**P**				S		
Town of Ajax		**P**				S		

Municipality	HRCA	**TRCA**	CVCA	NVCA	LSRCA	CLOCA	GRCA	KRCA
Township of Brock					P			
Township of Uxbridge		S			P	S		
Township of Scugog					S	S		P
Town of Whitby						P		
City of Oshawa						P		
Municipality of Clarington						P	S	
HALTON REGION	P		S					
City of Burlington	P							
Town of Halton Hills	S		P					
Town of Milton	P		S					
Town of Oakville	P							
CITY OF HAMILTON	P							
NORTHUMBERLAND COUNTY							P	
Township of Hope							P	
Town of Port Hope							P	
Town of Cobourg							P	
Township of Hamilton							P	
Township of Haldimand							P	
PEEL REGION		S	P					
City of Mississauga	S	S	P					
City of Brampton		S	P					
Town of Caledon		S	P		S			
Township of Millbrook North Monaghan							P	
SIMCOE COUNTY				S	P			
Township of Adjala-Tosorontio		S		P				
Town of Innisfil				S	P			
Town of New Tecumseth				P	S			
Town of Bradford West Gwillimbury				S	P			
City of Barrie				S	P			
Township of Oro-Medonte				P	S			

Municipality	HRCA	**TRCA**	CVCA	NVCA	LSRCA	CLOCA	GRCA	KRCA
Township of Ramara					P			
Township of Springwater				P				
Township of Clearview				P				
Town of Wasaga Beach				P				
Town of Collingwood				P				
Township of Essa				P				
CITY OF TORONTO		P						
CITY OF KAWARTHA LAKES								P
WELLINGTON COUNTY	S		P					
Township of Puslinch	P							
Town of Erin			P					
YORK REGION		S			P			
City of Markham		P						
City of Vaughan		P						
City of Richmond Hill		P			S			
Town of Whitchurch/Stouffville		P			S			
Town of Georgina					P			
Township of King		S			P			
Town of Aurora					P			
Town of Newmarket					P			
Town of East Gwillimbury					P			

APPENDIX D: Flood Vulnerable Areas

TRCA's mandate for flood risk management includes the identification of areas at risk from flooding. Through the current Flood Risk Assessment update, TRCA identifies Flood Vulnerable Areas (structures and roads at risk of riverine flooding) within our jurisdiction, and investigates the implementation of tools and/or capital works projects that will reduce the risk to both life and property in these areas. High-level identification of flood risk was addressed through the development of a Flood Protection and Remedial Capital Works Strategy. The strategy includes an analysis of flood mitigation options in order to prioritize areas or structures within the TRCA jurisdiction requiring remedial flood protection works and/or acquisition. Implementation is achieved through large scale capital remedial works, technological advances in forecasting, municipal outreach, public education and data management.

TRCA has undertaken a detailed structure-level flood risk assessment project, together with an update of the database of flood vulnerable buildings and roads, leveraging advancements in geospatial technology.

Building on the results from the project, TRCA is starting a flood risk public outreach project, which will use the new mapping and flood risk information to communicate flood risk to municipal staff and the public. The goals of the outreach project are to help inform municipal flood response procedures and to help residents take preparatory steps to protect themselves and their property in advance of a flood. The information provided by the flood risk assessment could also be leveraged to estimate return on investment for future flood-protection measures.

Recent advancements in technology have allowed for the development of improved forecasting tools, as well as the historical analysis of typical storm events in the GTA. This information is being used to gain a better understanding of the response of the watersheds to various types of rainfall events, which has a direct impact on emergency response plans.

The figure below identifies the 'clusters' or areas with a high concentration of Flood Vulnerable Areas within TRCA's jurisdiction.

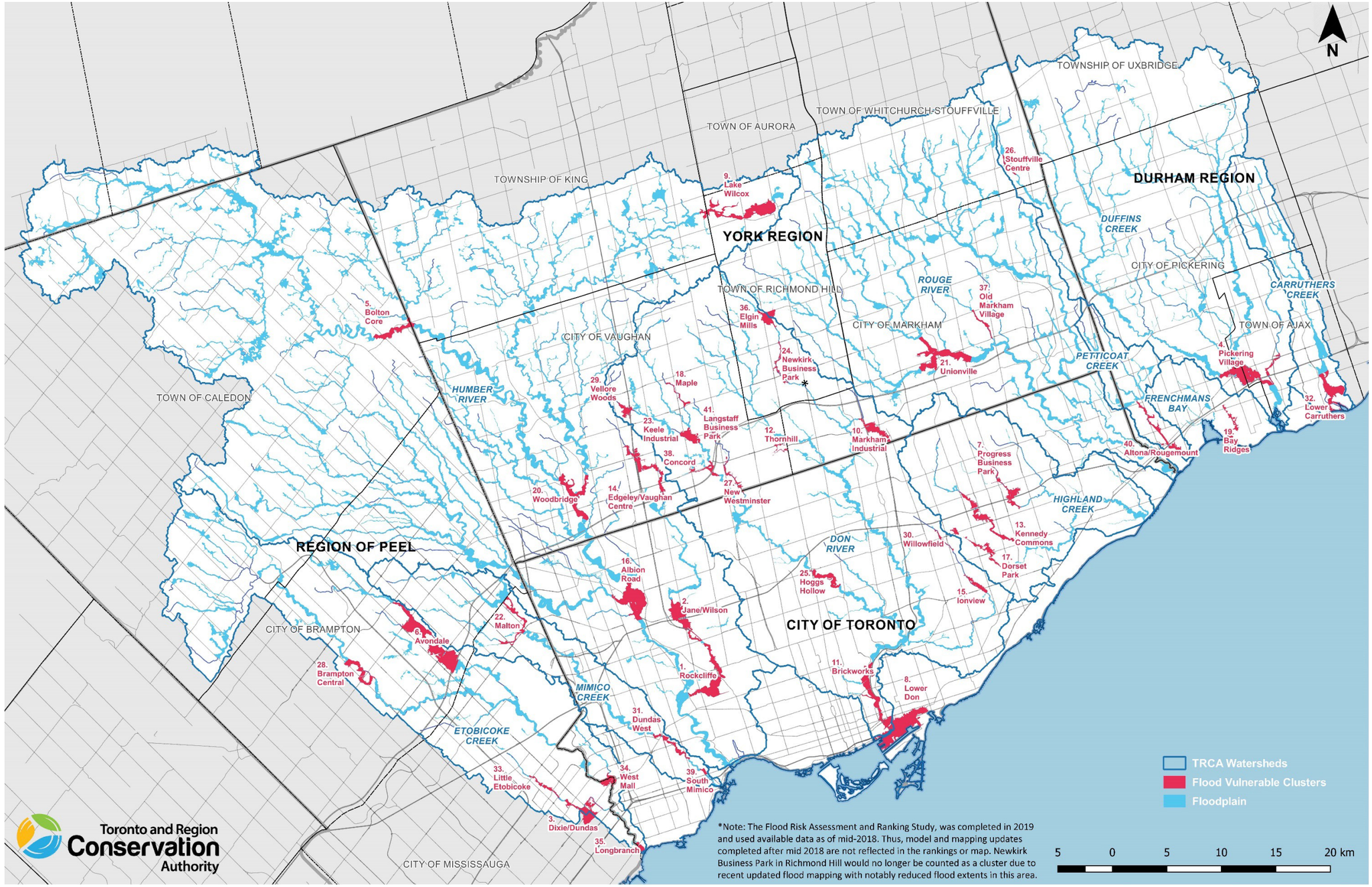


Figure D-1: TRCA Flood Vulnerable Cluster

APPENDIX E: TRCA'S Flood Incident Management System (IMS) Structure

During major and severe flood events, the TRCA may activate its Emergency Operations Centre (EOC) and utilize the incident Management System (IMS) structure for major/severe flood events structure to manage and respond to the incident effectively.

Figure 3 illustrates TRCA's IMS positions for a flood emergency. Depending on the severity of the flood event, a few key positions to all positions in the IMS structure may be activated.

A brief summary of each IMS section is provided below.

Command Section	The Command section will be responsible for caring out the corporate objectives, strategies and tactics during a major flooding event through continued communications with municipalities, emergency responders and internal staff.
Operations Section	The Operations section is responsible for carrying out on-the-ground flood response activities. This includes operating and monitoring flood control dams, ensuring flood monitoring equipment and gauges are working properly, and supporting site inspections and technical assessments as needed.
Planning Section	The Planning section will be responsible for collecting, collating, evaluating, analyzing, disseminating incident information. This includes the gathering of situational information that will be used for current and future planning activities.
Logistics Section	The Logistics Section is responsible for securing and supporting the resources needed to manage a flood event. This includes arranging personnel, equipment, and supplies that are not immediately available to Operations, as well as providing telecommunications, IT, and geomatics support.
Finance Section	The Finance Section is responsible for tracking and managing costs related to a flood incident. This includes monitoring available funding sources, tracking and reporting on expenses, managing reimbursements, and overseeing contracts and timekeeping.

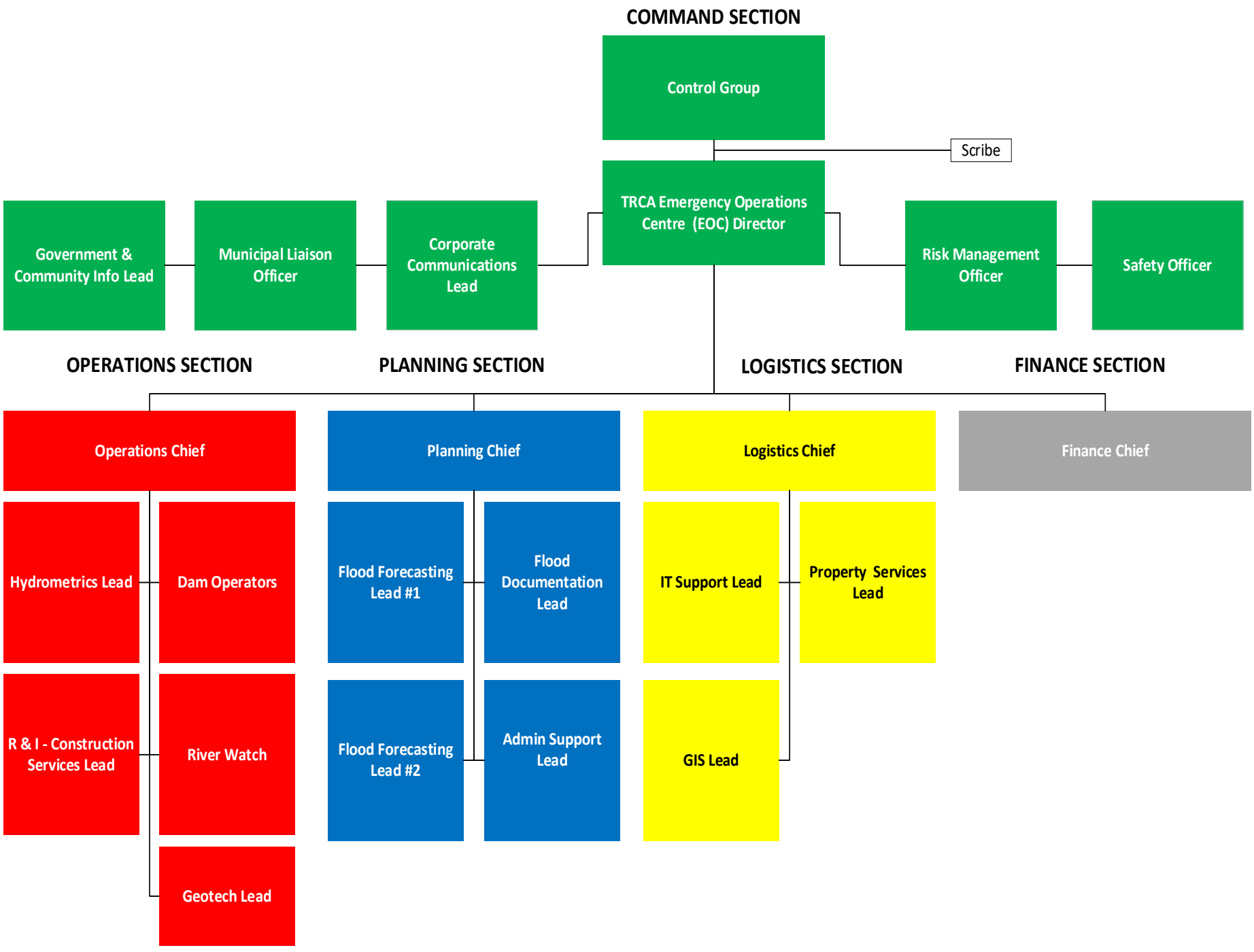


Figure E-1: TRCA Incident Management System structure for major/severe flood evento and Region Conservation Authority

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