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Kentville
A BREATH OF FRESH AIR

wolfville

Kings County, NS Flood Preparedness & Response Plan (FPRP)

June 2023
Change 1



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FOREWORD

The development of a Kings County Regional Flood Preparedness and Response Plan (FPRP) is paramount to public safety in the case of man-made disasters and natural disaster threats. The Kings County Regional Flood Preparedness and Response Plan was prepared in consultation with County and Municipal stakeholders responsible for everyday management throughout Kings County. It serves as Kings County's Emergency Flood Plan to coordinate an integrated approach to Flood response.

As a Supporting Plan to the Kings REMO Regional Emergency Management Plan, the Kings County Regional Flood Preparedness and Response Plan is augmented by the Emergency Coordination Centre (ECC) Operational Guidelines and Evacuation Guidelines in order to provide the level of detail required for a comprehensive emergency response to a flood event.

Kings REMO strives for strong leadership within the emergency management community and is dedicated to continuous improvements and enhancements to this plan, training and exercising throughout the Kings County region. Therefore, this plan is a living document that will be amended as necessary through a planning process that is managed by the Regional Emergency Management Coordinator (REMC) in consultation with emergency management partners throughout the County.



Cate Savage

Chair

Kings REMO

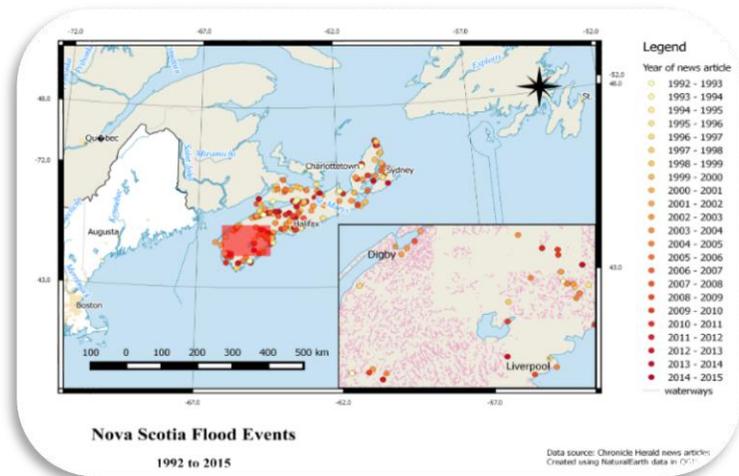
Regional Emergency Management Advisory
Committee (REMAC)

1.0 INTRODUCTION

1.1 Background

Floods are primarily caused by naturally occurring changes in the height of rivers, lakes and oceans. According to Public Safety Canada, floods are the most common natural hazard in the country and among the costliest. Historic floods have occurred across Canada, with many of the worst happening on major river systems that pass through populated areas. Scientists predict that flooding linked to the impacts of climate change will increase as the 21st century progresses, particularly in coastal areas of the country.

Nova Scotia's first flood on record hit Halifax in 1759, the result of a storm on the Bay of Fundy. Many of the province's subsequent floods have owed to a combination of snowmelt, heavy rain and ice jams. In January 1956, for example, a long period of thaw due to warm temperatures inundated waterways and created ice jams. Flooding occurred provincewide, destroying more than 100 bridges.



Nova Scotia has also been hit by flooding related to hurricanes and tropical storms. Among the most severe were Hurricane Beth in August 1971 and the “Groundhog Day Storm” in February 1976. Flood damage primarily occurred in coastal areas of the province at a combined cost of more than \$12 million.

This Regional Flood Preparedness and Response Plan is only one part of preparedness efforts that include training, exercises and the debriefing of actual events. As Kings County evolves, so should the Flood Plan, which will be regularly reviewed and adapted. Due to the nature of major emergencies, there may be a need to adapt the plan during a flood. Therefore, the following plan should not be seen as a final, rigid solution, but rather the foundation for continuous planning efforts

1.2 Authorities

The authority for an evacuation is afforded by the [Nova Scotia Municipal Government Act](#) and the [Emergency Management Act](#).

The legal authority for local authorities to order an evacuation rest within the Nova Scotia Emergency Management Act (1990) Section 14(f) – Protection of property and health or safety

Protection of property and health or safety – Section 14

Upon a state of local emergency being declared in respect to a municipality or an area thereof, the mayor may, during the state of local emergency, in respect of such municipality or an area thereof, do everything necessary for the protection of property and the health and safety of persons therein may:

- a. Cause an emergency management plan or any part thereof to be implemented;
- b. Acquire or utilize or cause the acquisition or utilization of personal property by confiscation or any means considered necessary;
- c. Authorize or require a qualified person to render aid of such type as that person may be qualified to provide;
- d. Control or prohibit travel to or from an area or on a road, street or highway;
- e. Provide for the maintenance and restoration of essential facilities, the distribution of essential supplies and the maintenance and coordination of emergency medical, social and other essential services;
- f. Cause or order the evacuation of persons and the removal of livestock and personal property threatened by an emergency and make arrangements for the adequate care and protection thereof;
- g. Authorize the entry by a person into any building or upon land without warrant;
- h. Cause or order the demolition or removal of any thing where the demolition or removal is necessary or advisable for the purpose of reaching the scene of an emergency, or attempting to forestall its occurrence or of combating its progress;
- i. Order the assistance of persons needed to carry out the provisions mentioned in this Section;
- j. regulate the distribution and availability of essential goods, services and resources;
- k. authorize and make emergency payments;
- l. assess damage to any works, property or undertaking and the costs to repair, replace or restore the same;
- m. assess damage to the environment and the costs and methods to eliminate or alleviate the damage

1.3 References

- [Public Health Agency of Canada – Emergency Lodging Service, 2007](#)
- [Nova Scotia Emergency Management Act](#)
- [Kings REMO Regional Emergency Management Plan, 2018-09](#)
- Kings REMO Regional Emergency Evacuation Plan, 2018-12
- Kings REMO Evacuation Operational Guidelines, 2018-05-01
- Kings REMO Emergency Coordination Centre Operational Guidelines, 2018-05-01

1.4 Purpose

Flood preparedness and response planning is a strategy to minimize loss of life, injury and trauma and to reduce property damage as a result of a flood. No one can anticipate every contingency during a flood event, but a flood preparedness and response plan will help develop appropriate responses for a wide range of occurrences. A flood preparedness and response plan will enable a quicker, more effective and more efficient response, and lead to a speedier recovery.



The Plan should be activated as soon as it becomes apparent that, due to an emergency of such magnitude as to warrant its implementation, evacuation and relocation of people is necessary.

1.5 Aim and Scope

The primary goal of this Plan is to provide an integrated planning framework that recognizes the role of individual residents, business owners, emergency responders and the Municipalities of Kings County. Together these individuals, groups and agencies represent the first line of defence in responding to a flood event within Kings County.

This goal is supported by overarching objective of enhancing public and emergency responder education, emergency preparedness and emergency response policies and procedures. Together these are intended to prevent or reduce loss of life or severe injury and/or damage to property and infrastructure during a major flooding event within Kings County.

If the need to evacuate and relocate residents of the affected area(s) is apparent, the provisions of the Regional Emergency Evacuation Plan (REEP) shall be implemented. In such events, the Municipality shall discuss the need to declare a State of Local Emergency (SOLE), [Annex A](#), if a mandatory evacuation is needed. If there is a fire or the possibility of fire, the Fire Chief has the authority to declare the mandatory evacuation at the current time there is no advantage to declaring a SOLE.

2.0 CONCEPT OF OPERATIONS (CONOPS)

2.1 Planning Assumptions

The plan assumes the following:

- NS Department of Agriculture will provide dyke condition statements as they become available.
- Kings REMO and the Emergency Coordination Centre Management Team (ECCMT) will have the primary responsibility for mitigation, prevention, preparedness, response and recovery in flood emergency/disaster situations.
- It is highly probable that with events such as climate change and weather anomalies, Kings County could experience flash flooding or a major flooding event to some degree in the future.
- Kings County and partner agencies will follow the response activities set out in the Kings REMO Regional Emergency Management Plan (REMP), the Regional Emergency Evacuation Plan (REEP) and Municipal Operating Procedures.
- Residents of Kings County will take active measures to protect personal property.

2.2 Plan Limitations

- The Municipalities of Kings County do not currently have a formal policy for the protection of private property during flooding. 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.
- There may be factors that will adversely affect Kings County'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 rain fall / severe summer storm the response and recovery may take place simultaneously as there is little or no time to prepare.

2.3 Plan Activation

This plan may be activated in whole or in part, as required, by the Kings REMO Emergency Coordination Centre Management Team (ECCMT), with or without the formal declaration of a state of local emergency.

Upon activation, all participating agencies should respond in accordance with the procedures described within this plan and in accordance with their agency operating procedures.

2.3 Flood Information

2.3.1 Types of Floods

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

2.3.1.1 Fluvial Flooding

Fluvial flooding is caused when high or intense precipitation, or snow and ice melt within the watershed flows into the river, causing it to overtop its banks. High or intense precipitation can be defined using Environment Canada's Rainfall Warning Criteria, wherein warnings are issued when 25 mm of rain or more is expected in one hour, when 50 mm or more is expected within 24 hours or 75 mm or more within 48 hours during the summer, or when 25 mm or more is expected within 24 hours during the winter.

While flooding from snow and ice melt can be easy to predict, flash flooding from sudden downpours can be more of a challenge to forecast.

2.3.1.2 Pluvial Flooding

Heavy and intense rainfall that occurs away from a waterbody. This is common in flatter areas away from waterbodies as heavy rain ponds on saturated land, and in urban areas where there is insufficient drainage as land is used for parking lots and buildings. Urban flooding is made worse when water and sewer systems are overwhelmed, and water has nowhere to go and ends up in basements.

2.3.1.3 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)

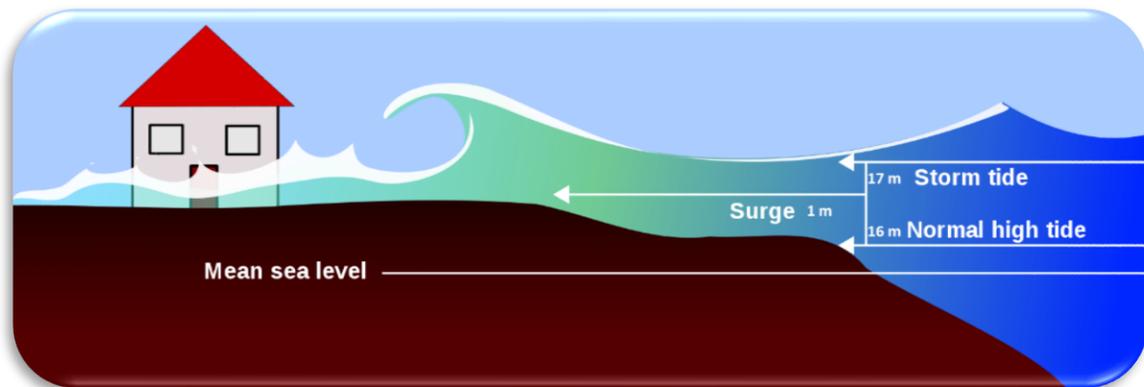


The worst-case scenario is above-zero temperatures combined with rain on frozen ground, or rain on snow with above-average water content. These conditions provide the greatest threat for flooding.

2.3.1.4 Storm Surge/Coastal Flooding

The strong tides of the Bay of Fundy affect the Cornwallis River up to 5 km west of the town of Kentville, making the towns of Kentville and Wolfville, and the villages of Port Williams and New Minas vulnerable to coastal flooding and storm surge.

Tidal range in the Minas Basin of the Bay of Fundy, Nova Scotia is between 13 and 16 m, the highest in the world. Following a semi-diurnal pattern, there are two high tides and two low tides every 24 hours and 50 minutes in the Bay of Fundy. When a high tide coincides with strong winds and low pressure of a storm, a storm surge can occur. A storm surge is an increase in the ocean water level above what is expected from the normal tidal level that can be predicted from astronomical observations. The strong tidal currents of the Minas Basin cause erosion of the fine glacial till sediments of the coastline at a rapid rate, making the coastal communities in this region ever more vulnerable to storm and flood events.



2.3.1.5 Dam Break or Breach

When a dam fails and water is released from a reservoir, the flood wave travelling downstream can cause significant property damage and possible loss of life.

Dam failures can be divided into two broad classifications:

- a. Failures caused by overtopping during extreme rainfall / snowmelt events, or failure of an upstream dam.
- b. Structural failures due to foundation problems (i.e. deterioration of concrete, erosion of earth, etc.), geological conditions, or earthquakes.

Overtopping the crest of the dam (i.e. dam breach), whether alone or in combination with a dam failure, can occur when an extreme hydrologic event or failure of an upstream dam causes large water inflows to exceed the capacity of the reservoir and its spillway. Overtopping may also be caused by an accumulation of debris or ice that restricts flow through the dam's spillway.

2.3.1.6 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.

2.4 Potential Adverse Affects Caused by Flooding

Flooding is generally accompanied by poor weather conditions. Significant flood events can be complex, and they can occur at any time day or night and last for an uncertain period of time. Responders may have to work in dangerous conditions, there may be considerable numbers of people displaced from their homes and there may be considerable business, infrastructure and utility interruption. All of the above are factors, which will have an influence on how to prepare a response in a flood emergency.

Significant flooding affecting a wide area can have substantial economic and public health impacts on affected communities and infrastructure.

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

- Threat to life and property;
- Destruction of public property;
- Utility failure (power, water / wastewater, gas);
- Communications disruption (telephone, internet, radio, television, newspaper production, delivery, etc.);
- Structural damage;
- Erosion;
- Damage to the watershed ecosystems;
- Traffic disruptions (road, bridge or rail closures, stranded motorists);
- Difficulty in attaining and delivering emergency services (Police, Fire, EHS, Public Works);
- Food and water shortages;
- Evacuation of people and animals;
- Crop damage; and
- Threat to public health (dangerous goods accidents, contaminated water – both potable and non-potable water sources).

2.5 Factors Affecting Emergency Response to a Flood Event

- Flooding can occur at any time during the year due to a variety of natural phenomenon (i.e. weather) and/or human induced circumstances (i.e. debris jamming, improper dam operation, etc.), but is most likely to occur during inclement weather conditions that will affect response times and procedures.
- The amount and extent of damage caused by any flood depends on several variables, including how much area is flooded, the depth of flooding, the velocity of flow, the rate of

rise, sediment and debris carried, the duration of flooding and the effectiveness of mitigation strategies.

- The potential for damage and/or loss of life due to flooding is magnified because, generally, the public may not recognize the safety hazards associated with flooding.
- Flooding does not necessarily occur in isolation of other emergency situations and may occur simultaneously with another unrelated type of emergency, whether it is a natural or human-induced emergency.
- Flooding can also result in secondary emergency events, including landslides, contamination of drinking water supplies, sewage back-up in homes and businesses, overloading of the sewage treatment plants resulting in the release of untreated sewage and a significant impact on the environment, etc.

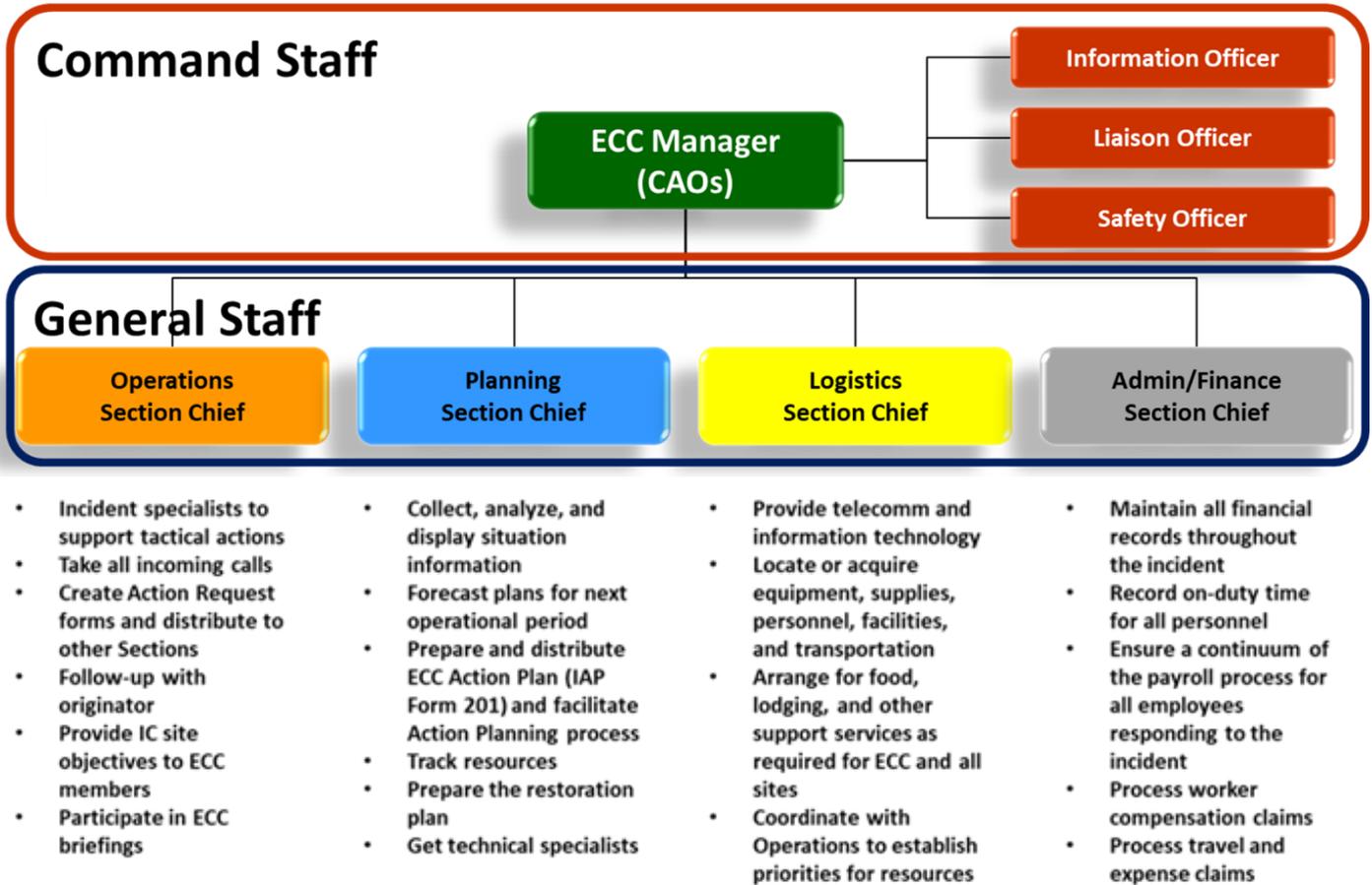
2.6 Flood Emergency Management Priorities

In a flood situation, Kings REMO and its partner agencies will focus their efforts on achieving the following objectives:

- Preservation of life and safety of emergency responders, residents and visitors.
- Support for stranded and evacuated persons.
- Protection of the water supply system, sewage treatment and other critical infrastructure of the Municipalities of Kings County.
- Protection of the environment, watercourses and potable water supplies.
- Reducing the economic and social suffering and losses to the residents of Kings County where possible.
- Returning communities to normal through a coordinated recovery process that includes re-entry of displaced persons.
- Reducing the impact to private property where possible and appropriate.

2.7 Flood Organizational Structure

To support a regional flood incident within Kings County the Kings REMO Emergency Coordination Centre is structured under the Incident Command System:



2.8 Municipal Public Warning Strategy

As there are limited audible warning systems within the Municipalities of Kings County, the public should be alerted to flooding conditions through local media (radio, television, newspaper) and social media (Facebook, Twitter). Warnings should also be posted on all Municipal websites and distributed through the Kings REMO Emergency Email Notification System. In extreme circumstances, public warning may also be done through vehicle public address systems and/or door-to-door contact by municipal services and/or volunteers.

2.9 Recovery

The ability to recover from the physical damage, injury, economic impairment and human suffering resulting from a disaster is a critical element of any emergency program. It is essential to recognize that successful recovery planning and activities depend on the rapid start-up of a recovery plan and must begin during the emergency response phase.

Through the implementation of a municipal disaster recovery strategy, Kings County Municipalities will work with their Departments, partner agencies, and volunteer resources to restore critical infrastructure (both public and private), systematically clean up affected areas, and return the community to a state of normalcy.

The prioritization of restoration and clean up efforts will be determined by the Kings REMO ECC Management Team based on a number of influencing factors, with the primary focus being on the protection of public safety.



3.0 RESPONSIBILITIES

3.1 Federal

The Government of Canada's Government Operations Centre (GOC) monitors the flood situation across the country. The GOC coordinates the federal government's response to events of national interest, such as floods, that may affect the safety and security of Canadians or critical infrastructure. Should a provincial or territorial government request assistance to deal with a flood, then the GOC would coordinate the Government of Canada response.

The Government of Canada has disaster assistance programs available to respond to the financial needs of provinces and territories in the wake of major natural disasters including the [Disaster Financial Assistance Arrangements](#)

Municipal staff across departments receive regular weather reports, advisories and warnings from Environment Canada weather services. These services are provided by weather meteorologists located in at Nova Scotia EMO Headquarters in Dartmouth, NS.

3.2 Provincial

A number of Nova Scotia government departments and agencies are engaged in flood related activities, including:

3.2.1 Nova Scotia Department of Agriculture (NSDA)

- The [NSDA](#) Land Protection Section is responsible for the management and maintenance of 240 kilometers of tidal dykes (including 260 aboteau structures) along the Bay of Fundy for the purpose of protecting 17,400 hectares of agricultural land (marshbodies) from sea water incursions.



3.2.2 Department of Municipal Affairs (DMA)

- [Municipal Affairs](#) administers Statements of Provincial Interest (SPI) under the Municipal Government Act. The current SPI on Flood Risk Areas was put in place in 1999, and focused heavily on areas mapped under the Canada-Nova Scotia Flood Damage Reduction Program from the mid 1980's. This planning tool requires that any municipality with a comprehensive municipal planning strategy must be "reasonably consistent" with the intent of the SPI. The goal of the SPI is to "protect public safety and property and to reduce the requirement for flood control works and flood damage restoration in the floodplains."
- Under the Federal Gas Tax Program all municipalities have submitted a Municipal Climate Change Action Plan. Each plan outlines priorities for climate change (adaptation and mitigation) and describes the range of actions the municipality will undertake to address climate impacts. In many communities flooding has been identified as a significant concern and is a top priority for taking action on climate change adaptation.

- The eligible project categories under the Federal Gas Tax Program have been expanded to include Disaster Mitigation. Projects that reduce or eliminate long-term impacts and risks associated with natural disasters are now eligible for funding.

3.2.3 Nova Scotia Emergency Management Office (NS EMO)(DMA)

- [NS EMO](#) takes an “all-hazards” approach to emergency management that recognizes that mitigation, preparedness, response and recovery can be used to address the impact of disasters.
- [NS EMO](#) regional staff (Emergency Management Planning Officers - EMPO’s) work with municipal emergency management coordinators to ensure there are emergency management plans in place for each municipality in Nova Scotia.
- Municipal planning and local knowledge is represented in the development of emergency management plans.
- The [MCCAP](#) process requires municipal emergency management coordinators to work with EMPOs in the development of their respective climate change action plans.



3.2.4 Nova Scotia Department of Public Works (NS DPW)

- [NS DPW](#) is responsible for delivering quality public infrastructure for Nova Scotia and deal with approximately 23,000 km of roads, 4,100 bridges, 7 ferries, and 2,400 buildings.
- [NS DPW](#) designs, constructs and operates this infrastructure in accordance with nationally and internationally recognized standards.
- [NS DPW](#) consults with communities on infrastructure developments. Often this infrastructure is developed or renewed in partnership with the Federal or municipal governments.

3.2.5 Nova Scotia Department of Natural Resources and Renewables (NS DNRR)

- [Nova Scotia Department of Natural Resources and Renewables](#) operates a long-term program to map the vulnerability of the province’s coast to flooding and erosion.
- NS DNRR is very active throughout Nova Scotia’s watersheds, and forestry activities including road construction, and harvesting can have a large influence on flooding. Through [Forest Sustainability Regulations](#), silviculture programs are in place to establish and tend forest stands within water shed areas, and the Department administers and enforces [Wildlife Habitat and Water Course Protection Regulations](#).

3.2.6 Nova Scotia Environment (NSE)

- [NSE](#) is the lead provincial department partnering with Environment Canada on maintaining and monitoring 28 real-time hydrometric monitoring stations. This information is critical for monitoring rising water in real-time during extreme weather events where flooding is a high-risk.
- [NSE](#)’s Water for Life: Water Resource Management Strategy sets climate change impact studies as a priority action for the department. Flood risk studies will be a key component of studying climate change impacts to the province.

- The Climate Change Unit provides information and guidance on climatic factors relevant to flooding, such as historic data and future projections of sea levels, storms and rainfall amounts and intensity.
- The Climate Change Unit has funded and coordinated several community climate change assessments through the Atlantic Climate Adaptation Solutions program, which include aspects of coastal and inland flood mapping and risk in six pilot areas (13 municipalities) in Nova Scotia.
- **NSE** regulates 114 activities in the province by developing, implementing and monitoring standards and conditions of approval. Many of these have some relevance to flood management.

3.3 Regional – Kings REMO

3.3.1 Prevention and Mitigation

Kings REMO is responsible for developing and implementing mitigation strategies to prevent or lessen the occurrences and/or severity of flooding.

These strategies include:

- Controlling development in and around flood zones using Zoning by-laws, Official Plans and Site Plan Development.
- Working to map the flood areas and the impact on critical infrastructure.
- Developing and circulating public education material concerning flood prevention and clean-up.

3.3.2 Response / Recovery Responsibilities

When flooding occurs, the initial responsibility for the welfare of residents is at the Municipal level. As with any emergency, the first priority is responder and public safety. The second priority is the protection and maintenance of public critical infrastructure in order to maintain basic services (hydro, water / wastewater, gas, telecommunication systems, etc.).



When flood conditions are present within Kings County, Kings REMO should:

- Activate the Kings REMO Flood Preparedness and Response Plan
- Activate the Kings REMO Regional Emergency Management Plan.
- Convene the Emergency Coordination Centre Management Team
- Appoint an Incident Commander.
- If necessary, recommend the declaration of a Municipal emergency.
- Direct and control all flood response operations in Kings County.
- Coordinate the acquisition of emergency response equipment, personnel and other resources required at the incident site.
- Coordinate assistance to residents displaced by flooding.
- Address concerns related to homes in Kings County that are on private wells or have private surface water intakes.

- Disseminate vital emergency information to staff, the media and citizens using appropriate channels.
- Provide information to the public concerning water supply safety, alternative sources of water, and protective actions to be taken.
- Request assistance from agencies not under Municipal control, as required (i.e. Municipal Mutual Assistance Agreements, Red Cross, local industry, etc.).
- Request Provincial assistance to perform specific flood combat / control tasks as may be required.
- Coordinate community disaster financial assistance (Nova Scotia Disaster Relief Assistance Program) as deemed necessary.
- Facilitate arrangements for the inspection of evacuated premises and provide for their orderly re-occupation as appropriate.
- Assist the Provincial authorities with damage estimation and assessment after the flood.
- Provide residents and businesses with information on safe handling of items damaged by water / sewage.
- Explore mitigation and prevention strategies to reduce the impact of future flood events

3.3.3 Regional Emergency Management Coordinator (REMC)

Coordinate flood specific education materials for distribution to residents and business owners within identified water flood damage areas to include:

- The Flood Preparedness and Response Plan;
- Established evacuation routes (minimum of two) from each identified flood damage centre, including locations of a primary and secondary Evacuation Centre / Emergency Shelter;
- Emergency preparedness and response education information for residents and businesses including pre-event, during an event, and post event (including information related to sandbags and building a sandbag dike); and
- Contact information for the REMC.

3.3.4 Site Operations (Incident Commander)

The Incident Commander (IC) assumes responsibility for the overall coordination of all operations at the emergency site and is the point of contact between the ECC Management Team and site operations.

The Incident Commander is responsible for:

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

3.3.5 Fire Services

- Conduct floodwater rescue, as required.
- Rescue / evacuate any persons in danger with minimum delay and provide first aid as necessary.
- Assist Police Services with evacuations in the affected areas as required.
- Control Fires, released chemicals and other hazards.

3.3.6 Kings RCMP/Kentville Police

- Evacuate the affected areas as required.
- Perform traffic and crowd control operations.
- Disperse people not directly connected with the operations who, by their presence, are considered to be in danger, or whose presence hinders in any way the efficient functioning of the flood combat/control operation.
- Secure the affected areas (based on need and availability of staff).
- Provide community security to prevent against looting and other unruly activities.
- Identify and establish detour routes due to high water and maintain proper traffic flow patterns as deemed appropriate.

3.3.7 Infrastructure Services – Water / Wastewater

- Implement actions to protect water and sewer systems and identify threats to drinking water.
- Work with ECC Information Officer to advise the public of protective actions that may be required in the event of damage or concerns related to the sewer systems and/or drinking water sources.
- Request the disconnection or discontinuance of any service that may constitute a public hazard.
- In the event a flood emergency results in the release of untreated or partially treated sewage into lakes and rivers, implement internal procedures and notify the Ministry of the Environment, and the Department of Fisheries and Oceans Canada.

3.3.8 NS DPW & Engineering Departments

- Deploy sandbags for flood defence
- Free obstructions to storm and waste water drainage
- Repair breaches in flood defences
- Visually monitor creeks and streams
- Coordinate activities of utility companies

3.3.9 Infrastructure Services – Transit

- Provide transportation for residents and emergency responders as required.

3.3.10 Community Development – Social Services

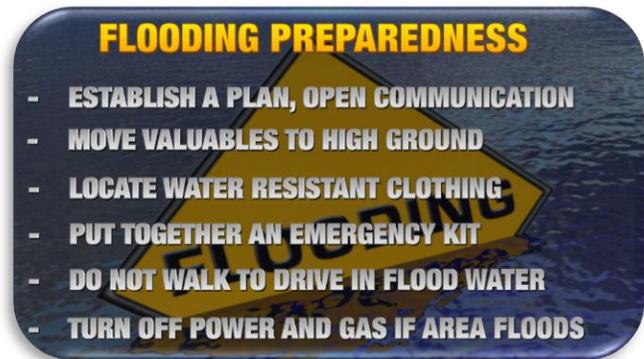
- Provide assistance to residents displaced by flooding as required.
- Coordinate Emergency Shelter operations.

3.3.11 Utilities (NS Power, Berwick Electric, Gas etc.)

- Perform disconnect operations where this is considered necessary and in the interest of public safety.
- Secure services and equipment to ensure continuity of supply.
- Coordinate the priority restoration of affected services as dictated by emergency needs of municipal services and other essential users.
- Assist with clean up and restoration of services.
- Assess ability to resume normal operations.

4.0 PUBLIC EDUCATION & AWARENESS OF FLOODING PREPAREDNESS

Since public awareness of flood preparedness and response will contribute to an effective evacuation process, ongoing public awareness and education shall be an integral component of this plan. To this end, this Plan, as part of the Regional Emergency Management Plan, shall be posted on the [Municipality of the County of Kings](#), the Towns of [Berwick](#), [Kentville](#) & [Wolfville](#)'s websites in order that the public may have access to it and printed information shall be provided to residents in historically vulnerable areas. During an emergency evacuation, residents are to be able to access to the local media sources for information and instructions.



As part of Community Outreach, the Kings REMO Regional Emergency Management Coordinator should provide an overview of Emergency Evacuation procedures to members of the community on an ongoing basis.

4.1 Evacuation Warnings

To be effective, Evacuation Warnings/Announcements should have the following characteristics:

- Authority**—Warnings are more credible and more likely to stimulate appropriate public actions if they are issued by a recognised authority.
- Consistency**—To avoid confusion and uncertainty, it is important that consistency be maintained when multiple warnings are issued to the public.
- Accuracy**—Accuracy and currency of information contained in the warning also affect understanding and belief. Errors can cause people to doubt subsequent warnings.
- Clarity**—An unclear warning can cause people to misunderstand or ignore it. Warnings should be in simple language, without the use of jargon.
- Level of Certainty**—Certainty determines the level of belief in a warning and affects decision making by those to whom the warning is given.
- Level of Detail**—Insufficient information creates confusion, uncertainty and anxiety, and public imagination will tend to fill the information void. This can promote rumours, uninformed misconceptions or fears.

- Clear Guidance**— Messages containing clear guidance about protective actions people should take and the time available for doing so are more effective than those which provide no specific instructions.
- Repetition of Warnings**—Where time permits, warnings should be repeated preferably using more than one delivery method. This provides confirmation of the warning message, helps increase persuasiveness and overcomes the problem of people not responding after hearing a warning only once.
- Impact Areas**—Warning information that clearly states the areas actually or likely to be affected by the event is most effective.
- Methods of Information Dissemination**—Warnings are more effective if a range of methods is used rather than a single method, thereby reaching as many people as possible in the shortest time. Methods need to be chosen to fit the time-frame available and should recognise that some modes are appropriate in reaching many people but with only relatively simple or generalised information (e.g. radio, television) whereas others can provide more specific information to targeted individuals (e.g. telephone, facsimile machine, computer, two-way radio, door-knocking or use of community leaders or wardens). Use of the Standard Emergency Warning Signal (SEWS) “[Alert Ready](#)” can enhance the effectiveness of electronic media warnings by alerting listeners for an urgent safety message to follow.
- Information Dissemination for Special Needs Groups**—Consideration must be given to the specific problems of special needs groups. Dissemination to, and receipt of information by, many of these groups will pose different challenges, for example, language. Neighbours can also help by checking on special-needs people in close proximity.

5.0 PLAN TESTING, REVIEW & MAINTENANCE

5.1 Plan Testing Schedule & Responsibility

The Kings County Regional Emergency Management Coordinator (REMC) is responsible for coordinating the annual testing (in whole or in part) of the Regional Flood Preparedness and Response Plan in order to verify its overall effectiveness and provide training to the emergency personnel. The exercise can take the form of a simple tabletop or a more elaborate functional exercise.

5.2 Plan Review & Maintenance

The Kings County FPRP will be maintained by the Regional Emergency Management Planning Committee (REMPC) and the Regional Emergency Management Coordinator (REMC).

The FPRP will be reviewed annually and, where necessary, revised by a meeting(s) of the [Regional Emergency Management Planning Committee](#) (REMPC) and the [Regional Emergency Management Advisory Committee](#) (REMAC). The REMP shall be revised subject to the approval of Municipal Councils.

REVIEWS

MONTH	DAY	YEAR	BY
March	1	2020	Kings REMO REMC
March	1	2021	Kings REMO REMC
March	1	2022	Kings REMO REMC

PLAN REVISIONS

MONTH	DAY	YEAR	CHANGE	APPROVED
June	15	2023	1	2023-07-17

6.0 DISTRIBUTION LIST

Distributed electronically:

Municipal Units:

- [Municipality of the County of Kings](#)
- [Town of Berwick](#)
- [Town of Kentville](#)
- [Town of Wolfville](#)

- [Village of Aylesford](#)
- [Village of Canning](#)
- Village of Cornwallis Square
- [Village of Greenwood](#)
- [Village of Kingston](#)
- [Village of New Minas](#)
- [Village of Port Williams](#)

Fire Departments

- Kings County Fire Departments

Regional Emergency Management Planning Committee (REMPC)

- [NS EMO](#) – Western Zone Planning Officer
- [Acadia University](#)
- [Annapolis Valley Amateur Radio Club](#) (AVARC)
- [Annapolis Valley First Nation](#)
- [Annapolis Valley Regional Centre for Education](#) (AVRCE)
- [Brigadoon Village](#)
- Community Services – Kings County
- [NS Department of Natural Resources and Renewables](#) (DNRR)
- [NS Department of Public Works](#) (DPW)
- [NS Emergency Health Services](#)
- Fire Services
- [Glooscap First Nations EMO](#)
- [Kentville Police](#) / [Kings County RCMP](#)
- [Kings Transit Authority](#) (KTA)
- [NS Department of Agriculture](#)
- [NS Health](#)
- [Canadian Red Cross](#)
- [Valley Communications](#)
- [Valley Search and Rescue](#) (VSAR)

Annexes

- A** [Declaring a State of Local Emergency \(SOLE\)](#)
 - [Form 4 \(Council\)](#)
 - [Form 5 \(Mayor\)](#)
- B** [Potential Evacuation Routes – Flood Risk Areas](#)
- C** [Flood Event – Kings REMO Actions](#)
- D** [Flood Event Checklist](#)
- E** [Criteria for Public Weather Alerts](#)
- F** [Lessons Learned – Flood Disasters](#)
- G** [Floods – Frequently Asked Questions \(FAQ\)](#)
- H** [Floods – References \(Federal / Provincial\)](#)
 - [Federal](#)
 - [Provincial](#)
 - [Regional](#)
- I** [Sandbagging – General Information](#)
- J** [Abbreviations & Acronyms](#)
- K** [Glossary](#)

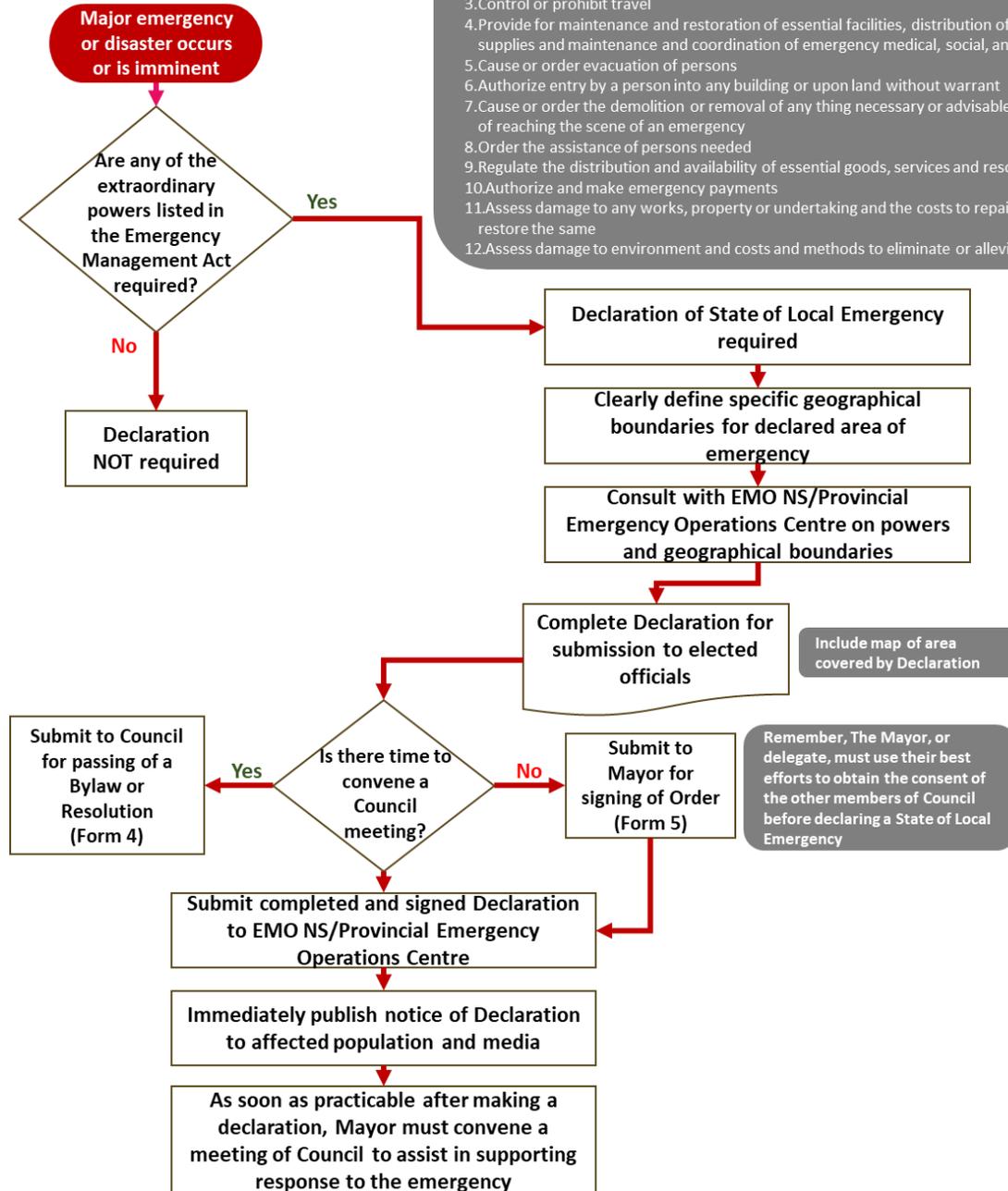
Annex A – Declaring a State of Local Emergency (SOLE)

Declaring a State of Local Emergency

Reference: [Nova Scotia Emergency Management Act](#)
(Section 12 / Section 14 / Section 18)

Emergency Powers in Brief:

1. Acquire or utilize personal property by confiscation or any means considered necessary
2. Authorize or require a qualified person to render aid
3. Control or prohibit travel
4. Provide for maintenance and restoration of essential facilities, distribution of essential supplies and maintenance and coordination of emergency medical, social, and other services
5. Cause or order evacuation of persons
6. Authorize entry by a person into any building or upon land without warrant
7. Cause or order the demolition or removal of any thing necessary or advisable for the purpose of reaching the scene of an emergency
8. Order the assistance of persons needed
9. Regulate the distribution and availability of essential goods, services and resources
10. Authorize and make emergency payments
11. Assess damage to any works, property or undertaking and the costs to repair, replace or restore the same
12. Assess damage to environment and costs and methods to eliminate or alleviate the damage



FORM 4

DECLARATION OF A STATE OF LOCAL EMERGENCY

MUNICIPALITY: _____

Section 12(2) of the *Emergency Management Act*, S.N.S. 1990, c.8

WHEREAS the area herein described is or may soon be encountering an emergency that requires prompt action to protect property or the health, safety or welfare of persons therein;

Emergency Area:

The area general described as:

[Empty rectangular box for describing the emergency area]

Province of Nova Scotia (hereafter

referred to as the "Designated Area(s)")

Yes

No

Nature of the Emergency:

[Empty rectangular box for describing the nature of the emergency]

AND WHEREAS the undersigned is satisfied that an emergency as defined in Section 2(b) of Chapter 8 of the Statutes of Nova Scotia, 1990, the *Emergency Management Act*, exists or may exist in the Designated Area(s) noted above;

THE UNDERSIGNED HEREBY DECLARES pursuant to Section 12(2) of the *Emergency Management Act*, a State of Local Emergency in the Municipality noted above as of and from ____ o'clock in the forenoon () or afternoon () of the _____ day of _____, 20____.

THIS DECLARATION OF STATE OF LOCAL EMERGENCY shall exist until _ o'clock in the forenoon () or afternoon () of the _____ day of _____, 20____, or for a maximum of 7 days from the date and time specified above unless the Declaration is renewed or terminated as provided in Section 20 of the *Emergency Management Act*.

DATED at _____, in the Municipality of _____, Province of Nova Scotia, this _____ day of _____, 20____.

Council, Municipality _____

Name _____

Positions _____

[Authorized by Resolution No. _____ dated the _____ Day of _____, 20____.

FORM 5

DECLARATION OF A STATE OF LOCAL EMERGENCY

MUNICIPALITY: _____

Section 12(2) of the *Emergency Management Act*, S.N.S. 1990, c.8

WHEREAS the area herein described is or may soon be encountering an emergency that requires prompt action to protect property or the health, safety or welfare of persons therein;

Emergency Area:

The area general described as:

[Empty rectangular box for describing the emergency area]

Province of Nova Scotia (hereafter

referred to as the "Designated Area(s)")

Yes

No

Nature of the Emergency:

[Empty rectangular box for describing the nature of the emergency]

AND WHEREAS the undersigned is satisfied that an emergency as defined in Section 2(b) of Chapter 8 of the Statutes of Nova Scotia, 1990, the *Emergency Management Act*, exists or may exist in the Designated Area(s) noted above;

AND WHEREAS the Council of the Municipality is unable to act;

AND WHEREAS the undersigned has (check appropriate box)

(a) Consulted with a majority of the members of the Municipal Emergency Management Committee

Yes

No

(b) Found it impractical to consult with the majority of the Municipal Emergency Management Committee

Yes

No

THE UNDERSIGNED HEREBY DECLARES pursuant to Section 12(3) of the *Emergency Management Act*, a State of Local Emergency in the Municipality noted above as of and from ____ o'clock in the forenoon () or afternoon () of the _____ day of _____, 20____.

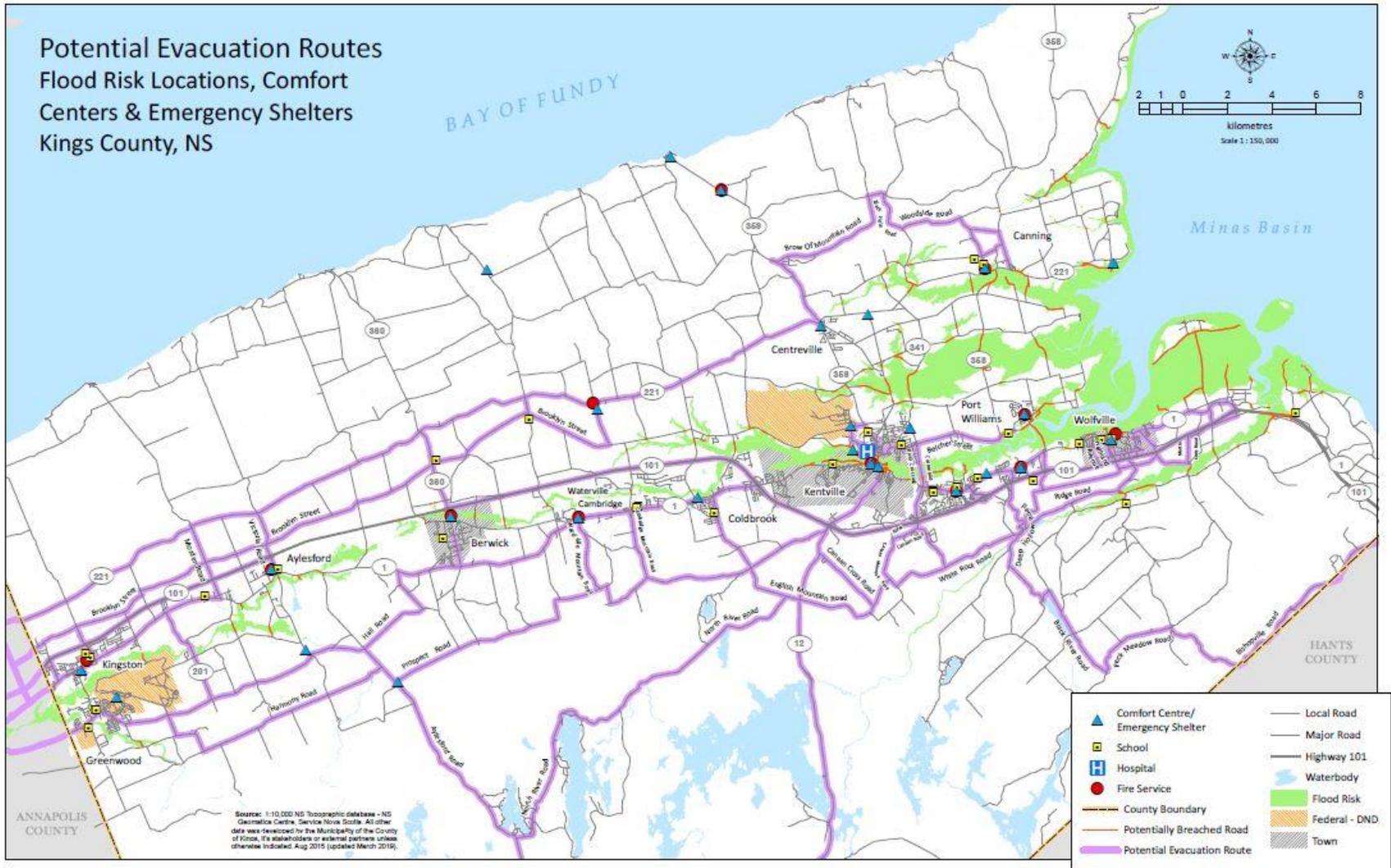
THIS DECLARATION OF STATE OF LOCAL EMERGENCY shall exist until _ o'clock in the forenoon () or afternoon () of the _____ day of _____, 20____, or for a maximum of 7 days from the date and time specified above unless the Declaration is renewed or terminated as provided in Section 20 of the *Emergency Management Act*.

DATED at _____, in the Municipality of _____, Province of Nova Scotia, this _____ day of _____, 20____.

Mayor's Signature

Municipality of

Annex B – Potential Evacuation Routes – Flood Risk Areas



Annex C – Flood Event – Kings REMO Actions

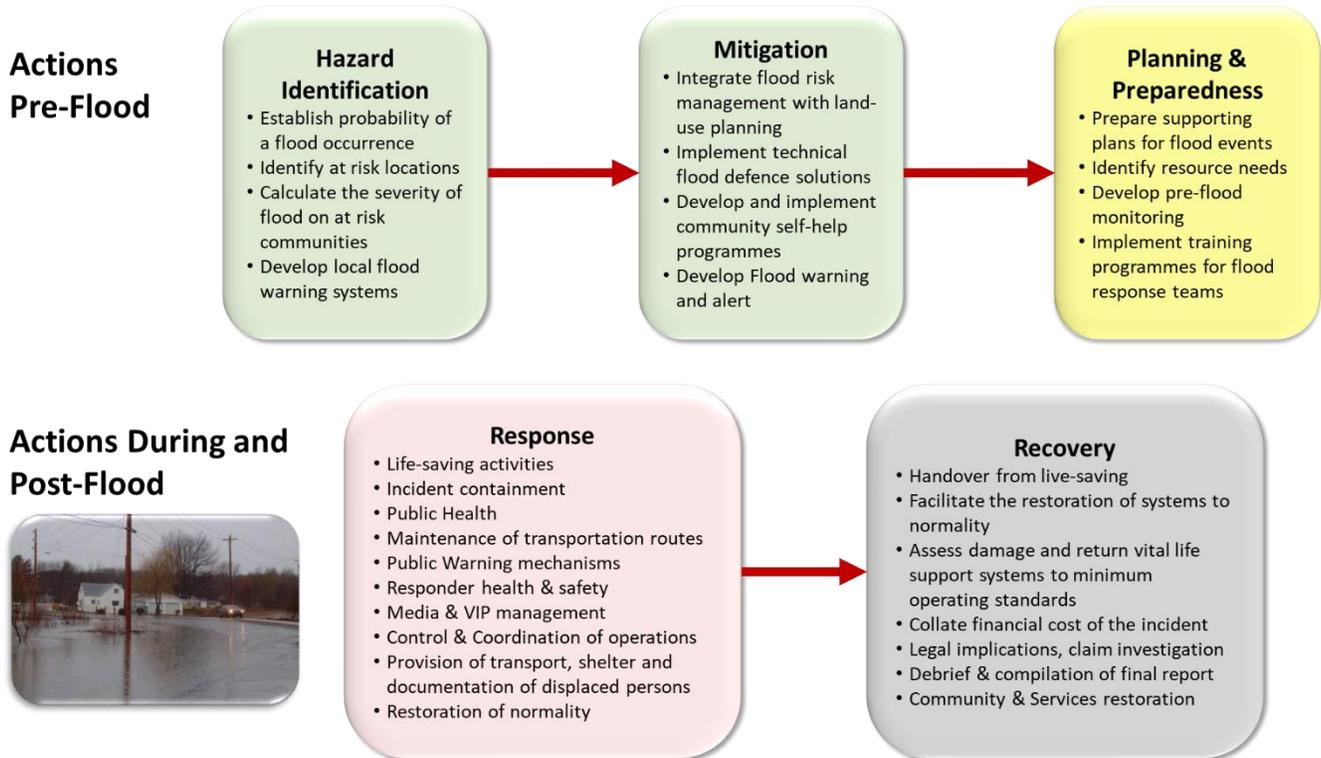
Reference: Kings REMO Regional Emergency Management Plan (REMP), 2018-09

Flood

A. Possible Major Effects	Probability
1. Casualties / Deaths	Low
2. Disruption of community	High and Localized
3. Disruption of utilities	Low to Moderate
4. Damage to property	High in localized areas
5. Disruption of traffic	High
6. Disruption of communications	Low to Moderate
7. Evacuation	Moderate to High
8. Contamination of normal water supplies	Moderate to High
9. Loss of economic activities	Low to Moderate

B. Potential Actions at the Scene	Agency Responsible
1. Warning of imminence	Provincial flood authority
a. Long term	Meteorological services/Canadian Tide & Current Tables (Environment Canada)
b. Short term	Police
2. Establish an emergency headquarters	Town Council Chambers – ECC
3. Establish adequate communications	Communication Coordinator
4. Establish a control perimeter	Police
5. Establish routes for emergency vehicles	Police
6. Notify hospitals of casualties including number and type	Medical/Police
7. Rescue	Fire/Police/Rescue services
8. Establish a temporary morgue	Medical Coordinator
9. Establish a news release system	Information Officer (Command Staff)
10. Establish emergency welfare services	Welfare/Social Services/Volunteer agencies
11. Establish an inquiry service	Welfare/Social Services
12. Eliminate hazards from damaged utilities	Engineering/Utilities
13. Protection of property and relocate resources where necessary	Police
14. Provide auxiliary power	Engineering
15. Clear debris	Engineering
16. Mobilize necessary manpower & equipment	EMO/Canada Manpower Centres
17. Establish jurisdiction	Government
18. Establish traffic control	Police
19. Establish dyking as required	Engineering
20. Check stocks of sand and sandbags	Engineering
21. Evacuation of personnel, livestock, etc.	Welfare/Social Services/Volunteer agencies/Agriculture
22. Storage of furnishings and equipment	EMO
23. Establish emergency health facilities	Health service

C. Equipment	Sources
1. Rescue equipment	Police/EMO
2. Pumps	Engineering/Fire Department
3. Medical and health supplies	Health Services
4. Transportation/Boats	EMO/Various sources/Transportation Coordinator
5. Communication equipment	Province/Police/EMO/Communication Coordinator
6. Auxiliary generators	Various sources
7. Mobile public-address equipment	Police/EMO/Radio Stations/Fire Department
8. Food and lodging	Welfare/Social Services
9. Dying equipment	Engineering/Industry
10. Heavy equipment (bulldozers, etc.)	Engineering/Industry
11. Auxiliary lighting equipment	Engineering/Utilities/Fire Department
12. Storage facilities for equipment, furnishings, livestock	Province



Annex D – Flood Event Checklist

Pre-Incident Phase

- Arrange for personnel to participate in necessary training and develop exercises relevant to flood events in Kings County
- Coordinate the County's preparedness activities, seeking understanding of interactions with participating agencies in flooding scenarios
- Ensure that emergency contact lists are updated
- Contact supporting emergency response agencies to review and determine whether major developments have arisen that could adversely affect response operations (e.g., personnel shortages, loss of equipment, etc.)
- Annually review and update the Kings REMO Regional Emergency Management Plan and Supporting Plans
- Review flood-prone areas
- Familiarize staff with requirements for requesting a State of Local Emergency (SOLE)
- Ensure that supplies, such as communications devices and sandbags, are prepared and ready for use. This includes primary and alternate communications and warning systems
- Identify and review local contractor lists to see who may provide support specific to flood response
- Review, revise, and, where necessary, establish mutual aid agreements with local agencies and other County agencies and private contractors relevant to multiple agency response to floods

Response Phase

- The Kings REMO ECC Manager will provide overall guidance for the deployment of resources across Kings County

- Activate mutual aid agreements

- Activate the Kings REMO Emergency Coordination Centre (ECC) and implement appropriate staffing plans. Contact appropriate supporting agencies to assign liaisons to the ECC for coordination of specific response activities

- Estimate emergency staffing levels and request personnel support, including specialized staff such as engineers, building inspectors, heavy equipment operators, and/or environmental remediation contractors

- Develop and initiate shift rotation plans, including briefing of replacements during shift changes (set the operational period briefing cycle)

- Submit request for State of Local Emergency (SOLE), as applicable

- Coordinate the evacuation of affected area, if necessary. Assign appropriate agency liaisons to the ECC, as the situation requires

- Support Search and Rescue operations by coordinating resource requests outside of the jurisdiction

- Request the Canadian Red Cross to activate Emergency Shelters and open shelters, if needed

- Formulate Emergency public information messages and media response using “one voice, one message” concept

- Record all ECC activities, completion of personnel tasks, incoming and outgoing messages, and the names of those sending and receiving them. These should be documented in ECC logbooks

- Begin damage assessments in coordination with Public Works Departments

- Assist with coordinating Public Works activities, such as debris removal from:
 - Storm drains
 - Main arterial routes
 - Public right-of-way
 - Dams
 - Other structures, as needed
- Contact local contractors for support, if necessary. Establish contact with private sector partners
- Coordinate with law enforcement agency (Kentville Police and/or Kings RCMP) to provide law enforcement to affected areas (road closures, security, etc.)
- Collect and chronologically file records and bills generated during the incident in order to ensure timely submittal of documents for reimbursement (Finance/Administration Section)

Recovery Phase

- Monitor secondary hazards associated with floods (contamination, damage to bridges/roads, impacts to utility lines/facilities) and maintain on-call personnel to support potential response to these types of hazards
- Deactivate/demobilize the ECC. Deactivate mutual aid resources as soon as possible
- Activate and implement applicable mitigation plans, community recovery procedures, and continuity of operations/governments plans until normal daily operations can be completely restored
- Implement revisions to the Kings REMO Regional Emergency Management Plan (REMP) and Supporting Plans based on lessons learned and best practices adopted during response
- Offer recommendations to Municipal Government and Public Works departments for changes in planning, zoning, and building code ordinances
- Participate in After Action Reports and critiques
- Submit valuable success stories and/or lessons learned to NS EMO and other County partners

Annex E – Criteria for Public Weather Alerts

Reference: [Environment and Climate Change Canada](#)

Rainfall Warning (Short Duration)

When 25mm or more of rain is expected within one hour



Rainfall Warning (Longs Duration) Summer

When 50mm or more of rain is expected within 24 hours
Or
When 75mm or more of rain is expected within 48 hours

Storm Surge Warning

Issued for abnormally high-water levels and high waves (storm surge or storm tide) caused by storms, which have the potential to cause coastal flooding. This usually occurs when astronomical tides are at their maximum.



Annex F – Lessons Learned – Flood Disasters

- | | |
|---------------------------------|---|
| Flood Preparations | <ul style="list-style-type: none">• Municipal staff need to be well-trained on flood preparedness plans |
| Personnel | <ul style="list-style-type: none">• In a wide-spread regional disaster, competition for resources and contractors will become an issue• Important to establish relationships with other municipalities to supplement existing capacity, and to know of alternate sources for potential resource requirements• Staff fatigue, stress, and management of shift lengths can present significant challenges for the initial response• Roles and responsibilities for positions and personnel need to be clearly defined• Partnering staff with other departments during an emergency can provide an invaluable response experience, ultimately increasing knowledge and capacity• There needs to be a clearly defined accountability system for municipal staff to check in and report that they were safe |
| Notification and Warning | <ul style="list-style-type: none">• Damage to communications infrastructure can make it difficult to provide updates to citizens, including notifications to media outlets and information postings to municipal channels: website, Social media• Door knocking and bullhorn announcements are important tools for communication when electronic options are not available |
| Rescues | <ul style="list-style-type: none">• The requirement may arise to re-direct Operations services staff and contractors with large equipment from protecting infrastructure to conducting rescues• Amphibious quads, zodiacs, front-end loaders, rock trucks and combines can be essential to rescue operations• Traffic control is vital to rescue and evacuation operations |
| Evacuation | <ul style="list-style-type: none">• Care facilities need to have an appropriate tracking system for their residents' final destination• Better communication with residents who do not evacuate is required so they understand the strain that they are putting on fragile municipal infrastructure and that the increased resource requirements to do adequate security patrols takes away from other important response objectives• A centralized people tracking system can facilitate more timely information about the location of evacuees• Clear guidelines for all responding agencies assisting with the search and rescue / evacuation operations are required to provide the most efficient coordination of the evacuation and rescue operation• Residents and contractors may need to be directed away from Fire Halls in order to not impede emergency rescue operations |

- Animal Rescue**

 - Once the threat to human safety has been resolved, bylaw/animal services are able to implement a formal animal rescue operation

- Reception Centres for Evacuees**

 - Given the length of time evacuees may be in Reception Centres, personnel need to create a sense of community to build support networks for evacuees
 - Daily visits by municipal Mayors provide much-needed information updates to the evacuees
 - Information about evacuees needs to be shared among the Reception Centres, other agencies and any call centre/inquiry lines
 - Providing updates to the ECC about emerging issues needs to occur in a timely fashion
 - A lack of communication infrastructure can impact both the personnel trying to operate the Reception Centre and the evacuees
 - Reception Centres need to have appropriate security
 - Information about any special requirements of evacuees needs to be available to the Reception Centres in advance in order to coordinate the appropriate accommodation
 - Appropriate support services need to be readily available to evacuees as the transition plan around closing of the Reception Centres is developed including their employment transportation requirements

- Infrastructure Protection**

 - Sewage lift stations need to be more resilient to withstand higher rates of river flow
 - Communication infrastructure is more vital than ever in this electronic age. Backup systems are required to support web services, phone and cellular service in order to access technical data and files for the communications between the ECC and, emergency workers in the field, critical facility operations staff, reception centres, residents and the media

- Crisis Communications**

 - A major impediment to public communication during a flood event was the lack of delivery channels either because critical communication infrastructure was lost, or residents did not have access to electronic communications or were not in the immediate area to use local radio stations or local newspapers
 - Establishing and maintaining credibility of the source and accuracy of information is critical to managing rumours
 - Using opportunities to provide printed information to residents such as during evacuee registration can significantly help to supplement other forms of communication
 - In the absence of direct channels of communication to residents, mass media has to be relied upon

Annex G – Floods – Frequently Asked Questions (FAQ)

When can floods occur?

Floods can occur in any region of Canada, at any time of the year, but most flooding occurs when the volume of water in a river or stream exceeds the capacity of the channel. Flooding also takes place along lake and coastal shorelines, when higher than normal water levels inundate low-lying areas.

Are you Flood Ready?

The first step towards reducing the potential harm of overland flooding is increasing your knowledge. See how much you know about overland flooding by trying the following quiz – [Are you Flood Ready?](#)

What is the meaning of a "100 year" flood?

The 100-year flood or x-year flood refers to the probability of those events occurring. That is, for a 100-year flood, there is a 1% chance in any given year of having a flood of that magnitude. For a 500-year flood, there is a 0.2% chance of having a flood of that magnitude occurring.

It should be stressed that the 100-year and 500-year events are independent events, from the perspective of probability. That means that if one of those events occurs, it has no effect on future events occurring. In other words, if a 100-year flood event occurs, that does NOT mean that people are “safe” for 99 years. The risk of having the flood in any given year is the same, regardless of if it occurred recently.

If your building is in the 100-year floodplain and has a 30-year Mortgage... it has a 26% chance of experiencing a 100-year flood during the life of the loan (vs. 4% chance of a fire).

What should I do in preparation for a flood?

Make an itemized list of personal property well in advance of a flood occurring. Photograph the interior and exterior of your home. Store the list, photos and documents in a safe place. Memorize the safest and fastest route to high ground. Assemble a disaster supplies kit containing: first aid kit, canned food and can opener, bottled water, extra clothing, rubber boots and gloves, Weather Radio, battery-operated radio, emergency cooking equipment, flashlight and extra batteries.

If you live in a frequently flooded area, keep sandbags, plastic sheets and lumber on hand to protect property. Install check valves in building sewer traps to prevent flood water from backing up into the drains of your home.

Know the elevation of your property in relation to nearby streams and other waterways, and plan what you will do and where you will go in a flood emergency.

What should I do when a flood threatens?

If forced to leave your property and time permits, move essential items to safe ground, fill tanks to keep them from floating away and grease immovable machinery.

Store a supply of drinking water in clean bathtubs and in large containers.

Get out of areas subject to flooding. This includes dips, low spots, floodplains, etc.

What should I do during a flood?

Avoid areas subject to sudden flooding.

Even 15 cm (6 inches) of fast-moving floodwater can knock you off your feet, and a depth of 60 cm (two feet) will float your car! Never try to walk, swim or drive through such swift water.

Do not attempt to drive over a flooded road. STOP! Turn around and go another way.

Keep children from playing in floodwaters or near culverts and storm drains.

What should I do after a flood?

Boil drinking water before using. If fresh food has come in contact with floodwaters, throw it out.

Seek necessary medical care at the nearest hospital. Food, clothing, shelter and first aid are available at Red Cross shelters – know the location of Emergency Shelters throughout Kings County.

Use flashlights, not lanterns or torches, to examine buildings. Flammables may be inside.

Do not handle live electrical equipment in wet areas. Electrical equipment should be checked and dried before being returned to service.

Is flood damage covered by your homeowners insurance?

Flood damage is excluded in nearly all homeowners and renters insurance policies but, if desired, can be purchased as a separate policy – check with your insurer as to whether or not flooding is covered under your current policy.

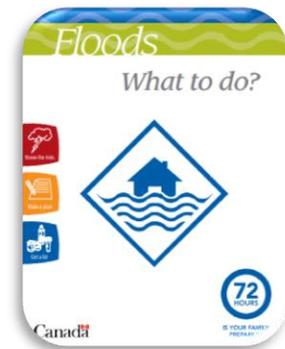
What about flood safety?

More than half of all flood related fatalities are a result of driving into hazardous water covered roadways. If you encounter a flooded roadway follow this simple advice: Turn Around, Don't Drown!

Annex H – Floods - References

Federal

- [Floods – What to Do?](#)
- [Disaster Financial Assistance Arrangements \(DFAA\)](#)
- [Natural Resources Canada - Floods](#)
- [FloodSmart Canada](#)



Provincial

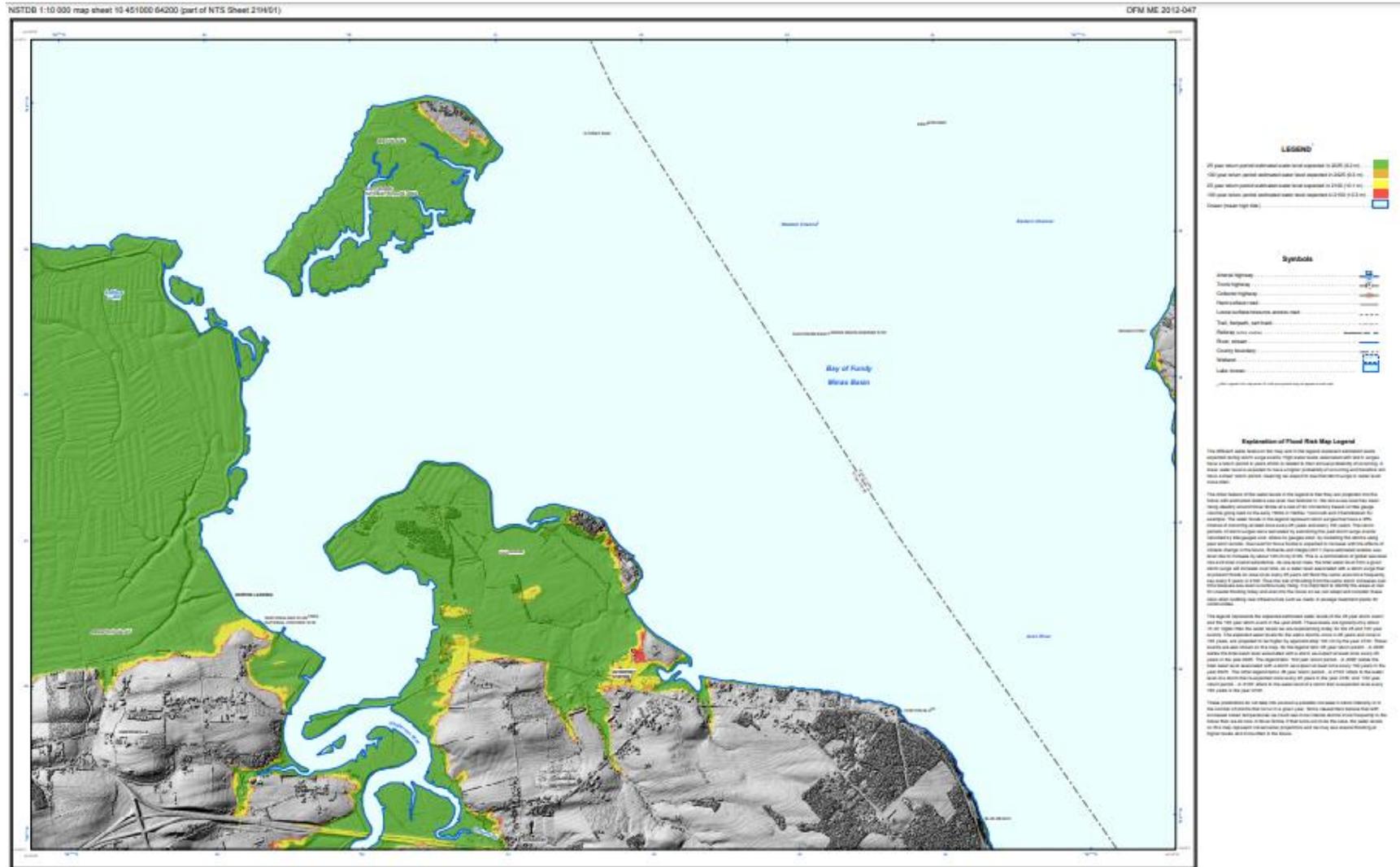
- [Flood Management in Nova Scotia: A Provincial Government Overview](#)
- [Nova Scotia Flood Mitigation Framework – our approach to flood management](#)
- [Building Flood Resilience in Nova Scotia](#)
(Presentation to Atlantic Flood Workshop, June 14, 2018)
- [Maritime Coastal Flood Risk Map – Nova Scotia](#)
- [Nova Scotia Flood Event Database \(1992-2015\)](#)
- [Nova Scotia Storm Surge Events - Mapping](#)
- [Real-Time Coastal Flood Risk Mapping Application](#)
- [NS Department of Health & Wellness – Environmental Health \(Floods\)](#)

Regional

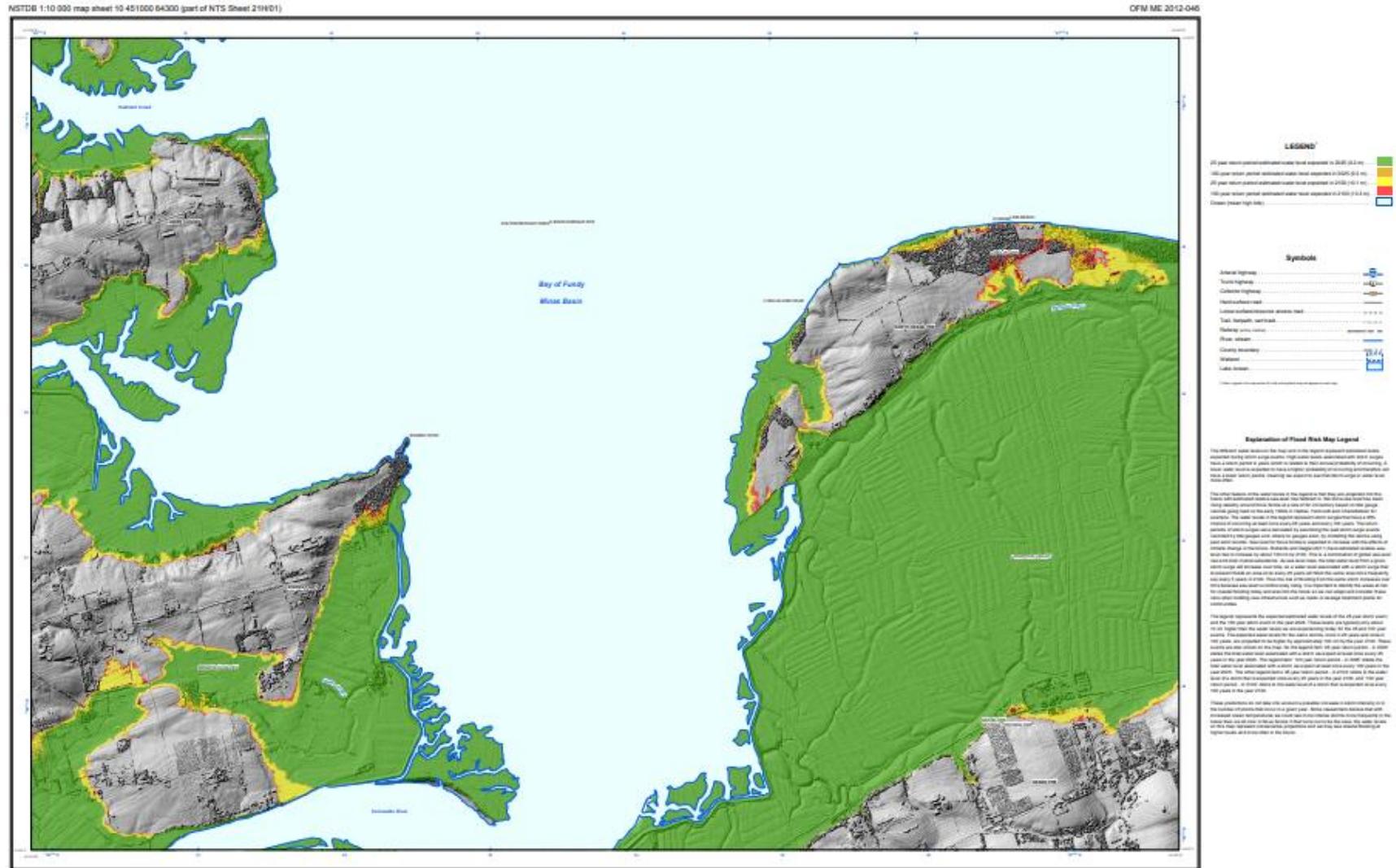
- [Maps of Coastal Flood Risk from Sea-Level Rise and Storm Surge](#)
 - [Avonport Station Area](#)
 - [Grand Pré Area](#)
 - [Wolfville Area](#)
 - [Canard Area](#)
 - [Canning Area](#)
 - [Kingsport Area](#)
 - [Kentville \(East\) Area](#)
 - [Kentville \(West\) Area](#)
 - [Centreville Area](#)



Map of Coastal Flood Risk from Sea-Level Rise and Storm Surge of the Avonport Station Area



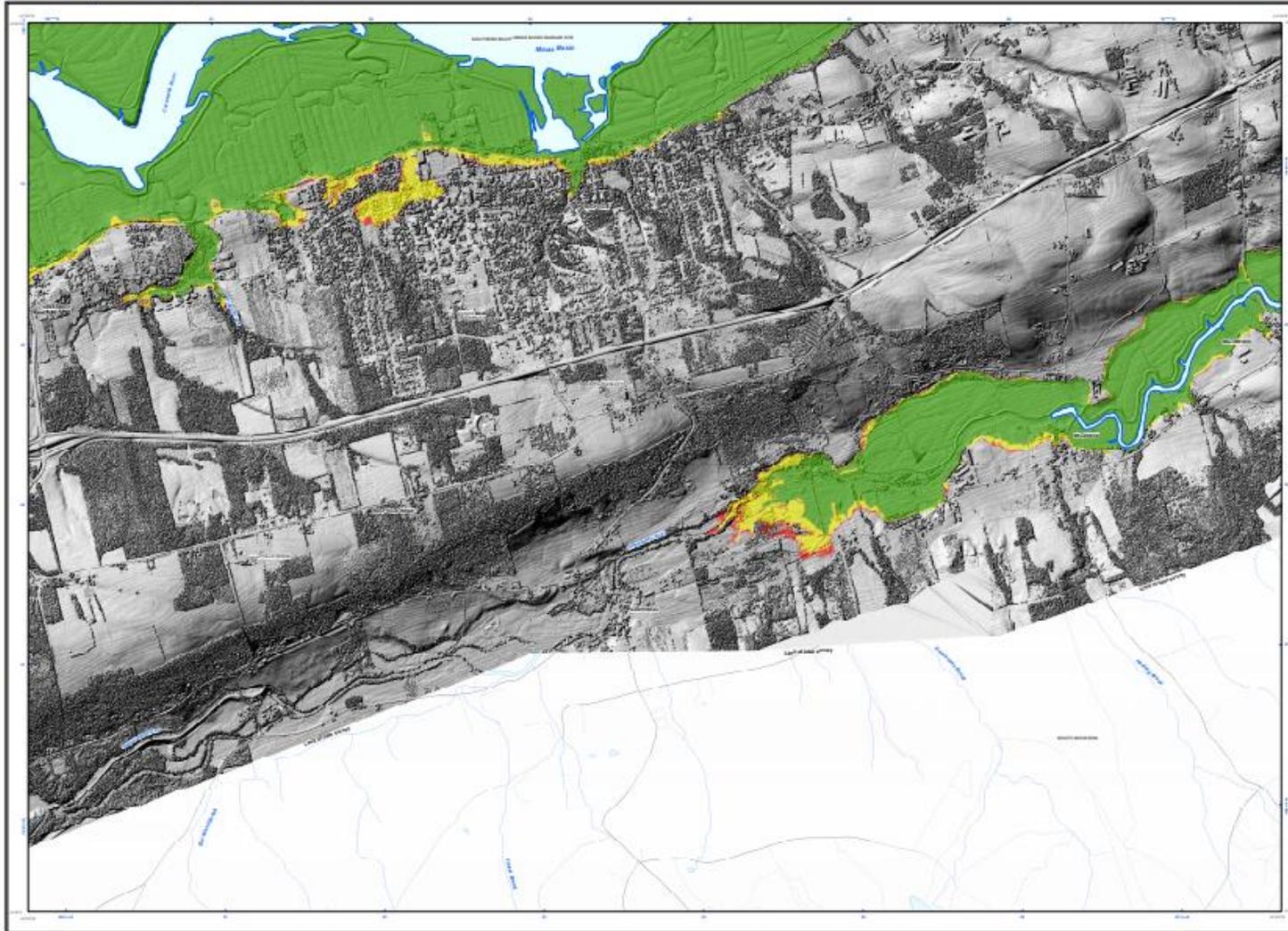
Map of Coastal Flood Risk from Sea-Level Rise and Storm Surge of the Grand Pré Area



Map of Coastal Flood Risk from Sea-Level Rise and Storm Surge of the Wolfville Area

NGTDB 1:10 000 map sheet: 10-450500 04300 (part of NTS Sheet 21H01)

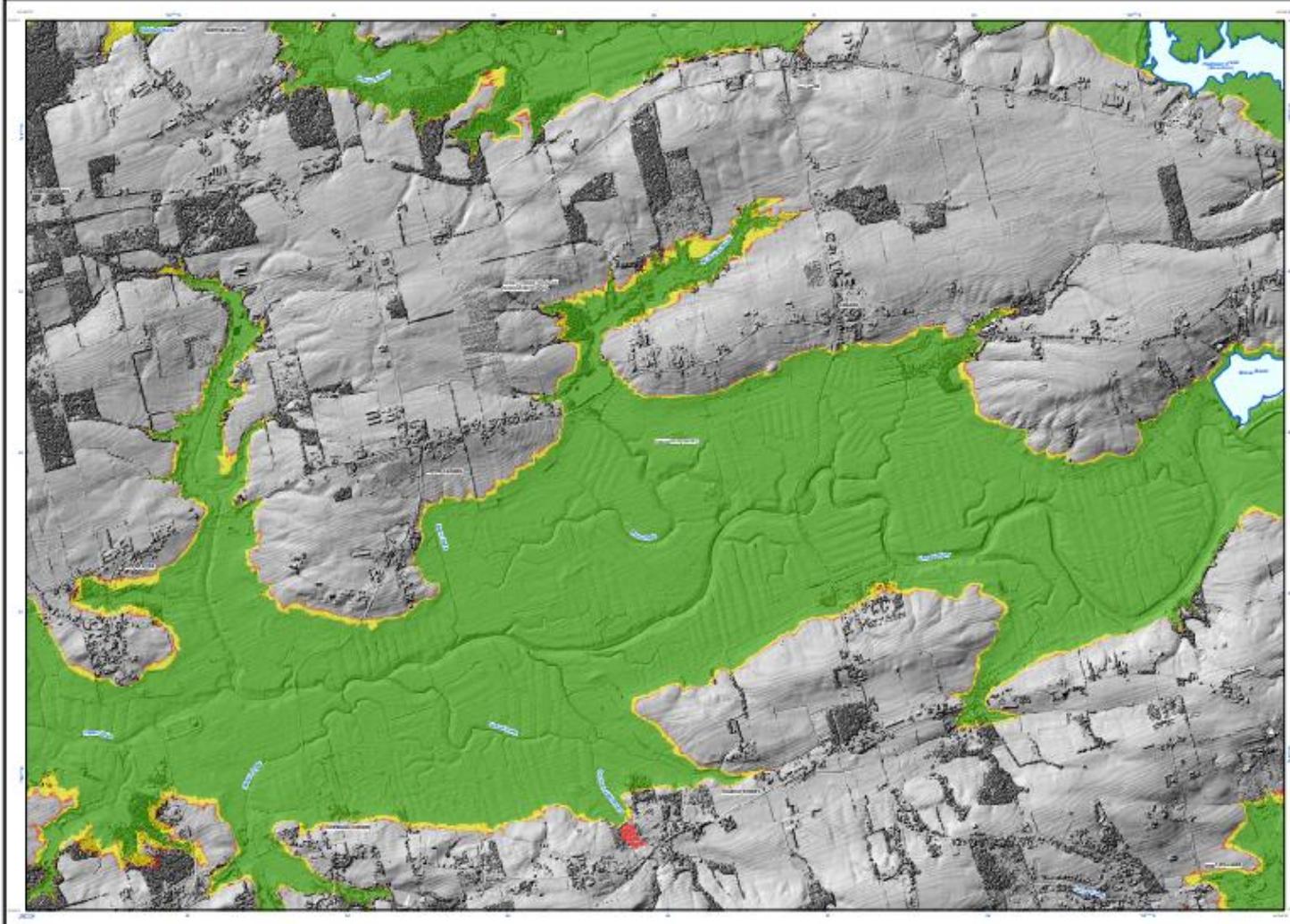
CPM ME 2012-051



Map of Coastal Flood Risk from Sea-Level Rise and Storm Surge of the Camard Area

NSTD8 1:10 000 map sheet: 10 451000 64400 (part of NTS Sheet 21HD1)

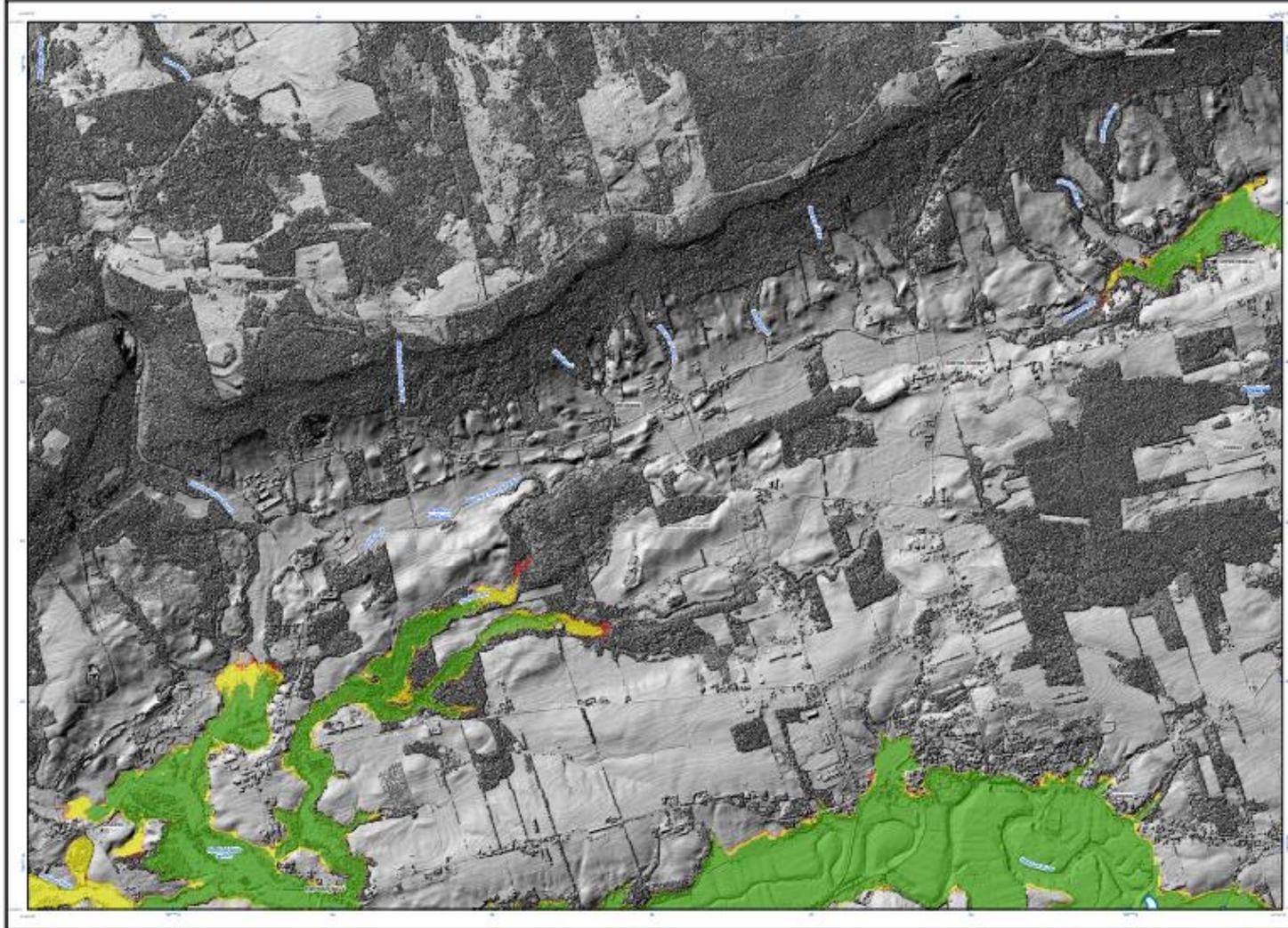
OFM ME 2012-045



Map of Coastal Flood Risk from Sea-Level Rise and Storm Surge of the Canning Area

NSTD8 1:10 000 map sheet 10 451500 64400 (part of NTS Sheet 21H01)

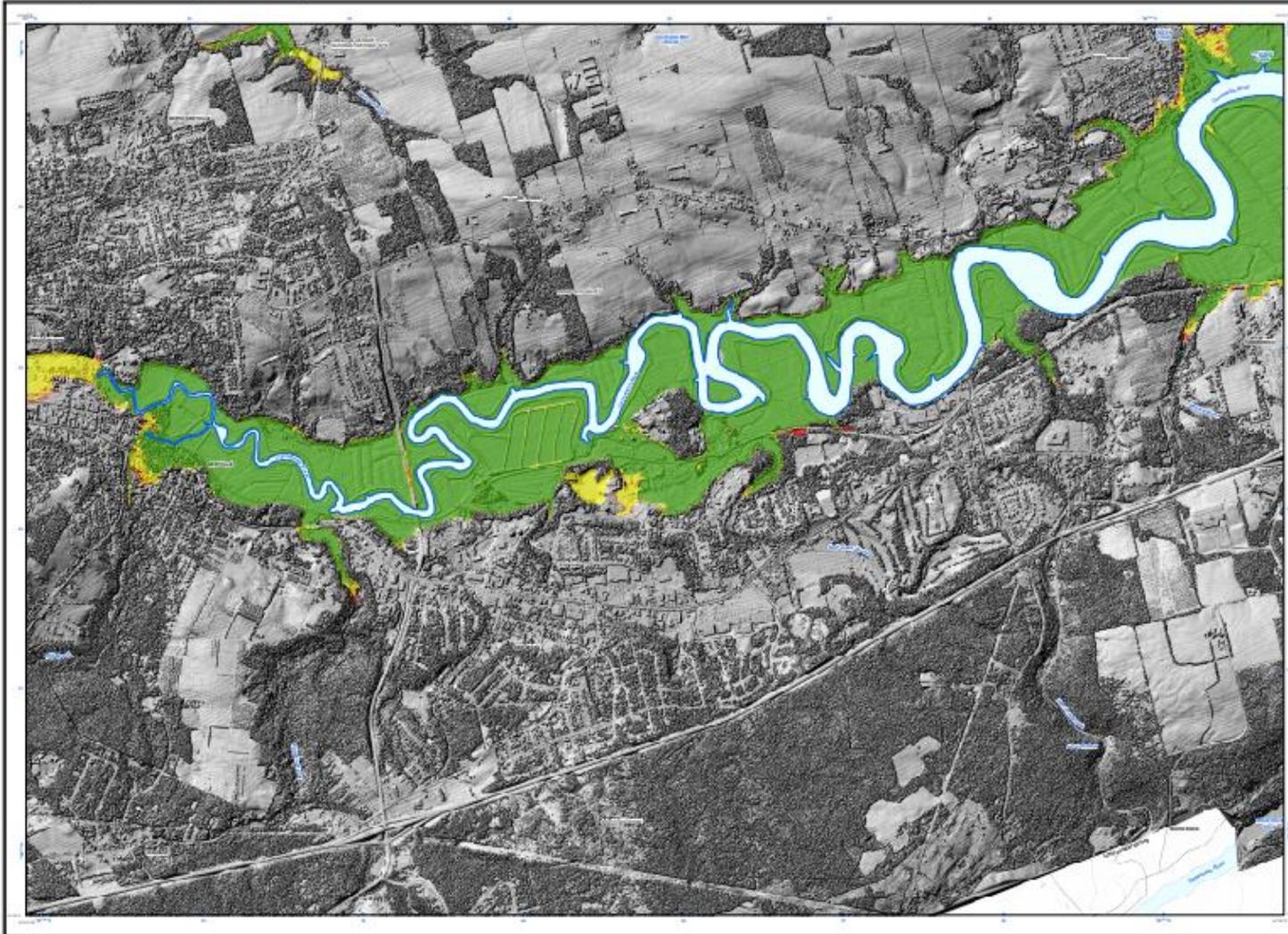
CFM ME 2012-041



Map of Coastal Flood Risk from Sea-Level Rise and Storm Surge of the Kentville (East) Area

NSTD8 1:10,000 map sheet 10 450500 64400 (part of NTS Sheet 21WD1)

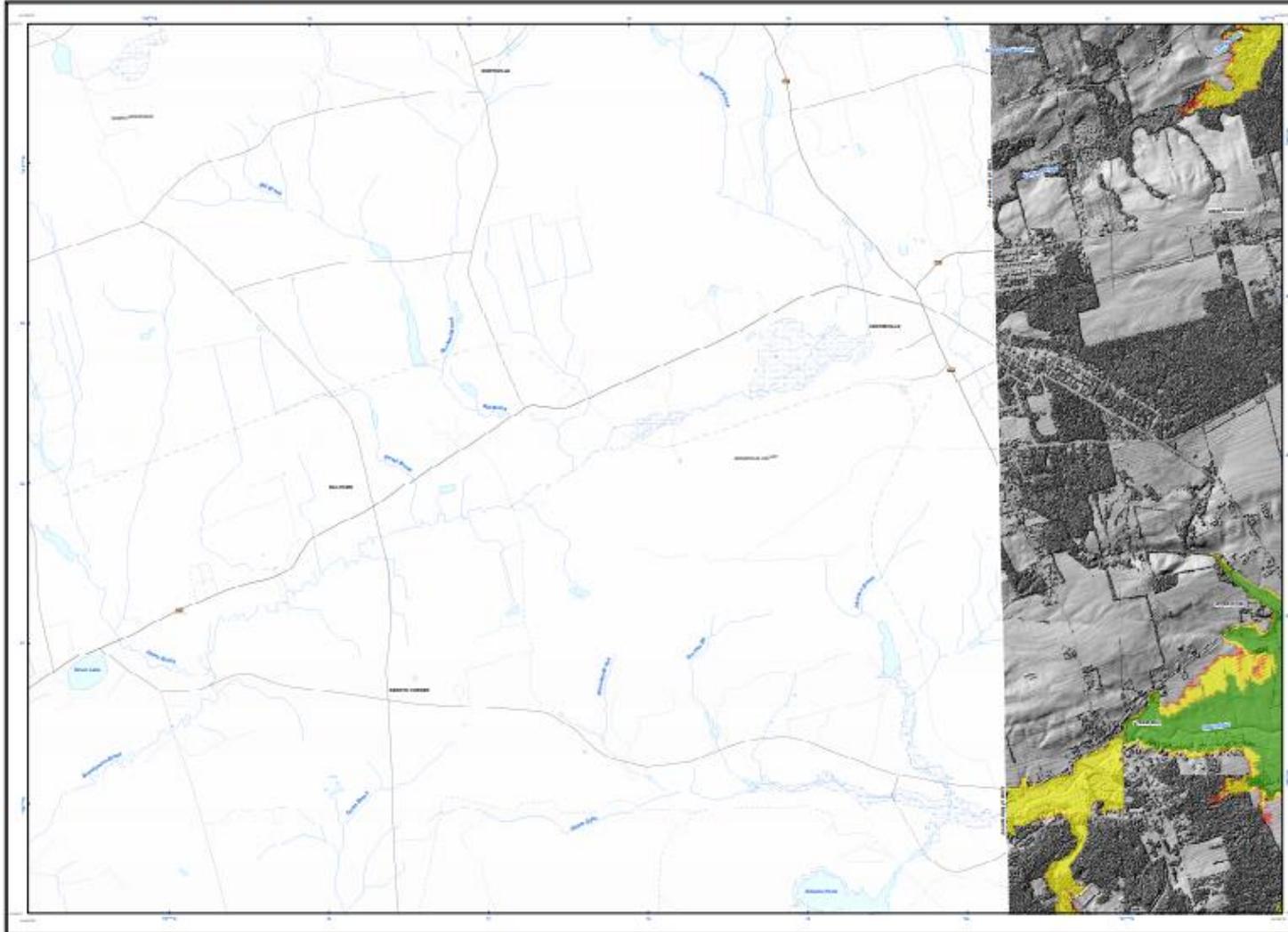
OFM ME 2012-050



Map of Coastal Flood Risk from Sea-Level Rise and Storm Surge of the Centreville Area

NSTD 1:10 000 map sheet 10 451000 64500 (part of NTS Sheet 21H02)

DFM ME 2012-044



LEGEND

10 year return period water level that is expected to occur 2.33 times in 10 years
 50 year return period water level that is expected to occur 2.0 times in 50 years
 100 year return period water level that is expected to occur 1.0 times in 100 years
 200 year return period water level that is expected to occur 0.5 times in 200 years
 (Values shown in feet)

Symbols

General Highway
 Trunk Highway
 Collector Highway
 Watercourse
 Interstate/Expressway
 Trail, path, cart track
 Railway
 County boundary
 Water
 Lake

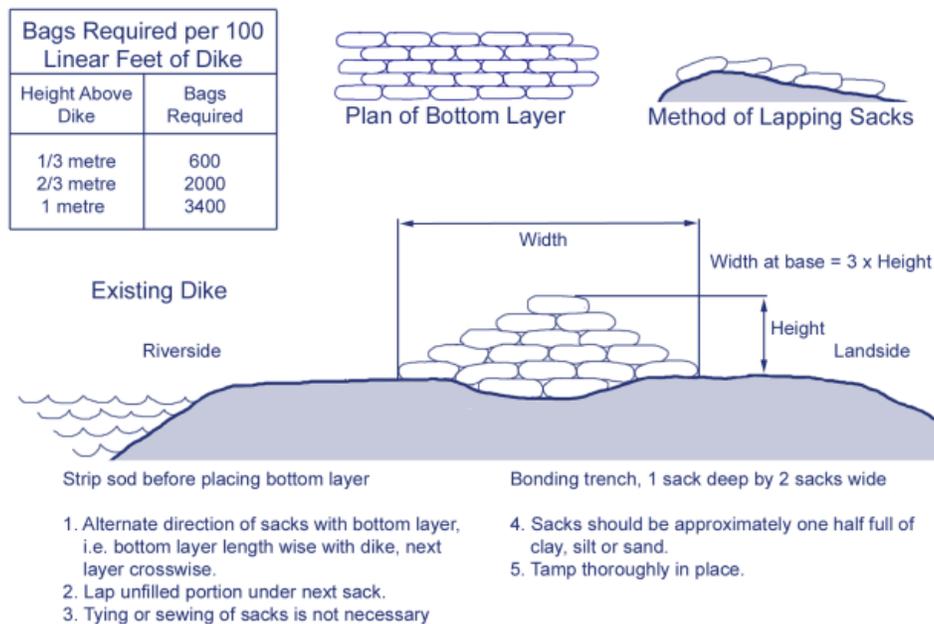
Explanation of Flood Risk Map Legend

The legend indicates the return period of the highest expected water level that is expected to occur 2.33 times in 10 years, 2.0 times in 50 years, 1.0 times in 100 years, and 0.5 times in 200 years. The return period of the highest expected water level that is expected to occur 2.33 times in 10 years is 10 years. The return period of the highest expected water level that is expected to occur 2.0 times in 50 years is 50 years. The return period of the highest expected water level that is expected to occur 1.0 times in 100 years is 100 years. The return period of the highest expected water level that is expected to occur 0.5 times in 200 years is 200 years.

Annex I – Sandbagging – General Information

- Construct the sandbag dike on high ground, as close as possible to your home or building. By being closer to your home or building, fewer bags will be needed, and the sandbag dike will be less exposed to the stream.
- Sandbagging should also focus along existing flood works or any low spots along dikes for maximum protection.
- Dig a trench one bag in depth and two bags wide as a foundation for the dike structure.
- To be effective, a dike must be three times as wide at its base as it is high.
- Sandbags should be turned right side out and filled half full. They need not be tied shut, just laid overlapping each other.
- The open ends of the sandbags should be facing upstream and/or uphill so that the moving water will not remove the sand from the bags as readily.
- Alternate direction of sandbags with bottom layer, i.e. bottom layer lengthwise with dike, next layer crosswise.
- As individual bags are put in place, walk on bags to tamp them into place to ensure maximum strength. Take care to avoid puncturing the bags.
- The butt ends of the bags should be placed facing the stream, for rows that are perpendicular to the stream.
- Each successive layer should be set back one-half sandbag width on both sides in each additional layer, so a completed dike has a triangular cross-section.
- The number of sandbags needed to protect a home or building varies depending on the local topography and the anticipated depth of water.

RECOMMENDED METHOD FOR SANDBAG DIKING



Annex J – Abbreviations & Acronyms

AREP	Agency Representative
DFAA	Disaster Financial Assistance Arrangements
ECC	Emergency Coordination Centre
ECCC	Environment and Climate Change Canada
ECCMT	Emergency Coordination Centre Management Team
EMO	Emergency Management Office
FPRP	Flood Prevention and Response Plan
IAP	Incident Action Plan
IC	Incident Commander
ICP	Incident Command Post
ICS	Incident Command System
IMT	Incident Management Team
IO	Information Officer
LO	Liaison Officer
LSC	Logistics Section Chief
MAC	Multiagency Coordination (MAC) Group
OSC	Operations Section Chief
PSC	Planning Section Chief
REMAC	Regional Emergency Management Advisory Committee
REMC	Regional Emergency Management Coordinator
REMP	Regional Emergency Management Plan
REMPCC	Regional Emergency Management Planning Committee
SO	Safety Officer
UC	Unified Command

Annex K – Glossary

100-Year Flood	A flood event that statistically has a 1 out of 100 (or one percent) probability of being equalled or exceeded on a specific watercourse or water body in any given year.
Flood/Flooding	A temporary condition caused by the accumulation of runoff from any source, which exceeds the capacity of a natural or man-made drainage system and results in inundation of normally dry land areas.
Floodplain	The area, usually low lands adjoining a watercourse, which has been, or may be, covered by flood water.
Peak Flow	The maximum rate of flow through a watercourse for a given storm.
Runoff	The portion of precipitation on land that ultimately reaches streams, especially water from rain or melted snow that flows over ground surface.
Storm Drainage System	A drainage system for collecting runoff of stormwater on highways and removing it to appropriate outlets. The system includes inlets, catch basins, storm sewers, drains, reservoirs, pump stations, and detention basins
Storm Surge	high water levels that result from very low pressure, strong winds blowing toward land, and high tides (if present). Depending on the conditions and geographical setting, water levels may be “set up” by as much as several metres and have potential to cause severe flooding for low-lying coastal regions.
Stormwater	Precipitation from rain or snow that accumulates in a natural or man-made watercourse or conveyance system
Watercourse	A stream, river or channel in which a flow of water occurs, either continuously or intermittently, with some degree of regularity
Watershed	An area from which water drains into a lake, stream or other body of water. A watershed is also often referred to as a basin, with the basin boundary defined by a high ridge or divide, and with a lake or river located at a lower point

