LOWER FRASER FLOODPLAINS COALITION

Lower Fraser Floodplains Dialogue for Regional Action

Reporting Back: Mid & Up River Gathering • November 28 2024

This report was prepared by the Lower Fraser Floodplains Coalition. Report design by Hanna Araza, West Coast Environmental Law.

Table of Contents

Executive Summary

On November 28, 2024, representatives from 10 First Nations and 5 local governments came together online for the second *Lower Fraser Floodplains Dialogue for Regional Action Series: Mid & Up River Gathering*, hosted by the Lower Fraser Floodplains Coalition. Dialogue focused on sharing information, resources and priorities for understanding flood risk to communities and critical infrastructure, as well as the necessary role for the Province in supporting the region.

Chief Norm Florence of Chowéthel First Nation welcomed everyone to the session, and explained the importance of following proper protocols by acknowledging the unceded territory we are on and the First Nations who have shared this land since time immemorial, including the Tiyt Tribe (a tribe consisting of Union Bar, Yale, Chowéthel, Pópkw'em, Sq'ewá:lxw, Skw'átets, Shxw'ōwhámél, Sq'éwqel),[1] the Pilalt Tribe, the Ts'elxwéyeqw Tribe, and the independent Nations across Stó:lō territory. He noted they all belong to the Stó:lō,[2] from Yale to the mouth of the Fraser, and are connected within S'ólh Téméxw.

Jason Lum, Director of the Fraser Valley Regional District and Chilliwack Councillor, emphasized arriving in the spirit of collaboration. Councillor Lum urged participants to seize the moment to seek additional funding and resources by showcasing how closely communities, industries, and organizations are working together to safeguard all people within S'ólh Téméxw.[3]

SETTING THE TABLE FOR DIALOGUE

Mariah Mund, Resilience Lead at the Emergency Planning Secretariat (EPS) described the evolution of the flood management landscape in the Lower Fraser, from pre-colonial First Nations practices of reducing flood risk by adaptively managing human activities and communities, to a flood control system of dikes, channels and pump stations that aims to keep water out of the floodplain. Since 2022, the LFFC has promoted relationship building for First Nations and local governments, and technical work to fill knowledge gaps about multi-beneficial flood management practices to protect communities and ecosystems. The 2024 BC Flood Strategy is a positive step, but needs to be implemented in the Lower Fraser.

Gillian Fuss, Manager at the Emergency Planning Secretariat, which provides services to the 31 Mainland Coast Salish First Nations, gave an update on the EPS strategic plan and framework for disaster risk reduction and climate resilience, Hílekw Sq'eq'o, which means "to get ready together" in Hal'qeméylem. Hílekw Sq'eq'o emphasizes regional collaboration to improve resilience collectively rather than individually. She encouraged non-First Nations actors to gain cultural competency so they can work effectively with First Nations communities. Hílekw Sq'eq'o supports First Nations' jurisdiction over their traditional territories, including the principle of free, prior, and informed consent.

The Lower Fraser Floodplains Coalition described work to advance the five priorities identified at the June 2023 regional gathering, including: understanding risk; protecting critical infrastructure and local essential

1 *formerly known as: Union Bar, Yale, Chawathil, Popkum, Skowalook, Peters, Shxw'ōwhámél, and Seabird Island.*

2 *"Stó:lō" is a Halq'eméylem word that means "People of the River."*

3 *"S'ólh Téméxw" are Halq'eméylem words for "our world, our land."*

services; river and waterway restoration and resilience; food security; and developing a framework for regional decision-making. LFFC has three baskets of work to support these regional priorities. Basket 1 (understanding risk and risk reduction options) includes technical work to fill in gaps at the regional level and a network analysis of critical infrastructure systems and local essential services. Basket 2 (facilitating multi-benefit, nature-based flood resilience projects) includes webinars; relationship building for farmers and First Nations; advocating for funding programs and identifying resources needed to support collaborative projects. Basket 3 (advancing a regional framework for flood risk management) involves development of regional scale decision support tools, and continued advocacy to the provincial and federal governments to provide sustained support and resources for the region.

SPOTLIGHT ON REGIONAL ACTION

Understanding risk: ***Gillian Fuss from EPS*** spoke about a geohazard mapping project involving nine First Nations communities along the Fraser River that is supported by the EPS. The project aims to assess landslide risks, particularly related to atmospheric rivers and heavy rainfall, and associated flooding, as well as water pooling behind infrastructure. The nine First Nations communities are working together to make collective decisions and create a regional database. Each community will receive individual maps, but once the modelling is complete, the data will be made publicly available, and meetings with infrastructure operators will be held to discuss the results and support ongoing resilience efforts. This approach fosters cooperation and ensures that the data benefits all communities in the region.

Collaboration – Sumas River Watershed Flood Mitigation Planning Initiative: ***Ida Dutt, Policy and Governance Officer at Semá:th First Nation*** presented on the Sumas River Watershed Flood Mitigation Plan (SRWFMP) - a collaborative initiative aimed at reducing flood risks within the Sumas River watershed. The project is a joint effort between the Semá:th, Leq'á:mel, and Máthxwi (Matsqui) First Nations, the cities of Abbotsford and Chilliwack, and the government of British Columbia. The goal of the initiative is to develop a comprehensive flood mitigation plan that balances flood risk reduction with ecosystem restoration, informed by traditional knowledge, ensuring resilience for the entire region.

DIALOGUES

Understanding risk across the region: Guests shared work on flood risk that is completed, underway and planned across the region. They noted the need to refine data collection– in some cases to update models to be more place-based, in others to understand how risks affect neighbouring communities. The idea of a regional knowledge hub was raised. The importance of protecting First Nations communities already vulnerable to flood hazards was highlighted, as well as ensuring resilience of any new developments in the floodplain. Advocating as a region was seen as a pathway to access funding and support.

Understanding risk management options for critical infrastructure systems: Guests shared work on increasing infrastructure resilience, including a number of examples of green infrastructure as part of the solution. The benefits of working with neighbouring communities were noted, as well as the need for provincial involvement to deal with the level of investment needed and the regional importance from the perspectives of fish habitat and food security.

Unlocking a steady flow of collaborative, nature-based flood resilience projects: Guests shared that pilot projects are important, along with learning from other jurisdictions. Bringing traditional knowledge into planning is important, as well as educational experiences on the land. A common repository for open source data could be helpful for everyone, including communities that lack resources. Funding for capacity to do the work is critical.

Key messages for the Province about supporting flood risk management in the Lower Fraser: The region is working together, more and more, but the Province is missing. The federal government also needs to take care of their responsibilities for salmon and salmon habitat. Indigenous involvement, knowledge and values need to be prioritized. The Lower Fraser needs funding for holistic approaches to managing risk. We need to address the housing crisis with sustainable, resilient housing.

NEXT STEPS

LFFC will be reaching out to local governments and First Nations about participation in the critical infrastructure network analysis, which will begin in summer 2025 and will have several phases. EPS and LFFC will also be setting up sessions to engage with First Nations and local governments about funding opportunities regarding flood risk assessment and flood resilience projects.

Introduction

On November 13, 2024 representatives from three First Nations and thirteen local governments came together online for the second *Lower Fraser Floodplains Dialogue for Regional Action Series: Coastal & River-Tidal Gathering*, hosted by the Lower Fraser Floodplains Coalition. Also in attendance were representatives from the BC Ministry of Water, Land and Resource Stewardship and Emergency Management and Climate Resilience, Vancouver Coastal Health, Fraser Health, and the Lower Fraser Fisheries Alliance.

WELCOMING & OPENING REMARKS

Chief Norm Florence of Chowéthel First Nation welcomed us to this session on flood resilience by grounding us in place. In the spirit of truth and reconciliation, he explained the importance of following the proper protocols by acknowledging the unceded territory we are on and the First Nations who have shared this land since time immemorial, including the Tiyt Tribe (a tribe consisting of Union Bar, Yale, Chowéthel, Pópkw'em, Sq'ewá:lxw, Skw'átets, Shxw'ōwhámél, Sq'éwqel), the Pilalt Tribe, the Ts'elxwéyeqw Tribe, and the independent Nations across Stó:lō territory. He noted they all belong to the Stó:lō, from Yale to the mouth of the Fraser, and are connected within S'ólh Téméxw.

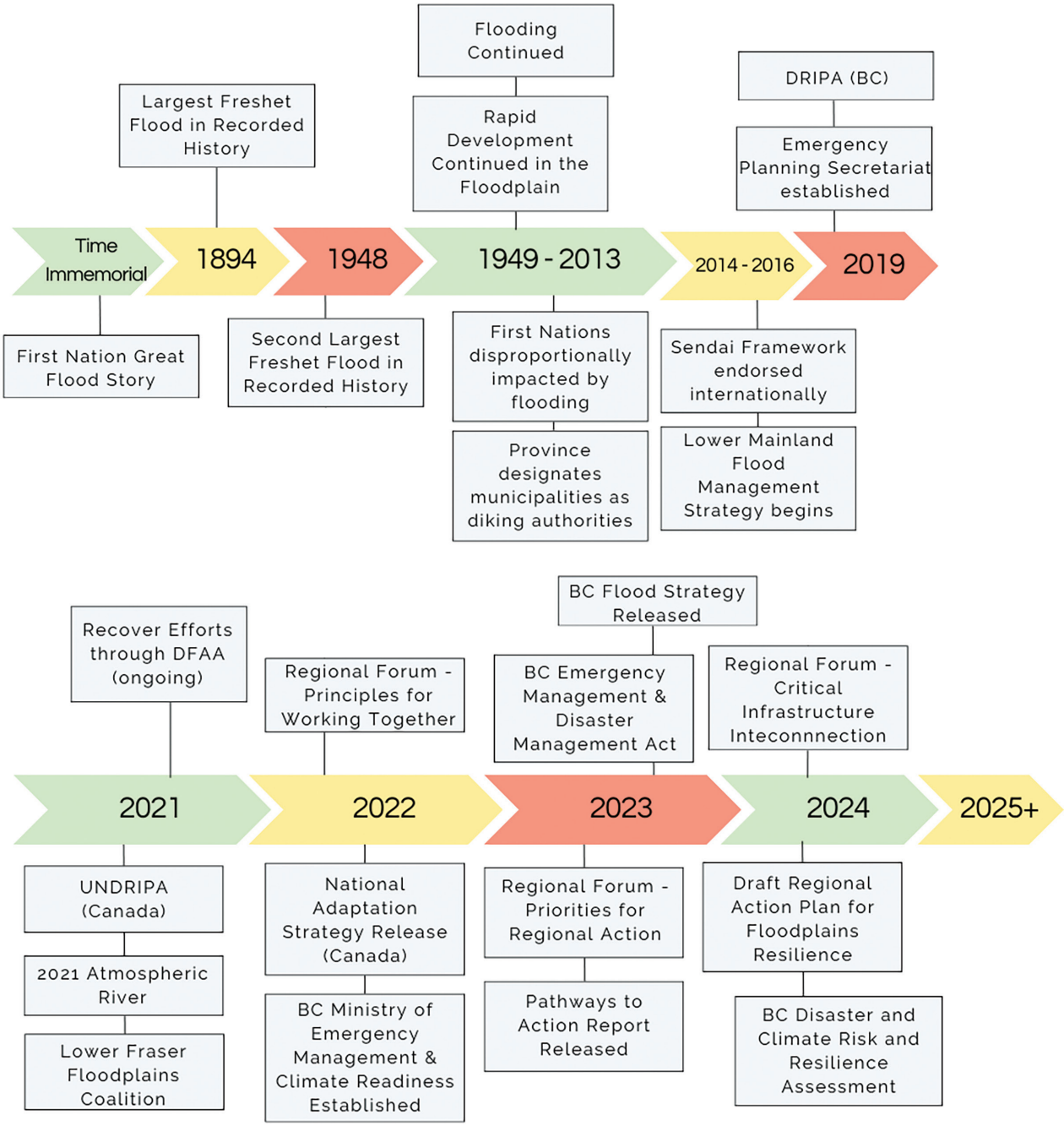
Chief Florence thanked the many people who have been working diligently towards resilience and reminded us of the value in recognizing the lands we are on, the First Nations who have lived here, and the importance of collaboration as a necessary part of true reconciliation.

Jason Lum, Director of the Fraser Valley Regional District and Chilliwack Councillor, emphasized arriving in the spirit of collaboration. With a decade of experience, he has seen that flood risks transcend any single First Nation or local government. Rivers do not recognize borders, so planning should not be confined by them. These dialogues are a chance to collaborate and learn together. With a new provincial government in place, Councillor Lum urged participants to seize the moment to seek additional funding and resources by showcasing how closely communities, industries, and organizations are working together to safeguard all people within S'ólh Téméxw.

Setting the Table for Dialogue: Context

Mariah Mund, Resilience Lead at the Emergency Planning Secretariat, began the day by briefly reviewing the flood landscape of the Lower Fraser, as a reminder of where we are and how we got there.

THE FLOOD MANAGEMENT LANDSCAPE IN THE LOWER FRASER



Mid River	Up River
• Abbotsford • Chilliwack • Mission • FVRD* • Áthelets (Aitchelitz) • Xwchíyò:m (Cheam) • Qweqwe'ópelhp (Kwaw-Kwaw-Apilt) • Sq'ewqeyl (Skowkale) • Sqwá • Shxwhá:y Village • Th'ewá:li (Soowahlie) • Sxwoyehá:lá (Squiala) • Semà:th (Sumas) • Ch'iyàqtel (Tzeachten) • Yeqwyeqwí:ws (Yakweakwioose)	• Hope • Kent • Harrison Hot Springs • FVRD* • Chowéthel (Chawathil) • Leq'á:mel (Leq'amel) • Skw'átets (Peters) • Popkum • Sq'welets (Scowlitz) • Sq'éwqel (Seabird Island) • Shxw'ōwhámél • Sq'ewá:lxw (Skawahlook) • Sts'ailes • Union Bar • Yale

The region's vulnerability to flooding was brought home by the November 2021 atmospheric river events. Since 2022, the LFFC has promoted relationship building for First Nations and local governments to create opportunities to work together as neighbours and as a region. LFFC also supports technical work to fill knowledge gaps about multi-beneficial flood management to protect communities and ecosystems, and advocates to the federal and provincial governments for supportive policy and funding for our region.

While there was uncertainty around provincial action due to the elections at the time of this gathering, it was noted that the BC Flood Strategy was released in April 2024. The Strategy offers guidance about a more holistic approach to flood management that opens up a range of solutions beyond flood control, including nature-based measures. The BC Flood Strategy also acknowledges the importance of good, collaborative relationships between local governments and First Nations. In the Lower Fraser it's clear that there is strong interest and energy to take up the Strategy and move forward with the work of preparing our communities to be resilient for the future.

UPDATE ON HÍLEKW SQ'EQ'O: A MAINLAND COAST SALISH EMERGENCY PLAN FOR ALL HAZARDS AND CLIMATE CHANGE

Gillian Fuss, Manager at the Emergency Planning Secretariat (the non-political organization that supports 31 First Nation communities, from Yale to Semiahmoo to Squamish, in improving emergency planning and preparedness at the local and regional levels), offered an overview of ***Hílekw Sq'eq'o–which means "to get ready together" in Hal'qeméylem.*** *Hílekw Sq'eq'o* is the EPS strategic plan and a framework for disaster risk reduction and climate resilience. It is aimed at transitioning emergency management from a focus on response and protection, to include resilience. *Hílekw Sq'eq'o* draws on the Sendai Framework for Disaster Risk Reduction, with the addition of three pillars to weave First Nation expertise with global best practices. These pillars are capacity building, emergency response, and community wellness.

Hílekw Sq'eq'o emphasizes regional collaboration to improve resilience collectively rather than individually. This highlights the importance of cultural competency, with non-First Nations actors encouraged to gain this competency so they can work effectively with First Nations communities. The framework supports First Nations' jurisdiction over their traditional territories, including the principle of free, prior, and informed consent.

Hílekw Sq'eq'o serves as a living document that will evolve, integrating both cultural expertise and practical, localized knowledge to guide action plans.

LOWER FRASER FLOODPLAINS COALITION UPDATE

In March 2024, the LFFC hosted two regional dialogues focusing on critical infrastructure—one for coastal and tidal river communities, and another for mid and upriver regions. Critical infrastructure, with interconnected systems, is a key regional issue, as disruptions in one area can have cascading effects across communities. Both the *Pathways to Action* report that concluded the LMFMS (2014-23) and the *Hílekw Sq'eq'o* framework identify reducing risk to critical infrastructure and local essential services as a priority. At the March 2024 dialogues Dr. Stephanie Chang shared insights on the lack of research on how critical infrastructure is exposed to hazards in the Lower Fraser, an area where infrastructure failures were evident during the 2021 atmospheric river event.

EPS has secured funding—$1.7 million over 3 years for coastal work through the Natural Resources Canada Climate Resilient Coastal Communities program, and $200,000 for mid and upriver regions from the Ministry of Water, Land and Resource Stewardship—to support relationship-building, technical analysis, and capacity-building among First Nations and local governments. The goal, with support from the Lower Fraser Floodplains Coalition, is to identify and implement multi-benefit projects that enhance flood resilience and reduce risks across the region, and to develop a network analysis of the interdependencies of critical infrastructure systems and local essential services. This network analysis is designed to be a decision support tool for the region.

ADVANCING A REGIONAL APPROACH TO FLOOD RESILIENCE (2024)

- Flood management in the Lower Fraser region, which involves 29 local governments, 31 First Nations, and many layers of federal, provincial, and Indigenous jurisdiction and laws, is inherently complex. Yet regional coordination and collaboration is crucial for managing flood risks because water does not respect jurisdictional boundaries. At the June 2023 forum organized by LFFC, local governments and First Nations identified five shared regional priorities for action:
- understanding risk;
- protecting critical infrastructure and local essential services;

- river and waterway restoration and resilience;
- food security; and
- developing a framework for regional decision-making.

LFFC has organized its activities into three baskets to support these regional priorities.

BASKET 1: Building a knowledge foundation

Understanding flood risk (what's in the floodplain and how vulnerable it is to flood events), as well as learning about an expanded toolbox of options to reduce risk (in addition to existing flood control measures) was identified as a priority at the June 2023 forum. LFFC and EPS are leading and supporting specific work that has been identified as important and not otherwise being done:

- Assembling existing flood risk-related information & undertaking a gap analysis;
- Completing maps / inventory of land use and activities on the floodplain at a scale relevant for understanding options for flood risk reduction and resilience measures;
- Gathering information on critical infrastructure and local essential services, connecting with infrastructure owners in preparation for a three-part expert and community-based process to analyze network dependencies. The importance of this research is underscored by the cascading infrastructure failures experienced in 2021, when flooding on Highway 1 disrupted the region.
- Improving technical understanding of the functioning of the river and associated waterways of the Lower Fraser (pre-contact, current, and future with climate change) as a foundation for modelling flood risk reduction and resilience options.

The overarching goal is to complete a regional flood risk assessment within three years that includes risk management options for critical infrastructure and local essential services.

LFFC also invites everyone to participate in the network dependency analysis of critical infrastructure and local essential services, which will likely begin in summer 2025. Collaboration, shared knowledge, and mutual support are key to building a more resilient future for the Lower Fraser region.

BASKET 2: Unlocking a steady flow of multi-benefit, nature-based resilience projects

During the session in June 2023, we heard local governments and First Nations say that their capacity to undertake multi-benefit, nature-based resilience projects could be enhanced with targeted support:

- education and technical support for project implementation;
- learning about existing and ongoing projects;
- federal and provincial funding to support collaborative projects from design to implementation, including the collaborative process and community engagement;
- a more efficient permitting process; and
- better relationships with farmers to identify potential opportunities for flood resilience practices on agricultural land.

The primary goal for this basket over the next three years is to identify 4-7 multi-benefit flood resilience projects that support flood safety, reconciliation, and environmental benefits.

Over the past year, the Lower Fraser Floodplains Coalition has focused on education, relationship-building, and advocacy to advance this basket of work. The group has hosted webinars for practitioners, facilitated discussions between farmers and First Nations communities, and worked with provincial and federal ministries to align funding programs with regional needs. New funding initiatives, such as the Disaster Resilience and Innovation Funding Program (DRIF), are seen as a positive step toward promoting more regionally focused disaster resilience efforts. LFFC members like Resilient Waters have supported projects that have made tangible progress, including upgrading floodgates in the region.

Ongoing efforts also include the creation of a "story map" to showcase current and completed projects, that could include the Living Dyke Pilot Project in Boundary Bay, Tsleil-Waututh Nation's shoreline adaptation work, and flood mitigation efforts in several watersheds. This story map will serve as a learning tool, sharing best practices for future flood resilience projects.

Next steps include addressing regional training and education needs, identifying resources for collaborative projects, and exploring joint applications for significant regional initiatives. The LFFC aims to continue fostering partnerships, addressing jurisdictional gaps, and sharing information to ensure progress continues.

BASKET 3: Updates on progress towards a regional framework for flood resilience

The final basket of work identified to advance the five priorities for action from the June 2023 regional forum is supporting "a regional framework for flood resilience, planning, and risk management." The BC Flood Strategy discusses regional planning and risk assessment, but with the provincial election in the fall, the Province has not yet indicated how regional scale flood work and coordination across communities will be supported. Yet a regional approach is needed, because the siloed management and competitive funding programs have not served our region or our communities. In the meantime, it is important that the Lower Fraser communities maintain momentum with the work that is already underway, and also that our region continues to use its collective voices to remind both the Province and federal government of the need for resources to support flood risk reduction and resilience in the Lower Fraser.

LFFC has taken on some of the work needed to inform a regional approach, focussing on the five priority areas identified at the June 2023 forum. For example, the network dependency analysis for critical infrastructure and local essential services (Basket 1) organized by LFFC will be one of the first initiatives to look at flood resilience across the region as a whole, and will be a way to proactively identify opportunities to build resilience into the critical infrastructure systems and services that communities in the region depend on. These systems and services are also essential for maintaining economic connections at the regional, national and international level. Consideration of the outcomes of this and other analysis to understand risk and risk reduction options can provide a starting point for leadership from First Nations, local governments and representatives from the federal and provincial governments to develop a regional agenda for action.

Spotlight on Regional Action

UNDERSTANDING RISK

Gillian Fuss presented on a geohazard mapping project involving nine First Nations communities along the Fraser River that is supported by the EPS. The project aims to assess landslide risks, particularly those caused by atmospheric rivers, such as the 2021 event that brought heavy rainfall. The project focuses on landslides and debris flow risks from heavy rain, as well as steep creek flooding and its impact on local communities and infrastructure. One key finding is the potential for landslides to disrupt the Highway 1 corridor between Chilliwack and Hope, with at least seven areas identified as vulnerable.

The project also looks at the issue of water pooling behind infrastructure, creating a "bathtub effect" that exacerbates flooding. Recommendations include improving slope stability on steep slopes and addressing drainage issues in areas where water is trapped behind highways and railways. Additionally, the team is working to expand the project to include rockfall identification and preventive measures, such as blasting or stabilization techniques.

Collaboration is important to the project, with the nine First Nations communities working together to make collective decisions and create a regional database. Each community will receive individual maps, but the overarching goal is to share the data openly. Once the modelling is complete, the data will be made publicly

available, and meetings with infrastructure operators will be held to discuss the results and support ongoing resilience efforts. This approach fosters cooperation and ensures that the data benefits all communities in the region.

REGIONAL COLLABORATION: SUMAS RIVER WATERSHED FLOOD MITIGATION PLANNING INITIATIVE

Ida Dutt, Policy and Governance Officer at Semá:th First Nation presented on the Sumas River Watershed Flood Mitigation Plan (SRWFMP) - a collaborative initiative aimed at reducing flood risks within the Sumas River watershed. The project is a joint effort between the Semá:th, Leq'á:mel, and Máthxwi (Matsqui) First Nations, the cities of Abbotsford and Chilliwack, and the government of British Columbia. The goal of the initiative is to develop a comprehensive flood mitigation plan that balances flood risk reduction with ecosystem restoration, informed by traditional knowledge, ensuring resilience for the entire region.

Dialogues

These **November 2024 dialogue sessions** were designed for neighbouring communities (two groups: Coastal River-Tidal, and Mid & Up River) **to share information, resources, ongoing actions and needs** related to flood risk assessment, and critical infrastructure, including:

- **Dialogue Round 1:** (A) Understanding flood risk across the region and (B) Understanding risk management options for critical infrastructure
- **Dialogue Round 2:** Unlocking a steady flow of collaborative projects; and
- **Dialogue Round 3**: How to send a message to the Province to support the urgent work needed to manage flood risks in the Lower Fraser.

1(A). UNDERSTANDING FLOOD RISK ACROSS THE REGION

Guests at the dialogue were asked to share actions that have already been completed, or are in progress or planned, that will help to increase understanding of flood risk across the region. Understanding risk is an important foundation for identifying, prioritizing and moving forward with flood risk reduction measures. Sharing the work that is occurring across the region is a way to share information and lessons, identify gaps that need

to be filled, and help assemble the knowledge foundation that can support regional risk assessment and management. This is not intended as an exhaustive list, but represents the work that guests viewed as important to share.

Examples of completed actions that are increasing understanding of flood (and in some case multi-hazard) risk across the region

- Engineering studies on Lower Coquihalla River after atmospheric river in 2021 (District of Hope) - show risks remain
- Fraser Valley Regional District – Integrated Hazard Mapping Report
- Draft release of Fraser River hydraulic model from NHC and Fraser Basin Council - absence of geomorphology
- A dredging project at the mouth of the slough: lots of fish data, quantity and species of fish data but there is no mechanism to share that data anywhere. So the biologists might not know what species of fish are in an area because it's not available

In-progress or planned actions that are increasing understanding of flood (and in some cases multi-hazard) risk across the region

- Flood Risk Management study in upper Coquihalla watershed
- SRWFMP risk assessment
- Real-time monitoring in Nicomen Slough watersheds (Leq'a:mel)
- Matsqui First Nation drainage assessment (KWL)
- Hope – Flood management plan (Ebbwater)
- Harrison Hot Springs – funding to improve the dike system
- Chilliwack – Seismic assessment of flood infrastructure
- Soowahlie First Nation HRVA
- Chawathil First Nation – 500-year flood mapping (NHC)
- Hatzic – hydrometric stations installation
- Sqwa – flood protection since 2016
- Fraser River bathymetry info

Ideas about ways to advance understanding of risk in the region in the next 3 years

Refining data collection and components of risk assessment

- Collecting real time data
- Trying to understand what we are tracking to better inform next steps
- Assessment of erosion
- Geomorphology in assessments
- Evaluate slope destabilization and risk to neighbouring communities
- Assess pluvial risk from more intense rain events
- Harrison Lake, Mount Breckenridge is an active volcano—what is the risk of flooding
- Include geomorphology in assessments
- Updating models to be more place-based (i.e., precipitation data can vary WIDELY even among nearby places, which makes modelling difficult to transfer between places without granular data)

Addressing knowledge gaps

- What can be learned from coastal resilience?
- Sediment model for the Fraser River and delta
- Pluvial modelling and flood risk
- How are graveyards affected by flooding
- Sediment deposition and sediment control within systems - e.g., Deroche Creek
- Need better long-term plans for Norrish Creek and Hatzic area
- An assessment of the whole river. How it is eroding or not eroding, most critical areas (highest risk, greatest potential damage) whether it's on First Nation or municipal land. Can we find that out and address those needs to reduce potential damage.

How can local governments and First Nations in the Lower Fraser region work together to advance these actions? Who is involved, what sort of collaboration is needed, and how could this be organized?

What's needed	How to do it
Build trust between First Nations and local governments	• Community to community forums (C2C) – Harrison, District of Kent, Sts'ailes, Scowlitz, Seabird, Cheam. A platform for sharing information (4 meetings/year)
Make it easier to share information	• Project information should be accessible across governments (subject to appropriate sharing). This would benefit everyone, including new employees. A dashboard is one idea. • Quarterly updates
Leverage Metro Vancouver and FVRD	• Advocate as a region(s) to access funding and fed/prov support • Coordinate plans instead of working in siloes • Support data and methodologies that are relevant for our region • Support a (joint) regional knowledge hub? (see information sharing, above)
Consider housing needs and flood risk together as a priority	• Be proactive and try to avoid putting multi-family housing in vulnerable floodplain areas • Ensure flood protection is developed for First Nations communities already vulnerable to flood hazards

What's needed	How to do it
Build on better understanding of risk to get clarity about risk tolerance of communities	• Need more work on how to effectively share information about flood hazards and risks with people in the floodplain, and how they can access that information • Need more information about community-specific impacts and values, including sensitive and cultural areas.

1(B). UNDERSTANDING RISK MANAGEMENT OPTIONS FOR CRITICAL INFRASTRUCTURE

Reducing flood risk for critical infrastructure to keep communities safe and the region from collapsing in a major flood event has been identified as an early priority in both *Pathways to Action (2023)* and *Hílekw Sq'eq'o*, the framework for disaster risk reduction and climate resilience developed by EPS for the 31 Mainland Coast Salish Nations. Guests at the dialogue were asked to share actions that have already been completed, or are in progress or planned, that will support or are already advancing the development of flood risk management options for critical infrastructure across the region.

Examples of *completed actions* that are increasing understanding of risk management options for critical infrastructure

- Taylor Road floodbox replacement - addressed risk and improved habitat connectivity (Leq'á:mel First Nation)
- Abbotsford managing flood risk for James Treatment plant
- Chilliwack/FVRD – flood hazard mapping
- Flood hazard mapping from LMFMS
- Bank stabilizing by Atkinson Rd - the work with Semá:th and City of Abbotsford - there was a pilot to green the area and include green infrastructure

In progress or planned actions that are increasing understanding of risk management options for critical infrastructure

- Provincial floodplain mapping (Flood Hazard Identification and Mapping from Mission to Yale, followed by additional areas)
- Lower Coquihalla study – has elements of critical infrastructure
- Working group (with Cheam, Ministries of Water, Land, & Resource Stewardship and Ministry of Agriculture & Food) to do one-on-one farmer engagement regarding Camp Hope Slough

Other actions suggested

Nature-based approaches

- Park land could work as a space that is intended to be flooded in making room for the river
- Include the importance of intact riparian zones as flood buffers: even basic measures would have

multiple benefits

- Sqwá First Nation: Emergency Management team went to Green Timbers - noticed that what is often prioritized is 'built infrastructure' but what is also critically important is green infrastructure, like forested infrastructure, biodiversity, species at risk and their critical habitat. We have missed an opportunity by not protecting this biodiversity.
- Modify traditional diking system for habitat enhancement and improved resilience (e.g., setback dikes, floodgate upgrades); requires overall analysis of diking system to identify localized opportunities.
- There is a current lack of public awareness about the importance of healthy riparian zones for flood protection, and that knowledge transfer would be critical for expanding nature-based solutions

Work more collaboratively

- Find out Province's plan regarding critical infrastructure (roads, hospitals, etc.)
- Harmonize projects – e.g., work together with neighbouring communities that are also building dikes
- Look at slope destabilization and risks to neighbouring communities
- Bring farmers into the discussion
- Understand cumulative effects of Highway 7 holding back floodwaters, no way to convey water, new creeks forming that weren't previously there - need collaborative approach
- Need more collaboration on dikes - orphan dikes, gaps in inventory

Considerations for understanding risk

- Look at uncertainty in risk assessments
- Avoid focusing only on Fraser River, include landslides

Additional comments for 1(A) and 1(B)

- In Hope, not able to move fast enough to address bank erosion issues before banks failed at highest priority site
- Challenged on southern slopes with instability - slides and sedimentation
- Level of hazard is changing - Leq'a:mel is trying to collect more real-time data to understand what we are dealing with - weather stations, hydrometric stations, wildfire risk monitoring
- Kent: need more culverts - new metal/concrete culverts
- Question posed: Would smaller bridges work instead of culverts?
- City of Abbotsford: moved away from culverts towards open bottom pre-fab bridge which doesn't have the same contact with the water and can last longer. However farmers cannot afford it.
- The flood control infrastructure is not affordable for local governments. This hard infrastructure has caused problems with the environment and fish connectivity and it cannot be corrected without funding. Being responsible for protecting residents but also food security and critical infrastructure in the region without funding mechanisms is impossible. (e.g., 1% tax increase = approx $1.5 million in the City of Abbotsford and updating dykes, repairing infrastructure could cost upwards of $1 billion)
- What knowledge gaps are still in existence? Still a lot of questions around risk assessment and translating community-scale efforts into a regional context. There is also a lot of variability at local scales, so modelling is difficult and requires more detailed data collection.
- We can probably make some good decisions around managing flood risk even if our information isn't perfect. Avoid over-investing in information vs. solutions

Outcome 1(A) and 1(B): What's working well, and how can we build on this?

What is already working well for collaborative risk assessments?	
Working together	• Collaborative approach to geohazard studies - synergies and efficiencies when looking at multiple watersheds
Regular opportunities to come together	• Community to Community Forums (C2C) – Harrison, District of Kent, Sts'ailes, Scowlitz, Seabird, Cheam. A platform for sharing information, meeting 4x per year. • EPS meetings • Big events and gatherings that bring people together: meeting new people, getting different perspectives and building relationships
Spending time together on the land and water	• Watershed tours • Paddling • Working together on specific green infrastructure projects (e.g., Atkins Road)
Learning from crisis	• The atmospheric river events of 2021 served as a catalyst for collaboration

What opportunities do you see to do more projects like this?
• More collaborative studies and approaches - for Highway 7, dikes, other critical infrastructure • Collaborative work across watersheds, repeating methodology • Working together to develop priorities along the river, creating room for habitat enhancement

What is needed to expand this to a regional scale?
• Funding is needed to modify/correct hard infrastructure, and property taxes won't be sufficient • Knowing how to reach out to other communities • Working with partners (eg. CP lands on Chawathil) • Address issues of standardization

3. What areas of **experience** or **knowledge** do you bring?

61 responses

Mentimeter

One insight, question or concern I'm taking away with me from today's session is...

So good to see everyone here working together.	Takeaway: The common desire to collaborate with neighbouring communities. It's time to reach out more to our neighbours!	we are in a transition period ... we want to work regionally, but capacity is challenging. balancing all the work	We have done a good job focusing on shared values, need to emphasize action on tangible projects.
Lack of provincial representation	Communities are all ready working together, they just need the funding to help them.	Mid and up river folks have great insights and knowledge about collaboration.	Acknowledging the Province and Feds need be at the table.

2. UNLOCKING A STEADY FLOW OF COLLABORATIVE, NATURE-BASED FLOOD RESILIENCE PROJECTS

Guests at the dialogue were asked to share actions and projects that are already increasing flood resilience and reducing risk in the region. In particular, guests were encouraged to describe projects that highlight collaboration, and nature-based approaches that have multiple benefits. Given that these types of projects can be more challenging to fund, design, and implement, it's important to share the work that is already underway so that lessons can inform new projects.

There are currently no examples of completed collaborative, nature-based flood resilience projects.

In progress or planned collaborative, nature-based flood resilience projects

- PSF has a project between Salmon and Agriculture - learning from a project in California
- Need to do an assessment on the dike capabilities, including some consideration of when they were put in and the design and materials that were used to build them. Specifically, why are there dikes next to the CP rail lines – why do we need both.
- Work of Sqwá, Shxwhá:y, City of Chilliwack – town dike re-alignment will benefit flood protection and infrastructure that historically left communities out. It completely left out and didn't protect portions of Sqwá FN and Shxwhá:y Village site. If we had just continued to raise the dike alignment, it would have perpetuated the issue of leaving communities out.

What other ideas do you have for advancing this outcome in the next 3 years?

- Pilot projects are important. Testing something on a smaller scale to see how it works prior to scaling it up. This creates a repeatable approach, builds rationale, and improves optimization.
- Learning from others outside our jurisdiction can be helpful.
- Farming practices need to be addressed - affecting water quality issues (including farming in the conversation)
- We've identified up to 6 years ago a need to have a repository of studies and data – open source, free and available – so that it benefits communities large and small. esp resource starved communities with challenges to find adequate contractors to implement the work

What is already working well?

- Sharing data across communities
- Kent and Seabird Island - Habitat project for salmon spawning area - worked really well together
- Kent also completed a Flood Box with First Nations partners
- Semá:th working with University of Fraser Valley on plans that include more traditional knowledge for resilience and recovery in emergency management

What external resources, technical information or facilitation support would help to implement more of these projects?	
Information sharing and learning exchange opportunities across communities	• Better access to information that already exists • An exchange program for staff across the region • More access to historical information, e.g., re: dikes • Bridging the gap between First Nations knowledge/science and western science. Western science has too narrow of a focus on regulations and needs to work on doing the right thing because it is the right thing – needs to be educational support for this. Need support for hands-on learning, which in remote communities often looks like transportation services to in-person events. • Learning about other projects. Sharing what other communities are doing (good and bad) can be really helpful • A who's who of communities' EM and infrastructure contacts, so we have an 'in' to start
Specific funding	• Funding for dedicated staff (e.g., Sqwá FN Lands department = 1.5 staff - need support in terms of people to do the work especially with habitat restoration projects (e.g., Hope Slough Project or the Gill Bar Project) • Professionals to guide the work across the region, not to compete for funding • Funding opportunities for farmers to incentivize waterway work • Need funding for good planning, not just to do projects • Not chasing funding would be good - this takes time and therefore capacity. There'd be more capacity if funding was easier to access and project timelines more realistic. • Funding for environmental studies to find out where the priorities are - need data to support the projects - inventory of "what's out there right now and how we can make improvements " (i.e., flood gates, fish ladders, etc.)
Communications materials	• Strong communication and visual design to represent consequences of not managing flood risk
Law & policy levers	• A tool for enabling flood resilience work on private land • Using the provincial flood strategy to address upstream hydrological impacts down river

Other comments	• Would it make sense for work in Upper Fraser to occur first, since it will influence flows experienced downstream?
What types of training, education, and capacity support would be useful to support more collaboration?	
Training and learning opportunities	• Educational experiences on the land • Skills in interpreting and communicating data • Understanding constraints re: fish and fish habitat • Project showcases • Catalogue of ongoing and future projects • Understanding how approaches to flood management are changing in specific communities (e.g., Hope) • When new models or information comes out (e.g., draft Fraser River hydraulic model), need to get out and present it to communities so can understand what it is and how it can be used • Need to better link hazards with land use planning to make good decisions
Getting public buy-in through education & communication	• Public education at the local level • Richmond example: simple signage showing progress and information about projects
Capacity support for collaboration	• Funding to hire consultants to support participation in collaboration • A way, or a person, to bring people together • Project timelines that build in enough time for collaboration • People with expertise to do the work (collaborative, structured decision-making)

3. WHAT IS THE ROLE OF THE PROVINCE IN SUPPORTING FLOOD RISK MANAGEMENT IN THE LOWER FRASER?

Guests were asked to consider key messages they would like the Province to hear about supporting flood risk management in the Lower Fraser.

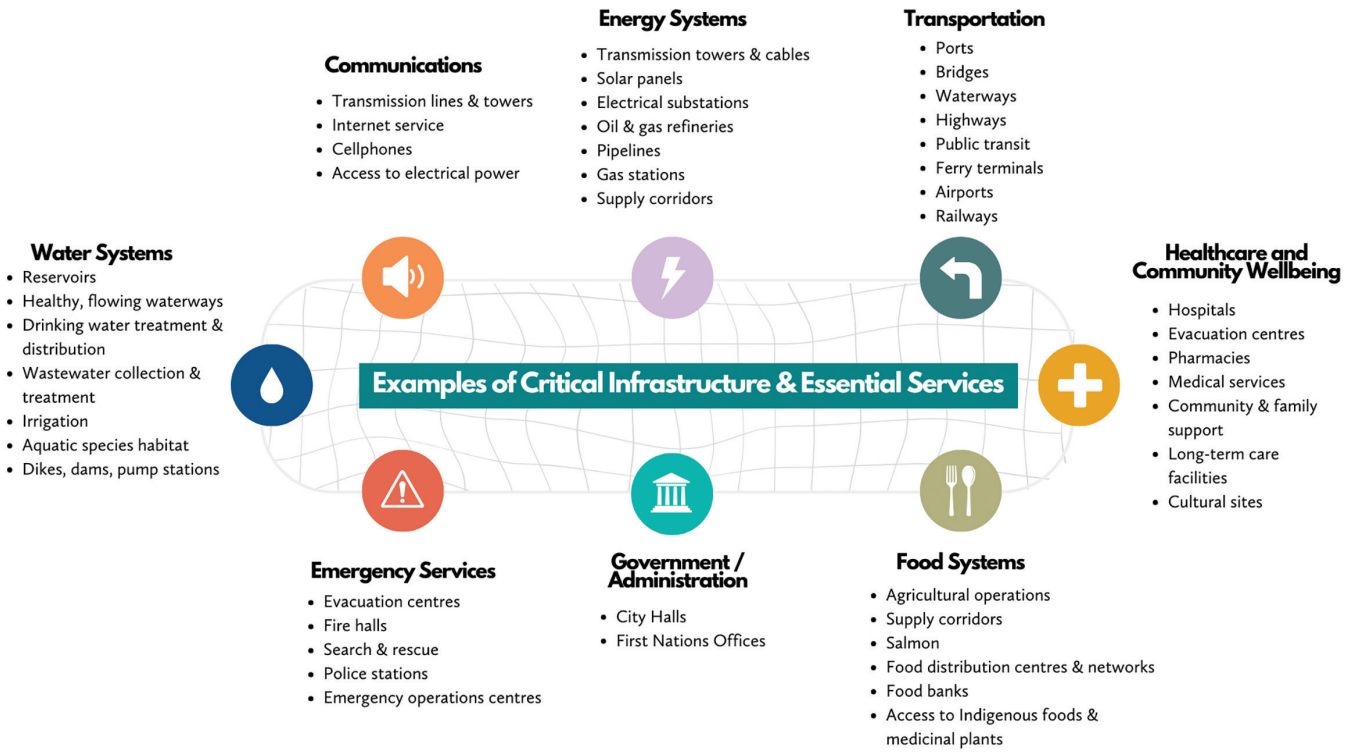
Key messages for the provincial government about their role in advancing flood risk management in the Lower Fraser

- The Lower Fraser is working collaboratively but the Province is missing—it needs to take a more active role in regional planning
- The Province is too slow in aligning its programs with DRIPA
- Prioritizing Indigenous involvement and values/views. There isn't enough space for input/feedback and there is a feeling like it isn't incorporated even when it is asked for
- The Lower Fraser needs funding for understanding risk, and for holistic approaches to managing risk
- The Province needs to be clear about its role in the Lower Fraser, and which Ministries are responsible for what
- The Province can provide more, better quality data, and improve sharing of data instead of repeating the same assessments
- Funding applications are too complex and require too many resources to assemble, and there also needs to be more flexibility around 'in-scope' and 'out-of-scope' items.
- The federal government needs to be involved because of their responsibilities for salmon and salmon habitat, and water quality, and also because they collect tax dollars and should fund programs
- We need to address the housing crisis with sustainable, resilient housing, and not create more flood risk.

Headlines

- *The Lower Fraser is working collaboratively but the Province is missing—it needs to take a more active role in regional planning*
- *The Province is too slow in aligning its programs with DRIPA*
- *Prioritizing Indigenous involvement and values/views. There isn't enough space for input/feedback and there is a feeling like it isn't incorporated even when it is asked for*
- *The Lower Fraser needs funding for understanding risk, and for holistic approaches to managing risk*
- *The Province needs to be clear about its role in the Lower Fraser, and which Ministries are responsible for what*
- *The Province can provide more, better quality data, and improve sharing of data instead of repeating the same assessments*
- *Funding applications are too complex and require too many resources to assemble, and there also needs to be more flexibility around 'in-scope' and 'out-of-scope' items.*
- *The federal government needs to be involved because of their responsibilities for salmon and salmon habitat, and water quality, and also because they collect tax dollars and should fund programs*
- *We need to address the housing crisis with sustainable, resilient housing, and not create more flood risk.*

Channels/forums to bring these messages forward:	Next steps
• EPS • Op-eds • UBCM • MOTT • Media • Message may be more effective coming from a group like LFFC/EPS, showing collaboration and collective buy-in	• Communicate with public • Meet with local MLAs • Relationship building around identified projects - move towards action



Next Steps

LFFC and EPS will be reaching out to local governments and First Nations about participation in the critical infrastructure systems network analysis. This work will begin in summer 2025 and will have several phases. LFFC and EPS will also be setting up sessions to engage with First Nations and local governments about funding opportunities related to flood risk assessment and flood resilience projects.

Lower Fraser Floodplains Coalition

We are a collaborative group of BC-based organizations and experts with the shared goal of helping BC's upcoming flood recovery and management efforts achieve the best possible outcomes. We offer support from a diverse range of interests, experience and networks, including Indigenous groups, conservationists, farmers, environmental legal specialists, researchers and natural resource professionals. We hope to see BC move towards a more holistic, collaborative approach to flood management that benefits people and other species, like salmon.

LOWER FRASER FLOODPLAINS COALITION

The Lower Fraser Floodplains Coalition is a group of BC-based organizations and experts with the shared goal of helping BC's upcoming flood recovery and management efforts achieve the best possible outcomes.