2021 SOUTHERN LAKES FLOOD EMERGENCY

Operational After Action Review

May 5, 2022

Sandbag berm at Marsh Lake (Photo Courtesy Government of Yukon)

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2021 Southern Lakes Flood Emergency Operational After Action Review

Executive Summary

While historical experience of flood risk in Yukon Territory has been relatively rare, a changing climate, combined with a growing number of people living in flood-prone areas, means that flooding is a hazard that government, property owners and communities must prepare for. Comprehensive flood risk management will include a wide range of strategies – from infrastructure adaptation to the protection of cultural resources. It must also include efforts to enhance preparedness to respond to flood emergencies.

This Operational After Action Review (AAR) provides an analysis of the strengths and challenges associated with the Government of Yukon's (YG) response to the 2021 Southern Lakes Flood Emergency. It identifies 21 recommendations to enhance flood preparedness and response, in support of YG's efforts to prepare for the emerging risks of a changing climate. This report is primarily an assessment of the coordination of YG's internal preparedness, planning and response functions. Recommendations are relevant to flooding, and may also be applied to other potential hazards and emergencies.

Photo 1: Flood protection infrastructure was constructed to protect access routes and properties at Marsh Lake. (Photo Courtesy: Government of Yukon and Canadian Armed Forces)

Incident Summary

Through the spring and summer of 2021, concurrent with the ongoing response to COVID-19, the Government of Yukon mounted the largest emergency response in its history to manage the impacts of flooding in the Southern Lakes Region. This response included the activation of YG's Emergency Coordination Centre (ECC), a Wildland Fire Management (WFM)-led Incident Management Team (IMT) and Incident Command Post (ICP), and the deployment of hundreds of staff from across YG departments to take on a wide range of roles. This effort was also supported by: First Nation governments,

municipalities, IMTs and technical experts from multiple provinces, 100 members of the Canadian Armed Forces (CAF), private contractors and many local volunteers.

The WFM-led IMT established 5 divisions to manage flooding across the region, including:

- Division A – Marsh Lake
- Division B – South McClintock
- Division C – Tagish
- Division D – Carcross
- Division E – Lake Laberge

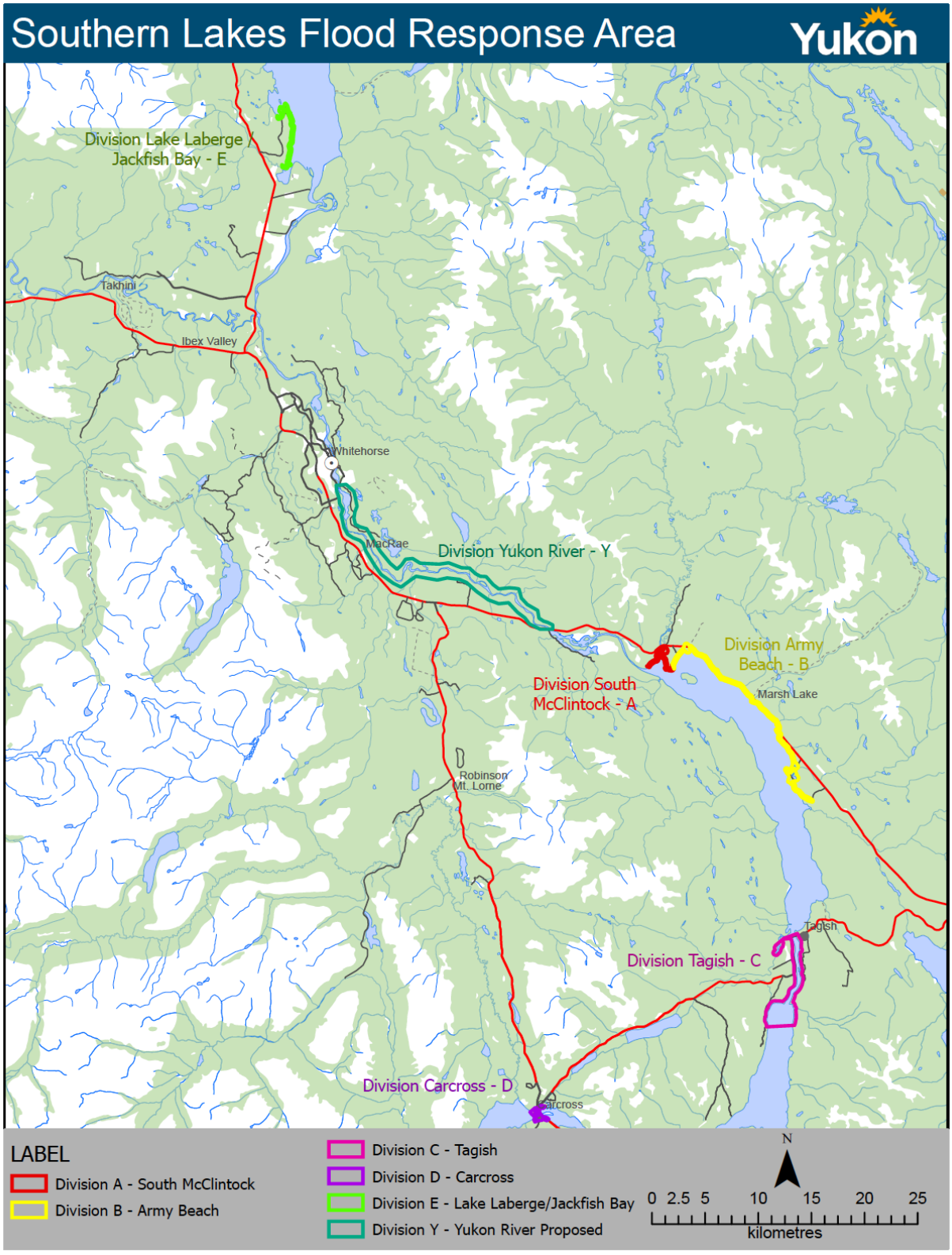
The operational areas for these divisions are illustrated in the map below.

Kwanlin Dün First Nation (KDFN) and Ta'an Kwäch'än Council (TKC) led response efforts on their respective Settlement Lands in the region. KDFN and TKC staff also supported YG responders and local residents of Marsh Lake and Lake Laberge. Carcross Tagish First Nation(CTFN) led efforts to protect their Settlement Lands, citizens and residents of the community of Carcross.

The Southern Lakes was not the only area impacted by flooding in 2021. In May, WFM and EMO responded to a rare overland flood event in Gem Haven. In early June, requests for support were issued to YG by both the Village of Carmacks (VoC) and the Village of Teslin (V0T), in coordination with Little Salmon Carmacks First Nation (LSCFN) and Teslin Tlingit Council (TTC) respectively. The City of Whitehorse (CoW) also activated an Emergency Operations Centre (EOC) to monitor flood conditions and develop contingency plans for possible impacts within municipal boundaries. Municipalities led response within their boundaries, at times requesting support from YG.

Photo 2: An overhead view of flood protection infrastructure in place at Carcross. (Photo Courtesy: Government of Yukon)

In total, flood preparedness and response activities spanned approximately 6 months, from early April through to the end of September. The State of Emergency (SoE) for the Southern Lakes was rescinded on September 14, and the Southern Lakes IMT stood down on Sept 30. At the time of writing, recovery activities for the Southern Lakes are ongoing, including work on a Disaster Financial Assistance Policy, and decisions about the removal of flood protection infrastructure that was left in place after the 2021 response. The timeline below provides an overview of key events during the Southern Lakes Flood Emergency, along with other flooding and fire-related incidents outside the Southern Lakes that YG staff were concurrently supporting.



Map 1: The Southern Lake Emergency Response included operations in 5 divisions from Lake Laberge in the North, to Carcross in the South.

Southern Lakes Flood Timeline & Concurrent Events

April 1: Yukon River Basin Snow Survey shows snowpack at 196% of normal.

April 7: ECC Director tasks staff with flood planning (during ongoing COVID activation).

April 23: First inter-departmental flood planning meeting, coordinated by EMO.

May 1: Yukon River Basin Snow Survey shows snowpack at 215% of normal.

May 7: Southern Lakes water levels begin to rise.

May 13: Gem Haven property floods; WFM & EMO staff coordinate response.

Early June: WFM staff respond to support Village of Teslin and Teslin Tlingit Council.

Early June: Village of Carmacks, Little Salmon Carmacks First Nation and WFM form Unified Command to respond to flood risk in Carmacks.

June 22: EMO requests WFM to establish an IMT to coordinate response to Southern Lakes Flooding.

June 24: WFM stands up an Incident Command Post (ICP) and initiates flood response. First sandbagging stations set up.

June 26: Yukon River flow peaks at Carmacks.

June 29: WFM IMT advises ECC that additional resources will be required to support flooding over the summer. ECC & WFM initiates requests to consultants KGS & Stantec, Federal Gov't & Provinces of MB, SK & AB.

July 4: Canadian Armed Forces deployed to support YG response

July 5-7: Evacuation Alerts & Orders issued for some residents of Marsh Lake & South McClintock.

July 9: YG declares a State of Emergency for Southern Lakes Flooding

July 10: Evacuation Order issued for Sawmill Rd residences; Evacuation Alerts in Tagish.

July 11: Evacuation Alert issued for Jackfish Bay and Duncan Lane residents (Lake Laberge); and one Carcross residence.

July 13: Evacuation Order issued for Shallow Bay residence (Lake Laberge)

July 18: Information boards installed at volunteer sandbag stations.

Aug 3: Evacuation Alert issued for Wildfire near Dawson City; WFM advises limited staff to support flooding as fire risk grows in Yukon and requests come

Aug 4: Evacuation Alerts Rescinded for Tagish, Carcross, Lake Laberge (Jackfish Bay Road, Duncan Lane), Marsh Lake.

Aug 5: IMT initiates demobilization planning; requests ECC to initiate plan for recovery transition.

Aug 7: Evacuation Alert Rescinded for Shallow Bay Road (Lake Laberge).

Aug – Sept: Ongoing monitoring and assessment of flood risk and infrastructure.

Sept 1: Seasonal WFM staff begin standing down.

Sept 2: Technical experts (Stantec) issue report recommending recovery and preparedness priorities.

Sept 14: State of Emergency Rescinded for Southern Lakes Flood Emergency (staff can no longer be reassigned; no further work on private property.)

Sept 15: ECC stands down.

Sept 30: IMT stands down; recovery work transitions to EMO.

Outcomes and Achievements

Considering the context of COVID-19 and an ongoing fire season, along with the relatively limited experience that YG staff and many communities have with flooding, the outcomes achieved during the course of this response were impressive. At the heart of this response was the dedication, collaboration and ingenuity of YG staff and leadership, impacted homeowners, volunteers, municipal and First Nation staff and out-of-territory response teams.

Major accomplishments include:

- With over 200 responders deployed and a large number of volunteers, there were no major safety incidents reported.
- At Marsh Lake, where water levels rose 2 meters in a 3-week period, a 5 km berm was constructed in a matter of weeks to protect over 400 homes and access routes.
- More than 80 YG staff were reassigned on short notice to support 70 flood-related positions over the course of the emergency.
- YG staff secured support from CAF, and WFM enacted mutual aid agreements to engage IMTs and experts from Alberta, Saskatchewan and Manitoba.
- Search and Rescue volunteers stepped up to support door-to-door emergency evacuation alerts and orders for residents in rural and hard-to-reach places.
- In Carmacks joint efforts by the VoC, LSCFN and YG WFM staff prevented the catastrophic failure of the Carmacks Waste Water Treatment Plant, a key piece of critical infrastructure.
- The VoT and TTC worked proactively to minimize flood impacts for residents, while providing work opportunities for citizens and identifying opportunities for future resilience.
- Flood protection infrastructure installed by volunteers, residents and responders in Tagish and Lake Laberge minimized impacts to homes and property.
- In areas across the territory, volunteers supported fellow Yukoners to protect property and assets that were out-of-scope of the government response.

AAR Methodology

Objectives

The Protective Services Branch has undertaken this AAR so that they may understand the experiences of responders, learn from challenges and strengths, and enter into a cycle of continuous improvement.

The objectives of this Operational AAR are to:

- Situate the 2021 Southern Lakes Flood Response in the context of COVID-19, other territorial flood events and the ongoing fire season.
- Evaluate underpinning policies, plans and governance structures to determine systemic factors contributing to strengths and challenges.
- Transparently capture and reflect the broad perspectives and experiences from response personnel and staff across all levels of the response.
- Undertake a critical analysis of YG preparedness and response measures in order to contribute to a process of continuous learning and improvement.
- Make recommendations including Actions for Consideration to enhance emergency management and disaster risk reduction efforts in a changing risk landscape.

The intent of this review is not to provide an overarching determination of the success or failure of the response, but to reflect the experiences and perspectives of responders so that these may be integrated into a cycle of continuous improvement. The recommendations and actions to consider in this review primarily relate to internal coordination and preparedness. Public engagement was out-of-scope for this review.

Research & Engagement

Staff and stakeholder feedback was gathered through a combination of workshops, interviews and surveys that engaged more than 120 participants. This included:

- 40 virtual semi-structured interviews, with 1-2 people each.
- 3 distinct surveys designed to gather qualitative and quantitative data from representatives of the IMT, ECC and community leaders.
- 2 in-person workshops including a Senior Leaders Interdepartmental Workshop (SLIW), and an IMT workshop.

In addition, expert knowledge of emergency management frameworks, in depth analysis of response documentation, emergency plans and policies informed the analysis and recommendations put forward in this review.

Findings & Recommendations

Key Themes

Analysis of participant feedback and documentation led to the identification of 15 themes organized across 3 broad categories. These are summarized in the table below:

Category	Themes
Emergency Plans, Policy & Governance	• Status and Application of Flood and Emergency Plans and Policy • Departmental Mandates, Roles & Responsibilities for Flood and Emergency Management • Defining & Supporting Roles and Responsibilities of Executive, Ministers and Elected Officials EM • Governance and Authorities for Municipalities and Unincorporated Communities
Flood Preparedness	• Understanding Flood Risk • Flood Preparedness & Training • Community Emergency Preparedness
Incident Management, Response & Recovery	• Coordination between the IMT and ECC • Planning, Documentation and Internal Communications • Engagement of Out-of-Territory IMTs and Experts • Human Resources and Staff Wellbeing • Volunteer Contributions and Coordination • Safety • Procurement, Management & Allocation of Flood Response Resources • Public Communications & Engagement • Transition to Recovery

Each theme has been analyzed in the context of strengths and areas for improvement identified through the AAR process. Opportunities to leverage these strengths and address challenges are embedded in the 21 recommendations put forward in this report.

Summary of Strengths & Areas for Improvement

The greatest areas for improvement identified through this review, include the need for updated governance structures, emergency plans, policies and training to guide decision-making and tactical response for flood emergencies. Gaps in these areas amplified challenges related to communications, reporting structures, agency mandates, and departmental authorities for response actions. The integration of emergency management responsibilities within YG departmental mandates, and the allocation of resources to enable these mandates, will be essential to the success and implementation of future flood and emergency preparedness and response efforts. YG and Yukoners would benefit from emergency plans and programs that align with Canada's Emergency Management Framework which is based on the United Nations Sendai Framework for Disaster Risk Reduction. Both of these frameworks set out a whole-of-society approach to reducing disaster risk and identify clear priorities to support governments in achieving resilience as climate-related hazards like flooding become more prevalent.

Capacity at the local level is another challenge associated with the 2021 response. In particular, focused effort to support community-engaged emergency planning is required to mitigate the impacts of future floods and minimize the challenges associated with reactive responses. The review found that special consideration must be given to the unique attributes of Yukon's rural and remote residents and unincorporated communities, to ensure they are prepared for future flood events and that YG is able not only to respond, but to support effective preparedness and mitigation efforts. This includes the need to plan for and support the work of volunteers, and finding more effective ways to integrate the local knowledge and networks of elected officials who represent Yukon's many unincorporated communities.

Prioritization of local-level and territorial flood planning and preparedness strategies and tactics should be guided by holistic Hazard Identification and Risk Analyses (HIRA) or Hazard Risk and Vulnerability Assessments (HRVA). These assessments will support governments and citizens to make informed decisions to reduce risk and prepare for future emergencies. Specifically, technical knowledge of flood risk and vulnerabilities along with an assessment of the social, economic, cultural and physical implications of flooding should be further developed at all levels of government.

Other challenges identified within the scope of the operational AAR included issues specific to incident management, such as: documentation processes, internal communications, inter-agency coordination, data management, resource management, and command and reporting structures. The large majority of these issues can be addressed through holistic and collaborative inter-departmental planning, preparedness and training. The review found that productive planning and training efforts had been underway prior to COVID-19, but that the reassignment of staff to the COVID-19 emergency meant that many were discontinued. YG has an opportunity now to learn from both the COVID-19 and flood responses, and to re-start this important work.

Fortunately, YG has many strengths to leverage. The knowledge and experience of staff, residents, and response partners involved in the flood response should be applied to the formalization of flood plans and policies. New tools that were developed for the 2021 flood response can be refined and integrated into future training. YG can and should leverage the lessons learned from the inter-departmental deployment of staff to consider options for expanding all-hazards and flood response capabilities.

Experts and response teams from across Canada have offered to provide support to YG in expanding flood response capabilities.

YG has also made commitments through Our Clean Future that will be instrumental in enhancing preparedness. Prioritizing actions dedicated to emergency planning with First Nations and communities, along with actions to facilitate flood and hazard modelling will be essential.

Finally, YG now has the experience of responding to multiple concurrent emergencies. This institutional knowledge should not be lost. With the findings of this review and the experience of staff and Yukoners, YG is well positioned to learn and improve.

Recommendations

Leading practice for emergency management includes the adoption of the United Nations Sendai Framework for Disaster Risk Reduction (DRR). The Sendai Framework was adopted by Canada in 2015, and is the basis for Canada's Framework for Emergency Management. It has also been adopted by provincial and municipal governments across Canada as they work to transform their approach to emergency management in line with the growing complexity of hazards and disasters. Informed by the experience from flooding in 2021, as well as the combined experience of COVID-19 response, YG is well positioned to advance the priorities and align with the leading practices set out in Canada's Emergency Management Strategy and Framework.

The 21 recommendations from this review are set out in the tables below. They align with Canada's Framework for Emergency Management, and address the strengths and challenges identified through the AAR Process. In addition to these recommendations, a number of approaches for consideration by YG and response partners have been developed to support them in identifying options for moving forward. Ultimately, it is the responsibility of YG to evaluate and consider these recommendations in the context of other priorities, risk tolerance, and the costs and benefits of risk reduction and preparedness, and determine the best approach and timeline for their implementation.

Photo 3: Members of the Canadian Armed Forces were instrumental in protecting property and infrastructure.

Emergency Plans, Policy & Governance *In alignment with Canada's EM Strategy, Priority 1: Enhance whole of society collaboration and governance to strengthen resilience.*	
#	**Recommendation**
1	**Develop a Yukon Territorial Framework for Emergency Management and Disaster Risk Reduction.** In alignment with leading practice, the Minister of Community Services should direct and ensure resources are made available for the development of a comprehensive Yukon Territorial Framework for Emergency Management and Disaster Risk Reduction. This framework should be relevant to the hazards, risks and vulnerabilities of the Territory and communities, complement YG's Our Clean Future plan, and align with the priorities and principles of Canada's EM Framework.
2	**Review and update the Yukon Government Emergency Coordination Plan (ECP).** Establish and invest in an inter-departmental process to review and update the Yukon Emergency Coordination Plan. Establish a timeframe to review and update complementary planning documents (including hazard specific and departmental plans).
3	**Integrate emergency management responsibilities into departmental mandates and ensure resources for implementation.** a. Senior Leadership (ADMs, DMs & Ministers) should clarify and embed responsibilities for emergency management within departmental mandates, and ensure sufficient resources are assigned to accommodate these responsibilities. b. Establish a process for leadership to give clear direction to departments regarding the elements of their workplans that they will modify in order to facilitate their role(s) in emergency response.
4	**Establish decision-making protocols and train senior leadership and elected officials in emergency management policies and practices.** a. Develop and deliver emergency management training and support tools for leadership (ADM/DM/Cabinet & Elected Officials) to guide them during preparedness and response efforts. b. Establish terms of reference for ADM/ DM Executive Emergency Management Committees and sub-committees.
5	**Clarify flood response policy, including issues related to public-private responsibilities, volunteer management, and recovery programs.** Address outstanding flood policy issues identified in previous AARs, as well as new issues identified through the 2021 flood response. These include: • A policy for that sets out the limitations of government-led response on private property, and clarifies the authorities of YG staff on private property and provides clear direction for private property owners on their responsibilities in flood risk mitigation, including specifications for appropriate measures. • A volunteer coordination and management policy. • Policy to enable the activation of emergency response operations and the continuation of emergency recovery activities in the absence of a declared State of Emergency. • A disaster financial assistance and recovery policy so that citizens and staff understand the options available to them.
6	**Explore options to enhance local-level planning and clarify response authorities, particularly for unincorporated communities.** a. Address critical gaps in flood and emergency planning, preparedness and governance for unincorporated communities. b. Establish a consistent and balanced process for MLAs, as the representatives of unincorporated communities, to support engagement and information sharing between citizens and responding agencies, including EMO. c. Clarify specific authorities for YG IMTS when responding in an unincorporated community, and ensure sufficient training and support is in place to carry out these authorities.

Flood Preparedness ***In alignment with Canada's EM Strategy Priorities 2 & 3: Improve understanding of disaster risk in all sectors of society, and; Increase focus on whole-of-society disaster prevention and mitigation activities***	
#	**Recommendation**
7	**Complete a Territorial Hazard Risk & Vulnerability Analysis (HRVA) to support evidence-based emergency management.** YG should resource and accelerate the completion of a Territorial HRVA or HIRA that includes community-level assessment of hazards, risks and vulnerabilities.
8	**Resource enhancements to flood modelling, mapping and forecasting to support emergency planning, response and risk reduction.** Resource the Department of Environment and Water Resources Branch to carry out flood modelling, mapping and forecasting actions identified in Our Clean Future, as well as to enable sustainable support for emergency preparedness and response.
9	**Develop a process to engage partners and departments in seasonal planning for flood hazards.** EMO should establish criteria / thresholds for the seasonal activation of the ECC and /or a flood emergency preparedness and response task force to enable the part or full-time deployment of inter-departmental staff in support of preparation and mitigation actions in advance of emergency response.
10	**Conduct seasonal table-top exercises to support flood preparedness and response.** In partnership with Environment, WFM and external agencies, EMO should lead seasonal planning tabletop exercises based on current year flood forecasts. These exercises may be used to support contingency planning, identify resources gaps, and ensure that YG departments, staff and external agencies are prepared for their roles in response and recovery.
11	**Support Municipalities and First Nation Governments to lead local-level emergency planning efforts.** a. Ensure staff and financial resources are available to support the development and update of municipal and First Nation emergency plans, as committed to in Our Clean Future. b. Explore and propose options to support emergency planning and preparedness for unincorporated communities.

Incident Management, Response & Recovery ***In alignment with Canada's EM Strategy Priorities 4 & 5: Enhance disaster response capacity and coordination and foster the development of new capabilities, and; Strengthen recovery efforts by building back better to minimize the impact of future disasters.***	
#	**Recommendation**
12	**Update the Flood Coordination Plan (FCP) and develop Tactical Response Guidelines for flood hazards.** a. YG EMO should coordinate an inter-departmental process to update and approve the Flood Coordination Plan. This plan should be approved by cabinet, shared broadly with staff across lead departments, and resourced for implementation. At a minimum, the updated FCP should establish: • Lead agency or unified command status, and a clear outline of the roles and responsibilities associated with these roles in flood preparedness, response and recovery. • An integrated operational plan for the activation of a Flood IMT by the ECC, that includes clear organizational structure, roles, responsibilities and authorities granted to each entity during response. This should outline clear structures for incorporated and unincorporated communities. b. To complement the FCP, the lead agency/unified command identified for floods should establish Tactical Response Guidelines. This should: • Establish safety and operational priorities for the activation of an IMT and the initiation of flood response activities • Include decision support and risk assessment tools • Include specifications and instructions for flood protection infrastructure • Include templates and tools to be utilized for damage assessment and monitoring • Wherever possible, link to hazard assessments, flood modelling, maps and other relevant data sources.
13	**Ensure that staff safety, mental health and wellness is prioritized at all stages of a response.** a. YG should prioritize staff mental health and wellness through the development of standard operating procedures and policies for staff responding to emergencies. b. Identify and/or train qualified flood safety officers and ensure this position is staffed from the outset of a Flood IMT activation.
14	**Continue to strengthen HR and staff reassignment processes for emergency management and incident response.** Refine and maintain the HRMT skills inventory and staff reassignment policy and procedures, and integrate this process into YG's ECP and ECC OGs.

15	**Build capacity for and resource inter-departmental response.** Expand inter-departmental training opportunities for staff including for IMT and ECC deployments.
16	**Explore options to expand YG's all-hazards tactical response capabilities.** a. Explore the feasibility of establishing a program to develop and train inter-departmental flood assessment and response teams. These 3-4 person teams would decrease the requirement of external experts, and the demand on WFM responders during fire season. This may include: • Safety training and risk assessment. • Identification of appropriate mitigation and prevention strategies. • Thresholds and criteria for decision making about when, where and how to establish flood protection systems. • Instruction in the proper construction & monitoring of dykes and berms. • Training in standard inspection forms and processes for reporting. • Training in public engagement and communication practices for work taking place on private property or high traffic public areas. b. Evaluate options for an expanded preparedness and response mandate for WFM, to include flooding and other potential hazards, based on a YG HRVA.
17	**Modernize EM technologies and practices for more efficient information sharing and analysis.** Build on the lessons and experience of Geomatics Yukon during the 2021 flood response to identify opportunities for workflow automation, improved data management and GIS capabilities for emergency preparedness and response.
18	**Plan for and develop programming to support volunteer response during future flood emergencies.** Effectively leverage volunteer capacities through the development of an emergency volunteer coordination plan and establish a volunteer coordinator role to be activated for flood emergencies. This plan should include guidelines for volunteer engagement, training, tracking, coordination, communication. It should include specific requirements related to risk mitigation, safety and liability.
19	**Develop an emergency public information and communication plan.** Leverage the materials and lessons from the 2021 Flood Season to develop public emergency communications plan for flood events. This should include: • Instructional materials and templates translated into both official languages. • Guidelines for flood briefings. • A range of options for communicating critical information with unincorporated communities. • Staff rostering plans and guidelines to ensure sufficient time off and back up for communications staff. • Clarification of levels of approval required for different types of emergency information, targeting approval at the lowest possible level for critical issues (i.e.: emergency evacuations).
20	**Streamline resource procurement and management practices and support training for staff in these roles.** a. Review, refine and establish streamline processes for issuing and tracking resource requests, and developing and managing contracts. This should include a consistent process for requests across the IMT and ECC. b. YG (WFM & EMO) should adopt the training materials and processes established during the 2021 Flood to improve contract management. This includes the practice of sending a FS staff person to the field to coordinate with Division Supervisors. c. EMO should maintain, as part of the FCP, a contact list of contractors and suppliers, and establish anticipatory contracts with critical suppliers to ensure capacity to respond to flood events.
21.	**Build recovery planning guidelines and public information into flood response plans.** a. Develop a recovery guideline to complement the ECP that supports the early initiation of recovery work that is independent of response operations. b. Develop support materials for the public for safe return to their homes and clarifying responsibilities and risks associated with flood protection infrastructure on their property.

Conclusion – Toward Flood Resilience

The successful outcomes of the 2021 flood response were made possible by the dedication and commitment of hundreds of YG, municipal and First Nation staff, alongside residents, volunteers, and expert teams from across the country. This response can be characterized as a largely reactive and emergent process – meaning that teams learned as they went and devised strategies as issues arose. The reactiveness of this response is not surprising; the impacts of COVID-19 over the previous year meant that planned flood and emergency preparedness efforts were not possible due to limited resources and the priority of the COVID response. Prior to that, the majority of recommendations from

AARs of flood events in 2007 and 2012 had not been implemented, in part because flood hazards were not perceived as a major issue. This perception is changing.

The need to establish a "culture of preparedness" was expressed by senior leaders, staff and community representatives alike. This shift is at the heart of Canada's Framework for Emergency Management, and reflects the reality that communities and governments can no longer afford to wait and respond to a growing number of climate-related hazards.

As flooding becomes more prevalent in Yukon, YG has an opportunity to adapt and build internal capacity to manage and reduce this risk. The majority of issues experienced during the 2021 floods, can be addressed through comprehensive, whole-of-government flood policies, planning and preparedness.

The Recommendations and Actions for Consideration in this report must be reviewed and evaluated by YG in the context of other pressing emergency management needs. Some of them would benefit from immediate action, while others are systemic in nature and will need to be integrated into longer-term strategic planning. A strong flood-risk governance structure and hazard risk assessment would support this work.

Photo 4: Sandbag filling stations were set up for residents and volunteers to support efforts.

In the near term, departments and communities can be engaged in preparedness and planning, reporting structures can be clarified, resources can be pre-positioned, training can be delivered and agreements put in place to ensure response capacity. Overtime, and with a better understanding of the future of flood risk, more targeted strategies can be established and greater capacity for tactical response can be developed across the Territory. And over the longer term, adaptive infrastructure investments can protect assets and reduce the cost of response.

In conjunction with ambitious climate adaptation and resilience actions established through Our Clean Future, YG is well positioned to adapt its approach to emergency management, and be a leader in proactive flood risk reduction and preparedness.

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Introduction

This Operational After Action Review & Report (AAR) documents the experiences, insights and recommendations identified by Government of Yukon (YG) staff and responders, response partners, community leaders and technical experts that were engaged in flood preparedness and response during the 2021 flood season. This input has been analyzed in the context of emergency plans and policies, response documentation, and leading emergency management practices, to develop a suite of recommendations and actions for consideration by YG to build resilience and strengthen YG's capacity to mitigate, respond and recover from future flood events.

The primary focus of this review is the operational evaluation of YG's response to the Southern Lakes Flood Emergency (SLFE). This review also includes insights from responders working for Kwanlin Dün First Nation (KDFN) and Ta'an Kwäch'än Council (TKC) that were leading response efforts on their Settlement Lands. In addition, the review includes input from Yukon communities and First Nation governments outside of the Southern Lakes region, that were impacted by flooding in 2021. This includes Little Salmon Carmacks First Nation (LSCFN) and the Village of Carmacks (VoC), Teslin Tlingit Council (TTC) and the Village of Teslin (VoT), and the City of Whitehorse (CoW).

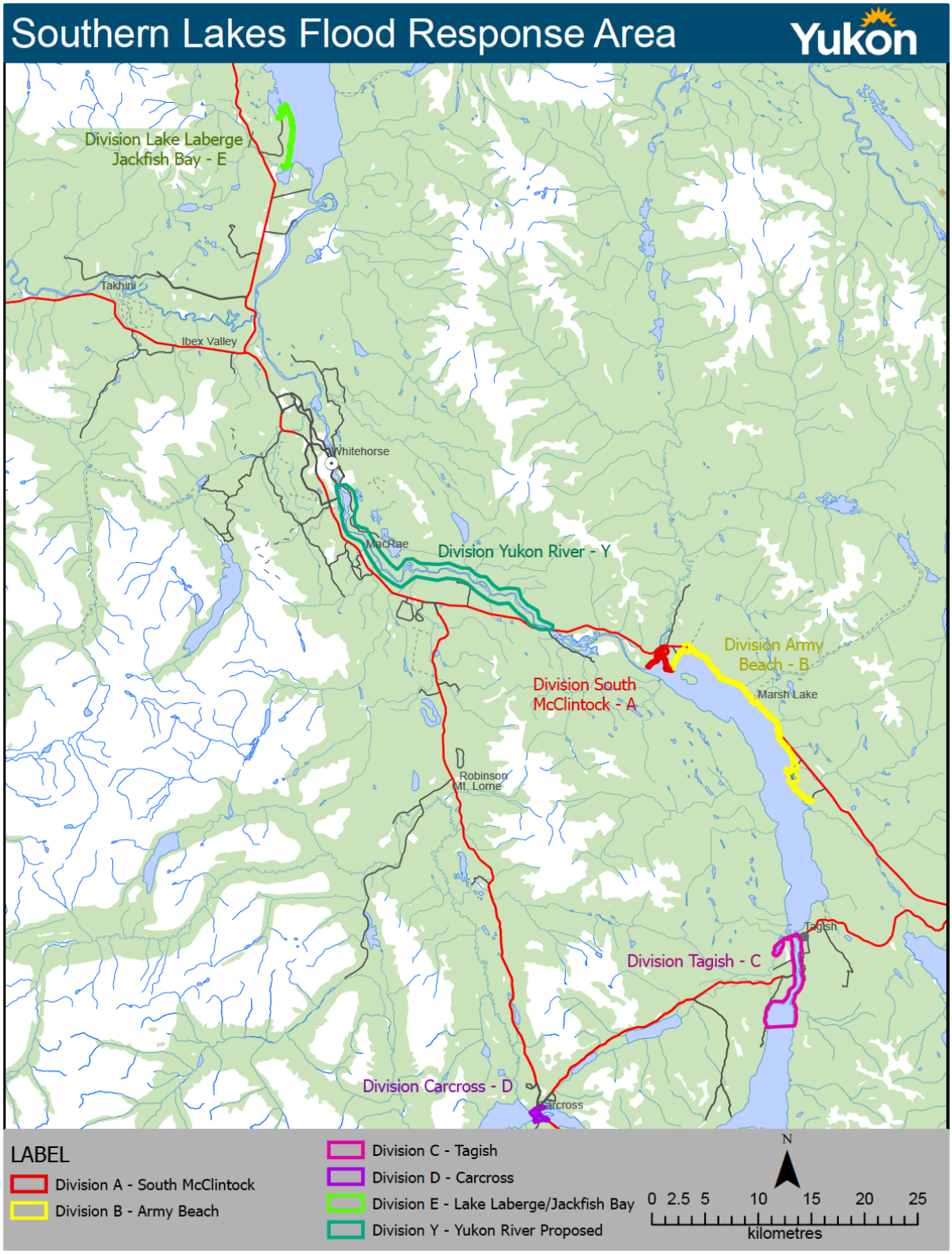
The findings, recommendations, and actions for consideration, identified in this report, present an opportunity for YG to adapt emergency management practices and policies for a changing risk landscape, one that includes the potential for more frequent and severe climate-related hazards that have not historically impacted the Territory. Some recommendations have near-term implications for flood preparedness and response, while other are systemic in nature and will take longer to evaluate, design and implement.

1 Incident Summary

Through the spring and summer of 2021, concurrent with the ongoing response to COVID-19, the Government of Yukon (YG) mounted the largest emergency response in its history to manage the impacts of flooding in the Southern Lakes Region. This response included the activation of YG's Emergency Coordination Centre (ECC), a Wildland Fire Management (WFM)-led Incident Management Team (IMT) and Incident Command Post (ICP) at the Elijah Smith School, and the deployment of hundreds of YG staff from across departments to take on a wide range of front-line, technical specialist and incident management roles. Critical support to the emergency was also provided by: IMTs and technical experts from multiple provinces, 100 members of the Canadian Armed Forces (CAF), private contractors and many local volunteers.

The Southern Lakes IMT ultimately established five divisions to protect communities, homes and infrastructure, including (See Map 1: Southern Lakes Flood Response Area):

- Division A - South McClintock
- Division B – Army Beach
- Division C – Tagish
- Division D – Carcross
- Division E – Lake Laberge/Jackfish Bay



Map 2: This map highlights the boundaries of the 5 different divisions that were centrally coordinated by the Southern Lakes Incident Management Team. (Government of Yukon, 2021)

Concurrent to the YG-led response for unincorporated communities in the Southern Lakes, First Nation governments also played a significant role in responding to flooding in the region. KDFN took responsibility for flood monitoring, mitigation and communications with citizens on their Settlement Lands, as well as providing sandbagging volunteers to support flood mitigation efforts of YG at Marsh Lake. The TKC worked collaboratively to support TKC citizens and other residents as well around Lake Laberge, the worked closely to monitor flooding at and around culturally significant sites and important wildlife areas on TKC Settlement Lands and to coordinate with WFM and ECC staff. Carcross Tagish First Nation staff were unavailable to participate in the review, however reports from YG staff indicated that CTFN mounted a highly effective response to protect the community of Carcross, and their Settlement Lands.

Photo 2 : Members of the Canadian Armed Forces were instrumental to protection efforts at Marsh Lake and Lake Laberge. Here they bolster flood protection infrastructure at Marsh Lake. (Photo courtesy of Government of Yukon)

The Southern Lakes was not the only area impacted by flooding in 2021. Prior to the establishment of an IMT & ICP for the Southern Lakes on June 24, 2021, WFM staff had been deployed to monitor and assess a series of smaller overland floods around the Territory. Some of these incidents were considered rare event and indicated for staff and residents the potential for greater flooding as the melt continued. In early June, rising waters in Carmacks and Teslin prompted requests for support from YG by the Village of Carmacks (VoC) and the Village of Teslin (VoT), in coordination with Little Salmon Carmacks First Nation (LSCFN) and Teslin Tlingit Council (TTC) respectively. The City of Whitehorse (CoW) also activated an Emergency Operations Centre (EOC) to monitor flood conditions and develop contingency plans for possible impacts within CoW municipal boundaries. Ultimately, CoW was also able to provide support to other communities experiencing flooding through the YG Emergency Coordination Centre (ECC).

Photo 5: Wildland Fire Management (WFM) responders construct a berm at Gem Haven to protect local residents and agricultural land. Historically overland flooding at Gem Haven has not been an issue and was an early indication of possible flooding to come.

Flood preparedness and response activities spanned approximately 6 months, from early April through to October. The State of Emergency (SoE) for the Southern Lakes was rescinded on September 14, and the Southern Lakes IMT stood down on Sept 30. At the time of writing, recovery activities for the Southern Lakes are ongoing. This includes but is not limited to: public engagement, work on a Disaster Financial Assistance Policy, and decisions about the removal of flood protection infrastructure that was left in place after the 2021 response.

The timeline below provides a high-level overview of preparedness and response activities from April 1 – Sept 30, inclusive of incidents in other regions of the Yukon.

Southern Lakes Flood Timeline

April 1: Yukon River Basin Snow Survey shows snowpack at 196% of normal.

April 7: ECC Director tasks staff with flood planning (during ongoing COVID activation).

April 23: First inter-departmental flood planning meeting, coordinated by EMO.

May 1: Yukon River Basin Snow Survey shows snowpack at 215% of normal.

May 7: Southern Lakes water levels begin to rise.

May 13: Gem Haven property floods; WFM & EMO staff coordinate response.

Early June: WFM staff respond to support Village of Teslin and Teslin Tlingit Council.

Early June: Village of Carmacks, Little Salmon Carmacks First Nation and WFM form Unified Command to respond to flood risk in Carmacks.

June 22: EMO requests WFM to establish an IMT to coordinate response to Southern Lakes Flooding.

June 24: WFM stands up an Incident Command Post (ICP) and initiates flood response. First sandbagging stations set up.

June 26: Yukon River flow peaks at Carmacks.

June 29: WFM IMT advises ECC that additional resources will be required to support flooding over the summer. ECC & WFM initiates requests to consultants KGS & Stantec, Federal Gov't & Provinces of MB, SK & AB.

July 4: Canadian Armed Forces deployed to support YG response

July 5-7: Evacuation Alerts & Orders issued for some residents of Marsh Lake & South McClintock.

July 9: YG declares a State of Emergency for Southern Lakes Flooding

July 10: Evacuation Order issued for Sawmill Rd residences; Evacuation Alerts in Tagish.

July 11: Evacuation Alert issued for Jackfish Bay and Duncan Lane residents (Lake Laberge); and one Carcross residence.

July 13: Evacuation Order issued for Shallow Bay residence (Lake Laberge)

July 18: Information boards installed at volunteer sandbag stations.

Aug 3: Evacuation Alert issued for Wildfire near Dawson City; WFM advises limited staff to support flooding as fire risk grows in Yukon and requests come

Aug 4: Evacuation Alerts Rescinded for Tagish, Carcross, Lake Laberge (Jackfish Bay Road, Duncan Lane), Marsh Lake.

Aug 5: IMT initiates demobilization planning; requests ECC to initiate plan for recovery transition.

Aug 7: Evacuation Alert Rescinded for Shallow Bay Road (Lake Laberge).

Aug – Sept: Ongoing monitoring and assessment of flood risk and infrastructure.

Sept 1: Seasonal WFM staff begin standing down.

Sept 2: Technical experts (Stantec) issue report recommending recovery and preparedness priorities.

Sept 14: State of Emergency Rescinded for Southern Lakes Flood Emergency (staff can no longer be reassigned; no further work on private property.)

Sept 15: ECC stands down.

Sept 30: IMT stands down; recovery work transitions to EMO.

1.1 CONTEXT

1.1.1 Responding to Dual Emergencies: COVID-19 & Flood Emergency Response

The management of flooding across the Yukon Territory coincided with the ongoing response to the COVID-19 pandemic. The relevance of this context to the flood emergency cannot be understated. Flood planning was initiated by the ECC Director in early April, in response to record snow surveys and concerns raised by communities. At this time, the ECC had already been activated for more 12 months, and staff across YG had been reassigned to support a wide range of COVID-19 response and recovery initiatives. COVID-19 initiatives that were being supported by the ECC concurrent to the initiation of flood planning included:

- the roll-out and management of vaccination programs
- ongoing enforcement of COVID-19 response measures
- communication efforts, and
- significant collaboration and coordination with communities, First Nations, and local governments across the Territory.

While the COVID-19 response is out-of-scope for this report, many participants noted the magnitude of mental health effects of the COVID-19 emergency on Yukon residents and on staff across the organization, and the added challenge of responding to a flood emergency on top of this.

A major implication of COVID-19 on emergency preparedness was that the EMO workplan and other strategic priorities related to emergency planning and preparedness were delayed. This includes actions identified in Our Clean Future, such as investment in flood risk modelling, support for updating emergency plans for Yukon First Nations and municipalities, a Disaster Financial Assistance Policy to support disaster recovery, and a planned Hazard Identification and Risk Assessment project (HIRA). All of these actions are important for future flood and emergency resilience.

Lastly, staff processes that were established during COVID-19 were utilized in some cases for flood response. As will be discussed in this report, there were positive and negative impacts of this, that influenced decision making and the preparedness and coordination of internal resources during flood response.

1.1.2 2021 Fire Season

YG has a well-established WFM program, that includes planning and preparedness throughout the year. The onboarding, training and deployment of seasonal staff starts annually in April. In addition, WFM Regional Duty Officers (RDO) from across the Territory are regularly tasked to support risk assessment and response coordination for seasonal flooding.

In 2021, above average snow pack surveys and flood hazard planning coincided with the ramp-up of WFM's activities in preparation for the 2021 fire season. As normally occurs, WFM RDOs responded to monitor a number of flood incidents at the request of EMO, however, the magnitude of flooding that ultimately happened exceeded WFM's planned capacity for flood support. The Yukon experienced what is described as an 'average' fire season in 2021, with over 90 fires burning across the territory. WFM teams are required to retain sufficient resources to ensure surge capacity for fires should they cross certain risk thresholds. As flood risk increased, the ECC requested WFM to establish an ICP in Carmacks, to deploy staff to Teslin to support sandbagging, and finally to establish an IMT for the Southern Lakes Emergency Response. These activities took place concurrent to training and deployment of staff and resources for fire response, and the ongoing management of several fires across the Territory. The task,

of preparing for and ensuring readiness to respond to fires, was complicated by the magnitude of the 2021 flood response. WFM staff were stretched to manage the scope of both flood and fire responses in 2021. This issue is discussed further in the report, along with actions for consideration.

1.2 Outcomes & Achievements

Considering the context of COVID-19 and an ongoing fire season, along with the relatively limited experience that YG staff and many communities have with flooding, the outcomes achieved during the course of this response were truly impressive. More than anything, the dedication, collaboration and ingenuity of the people – YG staff, impacted homeowners, volunteers, municipal and First Nation staff and out-of-territory response teams – was at the heart of these successes. There will always be challenges, and certainly there are many lessons that must be learned to adapt to and prevent future threats, but these must also be considered in light of the outcomes, and credit given to the people and agencies that worked together to achieve them.

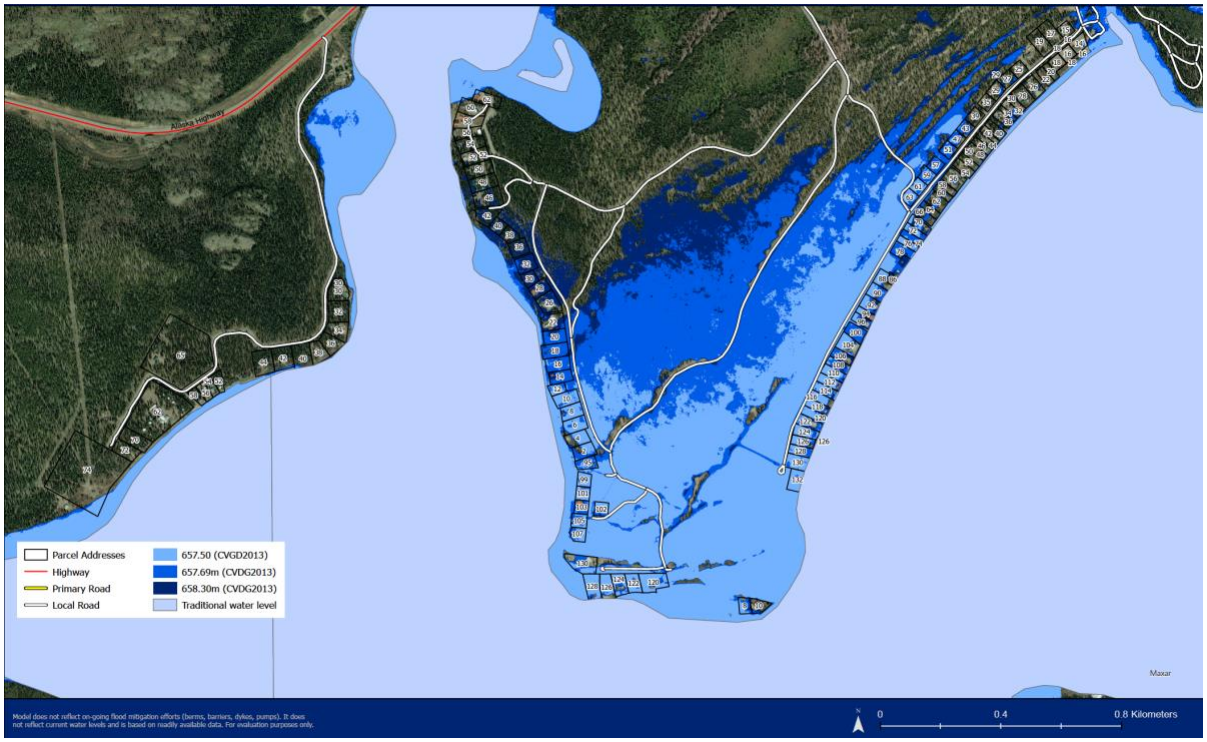
Major accomplishments include:

- With over 200 responders deployed and a large number of volunteers, there were no major safety incidents reported.
- At Marsh Lake, where water levels rose 2 meters in a 3-week period, a 5 km berm was constructed in a matter of weeks to protect over 400 homes and access routes. (see Maps 3&4)
- More than 80 YG staff were reassigned on short notice to support 70 flood-related positions over the course of the emergency.
- YG staff secured support from the CAF, and WFM enacted mutual aid agreements to engage IMTs and experts from Alberta, Saskatchewan and Manitoba.
- Search and Rescue volunteers stepped up to support door-to-door emergency evacuation alerts and orders for residents in rural and hard-to-reach places.
- Flood protection infrastructure installed by volunteers, residents and responders in Tagish and Lake Laberge minimized impacts to homes and property.

Outside the Southern Lakes Flood Emergency area, accomplishments include:

- In Carmacks joint efforts by the VoC, LSCFN and YG WFM staff prevented the catastrophic failure of the Carmacks Waste Water Treatment Plant, a key piece of critical infrastructure.
- The VoT and TTC worked proactively to minimize flood impacts for residents, while providing work opportunities for citizens and identifying opportunities for future resilience.
- In areas across the territory, volunteers supported fellow Yukoners to protect property and assets that were out-of-scope of the government response.

Map 3: Division A&B – Modelled Impact with Flood Protection in Place at South McClintock and Army Beach. This inundation model shows the extent of flooding with protection measures in place. The yellow lines denote the approximate location of flood protection infrastructure and berms installed by Division A with support from residents and volunteers. (Map and model courtesy of Government of Yukon)



Map 4: Division A&B – Modelled Impact With No Flood Protection at South McClintock & Army Beach. This model illustrates the extent of potential inundation in the absence of protection measures. Hundreds of properties were ultimately protected in this region. (Modelling & Maps courtesy of Government of Yukon)

2 After Action Review & Methodology

In Feb 2022, the Yukon Government Emergency Measures Organization (EMO) and Wildland Fire Management (WFM) contracted KM Resilience and Foresight Services to lead a 3rd party Operational After Action Review (AAR) of the 2021 flooding events. AARs that surface challenges and strengths are leading practice in emergency management, and reflect the principle of Continuous Improvement that is established in Canada's Framework for Emergency Management. Per this framework:

> Lessons learned and knowledge generated from quantitative and qualitative information should be used to develop improved practices, which are then shared widely. After emergencies or disasters occur, a systematic approach is used to learn lessons from the experience, increase effectiveness and improve emergency management practices and processes.[1]

The primary focus of the AAR is emergency planning, preparedness and response operations related to the Southern Lakes Flood Emergency. In addition, findings and experience from flooding on First Nation Settlement Lands and within municipal boundaries provides context and lessons that are important for overall flood resilience. Public engagement was out of scope for this operational AAR.

2.1 Objectives

Operational AARs are leading practice in Emergency Management. The Protective Services Branch has undertaken this AAR so that they may understand the experiences of responders, learn from challenges, and enter into a cycle of continuous improvement.

The objectives of this Operational AAR are to:

- Situate the 2021 Southern Lakes Flood Response in the context of COVID-19, other territorial flood events and the ongoing fire season.
- Evaluate underpinning policies, plans and governance structures to determine systemic factors contributing to strengths and challenges.
- Transparently capture and reflect the broad perspectives and experiences from response personnel and staff across all levels of the response.
- Undertake a critical analysis of YG preparedness and response measures in order to contribute to a process of continuous learning and improvement.
- Make recommendations including Actions for Consideration to enhance emergency management and disaster risk reduction efforts in a changing risk landscape.

The intent of this review is not to provide an overarching determination of the success or failure of the response, but to reflect the experiences and perspectives of responders so that these may be integrated into a cycle of continuous improvement. The recommendations and actions to consider in this review primarily relate to internal coordination and preparedness. The intended audience for an operational AAR are the leaders and agencies with responsibility for emergency planning and preparedness. While the public will have an interest in this review, public engagement was out-of-scope for this review, given engagement work ongoing through the recovery process. Prioritization and implementation of recommendations should be considered in light of findings from YG-led public engagement efforts.

[1] An Emergency Management Framework for Canada – Third Edition. Federal / Provincial/Territorial Ministers Responsible for Emergency Management, p 12. (May 2017) Available at: https://www.publicsafety.gc.ca/cnt/rsrcs/pblctns/2017-mrgnc-mngmnt-frmwrk/index-en.aspx.

2.2 Incident Research and Data Analysis

2.2.1 Contextual Research and Documentation Review

The AAR process was started with comprehensive analysis of available documentation from the response, as well as relevant plans and policies. This included:

- YG Emergency legislation, plans, policies and structures
- Review of previous Flood AARs (2007 & 2012)
- Review of documentation from technical experts
- Review of available ECC & IMT documentation, including official emails, flood forecasts, resource requests, daily incident action plans (IAPs), situation reports (sitreps), and daily flood briefings
- Review of public communication, including but not limited to media briefings, emergency warnings, orders and notifications

Analysis of this information provided important context for the report, and highlighted strengths and gaps with respect to the understanding of risk, preparedness, mitigation and response.

2.2.2 Staff & Stakeholder Engagement

Participant feedback was gathered through a combination of workshops, interviews and surveys that engaged more than 120 staff and stakeholders. This included:

- 40 virtual semi-structured interviews, with 1-2 people each.
- 3 distinct surveys designed to gather qualitative and quantitative data from representatives of the IMT, ECC and community leaders
- 2 in-person workshops including a Senior Leaders Inter-departmental Workshop (SLIW), and an IMT workshop.

Outputs from these engagements were recorded and analyzed to establish an understanding of the response and identify key themes. To encourage transparency and openness in the process, surveys and interviews were confidential and records have not been shared with YG. Quotes throughout are not attributed to specific individuals and are reflective of common input and perspectives from participants.

These different approaches were designed to get feedback from staff at all levels of the response. Interviews and surveys provided an option for staff to transparently provide personal perspectives and information about their experience that may not be forthcoming in a group environment, while the workshops promoted inter-departmental learning and problem solving.

2.2.3 Territorial Emergency & Flood Management Policy & Legislation

Themes and findings related to preparedness and response functions were compared to existing YG plans and policies to determine the extent to which these plans and policies were followed and/or relevant to the response. This includes:

- Yukon Civil Emergency Management Act
- Yukon Emergency Coordination Plan (2012)
- Yukon Flood Coordination Plan (2010)
- WFM Flood Management Interim Guidelines (2021)
- WFM Flood Management - Internal Policy (2014)
- WFM Mandate (2021)
- DRAFT Yukon Flood Coordination Plan (2016)

In addition to Territorial resources, federal policy and frameworks were also utilized to evaluate emergency management functions and policy. This includes:

- Canada's Emergency Management Strategy: Toward a Resilient 2030 (2019) [2]
- Canada's Emergency Management Framework[3] (Based on the UN Sendai Framework for DRR)

Collectively, these federal documents "guide Federal, Provincial & Territorial (FPT) governments, and their respective EM partners, in carrying out priorities aimed at strengthening Canada's ability to assess risks, and to prevent/mitigate, prepare for, respond to, and recover from disasters."[4]

2.2.4 Thematic Synthesis and Frameworks for Evaluation

A preliminary set of common issues, strengths and challenges were generated through qualitative analysis of interviews, surveys and workshops, and categorized by theme.

Common themes and issues were analyzed through multiple lenses including: the conventional Emergency Management Cycle, the Incident Command System (ICS), and Canada's Framework for Emergency Management.

The Operational AAR sets out a series of Findings, Strengths and Areas for Improvement under the following themes:

1. Emergency Plans, Policy & Governance
2. 2021 Flood Preparedness
3. 2021 Incident Management, Response & Recovery

2.2.5 Canada's Emergency Management Framework

Over the last 2 decades, emergency management has undergone a transformation from a primary focus on response, to one that encompasses disaster risk reduction (DRR) and resilience more broadly. This transition is reflected through internationally leading practice and the broad adoption of the United Nations Sendai Framework for Disaster Risk Reduction[5] (Sendai Framework). According to the UN: "DRR strategies and policies define goals and objectives across different timescales and with concrete targets, indicators and time frames. In line with the Sendai Framework for DRR, these should be aimed at preventing the creation of disaster risk, the reduction of existing risk, and the strengthening of economic, social, health and environmental resilience."[6]

The Sendai Framework is the global standard for emergency management and resilience, and was adopted by the Government of Canada (GC) in 2015. It is the foundation for *Canada's Emergency Management Framework* and the *Emergency Management Strategy for Canada: Toward a Resilient 2030 (Canada's EM Strategy).*

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[2] Emergency Management Strategy for Canada: Toward a Resilient 2030 (2019). https://www.publicsafety.gc.ca/cnt/rsrcs/pblctns/mrgncy-mngmnt-strtgy/index-en.aspx. Accessed Mar 2022

[3] EM Framework for Canada.

[4] EM Strategy for Canada.

[5] Sendai Framework for Disaster Risk Reduction 2015 – 2030. UN Office for Disaster Risk Reduction. Available at: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 ; Accessed Jan 7, 2022.

[6] Disaster Risk Reduction, Terminology. UNDRR. Available at: https://www.undrr.org/terminology/disaster-risk-reduction; Accessed Jan 7, 2022.

The Priorities of Canada's EM Strategy are:

a. Enhance whole-of-society collaboration and governance to strengthen resilience
b. Improve understanding of disaster risk in all sectors of society
c. Increase focus on whole-of-society disaster prevention and mitigation activities
d. Enhance disaster response capacity and coordination and foster the development of new capabilities
e. Strengthen recovery efforts by building back better to minimize the impact of future disasters.

These priorities were considered in developing Recommendations and Actions for Consideration. This approach is intended to support YG in aligning action with Canada's Framework for Emergency Management in the future.

2.2.6 Limitations

As in all such reports, inevitable limitations exist. These include:

High focus on challenges over strengths

As a critical assessment process, the intent of this AAR is to elevate Findings, Strengths and Areas for Improvement. Although participants were asked to discuss or record both strengths and challenges, in the period of time they were given, many focused more directly on challenges and recommendations for improvement. This is important and represents a transparent process in which participants felt comfortable sharing these challenges. It does, however, mean that the significant strengths and positive aspects of the response are less prevalent in the report. In closing interviews, participants would often reflect that there were 'many strengths that they didn't have time to discuss,' and that they were highlighting the issues they felt needed to be prioritized for improvement.

Timing

Debriefs and AARs are best conducted during, and immediately following, the response period; This ensures that strengths and challenges are captured when they are fresh, and allows for recommendations to be integrated into recovery and preparedness plans. Unfortunately, due in part to resource constraints and staff turnover, this AAR process did not get started until several months after the response ended. Many participants commented that they could no longer remember elements of the response, and that they supported the process but wished it had been done sooner.

Data and Documentation Availability

EMO and WFM staff provided a significant amount of incident documentation, including IMT Incident Action Plans (IAP), evacuation-related communications, and daily briefings. However there were some gaps in data and documentation, that made it difficult to piece together some aspects of the response and response outcomes. Data and documentation not available for this report included:

- Total staff deployed or reassigned from each department
- Final financial assessment of flood response and recovery efforts (this is ongoing)
- Damage assessment reports
- Evaluation of financial impacts to residents or businesses
- Total number of volunteers

Availability of Staff and Stakeholders to Participate

While there was excellent response from invitees to the process, some staff and stakeholders were unable to participate. One workshop (the IMT workshop) was delayed due to COVID, and some attendees were unable to join the rescheduled date. Representatives from the Village of Carmacks were unavailable for an interview, but did provide a written response to questions. Representatives from Carcross Tagish First Nation were unavailable to participate in the process. Yukon Energy did participate in the process however the staff lead for emergency operations was unavailable, leaving an incomplete picture of their response efforts. YEC worked closely with YG throughout the flood event, however specifics on their efforts have not been captured in this review.

Public Engagement was Out-of-Scope

Given the operational focus of the review and the intention of YG to connect with the public through recovery planning processes, public engagement was out-of-scope for this report. Some information about public and property owner perspective was gained through the review of media reports and interviews with front-line responders, Communications and Community Affairs staff. This approach is not unusual for operational AARs, but it does mean that there will inevitably be gaps in reporting that the public, and particularly those impacted by flooding, will note. Actions for Consideration from this report should be considered in the context of public feedback received by YG, and future public input on flood preparedness, response and resilience.

Thematic Analysis: Strengths & Areas for Improvement

The following section breaks down Strengths and Areas for Improvement identified across 15 themes organized into 3 categories. These Strengths and Areas for Improvement reflect the comments, perspectives and experiences of AAR participants, and at times represent conflicting points of view. Quotes and statistics from interviews, surveys and workshops are used throughout to provide context for the assessment of strengths and weaknesses. Quotes are verbatim, but not attributed to specific individuals, and, where used, represent perspectives that were expressed by multiple contributors.

Category	Themes
Emergency Plans, Policy & Governance	• Status and Application of Flood and Emergency Plans and Policies • Departmental Mandates, Roles & Responsibilities for Flood and Emergency Management • Defining & Supporting the Emergency Roles and Responsibilities of Executive, Ministers and Elected Officials EM • Governance and Authorities for Municipalities and Unincorporated Communities
Flood Preparedness	• Understanding Flood Risk • Flood Preparedness & Training • Community Emergency Preparedness
Incident Management, Response & Recovery	• Coordination between the IMT and ECC • Planning, Documentation and Internal Communications • Engagement of Out-of-Territory IMTs and Experts • Human Resources and Staff Wellbeing • Volunteer Contributions and Coordination • Safety • Procurement, Management & Allocation of Flood Response Resources • Public Communications & Engagement • Transition to Recovery

3 Emergency Plans, Policy & Governance

The first priority of Canada's Emergency Management Strategy is to "Enhance whole-of-society collaboration and governance to strengthen resilience." While response is often the focus of emergency management, it is plans, policies and governance structures that set the foundation for successful preparedness, response, recovery and resilience.

This section summarizes the plans, policy and governance structures set up to guide emergency management and flood hazard response, and synthesizes findings related to strengths and areas for improvement identified by AAR participants.

This section addresses issues and opportunities related to the following:

- Status of YG flood and emergency plans and policy
- Departmental mandates, roles & responsibilities

- The role of executive leadership and elected officials in flood & emergency management
- Governance and authority specific to unincorporated communities and municipalities

3.1 Theme: Status of YG Flood and Emergency Plans and Policies

A review of documentation identified a number of emergency and flood plans and policies intended to guide preparedness and response efforts. These include:

1. 2002 Civil Emergency Management Act (CEMA): Sets out the legislative responsibilities of YG and Local Authorities in establishing emergency plans and issuing State of Emergency Declarations.
2. 2011 YG Emergency Coordination Plan (ECP): Developed in 2006 and last updated in 2011, the YG ECP is intended to set out the roles and responsibilities of YG departments and response partners, in the coordination of emergency management activities, including the cycle of preparedness, mitigation, response and recovery. The document is not a tactical plan. It provides coordination guidance, best practice, and sets out expectations of departments to develop their own hazard risk assessments, emergency and business continuity plans under the umbrella of the ECP.
3. 2010 YG Flood Coordination Plan (FCP): This high-level coordination plan sets out the roles and responsibilities of YG departments, individuals, municipalities, self-governing First Nations and other response partners in flood preparedness, mitigation, response and recovery. This is not a tactical plan.
4. Draft 2016 Yukon Flood Coordination Plan: This document, in draft since 2016, sets out substantially different roles and responsibilities than the 2010 plan. The plan demonstrates the intent to implement some recommendations from the 2012 Flood After Action Review, however it was not finalized.
5. 2018 Emergency Coordination Center Operating Guidelines (ECC OG): Describes the role of the ECC in supporting Territorial Coordination of an emergency. This document includes an activation flow chart, and describes the intended functions and relationship between the Incident Site, Incident Support, Territorial Coordination and Strategic Coordination.
6. 2014 WFM Flood Policy: This policy sets out a role for WFM in flood preparedness and response, in coordination with other YG department including: EMO, Environment and Highways and Public Works. This policy specifies that flood-specific training and resources are required to ensure WFM is prepared to undertake this responsibility.
7. 2021 WFM Interim Flood Management Guideline: Developed based on a draft document from 2017, this document was drafted in the absence of a final flood plan to provide high-level emergency guidance for WFM staff responding to the 2021 Floods.

A key task within the scope of this AAR was to confirm how and if plans and policies were utilized during response, and their fit-for-purpose in addressing future risks and hazards. With the exception of the WFM Interim Flood Management Guideline, the review found that these documents were generally not relied on during the response for a number of reasons discussed below.

The table below summarizes the key challenges and strengths emerging from AAR participant contributions on the topic of Emergency Plans and Policies. They are discussed in greater detail in the following section.

3.1.1 Findings, Strengths and Areas for Improvement

Theme: Status and Application of Emergency Plans and Policies	
Areas for Improvement	**Strengths to Build On**
• Yukon would benefit from an overarching framework for whole-of-government emergency management. • Existing emergency plans and policies need to be aligned and updated. • Work is required to familiarize staff and leadership with emergency plans, policies and procedures. • The FCP does not provide clear direction on key policy issues that arose in previous incidents and in the 2021 floods.	• There is an opportunity to build on experience from COVID-19, and document and formalize successful emergent processes from flooding and COVID-19 response. • There is evidence of essential inter-agency planning work underway prior to the COVID-19 response.

Area for Improvement: Yukon would benefit from an overarching framework for whole-of-government emergency management

Inconsistencies across the above documents suggest that YG would benefit from an overarching framework for emergency management and disaster risk reduction. Many of the subsequent challenges flow from this lack of a coherent framework and strategic plan for EMO and Yukon-wide EM efforts. In recent years leading jurisdictions around the world and in Canada, including the Provinces of BC and Quebec, have adopted the Sendai Framework to anchor their work and enhance whole-of-government and whole-of-society approaches to EM and DRR.

Area for Improvement: Existing emergency plans and policies require updating and review for consistency.

As reflected by a number of AAR participants, existing emergency plans and policies include "conflicting roles and responsibilities and governance structures." A number of draft plans were in development when the COVID-19 Emergency was declared, including flood plans that were substantially different from previous versions. Because EMO staff were fully assigned to COVID-19, many of the productive negotiations around flood planning, response, and roles and responsibilities were ended, leaving different interpretations of which departments were responsible for flood preparedness and response, and how all-of-government efforts would be coordinated. In some cases, departmental flood-policies had been signed off, but roles and responsibilities within those policies had not been resourced for implementation or integrated into staff workplans.

At the outset of the response, this led to gaps in coordination, confusion over authorities and uncertainty around roles and responsibilities that were particularly challenging for staff tasked with establishing operational plans.

Several AAR participants confirmed the comment that "different playbooks were being used." A number provided examples where a lack of consistency in plans resulted in new structures and policies being developed on-the-fly to address emerging issues. Participants noted that having these plans and policies in place prior to response may have decreased the need to seek policy direction from above, and clarified authorities and responsibilities to allow for a more cohesive response from the outset.

Area for Improvement: Work is required to familiarize staff and leadership with emergency plans, policies and procedures.

As indicated in Figures 1 and 2, the large majority of interviewees and survey respondents indicated that they were not familiar with YG's emergency management plans prior to their engagement in flood response operations. Similarly, very few departments identified that they had emergency plans relevant to flooding or all-hazards, or that they were familiar with the roles outlined for them in the YG ECP or FCP.

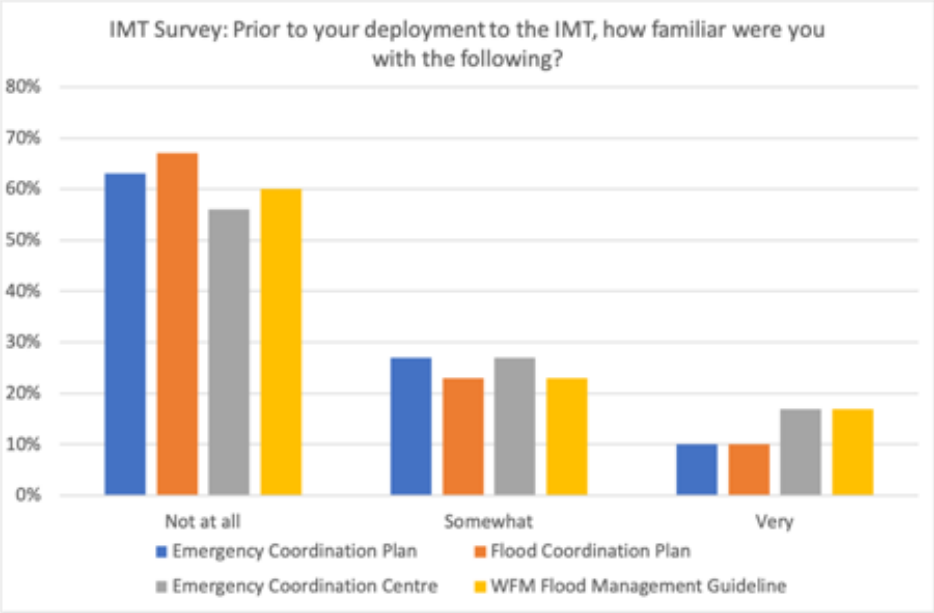

Figure 1: IMT Survey respondent familiarity with YG Flood and Emergency Plans

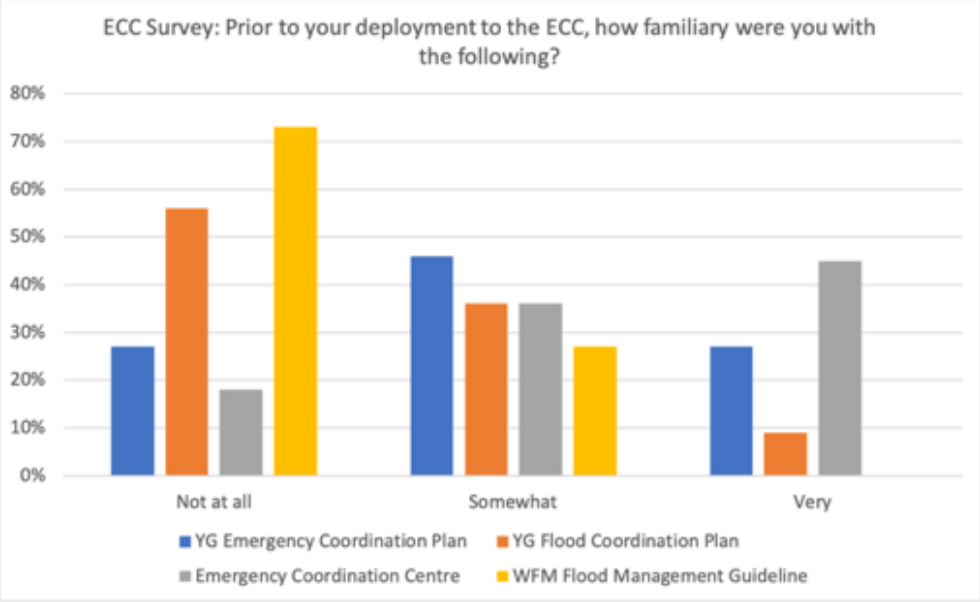

Figure 2: ECC survey respondent familiarity with YG Flood and Emergency Plans.

There was a strong feeling among the majority of AAR participants, that the lack of familiarity of emergency plans and policies extended to senior leaders in YG, including elected officials from all parties. This sentiment was also reflected in findings and recommendations from AARs of flood emergencies from 2007 and 2012, both of which recommended enhanced training and engagement around emergency plans at all levels. Continuous training and familiarity with emergency plans is a common challenge among government organizations, and one that requires dedicated resources and commitment to address.

Area for Improvement: The Flood Coordination Plan (FCP) should clarify policy issues related to flooding, many of which have been identified in previous AARs.

The following assessment of the 2007 Southern Lakes Response Operational Debrief describes the need for specific flood policies:

> *Policies need to be created to guide decision making in emergency response especially with regard to the protection of private property. The decisions and response that benefited the Southern Lakes property owners may not be sustainable at other incidents in the future. Establishment of policy with regard to private property will enable operational managers to respond more immediately to enquiries and to escalate issues beyond their level of authority. (p.5)*

The same sentiment was reflected from many AAR participants in regards to the 2021 Southern Lakes Flood Emergency. Specifically, there was confusion over the direction to protect the community and what that meant when it came to installing flood protection infrastructure on private property. This was a significant concern for IMT staff in the weeks before the State of Emergency was declared, as some residents challenged the authority of staff to install berms on their property. In other cases, private residents were supportive of efforts, but requested or expected additional support. Responders noted that there was "a lack of clarity about where private homeowner responsibility ended and government responsibility began." Staff working to build berms were not sure how to respond when asked by private citizens to protect other assets on their properties, and to provide public resources for private use. This became a challenge for responders on the ground who didn't have the authority to make those decisions and were unsure of the implications of helping some private residents and not others. There was also concern about the sustainability of that approach if flooding got worse or occurred elsewhere. Clarifying the objectives and limits of government-led flood protection efforts, including how decisions are being made would be helpful for both responders and property owners. In the future, larger or more widespread flood events may exceed the response capabilities of YG and response partners. Being prepared with policy and tools to make trade-off decisions in worst-case scenarios will be important. There are many lessons to be learned from other jurisdictions in this regard, including from recent major flooding in BC and Manitoba.

Strength: There is an opportunity to build on the experience from COVID-19, and document and formalize successful emergent processes from flooding and COVID-19 response

It was strongly felt that staff turnover, combined with limited capacity for planning during COVID-19 response efforts, contributed to the decline in familiarity with all-hazard emergency plans and policies.

The notable exception to this is the number of staff from across government that worked in the ECC throughout the COVID-19 response, gaining valuable experience in emergency management. As articulated by one interviewee "Through COVID-19, EMO, supported by the HRMT, was able to develop a cadre of staff that were familiar with ECC processes, and that will be available to support future

emergencies." Staff that worked across both COVID-19 and the flood hazard bring deep awareness of the challenges of managing multiple emergencies, and were able to identify several policy, planning and process improvements.

Further, COVID-19 led to the emergence of new practices and tools, such as the HRMT staff skills inventory and staff reassignment process, that were also applied to flood response. Processes like this should be refined, formalized and integrated into future emergency preparedness and response plans and policies.

Lastly, COVID-19 forced many departments to update their business continuity plans (BCP). While all-hazard departmental emergency plans are lacking, departments have a strong foundation to start from by leveraging their BCP development towards addressing other key risks and hazards.

Strength: There is evidence of essential inter-agency planning work underway prior to the COVID-19 response

The above challenges must be considered in the context of the impacts of COVID-19. In discussion with WFM and EMO staff it is clear that there was an intent to update flood coordination plans, the ECC OG, and to update the YG ECP starting in 2019. As noted by one WFM Manager: "We were involved in productive flood meetings 2 years ago with EMO. We were getting to a good place."

According to EMO staff, efforts were also underway in early 2020 to refine and establish formal roles for executives and elected leaders across all phases of emergency management. When COVID-19 struck, nearly all of these initiatives were paused, however, documentation exists as a strong starting point. Combined with the lessons learned from the 2021 floods and the COVID-19 response, YG is well positioned to revive these efforts.

3.2 Theme: Departmental Mandates, Roles & Responsibilities for Flood and Emergency Management

The coordinated development of whole-of-government emergency plans and policies, with clearly defined departmental and agency roles and responsibilities, facilitate effective emergency preparedness, response, recovery and resilience. This approach is reflected in the spirit and intent of the YG ECP and FCP. While the ECP and FCP were not widely referenced for this event, the nature of the 2021 flood response, and the deployment of staff with broad expertise from across government, demonstrates the need and value of a whole-of-government approach.

The following section highlights the strengths and challenges as identified by AAR participants and through contextual research. These findings are summarized in the table below and discussed in greater detail in the next section.

3.2.1 Findings, Strengths and Areas for Improvement

Theme: Departmental Mandates, Roles & Responsibilities for Flood and Emergency Management	
Areas for Improvement	**Strengths to Build On**
• Staff and management identified that most departments do not have a specific mandate to support emergency management, including flooding. • EMO mandate and responsibilities far exceed staff capacity to fulfill them. • Department managers and directors did not feel they could reprioritize workplans or access contingency funding to support their contributions to flood response.	• There is broad commitment and interest in proactive engagement in emergency management, and clarifying mandates for departments. • There is good precedence for whole-of-government and inter-agency emergency management processes within YG.

Area for Improvement: Staff and management identified that most departments do not have a specific mandate to support emergency management, including flooding.

There is a strong sense among AAR participants that flood and emergency preparedness is a political priority. However, specific direction and resources required to contribute to inter-departmental preparedness and response efforts have not been reflected in departmental mandates or budgets. In 2021 this influenced flood emergency preparedness and response in a number of ways.

- Many WFM staff felt unprepared to take on the 'Lead Agency' role for the Southern Lakes Flood Emergency given their limited training and expertise in flood response.
- Departments are not resourced to support critical emergency preparedness and planning efforts.
- Departments feel that contributing to emergency management processes is 'optional', or must be weighed against the pressures of their existing workplans and mandates.
- When departments are not engaged, important expertise from across government is not integrated into plans, risk assessments, response or recovery decisions.

As articulated by one interviewee in the context of establishing Lead Agency status for different hazards, "the assignment of roles and responsibilities in a planning document is not sufficient. A Lead Agency role is important and needs to be enshrined in the strongest possible means, which is legislation…at that point, departments can evaluate resource needs and make a management board submission to ensure that YG is capable of fulfilling that role."

From a flood response perspective, WFM was assigned the role of Lead Agency, but there was strong disagreement over whether or not this was the best use of departmental resources, especially at the height of fire season. It was noted by several WFM staff that flood preparedness, training, response or recovery is not identified within their workplans, and that they felt unprepared to take on this role. The implication of this is that WFM was called on to lead a major flood response in the absence of the level of flood-specific tactical plans, training, resources, or technical knowledge that they would apply to wildland fire-fighting. Staff, and especially those in the YDO role, felt they were under pressure to "choose between maintaining readiness for fire response, which is our primary mandate, or assigning trained firefighters to flood protection efforts." Experts and staff alike noted that there are a number of tasks related to flood response that require specific training, but that could be taken on by staff other than fire fighters.

Many directors and managers advised that they continue to field questions about flooding and flood preparedness that they are not mandated or resourced to engage in, but feel an obligation to support given the high level of concern over 2022 floods and the issues that arose in 2021. In the words of one participant, “It’s side-of-desk, but it’s never ending.” In the words of another, “Right now it’s 40% of my work, but it’s nowhere on my workplan.”

At the SLIW there was consensus around the need and desire for ADMs, DMs and Ministers to clarify the responsibility of departments and branches in emergency preparedness, so that they may be integrated into their mandates and adequately resourced. Staff also felt there should be a process linked to the decision to implement emergency response plans or declare a state of emergency, that requires leadership to give direction on which governmental services or priorities may be paused or reprioritized in order to enable the flexibility to support emergency response.

Staff felt that if this direction came from above, they would be in a better position to contribute to the overall governance of emergency management efforts, including planning, policy development and response, and allocate resources accordingly. The preference from AAR participants was that they be resourced to support active participation in preparedness, so that they could prevent the burnout and burden that comes from reactive engagement in response.

Area for Improvement: EMO’s mandate and responsibilities far exceed staff capacity to fulfill them.

As a small team of 4 staff, EMO has responsibility for the coordination and maintenance of YG emergency plans and policies, as well as providing support and guidance to incorporated and unincorporated communities. A consistent challenge for EM agencies in general is the requirement to proactively prepare, while also being available to coordinate response. Strategic planning and policy development is not possible for this team when they are tasked with long duration response and recovery efforts. COVID-19 has had a significant impact on the ability for EMO to lead planning, training and preparedness work. In addition, staff turnover within the department, along with a series of short-term casual contracts, further restricts the ability of EMO to advance key strategic priorities, such as planning support for communities, inter-departmental training, conducting HIRAs, and updating the YG ECP.

Area for Improvement: Department managers and directors did not feel they could reprioritize workplans or access contingency funding to support their contributions to flood response.

A significant challenge identified by staff and leadership was need for a mechanism to reprioritize workplans or access contingency funds to sustain workloads when staff were deployed to the flood. Many groups reported that, despite significant contributions to both COVID and flooding, they did not have relief from other responsibilities, and did not feel they had the authority to reprioritize or adapt their workplans. The implications of this include high levels of staff burnout, and added pressure on stretched resources.

As an example, Geomatics Yukon, which, according to an IMT IC provided “critical mapping capabilities and workflow automation support,” operates on a cost-recovery basis. This small team is not identified in any emergency plans, but contributed up to 3 of its 8 staff to the response over a period of 8 weeks, at the expense of completing work for other government clients. The team was unable to recover costs from the event and has been advised by their finance leads that they must have an agreement in place in the future to recover costs; otherwise, they will not have a budget to support this level of engagement.

Similarly, the Water Resources Branch (WRB), with 1 full time and 1 temporary hydrologist, has an essential role in Territory-wide flood monitoring and forecasting. The team worked 70 days straight to provide daily updates essential to the Southern Lakes response, while also trying to maintain essential flood monitoring services for the rest of the Territory.

As reflected by HR staff responsible for staff reassignment, there was inconsistency in whether directors would 'let their staff go' to support the response, because of their existing workload. Many felt that in the absence of direction from the executive to re-prioritize workplans, it is difficult to make the decision to allow staff to participate in an emergency response. Staff that did get deployed had different experiences depending on what department they came from. Some reported working weekends and evenings to keep up with their substantive positions, while others indicated that they were able to focus exclusively on response.

Strength: There is broad commitment and interest in proactive engagement in emergency management, and clarifying mandates for departments.

In hearing from senior leaders, it was clear that many departments have a vested interest in being proactively engaged in flood risk reduction and emergency management, and that YG has a wealth of knowledge within its departments to guide effective flood planning and policy. During the SLIW staff identified many areas where they have authority, technical skills, knowledge and experience to enhance flood response. They also identified a number of risks and concerns specific to the impacts of flooding on their services, clients and infrastructure. This information has been documented and provided to EMO to support future planning.

Strength: There is good precedence for whole-of-government and inter-agency emergency management processes within YG.

A small number of AAR participants that responded during the 2007 and 2012 floods, indicated that the now defunct Emergency Coordination Group (ECG) had been a venue for senior departmental leaders and response agency partners to coordinate and collaborate on all-of-government emergency management priorities. This group of leaders, appointed by Deputy Ministers, was intended to have the authority to direct and support a wide range of EM activities as set out in the ECG Terms of Reference[7]. It is unclear why momentum was lost with the ECG; however, this approach could be revisited in the future.

3.3 Theme: Defining & Supporting Roles and Responsibilities of Executive, Ministers and Elected Officials

Senior leadership, including executive administrators, Cabinet and MLAs have an essential role to play during emergencies and in the ICS structure. This includes making critical policy decisions that may arise and that have not been planned for, supporting staff and responders as they make risk-based decisions to effectively manage the incident and allocate limited resources, and leveraging their public roles to support consistent messaging. Throughout the COVID-19 response new processes emerged to brief leadership, and seek and receive policy direction; these processes were relied on in some cases for flood response. The subsequent section discusses the strengths and challenges identified in the table below in greater detail.

[7] YG ECG, Appendix G: Emergency Coordination Group (ECG) Standing Committee Terms of Reference (p 79)

3.3.1 Findings, Strengths and Areas for Improvement

Theme: Defining & Supporting the Emergency Roles and Responsibilities of Executive, Ministers and Elected Officials	
Areas for Improvement	**Strengths to Build On**
• There is a need to establish clear reporting and briefing structures for senior leaders and elected officials to ensure they are well informed and able to make urgent flood-policy decisions in a consistent and efficient way. • At times senior leadership and elected officials provided direction to responders outside of the ICS structure.	• Elected officials have strong local knowledge and connections that supported information gathering, outreach and volunteerism.

Area for Improvement: There is a need to establish clear reporting and briefing structures for senior leaders and elected officials to ensure they are well informed and able to address urgent flood-policy decisions in a consistent and efficient way.

Interviews and response documentation revealed inconsistencies in the structures used to brief and get direction from senior leadership. In part, this was complicated because the same structures utilized for COVID-19 were expanded to include flood policy issues. The ECP, ECC OG and FCP each set out different models for communicating and receiving strategic and policy direction from senior leadership. None of these models were consistently employed during the flood response.

According to one senior leader, “The mechanisms that we used for the flood to keep senior management involved and aware were the ADM and DM [emergency management] groups, but those structures were briefing venues only…policy decisions would be addressed on a one-to-one basis outside this group.” Generally, this meant that the Director of WFM or EMO would elevate policy issues via the ADM. Where the ADM of Protective Services was authorized to make these decisions, this one-to-one structure was effective. In situations where consultation was required with other departmental leaders, this added an extra layer of bureaucracy that at times delayed the process. Many of these challenges could be eliminated in the future by the proactive completion of policies and plans, approved by leadership, that would limit the requirement for senior decision makers to negotiate policy during response, and clarify the process for inter-departmental decision making when policy direction is required.

From the perspective of IMT Ics, limited decision criteria or established flood response policies meant that there were often questions that required strategic or policy direction. As explained by one IC “policy questions would get elevated to the ECC for consideration by senior leadership, but then depending on who was there, they would get pushed back down. So, we would take the question up through the YDO to the WFM Director instead, to go to the ADM for a response. We felt that the role of the ECC was to elevate these issues, but there was confusion around this process.” Examples of policy questions included those related to YG staff authority to access private property in the absence of a State of Emergency, prioritization of protection of private and public resources, and decision criteria for issuing evacuation notices.

AAR participants also identified instances when policy direction coming from Cabinet would be shared with the ECC, but there would be a delay in getting the information back down the chain to the IMT.

Staff identified that structural bottlenecks at the level of the EMO Director and the YDO were in part responsible for these challenges, as both roles were responsible for considerable flow of essential information. In the case of the EMO Director, this role was concurrently fielding information about flooding and COVID-19, while the YDO was fielding information about wildfires and flooding.

Many of these issues could be alleviated through formalized flood management and response policies and decision support tools. There is also an opportunity to streamline reporting processes for unified and effective communication and decision-making around urgent policy issues.

Area for Improvement: At times senior leadership and elected officials provided direction outside of the ICS structure.

YG Incident Management Teams (IMTs) utilize the globally recognized Incident Command System (ICS). ICS provides clear reporting structures, and supports effective decision making, communications and the integration of technical expertise. ICS identifies points of contact for specific functions, and is intended to ensure that all staff are working towards the same objectives in situations that are fast-moving and complex. As part of ICS, Incident Action Plans (IAPs) are developed for each operational period. IAPs establish response objectives, and guide the allocation of resources based on risk assessment and operational priorities.

Staff at the IMT identified a number of instances when senior leadership and elected officials issued directions to staff on the ground that conflicted with the operational objectives set out in IAPs. This is partially due to the absence of clear flood plans and communication and reporting processes for leadership.

This was a challenge for responders who were operating based on direction from the Incident Action Plan. As articulated by one interviewee:

> "When this reach around happens, and direction is given outside that command structure, the resources are diverted or the plan is diverted, and the plan is not completed."

In part, this was happening because volunteers and impacted residents were calling senior government staff and MLAs from all parties to escalate issues they were experiencing on the ground. In some cases, volunteers arrived to sandbagging sites where there were no supplies, and in other cases, residents wanted clarity on if and how their property would be protected. In the absence of clear communications structures and flood policies, leadership sought immediate resolution to urgent issues by reaching out to staff on the ground. The outcome was often confusion about where resources were being directed and why and how they were being prioritized.

In the earlier phases of the response, several ECC staff reported that elected officials and senior leaders would call ECC staff directly to get information, or to make recommendations about tasks they should prioritize. This approach, while well-meaning, bypassed the chain-of-command and distracted from operational priorities of the ECC staff team. As noted by an ECC staff person:

> "This caused a lot of stress. Often you are the only one in the role, and you are trying to get an evacuation alert out, and there's a public update that starts at 2, and you have COVID information to handle, and then you get a call from somebody at the executive level telling you what to post on social media. It's really hard to say no, but you can't do it all and there is no back up."

Clarity in the roles and responsibilities of senior management and elected officials is essential for effective response, as is the identification of decision-making authorities during emergencies. Improved coordination and briefing structures, combined with clear policy about flood response priorities are also essential to ensure that senior leadership has the information they need to understand and support response decisions. The majority of these issues could be addressed through a comprehensive flood plan, clarification of policy and decision criteria and formal engagement of leadership through the ICS structure. Exercising and training these plans across a variety of scenarios is essential in order to ensure that people are comfortable with their roles, and with the policies and priorities set out in plans. The participation of leadership in training and exercising is important.

Strength: Elected officials have strong local knowledge and connections that supported information gathering, outreach and volunteerism.

Throughout the response, it is clear that leaders across the Territory were acting with the best interest of Yukoners in mind, even when their approach posed challenges for staff. Elected officials were highly effective at connecting with the public to engage volunteers, and in advocating for support from federal resources. Many rolled up their sleeves and went out to volunteer on the ground, and had a strong understanding of local conditions and concerns. The knowledge and connections that MLAs have with their communities can provide essential intel and resources to support emergency planning, preparedness, response and recovery. Ensuring that mechanisms are in place to enable MLAs, especially those representing Yukon's many unincorporated communities, to bring this forward, could contribute to enhanced overall resilience.

3.4 Theme: EM Governance and Authorities for Municipalities and Unincorporated Communities

CEMA sets out the responsibilities of municipalities to establish emergency plans and the right to declare a local state of emergency. Unincorporated communities rely on YG to take on local authority responsibilities during an emergency.

The 2011 YG ECP states that the Department of Community Services is responsible for "acting as the local government during emergencies for unincorporated communities." (p 39)

According to the 2010 Flood Coordination Plan:

> *In the case of incorporated communities or First Nations with Self-Governing Agreements, the municipality has clear responsibilities under both the Municipal Act and the Civil Emergency Measures Act to implement emergency plans and response capabilities; supported by the Yukon Government, should the emergency exceed local capacity. For unincorporated communities, the Wildland Fire Management Branch of the Department of Community Services assumes an incident response and local control authority role, again supported by the wider resources of the Yukon Government, coordinated through Yukon EMO. (p14)*

The following graphic from the 2010 FCP depicts different intended organizational structures for flood response in incorporated and unincorporated communities.

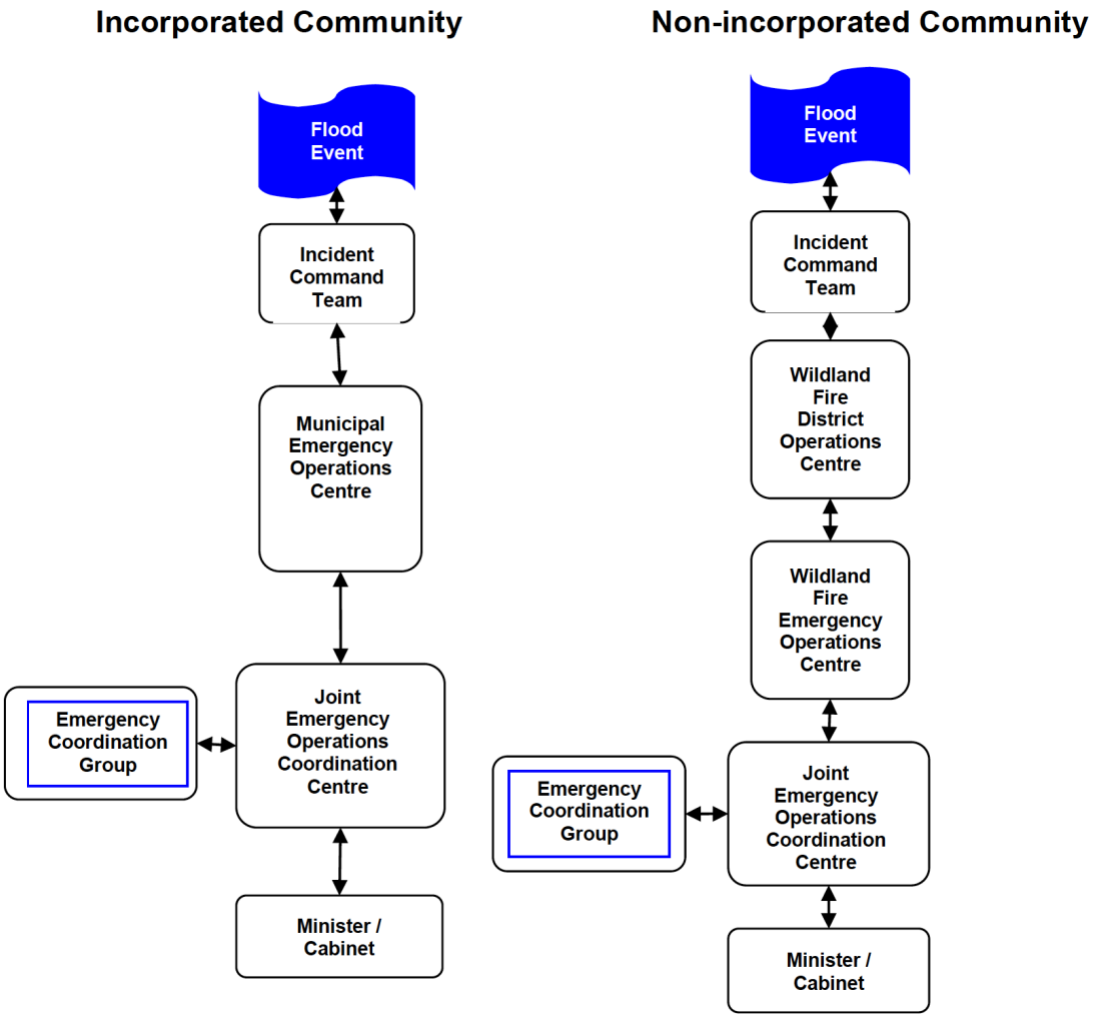

Figure 3: Command structures as set out in the FCP for incorporated and unincorporated communities. Note that the JEOCC and ECG are both defunct structures. The JEOCC has been replaced by the ECC, and the director-level ECG has not been replaced.

Whereas YG very clearly plays a supporting role in the context of municipally-led response, YG is intended to act both as the local authority, and in the territorial support role, for unincorporated communities. This difference has significant implications for governance and decision making, including the role of responders deployed to support municipalities, as compared to unincorporated communities during a State of Emergency. The table below summarizes the strengths and challenges associated with these different structures. These are discussed in greater detail in the next section.

3.4.1 Findings, Strengths and Areas for Improvement

Theme: EM Governance and Authorities for Municipalities and Unincorporated Communities	
Areas for Improvement	**Strengths to Build On**
• Southern Lakes IMTs were unclear on what authority they had to establish and implement emergency response objectives. • There is no clear mechanism for community-engaged emergency planning for unincorporated communities.	• Where municipalities were the lead agency there was more clarity around responsibilities for objective setting, response priorities, and the respective roles of YG Incident Command/ IMTs and the ECC. • First Nation and local authority knowledge and connections were beneficial in facilitating emergency response processes.

Area for Improvement: Southern Lakes IMTs were unclear on what authority they had to establish and implement emergency response objectives.

The scope of authority that YG IMTs are responsible for in unincorporated communities, is substantially different from their scope in supporting municipal local authorities. While local authorities are legally required to have emergency plans, there is no such requirement for Local Area Councils (LACs) or YG to establish emergency plans for unincorporated communities, meaning that response is, by nature, more reactive. Although WFM is identified in the 2010 FCP as having "Local control authority" there is no description of what this entails, or the scope of activities that they are authorized to undertake. This was a source of stress and tension, in particular in the early stages of IMT activation before a State of Emergency was declared.

In the context of wildfire response, WFM has specific powers and authorities set out in legislation. Further, WFM staff are accustomed to working under a "Delegation of Authority", which sets out limits and authorities around what they can and cannot do during a fire response. This is particularly important when transferring command of an incident to responders from other jurisdictions. No such process exists for flood response. In the absence of clear policy and legislation governing flood response, Ics requested a Delegation of Authority multiple times from the ECC. Specifically, they were seeking "clarification on what they were legally allowed to do, and what were reasonable issues for the IC to make decisions on."

In a municipality, Mayor and Council has the power to declare a state of emergency and enact emergency powers. This means that YG responders are acting on behalf of a municipality with the authority to make response decisions. As described by a number of AAR participants, the WFM-led IMT was responding across unincorporated communities of the Southern Lakes and Lake Laberge for 2 weeks before a State of Emergency was declared. In the absence of a clear delegation of authority, SOPs and a finalized flood plan, many staff cited concerns over liability, safety and authority to act. This was a significant source of stress for IMT leaders and staff alike who felt unprepared to take on the 'local authority role' described in the 2010 flood plan.

Area for Improvement: There is no clear mechanism for community-engaged emergency planning for unincorporated communities.

Citing the benefits and effectiveness of Local Authority-led responses, many AAR Participants highlighted the need for more work to be done to enhance preparedness and planning for unincorporated communities. The value of local knowledge and broad stakeholder engagement in emergency management cannot be understated. Joint planning not only helps to identify local priorities and assets at risks, it also helps to establish expectations and clarify roles and responsibilities of individuals, the private sector and government in preparedness, response and recovery. Although YG is responsible for response in unincorporated communities, there is no mechanism or resourcing currently in place to support community-engaged risk assessments, preparedness or planning efforts across all of the unincorporated communities. Planning with and for unincorporated communities is not a simple task to resolve, and is nested within a number of other complexities associated with governance for unincorporated communities. Interviewees also noted that "there are different levels of interest and motivation in different communities…some are really engaged and focused on resilience, some people want nothing to do with government, so they likely won't be involved, others just expect government to come in and do the work. So even if there were planning resources, there really needs to be commitment on both ends if you are asking people to participate in a process." A strategy to advance planning for and with unincorporated communities would need to consider these factors.

Strength: Where municipalities were the lead agency there was more clarity around responsibilities for objective setting, response priorities, and the respective roles of YG Incident Command/ IMTs and the ECC.

In both the Village of Teslin and the Village of Carmacks, municipal staff reported clear processes to request support and resources through YG, and effective mechanisms for coordination with those resources when they arrived. In both cases, WFM staff were deployed to support flood management priorities of the municipalities, and in both cases, municipalities were coordinating with First Nation governments.

In the case of the City of Whitehorse, leadership reported that the process for coordinating with other agencies, such as Yukon Energy Corporation (YEC) and the process for deploying CoW resources in support of flooding in other communities was effectively managed by the YG ECC Operations section.

Strength: First Nation and local authority knowledge and connections were beneficial in facilitating emergency response processes.

In both Carmacks and Teslin, WFM responders and ECC liaisons highlighted the value of local knowledge in supporting risk assessment, decision making, and public communications. Staff from municipal and First Nation governments that live and work in these communities were getting good intel from residents, and generally had trusting relationships with property owners. In Carmacks, where flooding posed significant risk to the Wastewater Treatment Plant, a WFM IC noted that "the knowledge of the Director of Public Works about infrastructure condition and management was invaluable." In addition, the collaboration between Little Salmon Carmacks First Nation (LSCFN) and the Village of Carmacks to share resources and coordinate on response to protect LSCFN Settlement Land and municipal assets, was essential.

Similarly, in Teslin, the Director of Public Works led a highly effective response in collaboration with Teslin Tlingit Council (TTC). The Mayor of Teslin and Chief of the TTC both noted that strong relationships between the Village and the First Nation government were a cornerstone of resilience for them during 2021 flooding. In Teslin, municipal staff managed the large majority of operational tasks, and primarily looked to YG to confirm financial support for costs related to flood mitigation and response. A small team from WFM was deployed for a few days to support Teslin in achieving their objectives.

In both communities, on the ground monitoring and preparedness efforts (which are discussed in the next section) paid off.

4 2021 Flood Preparedness

This section evaluates key issues, challenges and strengths identified in the context of planning and preparedness related to the 2021 Floods. It is closely tied to overall issues of governance identified above, and includes evaluation and discussion of:

- Understanding Flood Risk
- Flood Preparedness & Training
- Community Emergency Preparedness

It includes insights gleaned from documentation review, AAR participant experience in the Southern Lakes Emergency, as well as from leadership and responders in other communities.

4.1 Theme: Understanding Flood Risk

Priority 2 of Canada's EM Strategy is to: "Improve understanding of disaster risk in all sectors of society." Effective emergency preparedness and resilience planning requires improved understanding, mapping and assessment of how flooding may affect communities, cultural and ecological resources, and infrastructure assets in the future. Although flooding has been a relatively rare occurrence in the past, projections and experience demonstrate the need to better understand this evolving hazard, in order to prepared for it in the future. There were a number of challenges and strengths that emerged with respect to the current understanding of risk, and response and preparedness initiatives.

4.1.1 Findings, Strengths and Areas for Improvement

Theme: Understanding Flood Risk	
Areas for Improvement	**Strengths to Build On**
• Yukon would benefit from Hazard Risk and Vulnerability Analyses to inform territorial and local planning and preparedness. • Flood map and forecast capabilities and resources are not sufficient to meet the emergency planning, preparedness and response needs of the future. • WFM & IMT staff would benefit from decision support tools and real-time data to confidently evaluate risk on the ground.	• The Water Resources Branch developed excellent working relationships with other agencies that supported preparedness and response. • Seasonal forecasting and seasonal readiness meetings are an excellent practice that could be leveraged to conduct risk assessments. • Local knowledge from of First Nations Land Stewards, community leaders and citizens, can provide important intelligence to bolster risk assessment and support anticipatory planning.

Area for Improvement: Yukon would benefit from updated Hazard Risk and Vulnerability Analyses to inform territorial and local planning and preparedness.

HIRAs, or Hazard, Risk & Vulnerability Assessments (HRVA) underpin evidence-based emergency planning, preparedness and governance. They enable determination of the likelihood and consequence of different hazards impacting communities and assets, so that leadership and responders can determine how and where to allocate resources. Leading practice in HRVAs is to engage communities in the evaluation of the vulnerability and exposure of social, cultural, economic and environmental values, as well as critical infrastructure and the built environment. This approach allows for multi-faceted risk reduction that may be structural or non-structural, and will be relevant across multiple hazards. EMO

EMO has yet to complete a territory-wide HIRA or HRVA. This was recommended as a key action in both the 2007 and 2012 After Action Reviews, and is also referenced in the Our Clean Future Strategy. Staff, as well as community leadership highlighted this as "an urgent issue for effective emergency management" without which "we are unable to prioritize investment, apply for federal funding, and plan for the future." As noted by another "it takes time, but once you have this in place, it supports a governance and decision-making structure for evidence-based emergency planning and risk reduction." In the absence of a forward-looking HIRA or HRVA, EMO and communities will struggle to prioritize planning efforts to maximize limited resources.

Area for Improvement: Flood map and forecast capabilities and resources are not sufficient to meet the emergency planning, preparedness and response needs of the future.

Flood mapping and forecasting are identified in Our Clean Future as essential actions to build flood decisions. The work done by WRB to support flood forecasting and response in 2021 was absolutely critical, however, as reflected by a number of contracted engineers, "We didn't have the quality of forecasts we would normally rely on to make informed recommendations about how high the berm needed to be." While current flood forecasts provide information on the likelihood of flooding, modelling and analysis tools in the Yukon are not sufficient to provide accurate projections to inform flood protection design (i.e.: the height of berms). This meant that there was a reliance on consultants and engineers to make decisions with very limited information.

From staff we heard recognition that the role of YG's hydrologist has exponentially expanded as there is increased demand for better flood forecasts and models, there has been limited investment in modern tools to enable this. As noted in a subsequent section, the WRB hydrology team of 2 worked tirelessly without days off over the flood season to provide daily forecasts and critical information for responders, as well as cabinet and media briefings, while also monitoring conditions and providing forecasts for watersheds across the Territory. From communications staff responding to public inquiries, we heard that the public believed that there is more information then was being provided about flood risk, and that this data is automated and that there are tools in place to accurate projections. This is not the case. In reality, the data that was coming out is not automated, staff were compiling this by hand and working hard with experts to interpret the data. As discussed by one IMT leader "The work done by the WRB staff was outstanding – they need to be a dedicated part of flood planning and response in the future." As flooding becomes more prevalent there is a need to ensure WRB is resourced with the tools and staff required to sustainably support flood response and meet the needs of the public and responders. Our Clean Future identifies over $5 million in projects to enhance flood mapping and forecasting, ensuring that staff are available to lead this work will greatly improve flood preparedness, mitigation and response initiatives.

Area for Improvement: WFM & IMT staff would benefit from decision support tools and real-time data to confidently evaluate risk on the ground.

As articulated by a WFM staff person, "risk assessment and preparedness are 90% of what we do. We don't just go out and respond to a fire, we use all the data we can gather to make smart and safe decisions." During flood response for the Southern Lakes, this level information was not available, and staff had to make decisions on-the-fly, based on experience and judgement. Staff noted that "standard checklists to know what to look for [for flooding], to know what strategies to use, to know if something is worth responding to" were not available and would have been helpful. The eventual arrival of flood experts was critical in supporting many of these decisions, and lessons learned can be integrated into future decision-support tools.

Decision-support tools are enhanced by HRVAs and flood mapping, and should be informed by multiple perspectives. Checklists to assess risk, for example, can ensure that responders identify and make notifications if there is potential for impacts to human health, cultural resources, YFN Settlement Lands, critical infrastructure and environmental resources.

Strength: The Water Resources Branch (WRB) developed excellent working relationships with other agencies that supported preparedness and response.

The WRB worked closely with Yukon Energy Corporation (YEC), Environment and Climate Change Canada (ECCC), Natural Resources Canada (NRCan) and the Water Survey of Canada (WSC) to coordinate access to the best available flood forecasts and information. In addition, close collaboration with WFM meteorologists and Geomatics Yukon was essential to getting useful information for response decision making. If resourced, these partnerships can be leveraged not only during response, but to support enhanced flood preparedness and risk mitigation efforts.

Strength: Seasonal forecasting and seasonal readiness meetings are an excellent practice that could be leveraged to conduct risk assessments.

In the absence of community-level HRVAs, seasonal forecasts and readiness meetings allow for inter-agency consideration of possible risks. In 2021, snow surveys were completed earlier than normal, and triggered the ECC to initiate preparedness efforts. There is an opportunity to take this work further by conducting seasonal hazard tabletop planning exercises and risk assessments based on plausible scenarios.

Strength: Local knowledge from First Nations, community leaders and citizens can provide important intelligence to bolster risk assessment and support anticipatory planning.

In speaking with community leaders and First Nation staff, it was clear that there were a number of indicators of elevated flood risk long before the snow survey was issued. High water levels in the fall were an indicator for VoT to start preparing. For KDFN Land Stewards, snow pack and changes in the movement and migration patterns of animals were an indicator. Many local communities, and in particular First Nations, were hearing directly from their residents about high lake and ground water levels. In Carmacks, high water flow through the Waste Water Treatment Plant in early May was a trigger for that community to start preparing. Intelligence and information from local communities and First Nations could be integrated into seasonal risk and readiness assessments to support a more complete picture of potential flooding across the Territory. In addition, the interpretation of the impacts of forecasted flooding by communities and First Nations could support mitigation efforts based on community priorities.

4.2 Flood Preparedness & Training

This section evaluates the preparedness and planning efforts of YG in the lead up to the 2021 flooding season. It builds on a number of challenges and strengths related to governance and policy.

4.2.1 Findings, Strengths & Areas for Improvement

Theme: Flood Preparedness & Training	
Areas for Improvement	**Strengths to Build On**
• A number of departments did not participate and/or were not engaged in early preparedness discussions • Limited capacity and ongoing COVID-19 and Fire Management activities left few resources for flood training and exercises in 2021. • YG lacked flood experience and response expertise to inform operational tactics or advanced planning for possible flooding.	• Local knowledge of WFM Regional Duty Officers (RDO) and staff combined with experience in 2007 contributed to good decision making in the preparedness and early response phase. • The ECC Director leveraged the COVID activation to initiate flood planning and preparedness.

Area for Improvement: A number of departments did not participate, and/or were not engaged, in early preparedness discussions.

While the ECC initiated preparedness efforts early, a number of departmental directors and managers that attended the SLIW indicated that they were not engaged until after the response was underway. There were a number of reasons identified for this, including a lack of familiarity with plans, roles and responsibilities (as discussed above), lack of identification of their potential role in response by ECC staff, and a lack of capacity / exhaustion among staff across departments as a result of ongoing response to COVID-19.

The Implication of delayed engagement was that departments were unable to weigh in on risk assessments, prepare staff for potential response, identify internal capacities they could bring to response, or offer policy and expert advice regarding issues of concern to them.

Nearly all participants highlighted ways in which their earlier engagement in flood preparedness could have supported more effective coordination of their expertise and resources through the summer months. Specifics from departments have been captured and provided to EMO to support future preparedness efforts.

Areas for Improvement: YG lacked flood experience and response expertise to inform operational tactics or advanced planning for possible flooding.

Compared to other seasonal events like wildfires, major flooding events that displace Yukoners have been relatively rare. However, as described by a representative of one of the Indigenous governments we spoke with:""We are fire people, we expect and prepare for fires, but we are not flood people, the conditions we are seeing now, the snow pack, the melt patterns, these are different than what we have seen in the past. I think this is the same for YG." And according to a YG staff person "Historically, we've only experienced these floods every 10 years, we haven't had a need to invest in them the same way we invest in fires." While this has been the case in the past, climate projections used to inform Our Clean Future indicate that this is changing, and that there is a need to prepare for more frequent flood emergencies moving forward.

Flood response experts and consultants that participated in the AAR noted that YG preparedness efforts would have benefited from additional pre-planning for tactical response options in the Southern Lakes. Specifically, there was limited expertise within YG to establish appropriate flood protection measures, to determine where berm construction would be most useful, or to work with property owners to identify potential risks and mitigation options in advance. This meant these decisions were being made at the height of emergency response, with limited opportunity to consider implications and trade-offs. Experts with experience in Manitoba have recommended YG consider establishing Flood Response Corridors in advance of flooding. These corridors would pre-define where berms may be established in high-risk areas based on modelled flood risk potential. Experts also recommended early and regular communications with community to prepare them for the potential deployment of flood protection infrastructure.

Area for Improvement: Limited capacity and ongoing COVID-19 and Fire Management activities, left few resources for flood training and exercises in 2021.

Although recommended in previous AARs, staff have never been trained specifically for flood response. This includes training in basic flood protection methods, as well as training for standardized processes for risk and damage assessment, monitoring, and safety. Experts noted that there are a number of tasks

that do not require first responder expertise that YG staff and volunteers could be trained on annually to enhance readiness.

Table-top and functional emergency exercises are common approaches to preparedness in advance of a known hazard season. In 2021, EMO staff that may have led this work were exhausted from a full year of COVID-19 response activities, and fully engaged in vaccination roll out. There was no capacity to support the type of exercises that would have been useful. In addition, WFM staff noted that while they were asking about preparedness efforts, there was no substantial response coming from the ECC. There were expectations on both sides that the other was working on flood preparedness, when in reality WFM was fully engaged in fire preparedness, and the ECC was tasked with COVID-19 – both with limited capacity to connect and identify this gap. In future, clear mandates, plans, and dedicated resources for flooding would help to address this challenge.

Strength: Local knowledge of WFM Regional Duty Officers (RDO) and staff combined with experience in 2007, contributed to good decision making in the preparedness and early response phase.

Although there were delays and differences in opinion over the role of WFM in flood response, local knowledge and work by the Southern Lakes RDO and staff contributed to a good foundation of data and insights. The WFM Southern Lakes Regional Duty Office identified early on that flooding was likely to be an issue in the region. According to one WFM manager, the occurrence of a number of "overland floods throughout April was a good indicator of what was coming. We started communicating early with crews that there was flood potential and that they may need to activate." The RDO also started compiling maps and data from 2007, because "that was all we really had." As noted by one IMT workshop participant: "It helped that we were familiar with the people and the region. Some of us live there. So we knew what the public impact and response could be. And they trusted us to protect them." And by another: "the only reason we knew what to do at the start was because we had experience from 2007, otherwise, we would have been lost."

Similarly, in Carmacks, the WFM IC requested survey equipment to immediately identify the locations where berms should be established, and reached out early to get health information for potential impacts to septic tanks and the sewer systems. Experience in previous floods was key in his call to make these requests. This tactical approach and knowledge is critical for incorporation in future flood response plans.

Strength: The ECC Director leveraged the COVID-19 activation to initiate flood planning and preparedness.

Planning for the 2021 flood season was initiated by the ECC in early April in response to record level snow pack surveys recorded by the WRB, and concerns raised by residents and communities about flood risk potential. While training and exercising was a gap, several important initiatives did take place, including:

- Review of recommendations from 2007 and 2012 Flood Response AARs
- Inventory and ordering of sandbags and other flood supplies by the Logistics Section Chief
- Convening of an interdepartmental flood planning meeting, including staff representing WFM, HPW, ESS and Environment, along with ECC Section Chiefs.
- Public communications regarding flood risk and mitigation were issued by the Public Information Officer with support from Community Affairs
- Outreach and coordination with Yukon Energy Corporation (YEC)

- Outreach and coordination of resources with municipalities, including City of Whitehorse, City of Dawson, Village of Carmacks and Village of Teslin.

This work was underway concurrent to the ongoing roll-out of vaccination programs across Yukon communities, led by the ECC on behalf of HSS. The fact that the ECC was already activated meant that Section Chiefs were able to coordinate to develop response plans, assess risk, and conduct inventories. In addition, while there were definitely challenges with the briefing and reporting structures, the ECC was able to elevate risk information about flooding to senior leadership.

The fact that the ECC Director anticipated the potential for a larger activation, and assigned staff to flood preparedness as soon as reasonably possible, was a strength. Normally, the ECC would not be activated for preparedness efforts, however, the effectiveness of this model suggests that consideration should be given to the proactive activation of an ECC for preparedness purposes.

4.3 Community Emergency Preparedness

It is a common refrain among emergency managers that "All emergencies are local." They impact local infrastructure, residents, and social and cultural values. Response and recovery operations are also most acutely felt at the local level. Community emergency preparedness is the starting point for community resilience and response. Strengthening local capacity to prepare for, mitigate, respond and recover from emergencies enables faster response and significantly improves outcomes. It also ensures strong coordination and more effective integration when external resources are required. First Nation and municipal leaders that contributed to the AAR, identified a number of opportunities to learn from 2021 flooding, and improve local-level capacity to manage future emergencies.

4.3.1 Findings, Strengths and Areas for Improvement

Theme: Community Emergency Preparedness	
Areas for Improvement	**Strengths to Build On**
• Communities need support for holistic emergency planning and preparedness. • Communities are concerned about evacuation capabilities.	• Local Authorities and First Nations have a strong understanding of what they need in order to prepare for flooding in the future, and, with support can lead effective response. • Proactive planning at the local level, mitigated flood risk and enabled municipal and First Nation governments to provide support to other communities.

Area for Improvement: Communities need support for holistic emergency planning and preparedness.

YG's Our Clean Future strategy highlights the need for communities to be prepared for an increase in the frequency and severity of climate hazards, including flooding. To date, actions including a commitment from YG to support communities to develop emergency plans, based on local hazard & risk identification assessments, have not been fulfilled.

This is largely due to capacity and resource limitations within the small EMO team to support this work during the ongoing COVID response. The majority of municipal leaders and First Nation government representatives that contributed to the AAR indicated that they did not have up-to-date emergency plans or programs in place, and that this was a priority for them in the future. Others noted that they "desperately need help to develop emergency plans;" and "have been asking for this for years." A WFM IC that worked on the flood in Carmacks concurred that "we need to do more training in Unified

Command, so that we can better align operations and decision making across the Village, the First Nation, and WFM or YG."

While there are commitments in Our Clean Future to support emergency planning for municipalities, there is no similar commitment for unincorporated communities. With a growing number of people living in the Territory, this is a gap that has not been addressed. YG staff commented on the challenges of emergency planning for unincorporated communities, but also identified some possible options, such as "taking a regional approach to maximize resources."

Area for Improvement: Communities and emergency responders are concerned about evacuation capabilities.

In discussing contingencies related to flooding in 2021, staff from VoC and CoW expressed concern over the ability to carry out an effective evacuation. While VoC staff commented that immediate evacuation would be possible, it would be difficult to support residents if they were evacuated for the long term.

CoW has developed a public safety plan that includes mustering locations in communities for people that need support to evacuate. However, while the Canada Games Centre (CGC) is an option for localized evacuations, or to support other communities, "If there were something really big, and we needed to get a lot of residents out of Whitehorse, there's really nowhere in the Yukon to go. We are looking at going South to Prince George, or West to Alaska. This is an area where we could really use some good support from YG. I don't think it's been considered."

In the context of unincorporated communities, a number of tools were used to advise residents of evacuation alerts and orders. Emergency Social Services (ESS) was also prepared to welcome evacuees if needed. In some cases, evacuation orders were issued to properties that were not flooded because flooding was going to cut off emergency access to residents. Staff did identify that there were locations where residents didn't feel the need to evacuate, given that they were self-sufficient, but that they remained unreachable by emergency vehicles. It is important to ensure that residents understand the implications of following or disregarding an evacuation order. Depending on the circumstances, evacuations are not always the best approach, especially if there are limited places for people to go, and if there are options to support residents to stay safely at home. Evaluating the unique needs and capacities of rural and remote residents could inform improved policy and processes for emergency evacuation or shelter-in-place supports.

Strength: Local Authorities and First Nations have a strong understanding of what they need in order to prepare for flooding in the future, and, with support, can lead effective response.

Local leadership has identified opportunities to reduce flood risk along a continuum ranging from permanent flood protection infrastructure to emergency planning. When asked what flood resilient communities would look like in 5 years, participant responses included:

- "Distribution and pre-positioning of flood protection resources, so that not all communities require limited contractor services at the same time. We have an opportunity to be proactive."
- "We need design guidance and funding for flood protection infrastructure; we need to know what parameters to build it too. We need to stop responding to flooding, and make permanent investments to protect our communities."
- "We need to protect our cultural resources. Flooding is impacting our food security and fish resources, as well as traditional sites. Flood mapping can help us make better decisions."

- "We would work collaboratively with YG and the Village and First Nation, to develop better emergency plans for flooding in the future."

With support, municipalities, First Nations and communities can identify and mitigate flood risks, and develop the plans, policies and practices required to respond when the worst happens.

Strength: Proactive planning and collaboration at the local level, mitigated flood risk, and enabled municipal and First Nation governments to provide support to other communities.

There are a number of excellent examples of community-led preparedness and response.

As early as October of 2020, the Director of Public Works in Teslin was concerned about flooding. Ground saturation in the fall and high-water levels at freeze-up prompted him to request approval to add an additional 8 000 sandbags to the community's stockpile, and begin to assess additional mitigation options.

The Mayor of Teslin also credits the Village's approach to overall resilience for its effective mitigation of flooding in 2021. This includes economic development and procurement policies that prioritize local contractors, ensuring that they are available and resilient enough to support emergency response when needed. In the spring of 2021, when flood risk became real, these contractors were immediately available to support. In addition, through collaboration with TTC we heard that "nearly every teenager in our community had a job working on the flood." Their proactive approach enabled the VoT and TTC to turn risk into opportunity, and effectively prevent disaster.

In Carmacks, staff identified early on the risk to the community and waste water treatment plant. The collaborative approach of the VoC with LSCFN and the WFM RDO, points to the value of locally-led, collaborative response. With support and expertise from YG to invest in local emergency planning and training, valuable lessons from Carmacks could be applied to the development of a community emergency plan and future risk mitigation efforts.

When flood warnings were first issued for the Southern Lakes, the City of Whitehorse recognized the potential for flooding downstream. The City activated its Emergency Operations Centre (EOC) to assess potential risks of flooding and develop contingency plans. CoW notified the YG ECC that they were activated, and leveraged the ECC to coordinate with YEC and model flood risk in the vicinity of the dam. While water levels remained high throughout the summer, ultimately no major impacts were experienced in Whitehorse; however, the EOC activation did allow Whitehorse time to develop contingency plans in the event that flooding impacted the bridge, hospital access and community water sources. In addition, CoW was in a strong position to support other communities, and worked through their EOC to deploy resources in support of response operations in Carmacks and the Southern Lakes.

Kwanlin Dün First Nation (KDFN) tasked Land Steward Officers (LSO) with overseeing flood monitoring and response. The knowledge and familiarity with land and community was essential to KDFN's work to support their citizens. LSOs identified a number of concerns including:

- environmental contamination
- safety of citizens
- erosion impacts – such as erosion of cultural sites and loss of settlement land
- loss of citizen-owned assets, and
- concerns about salmon habitat as a result of flooding.

Although there was no flood-specific plan in place, LSOs quickly established a well thought out approach to identify, assess and prioritize parcels at risk. KDFN staff communicated with citizens to provide information to help them mitigate risk. KDFN staff were also able to help out at Marsh Lake by supporting sandbagging efforts there. In the future, the approach and knowledge used by KDFN is a good starting point for flood preparedness.

Ta'an Kwäch'än Council (TKC) was actively responding across their settlement land, and coordinating with responders working at Lake Laberge. The primary concerns of TKC staff were the protection of settlement land from erosion, including culturally and ecologically significant locations. TKC leadership allocated contingency funding for flood response, and staff reported an excellent working relationship with WFM and YG responders collaborating to identify and protect areas at risk. TKC contributors to the AAR noted there are concerns about densification in flood plains around the area, and highlighted the urgent need to understand the impacts of flooding not only to future development, but to the wildlife and people that rely on the health of the lake and the ecosystem for survival.

5 Incident Management, Response & Recovery

This section breaks down key issues, challenges and strengths identified in the context of response and incident management. It includes consideration of activities at and across the ECC, IMT and Site levels, as well as response efforts in communities outside the Southern Lakes area where YG was providing support. Perspectives of AAR participants relate to the following themes:

- Coordination between the IMT and ECC
- Planning, Documentation and Internal Communications
- Human Resources, Staff Wellbeing
- Engagement of Out-of-Territory IMTs & Technical Experts
- Volunteer Contributions and Coordination
- Safety
- Procurement, Management and Allocation of Flood Response Resources
- Transition to Recovery

5.1 Coordination between IMT and ECC

Coordination between IMTs and ECCs (and EOCs) is a common challenge for governments across Canada. Understanding and testing these processes during non-emergency times is key to improving them for the future. In relation to the Southern Lakes Response, AAR participants consistently highlighted unclear roles, responsibilities and decision-making structures between the IMT and ECC as a foundational issue that affected multiple aspects of response, including the setting of response objectives, clarification of policy issues, resource requests and acquisition, and public and internal communications. Insight from AAR participants representing both the IMT and the ECC has surfaced challenges and strengths worth considering.

5.1.1 Findings, Strengths and Areas for Improvement

Theme: Coordination between IMT and ECC	
Areas for Improvement	**Strengths to Build On**
• There was discrepancy between EMO and WFM teams in their respective understanding of the scope of the role of IMTs activated for flood response. • There is a need to clarify roles, responsibilities and reporting structure between the ECC and IMT. • The role of the ECC In leading some aspects of response, such as evacuation orders and volunteers, while playing a supporting role to the IMT in others, led to further confusion about which entity was responsible for decision-making. • The role of the YDO and IMT liaison between the IC and the ECC created a bottleneck for communications and led to duplication of efforts.	• Communications and reporting processes within the ECC and IMT were well understood by staff with experience in ICS, or who had taken ECC training. • Communication and coordination between municipally-led responses, WFM and the ECC was effective.

Area for Improvement: There was discrepancy between EMO and WFM teams in their respective understanding of the scope of the role of IMTs activated for flood response.

Planners from WFM and EMO indicated that as early as April, they had been involved in discussions regarding the potential need for WFM to support flood emergency response. Unfortunately, there were misunderstandings between WFM and EMO with respect to preparedness and planning for a potential flood response, and a lack of clarity around which agency was ultimately responsible for setting response objectives. This was magnified by the existence of multiple draft plans and policies that set out different roles and responsibilities, and further complicated by the fact that neither agency had capacity amidst on ongoing COVID-19 response, and preparedness activities for the 2021 fire season, to focus on coordination issues in advance of the flood.

Over time, this relationship was sorted out, however clarity is required for future flood events and other incidents where the ECC requests any department to stand up an IMT.

Area for Improvement: There is a need to clarify roles, responsibilities and reporting structures between the ECC and IMT.

It is common for there to be a period of confusion at the outset of any emergency, as risk is assessed and response measures activated. The transition from an “incident” to a declared “State of Emergency” includes changes in reporting structures and authorities. Most YG staff had not been involved in a major IMT activation, nor had YG refined or tested plans for long-duration, inter-departmental, IMT responses supported by an ECC, so it is not surprising that this fast-moving event created confusion around reporting structures across these two entities.

Through surveys, staff were asked to rank their perspective on the clarity of this relationship. There was high correlation between respondents that felt roles, responsibilities and authorities were ‘very unclear’ and IMT and ECC staff working during the initial phases of the response. Survey respondents who felt that roles, responsibilities and authorities were “very clear”, included Senior ECC staff and IMT staff who were working near the end of the response period. IMT staff from out-of-province teams also felt there was strong clarity. The relationship between the IMT and ECC was further complicated by “confusion about where the ECC ended and EMO began, and where the IMT ended and WFM began.”

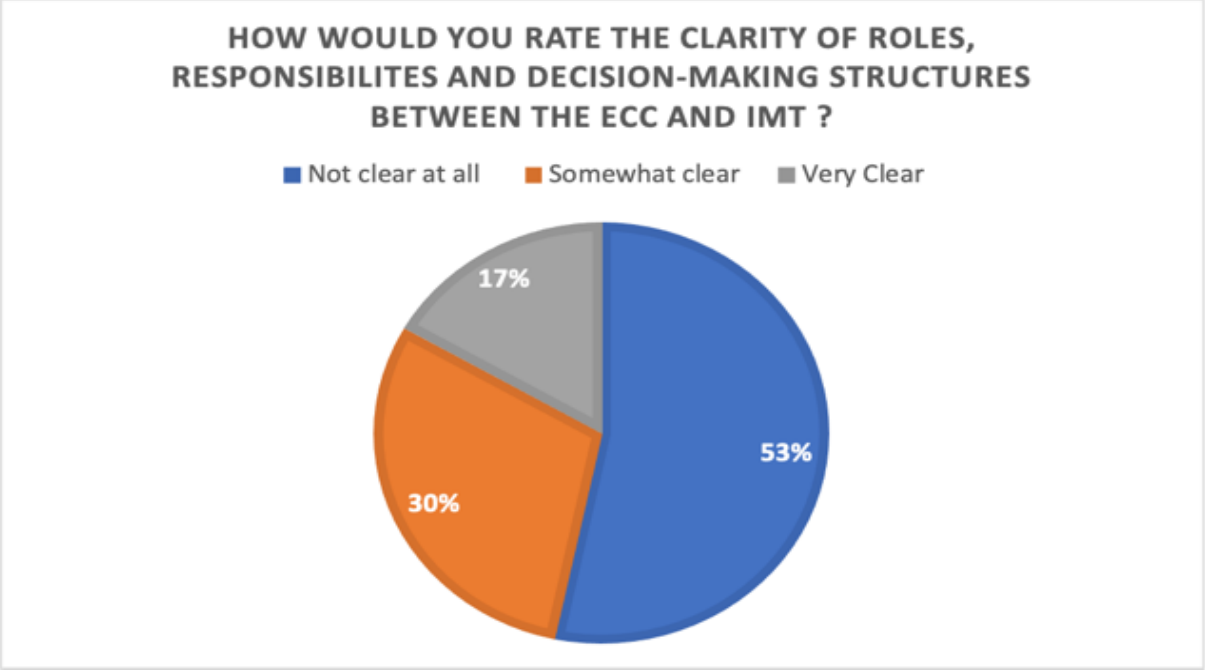

Figure 4: The majority of survey respondents who worked in the IMT or ECC, felt that there was a lack of clarity around roles and responsibilities across the IMT and ECC.

When asked, interviewees identified a wide range of perspectives on the roles of the ECC and IMT. A number of interviewees reflected the perspective articulated by a senior ECC staff person that: "Reporting relationships seemed to change as new personnel came in." A review of documentation from the event, indicated that the response lacked a consistent, overarching organizational structure that connected that the ECC to the IMT, and that at different times, different reporting structures were being used. One major contributing factor to this confusion is the slightly different models of ICS that are applied by the IMT and the ECC.

These issues could be alleviated by the development of clear structures that are integrated into emergency plans, and reinforced through joint ECC-IMT tabletops and training exercises. This emergency presents an excellent opportunity for YG to improve coordination for long-term, large-scale emergencies by focusing on communication and command pathways.

Area for Improvement: The role of the ECC In leading some aspects of response, such as evacuation orders and volunteers, while playing a supporting role to the IMT in others, led to further confusion about which entity was responsible for decision-making.

In addition to supporting the IMT through inter-departmental coordination of resources, the ECC also takes responsibility for supporting citizens impacted by a disaster. For example, in major fire events, WFM may request support from the ECC to support evacuation of citizens. During the flood event, EMO supported the coordination of Search and Rescue (SAR) volunteers to issue evacuation alerts and notices, and activated ESS to plan for the establishment of a reception centre. In addition, the ECC took on the task of volunteer management.

IMT staff were appreciative of the efforts of the ECC in leading this work; however, many also identified the need for better communication between the ECC and IMT when the ECC was taking action. For example, IMT staff felt the deployment of SAR volunteers to deliver evacuation orders to residents was highly effective, but noted that they were not informed in advance that these volunteers would be on

site. In another case, the IMT was supportive of the ECC efforts to request assistance from the Canadian Armed Forces, but did not receive advance notice of their arrival. As the lead on the ground responsible for safety and resources, IMT ICs and section chiefs need to be more directly plugged into operational decisions like this.

The Incident Command System is intended to streamline response decisions and ensure that there is single command structure. In situations where the ECC is shifting between a support role to the IMT, and an operational role directing resources at the incident site, this single command structure is splintered. IMT staff identified challenges when responders on the ground are faced with the sudden arrival of resources or people that they were not expecting. At best, this creates confusion about the allocation and role of resources, at worst, this leads to safety concerns for folks on the ground, and possible conflicts between IMT and ECC objectives and operations.

Area for Improvement: The role of the YDO and IMT liaison between the IC and the ECC created a bottleneck for communications that, at times, led to duplication of efforts.

While there was confusion and challenges related to the relationship between the ECC and the IMT, there was general agreement on the need to clarify and simplify this structure. Both IMT and ECC staff identified that the positioning of the YDO between the IMT and the ECC impacted the flow of information, and added an additional step in the issuing of requests for resources and policy direction. As articulated by one interviewee: “The positioning of the Yukon Duty Officer made the reporting structure quite difficult. The need to funnel IMT requests and ECC inquiries through the YDO made communication between the ECC and IMT almost impossible.”

There was broad agreement that the role of the YDO in long duration, non-fire responses should be re-evaluated to limit redundancy in roles, and support better information flow and support from the ECC to the IMT, and vice versa. Options identified to alleviate this issue include “Enabling direct communication between Section Chiefs in the ECC and those in the IMT,” and “Having a WFM / IMT rep at the ECC Operations table, along-side other departmental reps, who would be talking to the IC.” Alternatively, several participants noted that WFM could be resourced to respond to flooding, as a multi-hazard response agency. This would require an evaluation of resource requirements to concurrently manage flood and fire preparedness and response efforts.

Strength: Communications and reporting processes within the ECC and IMT were well understood by staff with experience in ICS, or who had taken ECC training.

Although reporting relationships, roles and responsibilities between the IMT and ECC were a source of confusion, staff that worked within the IMT or ECC felt that they understood the intended reporting relationships internally. This sentiment was strongest among staff that reported having experience with ICS, and taken ECC training. In particular, staff referenced the excellent coordination of the CAN-TF2 team from Alberta, and noted that they would be interested in further training with this team. There was less clarity for those staff that did not have ICS or ECC training.

Strength: Communication and coordination between municipally-led responses, WFM and the ECC was effective.

Feedback from staff representing Municipal governments, reported that they had a clear point of contact within the ECC, and that they felt interagency response was well managed. Staff resources and ICs from WFM deployed at the request of the ECC to monitor flooding, and support municipally-led response operations, reported that they had clear lines of communication through the YDO to the ECC.

While there were some issues identified with resource acquisition, generally, the lead-agency status of the municipality eliminated concern about authority, policy questions and response objectives.

5.2 Planning, Documentation & Internal Communications

Within the IMT, perspectives on the effectiveness of internal communications varied based on the overall level of experience of responders staffing leadership roles, and the operational periods that staff were referencing. There were a number of perspectives on internal communications.

5.2.1 Findings, Strengths and Areas for Improvement

Theme: Planning, Documentation & Internal Communications	
Areas for Improvement	**Strengths to Build On**
• The IMT Planning Section was understaffed in the early stages of the response. • Different IMTs took different approaches to generating incident objectives for IAPs. • Neither the ECC or the IMT had capacity to conduct advanced planning or establish contingency plans. • YG lacks a digital platform to support a Common Operating Picture (COP) for emergency management. • Tools developed and rolled out during the response for berm inspections, were not refined enough for effective use in response.	• Incident Action Plans, daily briefing documents, org charts and morning briefings were highly effective. • Workflow automation applications developed mid-response by Yukon Geomatics have the potential to greatly enhance emergency management processes and documentation.

Area for Improvement: The IMT Planning Section was understaffed in the early stages of the response.

IMT Planning section staff noted a number of gaps in staffing early on. Specifically, neither the Situation Unit nor the Resource Unit was staffed. The Planning Section, which is responsible for IAPs and briefings, along with management of documentation, GIS and planning for resources, did an incredible job in the face of staff shortages, however, this workload is unsustainable. The work of the Planning Section was made more challenging by the number of YG staff unfamiliar with ICS documentation processes, and the high number of staff that were assigned for short shifts (1 week or less). IMT staff noted that not having a Resource Unit Leader, especially during a government-wide response, was a major challenge.

Area for Improvement: Different IMTs took different approaches to generating incident objectives for IAPs.

In some cases, and particularly when the IMT was understaffed or there were less experienced people in leadership roles, the Operations Section relied on staff in the field to set objectives for the IAP. In other cases, Section Chiefs coordinated at the IMT to set response objectives based on intel from the field. Division Supervisors and Task Force Leaders identified this as a point of confusion. As noted by one contributor “I would get a call from the Ops Chief asking what my objectives were, but I felt that based on the chain-of-command I should be providing information up that would then be assessed in the context of the broader response. I thought I would be getting objectives from someone in leadership, not setting them from the ground.” This difference in approaches is not uncommon, in particular when resources are stretched and inexperienced staff are called up to leadership roles. Depending on the scope, scale, experience and resources assigned to a response, staff on the ground may be better positioned to advise on objectives. In larger-scale responses, where resources need to be balanced

across multiple incidents, higher level coordination and direction may be more efficient. Either way, information must be clearly shared up and down the chain-of-command, and consistency in approach is important. Continuing to train inter-departmental staff in ICS will help to alleviate these inconsistencies.

Area for Improvement: Neither the ECC or the IMT had capacity to conduct advanced planning or establish contingency plans.

Anticipating and conducting advanced planning for possible contingencies or changing scenarios is an important element of resilience in response. Dual COVID-19 and Flood response operations combined with limited staff capacity, meant that this advanced planning was not possible. Staff identified a number of contingencies that they were concerned about including:

- Limited capacity to plan for a major evacuation effort, and to support citizens, had the Carmacks Waste Water Treatment Facility failed.
- Rostering for additional surge capacity, in the event that WFM staff were redeployed to respond to major fire events.
- Rostering and availability of staff if water levels rose again in the fall, after WFM seasonal staff were no longer available.
- Limited capacity to initiate recovery planning, including identification and rostering of staff, and resource requirements for demobilization and short-term recovery efforts.

While there is no great solution for this challenge, pre-planning, emergency exercises, and enhancement of local-level capacities can all contribute to better preparedness and flexibility to prepare and adapt to changing situations.

Area for Improvement: YG would benefit from a Common Operating Picture (COP) for emergency management.

Modern emergency management and response decisions are often supported by a Common Operating Picture (COP). Today, a COP is generally established through an interconnected digital/GIS-based tool, that provides shared, real-time, situational awareness of an operation. Where multiple sites are involved the digitization of this information is helpful to ensure that teams are working from the same understanding of an incident. It provides a visual method to confirm that resources have been deployed, quickly identify and mitigate emerging risks, and can also be used for scenario planning. Public and political expectation is often that these tools are in operation. In this event, the reality was that individual maps were being generated by a single person in the GIS section, while response and resource data was being shared in a number of ways, including paper-based forms and emails. A digital COP can support effective planning and objective setting, clear communication, and status updates with policy-makers, stakeholders and the media, and can also greatly enhance coordination across disparate sites.

WFM recently invested in a modernized system for firefighting operations. There may be an opportunity to expand this system for additional hazards. GIS staff that worked on the flood incident also had excellent recommendations for options to support workflow automation, mapping, and information sharing across digital platforms.

Area for Improvement: Tools developed and rolled out during the response for berm inspections were not refined enough for effective use in response.

Survey 123 was an app developed in the middle of the response, intended to generate a GIS database of berm condition reports, and identify high risk areas. The concept is excellent. Unfortunately, the context in which it was rolled out, without testing or training, led to staff using it without clear direction and in

inconsistent ways. This resulted in hundreds of reports being generated daily, but limited capacity to review and evaluate the reports. According to one Branch Supervisor "I thought that berm condition assessments and priority issues were being shared directly with Ops Section Chief from the technical experts and task forces via Survey 1-2-3, and this was the basis for daily objectives and resource allocation. It turned out this was not the case." Documentation unit staff and GIS staff were overwhelmed with data and unable to process it in real time. If technical issues and training can be addressed, the tool has excellent future potential.

Strength: Incident Action Plans, daily briefing documents, org charts and morning briefings were highly effective.

The Planning Section was able to generate daily IAPs that were shared with all staff who reported having a strong understanding of objectives. IMT staff generally agreed that "Daily evening meetings in the ICP were effective for setting the following days objectives." Morning briefings were also a good venue for staff to get information. In particular, staff that were new to ICS found it valuable to have access to the org chart, and understand the intended flow of information.

Daily briefing documents were initiated in early July, and consolidated by staff at the ECC. These documents were well laid out and provided a clear summary of incidents across the territory, as well as incident objectives that could be shared with leadership and stakeholders.

Photo 6: Responder briefings at Elijah Smith School were effective and reinforced daily safety messaging.

Strength: Workflow automation applications developed mid-response by Yukon Geomatics have the potential to greatly enhance emergency management processes and documentation.

Survey 123 is one example of an app developed during response with excellent potential. While the roll out of an untested tool during response was not ideal, the Geomatics Yukon staff that developed it could work with IMT staff to refine it, and create a useful digital tool for damage assessment and berm condition monitoring. With expert input and training this tool could be applied for multiple hazards.

5.3 Engagement of Technical Experts & Out-of-Territory IMTs

IMTs from Manitoba, Saskatchewan and Alberta, along with the CAF and a number of external consultants were critical to the success of the flood response. They also provided excellent insights for future improvement opportunities.

5.3.1 Findings, Strengths and Areas for Improvement

Theme: Engagement of Technical Experts & Out-of-Territory IMTs	
Areas for Improvement	**Strengths to Build On**
• Flood experts could have been engaged earlier to provide preparedness advice. • There was a missed opportunity to build internal YG capacity through training with expert teams. • Technical experts were not always able to elevate critical issues for inclusion in plans.	• The activation of mutual aid agreements, and integration of out-of-province teams and experts was highly effective. • As the incident progressed, incident planning became more streamlined and there was improved coordination with technical experts.

Area for Improvement: Flood experts could have been engaged earlier to provide preparedness advice.

Although WFM and HPW are accustomed to responding to moderate flood events across the Territory every year, the magnitude of flood protection infrastructure required for the Southern Lakes Flood response exceeded internal capacity and expertise. This included knowledge of engineering and design specifications for berms, proper berm placement and construction standards, and monitoring and assessment processes.

Flood response experts, contracted to support the response, noted that "by the time we got there, we were almost too late. By the time we arrived, the water was very high. I thought we had about a 50-50 chance of success… Upon inspection, a number of berms [from residents and responders] also had to be rebuilt or relocated." Recommendations from experts included "basic berm construction training for volunteers and responders, so that they can get off to a good start." This information was eventually developed and should be captured for inclusion in preparedness plans and flood communications.

Area for Improvement: There was a missed opportunity to build internal YG capacity through training with expert teams.

The arrival of expert teams from out-of-province, as well as the work of local firms was essential. However, it was noted that there was a missed opportunity to build internal capacity through on-the-ground training with those teams.

Flood experts assigned to the damage assessment task force noted that "people assigned to the task force were inconsistent, which led to the process being unsuccessful. We couldn't get people trained up before they would be replaced by someone new. If we had consistent people, we would have been much more effective, and built-up capacity for future flooding." Similarly, Canada Task Force-2 highlighted that they have the capacity to provide training and mentorship, and recommended that in the future these services to be leveraged to enhance internal capacity.

Area for Improvement: Technical experts were not always able to elevate critical issues for inclusion in plans.

Consultants and technical experts that were in the field noted that there was not an effective mechanism to flag high priority issues for the IC. In the words of one expert with decades of experience,

"We were seeing all kinds of issues out there at first, and we needed a 'red phone' [i.e.: direct emergency line] to let the Ops Chief and IC know when they needed to change course, but we didn't have this." The implication of this was that technical experts would give advice directly to Task Force Leaders or Division Supervisors, many of whom were unsure if they should reprioritize their objectives at the direction of experts.

Strength: The activation of mutual aid agreements, and integration of out-of-province teams and experts was highly effective.

Early on in the response, the ECC and IMT identified the need for additional resources, including technical experts and other IMTs. As noted by one WFM Manager, "This was the first time that Mutual-Aid has been activated to support flood response, this was a huge success." Expertise from teams from Manitoba, Alberta and Saskatchewan, places that have deep experience with flooding, was critical to the protection of property in the Yukon. Similarly, the ECC-led request for assistance from Public Safety Canada, resulted in the deployment of 100 highly trained military personnel. Experts from engineering firms KGS and Stantec were also engaged and provided critical expertise that informed berm design and flood risk assessment. The processes used for engaging these teams was effective.

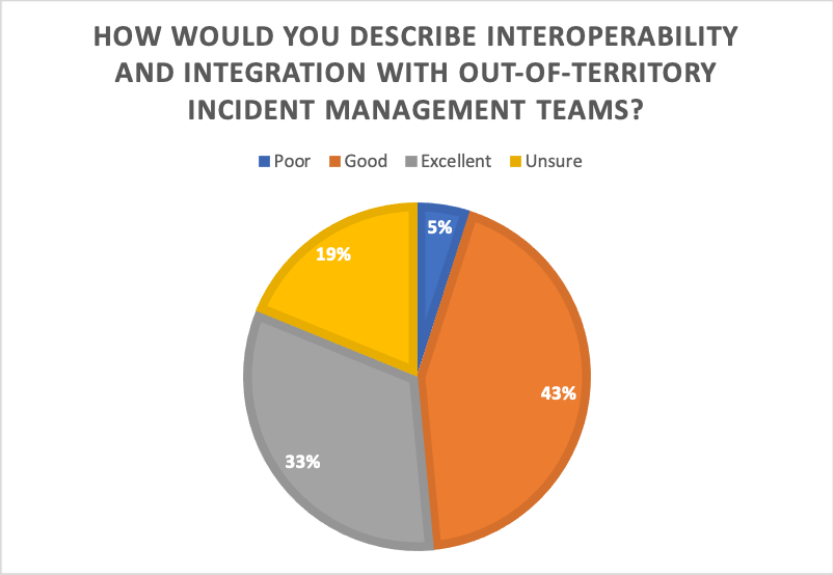

Figure 5: Overall, IMT survey respondents felt that interoperability with out-of-territory teams was effective.

Strength: As the incident progressed, incident planning became more streamlined and there was improved coordination with technical experts.

As reported by a CAN TF-2 representative "Utilizing subject matter experts and the best information available at the time, I feel as through the response was effective in building reasonable, achievable objectives to manage the event." According to a WFM IC leading near the end of the response, by that time "The plans section was great with documentation. Incident near miss reporting was effective and followed standardized YG and WCB protocols."

5.4 Human Resources & Staff Wellbeing

This was a complex, long duration response that required EMO and WFM to integrate human resources from across government. The magnitude of the response is evident in the expansion of the IMT

organizational structure over just a few weeks. The organizational charts below illustrate the expansion of the IMT from 9 positions on June 24, to well over 30 positions, some with multiple individuals assigned, on July 30. These charts do not show the number of responders on the ground. The rapid activation and expansion of an IMT is a normal feature during emergencies, however it is always challenging to concurrently plan for and manage a growing team, while leading an emergency response. This is magnified when staff are unfamiliar with ICS and each other. The work done by staff to facilitate this should not be underestimated, nor should the value of planning, preparedness, and training to support this rapid deployment in the future. Inevitably, challenges and lessons arose in relation to HR and staff wellbeing, but there are also many important strengths to acknowledge and build on.

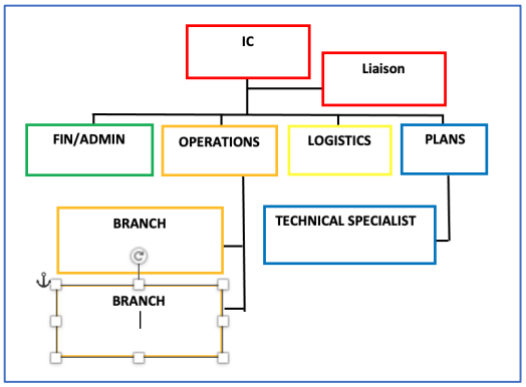

Figure 6: June 24 IMT Organizational Chart with 9 positions staffed. Each box represents one position, and 1 person was assigned to each. (Source: June 24, Incident Action Plan)

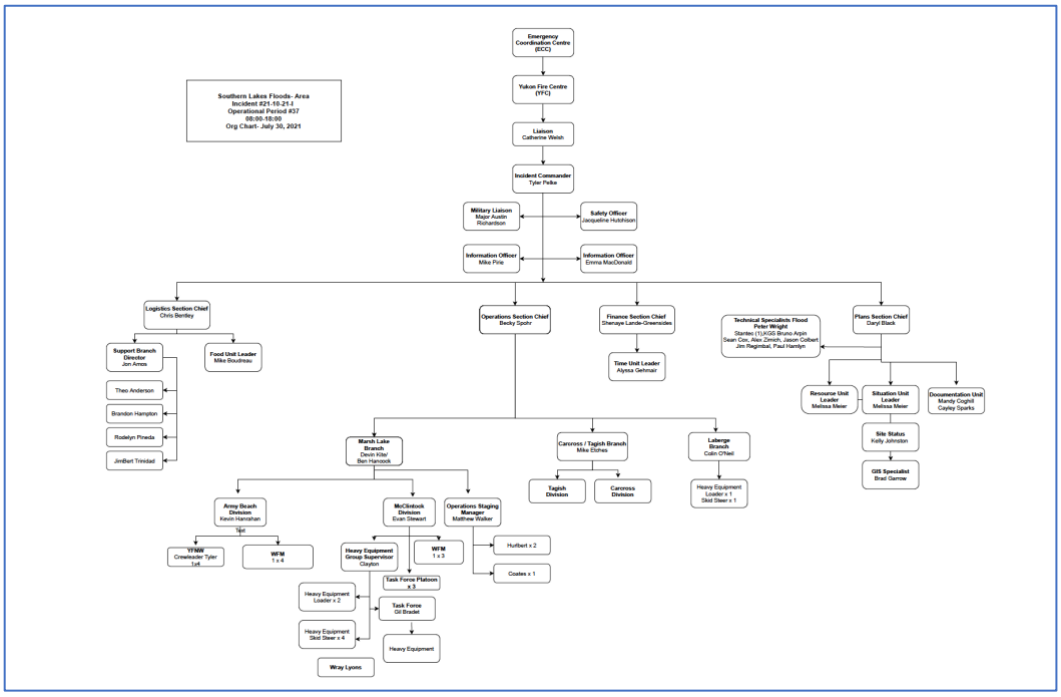

Figure 7: July 30 IMT Organizational Chart with 44 positions staffed. Each box represents 1 position, that may include multiple people assigned. (Source, July 30 Incident Action Plan)

5.4.1 Findings, Strengths and Areas for Improvement

Theme: Human Resources & Staff Wellbeing	
Areas for Improvement	**Strengths to Build On**
• Staff and leadership identified significant concerns with respect to mental health and wellness of staff, and their willingness to contribute to response in 2022. • Not all staff had the appropriate level of training or experience for the ICS roles they were assigned. • WFM has limited staff capacity to respond to both flood and fire risk. • Staff position descriptions were developed on-the-fly for ICS roles. • There is room for improvement in onboarding, handover and transition processes. • HRMT staff reassignment process is only effective under CEMA.	• Many YG staff went above and beyond to support the response, this should be recognized and celebrated. • The HRMT Staff Reassignment Process and Skills Inventory were highly effective, and embedded HR staff within the IMT and ECC were essential. • Inter-departmental collaboration has strengthened staff relationships and built capacity for future whole-of-government response.

Area for Improvement: Staff and leadership identified significant concerns with respect to mental health and wellness of staff, and their willingness to contribute to response in 2022.

Directors and managers that participated in the SLIW shared that staff were experiencing unprecedent burnout after the combined pressures of COVID-19 and their roles in flood response. In EMO alone, 100% of the staff team had been fully dedicated to COVID-19 response from March 2020 onwards.

As stated by one person with experience across both the ECC and IMT "There was a tremendous amount of burnout. This was identified by people and discussed in meetings, but nothing was seriously done to address it." From another we heard that: "staffing attrition and leave after COVID was a major issue. Staff were so worn out that when the call went out for flooding, we weren't getting a great response." Representatives from the ECC Personnel Unit indicated that for every 5 people contacted to fill a role during flood response, 1 replied in the affirmative.

From the IMT we heard that, "Upper-level staff were working multiple positions without breaks. This led to burn out and stress." As noted by one responder on the ground, "One of the most stressful things was dealing with angry and abusive clientele. We didn't have the communications skills to be able to address this." In a handful of cases staff identified instances where exhaustion and burn out was leading to disrespectful behaviour between staff. This was rare, but seemed to be a factor of limited resources, and to coincide with inexperienced staff being tasked with roles they were not trained to manage, or people being put in leadership positions without strong competencies to manage during crisis.

Staff that participated in the response spoke of working or being on-call "50,60,70 days straight," "working until 1 or 2 in the morning to try to be ready for the next operational shift," and "working weekends and evenings on my substantive role, because I knew it wasn't going away." For some specialized positions, staff in those roles stated there "was no back up. So transitioning out wasn't an option." Staff and contractors alike noted that the long duration response was not feasible or sustainable year-over-year. Many staff concluded that they were happy to help, but that they would "be taking vacation this year during flood season."

As noted by one representative at the SLIW "it's often the most dedicated public servants that step up and raise their hands for these tasks. And these are the folks that are now getting burned out and leaving." As expressed by another, "the most important thing we need to do is take care of our people."

Area for Improvement: Not all staff had the appropriate level of training or experience for the ICS roles they were assigned.

Training and experience varied considerably across the IMT, ECC and site. Initial IMTs and those coming from out-of-territory included staff that had strong experience in ICS. As time went on however, and the IMT structure grew from a handful of positions to over 200 responders on the ground, as well as private contractors, the level of training and experience declined.

In some cases, staff were learning about ICS on the job, while also trying to lead a complex emergency response. At the ECC, some staff in Section Chief roles had received no training in ICS. In addition, some people that did have ICS training, didn't have the leadership experience or decision making authority within YG appropriate for the roles they were being tasked with. Within the IMT, there were many examples of staff "falling up" into roles that they were not prepared for, by virtue of the fact they had been a part of the response already. As articulated by one survey respondent, one of the biggest challenges was "People assuming roles for which they were not qualified." Staff reported the stress associated with "making decisions well above my paygrade." In the future, a matrix of competencies and recommended decision making authorities could help to clarify which staff across the organization are well suited for different ICS roles, and enable targeted training to develop inter-departmental IMTs.

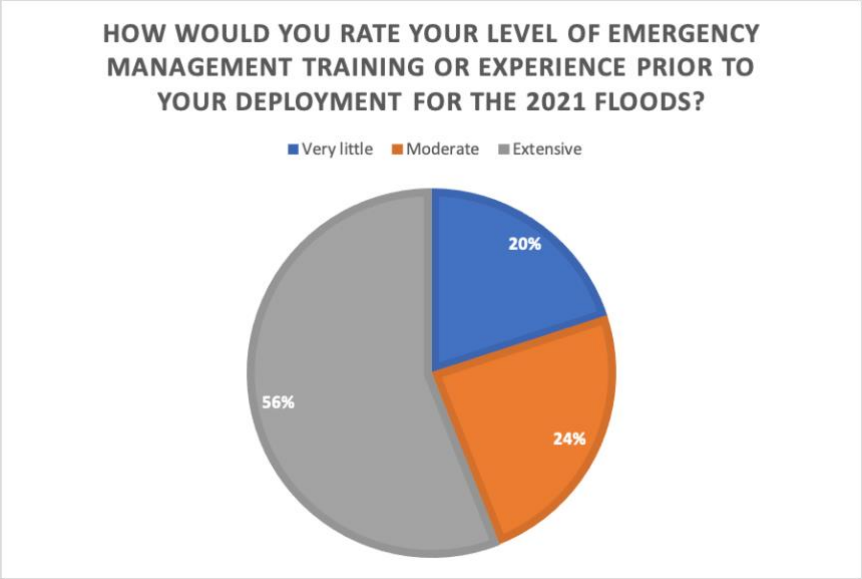

Figure 8: IMT survey results: WFM staff and out-of-province IMTs reported high levels of training, while many YG staff reported very little experience for their IMT roles. The majority of respondents had leadership roles within the Incident Command System Structure (Division Supervisor or above).

Area for Improvement: Staff position descriptions were developed on-the-fly for ICS roles.

HR staff faced challenges trying to match ICS positions with staff roles. As noted, "When the IMT is requesting positions like Planning Section Chief, there is no official position for that in the government bureaucracy. So we didn't have the description and would have to create it." Because there was a limited number of staff that had taken ICS training, HR staff could not just select staff based on training qualifications – they had to translate the ICS roles into competencies and skillsets. There were numerous

examples of ICS specific roles being requested, and HR staff trying to work through a bureaucratic process to create a position description and fill a role with limited time. In the future, positions descriptions could be prepared along with a matrix of responsibilities or recommended level of authority to fill those roles.

Area for Improvement: WFM has limited staff capacity to respond to seasonal flood and fire risk.

WFM is currently the only branch with extensive Incident Management expertise and tactical response training. This expertise was essentially to establishing a command structure for the flood response. However, WFM is uniquely trained, and primarily responsible for, wildfire management, and must engage in annual fire preparedness and readiness efforts. WFM is currently not resourced to plan or prepare for flooding hazards at the scope and scale projected to impact Yukoners in the future. As noted by AAR participants, the scope of the role of WFM and the YDO in supporting resource acquisition and response "would not have been possible in a greater fire season."

Throughout the response, WFM staff raised concerns about the readiness and health of staff to be redeployed from flood response to fire response if needed. In addition, by September, most seasonal staff were no long employed. As YG looks to build resilience to a changing climate, there is a need to consider how emergencies will be managed year-round, and to evaluate options to prepare for overlapping flood and fire seasons.

Area for Improvement: There is room for improvement in onboarding, handover and transition processes.

Effective onboarding, handover and transition of staff during a complex incident is essential to the continuity of the response. This process ensures that there is a clear transfer of knowledge with respect to the work that has been complete and is underway, as well as lessons learned, risks identified, and strategic objectives. Staff scheduling for the flood did not always allow for this. A number of AAR participants reflected the opinion that "transfer of knowledge between incoming and outgoing staff did not always occur."

Finding a balance between staff continuity and transition is also important. Within the IMT, WFM staff would usually work on a 14-day schedule. But as staff from across YG were integrated this varied significantly. According to one IMT Section Chief, "with YG staff, it was more like people can come in for a few hours or a few days. There was lots of turnover." Staff that were trained in ICS reported an easier time with handover. However staff taking on new roles without training reported that they were "trying to learn ICS, while trying to learn about the response." Many staff made recommendations about the need for "clear job descriptions and expectations that should be provided before you arrive."

In the ECC, this experience was somewhat different. Staff were generally in place for extremely long assignments, and finding themselves feeling like they "couldn't afford to leave." This feeling of being indispensable is a common challenge in response, especially for small teams, and puts significant pressure on staff who may become less effective the more tired they become. Not having regular transition periods also increases the fragility of a response structure – such that if a key person is sick or leaves with all the information in their head, it can be challenging for another person to pick up where they left off. The practice of transitioning helps to reinforce good documentation, healthy habits, and resilience within a response structure.

Transition and handovers were especially challenging in the context of logistics and finance positions, where significant work was being done to manage multiple requests and contracts. When staff came in

without time for a handover, “critical contract and resource issues fell behind.” One IC noted that the need for “consistency in transition” and recommended that “this shouldn’t just be a one-to-one handover, it should be the core of the IMT participating in transition over 2 days, so everyone hears everything and knows what’s being taken on across the board.” This method would be ideal, but is also challenging when staff numbers are limited.

Area for Improvement: HRMT staff reassignment process is only effective under CEMA.

According to HR representatives, staff reassignment for emergency response can only be undertaken during a Declared State of Emergency. This meant that when the SoE was rescinded, staff that had been deployed for flooding had to return to their substantive roles. IMT leadership noted that they were not advised of this, and so did not have time to plan for the implications of moving forward with recovery and demobilization without government-wide staff. When the SoE was lifted on Sept 14, WFM was already facing a staff shortage because seasonal staff were no longer on the roster. At that time, while the hazard was no longer a threat, recovery operations were still underway. According to a WFM staff person “The staff was cut to the point of being unable to achieve full demob by the given deadline. The SoE being cancelled without warning was a huge blow to our ability to keep staff.”

This legality also has implications for preparedness and recovery. It means that staff rostering cannot begin early, for example when initial forecasts indicate the potential for flooding, nor can staff be reassigned to support recovery planning and on the ground efforts. Both preparedness and recovery are elements of an emergency that benefit from coordinated inter-departmental efforts.

Strength: Many YG staff went above and beyond to support the response, this should be recognized and celebrated.

There is no doubt that staff across the board, no matter their experience level, went above and beyond to support the response. The dedication of these staff to the wellbeing of Yukoners is something that should be recognized and rewarded. The success of the response was due in large part to staff ingenuity, flexibility and dedication. As commented by one HPW director during the SLIW, “we can’t give enough credit to the front-line staff who came out to help, they went above and beyond.” And by another, “we had staff that would work on the response all week, and then get their families and friends out there to volunteer on the weekend.” In spite of high levels of stress, staff consistently reported that they continued to work because it was important to them both as Yukoners and as public servants.

Strength: HRMT Staff Reassignment Process and Skills Inventory were highly effective, and embedded HR staff within the IMT and ECC were essential .

ECC and IMT leadership commented on the essential role played by HR staff that were embedded in these respective structures. There was widespread agreement that HR staff should be engaged in preparedness and response early on to support long-term planning and staff rostering as soon as possible, a process that would greatly improve handover, staff wellbeing, and response continuity.

Many staff commented on the value of the HRMT staff reassignment process which enabled staffing of positions from across YG. This process enabled an “evidence-based approach to identifying staff from across YG with skills and competencies to fill different roles. It also allowed us to develop a roster of staff that was useful for limiting burnout.” Through the staff reassignment process, the HRMT reassigned 80 staff to fill 70 flood response roles over the period of the response. While there were definitely challenges as outlined above, this process was highly effective, and, with refinement and maintenance could be utilized as a key preparedness tool. One challenge with the staff reassignment

process is that it can currently only be utilized under CEMA, so there were staffing deficits when CEMA was rescinded.

Strength: Inter-departmental collaboration has strengthened staff relationships and built capacity for future whole-of-government response.

Although many staff expressed concern about their workloads, health and capacities, they also were extremely grateful for the opportunity to participate in the response. Many AAR participants reflected on the "new relationships with different departments," "opportunity to innovate," and the "breakdown of silos" that occurred when people from different departments came together to support the response. WFM and EMO leadership have noted the powerful potential of inter-departmental IMTs to support response to future hazards.

5.5 Volunteer Contributions & Coordination

Volunteers played a significant role in supporting their fellow Yukoners throughout the flood season. This included spontaneous volunteers that showed up to help where they could, local businesses that coordinated and transported staff to specific sites, and trained SAR volunteers that supported with evacuation. Unfortunately, there was no formal way to track the contributions of volunteers during this effort, but their impact was noted by many. While direct feedback from volunteers was out-of-scope for this report, the following strengths and challenges were identified by AAR participants in the context of volunteers.

5.5.1 Findings, Strengths and Areas for Improvement

Theme: Volunteer Contributions & Coordination	
Areas for Improvement	**Strengths to Build On**
• The overwhelming desire of volunteers to assist, overwhelmed staff capacity to coordinate, leading to challenges. • In some locations, volunteers were co-located with emergency response operations, posing safety and management challenges.	• Yukoners want to help, and volunteers can and should be planned for in the future. • Volunteers have good insight and experience that could be harnessed for future planning.

Area for Improvement: The overwhelming desire of volunteers to assist, overwhelmed staff capacity to coordinate, leading to challenges.

The 2007 Flood AAR puts forward a number of recommendations with respect to the value of volunteers to flood response, and the need to provide coordination to ensure their efforts are well utilized. In 2021 there was limited consideration given for volunteers until members of the public started showing up to help. Once activated, the IMT quickly established sandbagging locations for impacted residents, but there was limited information and details for volunteers. As businesses and members of the public reached out to offer support, staff were initially overwhelmed by calls and inquiries, and struggled to harness this energy effectively. Some of the issues that arose in the early days included:

- A lack of information or instruction for volunteers on how to help (i.e.: how to fill a sandbag, how to coordinate at a sandbag station, how to remain safe).
- Frustration from volunteers that arrived at sites that didn't have supplies or equipment.
- Overload of calls to the flood information line (that was primarily intended to support flood-impacted residents and businesses) from volunteers looking for direction.
- Limited consideration for the types of jobs that volunteers are appropriate for.

- Limited capacity to coordinate sand-delivery and sand-bag distribution for volunteer stations, while also coordinating this for responders.

Volunteers have an important role to play in flood preparedness and response, and were instrumental to protection efforts across the Southern Lakes and other areas affected by flooding. As noted by one staff person "When you are relying on volunteers for an essential service, you can't just dump sand bags and say, have at it. You can't just put out a social media post and say 'we need volunteers' – you need guidance , instructions and support. There is a significant amount of time and effort that goes into volunteer management, it can't be thrown together in a couple of hours."

Over time information boards were established to provide some direction to volunteers. However, significant time and resources were dedicated to reactive planning and messaging for volunteers, often at the expense of other operational objectives. Leading practice in EM is to plan for spontaneous volunteers, this response offers excellent lessons for future planning, and a number of materials were eventually developed that can be integrated into these plans.

Area for improvement: At times volunteers were co-located with emergency response operations, posing safety and management challenges.

Staff at Army Beach were concerned that volunteer efforts were co-located with the military deployment and site operations for formal response. This made it difficult for Division Supervisors to maintain safety and identify staff versus volunteers. In addition, members of the public would often drive through the Marsh Lake are, a high traffic zone where heavy machinery was operating. There were a number of safety concerns associated with this. AAR participants felt that there needed to be clear separation and better coordination of volunteers in the future. According to a WFM staff person "In 2007 we had a volunteer coordinator directly in the IMT. This worked well. If volunteers are going to come no matter what, it's better if they are a formal part of the structure."

Strength: Yukoners want to help, and volunteers can and should be planned for in the future.

Volunteers are credited with filling thousands of sandbags and contributing to the protection of their homes and communities. With better planning and modest training, flood response volunteers could play an even greater role. Although a volunteer coordinator was brought on eventually, this is a role that should be prioritized in the future. As recommended by experts from Manitoba – "there is a lot more that can be done to support volunteers, basic training is a start, but just having a system for sandbagging, with a few people in the community that understand it, goes a long way." There are a number of examples and lessons from volunteer programs across Canada that could be drawn on for future efforts. The City's of Calgary and Winnipeg are examples where volunteers have been effectively used for flood response.

Strength: Volunteers have good insight and experience that could be harnessed for future planning.

As noted by a YG staff person "The volunteer and community response was astounding really, people really worked hard and they learned a lot." Given the number of local businesses, individuals and groups that came out to help, there is a wealth of experience in the community that could be used to inform future planning. Identifying volunteers that would be willing to support future planning, training and response efforts, would build in their valuable experience during the 2021 floods. As a territory with a a reliance on external responders, serious consideration should be given to better leveraging volunteers in preparedness and response.

5.6 SAFETY

Safety was highlighted by many as a key success in the response. There were no major incidents or injuries over the entire course of the response. This is an exceptional record for a response of this magnitude. There were however a number of close calls and areas of improvement identified that can be applied to continue to support a positive safety track record.

5.6.1 Findings, Strengths and Areas for Improvement

Theme: Safety	
Areas for Improvement	**Strengths to Build On**
• YG staff require training on flood safety protocols. • At times the assignment of resources and contractors exceeded the span-of-control for supervisor. • Staff and supervisors were driving long distances throughout the day.	• The majority of staff felt there were clear pathways to report safety concerns, and that safety was a priority. • Safety Officers acted quickly to identify and mitigate safety issues.

Area for Improvement: YG staff require training on flood safety protocols.

WFM has a well-established fire training program in place that brings on seasonal staff every year and ensures a strong focus on responder safety. A major concern identified by WFM management and staff is the lack of training that seasonal firefighting staff have related to flood safety, and the absence of safety planning that was done in advance of their activation to respond to the 2021 floods. This includes safety considerations for working around high and moving water, as well as concerns related to water contamination and electrical risks. Further, IMT iCs identified that they "could not find a qualified safety officer early on in the response, and we are firefighters, so we weren't really sure what all the safety concerns were." Additional concerns were identified when it came to staff working on flooded private property "where you didn't know what you might find - chemicals, sewage contamination, other hazards. Staff were sometimes taking down structures, you just didn't know." As identified by one Safety Officer "90% of safety concerns can be eliminated through preparedness, training and plans. If you have these in place, you should be mitigating most safety risks."

In Carmacks, when the IC requested support from the ECC to get safety information related to sewage contamination, it took more than 24 hours to be connected with the right YG branch (Environmental Health). Prior engagement of Environmental Health in preparedness planning, and an updated list of departmental flood contacts for staff at the ECC to reference, may have facilitated a faster response. Identification of and access to experts that can provide health and safety information should be a key consideration in future flood planning.

Area for Improvement: At times the assignment of resources and contractors exceeded the span-of-control for supervisors.

Span-of-control is an ICS principle that supports safe management and operations. Generally, a ratio of one supervisor to five reports is recommended. As noted by one Safety Officer, "at one point there were 17 private contractors operating heavy equipment reporting to a single branch supervisor." In addition, and as noted above, volunteer operations were happening in the same place as heavy equipment work. "With external contractors operating outside YG protocols, and converging with volunteers, there are many opportunities for accidents, in my opinion we were lucky."

Area for Improvement: Staff and supervisors were driving long distances throughout the day.

Concerns were raised about the distances that staff were driving throughout the day amidst the high volume of traffic on the road, including trucks transporting sandbags, rock and other flood supplies. As noted by one IC, "staff at Lake Laberge were driving out in the morning from Whitehorse, and then back to Takhini Gas Bar to use the washroom." Others commented that the morning briefing in Whitehorse meant that work "often didn't start until 10:30 am, and then finished around 7 pm." As people got more exhausted towards the end, there was concern about the safety of people on the roads. Ensuring that staff have everything they need to remain at the site, including washroom facilities or trailers, food, first aid, and video-access to briefings, may limit this risk in the future.

Strength: The majority of staff felt there were clear pathways to report safety concerns, and that safety was a priority.

As demonstrated by staff responses to the IMT survey, staff were generally positive about the focus on safety throughout the response. Although there were concerns related to training and span-of-control, staff felt that safety was a priority at briefings, and that they could elevate concerns as needed. These practices should continue in the future.

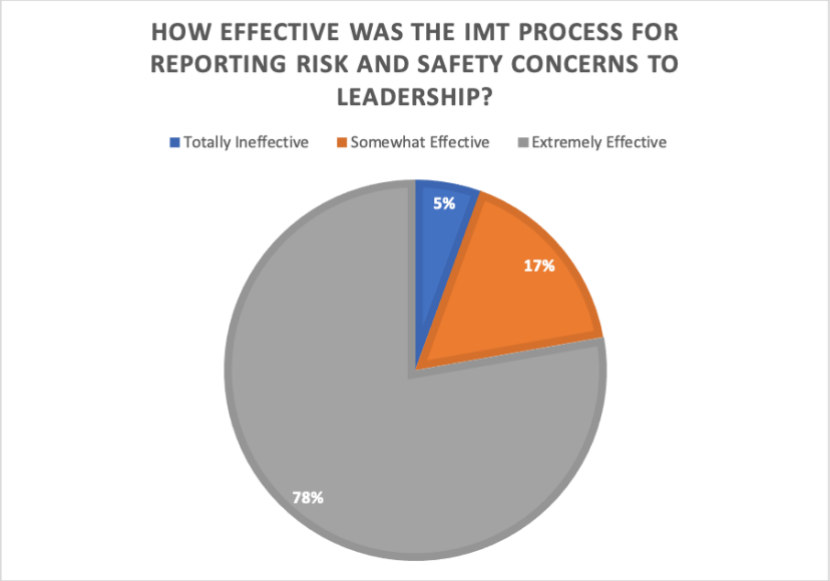

Figure 9: Staff that reported negatively on this question were generally those with less training in ICS, demonstrating the importance of training and onboarding to support safe operations.

Strength: Safety Officers acted quickly to identify and mitigate safety issues.

Safety officers on site were "authorized to addressed safety concerns directly with staff and contractors." This meant that risks could be mitigated quickly. Perspectives on safety improved substantially when members from Manitoba arrived, with expertise in flood response and safety protocols. Ensuring that Safety Officers have flood experience, and pre-identifying possible flood safety issues, is important to sustain safety in future response efforts.

5.7 Procurement & Management of Flood Response Resources

In any emergency, the management of resources is as a major task that takes strong coordination across the incident command structure. It is also a task that often starts out informally, with the urgency of the event taking precedence over process. It was not surprising that resource procurement and

management processes were chaotic in the beginning. A number of excellent solutions and recommendations were provided by AAR participants.

5.7.1 Findings, Strengths and Areas for Improvement

Theme: Procurement & Management of Flood Response Resources	
Areas for Improvement	**Strengths to Build On**
• YG IMTs and the ECC would benefit from a standard, streamlined process for issuing and filling resource requests. • YG finance and contract management processes were not well understood by IMT staff or out-of-province teams. • A high reliance on the private sector for equipment and operators, may prove a challenge in the long run.	• Overall, resources got where they needed to go, and critical tasks were achieved thanks to hard work by staff at all levels. • Once staffed, the IMT Finance Section established effective processes to address contracting challenges. • The ECC demonstrated creativity in coordinating sandbag filling and delivery. • Highways and Public Works Staff were essential to sourcing key equipment and supplies. • There was excellent utilization of local private sector resources.

***Area for Improvement: YG IMTs and the ECC would benefit from a standard, streamlined process for issuing and filling resource requests*.**

As described by one IMT Logistics Chief: "When we needed anything we would email the Yukon Fire Centre logistics, then if they couldn't fill it, the order would go to the ECC. If the ECC had questions, they would ask those to the YDO, and the YDO would ask IMT Logistics. Then we had to go back to the requestor for clarification. This added extra steps. It would have been nice if IMT logistics could speak directly to ECC logistics."

From the perspective of one logistics staff person at the ECC, "Requests were coming in in different formats. Sometimes by email, sometimes for personnel through the HRMT digital process. Then we had a totally different system we were using with health. There was a lot of duplication of effort." At the time of the flood response, YG did not have a list of critical supplies or suppliers for flood response, and the ECC did not have a clear list of where these supplies could be found internally. For staff that were new to YG, navigating government to find internal resources was challenging.

Many staff noted that requests would be made with limited parameters, for example, "a request would come in for rope. Well, what kind of rope? How much? What's it for? We didn't have a lot of flood experience so I needed specifics to be able to source the right thing."

Staff also noted that at times resource requests would go to multiple people at the same time, and it was unclear who was filling these requests. In the absence of a process to clarify this, resource requests were often duplicated, leading to confusion when they arrived on site, and challenges when requests needed to be cancelled. Staff noted frustration at having secured people and equipment, only to find out that they were no longer needed.

Area for Improvement: YG finance and contract management processes were not well understood by some IMT staff or out-of-province teams.

Experienced finance staff that came into the IMT later in the response arrived to find that, in the early days of the response, contracts were being established in the field without clear documentation. In

some cases invoices were submitted to YG but no contract could be located. This required finance staff to track backwards to confirm that work was done and under what terms. As described by staff "this was often a case of get things done and worrying about process later, and in an emergency sometimes you have to do that."

In addition, external teams were unfamiliar with YG procurement and contracting processes, so when YG staff returned to those roles, there were a number of loose ends to tie up. Further complicating contract management was that some private sector resources were "working for YG during the day, and then showing up at volunteer sites later," and it was difficult to discern what they were billing for.

Area for Improvement: High reliance on private sector, for equipment and operators, may prove a challenge in the long run.

Private contractors and rental services, including heavy equipment and operators, were central to flood response in 2021. As noted by an HPW Director during the SLIW, "the private sector was a critical resource in 2021, but they may not always be available. This year, for example, it's already hard to get contractors just to do our basic work. There is a lot of big infrastructure work out there that is more valuable to them." Staff noted that the contracting of private sector resources was "highly reactive," but that if done proactively and over time, "we can use fewer resources and have better distribution." In the context of flood specific equipment and supplies, a number of staff emphasized the need for YG to invest in sandbagging machines, and to work with communities to find ways to distribute and store supplies across the territory so that they wouldn't "all need to be trucked from Whitehorse at the same time."

Strength: Overall, resources got where they needed to go, and critical tasks were achieved thanks to hard work by staff at all levels.

Inexperience, contracting and coordination challenges aside, staff worked hard to ensure that critical resources were available to achieve objectives. While this was highly stressful for staff involved, the lessons learned from this event, including connections with suppliers, volunteers, contractors, and improved knowledge of internal capacities, can be translated to better preparedness for the future. Staff that were involved in IMT and ECC logistics and finance sections are a valuable resource to support the refinement and improvement of plans for the future, and to advise on proactive preparedness.

Strength: Once staffed the IMT Finance Section established effective processes to address contracting challenges.

This included 'brief and basic training materials and a contract request form', as well as a practice of having a member of the Finance Section do site visits, with Division Supervisors, to check that the equipment on site matched the contracts in place. Contract management boards were developed so that the "entire team was aware of what contracts were in place and when they ended." Staff at the WFM IMT workshop emphasized the need for early and continuous engagement of a Finance Section Chief, and staff with experience in YG government processes.

Strength: The ECC demonstrated creativity in coordinating sandbag filling and delivery.

When the ECC initiated flood planning, Logistics staff coordinated with Yukon Corrections Centre (YCC) to establish a voluntary program for inmates to fill sandbags. In April and May, this resulted in 5 000 sandbags being filled by YCC inmates. Later in the response, the ECC worked with City of Whitehorse and Hootalinqua Volunteer Fire Department to establish sandbag filling stations for Whitehorse

residents. The intent of this was to decrease public traffic within flood zones. These efforts exemplify the ingenuity and creativity required to address problems, and are a great example of inter-agency collaboration.

Strength: Highways and Public Works Staff were essential to sourcing key equipment and supplies.

IMT staff from WFM relied heavily on HPW staff to identify private sector resources. Whereas WFM has experience and knowledge of fire-related suppliers, staff deployed on behalf of HPW had strong relationships and local knowledge of heavy equipment operators, drivers, and suppliers that were essential to flood-response. This experience and knowledge could be utilized to build contractor lists and coordinate anticipatory contracts for future flood events. Consideration should also be given to permanently assigning HPW staff to the role of Logistics Section Chief or Deputy at future IMTs and in the ECC, and providing targeted training to HPW staff to take on these roles.

Strength: There was excellent utilization of local private sector resources.

Although there were challenges with contracting, staff were extremely appreciative of the efforts and availability of local businesses and contractors. In the future, it was recommended that anticipatory contracts be established for local contractors and consultants, and that they be engaged, where appropriate, in flood preparedness, including exercises and planning. This engagement may support to identify challenges and mitigation opportunities, and ensure availability of private sector resources in the future.

5.8 Public Communications & Engagement*

The Southern Lakes flood event was a high-profile event that affected a number of residents directly. Communication with residents was a high priority throughout the event, and a number of excellent lessons surfaced to enhance communications and engagement in the future.

**This section reflects staff and responder perspectives exclusively, and does not include specific feedback from the public – this will be essential to continue to evaluate and improve public communications and engagement in the future.*

5.8.1 Findings, Strengths and Areas for Improvement

Theme: Public Communication & Engagement	
Area for Improvement	**Strengths to Build On**
• There are inherent challenges in communications with unincorporated communities. • Material for public communication and flood hazard information had to be developed during response. • Approval processes for emergency information and communications should be streamlined. • The volume of public inquiries and calls, through the flood information line and email address, were difficult for staff to prioritize and manage. • Staff often felt that they were not well positioned to provide clear and transparent information to impacted residents. • There is limited capacity for community engagement in emergency response planning or recovery.	• The ECC Public Information Officer (PIO) and team did an excellent job getting critical information out to the public as soon as reasonably possible, and while working under significant pressure. • The IMT and ECC PIOs, supported by Community Affairs staff, utilized a suite of tools to get information out to unincorporated communities

Area for Improvement: There are inherent challenges in communications with unincorporated communities.

One ECC staff person described the challenges of communicating with residents of unincorporated communities:

> "It can be really difficult to communicate with unincorporated communities in a consistent way, because they don't all have an organizing body, or even a place to gather. So there are limited ways to communicate during emergencies. In Lake Laberge, for example, people kept saying they hadn't heard from us, but unless every resident gives us their email address, we don't have a way to get them urgent info. And even then, many people are off-grid without internet, and don't want to be reached….In Marsh Lake and Tagish there are better options. In places where there are Local Advisory Councils (LACS), or some groups have Facebook pages and community centres, these are good ways to get information out."

Whereas YG relies on First Nation and Municipal governments to communicate and engage directly with their residents, the responsibility for emergency communications for unincorporated communities lies with YG.

Compounding this, staff at the IMT and ECC were unable to identify specific efforts to communicate or identify vulnerable people living in impacted communities. "We relied on neighbours to help each other. We really didn't have a lot of information about who was where." In any emergency, some groups and individuals may be more acutely affected, and harder to reach. A number of intersecting factors may indicate greater vulnerability to flooding, including but not limited to: age, race, gender, income, language, physical and mental abilities, employment and geography. It is best practice to work to identify these groups, and ensure that they are able to access information and support in appropriate ways.

Area for Improvement: Material for public communication and flood hazard information had to be developed during response.

Staff noted an absence of "templates or information about flooding to get to residents." While EMO staff did confirm that private residents were advised to prepare for flooding, there were no specifics about how to do this appropriately. This was also highlighted by the French Language Service Directorate (FLSD). According to the FLSD, departmental staff "worked to exhaustion to translate materials. A lot of that could have been done in advance."

Experts with flood experience in Manitoba referenced the need for instructional material about "how to build a proper berm, where to locate it, and what level it should be constructed to." In the absence of flood mapping and HRVAs, specific information for different communities is very difficult to develop. Eventually, public communications were issued with better instructions, and materials were also developed to support volunteer operations. Staff felt that these were all processes that could have been undertaken as part of preparedness and planning.

Area for Improvement: Approval processes for emergency information and communications should be streamlined.

In dynamic emergency situations, where information is changing often, there is a need to communicate emergency information and directions clearly and quickly to those who may be impacted. Staff that

were trained in emergency communications were concerned that the sharing of specific emergency information was delayed by the direction to include more general information about government policy and commitments.

PIOs, at the ECC and IMT, commented that the approval process for communications "extended outside the ICS structure." For example, "non-WFM staff in the PIO role were seeking approval for emergency communications from their directors. This should be coming from the IC." In the context of the ECC staff reported that "Conventional government processes can be hindering. Getting a piece of information out to the Southern Lakes residents could take 4 levels of approval. We went to the ECC Director, then the EMO Director, then the ADM, and then sometimes the DM. In an emergency situation this is not reasonable." Staff felt that there were opportunities to differentiate between urgent emergency information that should be approved for immediate release by an IC or ECC Director, and other types of non-urgent communications that should require approval – such as those related to government recovery plans or funding commitments.

Area for Improvement: The volume of public calls and inquiries, through the flood information line and email address, were difficult for staff to prioritize and manage.

Communications staff reported that the Southern Lakes Flood email was receiving about 200 emails a day, and that the phone line was receiving a similar number of calls. "The majority of inquiries we got coming in were about volunteering – where to go, when to go, etc. So that took up a lot of time." In addition, "Some residents were using the phone line as 9-1-1." It was challenging for the one or two staff monitoring those platforms to prioritize issues, get answers and respond. Staff noted that "once materials were published on the website, and there was signage up at volunteer sites, this helped to decrease the calls." The flood information line and email represent good practice. They need to be adequately resourced, with clear prioritization protocols, to be effective.

Area for Improvement: Staff often felt that they were not well positioned to provide clear and transparent information to impacted residents.

Staff on the ground were encouraged to communicate as much as possible with impacted residents. There were pros and cons to this. One IC pointed out that, "residents directly impacted by flooding, and especially those that had been evacuated from their homes, should have a single, dedicated contact to get answers and support." Instead, residents were getting different information from different responders throughout each day. This was particularly challenging as the response continued into August and September. Staff noted that "residents were getting tired and frustrated. There was no way to track who had spoken to who, or who said what to who, so there was a lot of confusion." As noted by one staff person "I felt like they [impacted residents] thought I was lying, but they would ask for information about when a berm would come down, or what the plan was, and we just didn't have that information." And by another "I didn't know what I was allowed to say, I didn't know if there was liability if I gave the wrong information. They didn't want to be directed to the flood line again, but I felt like I couldn't say that we didn't have a plan yet." Another experienced responder noted that there was at times "A lack of empathy and compassion for the people who had been affected […] Some responders were just not the right people to be doing the frontline communications."

ECC Communications staff reported that they felt pressure to host meetings and events when they had no information to share, and this "eroded credibility, and made us feel like we were bad at our job." Staff reported that "politicians on all sides, and the public wanted more information then was available. But the situation was changing and we didn't know what was coming." Training, planning, and improved

internal and external communications processes could all help to alleviate these challenges for staff and the public.

Area for Improvement: There is limited capacity for community engagement in emergency response planning or recovery.

As set out in Canada's EM Strategy, whole-of-society collaboration in emergency management efforts is an essential step towards resilience. While many community meetings were held to provide information during the response, staff were unable to point to evidence of intentional engagement of residents and community stakeholders in emergency planning or recovery efforts. One staff person with significant emergency response experience shared the perspective that: "often when there were meetings, [YG representatives] were only talking about how much the government had done for them [the impacted public]. There was a lack of open, respectful, 2-way communications with community groups in flooded areas." Local authorities and First Nations also commented that "if YG really wants to know what's going on, they need to include the people that were impacted." Strong engagement does not necessarily mean that every individual issue will be addressed, but it can promote trust and transparency, and provide critical intelligence and support for a response.

In the context of emergency management, public engagement is very different than communications, and requires resourcing to be effective. As noted above, this challenge is particularly evident in unincorporated communities that lack organizing bodies and emergency preparedness responsibilities or funding. EMO is not resourced to support emergency planning for these communities, and currently does not have mandate or capacity for community engagement.

Strength: The ECC Public Information Officer (PIO) and team did an excellent job getting critical hazard information out to the public as soon as reasonably possible, and while working under significant pressure.

Prior to being supported by an additional 3 staff, the ECC PIO was the sole person responsible for both COVID-19 and flood communications. Considering this, the quality of materials that were released were exceptional. With the addition of staff, came the ability to focus on specific incidents. Feedback on public communications improved overtime, in part because of the added capacity to develop and distribute digital content. Staffing up the PIO role early can help YG get ahead of communications challenges, and ensure the effective distribution of key materials.

Strength: The ECC and IMT PIOs, working with Community Affairs staff utilized a suite of tools to get information out to unincorporated communities.

In addition to the flood information line and email, communications staff worked hard to get information out to residents in a wide range of formats. This included: the use of SAR volunteers for door-to-door notifications, community Facebook pages, signage in communities, zoom meetings and bulletins. Developing and coordinating these materials was a significant task with good learnings for the future. These materials and methods can be included in future plans, and modified for different types of potential hazards.

5.9 Transition to Recovery

The recovery phase of any incident is often the longest. At the time of writing, recovery planning for the 2021 flood is ongoing. While recovery planning and solutions are outside the scope of this report, staff did highlight concerns and opportunities with respect to the transition from response to recovery that are important for future planning.

5.9.1 Findings, Strengths and Areas for Improvement

Theme: Transition to Recovery	
Areas for Improvement	**Strengths to Build On**
• Recovery planning did not get underway until late in the response. • Once the state of emergency was rescinded, inter-departmental staff were unavailable to support recovery efforts, including data synthesis and demobilization. • There was limited information for evacuated residents about returning safely to their homes, and what would happen to flood protection infrastructure (ie: berms).	• Good work was done at the ECC to set out a framework for recovery planning. • The ECC and IMT engaged technical experts to provide advice on flood protection infrastructure and planning for 2022.

Area for Improvement: Recovery planning did not get underway until late in the response.

Leading practice in emergency management is to establish a Recovery Task Force or Recovery Operations Centre as soon as reasonably possible. This enables the acquisition of resources that may be required to support near-term recovery efforts, such as debris removal, berm deconstruction, and support for residents to return to their homes. It also allows for specific focus on long-term recovery policy and programs to support impacted stakeholders, such as disaster financial assistance. Other recovery tasks that require planning include timely staff debriefs, the consolidation and summary of response data, and the initiation of After Action Reviews.

In early August, the recommendation was made by experienced staff from WFM, CanTF-2 and the ECC Operations and Planning Sections, to establish a task force for this purpose. It is unclear why this recommendation was not acted upon. The delay of the transition to recovery meant that staff were not able to initiate this planning with the benefit of an activated IMT or ECC, and that recovery tasks have been drawn out.

Area for Improvement: Once the State of Emergency was rescinded, inter-departmental staff were unavailable to support recovery efforts, including data synthesis and demobilization.

Staff noted that, not having initiated recovery planning early, the transition to recovery was abrupt, leaving minimal resources to support related efforts. With the rescinding of the SoE, capacity to convene staff and resources to support recovery efforts was limited. Staff noted that there had not been consideration for what would happen with berms and flood protection infrastructure on private property when this happened. External consultants were eventually hired to make recommendations about berms. As the weather turned, there was limited capacity to remove berms that were damaged, and many residents started deconstructing berms on their property. In addition, access to data and event records was closed, and staff identified a lost opportunity to summarize and analyze critical digital data from the response. This information could have been used to generate maps, evaluate the response, and inform recovery and future preparedness planning.

Area for Improvement: There was limited information for evacuated residents about returning to their homes, accessing support, and what would happen to existing flood protection infrastructure (ie: berms).

As evacuation orders, and then the SoE was rescinded, there was limited information available for residents to clarify next steps. Some information was provided about how to safely return home. In addition, there was limited access to information about flood recovery – including disaster financial assistance.

In some areas, berms were removed by responders, however the berm at Marsh Lake remained in place. Consultants were retained to provide engineering advice regarding the status and integrity of berms, however, in the absence of clear direction, residents that did not want berms on their property deconstructed them, while others have left them standing. It was not made clear who's responsibility it was to maintain or remove this infrastructure after the flood risk subsided. This leaves the potential for safety risks. Work to answer these questions is ongoing with YG.

Strength: The ECC and IMT engaged technical experts to provide advice on flood protection infrastructure and planning for 2022.

The engineering firm Stantec was contracted to assess the status of flood protection infrastructure in the fall of 2021, and provide recommendations with respect to maintenance requirements over the coming winter. Stantec also provided guidance for EMO as to recovery priorities and preparedness actions for 2022. The team that provided this advice had been working on the flood event throughout the summer, and brought excellent perspective to advise on recovery efforts. This effort should put YG in a better position for future flooding.

Strength: Good work was done at the ECC to set out a framework for recovery planning.

While it was not utilized, there is evidence of good work done by staff at the ECC to review leading practice for recovery planning, and to establish a proposal to implement a recovery task force and support concurrent response and recovery efforts. Building capacity to enable early recovery operations will greatly enhance resilience to future floods. This work can be refined and leveraged to support future recovery operations, SOPs and policies.

6 Recommendations & Actions for Consideration

The recommendations and actions identified below are drawn from analysis of the thematic issues, strengths and challenges identified by AAR participants, and expert knowledge of leading practice in emergency management and disaster risk reduction. Prior to implementation, YG will need to evaluate and prioritize these recommendations in the context of other risks and hazards that YG is responsible for managing, as well as other government priorities. Approaches and timelines for implementation may vary, based on internal capacity, knowledge, resources and risk tolerance.

6.1 Recommendations 1-6: Emergency Plans, Policy and Governance

The following Recommendations and Actions for Consideration relate primarily to the themes, strengths and challenges set out in Section 3: Emergency Plans, Policy & Governance. They support alignment of YG practices and policy with Priority 1 of Canada's EM Strategy: Enhance whole-of-society collaboration and governance to strengthen resilience.

Recommendation 1: Develop a Yukon Territorial Framework for Emergency Management and Disaster Risk Reduction

In alignment with leading practice, the Minister of Community Services should direct and ensure resources are made available for the development of a comprehensive Yukon Territorial Framework for Emergency Management and Disaster Risk Reduction. This framework should be relevant to the hazards, risks and vulnerabilities of the Territory and communities, complement YG's Our Clean Future plan, and align with the priorities and principles of Canada's EM Framework.

Actions for Consideration:

To support this recommendation, YG could consider the following actions:

- Establish a Directors Working Group, chaired by EMO to oversee the development and implementation of this framework, and ongoing prioritization of efforts. This could be modelled based on the ECG.
- Engage with communities, experts and emergency management partners in the development of the framework.
- Establish a timeline for development and implementation of the framework, including near and long-term objectives.
- Ensure the framework sets out a clear governance model, and embed framework priorities into future emergency management legislation.
- Develop support tools and programs for Communities and First Nation Governments to align their EM programs within the YG Framework.
- Utilize open-source Sendai Framework assessment tools to establish a baseline for emergency management and DRR knowledge and practices across government, and set reasonable targets, timelines and risk reduction priorities.

Recommendation 2: Review and update the Yukon Government Emergency Coordination Plan (ECP)

Establish and invest in an inter-departmental process to review and update the Yukon Emergency Coordination Plan. Establish a timeframe to review and update complementary planning documents (including hazard specific and departmental plans).

Actions for Consideration:

- Accelerate the completion of an HRVA or HIRA, to underpin this work (see recommendation 7).
- Align the ECP with an updated Yukon Emergency Management Framework (per recommendation 1).
- Have the ECP approved by Cabinet and regularly updated to reflect organizational changes.
- Include clear roles and responsibilities for all departments across the spectrum of preparedness, mitigation, response and recovery.

Recommendation 3: Integrate emergency management responsibilities into departmental mandates and ensure resources for implementation.

a. Senior Leadership (ADMs, DMs & Ministers) should clarify and embed responsibilities for emergency management within departmental mandates, and ensure sufficient resources are assigned to accommodate these responsibilities.

b. Establish a process for leadership to give clear direction to departments regarding the elements of their workplans that they will modify in order to facilitate their role(s) in emergency response.

Actions for Consideration:

- Prioritize inter-departmental engagement in preparedness, as a strategy to reduce resource demand and costs during response.
- YG could leverage work done through COVID to create business continuity plans.
- YG should consider establishing an emergency contingency fund that can be drawn on when departmental budgets are exceeded.
- Where YG departments utilize cost-recovery models, service level agreements should be in place to support surge capacity to support EMO, the ECC and IMTs during response.

Recommendation 4: Establish decision-making protocols and train senior leadership and elected officials in emergency management policies and practices.

a. Develop and deliver emergency management training and support tools for leadership (ADM/DM/Cabinet & Elected Officials) to guide them during preparedness and response efforts.

b. Establish terms of reference for ADM/ DM Executive Emergency Management Committees and sub-committees that:

a. Identify clear decision-makers and the level of decisions they will be asked to make.
b. May include hazard-specific membership.
c. Limit the number of members on each committee to facilitate urgent decision-making.
d. Clearly positions the executive committees in the chain-of-command
e. Includes specific requirements for DMs/ADMs to make available staff and resources from their respective departments to plan for and respond to emergencies.
f. Clarifies the reporting relationship between IMTs, ECC, EMO and other lead agencies with the executive committee, and ensures streamlined communications procedures.

Actions for Consideration:

- Require annual training for leadership.
- Utilize seasonal scenario-based training and exercises to familiarize leadership with plans and processes.
- Engage Executive Emergency Management Committees and Sub-Committees to make proactive decisions on key policy issues, to be integrated into emergency and flood hazard plans.
- Identify opportunities for leadership to observe and participate in emergency response in other jurisdictions, to bring back lessons and establish relationships and networks that can be activated to support future response needs.

Recommendation 5: Clarify flood response policy, including issues related to public-private responsibilities, volunteer management, and recovery programs.

Address, as soon as reasonably possible, outstanding flood policy issues identified in previous AARs, as well as new issues identified through the 2021 flood response. These include:

- A policy that sets out the limitations of government-led response on private property, and clarifies the authorities of YG staff on private property.
- Direction for private property owners on their responsibilities in flood risk mitigation, including specifications for appropriate measures (ie: required height of berms, distance from shoreline of belongings and buildings, safety considerations).
- A volunteer coordination and management policy.
- Policy to enable the activation of emergency response operations and the continuation of emergency recovery activities in the absence of a declared State of Emergency.
- A disaster financial assistance and recovery policy so that citizens and staff understand the options available to them

These policies should be clearly articulated in the Flood Coordination Plan, referenced in Recommendation 12.

Recommendation 6: Explore options to enhance local-level planning and clarify response authorities, particularly for unincorporated communities.

a. Address critical gaps in flood and emergency planning, preparedness and governance for unincorporated communities.

b. Establish a consistent and balanced process for MLAs, as the representatives of unincorporated communities, to support engagement and information sharing between citizens and responding agencies, including EMO.

c. Clarify specific authorities for YG IMTS when responding in an unincorporated community, and ensure sufficient training and support is in place to carry out these authorities.

Actions for Consideration:

- Explore options to resource and convene regional stakeholders in emergency planning and preparedness efforts.
- In the absence of staff resources to support dedicated emergency planning, YG could establish community preparedness grants to support community-led emergency preparedness efforts.

- Explore the potential to establish remote community liaison positions within EMO to support local or regional emergency preparedness efforts.
- Where YG is intended to serve as the local authority, consider a unified command model inclusive of multiple YG departments to support effective incident management.

6.2 Recommendations 7-11: Flood Preparedness

Recommendations 7 – 11, and the Actions for Consideration set out in this section, are drawn from the themes, strengths and challenges identified in Section 4: Flood Preparedness. They support alignment with Priorities 2 & 3 of Canada's EM Strategy:

- Improve understanding of disaster risk in all sectors of society.
- Increase focus on whole-of-society disaster prevention and mitigation activities.

Recommendation 7: Complete a Territorial Hazard Risk & Vulnerability Analysis (HRVA) to support evidence-based emergency management.

YG should resource and accelerate the completion of a Territorial HRVA or HIRA that includes community-level assessment of hazards, risks and vulnerabilities. This assessment should include cultural, social, economic, environmental and other physical assets at risk from hazards.

Actions for Consideration:

- Establish an HRVA development process that engages local communities and leverages the work of the Climate Action Secretariat to assess climate risks.
- Use a model that can be downscaled to support communities to apply the HRVA to the development of their emergency plans and risk reduction efforts.
- Under the YG governance framework, establish a timeline to review and update the HRVA, to ensure that changes in climate, infrastructure, environment and demographics are included.
- Once completed, the HRVA should guide the prioritization of emergency planning and risk reduction efforts across government, based on a strategic plan approved by EM Executive Committees.

Recommendation 8: Resource enhancements to flood modelling, mapping and forecasting to support emergency planning, response and risk reduction.

Resource the Department of Environment and Water Resources Branch to carry out flood modelling, mapping and forecasting actions identified in Our Clean Future, as well as to enable sustainable support for emergency preparedness and response.

Actions for Consideration:

- Leverage existing partnerships and recently announced federal funding to advance this work.
- Establish an inter-departmental flood policy committee to guide the modernization of a flood management program, and ensure that this work is relevant for a broad spectrum of risk reduction efforts, including but not limited to: emergency response, community planning, infrastructure planning and development, and environmental adaptation efforts.
- Utilize flood maps and forecasts to establish Flood Response Corridors - a leading practice from Manitoba, whereby there are established locations for the construction of temporary berms based on flood mapping and elevation. These corridors are stable and ensure that all parties (responders, property owners, and the public) are aware of the potential for a berm to be constructed there.

Recommendation 9: Develop a process to engage partners and departments in seasonal planning for flood hazards.

EMO should establish criteria / thresholds for the seasonal activation of the ECC, and /or a flood emergency preparedness and response task force, to enable the part or full-time deployment of inter-departmental staff in support of preparation and mitigation actions in advance of emergency response.

Actions for Consideration:

Seasonal preparedness activities may include the following:

- Review and update on status of actions from previous after action reports
- Risk assessment and monitoring
- Proactive procurement and pre-positioning of resources
- Staff rostering
- Coordination of preparedness activities with communities and municipalities
- Strategic and tactical planning for high risk areas
- Contracting of flood consultants and experts as needed to support planning and response requirements
- Contracting of private sector resources as required
- Delivering updates to and receiving policy direction from Executive EM Committees
- Coordination of the distribution of preparedness information to the public

Recommendation 10: Conduct seasonal table-top exercises to support flood preparedness and response.

In partnership with Environment, WFM and external agencies, EMO should lead seasonal planning table-top exercises based on current year flood forecasts. These exercises may be used to support contingency planning, identify resources gaps, and ensure that YG departments, staff and external agencies are prepared for their roles in response and recovery.

Actions for Consideration:

- Work with WRB to design exercise scenarios, based on annual most probable and worst-case scenarios.
- Include Yukon First Nations, municipal staff, and community organizations in exercises, where appropriate, to establish risk and readiness of communities to respond, as well as their capacity to support response outside their jurisdictions.
- Exercises can range in complexity, and may include a series of simple 1-2 hour sessions to address different aspects of flood preparedness and response.
- Include executive leadership in exercises to test and confirm their roles in response .
- Include external agencies where appropriate.

Recommendation 11: Support Municipalities and First Nation Governments to lead local-level emergency planning efforts

a. Ensure staff and financial resources are available to support the development and update of municipal and First Nation emergency plans, as committed to in Our Clean Future.

b. Explore and propose options to support emergency planning and preparedness for unincorporated communities.

Actions for Consideration:

- Expand staffing of EMO to include dedicated community emergency planner positions that can work with communities to develop, exercise, and maintain emergency plans.
- Support knowledge sharing across communities, including lessons learned, from the proactive examples from the City of Whitehorse, Village of Teslin and Teslin Tlingit Council in mitigating the impacts of flooding in 2022.
- Establish pre-determined distribution points and storage locations for flood response resources in and around communities at risk.
- Establish an emergency preparedness fund for communities to address unique priorities based on local HRVAs; Support communities to access federal funding intended to support municipal and community preparedness initiatives.
- Evacuations are a major concern for communities, YG could work with communities to provide guidance, and support the development of evacuation plans, including identification of potential destinations for evacuees.

6.3 Recommendations 12-21: Incident Management, Response & Recovery

Recommendations and Actions for Consideration in this section are drawn from the themes, strengths and challenges discussed in Section 5: Incident Management, Response and Recovery. They focus on alignment of YG practices with Priorities 4 & 5 of Canada's EM Framework:

- Enhance disaster response capacity and coordination and foster the development of new capabilities, and,
- Strengthen recovery efforts by building back better to minimize the impact of future disasters.

Recommendation 12: Update the Flood Coordination Plan (FCP) and develop Tactical Response Guidelines for flood hazards.

a. YG EMO should coordinate an inter-departmental process to update and approve the Flood Coordination Plan. This plan should be approved by cabinet, shared broadly with staff across lead departments, and resourced for implementation. At a minimum, the updated FCP should establish:

- Lead agency or unified command status, and a clear outline of the roles and responsibilities associated with these roles in flood preparedness, response and recovery.
- An integrated operational plan for the activation of a Flood IMT by the ECC. This plan should include clear organizational structure, roles, responsibilities and authorities granted to each entity during response. This plan should outline clear structures for incorporated and unincorporated communities.

b. To complement the FCP, the lead agency/unified command identified for floods should establish Tactical Response Guidelines. This should:

- Establish safety and operational priorities for the activation of an IMT and the initiation of flood response activities.
- Include decision support and risk assessment tools.
- Include specifications and instructions for flood protection infrastructure.
- Include templates and tools to be utilized for damage assessment and monitoring.
- Wherever possible, link to hazard assessments, flood modelling, maps and other relevant data sources.

Actions for Consideration:

- Conduct a series of planning workshops with relevant departments to develop and refine plans, and confirm flood-specific roles and responsibilities.
- Consider replacing the Lead Agency status with a Unified Command model for flood preparedness and response. This could include, for example, a Unified Command including EMO, Environment and WFM.
- Establish criteria for transferring the reporting of the IMT from the YDO directly to the ECC for support, this could be based on the magnitude of flood and fire response operations ongoing.
- Engage experts from out-of-territory response teams in the development of guidelines for flood protection tactics.

Recommendation 13: Ensure that staff safety, mental health and wellness is prioritized at all stages of a response.

a. YG should prioritize staff mental health and wellness, through the development of clear and consistent standard-operating-procedures for staff responding to emergencies.

b. Identify and/or train qualified flood safety officers and ensure this position is staffed from the outset of a Flood IMT activation.

Actions for Consideration:

- Include standard deployment timelines and mandated time off to recover between response deployments and return to substantive positions.
- Consider including emergency management responsibilities directly in position descriptions, so that staff know to expect that they may be reassigned or deployed to support essential roles.
- Include staff debriefs for all staff prior to leaving their response assignment.
- Embed mental health experts within the IMT or ECC to monitor the situation and support proactive outreach to responders.
- Continue the practice of daily safety briefings and inclusion of safety messaging in IAPs.
- Ensure staff understand and work within an appropriate span-of-control.

Recommendation 14: Continue to strengthen HR and staff reassignment processes for emergency management and incident response.

Refine and maintain the HRMT skills inventory and staff reassignment policy and procedures, and integrate this process into YG's ECP and ECC OGs.

Actions for Consideration:

- Formalize the practice of embedding HRMT staff into personnel units at the EOC and IMT.
- Train IMT and ECC staff on the digitized process for staff resource requests to limit duplication and streamline staffing processes.
- Engage HRMT early on in preparedness efforts to establish staffing schedules and rosters for long duration responses.
- Refine ICS position descriptions developed through the flood so that they are available to support future emergency response operations.
- Expand the application of the HRMT skills inventory, to identify strong candidates for emergency management training.

Recommendation 15: Build capacity for and resource inter-departmental response.

Expand inter-departmental training opportunities for staff including for IMT and ECC deployments.

Actions for Consideration:

- Develop a coordinated training approach for IMT and ECC staff.
- Leverage the HRMT skills inventory to target staff for training.
- Require manager sign-off for accepting staff into training. Sign-off would signify support for staff participation in training, and their deployment to support emergency operations.
- Make a practice of deploying staff to emergencies in other jurisdictions to gain experience and build territorial capacity.
- Take advantage of mentorship and training services offered by agencies such as Can TF 2, for example by rostering less experienced staff alongside them.

Recommendation 16: Explore options to expand YG's flood and all-hazard tactical response capabilities.

a. Explore the feasibility of establishing a program to develop and train inter-departmental flood assessment and response teams. These 3-4 person teams would decrease the requirement of external experts, and the demand on WFM responders during fire season. This may include:

- Safety training and risk assessment.
- Identification of appropriate mitigation and prevention strategies.
- Thresholds and criteria for decision making about when, where and how to establish flood protection systems.
- Instruction in the proper construction & monitoring of dykes and berms.
- Training in standard inspection forms and processes for reporting.
- Training in public engagement and communication practices for work taking place on private property.

b. Evaluate options for an expanded preparedness and response mandate for WFM, to include flooding and other potential hazards, based on a YG HRVA.

Actions for Consideration:

- Expand seasonal staffing numbers and contract lengths where feasible.
- Research costs associated with training, maintaining and supporting flood response teams and resources in other parts of Canada.
- For an expanded WFM Mandate: consider cost-recovery and training opportunities through staff deployment to support fire and flood response nationally and globally.
- Contract experts and/or utilize pre-existing tools such as those developed by the Province of BC, CAN-TF 2 and the Province of Manitoba to establish tactical teams and training programs.
- Offer training opportunities to Yukon First Nations, Local Authorities, and volunteer organizations (i.e.: SAR, volunteer firefighters).
- Maintain teams of 3-4 YG staff that can be deployed territory wide, and provide on-the-job training as needed and build local capacity.
- Consider options to integrate all-hazards into this approach.

Recommendation 17: Modernize EM technologies and practices for more efficient information sharing and analysis.

Build on the lessons and experience of Geomatics Yukon during the 2021 flood response to identify opportunities for workflow automation, improved data management and GIS capabilities for emergency preparedness and response.

Actions for Consideration:

- EMO should establish a service-level-agreement with Geomatics Yukon to ensure that GIS capabilities are in place for future emergency preparedness and response.
- Review specific issues and challenges with the Survey 123 tool, in order to develop an automated damage assessment and berm monitoring approach.
- Evaluate options to modernize YG EM and Incident Management via the integration of digital emergency management information systems, including a GIS-based common operating picture.
- Explore options to integrate and standardize resource requests, contract development and approval, and documentation processes across IMTs and the ECC.

Recommendation 18: Plan for and develop programming to support volunteer response during future flood emergencies.

Effectively leverage volunteer capacities through the development of an emergency volunteer coordination plan and establish a volunteer coordinator role to be activated for flood emergencies. This plan should include guidelines for volunteer engagement, training, tracking, coordination, communication. It should include specific requirements related to risk mitigation, safety and liability.

Actions for Consideration:

- Implement a separate information line for members of the public inquiring about volunteering.
- Explore partnership options with local businesses and organizations interested in supporting emergency volunteer efforts.
- Deliver seasonal training sessions for volunteers and residents interested in supporting flood protection efforts.
- Identify community volunteer leaders and or staff to be on site at volunteer stations at all times.
- Identify roles for volunteers and associated qualifications for those roles.
- Establish volunteer stations and gathering locations in areas separate from IMT response operations.
- Consider working with or contracting volunteer management organizations to support and lead this work during response.

Recommendation 19: Develop an emergency public communications plan.

Leverage the materials and lessons from the 2021 Flood Season to develop public emergency communications plan for flood events. This should include:

- Instructional materials and templates translated into both official languages.
- Guidelines for flood briefings.
- A range of options for communicating with unincorporated communities.
- Staff rostering plans and guidelines to ensure sufficient time off and back up for communications staff.

- Clarification of levels of approval required for different types of emergency information, targeting approval at the lowest possible level for critical issues (i.e.: emergency evacuations).

Actions for Consideration:

- For large scale flood events, provide a dedicated contact for residents and property owners that have been directly affected. This should be separate from the general flood line.
- Consider deploying dedicated communications staff to the site, to be a direct in-person contact for residents and decrease burden on front line staff to respond to resident inquiries.
- Develop briefing materials to support front line staff in effective, kind and respectful communications with impacted residents.
- Develop guidelines for establishing local flood information stations, where impacted residents can go to get up-to-date information.
- Embed FLSD staff with the PIO to ensure legislative requirements are met and French speaking residents have access to essential information.
- Continue to utilize SAR volunteers for door-to-door notification of evacuations and the distribution of information for remote residents.

Recommendation 20: Streamline resource procurement and management practices and support training for staff in these roles.

a. Review, refine and establish streamline processes for issuing and tracking resource requests, and developing and managing contracts. This should include a consistent process for requests across the IMT and ECC.

b. YG (WFM & EMO) should adopt the training materials and processes established during the 2021 Flood to improve contract management. This includes the practice of sending a FS staff person to the field to coordinate with Division Supervisors.

c. EMO should maintain, as part of the FCP, a contact list of contractors and suppliers, and establish anticipatory contracts with critical suppliers to ensure capacity to respond to flood events.

Actions for Consideration:

- Work with Geomatics Yukon to establish a digital process that enables real-time tracking of resource requests and contracts.
- IMTs should staff the Finance Section Chief role early, and ensure that a YG FSC or Deputy is in place in the event that out-of-territory teams are deployed.
- EMO and WFM should work with HPW to formalize logistics and finance roles for HPW, and establish processes for contracting and procurement that align with YG protocols**.**

Recommendation 21: Build recovery planning guidelines and public information into flood response plans.

a. Develop a recovery guideline to complement the ECP that supports the early initiation of recovery work that is independent of response operations.

b. Develop support materials for the public for safe return to their homes, and clarifying responsibilities and risks associated with any remaining flood protection infrastructure on their property.

Actions for Consideration:

- Building on leading practice from other jurisdictions, consider formalizing a Recovery Operations Centre or task force, that can be stood up during response, to prioritize recovery resources and policies.
- Consider tasking senior leadership with responsibility for chairing this work.
- Include options for public engagement (not just communications) to inform recovery priorities.
- Ensure adequate staff resources are available to support this work.
- Evaluate and establish working groups as needed for long-term recovery requirements.

7 Conclusion – Toward Flood Resilience

The successful outcomes of the 2021 flood response were made possible by the dedication and commitment of hundreds of YG staff, municipal and First Nation staff, alongside residents, volunteers, and expert teams from across the country. This response can be characterized as a largely reactive and emergent process – meaning that teams learned as they went and devised strategies as issues arose. The reactiveness of this response is not surprising – the impacts of COVID-19 over the previous year meant that planned flood and emergency preparedness efforts could not be completed. Prior to that, the majority of recommendations from AARs of flood events in 2007 and 2012 had not implemented. This may be because there was a sense that flooding was not a major issue, relative to other government priorities over the last 24 years.

The need to establish a "culture of preparedness" was expressed by senior leaders, staff and community representatives alike. This shift is at the heart of Canada's Framework for Emergency Management, and reflects the reality that communities and governments can no longer afford to wait and respond to more frequent and severe hazards.

As flooding becomes more prevalent in Yukon, YG has an opportunity to adapt and build internal capacity to manage and reduce this risk. The 2021 floods demonstrated that YG can mount a coordinated inter-agency approach, and offered many lessons for strengthening capacity for the future. The majority of issues experienced during the 2021 floods, can be addressed through comprehensive, whole-of-government flood policies, planning and preparedness.

The Recommendations and Actions for Consideration in this report must be reviewed and evaluated by YG in the context of other pressing emergency management needs. Some of them would benefit from immediate action, while others are systemic in nature and will need to be integrated into longer-term strategic planning. A strong flood-risk governance structure and HRVA would support this work.

In the near term, departments and communities can be engaged in preparedness and planning, reporting structures can be clarified, resources can be pre-positioned, training can be delivered, and agreements put in place to ensure response capacity. Overtime, and with a better understanding of the future of flood risk, more targeted strategies can be established, and greater capacity for tactical response can be developed across the Territory. Over the longer term, adaptive infrastructure investments can protect assets and reduce the cost of response.

In conjunction with ambitious climate adaptation and resilience actions established through Our Clean Future, YG is well positioned to adapt its approach to emergency management, and be a leader in proactive flood risk reduction and preparedness.

8 Appendix 1: Consolidated Table of Strengths and Areas for Improvement

Category 1: Emergency Plans, Policy & Governance		
Theme	**Strengths**	**Areas for Improvement**
Status and Application of Flood and Emergency Plans and Policies	• There is an opportunity to build on experience from COVID-19, and document and formalize successful emergent processes from flooding and COVID-19 response. • There is evidence of essential inter-agency planning work underway prior to the COVID-19 response.	• Yukon would benefit from an overarching framework for whole-of-government emergency management. • Existing emergency plans and policies need to be aligned and updated. • Work is required to familiarize staff and leadership with emergency plans, policies and procedures. • The FCP does not provide clear direction on key policy issues that arose in previous incidents, and in the 2021 floods.
Departmental Mandates, Roles & Responsibilities for Flood and Emergency Management	• There is broad commitment and interest in proactive engagement in emergency management, and clarifying mandates for departments. • There is good precedence for whole-of-government and inter-agency emergency management processes within YG.	• Staff and management identified that most departments do not have a specific mandate to support flood or emergency management. • EMO mandate and responsibilities far exceed staff capacity to fulfill them. • Department managers and directors did not feel they could reprioritize workplans or access contingency funding to support their contributions to flood response.
Defining & Supporting Roles and Responsibilities of Executive, Ministers and Elected Officials	• Elected officials have strong local knowledge and connections that supported information gathering, outreach and volunteerism.	• There is a need to establish clear reporting and briefing structures for senior leaders and elected officials to ensure they are well informed and able to make urgent flood-policy decisions in a consistent and efficient way. • At times senior leadership and elected officials provided direction to responders outside of the ICS structure.
EM Governance and Authorities for Municipalities and Unincorporated Communities	• Where municipalities were the lead agency there was more clarity around responsibilities for objective setting, response priorities, and the respective roles of YG Incident Command/ IMTs and the ECC. • First Nation and local authority knowledge and connections were beneficial in facilitating emergency response processes.	• Southern Lakes IMTs were unclear on what authority they had to establish and implement emergency response objectives. • There is no clear mechanism for community-engaged emergency planning for unincorporated communities.

Category 2: 2021 Flood Preparedness		
Theme	**Strengths**	**Areas for Improvement**
Understanding Flood Risk	• The Water Resources Branch developed excellent working relationships with other agencies that supported preparedness and response. • Seasonal forecasting and seasonal readiness meetings are an excellent practice that could be leveraged to conduct risk assessments. • Local knowledge from of First Nations Land Stewards, community leaders and citizens can provide important intelligence to bolster risk assessment and support anticipatory planning.	• Yukon would benefit from Hazard Risk and Vulnerability Analyses to inform territorial and local planning and preparedness. • Flood map and forecast capabilities and resources are not sufficient to meet the emergency planning, preparedness and response needs of the future. • WFM & IMT staff would benefit from decision support tools and real-time data to confidently evaluate risk on the ground.
Flood Preparedness & Training	• Local knowledge of WFM Regional Duty Officers (RDO) and staff combined with experience in 2007 contributed to good decision making in the preparedness and early response phase. • The ECC Director leveraged the COVID activation to initiate flood planning and preparedness.	• A number of departments did not participate and/or were not engaged in early preparedness discussions • Limited capacity and ongoing COVID-19 and Fire Management activities left few resources for flood training and exercises in 2021. • YG lacked flood experience and response expertise to inform operational tactics or advanced planning for possible flooding.
Community Emergency Preparedness	• Local Authorities and First Nations have a strong understanding of what they need in order to prepare for flooding in the future, and, with support can lead effective response. • Proactive planning at the local level mitigated flood risk and enabled municipal and First Nation governments to provide support to other communities.	• Communities need support for holistic emergency planning and preparedness. • Communities are concerned about evacuation capabilities.

Category 3: Incident Management, Response & Recovery		
Theme	**Strengths**	**Areas for Improvement**
Coordination between the IMT and ECC	• Communications and reporting processes within the ECC and IMT were well understood by staff with experience in ICS, or who had taken ECC training. • Communication and coordination between municipally-led responses, WFM and the ECC was effective.	• There is discrepancy between EMO and WFM teams in their respective understanding of the scope of the role of IMTs activated for flood response. • There is a need to clarify roles, responsibilities and reporting structure between the ECC and IMT. • The role of the ECC In leading some aspects of response, such as evacuation orders and volunteers, while playing a supporting role to the IMT in others, led to further confusion about which entity was responsible for decision-making. • The role of the YDO and IMT liaison between the IC and the ECC created a bottleneck for communications and led to duplication of efforts.
Planning, Documentation and Internal Communications	• Incident Action Plans, daily briefing documents, org charts and morning briefings were highly effective. • Workflow automation applications developed mid-response by Yukon. Geomatics have the potential to greatly enhance emergency management processes and documentation.	• The IMT Planning Section was understaffed in the early stages of the response. • Different IMTs took different approaches to generating incident objectives for IAPs. • Neither the ECC or the IMT had capacity to conduct advanced planning or establish contingency plans. • YG lacks a digital platform to support a Common Operating Picture (COP) for emergency management. • Tools developed and rolled out during the response for berm inspections, were not refined enough for effective use in response.
Engagement of Out-of-Territory IMTs & Technical Experts	• The activation of mutual aid agreements, and integration of out-of-province teams and experts was highly effective • As the incident progressed, incident planning became more streamlined and there was improved coordination with technical experts.	• Flood experts could have been engaged earlier to provide preparedness advice. • There was a missed • opportunity to build internal YG capacity through training with expert teams. • Technical experts were not always able to elevate critical issues for inclusion in plans
Human Resources & Staff Wellbeing	• Many YG staff went above and beyond to support the response, this should be recognized and celebrated. • The HRMT Staff Reassignment Process and Skills Inventory were highly effective, and embedded HR staff within the IMT and ECC were essential • Inter-departmental collaboration has strengthened staff relationships and built capacity for future whole-of-government response.	• Staff and leadership identified significant concerns with respect to mental health and wellness of staff, and their willingness to contribute to response in 2022 • Not all staff had the appropriate level of training or experience for the ICS roles they were assigned. • WFM has limited staff capacity to respond to both flood and fire risk • Staff position descriptions were developed on-the-fly for ICS roles • There is room for improvement in onboarding, handover and transition processes • HRMT staff reassignment process is only effective under CEMA.
Volunteer Contributions and Coordination	• Yukoners want to help, and volunteers can and should be planned for in the future. • Volunteers have good insight and experience that could be harnessed for future planning.	• The overwhelming desire of volunteers to assist, overwhelmed staff capacity to coordinate, leading to challenges. • In some locations, volunteers were co-located with emergency response operations, posing safety and management challenges.
Safety	• The majority of staff felt there were clear pathways to report safety concerns, and that safety was a priority. • Safety Officers acted quickly to identify and mitigate safety issues.	• YG staff require training on flood safety protocols. • At times the assignment of resources and contractors exceeded the span-of-control for supervisor. • Staff and supervisors were driving long distances throughout the day.

Procurement, Management & Allocation of Flood Response Resources	• Overall, resources got where they needed to go, and critical tasks were achieved thanks to hard work by staff at all levels. • Once staffed the IMT Finance Section established effective processes to address contracting challenges. • The ECC demonstrated creativity in coordinating sandbag filling and delivery • Highways and Public Works Staff were essential to sourcing key equipment and supplies. • There was excellent utilization of local private sector resources.	• YG IMTs and the ECC would benefit from a standard or streamline process for issuing and filling resource requests. • YG finance and contract management processes were not well understood by IMT staff or out-of-province teams. • A high reliance on the private sector for equipment and operators may prove a challenge in the long run.
Public Communications & Engagement	• ECC PIO and team did an excellent job getting critical information out to the public as soon as reasonably possible, and while working under significant pressure. • The PIO and Community Affairs utilized a suite of tools to get information out to unincorporated communities.	• There are inherent challenges in communications with unincorporated communities. • Material for public communication and flood hazard information had to be developed during response. • Approval processes for emergency information and communications should be streamlined. • The volume of public inquiries and calls, through the flood information line and email address, were difficult for staff to prioritize and manage. • Staff often felt that they were not well positioned to provide clear and transparent information to impacted residents. • There is limited capacity for community engagement in emergency response planning or recovery.
Transition to Recovery	• The ECC and IMT engaged technical experts to provide advice on flood protection infrastructure and planning for 2022. • Good work was done at the ECC to set out a framework for recovery planning.	• Recovery planning did not get underway until late in the response. • Once the state of emergency was rescinded, inter-departmental staff were unavailable to support recovery efforts including data synthesis and demobilization. • There was limited information for evacuated residents about returning safely to their homes, and what would happen to remaining flood protection infrastructure (ie: Berms).

9 Appendix 2: Table of Recommendations and Actions for Consideration

Emergency Plans, Policy & Governance *In alignment with Canada's EM Strategy, Priority 1: Enhance whole of society collaboration and governance to strengthen resilience.*		
#	**Recommendation**	**Actions for Consideration**
1	**Develop a Yukon Territorial Framework for Emergency Management and Disaster Risk Reduction** In alignment with leading practice, the Minister of Community Services should direct and ensure resources are made available for the development of a comprehensive Yukon Territorial Framework for effective whole-of-society emergency management and disaster risk reduction. This framework should be relevant to the specific hazards, risks and vulnerabilities of the Territory and communities, complement YG's Our Clean Future plan, and align with the priorities and principles of Canada's EM Framework.	• Establish a Directors Working Group, chaired by EMO to oversee the development and implementation of this framework, and ongoing prioritization of efforts. This could be modelled based on the ECG. • Engage with communities, experts and emergency management partners in the development of the framework. • Establish a timeline for development and implementation of the framework, including near and long-term objectives. • Ensure the framework sets out a clear governance model and embed framework priorities into future emergency management legislation. • Develop support tools and programs for Communities and First Nation Governments to align their EM programs within the YG Framework. • Utilize open-source Sendai Framework assessment tools to establish a baseline for emergency management and DRR knowledge and practices across government, and set reasonable targets, timelines and risk reduction priorities.
2	**Review and update the Yukon Government Emergency Coordination Plan (ECP)** Establish and invest in an inter-departmental process to review and update the Yukon Emergency Coordination Plan. Establish a timeframe to review and update complementary planning documents (including hazard specific and departmental plans)	• Accelerate the completion of an HRVA or HIRA, to underpin this work (see recommendation 7) • Align the ECP with an updated Yukon Emergency Management Framework. • Build on the strengths of the existing ECP • Have the ECP approved by Cabinet and regularly updated to reflect organizational changes • Include clear roles and responsibilities for all departments across the spectrum of preparedness, mitigation, response and recovery.
3	**Integrate emergency management responsibilities into departmental mandates and ensure resources for implementation** a. Senior Leadership (ADMs, DMs & Ministers) should clarify and embed responsibilities for emergency management within departmental mandates, and ensure sufficient resources are assigned to accommodate these responsibilities. b. Establish a process for leadership to give clear direction to departments regarding the elements of their workplans that they will be expected to modify in order to facilitate their role (s) in emergency response.	• Prioritize inter-departmental engagement in preparedness, as a strategy to reduce resource demand and costs during response. • YG could leverage work done through COVID to create business continuity plans. • YG should consider establishing an emergency contingency fund that can be drawn on when departmental budgets are exceeded. • Where YG departments utilize cost-recovery models, service level agreements should be in place to support surge capacity to support EMO, the ECC and IMTs during response.
4	**Establish decision-making protocols and train senior leadership and elected officials in emergency management policies and practices.** a. Develop and deliver emergency management training and support tools for leadership (ADM/DM/Cabinet & Elected Officials) to guide them during preparedness and response efforts. b. Establish terms of reference for ADM/ DM Executive Emergency Management Committees and sub-committees	• Require annual training for leadership. • Utilize seasonal scenario-based training and exercises to familiarize leadership with plans and processes. • Engage Executive Emergency Management Committees and Sub-Committees to make pro-active decisions on key policy issues to be integrated into emergency and flood hazard plans. • Identify opportunities for leadership to observe and participate in emergency response in other jurisdictions, to bring back lessons and establish relationships and networks that can be activated to support future response needs.
5	**Clarify flood response policy, including issues related to public-private responsibilities, volunteer management, and recovery programs** Address outstanding flood policy issues identified in previous AARs, as well as new issues identified through the 2021 flood response. These include: • A policy for that sets out the limitations of government-led response on private property, and clarifies the authorities of YG staff on private property. • Direction for private property owners on their responsibilities in flood risk mitigation, including specifications for appropriate measures. • A volunteer coordination and management policy. • Policy to enable the activation of emergency response operations and the continuation of emergency recovery activities in the absence of a declared State of Emergency. • A disaster financial assistance and recovery policy so that citizens and staff understand the options available to them	

6	**Explore options to enhance local-level planning and clarify response authorities, particularly for unincorporated communities.** a. Address critical gaps in flood and emergency planning, preparedness and governance for unincorporated communities. b. Establish a consistent and balanced process for MLAs, as the representatives of unincorporated communities, to support engagement and information sharing between citizens and responding agencies, including EMO. c. Clarify specific authorities for YG IMTS when responding in an unincorporated community, and ensure sufficient training and support is in place to carry out these authorities.	• Explore options to resource and convene regional stakeholders in emergency planning and emergency preparedness efforts. • In the absence of staff resources to support dedicated emergency planning, YG could establish community preparedness grants to support community-led emergency preparedness efforts. • Explore the potential to establish remote community liaison positions within EMO to support local or regional emergency preparedness efforts. • Where YG is intended to serve as the local authority, consider a unified command model inclusive of multiple YG departments to support effective incident management.

Flood Preparedness *In alignment with Canada's EM Strategy Priorities 2 & 3: Improve understanding of disaster risk in all sectors of society, and; Increase focus on whole-of-society disaster prevention and mitigation activities*		
	Recommendation	**Actions for Consideration**
7	**Complete a Territorial Hazard Risk & Vulnerability Analysis (HRVA) to support evidence-based emergency management.** YG should resource and accelerate the completion of a Territorial HRVA or HIRA that includes community-level assessment of hazards, risks and vulnerabilities.	• Establish an HRVA development process that engages local communities and leverages the work of the Climate Action Secretariat to assess climate risks. • Prioritize a model that can be downscaled to support communities to apply the HRVA to the development of their emergency plans and risk reduction efforts. • Under the YG governance framework, establish a timeline to review and update the HRVA, to ensure that changes in climate, infrastructure, environment and demographics are included. • Once completed, the HRVA should guide the prioritization of emergency planning and risk reduction efforts across government, based on a strategic plan approved by EM Executive Committees.
8	**Resource enhancements to flood modelling, mapping and forecasting to support emergency planning, response and risk reduction.** Resource the Department of Environment and Water Resources Branch appropriately to carry out flood modelling, mapping and forecasting actions identified in Our Clean Future, as well as to enable sustainable support for emergency preparedness and response.	• Leverage existing partnerships and recently announced federal funding to advance this work. • Establish an inter-departmental flood policy committee to guide the approach to modernization of a flood management program and ensure that this work is relevant for a broad spectrum of risk reduction efforts, including but not limited to emergency response, community planning, infrastructure planning and development and environmental adaptation efforts. • Utilize flood maps and forecasts to establish Flood Response Corridors - a leading practice from Manitoba, whereby there are established locations for the construction of temporary berms based on flood mapping and elevation. These corridors are stable and ensure that all parties (responders, property owners, and the public) are aware of the potential for a berm to be constructed there.
9	**Develop a process to engage partners and departments in seasonal planning for flood hazards.** EMO should establish criteria / thresholds for the seasonal activation of the ECC and /or a flood emergency preparedness and response task force to enable the part or full-time deployment of inter-departmental staff in support of preparation and mitigation actions in advance of emergency response.	Seasonal preparedness activities may include the following: • Risk assessment and monitoring • Proactive procurement and pre-positioning of resources • Staff rostering • Coordination of preparedness activities with communities and municipalities • Strategic and tactical planning for high-risk areas • Contracting of flood consultants and experts as needed to support planning and response requirements • Contracting of private sector resources as required • Delivering updates to and receiving policy direction from Executive EM Committees. • Coordination of the distribution of preparedness information to the public
10	**Conduct seasonal table-top exercises to support flood preparedness and response.** In partnership with Environment, WFM and external agencies, EMO should lead seasonal planning tabletop exercises based on current year flood forecasts. These exercises may be used to support contingency planning, identify resources gaps, and ensure that YG departments, staff and external agencies are prepared for their roles in response and recovery.	• EMO could Work with WRB to design exercise scenarios based on annual most probable and worst-case scenarios. • Include Yukon First Nations, municipal staff and community organizations in exercises where appropriate, to establish risk and readiness of communities to respond, as well as their capacity to support response outside their jurisdictions. • Exercises can range in complexity, and may include a series of simple 1-2 hour sessions to address different aspects of flood preparedness and response. • Include executive leadership in exercises to test and confirm their roles in response . • Include external agencies where appropriate.

11	**Support Municipalities and First Nation Governments to lead local-level emergency planning efforts** a. Ensure staff and financial resources are available to support the development and update of municipal and First Nation emergency plans, as committed to in Our Clean Future. b. Explore and propose options to support emergency planning and preparedness for unincorporated communities.	• Expand staffing of EMO to include dedicated community emergency planner positions that can work with communities to develop, exercise and maintain emergency plans. • Support knowledge sharing across communities, including lessons learned from the proactive examples from the City of Whitehorse, Village of Teslin and Teslin Tlingit Council in mitigating the impacts of flooding in 2022. • Establish pre-determined distribution points and storage locations for flood response resources in and around communities at risk. • Establish an emergency preparedness fund for communities to address unique priorities based on local HRVAs; Support communities to access federal funding intended to support municipal and community preparedness initiatives. • Evacuations are a major concern for communities, YG could work with communities to provide guidance and support the development of evacuation plans, including identification of potential destinations for evacuees.

Incident Management, Response & Recovery ***In alignment with Canada's EM Strategy Priorities 4 & 5: Enhance disaster response capacity and coordination and foster the development of new capabilities, and; Strengthen recovery efforts by building back better to minimize the impact of future disasters.***		
#	**Recommendation**	**Actions for Consideration**
12	**Update the Flood Coordination Plan (FCP) and develop Tactical Response Guidelines for flood hazards.** a. YG EMO should coordinate an inter-departmental process to update and approve the Flood Coordination Plan. This plan should be approved by cabinet, shared broadly with staff across lead departments, and resourced for implementation. At a minimum, the updated FCP should establish: • Lead agency or unified command status, and a clear outline of the roles and responsibilities associated with these roles in flood preparedness, response and recovery. • An integrated operational plan for the activation of a Flood IMT by the ECC, including clear organizational structure, roles, responsibilities and authorities granted to each entity during response. This plan should outline clear structures for incorporated and unincorporated communities. b. To complement the FCP, the lead agency/unified command identified for floods should establish Tactical Response Guidelines. This should: • Establish safety and operational priorities for the activation of an IMT and the initiation of flood response activities • Include decision support and risk assessment tools • Include specifications and instructions for flood protection infrastructure • Include templates and tools to be utilized for damage assessment and monitoring • Wherever possible, links to hazard assessments, flood modelling, maps and other relevant data sources.	• Conduct a series of planning workshops with relevant departments to develop and refine plans, and confirm flood-specific roles and responsibilities. • Consider replacing the Lead Agency status with a Unified Command model for flood preparedness and response. This could include, for example, a Unified Command including EMO, Environment and WFM. • Establish criteria for transferring the reporting of the IMT from the YDO directly to the ECC for support, this could be based on the magnitude of flood and fire response operations ongoing. • Engage consultants and experts from out-of-territory response teams in the development of guidelines for flood protection tactics.
13	**Ensure that staff safety, mental health and wellness is prioritized at all stages of a response.** a. YG should prioritize staff mental health and wellness through the development of standard operating procedures and policies for staff responding to emergencies. b. Identify and/or train qualified flood safety officers and ensure this position is staffed from the outset of a Flood IMT activation.	• Include standard deployment timelines and mandated time off for staff to recovery between response deployments and return to substantive positions • Consider including emergency management responsibilities directly in position descriptions, so that staff know to expect that they may be reassigned or deployed to support essential roles. • Include staff debriefs for all staff prior to leaving their response assignment. • Embed mental health experts within the IMT or ECC to monitor the situation and support proactive outreach to responders. • Continue the practice of daily safety briefings and inclusion of safety messaging in IAPs. • Ensure staff understand and work within an appropriate span-of-control.

14	**Continue to strengthen HR and staff reassignment processes for emergency management and incident response.** Refine and maintain the HRMT skills inventory and staff reassignment policy and procedures, and integrate this process into YG's ECP and ECC OGs.	• Formalize the practice of embedding HRMT staff into personnel units at the EOC and IMT • Train IMT and ECC staff on the digitized process for staff resource requests to limit duplication and streamline staffing processes • Engage HRMT early on in preparedness efforts to establish staffing schedules and rosters for long duration responses. • Refine ICS position descriptions developed through the flood so that they are available to support future emergency response operations. • Expand the application of the HRMT skills inventory to identify strong candidates for emergency management training.
15	**Build capacity for and resource inter-departmental response.** Expand inter-departmental training opportunities for staff including for IMT and ECC deployments.	• Develop a coordinated training approach for IMT and ECC staff, ensure that materials align and are based on updated and approved YG ECPs • Leverage the HRMT skills inventory to target staff for training • Require manager sign-off for accepting staff into training. This sign-off should signify support for staff participation in training and their deployment to support emergency operations. • Make a practice of deploying staff to emergencies in other jurisdictions to gain experience and build territorial capacity. • Take advantage of mentorship and training services offered by agencies such as Can TF 2, for example, by rostering less experienced staff alongside them.
16	**Explore options to expand YG's all-hazards tactical response capabilities.** a. Explore the feasibility of establishing a program to develop and train inter-departmental flood assessment and response teams. These 3-4 person teams would decrease the requirement of external experts, and the demand on WFM responders during fire season. This may include: • Safety training and risk assessment • Identification of appropriate mitigation and prevention strategies • Thresholds and criteria for decision making about when, where and how to establish flood protection systems. • Instruction in the proper construction & monitoring of dykes and berms • Training in standard inspection forms and processes for reporting • Training in public engagement and communication practices for work taking place on private property. b. Evaluate options for an expanded preparedness and response mandate for WFM to include flooding and other potential hazards, based on a YG HRVA.	• Expanding seasonal staffing numbers and contract lengths where feasible • For an expanded WFM Mandate: considering cost-recovery and training opportunities through staff deployment to support fire and flood response nationally and globally • Contract experts and/or utilize pre-existing tools from the Province of BC and the Province of Manitoba to establish teams and training programs. • Offer training opportunities to Yukon First Nations, Local Authorities, and volunteer organizations (i.e.: SAR, volunteer firefighters). • Maintain teams of 3-4 staff that can be deployed territory wide, and provide on-the-job training as needed and build local capacity. • Consider options to integrate all-hazards into this approach.
17	**Modernize EM technologies and practices for more efficient information sharing and analysis.** Build on the lessons and experience of Geomatics Yukon during the 2021 flood response to identify opportunities for workflow automation, improved data management and GIS capabilities for emergency preparedness and response.	• EMO should establish a service-level-agreement with Geomatics Yukon to ensure that GIS capabilities are in place for future emergency preparedness and response. • Review specific issues and challenges with the Survey 123 tool, in order to develop an automated damage assessment and berm monitoring approach. • Evaluate options to modernize YG EM and Incident Management via the integration of digital emergency management information systems, including a GIS-based common operating picture. • Explore options to integrate and standardize resource requests, contract development and approval, and documentation processes across IMTs and the ECC.

18	**Plan for and develop programming to support volunteer response during future flood emergencies.** Effectively leverage volunteer capacities through the development of an emergency volunteer coordination plan and establish a volunteer coordinator role to be activated for flood emergencies. This plan should include guidelines for volunteer engagement, training, tracking, coordination, communication. It should include specific requirements related to risk mitigation, safety and liability.	• Implement a separate information line for members of the public inquiring about volunteering. • Explore partnership options with local businesses and organizations interested in supporting emergency volunteer efforts. • Deliver seasonal training sessions for volunteers and residents interested in supporting flood protection efforts. • Identify community volunteer leaders and or staff to be on site at volunteer stations at all times. • Identify roles for volunteers and associated qualifications for those roles. • Establish volunteer stations and gathering locations in areas separate from IMT response operations. • Consider working with or contracting volunteer management organizations to support and lead this work during response.
19	**Develop an emergency public communications plan.** Leverage the materials and lessons from the 2021 Flood Season to develop public emergency communications plan for flood events. This should include: • Instructional materials and templates translated into both official languages. • Guidelines for flood briefings. • A range of options for communicating with unincorporated communities. • Staff rostering plans and guidelines to ensure sufficient time off and back up for communications staff. • Clarification of levels of approval required for different types of emergency information, targeting approval at the lowest possible level for critical issues (i.e.: emergency evacuations).	• For large scale flood events provide a dedicated contact for residents and property owners that have been directly affected. This should be separate from the general flood line. • Consider deploying dedicated communications staff to the site, to be a direct in-person contact for residents and decrease burden on front line staff to respond to resident inquiries. • Develop briefing materials to support front line staff in effective, kind and respectful communications with impacted residents. • Develop guidelines for establishing local flood information stations where impacted residents can go to get up-to-date information. • Embed FLSD staff with the PIO to ensure legislative requirements are met and French speaking residents have access to essential information. • Continue to utilize SAR volunteers for door-to-door notification of evacuations and the distribution of information for remote residents.
20	**Streamline resource procurement and management practices and support training for staff in these roles.** a. Review, refine and establish streamline processes for issuing and tracking resource requests, and developing and managing contracts. This should include a consistent process for requests across the IMT and ECC. b. YG (WFM & EMO) should adopt the training materials and processes established during the 2021 Flood to improve contract management. This includes the practice of sending a FS staff person to the field to coordinate with Division Supervisors. c. EMO should maintain, as part of the FCP, a contact list of contractors and suppliers, and establish anticipatory contracts with critical suppliers to ensure capacity to respond to flood events.	• Work with Geomatics Yukon to establish a digital process that enables real-time tracking of resource requests and contracts. • IMTs should staff the Finance Section Chief role early, and ensure that a YG FSC or Deputy is in place in the event that out-of-territory teams are deployed. • EMO and WFM should work with HPW to formalize logistics and finance roles for HPW, and establish processes for contracting and procurement that align with YG protocols.
21.	**Build recovery planning guidelines and public information into flood response plans.** a. Develop a recovery guideline to complement the ECP that supports the early initiation of recovery work that is independent of response operations. b. Develop support materials for the public for safe return to their homes and clarifying responsibilities and risks associated with any remaining flood protection infrastructure on their property.	• Building on leading practice from other jurisdictions, consider formalizing a Recovery Operations Centre or task force, that can be stood up during response to prioritize recovery resources and policies. • Consider tasking senior leadership with responsibility for chairing this work. • Include options for public engagement (not just communications) to inform recovery priorities. • Ensure adequate resources are available to support near-term recovery efforts (i.e.: demobilization, debris management, damage assessments) • Evaluate and establish working groups as needed for long-term recovery requirements.

10 Appendix 3: List of Acronyms

AAR	After Action Review
BCP	Business Continuity Plan
CEMA	2002 Civil Emergency Management Act (Government of Yukon)
CoW	City of Whitehorse
CTFN	Carcross Tagish First Nation
DRR	Disaster Risk Reduction
ECC	Emergency Coordination Centre
ECC OG	Emergency Coordination Centre Operational Guidelines
EM	Emergency Management
EMO	Emergency Measures Organization
EOC	Emergency Operations Centre
FCP	Flood Coordination Plan
HPW	Highways and Public Works
IAP	Incident Action Plan
IC	Incident Command/Commander
ICP	Incident Command Post
IMT	Incident Management Team
KDFN	Kwanlin Dün First Nation
LSCFN	Little Salmon Carmacks First Nation
RDO	Regional Duty Officer (Wildland Fire Management position)
Sendai Framework	United Nations Sendai Framework for Disaster Risk Reduction
SitRep	Situation Report
SLIW	Senior Leaders Interdepartmental Workshop
SoE	State of Emergency
TKC	Ta'an Kwäch'än Council
TTC	Teslin Tlingit Council
UC	Unified Command
VoC	Village of Carmacks
VoT	Village of Teslin
WFM	Wildland Fire Management
WRB	Water Resources Branch
YDO	Yukon Duty Officer (Wildland Fire Management position)
YG	Government of Yukon
YG ECP	Yukon Government Emergency Coordination Plan

This Operational After Action Review was led by KM Resilience & Foresight Services with support from House of Wolf & Associates. Recommendations and actions for consideration have not been prioritized. They are provided for the consideration of YG, and should be analyzed and prioritized following the outcomes of YG-led public engagement and in consideration for other risks and hazards.

All data, timelines and information are based on review of documentation provided by YG Emergency Measures Organization and Wildland Fire Management. Perspectives and examples reflect the statements and experiences of participants in the AAR. Every effort has been made to clarify and confirm information; however, some data was not available during the timeframe of the review.

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