

INTERNATIONAL OSOYOOS LAKE BOARD OF CONTROL

Annual Board Meeting Minutes

Thursday, October 3, 2024

9:00 – 3:30 PM (PDT)

Sonora Community Centre, Osoyoos, BC

Participants

	Canada	United States
Chair	Dave Hutchinson	Scott VanderKooi
Members	Sue McKortoff Brian Symonds Connie Chapman Anna Warwick Sears (absent)	Arnie Marchand John Arterburn Kris Kauffman (virtual) Colonel Kathryn Sanborn
Secretariat	Martin Suchy	Sarah Dunn
IJC Commissioners	None	None
IJC Advisors and Staff	Rob Caldwell Catherine Lee-Johnston (virtual) Christina Chiasson (virtual)	John Allis David Hermann (virtual) Jeff Kart (virtual)
Observers	ONA	None
Guests	Jamie Kolodinsky (ECCC) Katie Slimmon (ECCC) James Littlely (Okanagan Basin Water Board, deputy to board member Anna Warwick Sears) Genevieve Brown (NHC, virtual) Shaun Reimer (Okanagan Lake Operator) Felicia Minotti (Global Affairs Canada)	Sonja Michelsen (Adv. to Col. Sanborn) Craig Jordan (Ecology) Samantha Long (Ecology) Nick Sutfin (USGS, virtual)

- 9:00 1. Welcome and Introductions** Scott VanderKooi (15 mins)
- Land Acknowledgement
 - IJC Commissioners
 - Board Members
 - Guests

Mr. VanderKooi provided an introduction and welcome to the meeting before asking attendees to complete a round table of introductions. Those in person and online were given time to introduce themselves.

- 9:15 2. Review of Agenda** Scott VanderKooi (5 mins)

Mr. VanderKooi reviewed the agenda for the day, and Ms. Dunn noted that the records management section would be shortened by a few minutes.

- 9:20 3. Minutes, Conditions & Updates**

- 3.1 Approval of Sept 4, 2024, Meeting Minutes Scott VanderKooi (5 mins)

Mr. VanderKooi inquired about the approval of the minutes from the September call. However, there were several edits and inconsistencies that still needed addressing, and several board members had not yet had a chance to review the minutes. Consensus was to postpone the approval to the next Board meeting in December.

- 3.2 2024 Hydrologic Conditions and Order Compliance Sarah Dunn (20 mins)

Ms. Dunn shared a presentation regarding the hydrologic conditions in the basin and provided an overview of operational updates. Regarding basin conditions, Ms. Dunn reviewed the data for the previous and current water year (01 Oct 2023 to present), noting that the early fall had been warmer than normal and continued into December, which saw high temperatures in the Okanagan basin. She also noted that spring temperatures were below normal in both the Okanagan and Similkameen basins. Spring precipitation amounts were near-normal. Predictions for this year include a 71% chance of La Nina developing for late fall and winter, which would mean cooler temperatures and increased precipitation in the winter season.

Both basins experienced lower than normal snowpack in water year 2023-2024 (01 Oct 23 to 30 Sep 24). The Snow Water Equivalent (SWE) recorded at the Mission Creek snow pillow was in the lower quartiles of the historical record throughout the season. Ms. Dunn explained that peak snow occurred later in 2024 than typical (in early May). Mt. Blackwall in the Similkameen Basin recorded much lower than normal snowpack, and the peak snowfall was very muted. Regarding temperatures, Ms. Dunn shared that the mean daily temperature in Kelowna and Osoyoos was often higher than normal with only a

brief period of cooler temperatures. Drought conditions remained dry or very dry in British Columbia and Washington.

Ms. Dunn reviewed the meaning of drought conditions for lake operation. Drought conditions are defined by the IJC Order of Approval and are based on the volume of the flow in the Similkameen River (condition 8a), the net inflow into Okanagan Lake (condition 8bi), and Okanagan Lake level (condition 8bii). Drought condition 8a was met, while 8bi was barely not met. Condition 8bii was also not met. Preliminary drought conditions were declared in April 2024, as inflow forecasts did indicate the thresholds (Condition 8bi) would be met. The drought conditions were not met when the final observed inflow volume was calculated in August, but the Board requested to continue operating under drought conditions and sent a letter to the IJC conveying this request. Mr. Allis of the IJC noted that the IJC response letter had now been approved, and although the Commission would not allow a deviation from the rule curve based on Board recommendation, the commission considered condition 8bi to have been effectively met (as there is assumed to be some uncertainty in the calculation, and the value came very close to the threshold) so lake operations under drought conditions were allowed. There was an action item noted to change 8bi to be stated as “effectively met” in presentations going forward.

Mr. Arterburn inquired if there might be a way to be transparent about providing a statistical value in terms of a range for the drought conditions to be met. Additionally, he noted that the Order is very rigid, but the environment is not. As an example, he stated that if there isn’t enough water coming down the Similkameen, it would be incredibly dry in the basin regardless of the levels in the lake. He stated that having a spread of values in the Order criteria would give the Board more flexibility to make decisions based on what is happening locally. Mr. Allis responded to say that the order is very rigid and updating it to include these points has been discussed. Currently, the rigidity of the order must be followed.

Ms. Michelsen mentioned that differing values are often received from the forecast centre, and selecting forecast values can become a matter of interpretation. In the case of this season, she suggested conservatively selecting the lower forecast value. She inquired how the Board should go about selecting the forecast that is used for calculations. Ms. Michelsen reinforced that a forecast will always have uncertainty, but that actual measured observations do not include the same type of uncertainty.

Mr. Suchy responded, stating that usually the more conservative forecast is taken. He noted that late in the spring, the actual inflow data from previous months can be used, rather than the forecasted volume alone. With two forecast models, the more conservative value was taken based on snowpack concerns this year. Mr. Suchy recommended an action item to come up with an approach to deal with the selection of forecasts in the future.

Ms. Dunn returned to discussing conditions, highlighting that Okanagan Lake levels were kept well above normal in the fall 2023 in response to predicted drought conditions and active management from the operator. She noted that the Zosel Dam operator was always in compliance with the order. Mr. Suchy pointed out that perhaps Okanagan Lake would not have reached the threshold if not for active

management and that managed levels are a discussion to continue. Mr. Hutchinson noted that the peak flow for the year at Okanagan Lake at Penticton was created by the fish flush.

3.3 2024 Sockeye Run Update

John Arterburn (20 mins)

Mr. Arterburn provided a presentation on the success of the sockeye salmon run this season and positive outcomes of the observations made. He explained that the number of fish coming back to the basin has increased over time and continues to do so. To track the fish, Mr. Arterburn spoke of the use of passive integrated tags (PIT tags) that go inside the fish, allowing them to be detected when they pass antenna arrays set up around the Okanagan and Columbia basins.

Mr. Arterburn shared that 11% of sockeye were still being lost, likely due to being unable to pass through Zosel Dam gates. He showed photos of the different gate and stop log configurations that were tested in 2024 to learn about how fish prefer to pass through the facility, considering factors such as water height, predation, and life stage of the fish (juvenile or adult). Ways were found to reduce the flow required to send fish over the dam, and an efficient construction of dam boards and stop logs is being worked on. Stop logs placed behind an open gate were 20% more effective than wide-open gates for adult fish passage. Overall, several recommendations have been determined to enhance juvenile migration and adult passage.

10:05 BREAK (15 mins)

10:20 4. Compliance and Operations Update

4.1 Okanagan Lake Regulation System Operations

Shaun Reimer (30 mins)

Mr. Reimer shared a presentation regarding Okanagan Lake Regulation System management. He noted that the focus over the past season was on capturing as much water as possible due to the below-normal snowpack, including at manual snow-surveying sites. Based on this data and that from the BC River Forecast Centre, drought preparations were enacted. Mr. Reimer stated that by the end of the water year (Sept 30), Okanagan Lake ended up at 5-6 cm (2-3 inches) below the intended target and that lake levels peaked 20 cm (8 inches) below the target 2 weeks after the target date.

Mr. Hutchinson asked if the province had investigated improving the forecast accuracy by considering local areas with higher resolution models, to which Mr. Reimer replied that they have, but it is an ongoing process. He explained that the manual sampling requirements can delay the forecast, and that prediction is difficult in the face of climate change. He did note that the province is looking into using satellite imagery to help remedy this.

Mr. Arterburn stated that setting up a systematic means for communication and coordination would be very helpful in terms of lake levels and dam operation. Mr. Reimer agreed and suggested the board consider an action item for developing a means for the Province and Ecology communicate and collaborate on flows for the future. He highlighted that coordination is always much more difficult in low-flow and low-level conditions. Ms. Chapman agreed, noting that it is difficult to set up priorities and balance them when conditions are more dire.

4.2 Zosel Dam Operations

Craig Jordan (30 mins)

Mr. Jordan shared a presentation regarding operations at Zosel Dam. He explained that when minimum target flows are not met, junior water rights are pulled. 92 water rights were pulled in 2023. He noted that flow targets also consider the minimums for fish flows.

Mr. Jordan continued, discussing the low snowpack that led to water management over the season, sharing that Zosel did not have a gate open for spring runoff and that no spring freshet was observed. Due to this, operators had to think about how they would get fish over the dam. Stoplogs were used, including one with a cutout.

When the influx of water was received from reservoir operations upstream, many adult salmon were able to pass. A small run of fish was observed early when temperatures dropped, and operators were able to get higher flows in the river. Irrigators were able to access water in 2024 and did not have water rights pulled. Irrigators often want water most in September and early October, with the cut-off date being October 10th.

Mr. Symonds stated that the Osoyoos Lake rule curve used to be much more restrictive, and that it was good to see improvements had been made so that objectives could be reached. Mr. Jordan shared that smoothing the curve was done by trying to minimize large variations in flow.

Mr. Arterburn pointed out that now that we know how much water is needed for certain configurations for fish passage, it could be released in a more efficient manner and that modified dam boards might be very helpful to streamline this process.

Gate Replacement Update:

Mr. Jordan shared that plans were nearly complete with reductions to the project scope (original plan received bids that were \$2 million over budget), with the base bid being a lifting mechanism reusing the old gates.

Additive 1 - gate replacement.

Additive 2 - improved gate finishes.

Additive 3 - a gate heater in gate #2.

Important notes shared by Mr. Jordan include that SCADA (Supervisory Control and Data Acquisition) and cameras were officially cut from this project, while a new generator and all-season access road are going to continue under a different contract. Physical work at the dam will be completed in fall 2025 after freshet and fish windows. One gate at a time will be done, so three can still be operational.

Mr. Hutchinson asked if there was anything that could be done to fine-tune the stop log configuration to improve fish passages. He also asked if adjustable stop logs were an option. Mr. Jordan answered that the integration of arrays into stop logs is being looked at, and that adjustable stop logs would require the whole dam to be re-imagined.

11:20 5. IJC Update

5.1 IWB Initiative

Catherine Lee-Johnston and Dave Hermann (20 mins)

Ms. Lee-Johnson of the IJC provided a presentation on an International Watershed Board in the basin. She highlighted the differences between a Board of Control and an International Water Board. Watershed Boards have additional responsibilities including water quality and aquatic ecosystem health monitoring in addition to water quantity. They also have additional members and groups (public, indigenous, equal representation on the US and CAN sides).

Mr. Hermann of the IJC explained that the IJC is conducting a feasibility study to determine the benefits of standing up a pilot watershed board in the region during which IJC staff will travel to the basin to discuss interests with several groups and assess needs. For the next steps, a Terms of Reference document that has been drafted will be reviewed and a team will be pulled together by Commissioners once membership of Board, public, and indigenous members has been determined. Mr. Hermann mentioned that the Board will report to the Commission, and two IJC staff will be the study coordinators that work with the feasibility team. The report itself will eventually be submitted to the Commission.

Mrs. McKortoff mentioned that she sits on a Board with all the mayors and chiefs in the area, referred to as the Okanagan Lake Watershed Collaborative Leadership Table. This Board is working to protect the watershed and put together a MOU to review how this can be accomplished. Ms. Lee-Johnson mentioned that she will follow up to get the names of these members to discuss the creation of an International Water Board. Mr. Marchand also mentioned that he and Dr. Sears are connecting with a group in Kelowna including the 7 bands of the Okanagan and others. Mr. Littlely noted that now is a great time to begin integrating all these groups.

11:40 LUNCH BREAK (70 mins)

12:50 6. Special Projects cont.

6.1 Phase II Model Integration

Genevieve Brown (30 mins)

Ms. Brown presented on the Osoyoos Lake Climate Change Vulnerability Project and focused on how the frequency of drought criteria being met might change with climate change. She explained how the RAVEN model is being used to run climate change scenarios. The modelling scenarios suggest that drought criteria will likely be met more frequently in the future. Lower Okanagan Lake levels are projected to occur as drought conditions are met in a higher percentage of years. Ms. Brown proposed initial reservoir modeling assumptions for Osoyoos Lake, but additional work was expected.

Ms. Brown went on to explain the HEC-RAS hydraulic modelling that has been completed to date. She noted challenges with model calibration and uncertainty of flow through the connecting channel. A final report on this work is expected to be delivered in January.

Questions for Ms. Brown included one from Mr. Hutchinson, who asked what kind of changes are being planned to correct the operational model for Okanagan Lake. Ms. Brown responded that minimum outflows, target elevations, and precipitation data will be tweaked to potentially bring lake levels up and result in drought conditions being met less often. Mr. Arterburn also posed a question, asking how the active management of the dam was being accounted for, to which Ms. Brown responded that it is based on ideal operation and the results of the model when it is run in forecast mode.

In response to a question from Ms. Michelsen regarding whether the proposed 100 cfs (2.8 m³) minimum at Zosel was a reasonable value, Mr. Jordan clarified that, ideally, the outflow should remain at a minimum of 200 cfs (5.7 m³) for fish flows. There were also several inquiries about the effect of backwater at the gauge, and it was highlighted that there is a lot of uncertainty associated with this effect. To this point, Mr. Hutchinson suggested that the cross-channel should be monitored to help refine the modeling and understand the backwater effect. The Board was supportive of this idea.

6.2 Ice Jam Project

Nick Sutfin (30 mins)

Dr. Sutfin provided a presentation on the preliminary results of the ice-jam project. The project aimed to examine meteorological variables associated with the formation of ice jams on Osoyoos Lake. The report is undergoing peer review, after which results will be made available in a USGS report. The Board will have the opportunity to review the report following Dr. Sutfin's presentation. As background, he shared that ice jams cause lake levels to rise and are very difficult to predict in a temperate climate. They can harm fish spawning and increase egg mortality. Variables examined for the purposes of the project included lake discharge, lake level, wind speed, wind direction, and air temperature (in 2-day moving averages) to detect jams. Landsat and Sentinel 2 imagery was used to examine ice conditions and validate known ice jams. Criteria to detect an ice-jam included a decrease in discharge, an increase in lake level, and an air temperature of at least 15°F (-9.5°C) or a mean of 25°F (-3.9°C). Discharge from the Similkameen River was not considered in this project for the detection of ice jams.

Once a jam was identified, the following day was be considered a “jam day” if the percent change in discharge was less than or equal to 0% AND the percent change in lake level was greater than or equal to 0%. Known recent jams were used to calibrate this. Prominent westerly winds and high wind speeds were associated with jams, and a wind shift was associated with the jam clearing up. There was a statistical difference between air temperature, wind direction, and wind speed on jam and non-jam days. There have been more than 2x the jams recorded in the last decade than in any other decade since 1965, even though temperatures have increased over time. Overall, methods in Dr. Sutfin’s presentation aim to predict future ice jams on Lake Osoyoos.

Suggestions from the Board for future work on this study included filtering for seiche in the lake, preparing a timeline for study deliverables, looking at a larger period of record, and determining the factors that cause a particularly severe jam. Mr. Caldwell suggested plotting jams by size and trying to visually determine what else might be driving them.

13:50 7. Business Items

7.1 Public and Applicant Correspondences

Sarah Dunn (10 mins)

Upon review of business items, Ms. Dunn reviewed communications from the previous year, noting the 2 letters that were sent to Ecology. Mr. Suchy stated that a letter from Ecology to the Board would be helpful to outline the plan and mitigation measures to remain in compliance with the order during the Zosel Gate replacement project.

7.2 Records Management

Scott VanderKooi (10 mins)

The Board discussed the importance of locating paper and electronic documents and adding them to the board Sharepoint so that all documentation relating to the board is in one place. An action item was agreed upon to do so and to determine a custodian for these files.

14:10 BREAK (10 mins)

14:20 7. Business Items cont.

7.3 Work Plan Update & IWI Project Proposals

Martin Suchy (25 mins)

Mr. Suchy shared a list of IWI funding proposals and conducted a discussion on which should be prioritized. During the discussion, the Board agreed to remove the installation of cameras on Zosel Dam from the workplan. Records management was added to the workplan, as was the consideration of

becoming part of a World Meteorological Organization study looking at atmospheric rivers. Mr. Caldwell noted that Commissioners are concerned about atmospheric rivers, and they are a priority. Mr. Suchy suggested that objectives and proposals would be circulated for this study. Mr. Arterburn suggested adding funding for temperature/oxygen buoys in Osoyoos Lake, ice jam remediation, fish flow coordination support, and improvement of fish passage at Zosel Dam to the workplan items.

The Board agreed that workplan activities would be prioritized and ranked. Mr. Suchy noted he would finalize a list and circulate it to prepare for the Fall submission for IWI proposals by the end of October.

7.4 Prepare for Fall IJC Appearances

David Hutchinson (15 mins)

Mr. Hutchinson reviewed the action items to address before the Board's IJC appearances. He highlighted the importance of communicating the challenges in the basin and reminded the Board that context is important to review, as two new Commissioners have been appointed. Mr. Suchy suggested incorporating some slides from the presentations given in this meeting (fish passage, ice jams, modeling, etc.).

15:00 7. Round Table

Scott VanderKooi (15 mins)

During a roundtable to wrap-up the meeting, Mr. Marchand expressed the need for flexibility within the bounds of the order, and Mr. Littley noted the importance of communications with the public when framing/discussing drought conditions to avoid confusion. To conclude the meeting, Ms. Dunn stated that she would be circulating a list of action items for review.

15:15 8. Action Item Review

Sarah Dunn (5 mins)

15:20 9. Preparation for Public Meeting

Scott VanderKooi (10 mins)

15:30 Adjourn