



# Cowichan Water Use Plan

## Public Information Meeting

October 23<sup>rd</sup>, 2017 - Youbou Hall

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*A community planning initiative in partnership with:*





# Goals for Tonight

- To review and discuss the challenges and changing nature of water management in the Cowichan watershed
- To provide an overview of the community planning process for the Cowichan WUP and how people can keep informed and get involved
- To seek applications from community members who may be interested in volunteering on the Public Advisory Committee

*The meeting tonight is a key step in the initiation of the community planning process towards the **Cowichan Water Use Plan***

# Agenda

## **Presentations**

- Background and Context
- Water Management in the Cowichan Region
- Cowichan WUP Community Planning

## **Question and Answer Period**

## **Next Steps and How to Stay Involved**





# Overview

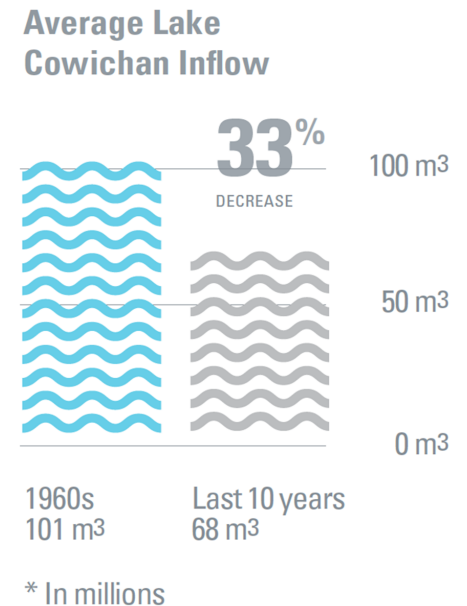




# Cowichan Water Use Plan

## Overview

- The current Cowichan water management system and weir – *implemented and constructed in the 1950s* – no longer has the capability to reliably support the varied water uses that have come to be expected.
- Climate change is the key driver that has resulted in a third less water coming into Cowichan Lake since the 1960s. 8 out of the last 15 years have been drought summers (including three of the last four). In 2016, lake levels were so low in September that pumps were installed with the anticipation of pumping lake water to increase flows to the river.
- This drying trend is only expected to worsen in coming years with a much smaller snowpack (decrease of 85%) and longer warmer drier summers (17% less rain) by the 2050s.
- A critical point is approaching where hard decisions will need to be made in drier years between river flows, lake levels and potentially building new infrastructure to store more water.



# Cowichan Water Use Plan

## Overview

The CVRD, Cowichan Tribes, the Cowichan Watershed Board, and Catalyst Paper have partnered together to initiate a community planning process that will explore future water use needs alongside a range of different potential water supply and storage options. The goal is to seek agreement on a long-term solution to better ensure water resources are sustainable and available to meet the region's future water use requirements.



The costs for the community planning process have been made through a grant from the Canada and BC Clean Water and Wastewater Program with additional funding provided by Catalyst Paper.





# Background and Context

# Cowichan Valley Regional District

Brian Carruthers  
CAO

Kate Miller  
Environmental Services



**Why** are we involved in water  
and watershed planning?

Provincial Direction  
CVRD Strategic Plan  
Good land use planning  
Public expectations  
Support Stewardship Community





## The power of Partnerships

- Mutual goals
- Shared risks
- Trust in outcomes
- Leveraging
- Effectiveness



**Cowichan  
Watershed  
BOARD**

**Catalyst**



## Elbow grease to date

- Substantial investments in partnership projects exploring water quality and supply, data collection and capacity building
- Major completion of key recommendations of the CBWMP identified actions
- Establishment of the CWB
- Ongoing financial and staff investment in plan components.
- Completion of climate projections
- Ongoing discussions on the region's future
- Watershed Management Service establishment





# Increasing concerns

## Summers will get hotter.



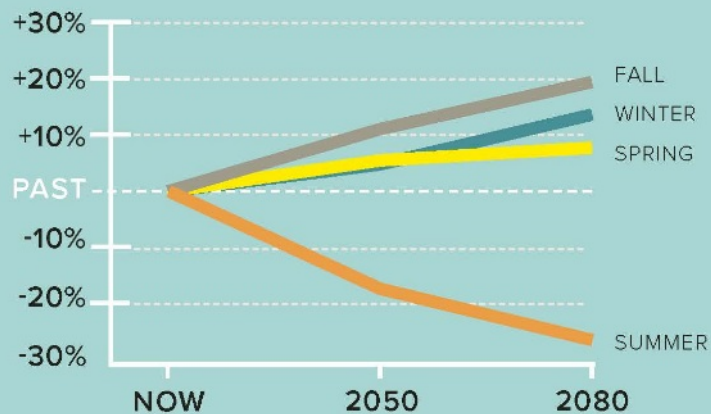
Use your landscaping and building design to cool your home and reduce fire risk.

Cool roofs absorb 70% less sunlight and reduce summer air temperatures by 2–3° C

# Wetter Winters, Drier Summers

**Summer will be drier, fall and winter wetter.**

SEASONAL CHANGES IN PRECIPITATION



Design with nature to consider raingardens and native plants, reducing water use and creating absorbent landscapes to help manage heavy rains.

Green features retain up to 70 to 90% rain

## What now – how are we moving forward

Step 1: Identify need – the focus of the current program

Step 2: Engineering solutions to address need

Step 3: Water licence application

Step 4: Implementation





Celebrating 50 years of Serving our Community  
1967 - 2017



# Water Management

## Cowichan Watershed



# Cowichan Water Management

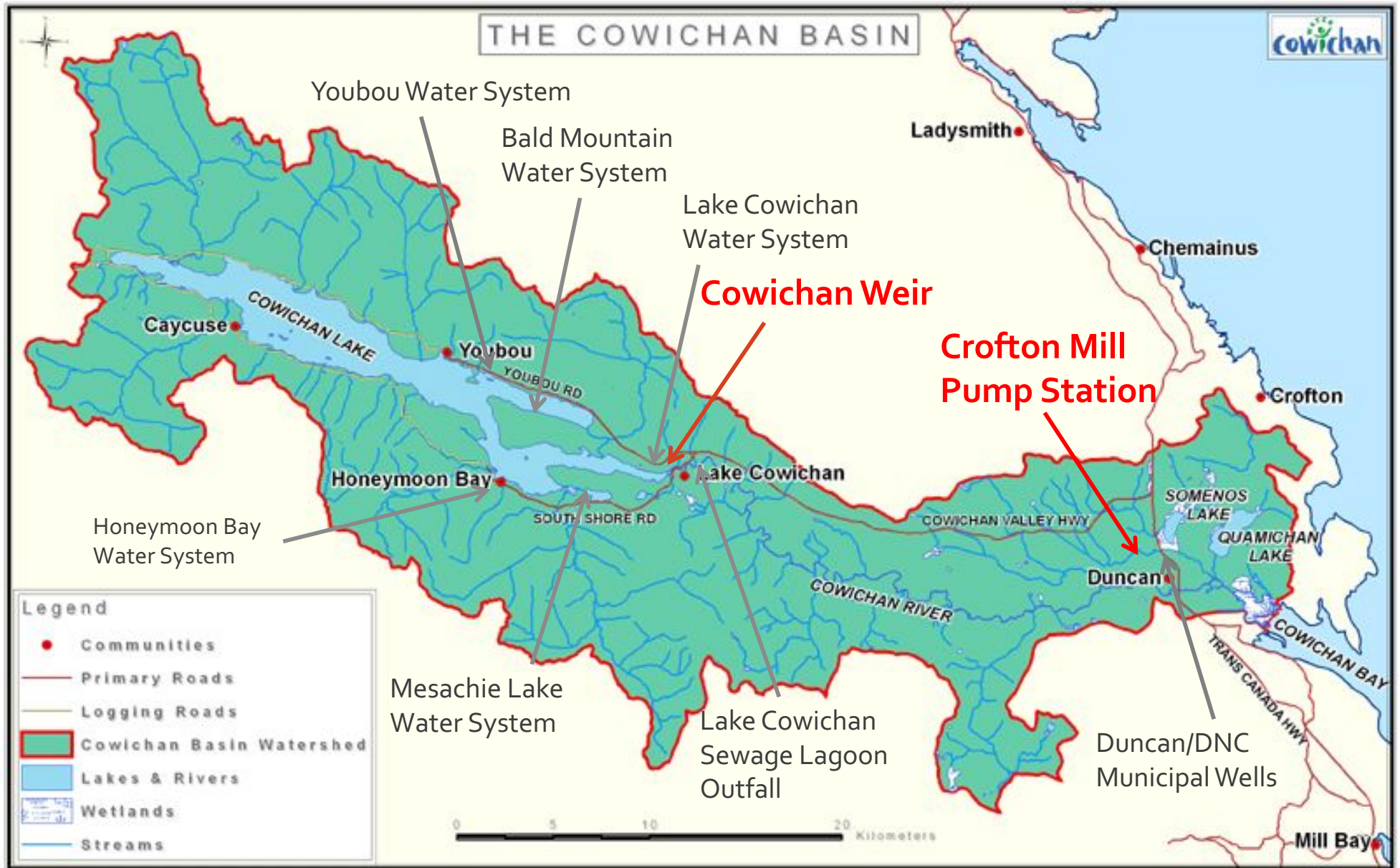




# Cowichan Water Management

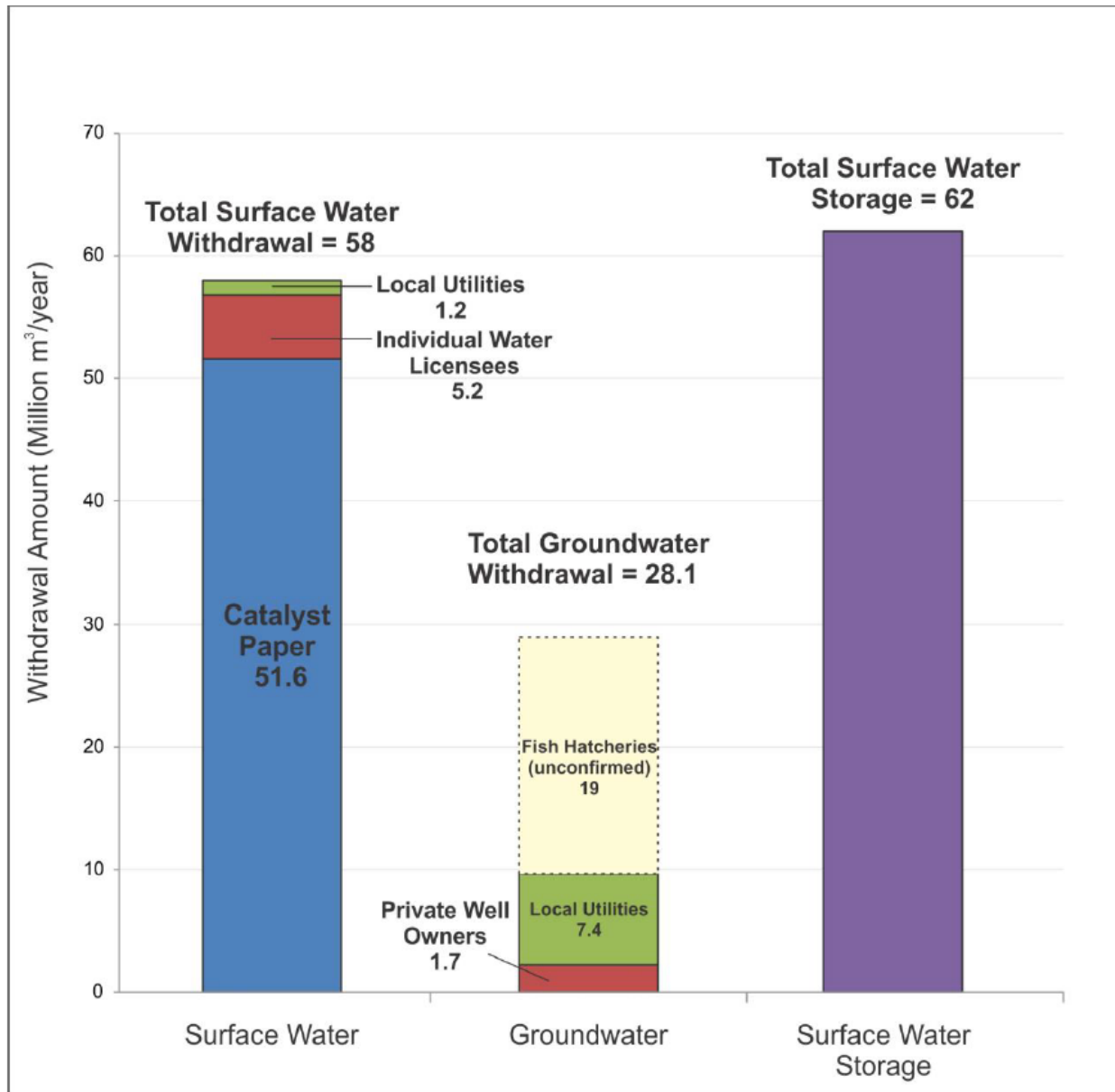
- Outline of Cowichan Water Management System
- Why is the system no longer reliable? (changes in demands, climate change, land use, etc.)
- How has Water Management been updated to cope with changes?
- What is next?





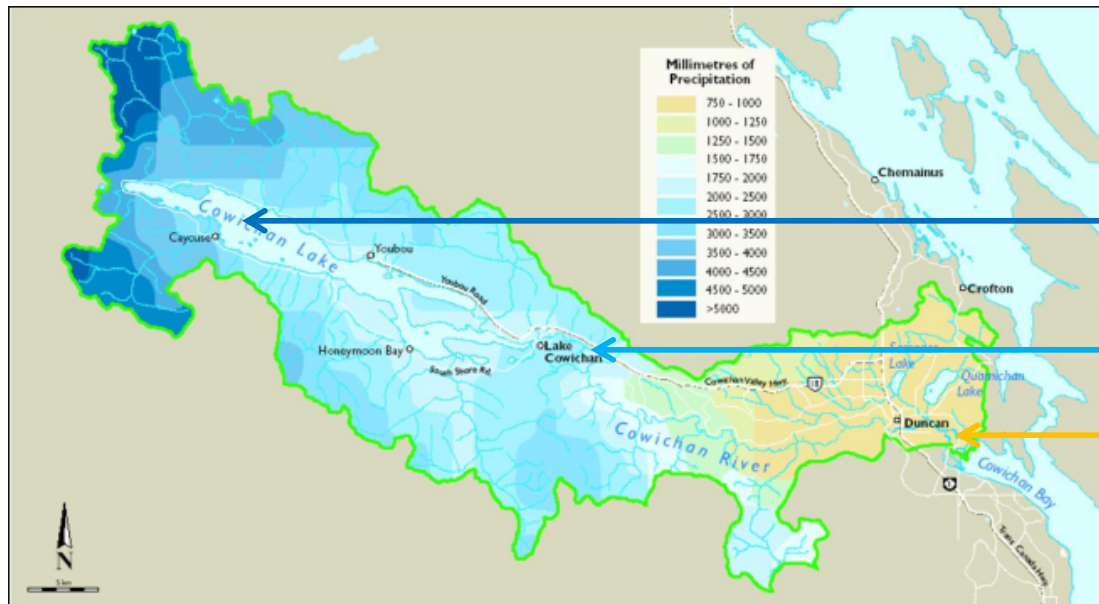


# Water Use in the Cowichan



Source: Foster and Allen, 2015

# Variation in Rainfall



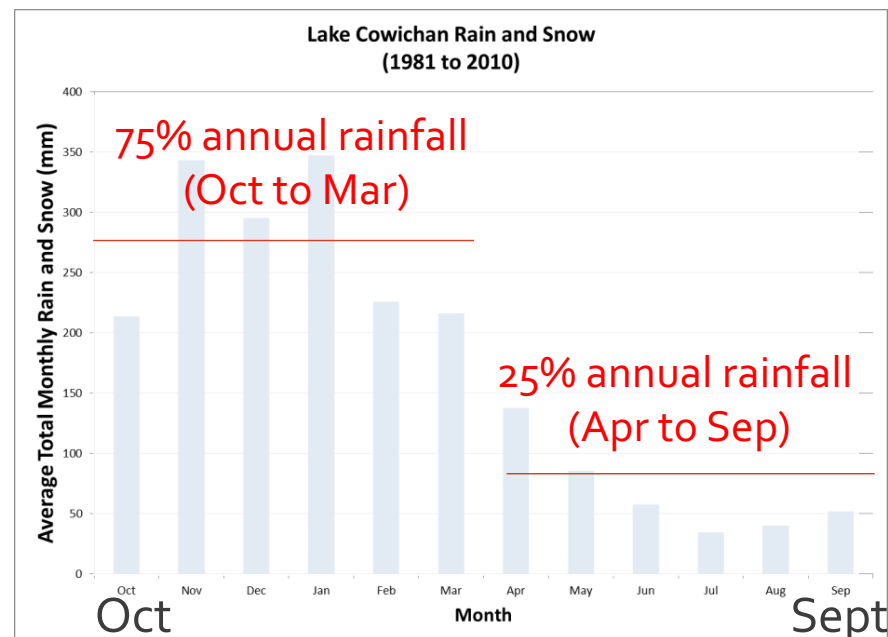
## Total Annual Rainfall

Western Portion of Watershed - > 2,500 mm

Lake Cowichan – 2,050 mm

Duncan - 1,150 mm

We live in a rainforest...we have plenty of water....why are there water issues?



# Variation in Flow and Demand

Winter

Summer

River Flow



River Flow ( $> 100 \text{ m}^3/\text{s}$ )



River Flow ( $4 \text{ to } 7 \text{ m}^3/\text{s}$ )

Water Demand



Community Demand ( )



Irrigation + Community Demand ( )

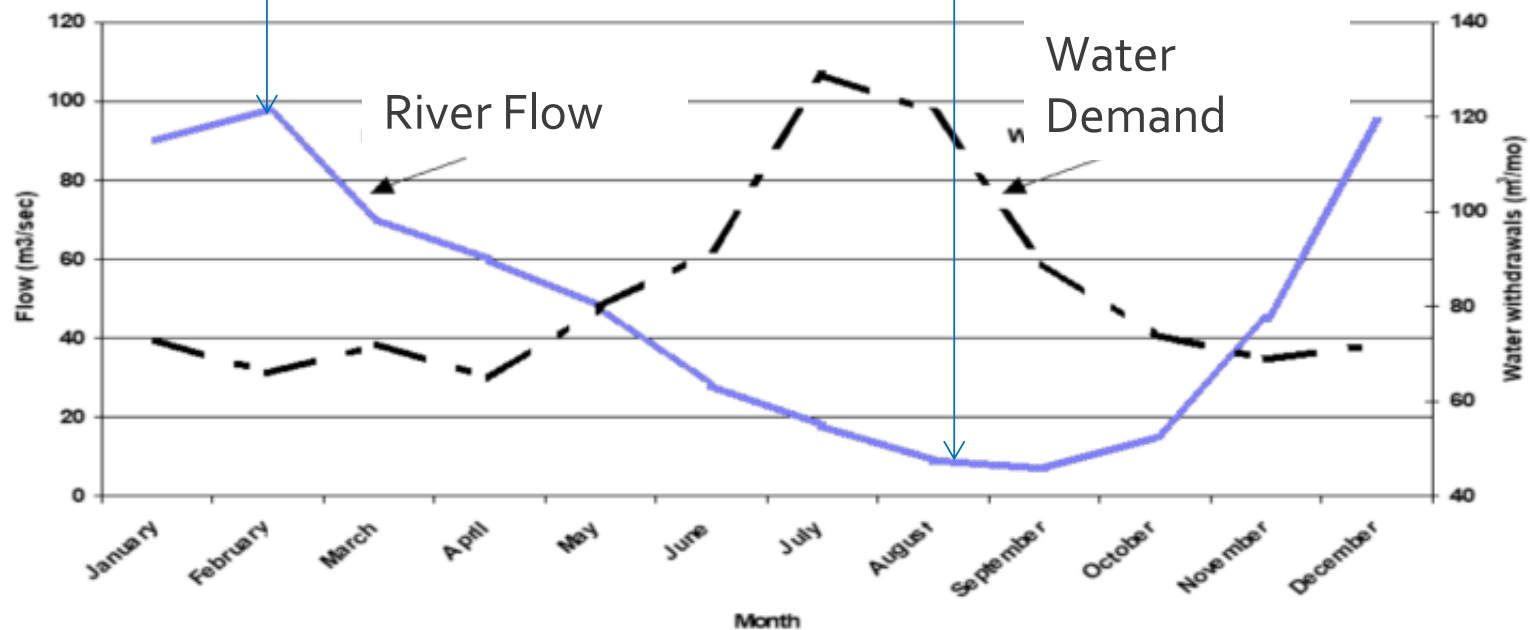
Crofton Paper Mill water demand relatively constant across the year ( $1.5 \text{ m}^3/\text{s}$ )

# Variation in Flow and Demand

Winter - River Flow ( $> 100 \text{ m}^3/\text{s}$ )



Summer - River Flow ( $4 \text{ to } 7 \text{ m}^3/\text{s}$ )



# Cowichan Weir

Constructed in 1957 – Operated by Catalyst Paper



Stores 59.5 million m<sup>3</sup> of water in Cowichan Lake  
(equivalent to 97 cm depth of water over lake surface)  
(about 97 days of supply at minimum flow)

Original design

Design Intent	Water Licence Flow
Maintain min. flow in Cowichan River below weir	250 cfs (about 7 m <sup>3</sup> /s)
Provide water for for Crofton Mill	100 cfs (about 2.8 m <sup>3</sup> /s)
Maintain min. flow below the Crofton Mill Pump Station	100 cfs (about 2.8 m <sup>3</sup> /s)

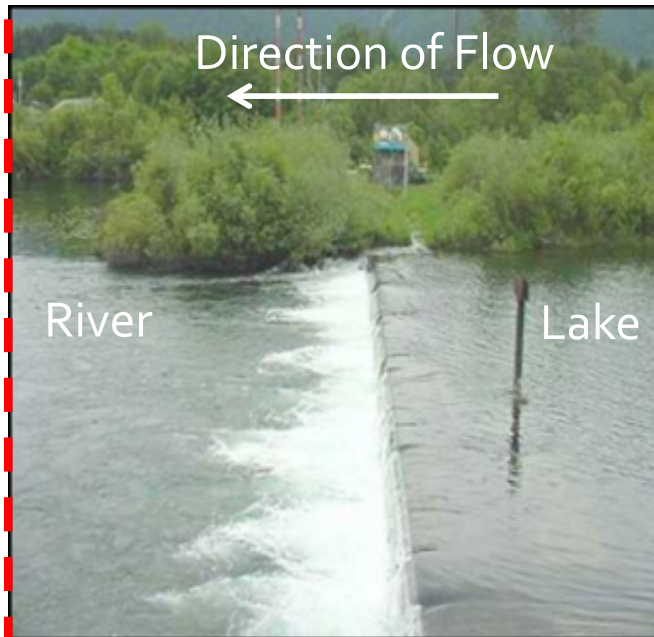


# Cowichan Weir

Operation during the Year

## Weir/Gates Controlling Flow/Lake Level

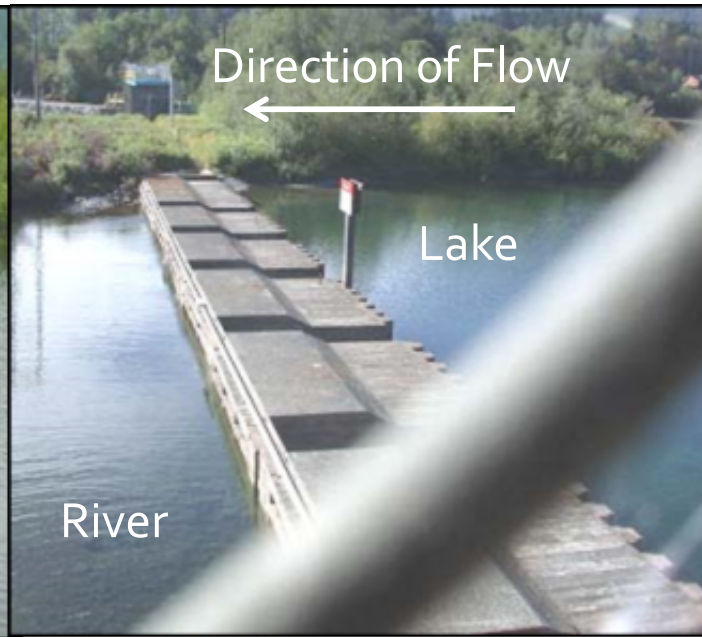
Late Spring/Early Summer  
(April to July)



Gates are fully raised and  
Boat lock is closed

Try to maintain Lake level  
Near top of weir to  
Store water for summer  
(but depends on inflow)

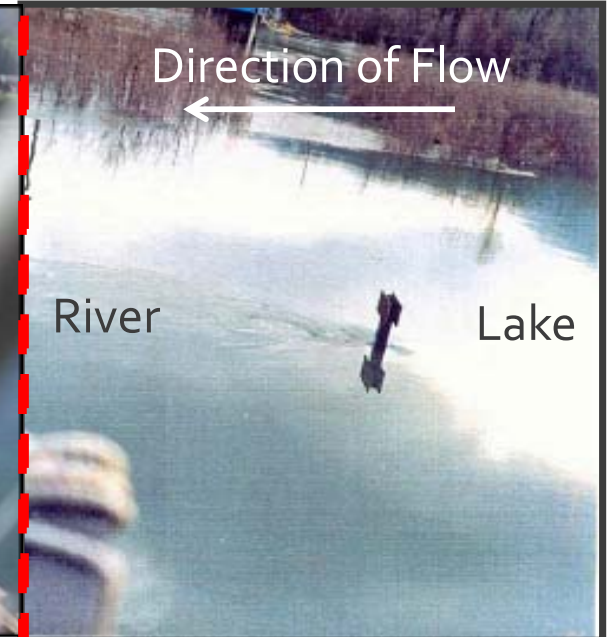
Late Summer/Early Fall  
(August to October)



Gates are operated to  
Maintain required minimum  
Flow

Water levels drop in lake as  
Water stored in spring is used to  
maintain summer flows.

## Weir/Gates Not Controlling Flow/ Lake Level Winter

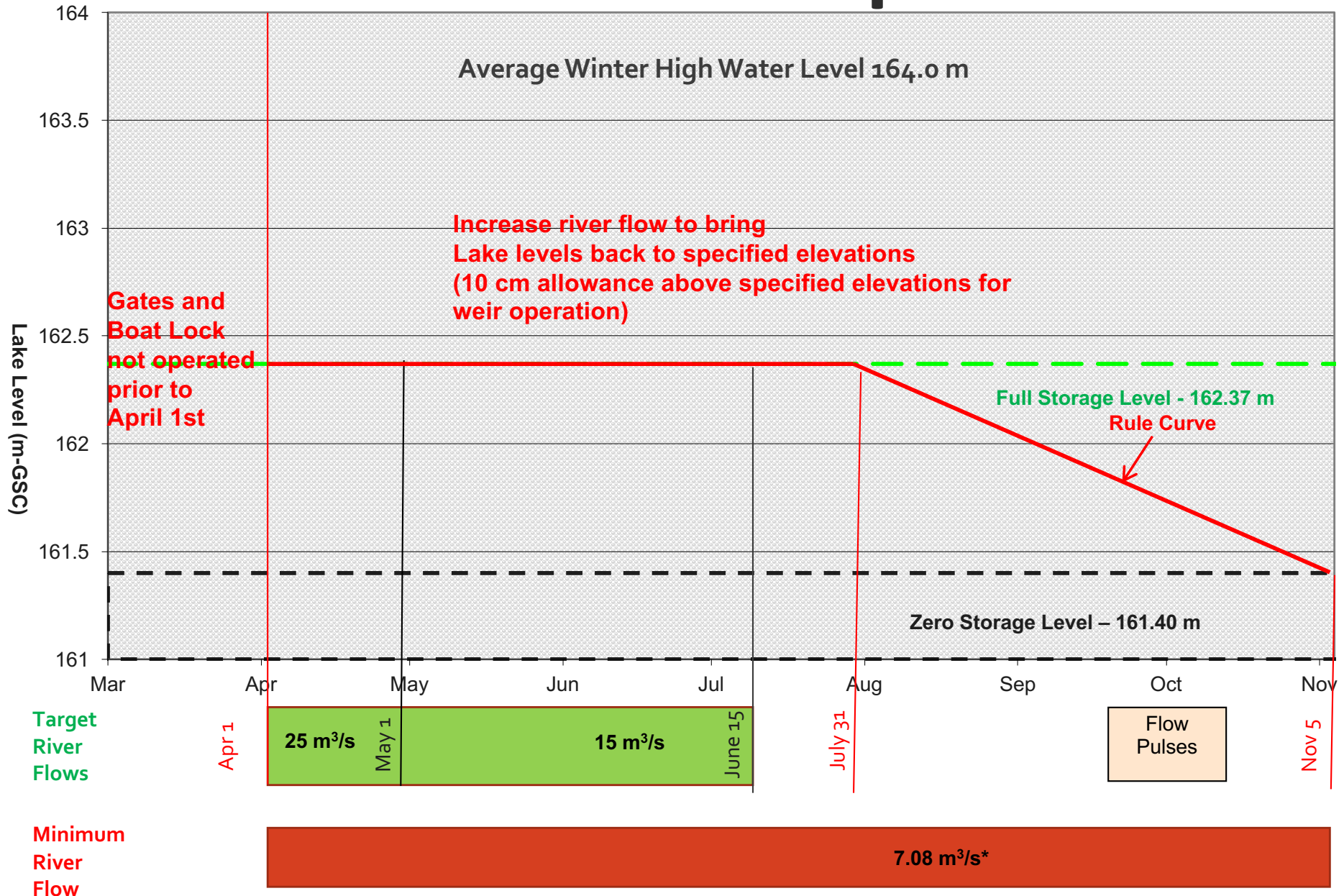


Gates are fully lowered and  
Boat lock opened

Lake levels rise above  
the weir

- increased lake inflow
- flow constriction in  
river channel downstream

# Cowichan Weir – Operation

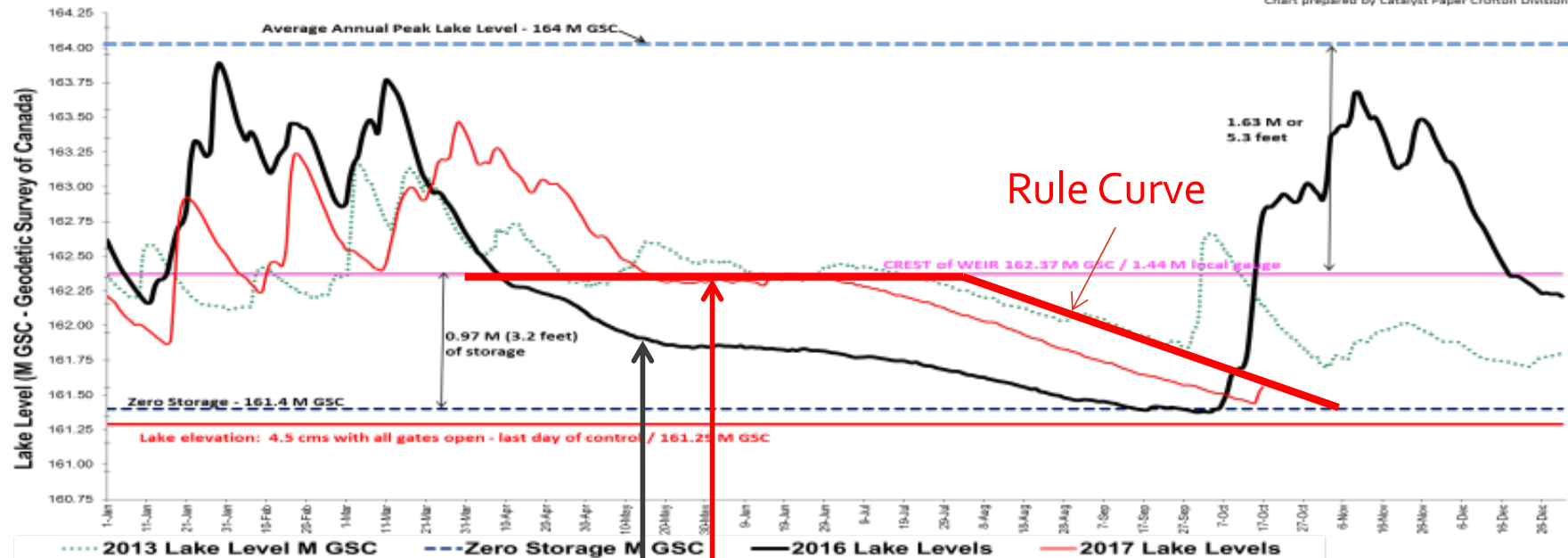


\* - 7.08 m<sup>3</sup>/s equal to 250 cfs minimum flow required by water licence

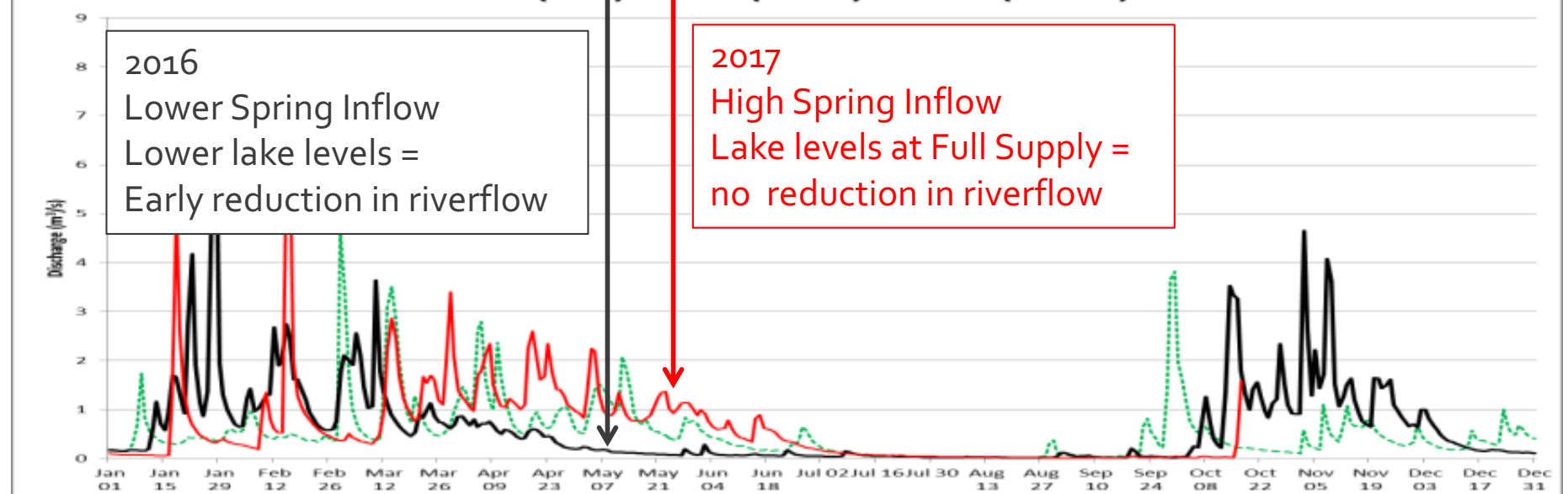
# Historical Water Levels and Flows

2016 Cowichan Lake Level - 2017 (Red) - 2016 (black) -- 2013 (Green)

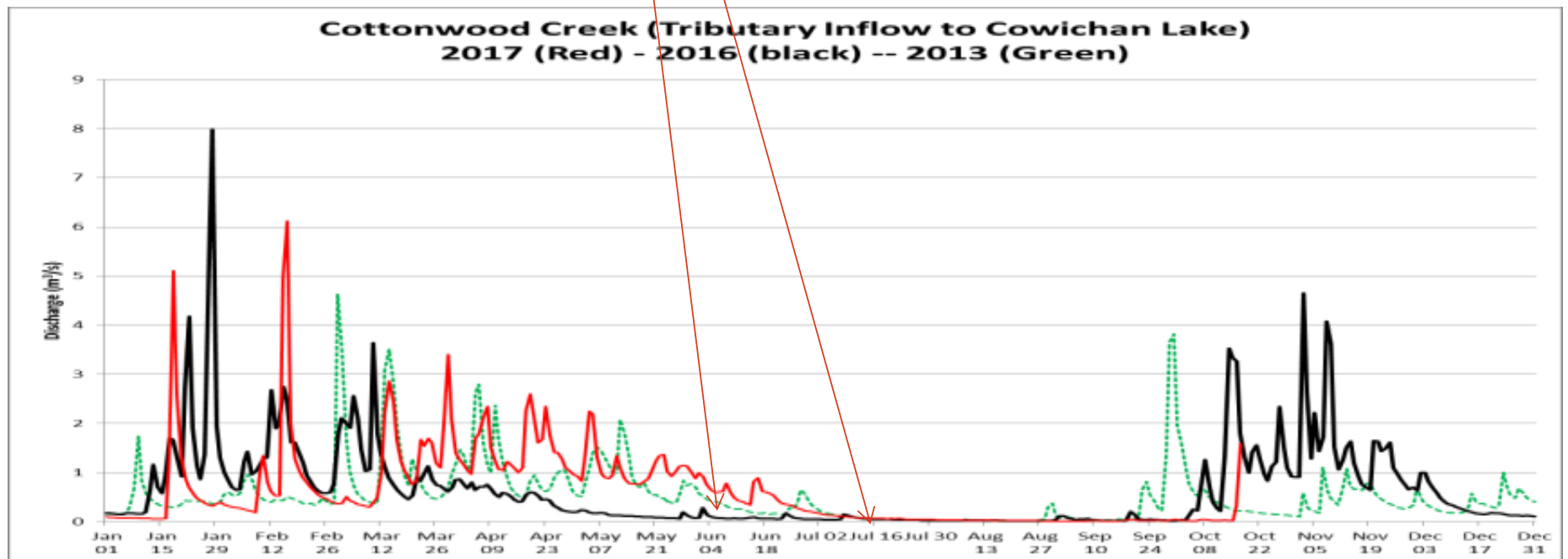
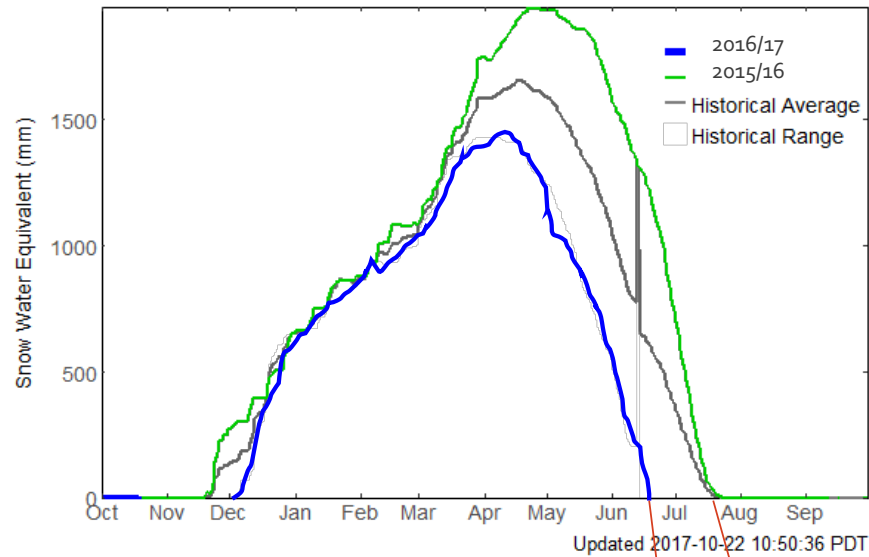
Chart prepared by Catalyst Paper Crofton Division



Cottonwood Creek (Tributary Inflow to Cowichan Lake)  
2017 (Red) - 2016 (black) -- 2013 (Green)



# Historical Water Levels and Flows





# Cowichan Weir

Water availability and needs have changed since the  
1950s

- Increase community water demand
- Sewer Treatment Plant Effluent  
Dilutions Minimum Flows
- Better understanding of ecological  
water needs
- Climate Change
- Land use

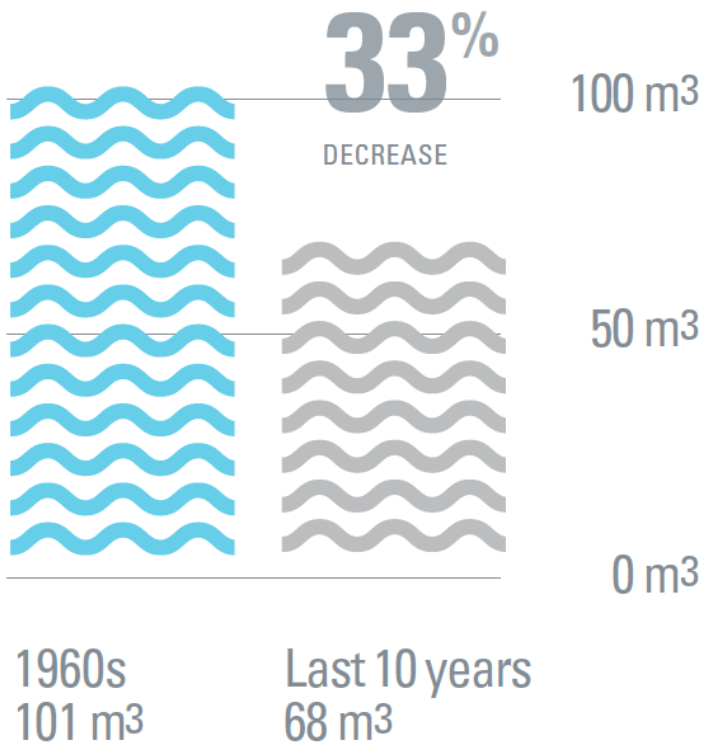


# Cowichan Water Management

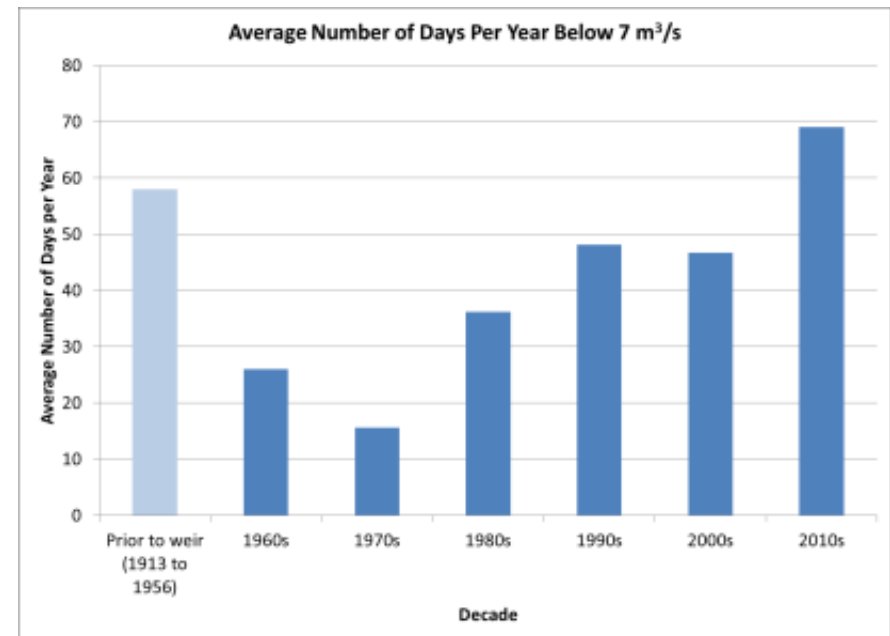
Average Spring/Summer  
Cowichan Lake Inflow is  
decreasing



Decreased Water  
Security











\* In millions



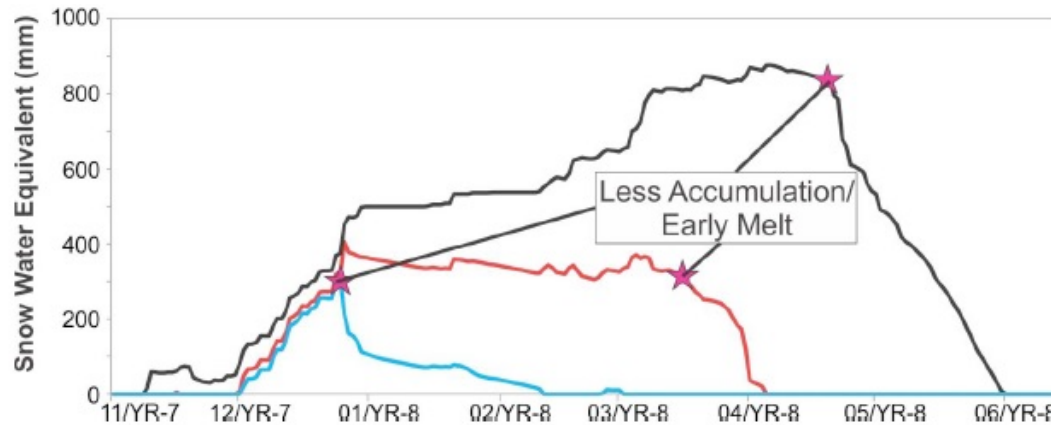
# of days river flow below 7 m³/s has  
doubled between 1960s/70s and 2000/2010s

# Climate Change in Cowichan

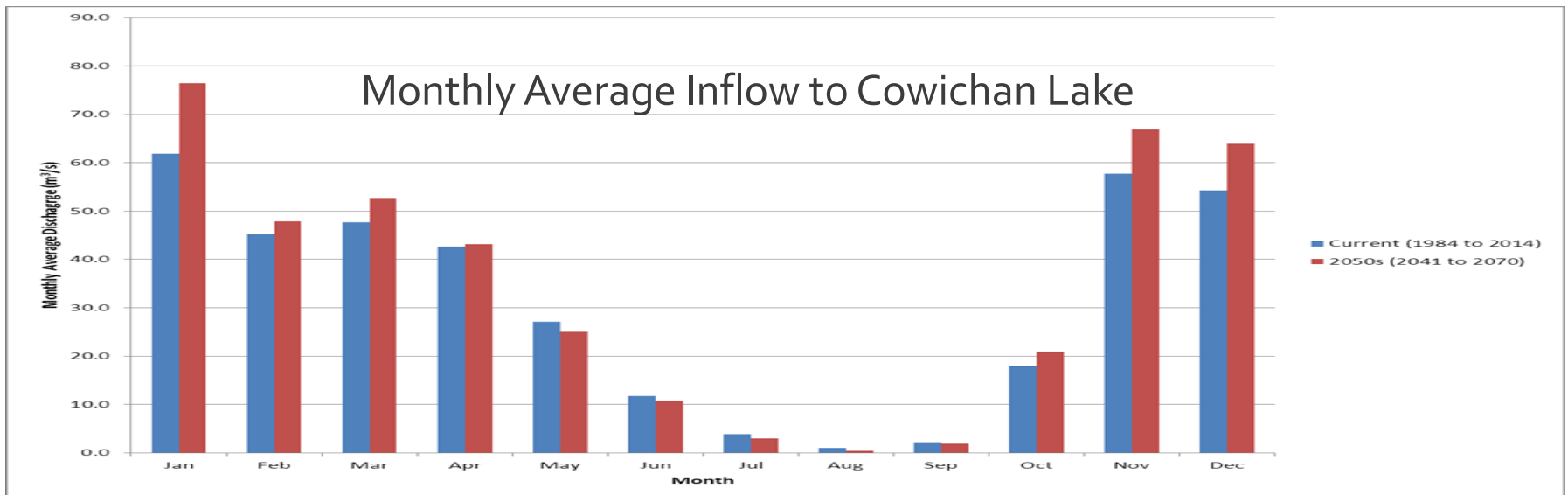
	Change by 2050	Change by 2080	Impact
Less summer rainfall	- 30 mm 	- 40 mm 	Less summer inflow to lake/river
Longer Dry Spells	From 22 days now to 26 days by 2050	From 22 days now to 32 days by 2080s	Longer period where storage required
Higher summer temp	+ 3.2 °C 	+ 5.2 °C 	Increase evaporation and increase irrigation demand
Higher winter temp	+ 2.4 °C 	+ 4.4 °C 	Less snow = less spring runoff
April 1 Snowpack	- 50% 	- 85% 	Less snow = less spring runoff

Source: Pacific Climate Impacts Consortium, 2017

# Climate Change in Cowichan



Source: Foster and Allen, 2015



- Increase in winter peak discharge
- Continued reduction in spring and summer inflow to the lake
- Modelling indicates

# What is being done?

## Ongoing – Improved Data, Management Tools and Collaborative Management

- Heather Mountain Snow Pillow
- More Frequent Flow Gauge Calibration
- Seasonal Forecasting
- Seasonal water management decisions involving multiple stakeholders

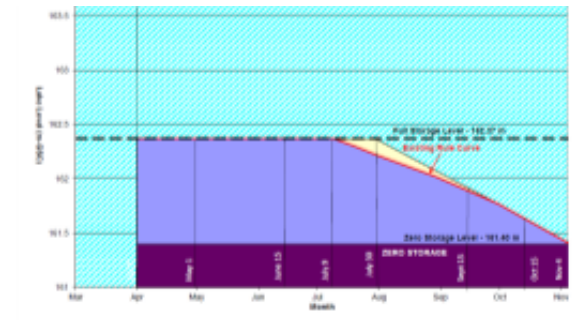
## 2013 - Updated Rule Curve

- Update to Water Licence Rules to improve flexibility to manage the weir given changes since 1960s
- Did not change licenced storage

## 2016 - Emergency Pumping And 10-year Interim Pumping Water Licence Application

- Pump water to access storage below lake outlet
- Up to 60 cm draw down

## 2017/18 - Cowichan Water Use Plan





# **Cowichan Water Use Plan (WUP)**

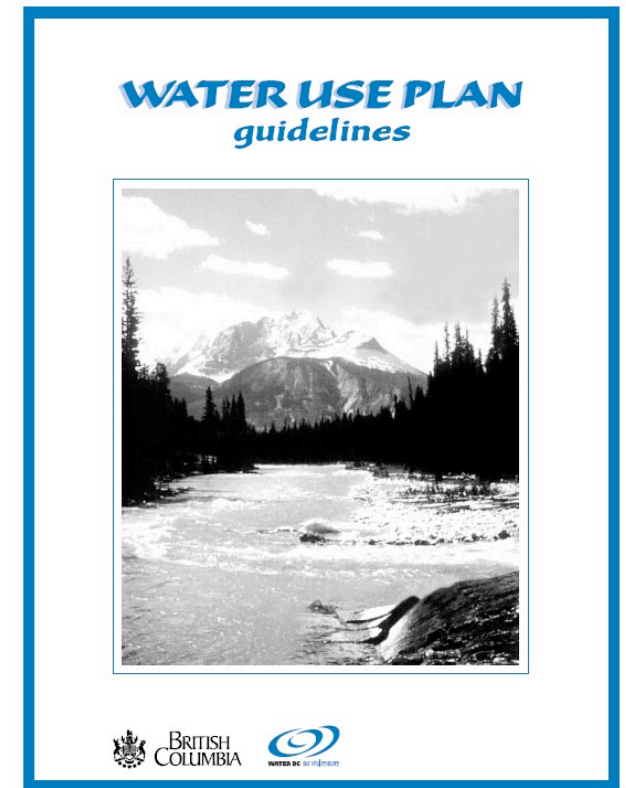
## **Community Planning**



# Water Use Planning Background

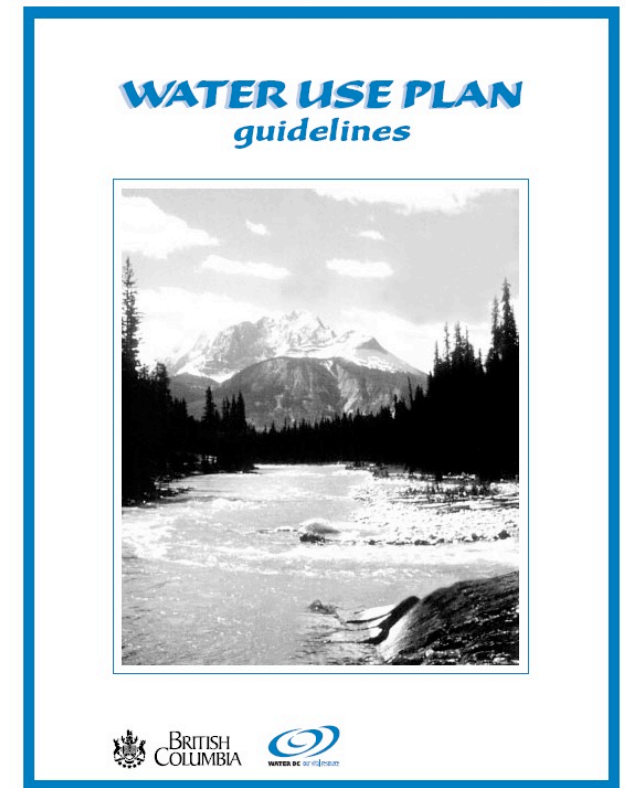
## 1998 BC Provincial Guidelines

- Outlined a new approach to enhance water management at water control facilities in BC
- A WUP is a technical document that defines the detailed operating parameters to be used on a day to day basis
- Meant to clarify how rights to provincial water resources should be exercised, with consideration to its multiple uses
- Over the past 20 years, about 25 community planning WUPs have been done



# Water Use Planning Background

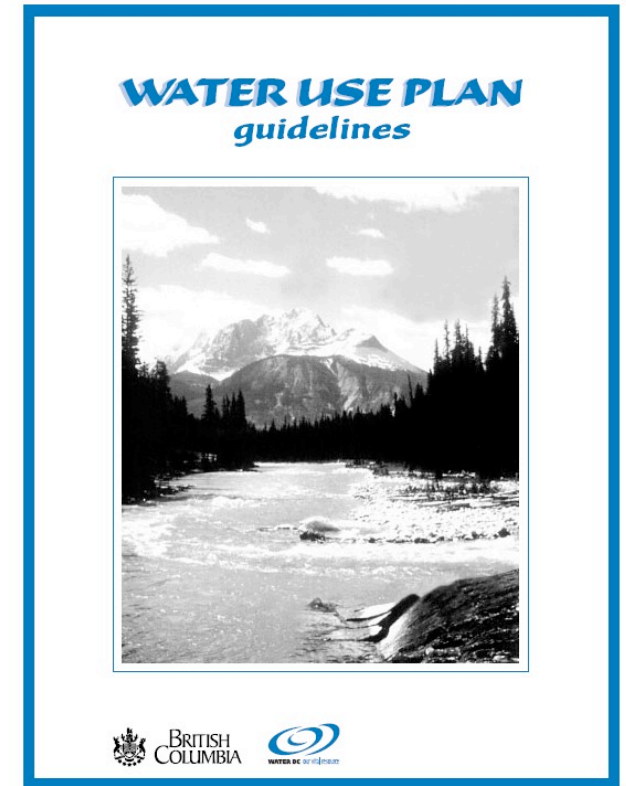
- Recognizes existing legal and constitutional rights and responsibilities
- WUPs are not comprehensive watershed management plans, but rather focus on changes to operations to accommodate other water uses and changing conditions
- WUPs are not meant to address historic grievances associated with construction of the original facilities
- The “WUP process” is adapted to suit the scale and context of each watershed
- Explicitly seeks input from the full range of water use interests



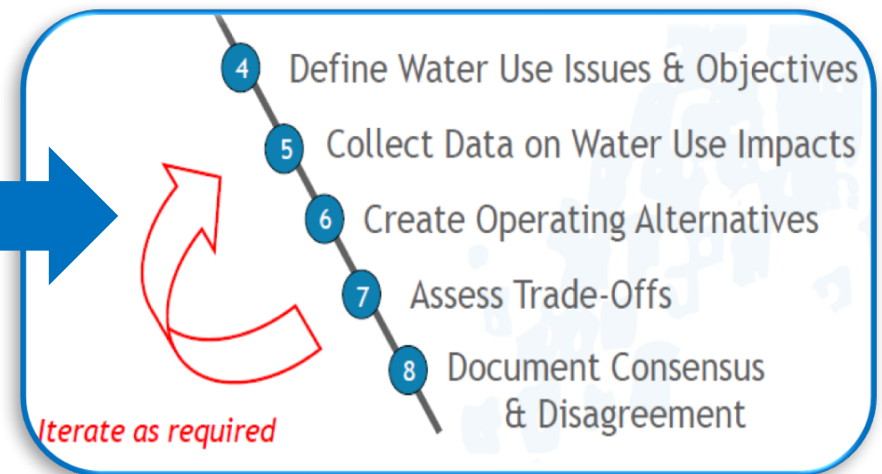
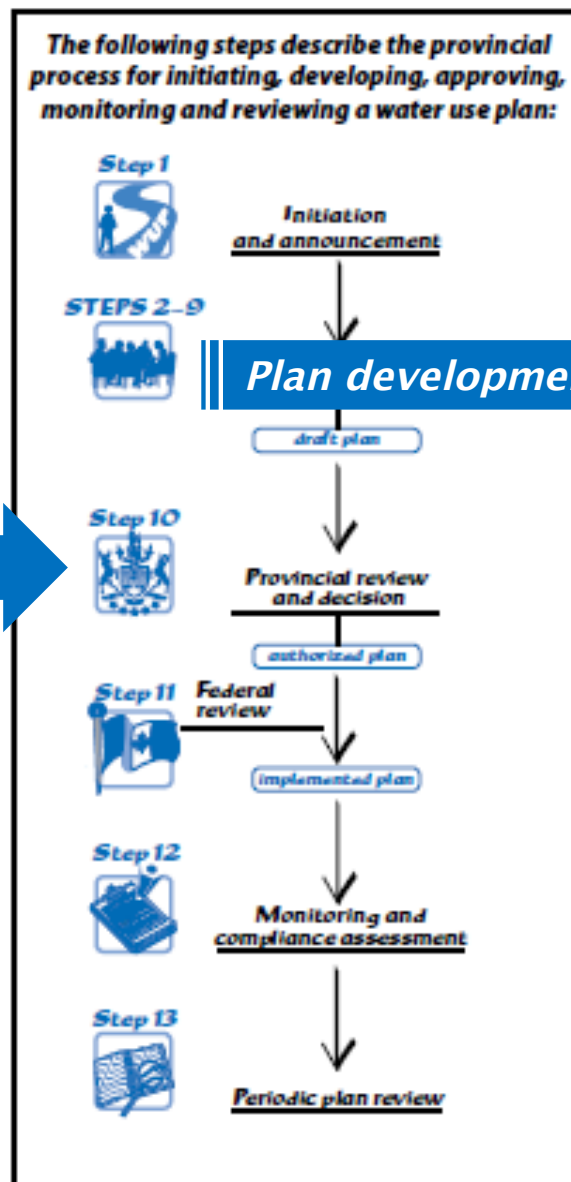
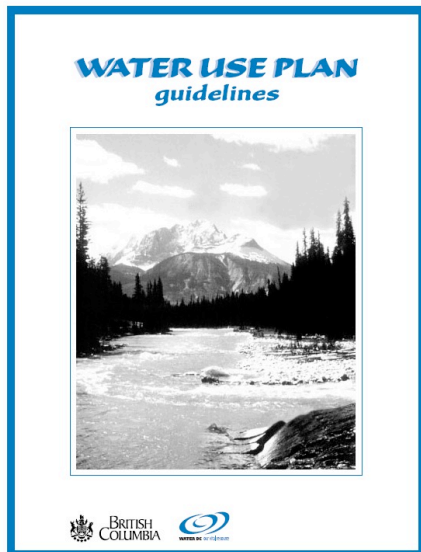
# Water Use Planning Background

## WUPs are based on a number of planning Principles:

- Structured interest-based process, not a negotiation
- Consensus-based (not mandatory)
- Collaborative, cooperative, inclusive
- Multiple objectives; trade-offs will be necessary
- Commitment to science and traditional knowledge to base decisions from



# Water Use Planning Background



# Cowichan Water Use Plan

## *Community Planning Process*

- The community planning process to develop the Cowichan WUP will follow a structured approach aligned with the Province's Water Use Plan Guidelines.
- A **public advisory group (PAG)** will be established to work through the WUP planning steps towards recommending a balanced long-term solution to meet the region's water use needs into the future, while taking into account social, economic and environmental values.
- The PAG will be made up of a diverse and representative cross section of all the water use interests in the watershed.





# Cowichan Water Use Plan

## *Community Planning Process*

### Water Use Interests:

In developing a plan, the full range of potential water use effects will be explored, for example:

- Drinking water supply
- Fish and wildlife
- Culture and heritage
- Lakefront property owners
- Industry and agriculture
- Local economic development
- Recreation
- Net cost of water supply and storage
- Flood control and safety
- Wastewater
- Other environmental effects (e.g. GHG)
- Etc.

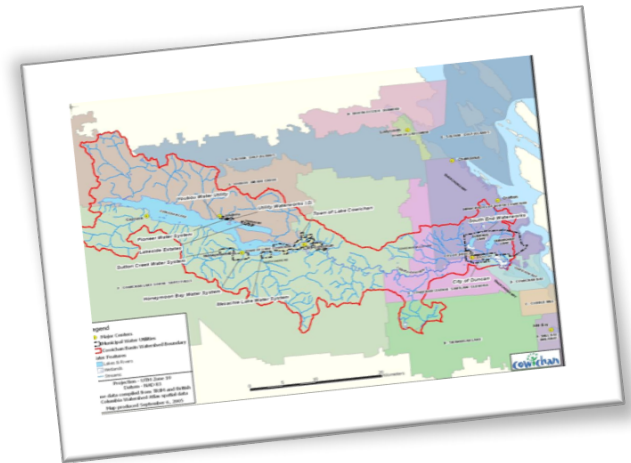


# Cowichan Water Use Plan

## *Community Planning Process*

### Scope of the Planning:

- The planning boundary will encompass the Cowichan watershed, but the primary focus will be on water use related to potential changes in lake levels on Cowichan Lake and potential changes in flows down the Cowichan River.
- The scope of options to be explored will likely include potential changes to the:
  - Minimum flow requirements to the Cowichan River,
  - Rule Curve and water levels for Cowichan Lake,
  - Water storage capacity of Cowichan Lake (e.g., weir modifications, permanent pump station, etc.)
  - And also include potential new enhancement projects that may be appropriate to mitigate adverse effects



# Cowichan Water Use Plan

## *Community Planning Process*

### **Public Advisory Group (PAG)**

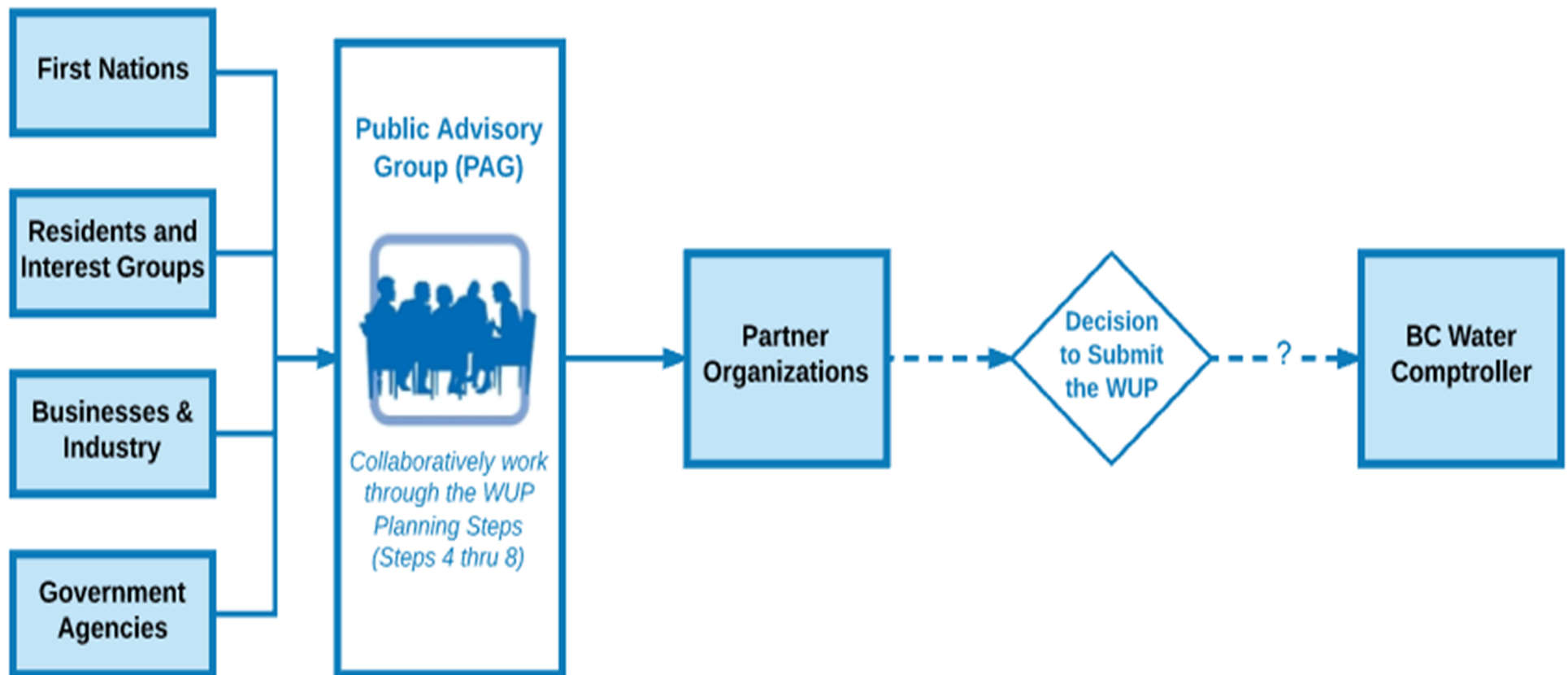
- A core group of about 15-20 community members representing the full range of water use interests
- The planning is expected to be carried out over approx an 8 month period and consist of about 4 full day meetings
- The PAG will receive targeted public input and feedback at strategic times during the planning
- The PAG will be supported through a number of Technical Sub-Groups and a on-line public survey that will be carried out
- PAG member responsibilities include:
  - Articulating their issues and interests related to a water use;
  - Developing objectives and creating water use options;
  - Exploring the consequences and trade-offs of different options;
  - Seeking agreement on a preferred option and making recommendations.



# Cowichan Water Use Plan

## *Community Planning Process*

### Process for developing the Cowichan WUP

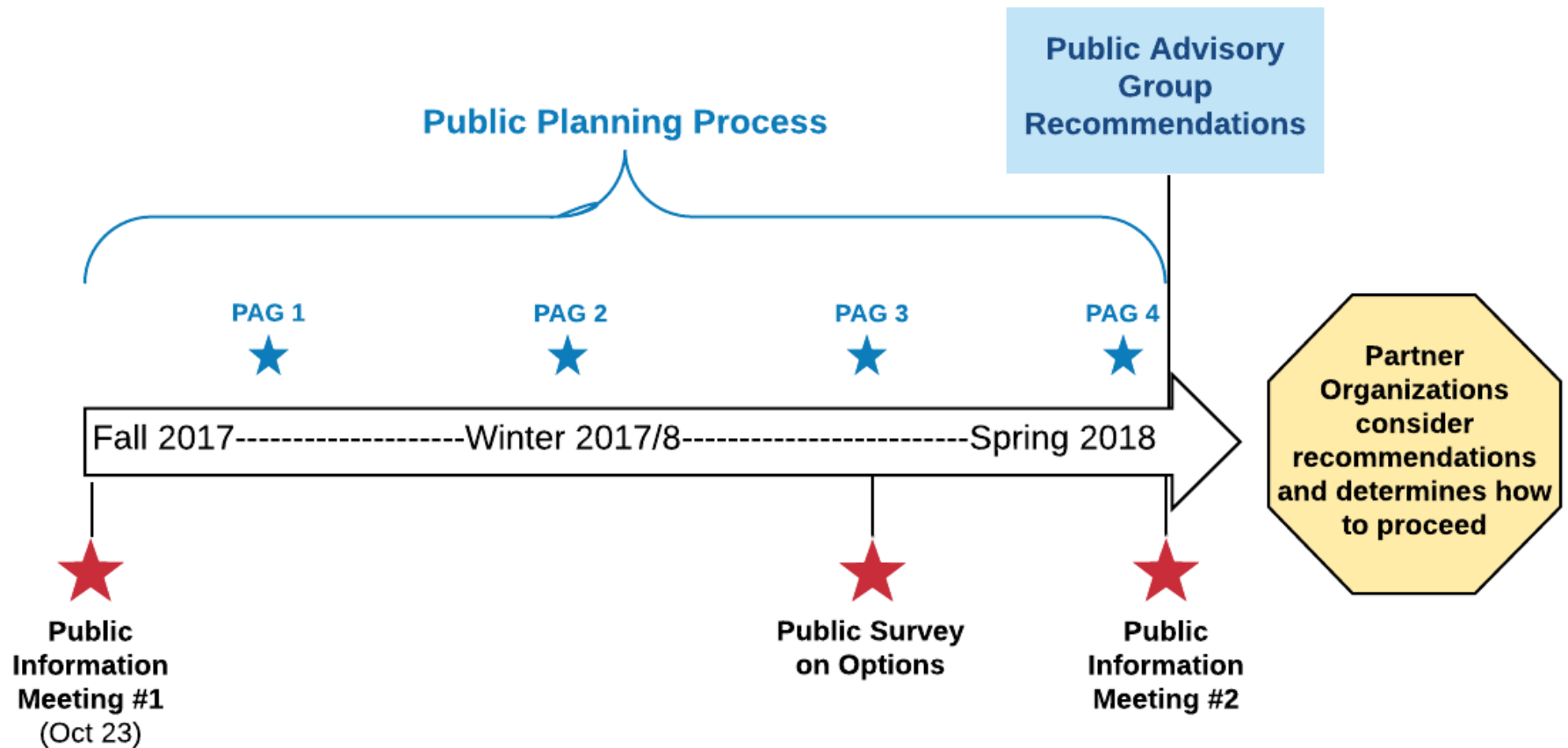




# Cowichan Water Use Plan

## *Community Planning Process*

### Anticipated Timeline



# Cowichan Water Use Plan

## *Community Planning Process*

### Composition of the Public Advisory Group (PAG)

- PAG membership needs to reflect a diverse and balanced mix of participants across the range of water use interests
- To ensure an efficient participatory process, PAG membership will be limited to 20 participants.
- We are seeking candidates who are willing to volunteer their time for approximately 4 full day meetings over the next 8 months *(plus the additional time needed in preparing for the meetings)*
- Interested candidates wishing to participate on the PAG are asked to fill out an application form following the presentations tonite
- *Applications can be submitted up to October 27*



# Cowichan Water Use Plan

## *Community Planning Process*



## Composition of the Public Advisory Group (PAG)

Application Form for the Cowichan Water Use Plan Public Advisory Group (PAG)

Name: \_\_\_\_\_ Organization: \_\_\_\_\_

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

How long have you lived and/or worked in the Cowichan Valley region: \_\_\_\_\_ years

What water use interests are most important to you (check all that apply):

<input type="checkbox"/> Water supply and drinking water	<input type="checkbox"/> Local economic development (commercial and industrial)	<input type="checkbox"/> Recreation
<input type="checkbox"/> Environmental	<input type="checkbox"/> Agriculture and irrigation	<input type="checkbox"/> General interest
<input type="checkbox"/> Lakeshore areas and structures	<input type="checkbox"/> Flooding and erosion	<input type="checkbox"/> Other (please specify): _____
<input type="checkbox"/> Cultural and spiritual		

Are you affiliated with and able to represent a particular group or organization? If so, which one(s) and in what role or capacity: \_\_\_\_\_

Have you previously been a member of a public planning process or committee for the Cowichan Valley or other region? If so, please identify and describe the process or committee: \_\_\_\_\_

Describe your and past experience with water management issues in the Cowichan Watershed: \_\_\_\_\_

Are you able to commit to the full process and attend a PAG meeting in late November/early December 2017? Yes / No

Are you interested in being added to an electronic mailing list to receive updates during the planning? Yes / No

### Selection of PAG members will be based on the following criteria (*in no particular order*):

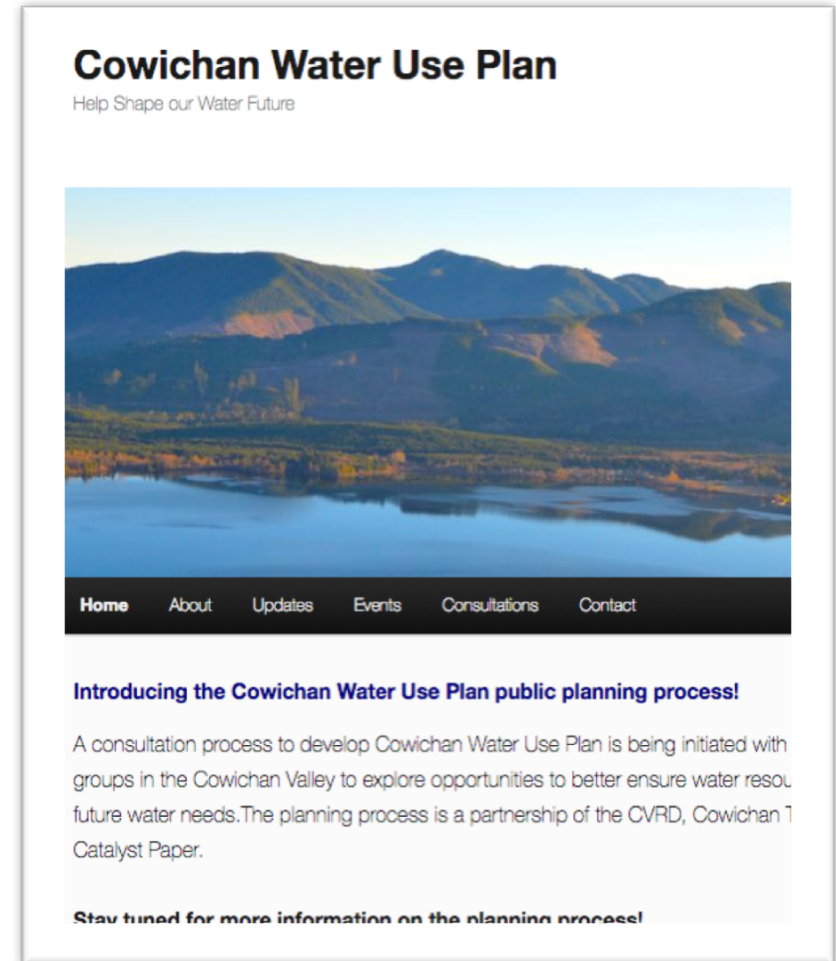
- Knowledge and past experience with water management issues in the Cowichan region
- Ability to represent one (or more) interest areas
- Duration lived and/or worked in the region
- Familiarity and past involvement on public planning processes
- Ability to attend four one day PAG meeting and serve for the full PAG process

# Cowichan Water Use Plan

## *Ongoing Public Involvement*

### Ways to keep informed throughout the Cowichan WUP Process:

- Sign-up to the Cowichan WUP mailing list: [info@cowichanwup.ca](mailto:info@cowichanwup.ca) to receive regular updates
- Visit the public Cowichan WUP Website ([cowichanwup.ca](http://cowichanwup.ca)):
- Participate in a future public survey
- Attend the Public Meeting in the spring for progress of the community planning
- Check out updates on Partner Organization websites and mailing lists





# Question and Answer Period



# Cowichan Water Use Plan

## Your Thoughts and Ideas

If you have additional thoughts about the process and/or concerns and priorities about water uses in the region, please take the time to write your thoughts and ideas down on the post it notes at the back of the room

A worksheet titled "What are your water use priorities and concerns" from the Cowichan Water Use Plan. The form is divided into seven sections for users to write their thoughts and ideas: Culture and Heritage, Environment (Fish and Wildlife), Industry and Agriculture, Lakefront Properties, Local Businesses & Economy, Recreation, and Other water use areas. The form includes the Cowichan Water Use Plan logo, the slogan "Helping to Shape Our Water Future", and logos for sponsors at the bottom: Cowichan, CWCN, Cowichan Watershed, and Catalyst.



# Next Steps

- Providing comments about tonight directly to us
- Establishing the Public Advisory Group
- Holding the first PAG meeting
- Providing regular updates to the website on the progress of the planning

# Thanks!

Further comments or questions?

- Email: [info@cowichanwup.ca](mailto:info@cowichanwup.ca)
- [mharstone@compassrm.com](mailto:mharstone@compassrm.com) / Ph: 604-619-3849
- [jsteele@compassrm.com](mailto:jsteele@compassrm.com) / Ph: 604-209-7253

