


Strengthening Resilience in the Face of Drought

Province of BC Drought Conditions and Key Actions

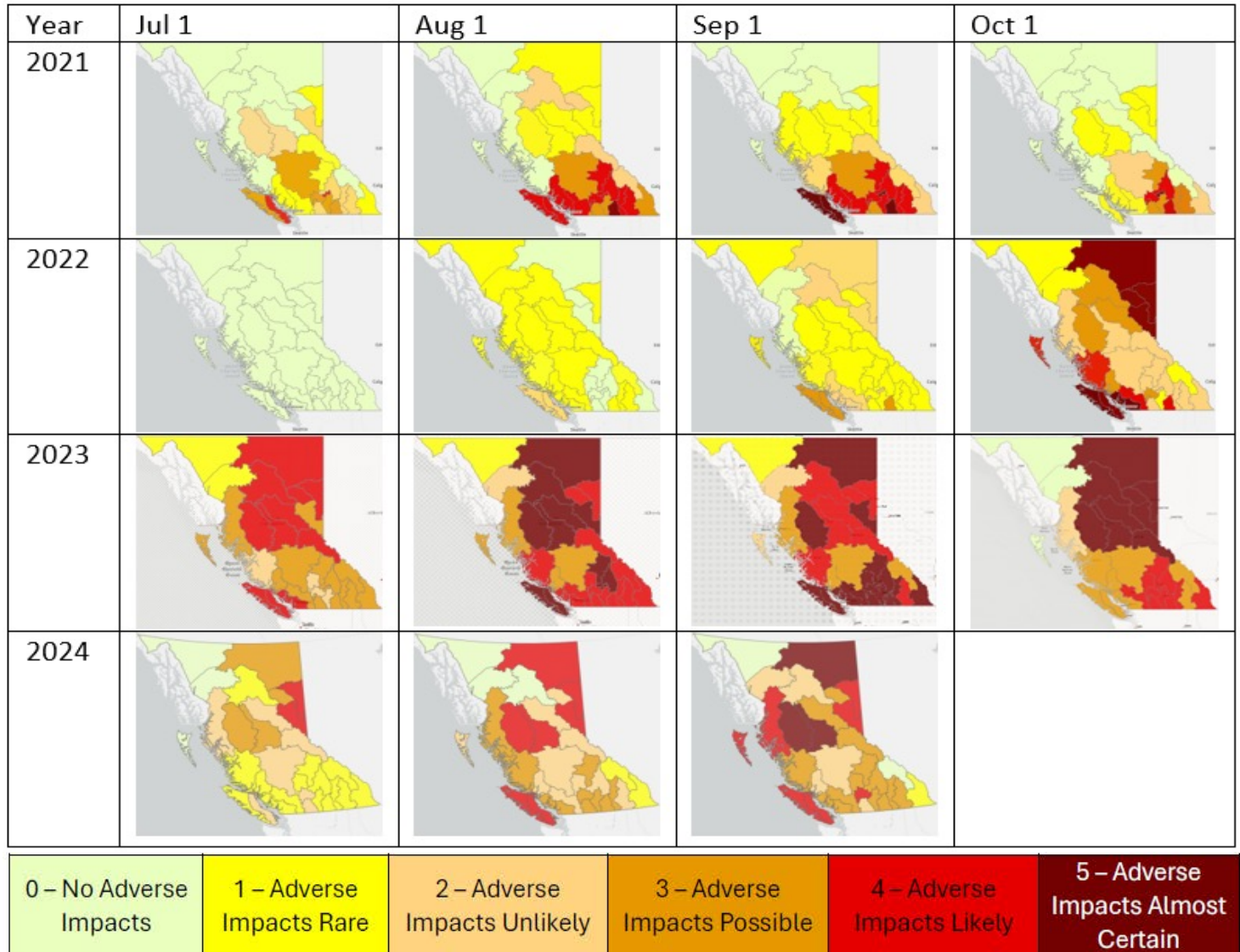
*Union of BC Municipalities
September 17, 2024*



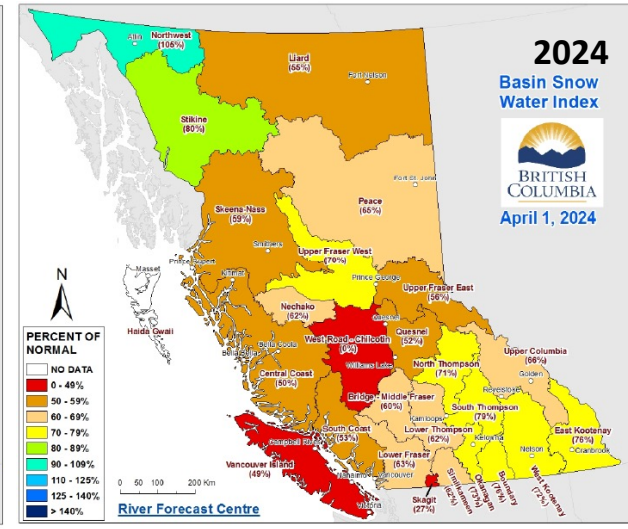
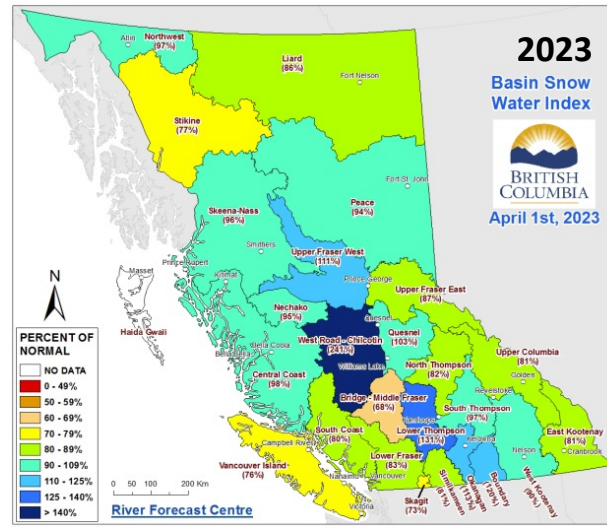
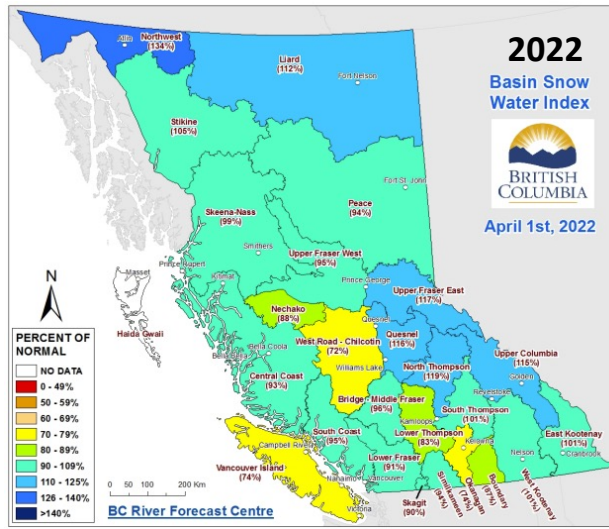
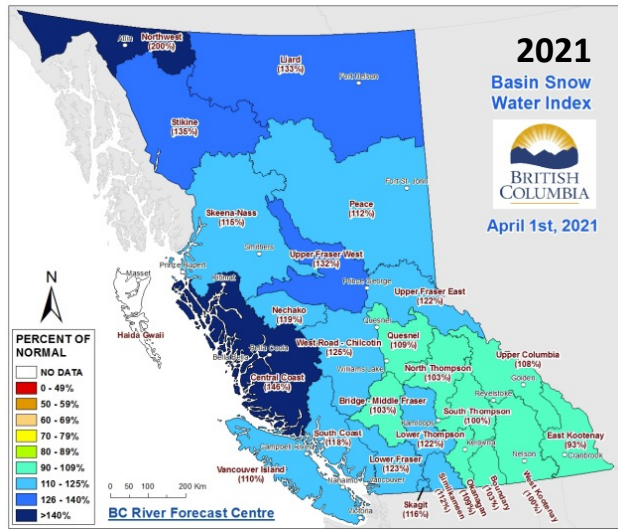
James Mack, Assistant Deputy Minister
Water, Fisheries and Coast Division
Ministry of Water, Land and Resource Stewardship

Drought Trends 2021-2024

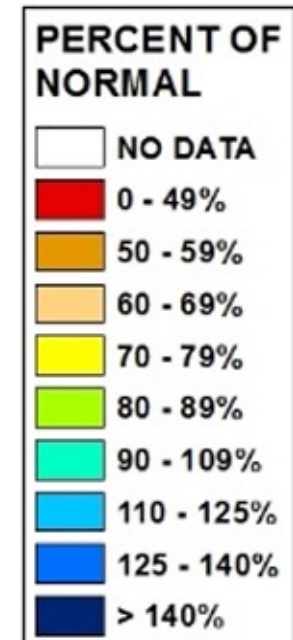
- In recent years, drought conditions are occurring:
 - earlier and/or extending later,
 - more frequently,
 - and/or more severely
- Multi-year precipitation deficits have led to low surface water and groundwater flows in some areas



Snowpack Trends 2021-2024

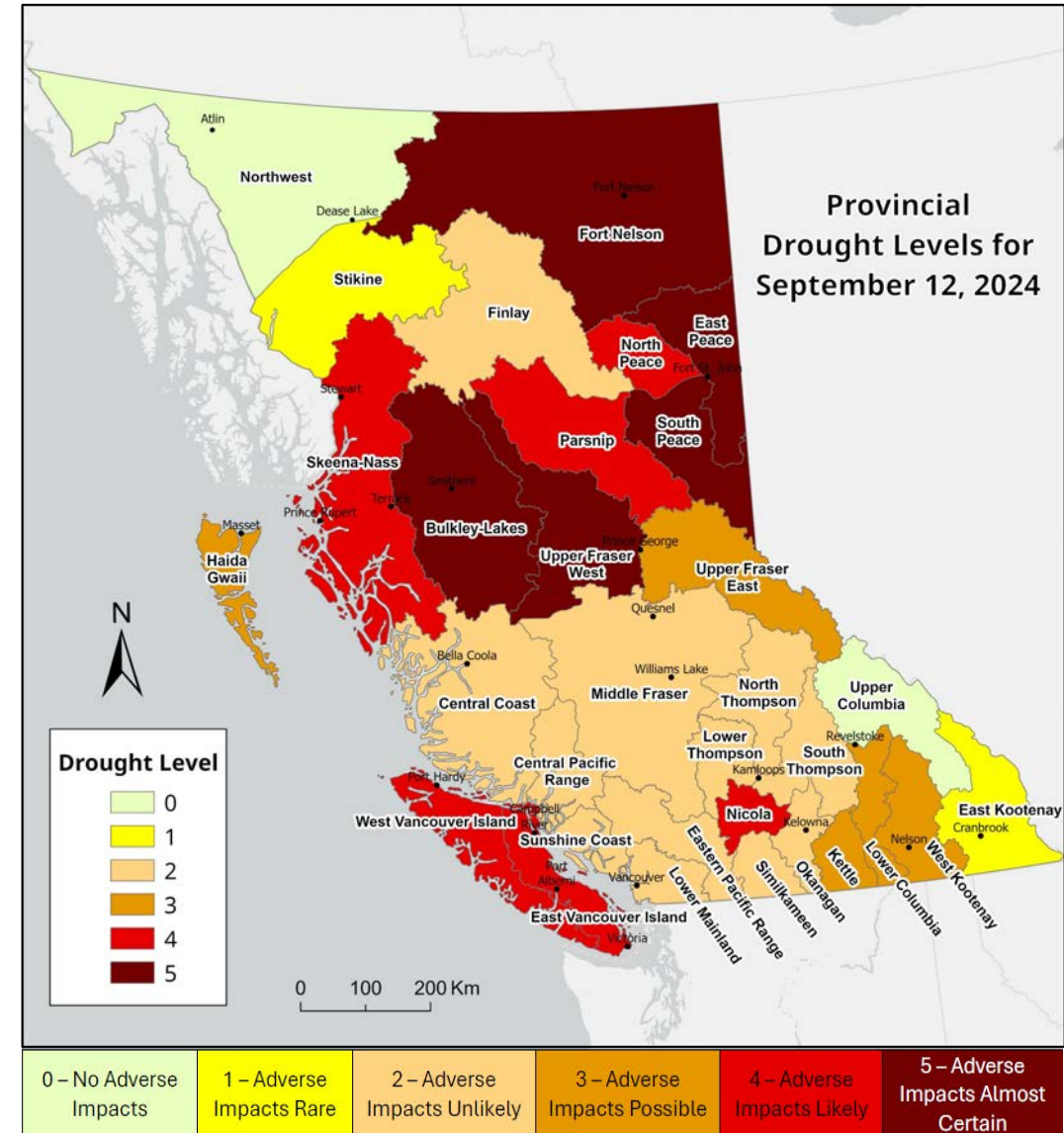
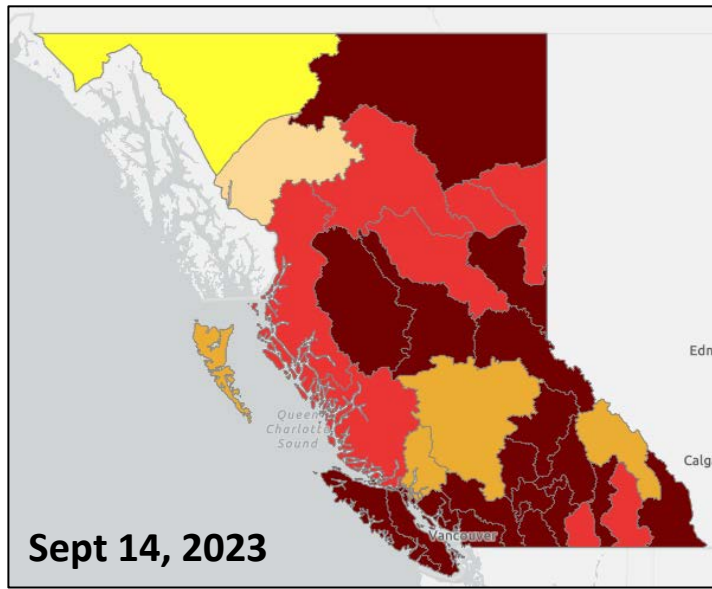


- This spring saw the lowest snowpack on record since 1970 for the province and the Fraser River
- Luckily, several unanticipated precipitation events have dampened down our drought risk



Drought Map – September 12, 2024

- Many parts of the province saw some streamflow recovery with rain in recent weeks, but a significant precipitation deficit remains in much of the North
- 42.6% of province (area) in drought level 4 or 5. Compared to 69% at this time last year



Enhancing Drought Response with a Whole-of-Government Approach

Earlier Preparation

- ✓ Early preparedness and communications with sectors and public
- ✓ Established Regional Drought Advisory Tables
- ✓ Agricultural Water Infrastructure program
- ✓ Tracking drinking water scarcity vulnerability
- ✓ Drought mitigation projects in partnership with DFO, PSF and FNFC

Earlier Conservation

- ✓ Encouraged voluntary water use reductions
- ✓ Encouraged local authority conservation actions
- ✓ Directly engaged water licensees
- ✓ Coordinated irrigation scheduling in key watersheds
- ✓ Determined and monitored flow thresholds for aquatic ecosystem health

Graduated Compliance

- ✓ Worked with unauthorized use in drought-prone areas
- ✓ Encouraged compliance with water licence terms
- ✓ Actioned compliance tools under WSA

Escalation Ready

- ✓ Created drought emergency response procedures (a first for BC)
- ✓ Compiled catalogue of all legislative provisions across laws that could be applied to drought response
- ✓ Started to explore feasibility of temporary water use transfer agreements

Investments for Drought Mitigation

Budget 2023 Investments

- \$513M/3-year Climate Preparedness and Adaptation Strategy, including for local governments and agriculture resilience
- \$250M/5-year BC Salmon Restoration and Innovation Fund
- \$15M for Pacific Salmon Foundation and First Nations Fisheries Council to work on emergency interventions for salmon
- \$115M available for remaining intakes of the Community Emergency Preparedness Fund
- \$20M Agriculture Water Infrastructure Program

Budget 2024 Investments

- \$83M increase for the Agriculture Water Infrastructure Program
- \$50M for the purchase and installation of water metering in select communities
- \$14M for Cowichan Lake weir
- \$10M to raise dam height on Saint Mary Lake on Salt Spring Island
- \$7-10M Watershed Security Fund intake for watershed restoration projects
- \$15M Disaster Resilience and Innovation Fund to address climate-driven hazards, and \$25M in 2025/26 and beyond

Agriculture

Agriculture Water Infrastructure Program

- Stream 2: Community Projects received 19 expressions of interest from local governments, irrigation districts and First Nations (<\$2M/project). Review underway with next intake planned for winter 24/25
- Stream 3: Assessments, Engineering Studies or Plans currently accepting applications (< \$200K/project)

Drought Extension, Preparedness and Communication

- Hosted 55 Drought Management and Irrigation Optimization Workshops (Nov 2023 - Apr 2024)
- Enhanced communications: social media, drought e-Bulletins, direct mailouts, TV spots, radio spots (English and Punjabi), website enhancements, regular community meetings in 5 sensitive watersheds
- Delivery of Irrigation Field Demonstrations and Water Storage Field Days underway

Watershed Planning - Securing Water for Agriculture

- Exploration of a Dedicated Agricultural Water Regulation and other policy mechanisms through the Koksilah Water Sustainability Planning process

Provincial Leadership on Drinking Water Supply Security

Completed:

- Communicated early to water suppliers on the need for drought preparation
- Developed spatial layer of drinking water systems in B.C.
- Built an internal (for privacy protection) to government tool (Drinking Water Supply Dashboard) to track drought-related risks to water supply
- Partnered with Indigenous Services Canada to develop a similar tool to track water supply status of First Nations water systems

Initiated / Ongoing:

- Exploring the potential impacts of wildfire suppression on drinking water supply
- Investigating options for improving water conservation at local government level



Drought Mitigation for Salmon/Fish

Agencies* working together to address drought impacts to salmon/fish.

Over 30 projects have been initiated across the province, such as:

- Cold water pool creation
- Access to spawning grounds
- Reconnection of isolated side channels
- Aeration of holding pools
- Fish salvage
- Localized shading

Many of these projects led by our First Nations partners.

* Fisheries and Oceans Canada, Pacific Salmon Foundation, First Nations Fisheries Council



Opening the mouth of Silver River (Harrison area). Provides access to ~45,000 m² of spawning habitat benefiting sockeye, chum, pink, and coho salmon.

Drought Action was Focused on Prevention

Most actions taken were non-regulatory:

- Water conservation through education and outreach
- Agricultural sector engagement
- Early advisory communication to local authorities
- Requests for voluntary water-use reductions
- Mitigation actions for fish and ecosystems, e.g., increasing access to spawning grounds

Some regulatory actions taken:

- Angling closures under the federal Fisheries Act
- Enforcement of Water Sustainability Act (WSA) requirements
- Ongoing stream monitoring for flow levels to protect fish population survival in consideration of regulatory action under the WSA



Local Authorities and First Nations are Key Drought Leaders

- Developing and implementing early water conservation strategies
- Early water conservation communication to residents
- Implementing water metering in pilot communities
- Early and sustained multi-year watering restrictions
- Updating water conservation bylaws



WATER CONSERVATION LEVEL	1	2	3	4
EFFECTIVE DATES	Begins April 1	May 1–October 31	As required	
Frequency	ANYDAY	Every other day: Even # houses = Even # days Odd # houses = Odd # days	One day per week: Even # houses = Thursdays Odd # houses = Mondays	SPRINKLING BAN: LAWN WATERING NOT PERMITTED
Watering times	Between 7 pm - 7 am	Between 7–10 am OR 7–10 pm for 2 hrs MAX	Between 7–10 am OR 7–10 pm for 2 hrs MAX	
Washing vehicles, boats, houses (siding)	ANYTIME	ANYTIME (on your watering day)	Between 7–10 am OR 7–10 pm on your watering day	Between 7–10 am OR 7–10 pm once per week on your Level 3 watering day
Hand-watering, drip irrigation	ANYTIME	ANYTIME		Between 7–10 am OR 7–10 pm
Filling fountains, pools, hot tubs	ANYTIME	ANYTIME (on your watering day)	VOLUNTARY RESTRICTIONS encouraging residents to reduce water use where they are able to	NOT PERMITTED
Pressure washing walkways, driveways, siding	ANYTIME	ANYTIME (on your watering day)		ONLY prior to application of paint, preservative, stucco, or sealant
New lawn permits	Can apply for a permit	Can apply for a permit		NO PERMITS ISSUED
Vegetable gardens and fruit trees are exempt from all watering restrictions, even in Level 4.				

Next Steps

- Potential for arrival of La Niña by end of summer may improve conditions, however we have long-term water management issues to plan for
- Building resilience to water scarcity through watershed investments, restoration / mitigation actions for salmon, drinking water and food security
- Strengthening relationships with local governments, industry and First Nations partners



gov.bc.ca/drought





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Managing Water Scarcity in Dawson Creek



Kevin Henderson, Chief Administrative Officer
September 2024



City of Dawson Creek

- Water Supply for 13,000 residents and rural users.
- 1942 US Army installed and built the current water system.
- Roots in Agriculture
- Growth in Oil and Gas
- Supports multiple industries

Welcome!
to the Peace River
Regional District!

Dawson Creek



Source Water & Storage

- One source water source – The Kiskatinaw River
- Water Supply for 13,000 residents and rural users
- Watershed Characteristics:
 - Rain-dominated watershed
 - Baseflow – groundwater
 - Area = 2,846 km²
 - Bearhole Lake is ~170km upstream



Water Scarcity Definition

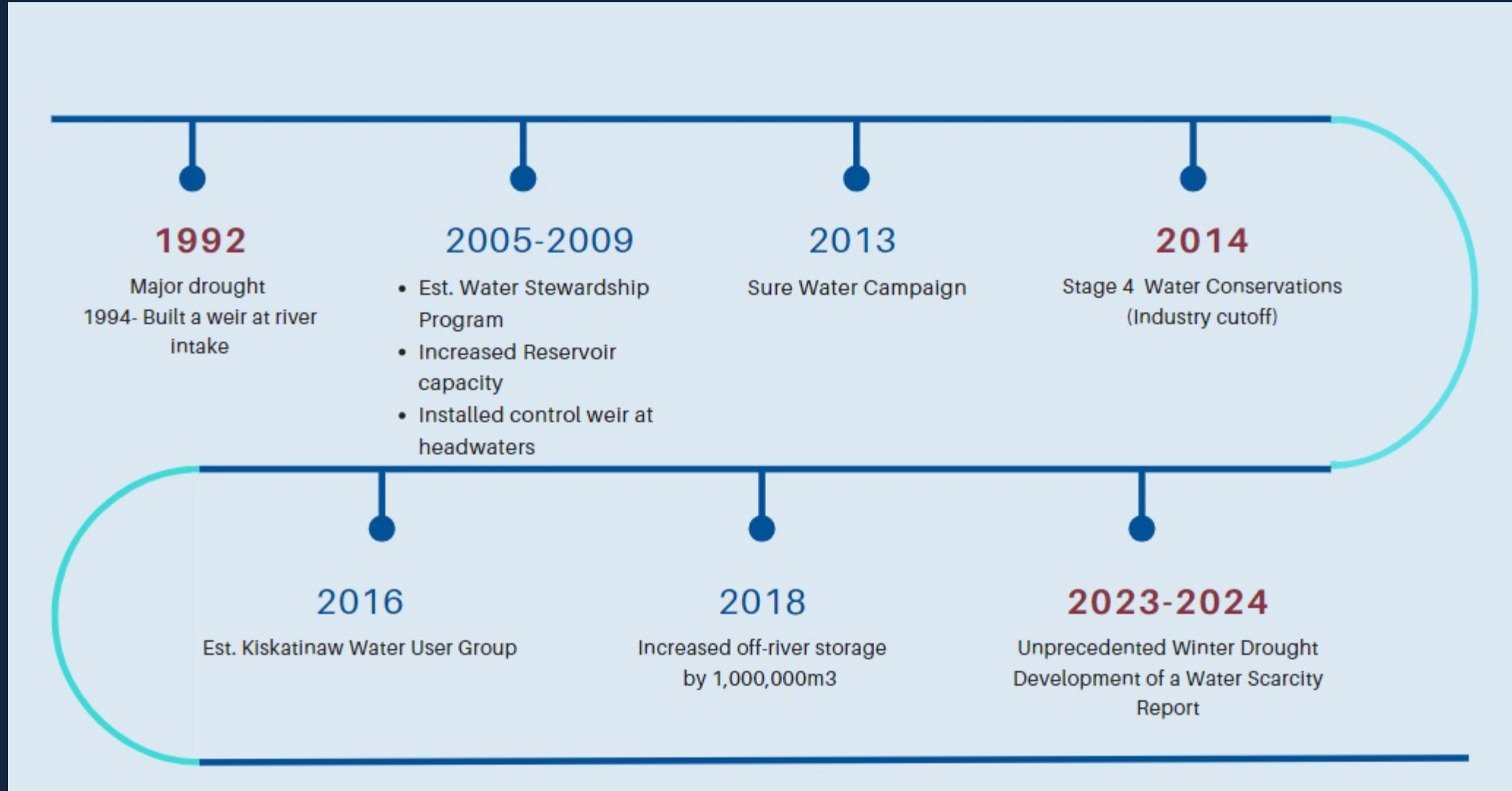
“Absence of consumable water”

Supply < Demand

Supply = river flows

Demand = environmental flows, drinking water & fire flows

Water Scarcity Timeline



1992 Drought & Arras Weir

- Broke open beaver dams in watershed
- Built an emergency earthen dam
- 1994 Installed the sheet-pile weir at Arras creating ~100 days of storage.



Water Storage

- 2004 off-river storage increased by 60,000m³
- 2007 Purchase of land for off-river water storage expansion
- 2009 installed a control weir at the headwaters, Bearhole Lake (1,356,000m³)
- Release takes 10-14 days to reach the City's intake



2009 Water Supply



Bearhole Lake: 209 Days



Arras Weir: 128 Days



Reservoirs: 60 Days



Water Plant & Distribution System

2009 Establishment of the Water Stewardship Program

- Monitoring and data collection for source water protection
- Dam Safety Program
- Partnerships and advisory to water regulators
- Water use statistics & conservation bylaw amendments
- Flood & drought technical support



2012 Water Reclamation Facility

- Partnership with Shell Canada.
- First in North-America.
- Recycles wastewater for non-potable uses
- Produces up to 4,000 m³/day
- Approved for use in industry practices and for City watering and dust suppression
- Level 2 Water Conservation forces industry to find alternate water sources such as reclaimed water.



2013 Sure Water Campaign

In 2013, the City launched the "Sure Water" campaign. The objective was to identify water users' preferred option among the four presented:

1. Upgrade the existing system as needed
2. Build a new raw water storage reservoir
3. Tap into groundwater aquifers
4. Build a new water pipeline (\$57-60 million in 2013)

- 93% support continued investigation into water supply issues and options.
- 73% of respondents agreed that the City should start to save for an eventual water supply system upgrade. Of those, 63% were willing to pay \$50/year more, while 35% were willing to pay \$100/year more. However, the cost of a new waterline to an alternative source would be significantly more than what people surveyed indicated they were willing to pay.

Council directed Staff to pursue the construction of a large raw water reservoir as a next step towards ensuring water security.

2014 Drought

- 1st summer Bearhole Lake release
- Daily flow monitoring at intake
- Water Conservation levels to Stage 4
- Impacts:
 - Industry cutoffs
 - Facility impacts
 - Business affected

City reaches Stage 4

Water restrictions increase as water levels continue to drop

JAMIE WOODFORD
Staff Writer

City council made a tough decision Monday to implement Stage 4 of the water conservation bylaw effective Thursday Aug. 19, which will essentially shut down the fracking process within the oil and gas industry in the area.

Car washes, originally prohibited under this stage of the bylaw, were given a temporary exemption so as to not have to shut down businesses in the city.

It was also decided that all city operated fields, flowerbeds and hanging baskets will not be watered during this stage.

Also affected is the waterslide at the Kenn Borak Aquatic Centre, which will be shut down under Stage 4 conservation measures.

Historically low river levels triggered Stage 4, which has never been enacted since the bylaw's inception two years ago.

Under Stage 4, watering of lawns, flower and vegetable gardens, decorative planters, trees and shrubs, artificial turf and outdoor tracks is prohibited.

Operation of a sprinkler for play is also prohibited.

Use of a hose to wash outdoor surfaces is not allowed unless ordered by a regulatory authority.

Hauling bulk water for non-drinking use is also prohibited under Stage 4.

All restrictions apply to commercial nurseries and produce farms; turf farms; golf courses; sports playing fields and schoolyards.

The B.C. government discontin-



JAMIE WOODFORD PHOTO

Director of operations Kevin Henderson explains the many restrictions of Stage 4 of the water conservation bylaw to city council.

“(Stage 4) means that you’re shut- sites will be shutting down for the form-

2018 Additional Storage



Bearhole Lake: 209 Days



Arras Weir: 128 Days

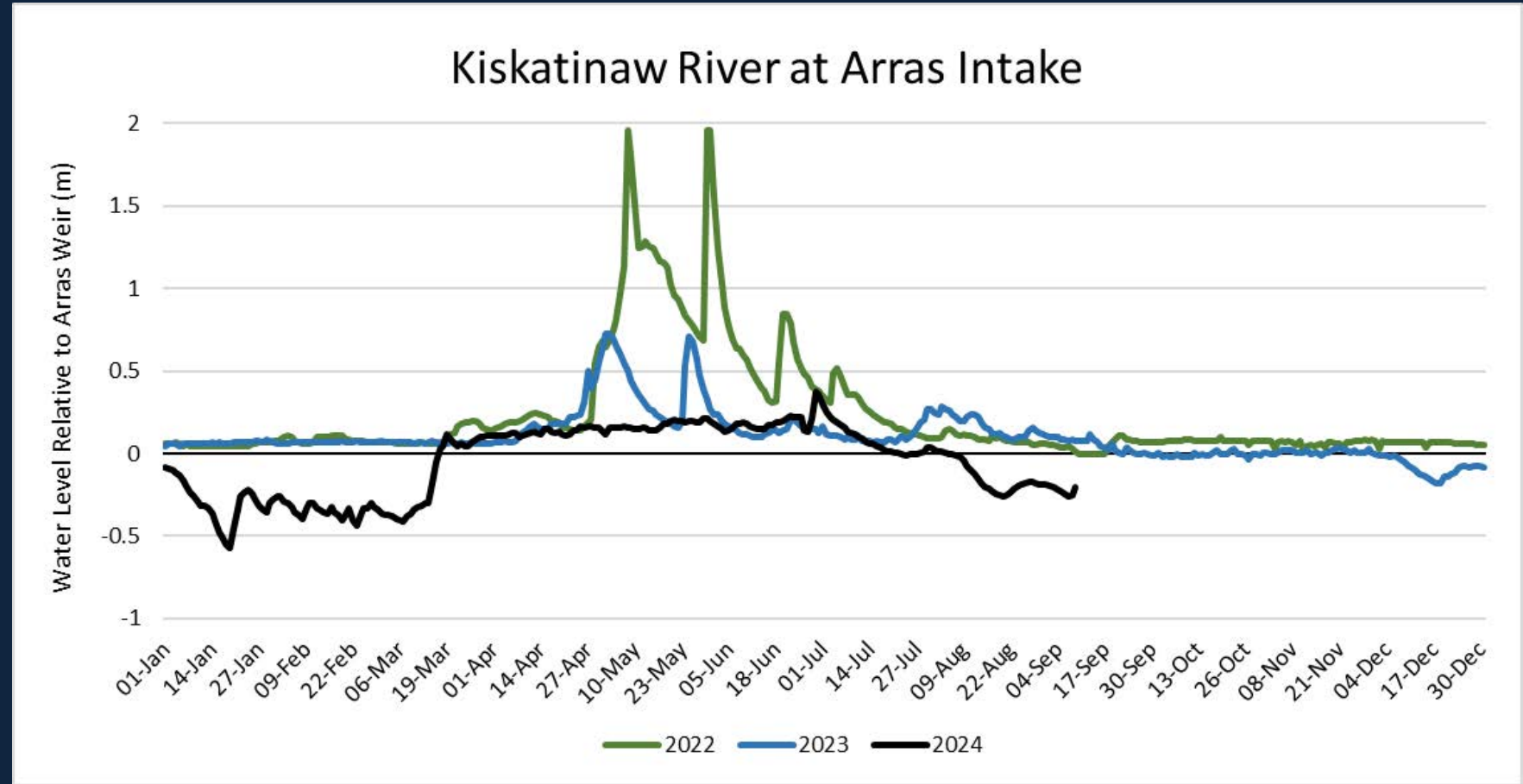


Reservoirs: ~200 Days



Water Plant & Distribution System

2023-2024 Cumulative Effects of a Multi-year Drought



2024 Unprecedented Winter Water Scarcity

- Demand > supply for 56 days
- Industry restriction on potable water for 112 days
- The City relied on reservoirs; using 189,000 m³ of stored water
- The City released 120,000 m³ of water from the headwaters
- Reservoirs were full as of September 10



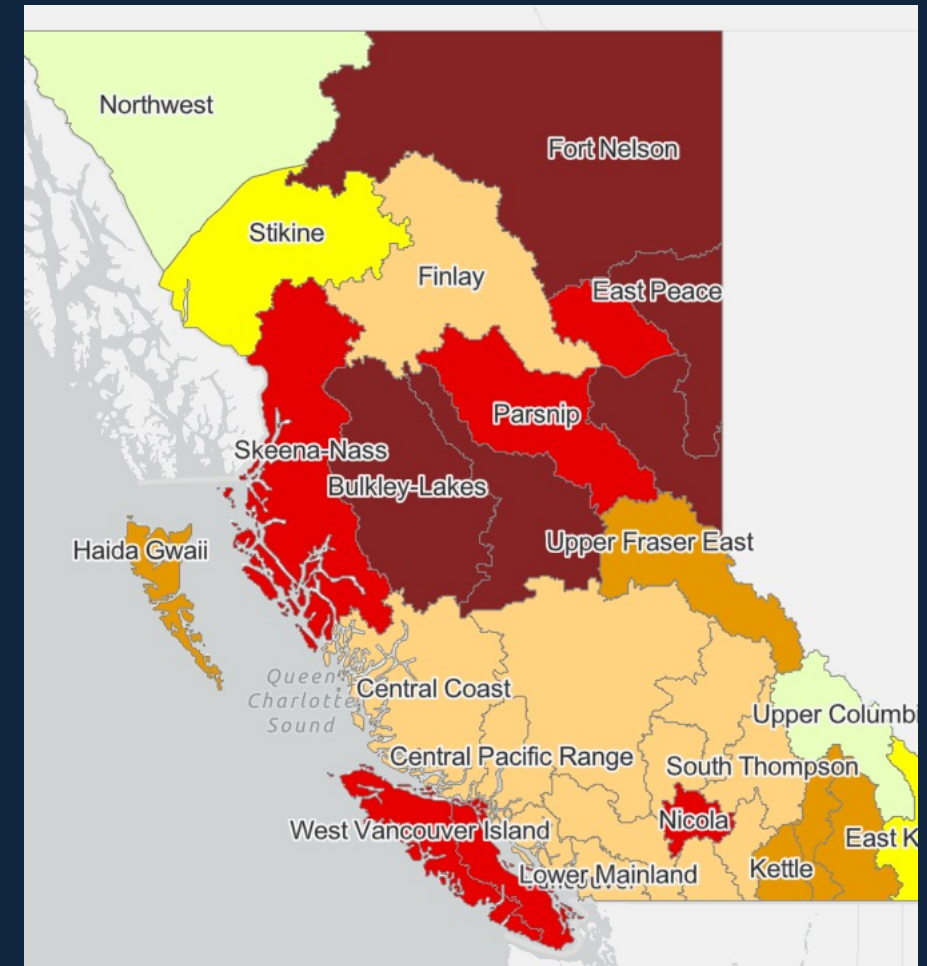
Situational Awareness Heading into Summer

Field Work and Data Collection

- Second lowest flow on record (since 1944)
- Flow monitoring
- Reservoir release for community & environmental flow needs

Partnerships

- Northeast Regional Technical Drought Working Group
- Kiskatinaw Water Users Group
- WLRs Drinking Water Supply Status



East Peace: Level 5 Drought (Sept 4, 2024)

Lessons Learned

- Internal Watershed Program and Emergency Manager are integral for close monitoring of the situation.
- Conditions observed over the last 3 years are unprecedented in the NE; Climate change has changed the game.
- Infrastructure projects are never cheaper than they are today.
- Future mitigation will be based on partnerships as the scope of these projects is well beyond our capabilities as a local gov't.

Thank you & Questions





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STRENGTHENING RESILIENCE

IN THE FACE OF
DROUGHT



OVERVIEW

- Introduction
- Climate in BC
- Water and How We Manage It
- Planning and Preparedness
- Working Together

WHO WE REPRESENT

BC Agriculture Council (BCAC)

- We work for B.C.'s farmers and ranchers. BC Agriculture Council is the lead industry advocate for key sector-wide priorities in British Columbia.
- Our mission is to grow a strong, sustainable and competitive agriculture sector by building industry consensus and advancing public policy.
- We achieve this by delivering a unified voice for the sector to the government through our member farm associations, representing over 20,000 farming families and approximately 96% of the farm gate sales in B.C.



OUR MEMBERS

- BC **Blueberry** Council
- BC **Broiler Hatching Egg** Producers' Association
- BC **Cattlemen's** Association
- BC **Cherry** Association
- BC **Chicken Growers'** Association
- BC **Cranberry** Growers' Association
- BC **Dairy** Association
- BC **Egg** Producers' Association
- BC **Fruit** Growers' Association
- BC **Grain** Producers' Association
- BC **Grapegrowers'** Association
- BC **Greenhouse** Growers' Association
- BC **Hazelnut** Grower's Association
- BC **Honey** Producers' Association
- BC **Landscape & Nursery** Association
- BC **Pork** Producers' Association
- BC **Potato & Vegetable** Growers' Association
- BC **Poultry** Association
- BC **Raspberries**
- BC **Salmon** Farmers Association
- BC **Shellfish** Growers' Association
- BC **Strawberry** Growers Association
- BC **Turkey** Association
- BC **Wine Grape** Council
- Fraser Valley **Pea and Bush Bean**
- **Horse** Council BC
- **Organic** BC
- Peace Region **Forage Seed** Association
- United **Flower** Growers

BCAC MEMBER

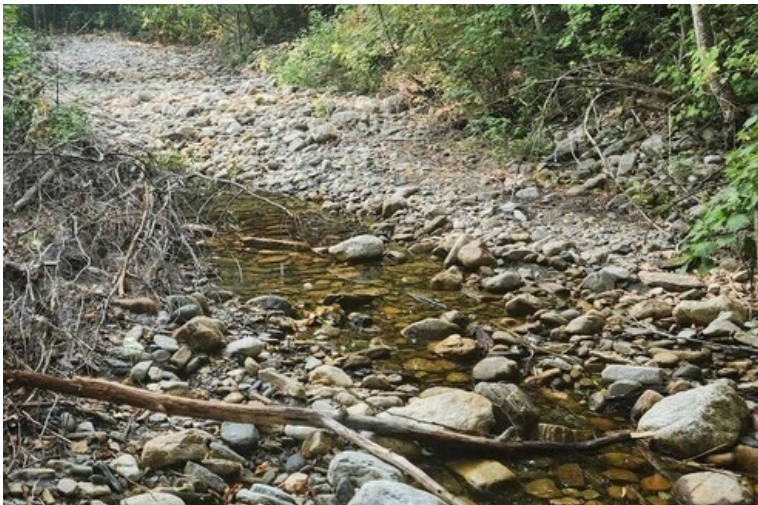


BC Cattlemen's Association

- Our mission is to maintain a healthy cattle industry that provides quality beef products to consumers and is guided by strong volunteer membership, environmental stewardship, respect for stakeholders and excellent business practices.



INCREASING TEMPERATURES





WATER SECURITY FOR AGRICULTURE &
LONG-TERM WATER STORAGE
SOLUTIONS

CHALLENGES

- Drought
- Crop loss
- Flooding
- Food insecurity



OPPORTUNITIES

- Prioritize Water for Food
- Agricultural Water Reserves
- Watershed Planning / Storage





SUPPORT SECTOR EMERGENCY
MANAGEMENT & CLIMATE READINESS
NEEDS

OUR GOAL

B.C.'s food supply is secure, and there is a reduced impact on the agriculture sector from climate-related and other emergencies.

CHALLENGES

- Vulnerability
- Financially catastrophic
- Impacts food security
- Forced to evacuate

OPPORTUNITIES

- Emergency Program Coordination
- Ag representation in EOCs
- Agriculture Coordinators
- Access Pass for Agriculture

The goals of BCAC / member FSPP project are:

The BC agriculture sector, through BCAC, has an emergency response plan which:

- Supports **agriculture working in synchronization with local governments Indigenous communities** and their emergency response programs.
- Plan is coordinated with the individual emergency plans of commodity associations and focus on events that **impact multiple commodities and regions in the province.**
- The agriculture sector is **engaged with local governments and Indigenous communities in their emergency preparedness** efforts as it relates to agriculture.
- The agriculture sector has a **provincial network of people trained** to assist local government and Indigenous communities in their emergency operations centers.

Continued...

- The agriculture sector, local governments and Indigenous communities together develop and implement a **consistent permitting system for shelter-in-place and entry/re-entry to farms during emergencies.**
- Individual producers have the necessary training and resources to return to their farms or shelter-in-place under a permit system in the event of emergencies.
- The entire agriculture sector shares the benefits of this project.

WORKING TOGETHER

- Our province's agriculture sector has been an important piece of British Columbia's identity for more than a century.
- The sector is a significant economic driver and is poised for opportunity
- We all have a part to play in its success.





Thank you



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United for Emergency Response: Activating your Local Social Service Sector in Climate Emergencies

Naomi Woodland

Regional Coordinator - Community Impact & Investment
Central and South Okanagan



United Way
British Columbia

Working with communities in
BC's North, Interior, Lower Mainland,
Central & Northern Vancouver Island

September 2024



Acknowledging that my work takes place on the traditional, ancestral and unceded territories of the Syilx, Secwepemc, Ktunaxa and Sinixt nations.

Why are we in this work?

1. Community-led Response to Local Needs

Locally-based staff and partnerships that can quickly pivot to support community needs

2. Maximizing the Power of the Social Service Sector

Generous support of donors across the Province to support emerging needs and long-term recovery efforts.

3. Continuous Learning and Improving

Leveraging lessons learned during crises; collaborate with provincial, local and Indigenous governments to maximize community support and resiliency



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Overview

Community Needs

Community needs exacerbated during climate emergencies (e.g., droughts)

Available Supports

Local non-profit sector acting as a *safety net* for community members in need

Collaboration in Action

Trusted partnership between social service sector and government agencies is needed



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Impact of Drought

Impact to local ecosystem

- Excessively high temperatures, lack of precipitation and access to water
- Increased number of wildfires and poor air quality due to prolonged periods of extreme heat and limited precipitation

Socio-economic impact

- Impacting food security, ecosystem health (*challenge for hunters and Indigenous peoples*) and local economies
- Direct impact on social determinants of health – especially for low income and marginalized community members

Common Priority Area – Emergency Response



- Thousands of residents on evacuation order or alert every year for the last 4 years
- Drought conditions for the last 4+ years
- Increase in extreme weather conditions (heat/cold)
- Prime conditions for largescale wildfires, flooding and heat events
- High impact on low income, vulnerable and marginalized populations

Collaboration in Action - Response in West Kelowna

- Convened an *Unmet Needs Table* (in partnership with City of West Kelowna)
 - Forged partnerships to work together during response
 - Evolved into a funding collaboration space & by-name meeting
- Triaged donation requests and available supports from donors



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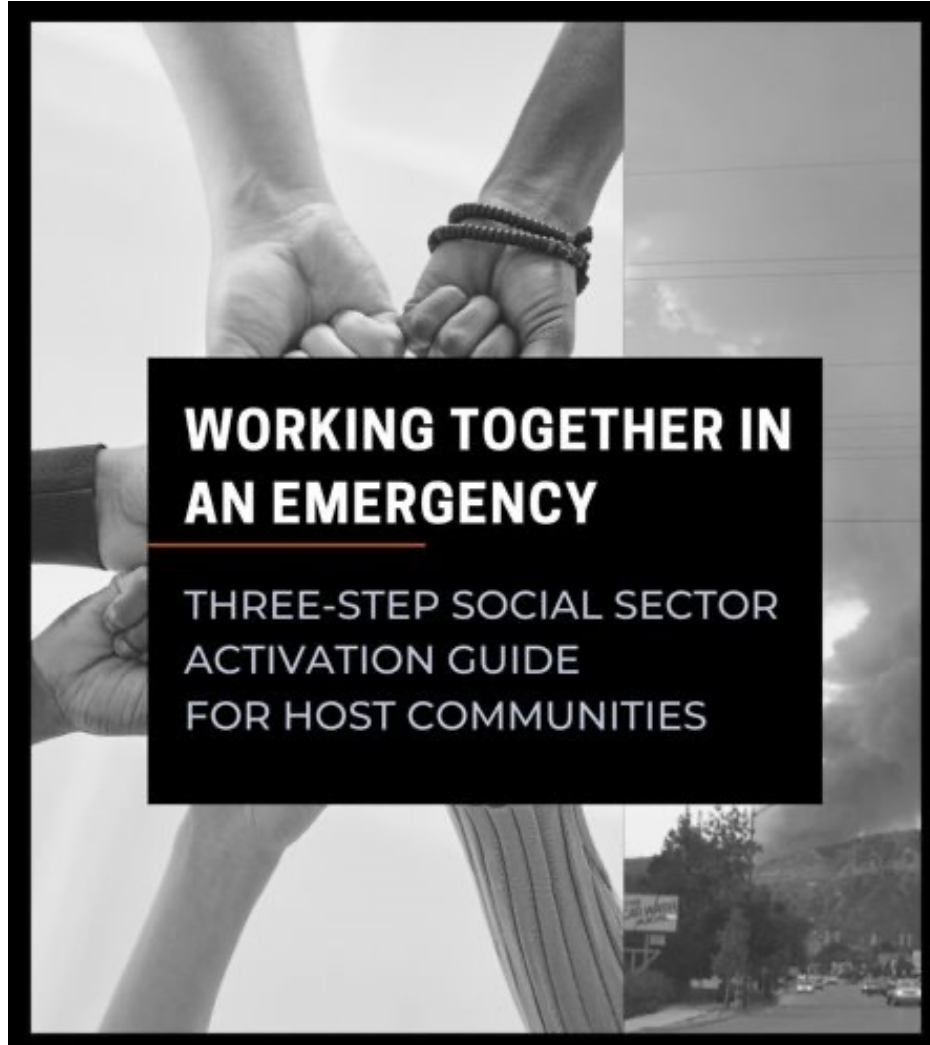
What does our Response Look Like?



An ESS Volunteer and United Way BC staff handing out food in an arena in Kamloops for wildfire evacuees from Jasper, Alberta (July 2024)

- Using **networks of known partners** to establish additional supports for evacuees
- **Funded community partners** to develop emergency preparedness plans
- Commitment to **long-term recovery and resiliency** activities
- **Intentional partnerships** with local authorities and First Nations

Social Sector Activation Guide



Provides structure for a **coordinated social response** in communities before and during an activation.

Offers recommendations on how a host community's social sector can work alongside Emergency Support Services (ESS) and local government to better support evacuees.

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Preparing for Response

Step One



- Relationships
- Cultural Safety
- Equity
- Trauma Informed

Step Two



- Social Response Task Force
- Roles & Responsibilities
- Communication strategy

Step Three



Prepared to support large scale events (EOC Level 3)

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If an Emergency Response is activated (either as host community or to respond), Social Response Task Force is Activated:

1. Local gov't shares needs with social sector convener; *convener activates the taskforce*
2. Connect with community navigators from evacuated community
3. Host meeting with Social Response Task Force
4. Refer to Social Response Task Force contact list
5. Assess funding needs and current capacity
6. Activate communication strategy
7. Apply for funding opportunities



Example: Social Response in South Okanagan Similkameen region

- Established Social Response Task Force in partnership with Regional District staff
- Over 25 non-profit and government partners are ready to support each other and community members in case of large-scale emergencies
- Preparing community members for emergencies via social service sector agencies



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Promoting Community Resiliency in Princeton

- Local staff unites partners to review ongoing needs and challenges
- Continued supportive non-profit tables = strong multisectoral partnerships
- Hi-Neighbour in Princeton: long-term support and commitment to community rebuilding and resiliency efforts



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Community-Led Recovery & Resiliency



Magda from United Way BC hosted a free workshop from a group of seniors on how they can build their own air filter; created in partnership with the City of West Kelowna, Interior Health Authority and Simon Fraser University (July 2024)

- United Way BC helps strengthen vital connections in climate impacted communities through an *asset-based community development approach*
- Full time staff member works with community partners, members and agencies to create a series of events and activities with the goal of fostering community well-being and resilience.

What we've Learned

1. People in our communities are struggling to access services and advocate for their own needs
2. Working with local non-profit partners to identify needs quickly and respond with funding, volunteers or advocacy
3. Collaborating with partner agencies leads to greater impact: ESS, local and regional government, community groups, corporate partners



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Reflection Questions

What is your community's capacity to support people who are vulnerable in an emergency?

Do you currently see government partners, health and non-profit organizations in your community coming together to develop solutions?

Is your council or staff part of a multi-sectoral collaborative? What benefits do you see from these conversations?



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Thank you & Questions



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Kootenay Family Place

In appreciation of our speakers today and with thanks for your contribution, UBCM has made a donation to the Kootenay Family Place. Kootenay Family Place is passionate about serving the needs of children, youth and families throughout the West Kootenay Boundary region through its services of early intervention, childcare, and providing a safe gathering place.