

MEMORANDUM

To: RDCO Directors
From: Anna Warwick Sears
Date: October 8, 2020
Subject: **Okanagan Lake Level Management considerations**

The District of Peachland has asked for the OBWB's support, calling to the province to review the current lake level management operations for Okanagan Lake, including lake level targets, current flow management models and climate forecast methodology. This is a timely call to action, and echoes recommendations in recent technical reviews, including the Okanagan Mainstem Flood Mapping Final Report. I understand that a similar request has been brought to RDCO.

It is not a simple task. Some of the questions that arise are, how far should the lake be drawn down each winter to prepare for high spring inflows? Under what scenarios would it help to change the full pool target? What is the relative risk of getting a very dry year, or several in a row as in the early 1930s, we may not be able to "refill" the lake? What are the implications of 'mining' the lake to prevent water shortages downstream, which could affect Okanagan Lake docks, lake water intakes, and other lake infrastructure? What operational plan would be necessary to reduce harm to shore-spawning kokanee salmon, and keep summer/fall flows high for sockeye salmon?

Although the process of changing the plan for lake level operations is complicated, it is essential that the province review and update their operations plan within the next few years.

During the course of preparing the Okanagan lakeshore flood maps, Northwest Hydraulic Consultants found that the frequency of flooding would be extremely high if the Okanagan Dam at Penticton continued to be operated in the same manner, given the expected increase in flows due to climate change. Working with the provincial dam operator, they modified the operational rules to be more protective against flooding.

*"The floodplain maps produced from this study are based on inflows projected to the middle of this century. Magnitudes of the design events are expected to exceed the capacity of the existing infrastructure if operational rules are not adjusted to account for the changing climate. Preliminary modifications to the OLRs Operating plan and guidelines were developed to mitigate projected future increases in floods. **If these modifications, or similar mitigations, are not implemented, the resulting flood flows and levels of the design events are expected to be more severe than mapped.**"*

This means that floods will be higher and more frequent than given on the new maps unless changes are implemented.

However, the modifications to the operating rules that were done for the flood mapping project were only done for the purpose of modeling. The old rules are still in place. In order to make changes to the rules, additional work will need to be done to evaluate the relative risk of drought and flooding

under climate change and how to manage for both ends of the weather spectrum while minimizing harm.

*“Prior to implementation, any changes to the operational plan is expected to require review initially with the Okanagan Nation Alliance and Canadian Okanagan Basin Technical Working Group (COBTWG) and then with a wider stakeholder group. Given the currently projected rate of change in floods due to climate change, **review and subsequent implementation of revised operating rules is recommended within the next five years.**”*

The Okanagan Basin Water Board is considering a research gap analysis, in partnership with the province, to evaluate all the work that has been done, and what additional work is needed. These are long-term, high-level modeling studies, and we would seek external funding to carry them out.

We are also assisting the province in other ways to reduce flood risk. In December, 2017 Associated Environmental wrote a report for the province titled, Review of 2017 Flood Response: Okanagan Lake Regulation System and Nicola Dam. This reviewed what was done with flow forecasting and lake level management, and made a series of recommendations for the future. One of the main recommendations for the report was to improve the in-season forecasting models by **increasing hydrometric monitoring in the mid and high elevations**, as well as snow surveys.

A significant long-term commitment is needed to achieve sufficient, high quality, and consistent data needed to drive the forecasting models, particularly recognizing that climate and hydrology have changed in B.C. in recent decades, and will continue to change.

The OBWB has recently approved a new program to support the expansion of the Okanagan’s hydrometric monitoring networks, over the course of the next few years.

Shaun Reimer, Public Safety and Protection Ministry of Forests, Lands, Natural Resource Operations, and Rural Development, the operator of the Okanagan Lake dam in Penticton, wil present to the OBWB at our meeting on October 6th. I will provide the RDCO board with any new insights updated information from that meeting.