STAFF REPORT

REGULAR BOARD MEETING
OF JULY 30, 2014

DATE: July 25, 2014

FROM: Jacob Ellis, Senior Policy Advisor

SUBJECT 2014 Drought Effects on the Cowichan River Flows

Recommendations:

1. That the Board support a reduction in river flows from 5 cubic meters per second (cms) to 4.5cms during the duration of the 2014 drought, in an effort to prolong sustained river flows.
2. That the CVRD provide assistance, in conjunction with its partners, to undertake the strategic drought mitigation measures identified in option 3 of this report.
3. That the CVRD accept the lead role in coordinating the 2014 Cowichan River drought response effort and that the Cowichan River Flows Working Group become advisory to the CVRD and Cowichan Watershed Board during this period.
4. That the CVRD collaborate with Cowichan Tribes and other agencies & organizations to ensure adequate, reliable summer and autumn flows in the Cowichan River in order to raise the needed funds for the CVRD to commission the detailed engineering design work required to support an application for funding to raise the weir at Cowichan Lake and install permanent pumps.

Relation to the Corporate Strategic Plan:

The Corporate Strategic Plan does not contemplate specific drought related issues. However, it does specify implementing the Cowichan Basin Water Management Plan as a priority, which includes drought mitigation measures.

Financial Impact: *(Reviewed by Finance Division: n/a)*

The cost to undertake drought mitigation measures for the Cowichan River depend on the options chosen. The financial impact of potential options range from no cost to over $1,000,000.

Background:

The east coast of the Cowichan region and in particular the Cowichan watershed is facing what may potentially be the lowest water levels on record. Little rainfall this spring combined with a low snowpack has led to the water levels in Cowichan Lake being at about 60% of what is needed to maintain regular river flows to the end of the dry season. In an effort to ensure a sufficient flow of water in the Cowichan River until fall rains come, Cowichan river flows have been reduced as of July 3, from the minimum 7 cubic metres per second permitted under Catalyst's license to 5 cubic metres per second. However, despite these measures, absent

significant rainfall, projections show that at this flow rate the supply of water in Cowichan Lake to support 5cms flows in the river will run out by September 28, 2014. At this date, flows will begin to diminish: on Oct 4 flows would reduce to 4cms; by Oct 13 flows would reduce to 3cms; and by Oct 28 flows would reduce to 2cms, assuming no rain during this period.

While wells drawing from the lower Cowichan aquifer are not currently threatened, the impacts of low flows on the Cowichan River are serious. Low summer water levels put salmon, trout, and steelhead populations at risk and threaten closure of the Catalyst pulp and paper mill. These low levels also mean less water reaching the aquifer that supplies Duncan, North Cowichan and other communities in the Cowichan Basin, and less water to dilute treated sewage discharges in the river from both the Town of Lake Cowichan and JUB lagoons.

Starting July 3, the Cowichan Watershed Board "flows committee" plus a broader group of stakeholders have been meeting to discuss and plan drought mitigation efforts. The CVRD, with support from this group, has invested considerable staffing resources as well as approximately $15,000 to develop and prepare mitigation options. Recent work has included:

- Funding: Organized a meeting of potential funders on July 21 to discuss how to raise immediate funds to support response efforts;
- Regulatory Approval Process: Contacted the Ministry of Forests, Lands and Natural Resource Operations (FLNRO) to determine the process and timetable to obtain ministry approval under Section 8 of the *Water Act* to place large pumps in Cowichan Lake above the weir to pump water should lake levels become exhausted prior to fall rains;
- Issued a Press Release: On July 21, a press release urging residents to conserve water and to further raise awareness in the Region on the drought issue was issued;
- Multi-Agency/Organization Collaboration: Contacted numerous agencies, provincial and federal representatives, non-profits/NGO's, industry, Cowichan Tribes, and local member municipalities to identify available support resources and potential funding;
- Cost Estimates: Worked with Catalyst to obtain cost estimates from a third party supplier for the costs to install pumps, and undertaking needed revisions to these estimates;
- Lake Level Analysis: Obtained high quality projections for when lake levels will reach zero capacity and when river flows will cease, against projected dates for when to expect fall rains;
- Examined Options: Identified and analyzed a range of potential mitigation options;
- Consulting Services: Retained KWL consulting services to undertake needed technical work to support an application under Section 8 of the Water Act to receive approval to install pumps.

After exploring a range of potential mitigation options, it is clear that no option solves all the issues created by this drought. This underscores the need to take action on a permanent solution by raising the weir at Cowichan Lake by 30cm and installing permanent pumps to ensure that the adverse effects from drought events are not repeated again in the future. However, as short term issues are the focus of this report, the following options are tailored to looking at short term mitigation efforts.

Options:

The CVRD has four main options it may pursue with its partners when it comes to responding to emerging drought conditions in the Cowichan Watershed:

1. Maintain river flows at 5cms and prepare for pumping of Cowichan Lake to sustain river flows after September 26.
2. Support a reduction in river flows to 4.5cms (thereby extending the water supply to October 6).
3. Undertake a collection of strategic drought mitigation measures.
4. Do nothing (and hope that sufficient rains arrive by September 28).

It is important to note that decisions on the ultimate course of action that will be pursued in the region is determined by consensus among interested stakeholders. No one group acts as the final decision maker, although the CVRD is currently acting as the lead entity on this response, with the support and assistance of a larger group of stakeholders in the region. The options presented in this report outline how the CVRD may wish to respond, but these do not control the ultimate outcome or decisions by other parties.

1. Option #1 Maintain river flows at 5cms and prepare for pumping of Cowichan Lake to sustain river flows after September 28

This option would see the installation of six (6) very loud large diesel pumps along with six (6) 500 gallon fuel tanks that would be capable of pumping enough water to maintain river flow at 5cms. The cost of installing and operating these temporary pumps for one month is estimated at $1,000,000. The cost of simply ordering the pumps and having them set up, but never using them is approximately $200,000 to $300,000. Utilizing pumps to maintain a flow of 5cms in the river for one week would result in about a 5cm. drop in lake levels; 3 weeks of pumping would result in lake level drop of approx. 15cm; and 6 weeks of pumping would result in a lake level drop of 30cm (1ft). If this option is pursued, the following timeline would be need to be followed:

- **July 20** Complete Lake level draw down scenario analysis;
- **July 23** Letter requesting financial support from potential funders distributed.
- **July 25** Obtain revised pumping cost estimate;
- **July 29** Complete draft pumping plan, construction, design drawing and other technical documentation to support the application process;
- **July 29** Complete draft application;
- **July 30** Board direction provided;
- **July 31** Retain professional communications consultant;
- **July 31** Develop public notice communication materials and website;
- **July 31** Submit application to the province;
- **Aug 1** Start month long public period with notice in newspapers;
- **(Ongoing)** Continue with weekly lake level draw projection updates;
- **(Ongoing)** undertake monitoring and public communications as required – (for example notice to the Town of Lake Cowichan re their water intake and potential concerns.);
- **Aug 12** Deadline for potential funders to commit funds to this response effort;
- **Aug 17** Make decision whether to go ahead with ordering pumps;
- **Aug 30** Public notice period ends;

- **Sept 2** Start of FLNRO's 45 day review period (although it will be working on this during the public consultation period as comments come in to ensure quick turnaround);
- **Sept?** FLNRO to make a decision on issuing approval for pumps;
- **Sept 14** Pumps arrive via semi and the 12 day installation process begins;
- **Sept 17** Zero storage level at Cowichan Lake is reached at the current 5cms flow;
- **Sept 25** Pumps installed and ready to operate;
- **Sept 26** Cowichan Lake levels insufficient to maintain river flows.

The advantage of this option is that it provides a nearly guaranteed flow of water regardless of when rains come this fall, which will ensure adequate dilution for wastewater discharges.

The disadvantages include high cost; it requires funds we don't have nor are likely to get; unrealistic timelines in which to make decisions – it requires a decision to purchase before the public consultation period ends and before regulatory approval is obtained, degradation to the Cowichan Lake lamprey habitat (a protected species); the CVRD as the applicant would assume all legal risks; noise levels – the pumps are rated as "very loud"; air pollution at the pumps (these pumps would together burn 8,510 liters of diesel fuel *per day or 255,303* litres a month); considerable drain on staffing resources for a number of months – requiring delay in work on previously identified priority projects; poor value for money; means spending up to $1M with little if any resulting long term benefits; takes resources away from focusing on a long term solution; ***may be unachievable due to timelines***, and it remains unclear if the CVRD actually has the authority to undertake an initiative of this kind.

2. Option #2 Support a reduction in river flows to 4.5cms (thereby extending the water supply to October 6).

This option consists of reducing the current flow of the river from 5cms to 4.5cms to extend the water supply to Oct 6 before flows cannot be controlled, and begin to diminish further. It operates on the premise that by Oct 6 or thereabout, sufficient rainfall will arrive. *Past* rainfall data indicates that the mean date for rainfall that produces a flow of 18cms is Oct 13.

The benefits of this option include little or no cost, staff time savings, the ability to focus on a long term solution. The disadvantages include lack of consensus from among area stakeholders, increased fish mortality rate due to warmer water temperatures, reduced sewage dilution ratios, and potential safety issues for swimmers due to changes in river dynamics. It is important to note that the CVRD does not control the implementation of this option. This is a decision by Catalyst, with approval by FLNRO, in consultation with local stakeholders including Cowichan Tribes.

3. Option #3 Undertake a collection of strategic drought mitigation measures

This option consists of undertaking a series of strategic drought mitigation measures including some or all of the following:

a. Assist DFO and Cowichan Tribes to prepare to catch and truck fish this fall;

b. Work with Cowichan Tribes to try and resolve concerns around going to a flow of 4.5cms.

c. Approve the CVRD moving ahead with a 20cm water conservation license for additional storage;

d. Support immediate closure of sport fishing on the river above white bridge to the weir, until November 1;

e. Commit gas tax funds as part of a funding partnership to complete engineering design work for raising the weir;

f. Engage a communications consultant and prep for a permanent long-term solution;

g. Install temperature monitors in the river to assess temperature impact on fish;

h. Install photo point monitoring of lake levels at a variety of locations;

i. Assess docks in Lake Cowichan at zero storage (could likely be undertaken with stewardship group support);

j. Send a letter to lake front property owners requesting they provide water line locations to assist with future drought management planning;

k. Support continued conservation efforts, including regular updates on the water and drought information website that was created in 2012 to inform the public about the drought and water storage issues generally; and

l. Send a letter to potential funding partners to help raise funds to support short term drought mitigation efforts.

The benefits of this option include lower cost, greater value for money, it will assist with future mitigation efforts, represents an effective mitigation response for fish, and these efforts can help support successful implementation of a long term solution. The disadvantages include that it doesn't eliminate the risk of no rainfall by Oct 4 even if flows are reduced. The result of which includes potential for increased fish mortality rates, financial costs to fisheries, financial losses due to a potential closure of the Catalyst mill and insufficient flows to dilute wastewater discharges in the river.

4. Option #4 Do nothing (and hope that sufficient rain arrives by September 26).

This option consists of lots of hope, optimism and prayer, along with a high tolerance for risk. In choosing this option, the CVRD would not assume the lead role in coordinating a response effort but rather continue to provide indirect support as a member on the Cowichan Watershed Board flows committee.

The advantages of this option include lower risk to the CVRD; not entangling itself in a number of political, jurisdictional, financial and legal issues for which it is not directly responsible; avoiding the expenditure of considerable staffing resources; cost savings in actual dollars expended; avoiding the possibility of early rains making any short term mitigation efforts unnecessary; and in allowing nature to runs its course if the river does run dry – due to no fault of the CVRD - which would likely help further underscore the need for real action on long term solution to prevent natural occurrences like this from repeating in the future.

The disadvantages of this option range from none – if fall rains arrive in time to keep the river flowing, to a number of problems - assuming the water supply becomes exhausted before fall rains arrive including: increased fish mortality rates, potential health risks due to insufficient wastewater dilution; loss of cultural fishing activities for Cowichan Tribes; financial losses due to a shutdown of Catalyst mill, loss of recreation opportunities on the river; legal actions by adversely affected parties, and potential for political fallout for failure to act.

Cowichan Watershed Board Resolutions

At is meeting of Tuesday July 22, the Cowichan Watershed Board passed the following resolutions:

1. *That the CVRD be requested to become the lead entity on the 2014 river flows issue and the Flows Working Group become advisory to the CVRD and Cowichan Watershed Board during this period.*

2. *That it be recommended that the CVRD and Cowichan Tribes collaborate with other agencies and organizations to ensure adequate, reliable summer and autumn flows in the Cowichan River in order to raise the needed funds for the CVRD to commission the detailed engineering design work required to support an application for funding to raise the weir at Cowichan Lake and install permanent pumps.*

No major issues were noted in the review of these recommendations/requests by the Cowichan Watershed Board. While taking on the coordinating role of this effort will require considerable staffing resources, these efforts are seen as supportive of the Regional District's overall goal of ensuring a swift response to the issues arising from 2014 drought, and taking action to mitigate the adverse effect of this event with all available means.

Submitted by,

Jacob Ellis