

# **Drought & Public Health in the Cowichan Valley**

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Cowichan Watershed Board

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# Acknowledgement

- Traditional territory of Cowichan people
- Indigenous health care systems
- Enthusiasm & potential in this room

# Hul'qumi'num

- Stz'uminus First Nation



- Cowichan Tribes



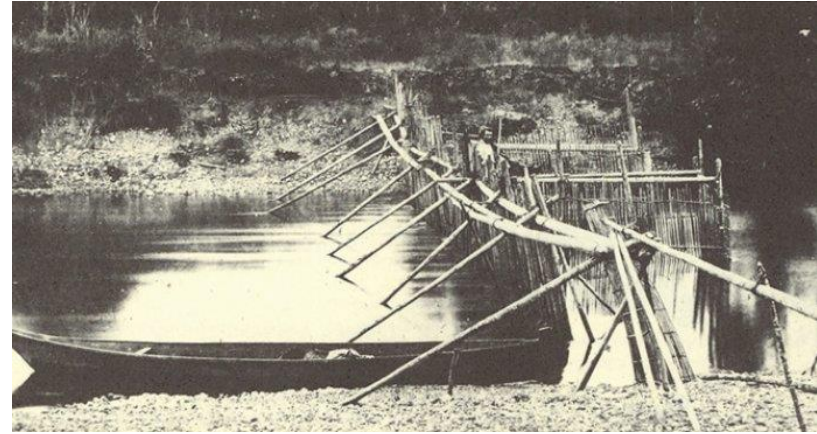
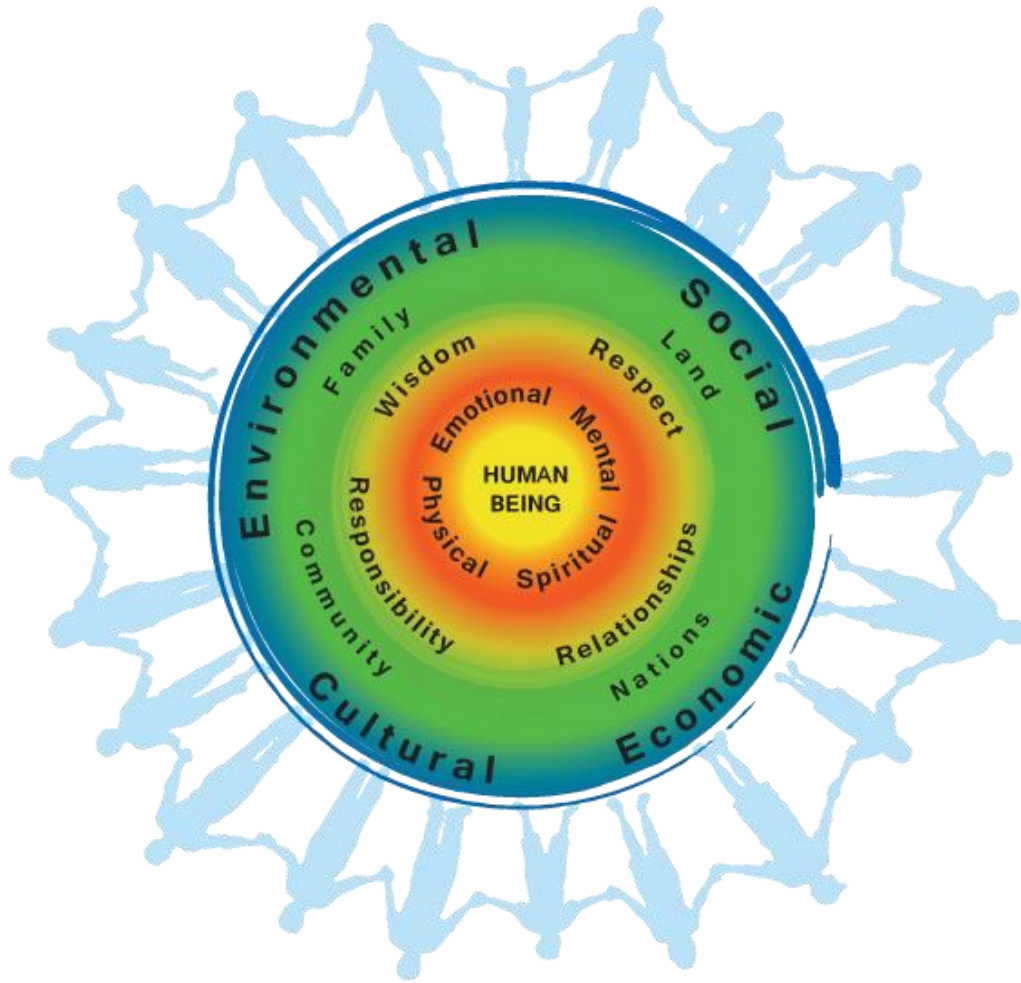
- **Cowichan Valley resident**
  - Hul'qumi'num person
- **Health care provider**
  - Family physician
- **Health care systems**
  - Public Health & Preventive Medicine specialist

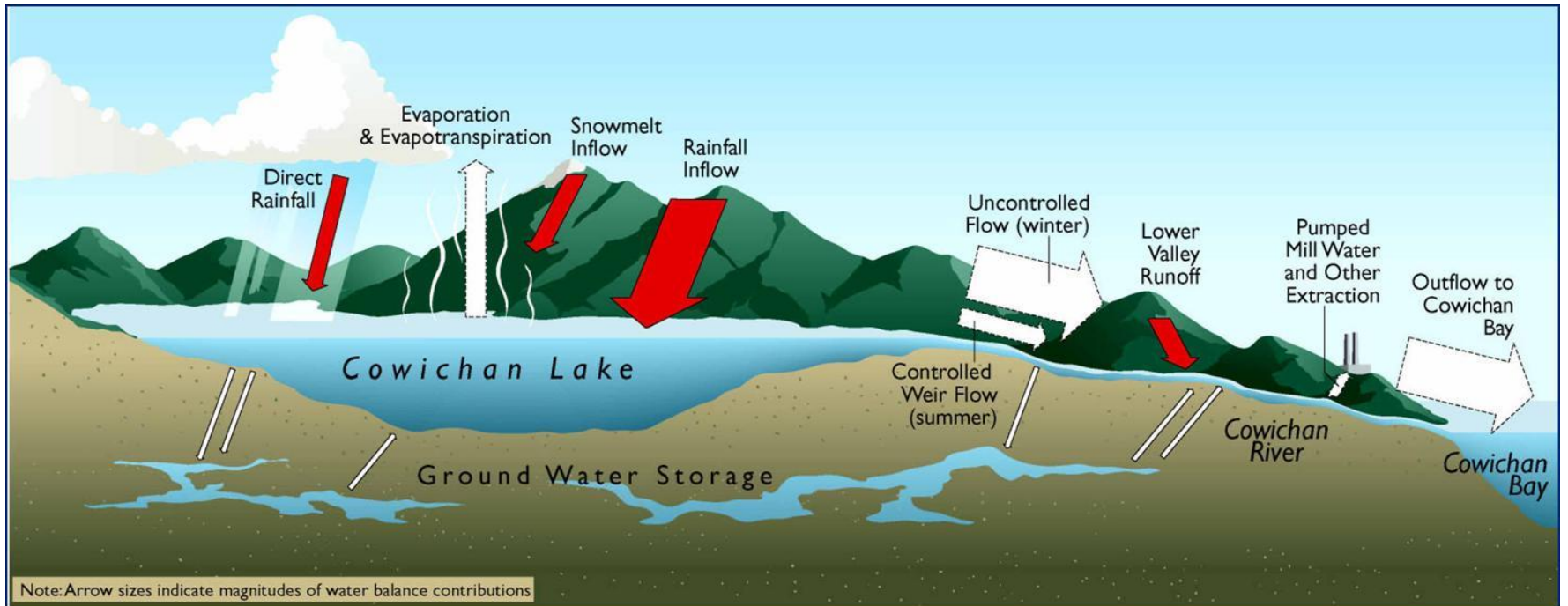
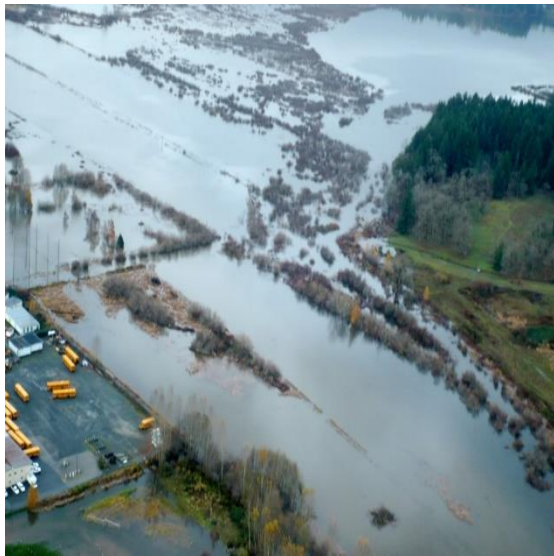
# Determinants of Indigenous Health

Distal	Intermediate	Proximal
Colonialism	Health Care Systems	Health Behaviours
Racism & Social Exclusion	Educational Systems	Physical Environment
Self Determination	Community Infrastructure & Resources	Employment & Income
	Environmental Stewardship	Education
	Cultural Continuity	Food insecurity

National Collaborating Centre for Aboriginal Health, Health Inequalities & Social Determinants of Aboriginal People's Health, 2009.

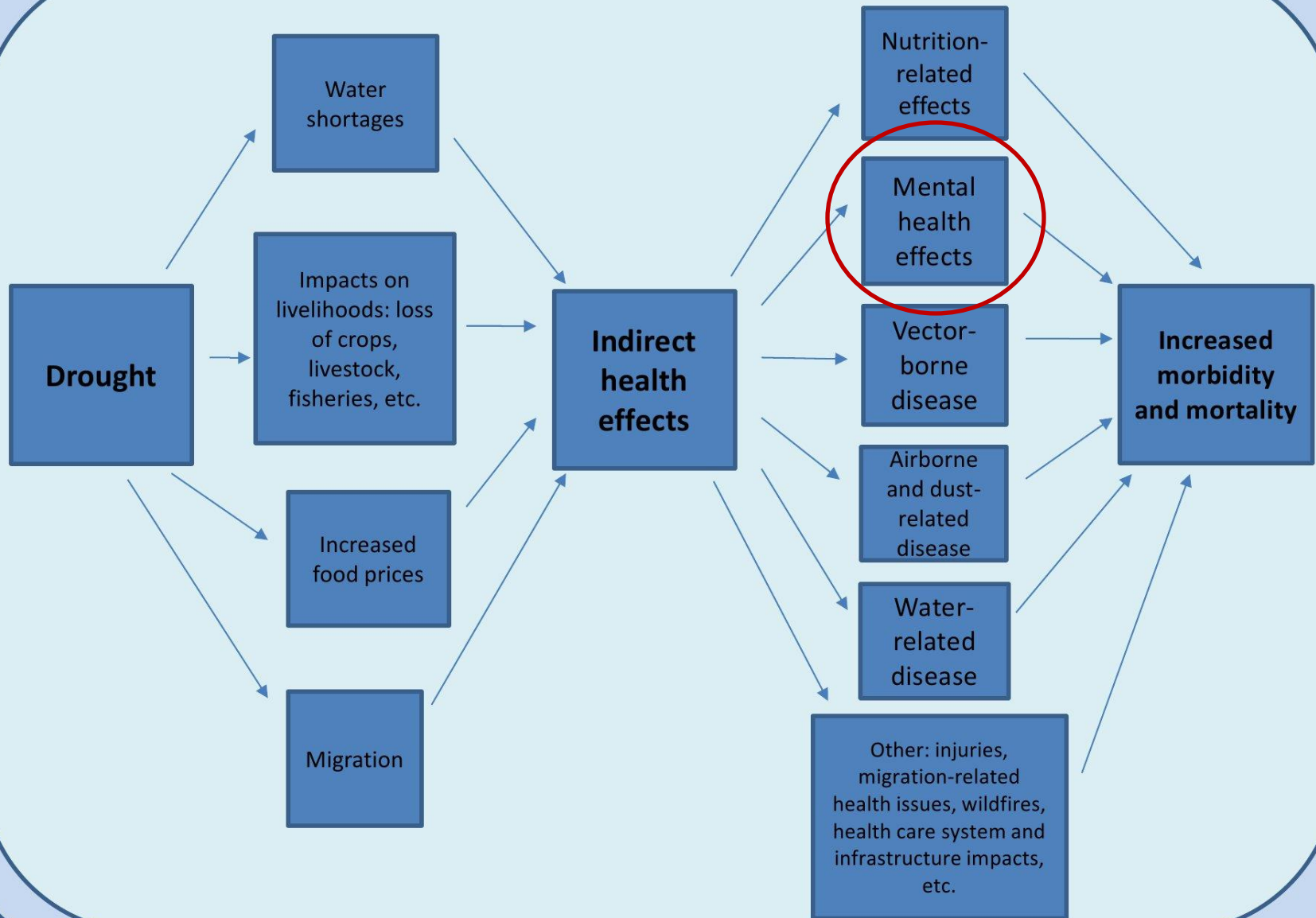
# First Nations Perspective on Wellness





Infrastructure: health, sanitation, available resources

Baseline public health: capacity for resilience





Drought-related Implication	Examples of Potential At-risk Populations
Quantity and quality of potable water	Persons relying on private wells for their drinking water, children, the elderly, athletes, persons with compromised immune systems, and persons on dialysis
Food and nutrition	Persons consuming raw produce grown using recycled water, economically disadvantaged persons, persons with compromised immune systems, children, and the elderly
Energy	Persons susceptible to extreme temperatures (e.g., the elderly), persons who live in institutional settings (e.g., nursing homes), and persons who rely on electronic equipment for survival or well-being (e.g., ventilators)
Air quality	Persons with allergies, asthma, or other chronic respiratory conditions that make them more susceptible to particulate matter in the air
Recreation	Persons who engage in water-related recreational activities and persons with compromised immune systems
Mental and behavioral health	Persons who rely on water for their economic livelihood (e.g., farmers, ranchers, landscapers, horticulturalists, recreational facility operators) and persons who have anxiety or depressive disorders
Infectious disease	Persons who rely on private wells to obtain their drinking water, persons who have both a septic tank and a groundwater well, and persons with underlying health conditions, including those with compromised immune systems
Chronic disease	Persons with certain chronic health conditions, such as asthma, allergies, other respiratory conditions, and immune disorders

2010. *When Every Drop Counts: Protecting Public Health During Drought Conditions—A Guide for Public Health Professionals*, CDC National Centre for Environmental Health

Table 1. Drought-related Implications and Examples of At-risk Populations

# Provincial Drought Levels

Table 1. Drought Levels Summary

Level	Conditions	Significance	Objective	Target
1 (Green)	Normal Conditions	There is sufficient water to meet human and ecosystem needs	Preparedness	Ongoing reductions in community water use
2 (Yellow)	Dry Conditions	First indications of a potential water supply problem	Voluntary conservation	Minimum 10% reduction
3 (Orange)	Very Dry Conditions	Potentially serious ecosystem or socioeconomic impacts are possible	Voluntary conservation and restrictions	Minimum additional 20% reduction to a minimum total of 30%
4 (Red)	Extremely Dry Conditions	Water supply insufficient to meet socio-economic and ecosystem needs	Voluntary conservation, restrictions and regulatory action as necessary	Maximum reduction
Loss of Supply		Potential loss of a community's potable or fire fighting supply	Emergency response	Ensure health and safety

# Summer of 2015

2015 DROUGHT LEVELS AT A GLANCE														
Drought Levels:	1	Normal		2	Dry		3	Very Dry		4	Extremely Dry			
Basins	15-May	28-May	25-Jun	03-Jul	09-Jul	15-Jul	21-Jul	23-Jul	05-Aug	06-Aug	20-Aug	03-Sep	17-Sep	01-Oct
Northwest	2	1	1	1	1	1	1	1	1	1	1	1	1	1
Stikine	2	1	1	1	1	1	1	1	1	1	1	1	1	1
Northeast	1	1	1	1	2	2	2	2	2	2	2	1	1	1
Peace	1	1	1	1	2	2	2	2	2	2	2	2	1	1
East Peace	1	2	1	1	2	2	2	2	2	2	2	2	1	1
Skeena-Nass	1	1	1	1	1	1	1	2	2	2	2	2	1	1
Nechako	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Upper Fraser	1	1	1	1	1	1	1	2	2	2	2	2	1	1
Middle Fraser	2	1	1	1	1	1	1	2	2	3	3	3	2	1
Upper Columbia	1	1	1	1	1	1	1	2	2	2	2	2	1	1
Lower Columbia	1	1	2	2	2	2	2	2	2	3	3	3	2	2
West Kootenay	1	1	2	2	2	2	2	2	2	3	3	3	2	2
East Kootenay	2	1	2	2	2	2	2	2	2	3	3	3	1	1
North Thompson	1	1	1	1	2	2	2	2	3	3	4	4	2	1
South Thompson	1	1	2	2	3	3	3	4	4	4	4	4	3	2
Okanagan-Kettle	2	2	2	2	3	3	3	3	4	4	4	4	3	3
Kettle (separated July 23)								4	4	4	4	4	3	3
Nicola	2	2	2	2	3	3	4	4	4	4	4	4	3	2
Similkameen	2	2	2	2	3	3	3	4	4	4	4	4	3	2
Skagit	1	1	1	1	3	3	3	4	4	4	4	4	2	1
Lower Fraser	2	2	3	3	3	4	4	4	4	4	4	4	2	1
South Coast	2	2	3	3	3	4	4	4	4	4	4	4	2	1
Vancouver Island	2	3	3	4	4	4	4	4	4	4	4	4	2	1
Haida Gwaii	1	3	3	3	3	3	3	3	3	3	2	1	1	1
Central Coast	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Prepared By: Water Management Branch, Ministry of Forests, Lands and Natural Resource Operations

Last Update: October 2, 2015

Source: BC Ministry of Forests, Lands and Natural Resource Operations

Figure 2: 2015 Drought Levels at a Glance

# What is MHO role in drought?



# Prevention

- **Participate** in local water governance
  - Sustainable development, built environment
  - Prepare to alter community expectations regarding water use
- **Communicate** about water conservation
  - Value of water metering & appropriate water rates, bylaws for water restrictions, leak detection & repair programs for supply systems (municipal distribution & residences), plant drought tolerant species, encourage or regulate water efficient appliances

# Prevention

- **Educate** on the effects of drought on health
  - Credible sources about potential public health impacts of drought delivered via a variety of media & processes
- **Regulate** water reuse
  - Rooftop runoff water collection
    - Canadian Standards Association is writing a document
    - MoH looking into writing a document

# Preparedness: Pre & Early Stage

Along with EHOs & Drinking Water Officer:

- **Provide guidance** to water suppliers & local governments on preparedness & response planning related to seasonal water shortages & loss of water supply
  - *Dealing with Drought: A Handbook for Water Suppliers in BC, July 2016*
    1. Provide proactive drought management goals to help prevent onset of drought conditions
    2. Assist & support water suppliers with assessing, planning, & responding to drought conditions & coordinating internal & external communications

# Preparedness: Pre & Early Stage

Along with EHOs & Drinking Water Officer:

- **Encourage/Require** formal planning for water shortage events & resulting water supplier responses to drought conditions
  - *Drinking Water Protection Act*
    - Section 10 Water system emergency response & contingency plan
    - Section 18 Water source & system assessments
- **Participate** in tabletop exercises around water shortages



# Response: Late & Severe Stage

Along with EHOs & Drinking Water Officer:

- **Participate** in emergency measures to respond to low water supply
  - Restrictions, legal requirements, minimum flows
- **Approve** local governments &/or water suppliers to use alternate potable water source when loss or failure is imminent
  - Length of access, cost

# Recovery

- **Analyze** existing surveillance data
  - i.e. hospital admissions, drought-sensitive conditions
  - Watershed Board Targets
    - Protect & enjoy stream, river & lake front habitats
    - Cowichan River summer flows 7 cm or higher
    - Grade 4 field trips, increased knowledge of watershed
    - Reduction in peak summer demand
    - Steelhead fry abundance
    - Shellfish harvested by 2020
    - Turbidity meet accepted water quality guidelines

# Recovery

- **Collect** qualitative data on individual & community impacts of drought
  - Physical/Emotional/Mental/Spiritual
  - Communication planning & strategies will be more effective with various target audiences
  - Resilience, Australian research
- **Collaboration**
  - Ecological Determinants of Health committee

# Huy ch q'u

