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Town of Tecumseh Flood Response Plan

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1.0 Introduction

1.1 Purpose

The purpose of the Town of Tecumseh Flood Response Plan (TFRP) is to prepare for the most efficient deployment of resources to achieve the following:

- To provide effective intra-agency and inter-agency cooperation and communication before, during, and after a flood event.
- A coordinated response consistent with prevailing conditions and information provided by external agencies including the Essex Region Conservation Authority (ERCA) Watershed Conditions statements, and/or other sources.
- To define the roles and responsibilities of the municipal departments and supporting agencies involved in a flood emergency.
- To define the procedures to be utilized in minimizing the effects of a flood emergency in the Town of Tecumseh.

1.2 Scope

The TFRP outlines the assistance that will be provided to the municipality and its residents during flood emergencies.

The Town of Tecumseh will work in conjunction with ERCA, stakeholders and Provincial authorities to help prepare for, prevent and/or mitigate where possible, and coordinate a response to flood emergencies.

1.3 Background

The Town of Tecumseh is located east of Windsor, Ontario and south of Lake St. Clair. The majority of Tecumseh's 94.7 square kilometres of land area is used for agriculture. The remainder of the Town can be characterised into three separate regions containing typical urban features of residential, recreational, institutional, commercial and industrial development, and approximately 5 kilometres of Lake St. Clair shoreline.

Many areas within the Town limits may succumb quickly to weather events such as intense rainfall or extreme wind conditions. Therefore, an emergency response to flooding requires collaboration between agencies, sectors and departments.

The extent of the initial flood response will depend on the warning time (which will vary based on the cause of the flooding) and on the scale of the flood event. Intense storms may produce a flood in minutes or a few hours.

The Town of Tecumseh has experienced significant fluvial and lake flooding in the past, therefore, the municipality, ERCA, and other partner agencies recognize the need for a flood management plan to coordinate flood preparedness and response actions.

1.4 Planning Assumptions

The plan assumes the following:

- ERCA will provide watershed condition statements as they become available.
- The Town of Tecumseh will have the primary responsibility for mitigation, prevention, preparedness, response and recovery in flood emergency/disaster situations.
- Climate change and associated extreme weather events may result in major flooding in certain areas of the Town.
- The Town of Tecumseh and partner agencies will follow the response activities set out in the Town of Tecumseh Emergency Response Plan (TERP), the TFRP and departmental operating procedures.
- Residents of the Town of Tecumseh will take active measures to protect their property and mitigate flooding from their property onto neighbouring properties and the road allowance and otherwise for the benefit of those areas at risk of flooding within the Town of Tecumseh.
- Without limiting the foregoing, when requested by the Town of Tecumseh or otherwise ordered to do so in accordance with the declaration of an emergency, residents shall deploy temporary measures, such as sand bags on their property as provided by the Town of Tecumseh in the manner and location directed by the Director of Public Works & Environmental Services. Where temporary measures are considered insufficient by the Town of Tecumseh, residents will provide access to and permit the installation of other flood control active measures on their private property by the Town or its designates where such active measure is deemed necessary by the Town of Tecumseh to mitigate flooding and there is insufficient time for the Resident to undertake the work.
- Where a Resident fails to take active measures or permit access for the installation of such measures, the Town of Tecumseh may take remedial action contemplated by section 446 of the *Municipal Act, 2001, S.O. 2001, c. 25*.

1.5 Plan Limitations

- While efforts will be made to assist residents in the protection of their property during a flood emergency, the protection of critical municipal infrastructure must be the first priority to ensure continuity of municipal services to the community.
- The Town will provide sandbags and sand to residents when adequate supplies are available, however, no municipal personnel will be deployed for the protection of private property where sufficient time exists to permit the resident to complete the active measures. Where insufficient time exists to permit the resident to complete the active measures, remedial action noted in 1.4 above may be undertaken by the Town.
- There may be factors that will adversely affect the municipality's ability to respond to flood emergencies. Response may be delayed if roads become impassable, normal channels of communications may be disrupted and utilities may be unavailable for extended periods of time.
- Response to flooding varies depending on the cause of flooding. In the event of a heavy rainfall or severe summer storm, the response and recovery may take place simultaneously as there is little or no time to prepare.

1.6 Authority and Maintenance

The authority for this Town of Tecumseh Flood Response Plan is provided by the Emergency Management and Civil Protection Act, RSO 1990. C.E.9. as an annex to the Town of Tecumseh Emergency Response Plan as authorized by By-law 2020-35.

Responsibility for the annual review, revision and testing of this TFRP shall be assigned to the Town of Tecumseh's Community Emergency Management Coordinator (CEMC).

2.0 Flood Information

“The Ministry of Natural Resources (MNR) defines flooding as an overflow of water associated with a lake, river or stream that threatens the safety, welfare of people and/or damage to public and/or private property. Floods may be caused by natural phenomena (e.g. weather), structural failure (e.g. dams), or human interference (e.g. stream diversion)¹”

2.1 Types of Flooding

The causes of flooding within the Town of Tecumseh could include one of the following, or a combination thereof:

2.1.1 Lake Flooding

Normal water levels in the Great Lakes are largely modulated by precipitation, natural springs and rivers. Great Lakes water levels typically rise during the spring into summer, but major winter snowfalls and excessive rainfall are primary drivers for high water as well. Lake flooding may occur along the shores of the Great Lakes, in some places repeatedly, and can intensify during high wind events and storms. Although water levels in the Great Lakes are in constant flux, the recent observed shifts have been particularly extreme.

2.1.2 Spring Rainfall

In the spring, the predominant form of precipitation changes from solid (snow and ice) to liquid (rain). The impact of spring rainfall will vary depending on a number of factors including:

- How much rain falls
- How much melting occurred before a rain event
- The water content of the existing snow on the ground
- The ground conditions (frozen or unfrozen)

¹ Ministry of Community Safety and Correctional Services – Hazard Based Planning – Guideline for the Development of a Municipal Flood Emergency Plan
https://www.emergencymanagementontario.ca/english/emcommunity/program_resources/hazardbasedplanning/flood_guideline.html

- The worst-case scenario is above-zero temperatures combined with rain on frozen ground, or rain on snow with above-average water content. These conditions provide the greatest threat for flooding.

2.1.3 Severe Summer Storms

During high intensity thunderstorms, rainfall is often so heavy (torrential downpours) that the ground is incapable of absorbing the water quickly enough, resulting in very high runoff rates. As a result, flash flooding may occur.

2.1.4 Urban Flooding

- Urban flooding may occur when the rainfall exceeds the municipal storm drainage system's ability to handle the volume of rain. Urban flooding is common during flash flood events. This type of flooding occurs in urban/built up areas during thunderstorm events because the surrounding ground surfaces are largely paved over, thereby decreasing the capability of the ground to absorb even small amounts of rainfall quickly enough. During these types of events, the streets may become inundated, sewer systems may surcharge, and basements may fill with water.

2.1.5 Water Main Break

In extreme circumstances, water main breaks could result in large volumes of water being released and result in flooding. During such situations, the streets may become inundated, sewer systems may surcharge, and basements may fill with water, creating issues similar to floods caused by natural phenomenon.

2.2 Potential Adverse Effects Caused by Flooding

A flooding event could result in, but is not limited to, the following:

- Threat to life and property;
- Destruction of public property, including damage to critical infrastructure;
- Utility failure (power, water / wastewater, gas);
- Communications disruption (telephone, internet, radio, television, newspaper production, delivery, etc.);
- Structural damage;
- Erosion;
- Damage to watershed ecosystems;

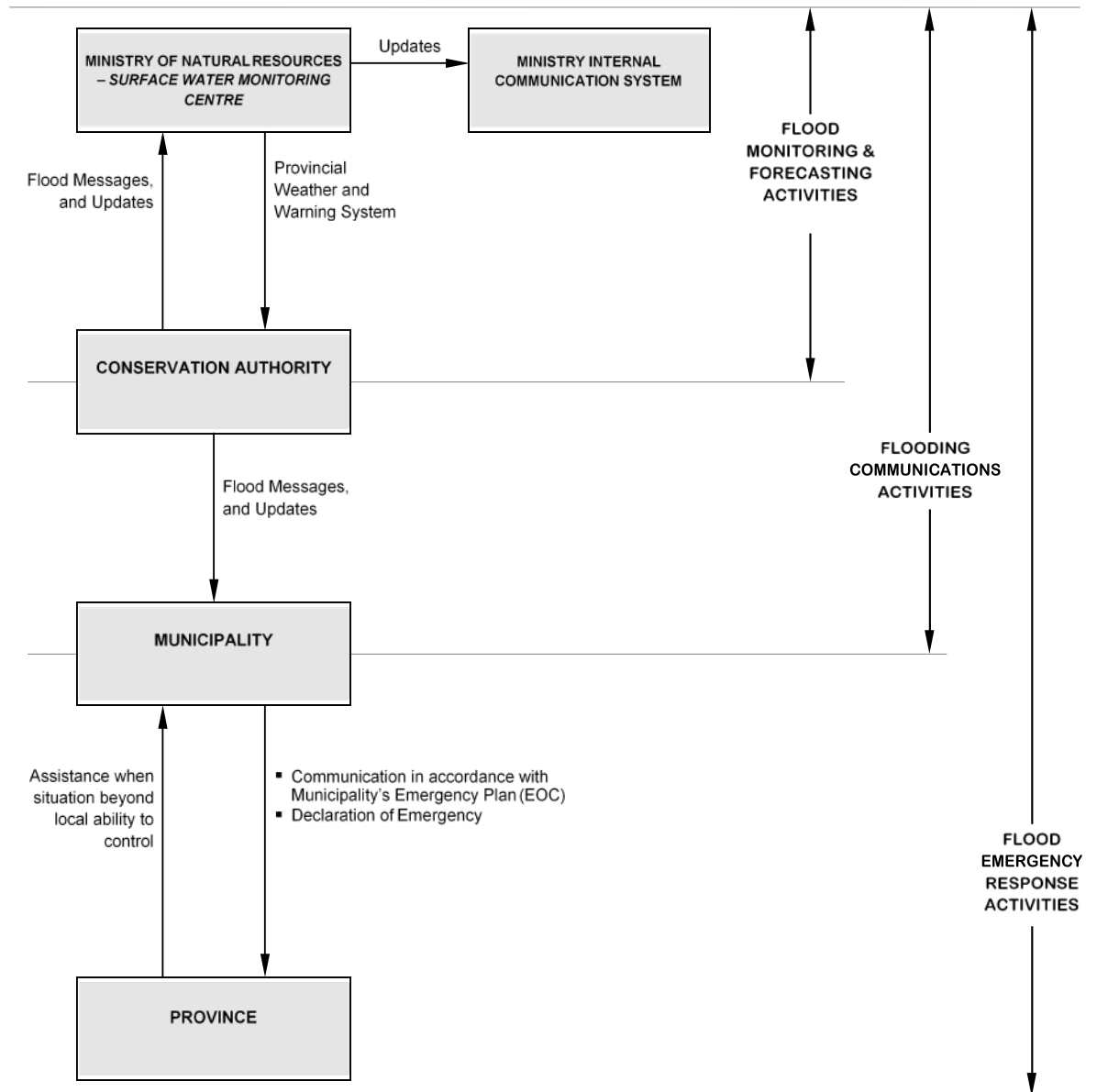
- Traffic disruptions (road, bridge or rail closures), stranded motorists;
- Difficulty in attaining and delivering emergency services (Police, Fire, Paramedic Services, Public Works);
- Food and water shortages;
- Evacuation of people and animals;
- Crop damage;
- Threat to public health (dangerous goods accidents, contaminated water – both potable and non-potable water sources).

3.0 Plan Implementation

The TFRP is intended to provide guidance to initial responding municipal staff to prevent or reduce loss of life or severe injury and /or damage to property and infrastructure during a major flooding event. Subject to determining the severity of the flooding event, the initial responding agency, service or department will immediately contact the Tecumseh CEMC, Mayor, Chief Administrative Officer (CAO) or the local municipal office as to the need to implement **Part 4: Emergency Notification Procedures** of the Town of Tecumseh Emergency Response Plan that sets out the procedures for notifying the Tecumseh Community Control Group (CCG) of an emergency.

4.0 Functional Roles and Responsibilities

Figure 1: Interaction of Agencies – Overview



4.1 Federal Government

Part of Environment Canada's mandate as it relates to this TFRP, is to preserve and enhance the quality of the natural environment, including water, air and soil quality, conserve and protect Canada's water resources, and to carry out meteorology.

Environment Canada's Ontario Storm Prediction Centre in Toronto uses current weather observations in combination with information from weather radars and satellites, a North American lightning detection network and a number of computer models to provide seven-day forecasts for locations across the province.

This information is also used to issue Special Weather Statements, Watches and Warnings when severe weather that could endanger life and property becomes a possibility.

Some weather events can be extremely localized and are not always captured by an observation site. Examples include intense, localized rainfall due to severe thunderstorms during the spring and summer or snow squalls during the fall and winter.

Municipal staff across departments receive regular weather reports, advisories and warnings from Accuweather. These services are provided by severe weather meteorologists located in either Ottawa or Toronto.

4.2 Provincial Government

The Ministry of Natural Resources and Forestry (MNRF) is responsible for Provincial flood emergency management and response including:

- Operating the Provincial Flood Forecasting and Warning System;
- Monitoring and reporting on surface water conditions;
- Issues flood messaging to Conservation Authorities and municipalities regarding status of provincial flood potential;
- Upon declaration of a municipal flood emergency, responds to municipal requests for assistance; and
- MNRF flood messages.

The MNRF provides Provincial Watershed Conditions Statements that include information regarding provincial watershed conditions and their potential for flooding and an outlook regarding expected spring weather conditions, and Provincial Flood Watch information including current technical information about the potential for flooding.

The Ministry of Environment, Conservation & Parks (MECP) provides information to municipalities regarding the safe handling and disposal of hazardous waste and the disposal of sandbags.

The Ministry of Municipal Affairs (MMA) advises municipalities on the Disaster Recovery Assistance for Ontarians (DRAO) and Municipal Disaster Recovery Assistance (MDRA) applications, dispatches Personnel Disaster Assessment Teams (PDAT) to affected municipalities, and activates these programs.

The Ministry of Transport (MTO) provides advice and assistance as needed on debris management to affected municipalities.

The Office of the Fire Marshal and Emergency Management (OFMEM) is responsible for operation of the Provincial Emergency Operations Centre (PEOC).

4.3 Essex Region Conservation Authority (ERCA)

The Essex Region Conservation Authority's role is to establish and undertake programs to promote the conservation, restoration, development and management of natural resources in partnership with local municipalities and the province.

ERCA maintains a flood forecasting and warning system to reduce risk to life and damage to property by providing local agencies and the public with advance notice, information and advice so that they can respond to potential flood emergencies.

The level of municipal response is generally linked to flood levels as described by the Conservation Authority through three levels of advisories:

1. Watershed Conditions Statements

- Safety Bulletins
 - 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.
- Flood Outlook
 - 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.

In cases when a Watershed Conditions Statement is announced and response actions are warranted, the Community Control Group (CCG) may activate to help coordinate planning and preparations. In addition, the CCG may activate to coordinate and integrate provincial activities. This may include pre-positioning resources such as sandbag filling machines and preparing public information for distribution.

During a Watershed Conditions Statement, the municipality should consider assigning their own flood observer/assessor to identify and monitor any sites at risk.

Public information on flood-proofing homes, businesses and threatened infrastructure as well as public safety advisories should be issued. Local authority Emergency Operation Centres (EOC) should create opportunities such as public meetings, local bulletin board postings, local radio or local newsprint articles to provide flood safety awareness to citizens and explain flood response plans. Evacuation plans should be updated by the local authority, as necessary, for potentially affected areas.

2. **Flood Watch Bulletins** mean that flooding is possible in specific watercourses or municipalities. Municipalities, emergency services and individual landowners in flood-prone areas should prepare.

In cases when a Flood Watch Bulletin is announced and response actions are warranted, The Town of Tecumseh should proactively patrol riverbanks and/or the lake shoreline on a priority basis and as conditions dictate. Patrols should include all flood protection works and should specifically observe for the appearance of instability or deficiencies. Public Works should increase monitoring of all pump stations to ensure they are in working order. Public Works will secure sandbags, sandbag equipment, set up a sandbag program, identify low-lying areas, and communicate with citizens regarding mitigation and take measures to protect the Town's infrastructure. If appropriate, Public Works will provide the primary monitoring along roadways where any infrastructure may be at risk.

3. **Flood Warning Bulletins** mean that flooding is imminent or already occurring in specific watercourses or municipalities.

Flood Warning Bulletins are issued when the river stage (water height) is expected to reach or exceed stream channel capacity or when lake levels are expected to breach the shoreline or when flooding is actively occurring along a waterway. The range of response can vary dramatically depending on the magnitude and potential consequences due to flooding. If response actions are warranted, the EOC will be activated with staffing levels and operational hours that reflect the level of response required. Flood Warning Bulletins along populated waterways indicate there is a high probability of damage or risk to public safety due to flooding.

In general, during a flood event, the advisories sequence through all three levels, beginning with a Watershed Conditions Statement, but in certain circumstances the first notification for an event may be a Flood Watch Bulletin. The timing of the advisories before a flood event can vary from a few hours to about 72 hours. ERCA distributes these advisories to key stakeholders by email and posts the information on its website.

In situations where there is some advance warning (>72 hours) of the potential for flood-producing weather systems, they may alert stakeholders of these conditions prior to releasing a Watershed Conditions Statement, Flood Watch or Warning Bulletin.

4.4 The Corporation of the Town of Tecumseh

Under the *Emergency Management and Civil Protection Act (Ontario Regulation 380/04)*, municipalities have the primary responsibility and authority for response to flooding and flood emergencies, and for the welfare of residents and protection of property. This responsibility is intended to prevent or reduce loss of life or severe injury and/or damage to property and infrastructure within the Corporation of the Town of Tecumseh.

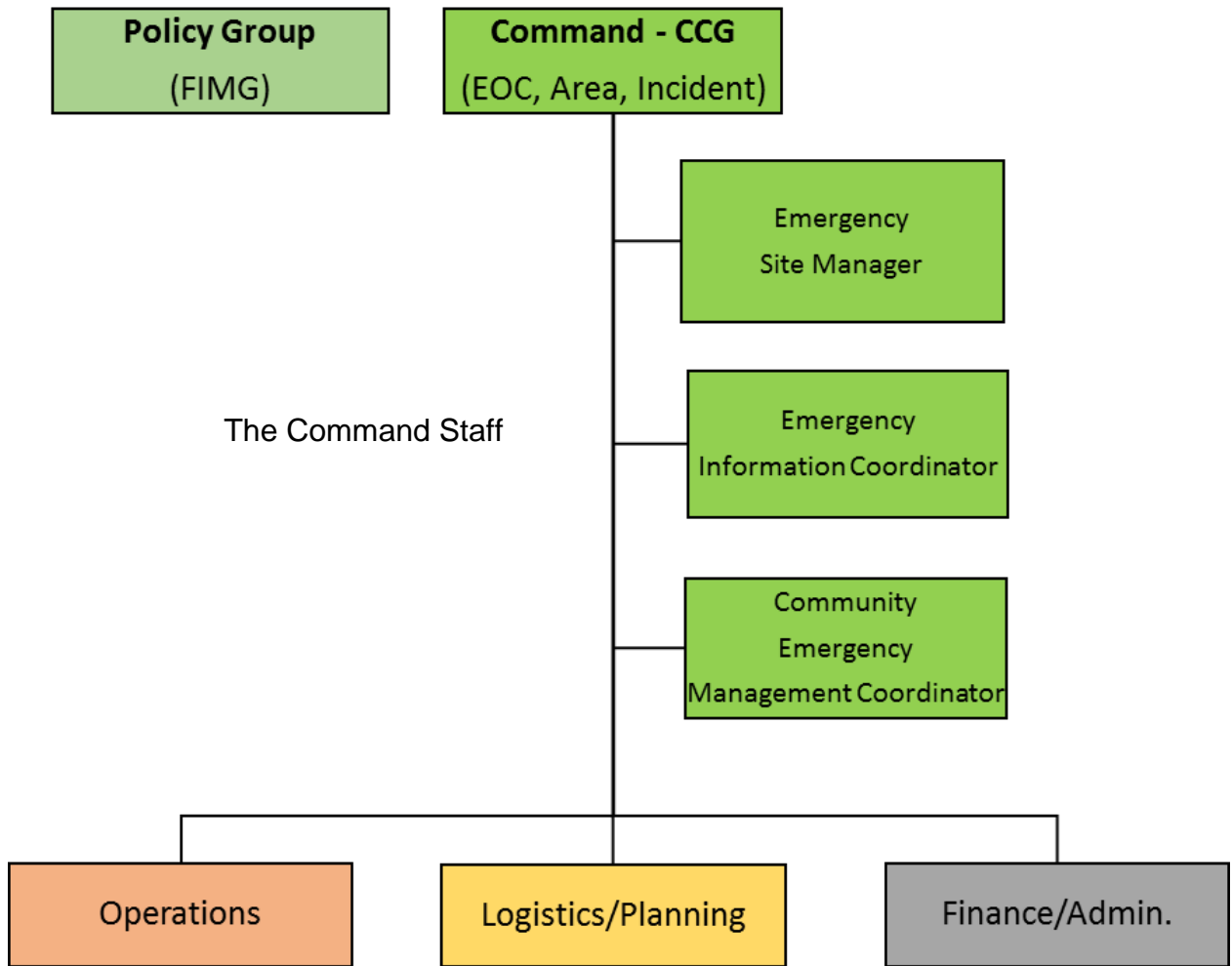
Upon receiving a Flood Watch or Warning, the Town of Tecumseh will:

- Notify appropriate municipal officials, departments and agencies in accordance with the Town of Tecumseh Emergency Response Plan.
- Determine the appropriate response to a flood threat and, if warranted, deploy municipal resources to protect life and property.
- If required, declare a flood emergency and implement the TFRP and TERP.
- If required, notify residents of the active measures to be taken by residents on their properties to mitigate the impact of flooding and otherwise monitor and, where needed, order implementation of such active measures retaining the right for the Town to enter onto a resident's property to complete such works where compliance is not forthcoming or insufficient time exists to allow the resident to complete the work.
- Request Provincial assistance under the *Emergency Management and Civil Protection Act* if municipal resources are inadequate to respond to the emergency.
- Maintain liaison with Conservation Authority Flood Coordinators.

4.5 Incident Management System (IMS) Function Descriptions

The Incident Management System (IMS) is a model for command, control and coordination of an emergency. It provides a way of coordinating the efforts of agencies and resources as they work together toward safely responding to an emergency incident. IMS consists of five key functions: Command, Operations, Planning, Logistics and Finance/Administration.

Figure 2: Incident Management System (IMS) Organizational Chart



4.5.1 Community Control Group (CCG)

The emergency response will be directed and controlled by the Community Control Group (CCG) – a group of officials who are responsible for coordinating the provision of the essential services necessary to minimize the effects of an emergency on the community. The CCG is activated as per the TERP based on flood potential, flood forecasts or the onset of flooding as guided by the Community Emergency Management Coordinator. The CCG consists of the following officials:

- Mayor of the Town of Tecumseh, or alternate;
- Chief Administrative Officer, or alternate, who becomes the Operations Officer in the Municipal Emergency Operations Centre (MEOC);
- Community Emergency Management Coordinator (CEMC), or alternate;

- Inspector Ontario Provincial Police (OPP), or alternate;
- Fire Chief, or alternate;
- Public Works Director, or alternate;
- Medical Officer of Health, or alternate;
- Social Services Director, or alternate;
- Emergency Medical Services (EMS) director, or alternate;
- Local electrical utility representative (Essex Power), or alternate, if required or available;
- Emergency Information Coordinator;
- Information Technology Officer (ITO);
- Additional personnel called or added to the CCG may include:
 - Emergency Management Ontario Representative;
 - Essex Region Conservation Authority Representative;
 - Liaison staff from Provincial ministries;
 - Any other officials, experts or representatives from the public or private sector as deemed necessary by the CCG.
- The Community Control Group may function with only a limited number of persons depending upon the emergency. While the CCG may not require the presence of all the people listed as members of the control group, all members of the CCG must be notified.
- The CCG role is to:
 - Evaluate the situation and assess involvement;
 - Provide strategic and policy direction to the CEMC;
 - Support the activation of the EOC;
 - Oversee the implementation of cross department communications; and
 - Brief elected and senior officials on the flood threat as well as flood readiness, response and recovery activities.

- In addition, when required, the CCG will task a Flood Issues Management Group (FIMG) to analyze specific flood-related issues and situations. The FIMG will then provide decision support and recommendations for CCG resolutions. The CCG will then apply the analysis from the FIMG in the decision making process.

4.5.2 Flood Issues Management Group

During flood events, the CCG may engage subject matter experts to provide research and analysis on legislation and policies. Subject matter experts also provide technical knowledge to support cross-ministry coordination and resolution of complex issues. These experts form the FIMG.

During any significant event, there may be issues that extend beyond normal emergency management activities and that require extraordinary measures to resolve.

While the CCG has decision support systems in place to deal with normal and above normal flood seasons, there may be complex situations where engaging additional Provincial-level decision-making support and expertise from key ministries and agencies is required. The FIMG will address specific, complex flood management issues, including those that have a precedent setting effect on future flood related Provincial decisions and activities that may have a direct influence on Municipal policy.

The primary role of the FIMG is to provide decision-making support to the CCG.

4.5.3 The Command Staff

Site Operations (Emergency Site Manager)

The Emergency Site Manager (ESM) assumes responsibility for the overall coordination of all operations at the emergency site and is the point of contact between the Community Control Group, Community Emergency Management Coordinator, and site operations.

The ESM is responsible for:

- Identifying the flood risk areas;
- Prioritizing response activities;
- Evaluating and identifying equipment and resources needed.

Command Staff assigned to the EMS are responsible for key activities in coordination with the General Staff functional elements.

Community Emergency Management Coordinator (CEMC)

The Community Emergency Management Coordinator (CEMC) is the Emergency Site Manager's point of contact for representatives of other governmental departments and agencies and/or the private sector.

The CEMC also serves as Safety Officer monitoring incident operations and advising the ESM on all matters relating to operational safety, including the health and safety of emergency responder personnel.

Emergency Information Coordinator (EIC)

The Municipal Emergency Information Coordinator will coordinate emergency information tools (such as news releases, news conferences, etc.) advising the public of actions that they should or should not take during the event. Messaging would include:

- Who should evacuate and to where;
- What they should do prior to leaving their residence or place of business;
- What they should take with them.

Updates on the event would be supplied to the public via the media and copies of news releases should be distributed to staff involved in the event as they may be questioned and/or asked for assistance by the public. Updates should be posted in public areas and evacuation centres.

The EIC should work with stakeholders to develop information for residents returning to their homes and/or businesses. The information should outline the precautions people should take prior to entering their building, turning on utilities, assessing the damage, and cleaning and restoring properties.

4.5.4 The General Staff

Operations

Operations coordinates the operational requirements and the response, directs resources and equipment as required to fulfill emergency management requirements.

- Under authority of the TFRP **Tecumseh Fire Rescue Services** has responsibility for the following:
 - Conduct floodwater rescue, as required;
 - Rescue/evacuate any persons in danger with minimum delay and provide first aid as necessary;

- Assist OPP with evacuations in the affected areas as required.
- Under authority of the TFRP **Public Works & Environmental Services** has responsibility for the following:
 - Pre-planning of the identified waterfront damage centres that includes garnering knowledge of the location and extent of breaches and pre-planning appropriate evacuation routes.
 - Maintaining a cache of tools and equipment available for immediate deployment to a flood emergency.
 - Maintaining a stock of sandbags, or a process for procuring sandbags and access to clean sand under emergency conditions. This may include keeping a stock of prebuilt sandbags.
 - Deploying filled sandbags to affected areas after consultation with the CEMC and Tecumseh Fire Rescue Services.
 - Supporting Tecumseh Fire Rescue Services to maintain emergency evacuation routes during emergency conditions.
 - Providing operational response regarding public safety and the protection of municipal infrastructure.
 - Providing operational response by identifying municipal areas that may be vulnerable to flooding and responds to requests for deployment of municipal resources and personnel.
 - Ensuring storm infrastructure is maintained in operational condition during the emergency conditions.
 - Consulting with the CEMC and other agencies to implement a debris management plan on behalf of impacted residents and business owners.
- Under authority of the TFRP the **Chief Building Official** has responsibility for the following:
 - Consulting with the CEMC to conduct inspections of evacuated premises and assisting with the coordination of re-occupation where damage of property is suspected.

Logistics/Planning

Planning gathers and shares information critical to the incident in order to develop, disseminate and evaluate incident action plans.

Logistics arranges for and coordinates all material, services, equipment and resources required to manage and resolve the emergency. Logistics tracks usage and current locations of these same items. Logistics is responsible for all service support requirements needed to facilitate effective and efficient incident management, including ordering resources from off-incident locations.

Finance/Administration

Finance/Administration performs duties related to administration, finance and staffing specific to the emergency. This includes keeping track of incident-related costs, purchasing, compensation, and claims. These actions would include:

- Pre-existing contracts with 24/7 suppliers;
- Extra-ordinary expenditures;
- Expenditure authorities (e.g. who can authorize/sign);
- Human resources considerations (e.g. tracking of overtime, volunteers, collective agreements);
- Potential cost recovery (e.g. third party liability);
- Location and procedure for accessing emergency petty cash;
- Donations management;
- If applicable, contact Ministry of Municipal Affairs and Housing for Ontario Disaster Relief Assistance Program (ODRAP).

5.0 Recovery Operations

Recovery refers to activities and programs designed to return a situation to an acceptable pre-emergency condition. Recovery activities may be carried out at the local, county or provincial level as is required by the complexity of the flood event. Specific activities at the local level include:

- Policies and procedures for debris removal;
- Public education on the appropriate cleanup of property and belongings;
- Determining who will carry out property damage assessments;

- Identification of vulnerable populations:
 - elderly living alone;
 - disabled;
 - homeless.

- Volunteer management program:
 - identification of areas where volunteers can be of assistance;
 - explore the use of existing organizations and define potential costs;
 - define registration process for non-affiliated volunteers.