

## SUMMARY

### Columbia Basin Regional Advisory Committee and Columbia River Treaty Local Governments' Committee

#### Kootenay System Workshop

*March 09, 2016*

*On-site at Castlegar, BC with video-conference links to Valemount, Golden and Cranbrook  
and a telecon link*

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## INTRODUCTION

The Columbia Basin Regional Advisory Committee (CBRAC) requested a workshop to strengthen their understanding of hydro operations on the Kootenay system. The members of the Columbia River Treaty Local Governments' Committee (LGC) were invited to join the workshop.

This workshop was held on March 9, 2016 with on-site participants in Castlegar and video conference links to Valemount, Golden and Cranbrook, as well as a telecon link. Twenty-six of the thirty-six CBRAC [members attended](#) as well as six of the ten LGC members. Representatives from the B.C. Ministry of Energy and Mines, BC Hydro, FortisBC, Regional District of Central Kootenays, Environment and Climate Change Canada and the US Army Corps of Engineers provided presentations.

The following summary is based on notes taken during the meeting as well as written comments from participants. Though not everything was captured verbatim, these notes are meant to reflect the spirit of the discussion. Materials and presentations can be found [here](#) or by clicking on each title below:

[Kootenay System Overview](#)

[The International Joint Commission – Kootenay Lake Board of Control](#)

[FortisBC Operations Overview](#)

[Local Government and Flood Management](#)

[Duncan Operations](#)

[Libby Dam Information Brief](#)

## SESSIONS

### River and Hydro System Overview

#### **Kootenay System Overview: Hydro Development and Operations**

*Heather Matthews, Manager Planning and Licensing, BC Hydro*

[Click here to view presentation](#)

#### **Discussion topics:**

- Process for deciding on water flows to the Kootenay Canal project and the other dams along the river from Nelson to Castlegar
- Opportunities for the US to do pumped storage into Canada
- The original water licenses for the river plants didn't have requirements to mitigate fish/wildlife impacts. The Treaty dams (Duncan on the Kootenay and Arrow/Mica on the mainstem Columbia) did have requirement for fish/wildlife mitigation, which resulted in the Columbia Basin Fish and Wildlife Compensation Program to meet the Water Comptrollers' requirements to mitigate impacts. See [www.fwcp.ca](http://www.fwcp.ca).

#### **International Joint Commission Kootenay Lake Order**

*Gwyn Graham, International Kootenay Lake Board of Control Canadian Secretary, Environment and Climate Change Canada*

[Click here to view presentation](#)

#### **Discussion topics:**

- The International Joint Commission (IJC) Kootenay Lake Order minimum water level for March 31<sup>st</sup> has not been met in last 5 years, which makes it challenging for shoreline land owners to plan shoreline development adequately (building decks, moving docks etc.).
- Farmers are compensated in Bonners Ferry for flooding as part of the mitigation agreement under the Kootenay Lake Order, which was created in the 1930s, but farmers are not compensated when their lands are flooded by high waters in the Kooconusa reservoir, or in the Creston Flats area.
- Questions about the role of the IJC and others to address any issues that arise about Grohman Narrows. Concerns about sedimentation clogging up the Grohman Narrows 'control point' with questions about whether the IJC has authority to address the land practices of private land owners and others which introduce sediments into the system. Also, changes in flows and reservoir levels redistributes sand from private lands as well.
- Kooconusa cannot be brought under the authority of the IJC now because the Libby dam is authorized through the Columbia River Treaty. Questions about what could happen if the Treaty is changed or terminated.
- Impacts of El Nino and La Nina years on river flows.
- Mechanisms for potentially updating the Kootenay Lake Order to incorporate best practices or for enhancing ecology. An example of the IJC's potential role is how they were involved in the water quality concerns in Montana for the Flathead River.

## **Operations and Regulatory Mechanisms**

### **Kootenay River Generating System – FortisBC Operations Overview**

*Marko Aaltomma, Manager, Network Services, FortisBC*

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#### **Discussion topics:**

- More details are wanted on the operation of the Brilliant dam/expansion project.
- Whether the current projects to improve understanding of local interests, (e.g. Kootenay Lake value survey), could result in changes to hydro operations that might have downstream impacts.

### **Kootenay Lake – Local Government and Flood Management**

*Eileen Senyk, Planning Technician, Regional District of Central Kootenay*

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#### **Discussion topics:**

- Importance of having a list of properties that are not in compliance with the current flood management bylaw.
- Accretions to private land around Kootenay Lake since the lake has been regulated, including impacts on set-back distances and whether accretions are still being approved by the Surveyor General.
- How erosion in the south and north arm of Kootenay Lake would affect setbacks.
- Whether the flood management related bylaws make provisions for zoning lands for ecological/cultural values.
- Resources landowners have to properly manage/develop foreshore areas.
- Local impacts of low lake levels including on water intakes and what agency has jurisdiction to address these impacts.
- The new Regional District of Central Kootenay responsibility for flood mitigation infrastructure and what types of partnerships are being considered to include fisheries.
- Diking/Improvement Districts which manage the diking around Creston.

### **Duncan Dam Operations**

*Heather Matthews, Manager Planning and Licensing, BC Hydro*

[Click here to view presentation](#)

#### **Discussion topics:**

- Appreciation of the pictures and diagrams in the presentation. They are easier to understand than graphs, which are common in hydrology presentations.
- Inflow sources to Kootenay Lake and the portion of inflows from each source.

- Mass erosions are typical in the north arm of the reservoir and a shelf of sediment is growing at the reservoir inflow. Questions about the impact on reservoir storage capacity and fish access, and consideration of potential mitigation actions.
- BC Hydro process for deciding when to set zero release at Duncan dam.

## **Libby Dam and Kootenay Reservoir – Libby Dam Information Brief**

*Kristian Mickelson, Civil Engineer, Water Management Section, Seattle District, US Army Corps of Engineers*

[Click here to view presentation](#)

### **Discussion topics:**

- Effectiveness of water management for fisheries including the recently implemented variable (VARQ) flows and water temperature impacts on sturgeon spawning.
- How the decision was reached to go above full pool level in 2012.
- Timing of flow forecasts, which impact decisions on drawdown/refill timing and levels, and how climate change is factored into these forecasts.
- Reservoir impacts on ecosystem connectivity and habitat, particularly for ungulates, as well as mitigation options.
- Potential mitigation of increasing water temperatures by using groundwater.
- Work on environmental impacts on fisheries in Canadian portion of the reservoir.
- Challenges of finding balance between stakeholder interests (e.g. houseboat owners want the reservoir higher in the spring when drawdown is needed for flood control.)

## **Questions/Discussion**

### **Topics:**

- Studies of where sediment and other impacts on fish are happening on Kootenay Lake, and where changes in hydrology are impacting fish.
- Impacts of dam operations on the Kootenay River on fish passage to the Slocan River.
- City of Nelson compensation for the Canal Plant Agreement.
- IJC Order requirements for maintaining the initial dredging at Grohman Narrows.
- Consideration of ecological, fish, or wildlife impacts in the Kootenay Lake IJC Order.
- Impacts on freshwater mussels, which is a keystone species and is a major concern.
- Concerns about fish stranding because of ramping rates, (the rate that water flows through a dam are increased or decreased), especially below Hugh Keenleyside dam and minimum flow requirements
- Challenge to keep floodplain mapping up to date now that this is a local government responsibility to fund via taxation. Question whether the 1,716 ft. flood construction level on Kootenay Lake is adequate for current conditions.
- Cumulative effects of the smaller tributary dams.

- Study of a more stable water level for Arrow Lakes reservoir, with flows more closely mimicking the natural hydrograph for Arrow reservoir to address the wide range of current impacts.
- Need to find a way to for the public to understand the flow and reservoir levels other than based just on the numbers reported from hydro facility operators.
- Potential for comments to the IJC to change the Order which seems more flexible than the Treaty.
- Relative value of considering ‘average’ conditions, which don’t happen often anymore because we bounce between high and low conditions more frequently – what are we doing with operations to handle these more frequent extreme events?

## **Improved Understanding and Awareness**

**Participants provided the following suggestions for how to improve understanding and awareness of hydropower operations on the Kootenay system:**

### **For the Public:**

- Public comments during the Grohman Narrows dredging public meetings indicate a significant lack of knowledge about how the system operates.
- Meetings in communities in the area as done for Columbia River Treaty Review, with a free meal. However the turnout to the Review meetings dwindled as the public became satisfied that those handling the Treaty were doing a good job.
- Friends of Kootenay Lake annual general meeting session on hydro operations went well – use best practices from this event.
- Weekly radio spot on operations like the weather forecast with a link to workshops/info sessions.
- Local government elected officials to include info in their newsletters and when the local media invites stories from them, such as the Trail newspaper.
- Break complex info into easily digestible pieces and put online.
- Create a video that links hydro operations, Columbia River Treaty, Columbia Basin Trust, Fish and Wildlife Compensation Program, etc. with a coherent message to explain the relationships that can be used for multi-purposes.
- Columbia Power Corporation has started offering tours to Grade 6 students including in class sessions on the Columbia River Treaty and history, plus field trips to local dams annually in June as well as tours for Selkirk College students and professional engineers.
- Heavy construction at Hugh Keenleyside dam in the past few years has meant tours by BC Hydro could not be done for safety reasons, but these will be reinstated.
- Increase the use of cartoon drawings in presentations to simplify concepts.
- Build on existing Columbia Basin Trust websites – [www.ourtrust.org](http://www.ourtrust.org) and [www.thebasin.ourtrust.org/geography/power-water/](http://www.thebasin.ourtrust.org/geography/power-water/)

### **For Columbia Basin Regional Advisory Committee and the Local Governments' Committee:**

- As the very high and very low water years of 2012 and 2015 highlights, there is a great need to understand climate change and impacts in the Kootenays. Bring government studies on climate change impacts on hydro operations to CBRAC/LGC when these are done.
- More discussion about invasive and exotic species - East Kootenay Invasive Species Council has created a Strategic Guidance Document for how to deal with invasive species, and a strategy for mussels in Western Canada.
- More information about what the Americans are doing and thinking beyond Libby, especially how their interests impinge on our operations, and ongoing information regarding their views on the Columbia River Treaty.
- Where are we going from here - to 2024 and beyond, regarding the Columbia River Treaty.
- Responsibility of Columbia Basin Regional Advisory Committee in terms of the Columbia River Treaty.
- Need for transparency from the Provincial and Federal governments regarding any agreements for specific issues related the Treaty but formed outside of it (e.g. the Non-Treaty Storage Agreement)

### **TOPICS OF INTEREST**

*These topics were raised by participants and have been added to the main "Information Needs Tracking" list located on the CBRAC website, [here](#).*

- Fisheries impacts from erosion along the Duncan reservoir.
- Current process and status of approvals of accretions around Kootenay Lake.
- Portion of inflows to Kootenay Lake from each source (i.e. Libby, Duncan, Lake tributaries).
- City of Nelson hydro system details.
- Brilliant operations – peaking schedule, ramp rates, changes in pond elevations.
- Flows below the confluence – portion from Kootenay and Arrow; coordinated timing of flow changes?
- Columbia Operations Fisheries Advisory Committee (COFAC).
- Northwest Power and Conservation Council (NWPPCC) plan.
- Climate change impacts on hydro operations.
- Invasive and exotic species management in the Columbia Basin
- Columbia River Treaty Review process going forward – American interests, CBRAC role, how potential, if any new agreements within and outside the Treaty will be reached.

### **RESOURCES REQUESTED BY CBRAC**

- Columbia River Treaty Review Technical Studies Appendices describing the Kootenay system performance measures used.

### **NEXT STEPS**

- Add CBRAC and LGC members to the IJC contact list.
- Distribute requested resources to CBRAC and LGC members
- CBRAC Steering Committee to decide how to provide the information on the Topics of Interest above for CBRAC and LGC members.

## CLOSING COMMENTS FROM ALL PARTICIPANTS

- Great, listened and learned a lot; much more to learn and understand
- Great value in CBRAC/CRT connections – always learn something; USACE was most valuable
- Top/down and bottom/up comment struck me as same as our responsibility to downstream users to keep water clean and downstream users to allow nutrient flow to reverberate back up based on long tradition of fisheries management
- Thank you, it's been great; especially appreciated transboundary discussion – though a political boundary, it's not a boundary for fish/wildlife/rivers
- Always enjoy coming up here, beautiful place, great conversations and questions
- Thanks for having me; we (FortisBC) do try to keep our website updated with Kootenay Lake levels and we are eager to get to know the interest groups for Kootenay Lake
- East Kootenay group looking to build weir at 10 feet below full pool; we're the forgotten area; we are hoping for a water use plan or something like it through Treaty negotiations
- Always good, new info, good discussions, great to have cross-section of people
- First time that I've attended a meeting; enlightening to meet cross-section of people; am a Columbia Operations Fisheries Advisory Committee member; Kristian's talk using language for mimicking natural hydrograph stuck out to me – we're talking at that level way upstream; would like to hear that discussed in BC
- Impressed with coordination of Fortis/BC Hydro/USACE and each of them listening to each other
- Appreciation to BC Hydro and FortisBC and senior staff; so respectful
- Thanks to Cindy and Brooke for a well-coordinated event and to Lynne for keeping us on track; as group decides what info needs are and how to share, Columbia Power Corporation can help
- Enjoy meetings; always learn; look forward to next one
- Thanks; I learned about IJC, Libby, Duncan
- Having Kristian (USACE) join us was a good idea; some ideas for presentations looking ahead
- Enjoyed discussions; BC Hydro will continue to share operational information through our the weekly notices, annual community meetings and 1-800 number
- A lot of knowledge I've heard before; I like how info is coming together and info from across the border – hope to hear more; now need to think about how to go forward; thanks to Cindy/Brooke/Lynne
- Reflecting back on dealing with these issues during my work life, and always being behind the eight ball; excellent job to staff in organizing this workshop.
- Echo thanks to all; appreciate it
- First meeting so very steep learning curve; thanks to presenters; hope I retain it
- Thanks for the invite. Great to step outside local government walls; learned lots about the river system – helped to clarify things; enjoyed it
- I can now picture Kootenay Canal and Canal Plant Agreement

## RESOURCES

### Columbia River Treaty

- BC Columbia River Treaty website: <http://blog.gov.bc.ca/columbiarivertreaty>
- Columbia River Treaty page on the Columbia Basin Trust's website: <http://thebasin.ourtrust.org/columbia-river-treaty/>
- Paper: *A Review of the Range of Impacts and Benefits of the Columbia River Treaty on Basin Communities, the Region and the Province*, by George Penfold. <http://blog.gov.bc.ca/columbiarivertreaty/files/2012/07/A-Review-of-the-Range-of-Impacts-and-Benefits-of-the-Columbia-River-Treaty6.pdf>
- US Columbia River Treaty website: <http://www.crt2014-2024review.gov/>
- Further Resources: <http://blog.gov.bc.ca/columbiarivertreaty/further-resources/>

### Hydroelectric Operations

- About BC Hydro's Generation System as a whole: [https://www.bchydro.com/energy-in-bc/our\\_system/generation.html](https://www.bchydro.com/energy-in-bc/our_system/generation.html)
- Videos about Columbia River Treaty and Hydro Operations in the Columbia Basin: <http://thebasin.ourtrust.org/columbia-river-treaty/resources/> - click on "Multimedia" to see the videos
- Water and Power in the Columbia Basin: <http://thebasin.ourtrust.org/?s=power+and+water>
- Reservoir level information
  - BC Hydro Previous Reservoir Elevations - [http://www.bchydro.com/energy-in-bc/our\\_system/transmission\\_reservoir\\_data/previous\\_reservoir\\_elevations.html](http://www.bchydro.com/energy-in-bc/our_system/transmission_reservoir_data/previous_reservoir_elevations.html)
  - Columbia Hydrometeorologic Data - [https://www.bchydro.com/energy-in-bc/our\\_system/transmission\\_reservoir\\_data/hydrometric\\_data/columbia.html](https://www.bchydro.com/energy-in-bc/our_system/transmission_reservoir_data/hydrometric_data/columbia.html)

### Other

- Web Resources for Columbia River Treaty and Columbia Basin Hydro Operations: <http://blog.gov.bc.ca/columbiarivertreaty/files/2014/05/CBRAC-Resource-List-Columbia-Basin-Hydro-Nov2015.pdf>
- Columbia River Treaty Local Governments' Committee: <http://akblg.ca/content/columbia-river-treaty>
- Columbia Basin Trust: <http://ourtrust.org/>
- BC Hydro Integrated Resource Plan Mailing List: [www.bchydro.com/irp](http://www.bchydro.com/irp) (click "Join the IRP mailing list" in bottom right corner)
- List of Acronyms: <http://blog.gov.bc.ca/columbiarivertreaty/files/2014/05/2015-07-21-Columbia-Basin-hydro-operations-acronyms.pdf>