Welcome

Public Information Meeting

October 23

This meeting is a key step in the initiation of a community planning process towards the

Cowichan Water Use Plan

Agenda:

5:30pm	Open House (please walk around)
7:00pm	Presentations
8:00pm	Question & Answer
8:30pm	Close

The initiation of this community planning process has been a joint collaboration in partnership with Cowichan Tribes, Cowichan Valley Regional District, Catalyst Paper Corporation, and Cowichan Watershed Board.

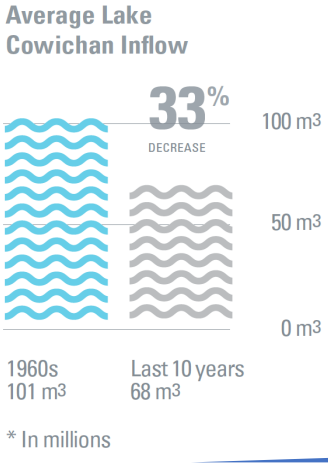
The Partners would like to thank the Federal and Provincial Governments who have provided the funding for this community-based planning initiative along with Catalyst Paper who provided added financial support.

Why another planning process?

The 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. According to Catalyst Paper (who own and operate the weir), 8 out of the last 15 years have been drought summers (including three of the last four). This drying trend is only expected to worsen in coming years with longer drier summers[1] and warmer water temperatures. A critical point is approaching where hard decisions will need to be made in drier years between:

- drastically reducing flows from the lake to Cowichan River **or**
- allowing lake levels to drop significantly through the late summer and early fall **or**
- potentially building new infrastructure to store more water in the lake (i.e., increasing the height of the weir), which will result in higher lake levels in the late spring and early summer.

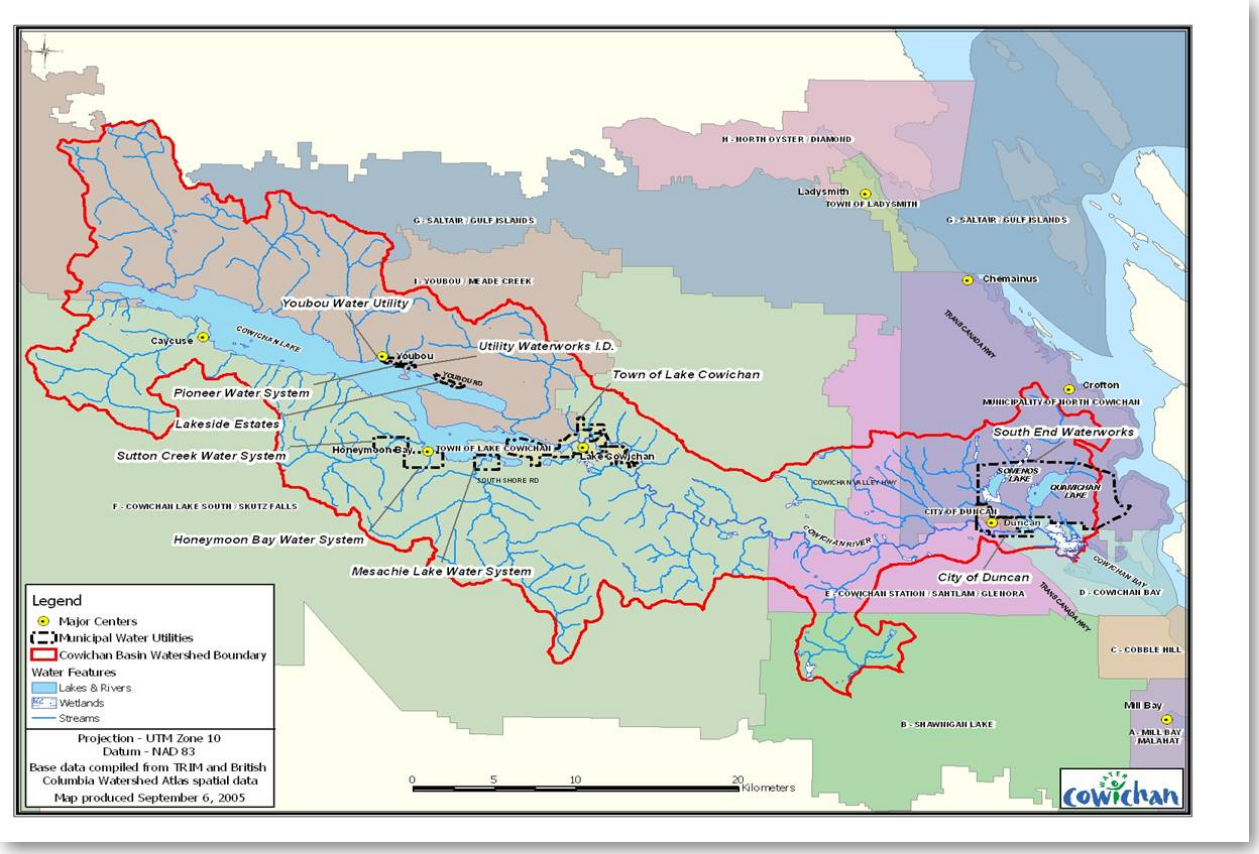
All these options have undesirable consequences that need to be considered and weighed to find an acceptable solution that will better balance the region's diverse water use needs now and into the future.



[1] Note. The snowpack depth is projected to decrease by 85%, the amount of summer rain is expected to decrease by 17% and the duration of dry spells will be lengthened by about 20% by the 2050s according to the CVRD's *Climate Projections for the Cowichan Valley Regional District* study (2017).

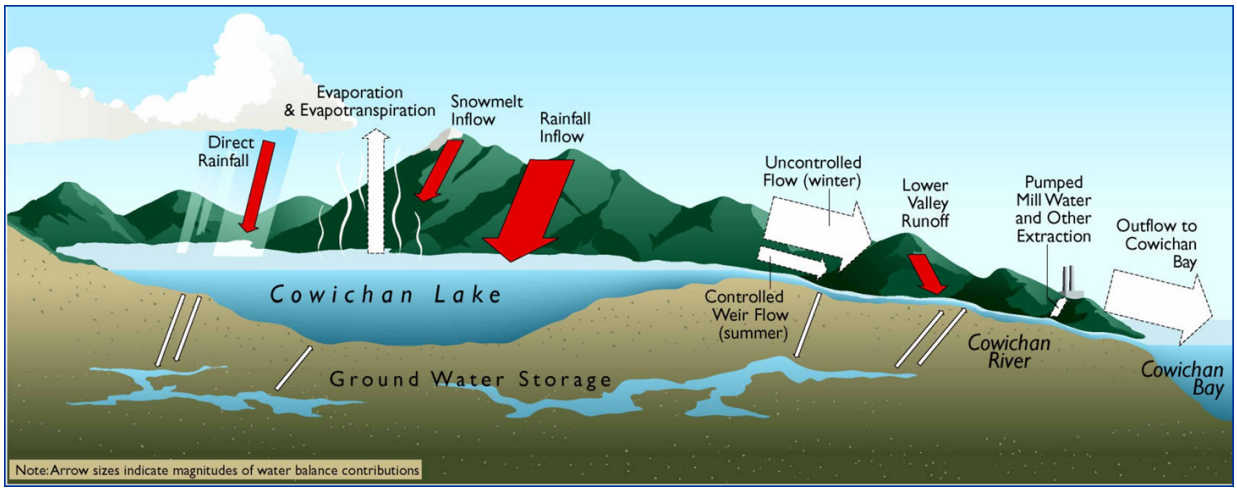
The Cowichan Watershed

The Cowichan Watershed is the largest and most diverse of the region's 16 watersheds

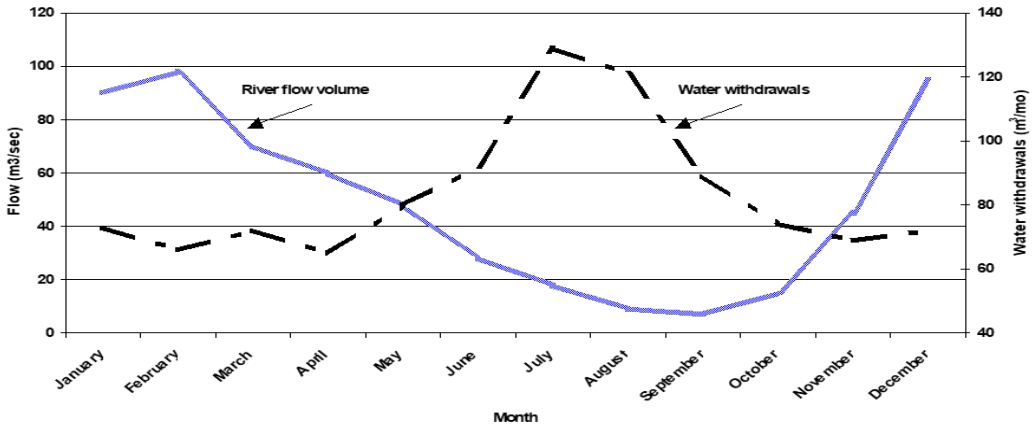


The watershed is vital to our well being:

- Supplies drinking water for around 25,000 people in three municipalities, five electoral areas and two First Nations
- Supplies 30% of region's fresh water needs for drinking, irrigation, sewage dilution and other uses
- Supports key economic sectors – tourism, agriculture/food production and industrial/business processes (e.g. forestry, pulp mill, fish hatcheries, golf courses)
- Provides extensive recreational opportunities – hiking, sports fishing, swimming/tubing
- Culturally significant to First Nations for food and ceremonies
- Supports vital ecological systems including fish habitat/migration and wildlife



Water Supply and Demand in a Changing Climate



Some interesting points:

- Average inflow to Cowichan Lake has decreased 33% since the weir was built and by the 2050s the snowpack depth is expected to decrease by 85% and the amount of summer rain is expected to decrease a further 17%
- A growing population, coupled with climate projections for warmer drier summers and longer periods of drought, suggest demand for water will be far greater than supply. There will not be enough water during summer months to meet both human and ecological needs
- Even in average years, water is in limited supply during the summer when demand is at its peak
- The high rate of groundwater extraction in the region increases pressure on an already – limited summer water supply
- As more people move to this region, the demand for water will increase
- *Water security was resident's top priority in CVRD's 2016 Community Satisfaction Survey*

Water Use and Reduced River Flows

Reduced river flows may mean ....

- Impacts to fish and wildlife
- Higher summer water temperatures impacting aquatic life (plants, bugs and animals)
- Reduced river flows with dried side channels
- Less water recharge to valley aquifers
- Not enough dilution for sewage lagoon outfalls
- Curtailment of Catalyst Crofton operations
- Reduced water quality
- Curtailment of drinking water for the town of Crofton
- Impacts to water based recreation down the river
- Impacts on eco-tourism and local businesses
- Loss of access to fire suppression water
- Visual impacts along the river
- Costs for trucking fish up river

Water Use and Summer Lake Levels

Higher lake levels in the late spring and early summer may mean ....

- Impacts to fish and fish habitat
- Impacts to birds and other wildlife using shoreline areas
- Impacts to lakeshore plants and vegetation
- Reduced lakeshore areas and beaches
- Impacts to shoreline based recreation
- Increased erosion of some areas
- Costs of increasing storage (e.g., raising the weir)

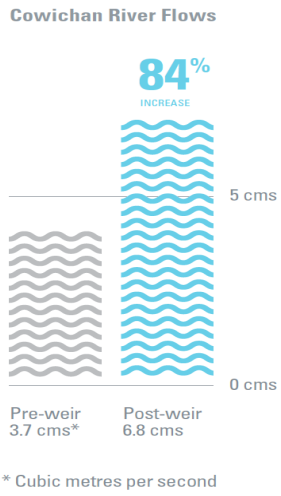
Lower lake levels in the summer and fall may mean ....

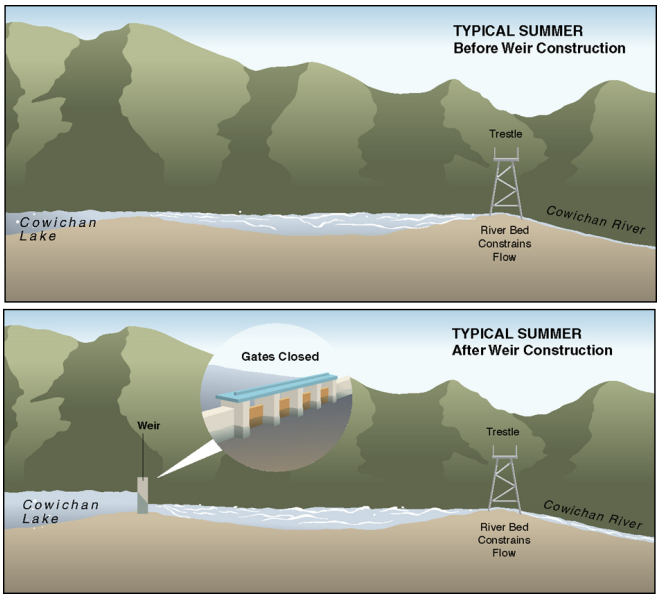
- Impacts to fish and fish habitat
- Impacts to birds and other wildlife using shoreline areas
- Impacts to lakeshore plants and vegetation
- Increased lakeshore areas and beaches (and more exposed mudflats)
- Impacts to water intakes (water quality) around the lake
- Impacts to navigation in shallower areas of the lake
- Impacts docks and wharves with lower water levels
- Visual effects of water levels dropping below normal minimal levels (i.e., ring effect)
- Increased erosion of some lakeshore areas
- Costs of pumping water to river

compass

A community planning initiative in partnership with
CVRD
Cowichan Watershed Board
Catalyst

Water Management and the Weir





Keeping the river flowing...

If lake water levels drop a little more than they normally do during dry summers (i.e., below the sill of the flood gates), there won't be any flows down the river. This was almost the case in 2016. The environment is changing and our need for water is growing, hence we need to talk about increasing storage.

For almost 60 years the weir has been used to store water in Cowichan Lake for release into the Cowichan River in the late summer and fall. Careful water management, made possible by the weir, has increased summer flows by 84% providing significant benefits to people and downstream aquatic ecosystems.

Making not enough last

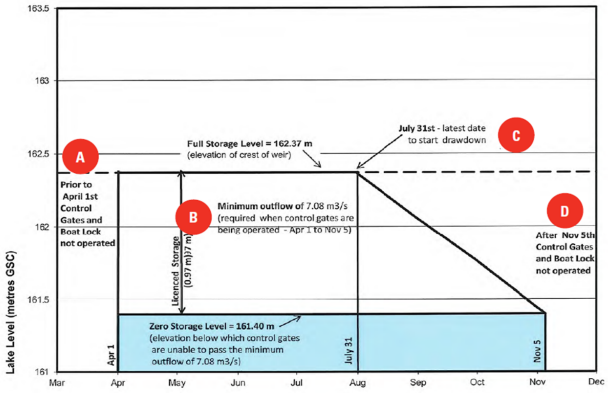
Water stored in the lake in the early spring has to be made to last until the winter rains return, akin to the water jug at the table to take you through to the end of dinner. What is critical is determining what the need is (seats at the table), how it gets doled out (when, to who, and how much), how long it has to last… and lastly what the risk of running out is.

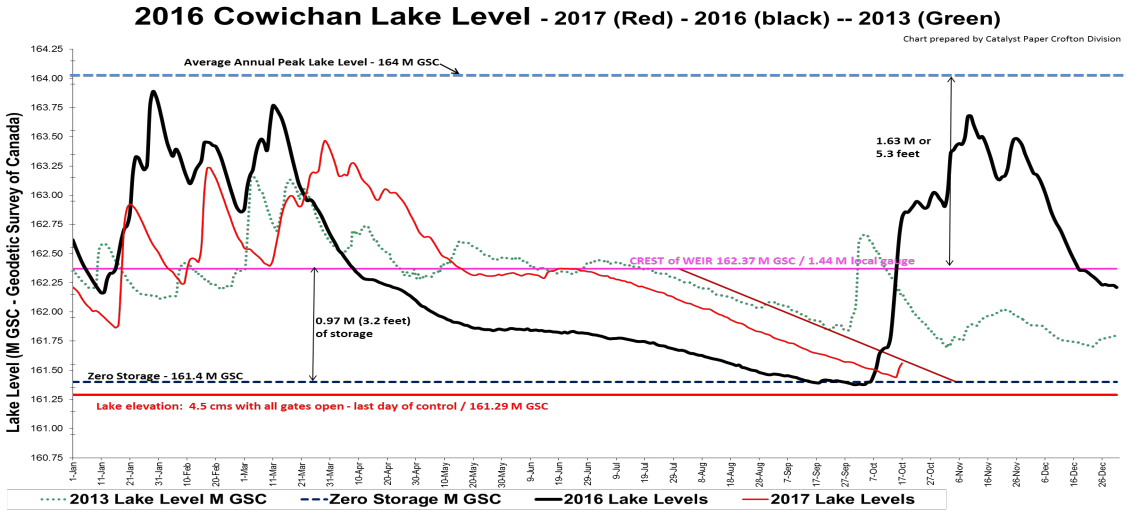
This is the focus of our work at this time

Flows through the weir …

Operation of the seasonal control structure (weir not dam) is governed by a regulated "rule curve" (the pour rate) that dictates minimum flow releases to the river. Storage is not allowed before April 1 but often there is no longer full storage at that time. Flow is also drastically reduced in drought years, often below regulated levels in an attempt make the limited water last as long as possible. This has risks.

The design rule curve is illustrated here with the assumption that the lake is full at July 31 which is often not the case as illustrated by the actual lake levels in a few recent years.





Past and Present Planning for Water

Past

Date	Report Title	Author
February 1991	Cowichan Lake Storage Assessment	KPA Engineering Ltd.
April 1993	Cowichan Lake Storage Assessment, Effect of Weir Raising on the Hydraulic Control at the Lake Outlet	KPA Engineering Ltd.
March 2000	Cowichan Lake and River Fisheries Development Project	Ecodomain Consulting
October 2005	Water Facts	Westland Resource Group
December 2005	Assessment of Water Supply Alternatives	UMA Engineering
August 2006	Cowichan Lake Weir Pumping Feasibility Study	Northwest Hydraulic Consultants
September 2006	Lowering of Cowichan Lake Outlet	UMA Engineering
March 2007	Project Memorandum - Cowichan Lake Weir Modifications	Westmar
March 2007	Cowichan Basin Water Management Plan	Westland Resource Group
October 2008	Cowichan Weir Start-up, Operation and Seasonal Protocols	Catalyst Paper
March 2010	Draft Cowichan Lake – Weir Operation Protocol Assessment and Review	Kerr Wood Leidal
August 2010	Cowichan Lake Outlet – Flood Lake Levels and River Discharge Analysis	Kerr Wood Leidal
January 2011	Cowichan Lake Weir Operation – Rule Curve vs Rule Band	Kerr Wood Leidal
February 2011	Cowichan Lake Erosion Assessment	Kerr Wood Leidal
February 2011	A Report on a Statistical Model to Forecast Seasonal Inflows to Cowichan Lake	Chapman Geoscience Ltd.
July 2011	Cowichan River Watershed – Climate Change Impact Assessment	Kerr Wood Leidal
2012	Rule curve review	BCCF, Catalyst
2013	Revised Water Licence Rules	MFLNRO
August 2014	Emergency Drought Planning – Pumping Options Review	Kerr Wood Leidal
2013	Revised Rule Curve	
2015	Cowichan Surface Water and Ground Water Modelling	SFU
2016	Fish Flow Assessments	

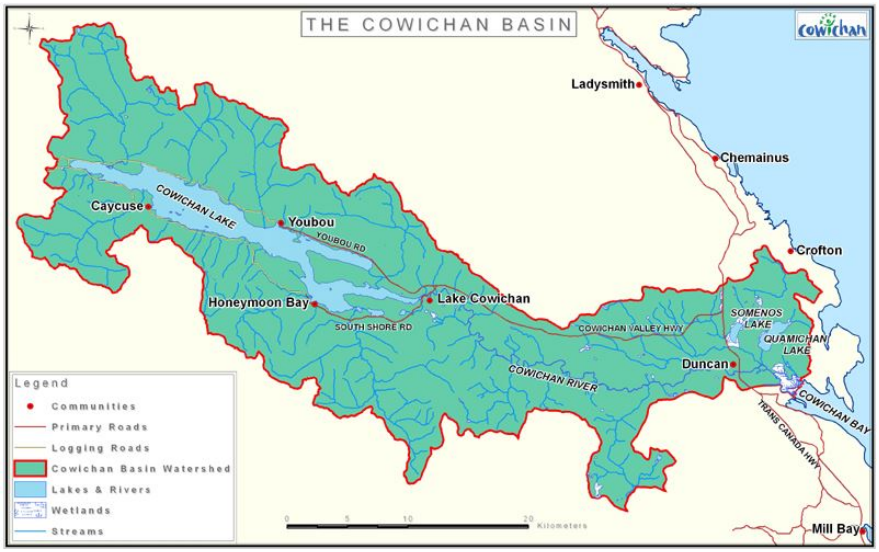
Present and beyond…

- Public consultation on the watershed management issues - *ongoing*
- Funding for a Structured Decision Support Process approved by the Province of BC - *now*
- CVRD Board discussing the merits of establishing a watershed service function to address growing concerns with water and water quality issues

Developing a Water Use Plan (WUP)

for the Cowichan watershed

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. (Note. This is one of many critical steps that will need to be carried out over a long planning horizon)



The Water Use Plan will encompass the Cowichan Watershed, but will primarily focus on water use related to potential changes in lake levels on Cowichan Lake and potential changes in flows down the Cowichan River.

The planning process to develop the Cowichan WUP will follow a structured approach guided by the Province's Water Use Plan Guidelines (see adjacent poster).

The WUP will seek to balance social, economic and environmental values.

The scope of options to be considered and explored during the WUP 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.

In developing a plan, the full range of potential water use effects will be explored and considered related to:

- 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.

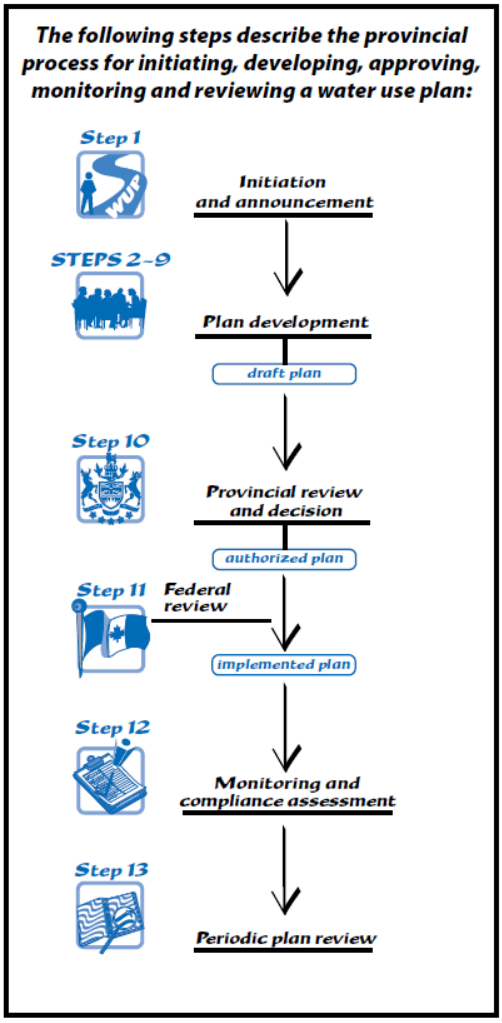
Provincial Water Use Plan Guidelines

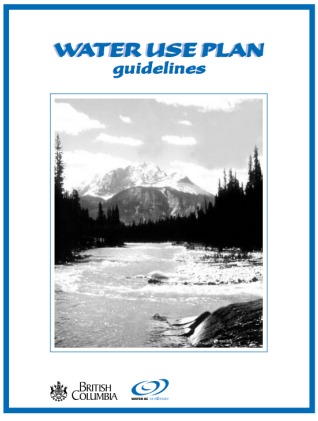
The Cowichan Water Use Plan process is aligned with the Provincial Water Use Plan Guidelines.

Guidelines for developing a water use plan were prepared by the BC Ministry of Environment, BC Hydro and Fisheries and Oceans Canada in 1998.

The process described in the guidelines is designed to seek consensus on a set of operating rules and, in some cases, proposed changes to the water control facilities in order to better satisfy the full range of water use interests at stake, while respecting legislation and other boundaries.

At this point, the process for the Cowichan Water Use Plan will be solely focused on the community planning during the *'Plan development'* stage (i.e., Steps 1 through 8). Recommendations from the public planning will be sent to the Partner organizations for a decision on whether to proceed with submitting the WUP (in Step 9) to government, which typically includes an application for a new or amended water license and any associated works.





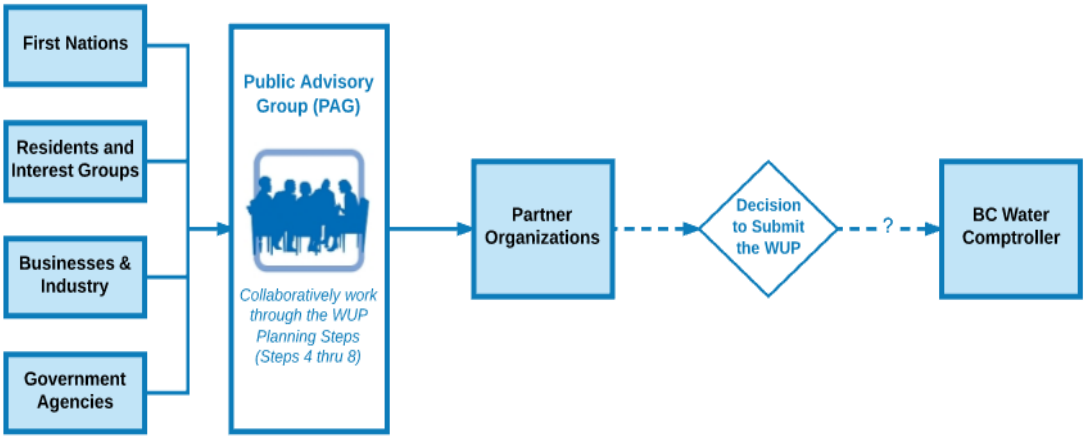
For more information about Water Use Planning, please refer to the province's guidelines which can be found at:

http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-planning-strategies/water-use-planning

Working Together
toward a Water Use Plan

*To ensure a Water Use Plan is reflective of the diverse interests and priorities of the residents and businesses of the region, a **public advisory group (PAG)** will be formed to work collaboratively through a structured process towards recommending a balanced long term solution to meet the community's water use needs into the future.*

Process to develop a Water Use Plan for the Cowichan watershed



The public planning (PAG) process is estimated to be completed in the spring of 2018. At the end of the process, the recommendations from the PAG will be forwarded to the Partner Organizations for a decision to move forward with submitting a WUP to the provincial government or not.

PAG members will represent a diverse range of water interests, and will likely include representatives from:

- Cowichan Valley Regional District
- First Nations
- Residents
- Local community and interest groups (e.g., lakefront property owners, environmental, recreation, agriculture, etc.)
- Catalyst Paper
- Provincial government
- Federal government (Fisheries and Oceans)
- Cowichan Watershed Board

The PAG will be comprised of about 15 to 20 members and there will be approximately 4 full day meetings over the 8 month process (i.e., meeting every other month). The PAG will be supported by a number of technical sub-groups to scope issues and help estimate potential water use effects.

The cost of developing the Cowichan Water Use Plan is being funded by a grant from the Canada and BC Clean Water and Wastewater Program and a contribution by Catalyst Paper.

What are your water use priorities and concerns

Please write your answers on the post-it notes and place in the appropriate spaces below

Culture and Heritage	Environment (Fish and Wildlife)
Industry and Agriculture	Lakefront Properties
Local Businesses & Economy	Recreation
Other water use areas:	

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