

# Arrow Lakes Reservoir Mid-Elevation Scenarios: Scoping Evaluation

## Columbia Basin Regional Advisory Committee Feedback May 27, 2016

The consulting team provided a presentation and answered questions about the *Arrow Lakes Reservoir Mid-Elevation Scenarios: Scoping Evaluation* report during the May 2016 meeting of the Columbia Basin Regional Advisory Committee. The Committee expressed appreciation that this report had been completed, and that they had been invited to provide input. This is a brief summary of the input from Committee members during breakout sessions as well as from individual members during the meeting.

### 1. Are key local values included in this assessment? Have any been missed? If so, what has been missed?

- No direct involvement by First Nations and no Traditional Ecological Knowledge.
- Footprint impacts are not clearly stated.
- The status quo is used as the base case, which is not innovative enough.
- One group indicated the list of values seems complete. Other groups and a few individuals identified the following gaps:

#### Ecological

- Impacts to keynote species – sturgeon, ungulates and First Nations values (plants, elk, caribou, medicinal plants, fisheries)
- Waterfowl flyway use
- Impact of the reservoir on local microclimate (weather, wind, etc.); will lower elevation lead to a slightly colder winter?
- Regional climate change impacts
- Future value of scenarios in terms of recovering salmon
- Possibility/risk of grass fires if drawdown zones areas are not inundated and the vegetation dries out and are used by campers or for parties/bonfires
- Torrent debris flows and effects on Arrow reservoir since where these hit the reservoir will shift
- Effects on water temperatures
- Annual spring melt and high water flows are not stored – they run through system during spring to late summer; flows from Mica would have to be limited as well
- Reed Canary grass is now the major draw down species – how will it respond
- If Arrow Reservoir is at a constant elevation, would peaking operations at Revelstoke Dam create exacerbated effects below the dam, including on the Illecillewaet River (e.g. erosion)?
- TGP gas in water

## **Recreation**

- Recreation impacts due to increased use as people tend to go wherever opportunities open up

## **Economic**

- Economic impact to local communities; socioeconomic scope; particularly the affected areas along the reservoir, though hard to determine this is important
- Development restrictions needed to prohibit building within the floodplain
- Effects of potential tourism and development including economic values
- Predictability for potential agriculture use

## **General**

- Relationships between values (i.e. ecological, recreational, economic)
- Need to differentiate the benefits and impacts from changing from 1420 to 1425 foot level versus 1 in 5 to 1 in 7 year flooding in Scenario 1 and 2

## **2. Which results surprised you, if any? Why?**

- One group and one individual did not identify any surprises and another expressed gratitude that the scenarios have not been dismissed due to money/power impacts.

### **General comments**

- With the current Treaty in place, is it realistic to make assumptions about any of these scenarios being implemented?
- Status quo/current operations is baseline – needs to be bookends
- Scenario 1 includes some seasonal fluctuation in the 4 of 5 years. Why is this fluctuation eliminated in Scenario? Keeping the elevation flat doesn't seem physically possible
- The limitations of only reviewing Arrow so there was no analysis of how proposed scenarios impact on upper/lower system (*Note: further analysis of up and downstream impacts is planned*)

### **Specific 'surprises' noted**

#### **Ecological**

- Possibility of increase in invasive species
- What amount of land could come back under these scenarios?- surprised not included
- Complicated aquatic nutrient supply impacts
- No discussion about anadromous fish (sockeye, chinook) - needs to be stated in report
- Not definitive on fish impacts
- Difference in impacts between terrestrial values and aquatics
- No flood plain discussion
- Increased erosion at 1425 or 1420 would occur but would be balanced/offset by increased vegetation at that elevation

## **Economic**

- Estimates for power generation

### **3. Which results do you think will surprise community members around the Arrow Lakes reservoir? Why?**

#### **Scope**

- New scenarios indicate potential changes to address concerns
- Study does not consider how much CRT operations have changed over years
- How does this fit into being a real CRT option?
- Lack of info on downstream (in BC and US) impacts and upstream (in BC)

#### **Ecological**

- Amount of research done on revegetation
- The amount of planting done in riparian areas and the decimation of the experimented areas - Were the areas well marked as study areas, were the public well advised of this activity so they could avoid the damage
- Difficult to assess the impacts on fisheries- better or worse?
- Amount of time it will actually take to re-establish vegetation etc.
- Lack of discussion on climate change and impact on losing ecosystem flushing
- Possibility of increased invasive species with both scenarios

#### **Social**

- How many people live along this reservoir is needed for context
- Separating recreation users between boat users and property owners will be new to the community members
- People are keen to learn more about the reservoir
- They will be surprised that community members are being asked at such an early stage in the development of the scenarios
- Opportunity to learn about the scale/scope of impacts outside of where they live
- Shocked that government and BC Hydro are taking this seriously; a lot of skepticism and remaining resentment, though this is a ray of hope for change
- Need to emphasize this is a long term process
- Prospect of disappointment if operations aren't changed according to one of the scenarios
- The surprise would be the two scenarios are being looked at

#### **Economic**

- The potential increase in agricultural opportunities, particularly in scenario 2, especially for people who don't know what was there before
- Potential huge local economic benefit
- Reservoir access questions and impacts not addressed enough

#### **4. What advice do you have for the Ministry of Energy and Mines and BC Hydro about further investigation?**

- Clarify the context for this study going forward – what are the expectations from Ministry of Energy and Mines and BC Hydro and the Treaty ‘negotiations’?

##### **Report content**

- Include clear description of who was interviewed/information sources
- Include some maps to provide context for where areas such as ‘Revelstoke Reach’ and ‘Arrow Reservoir’ are and what portion of the reservoir would be flooded in the different scenarios.
- Add visuals to communicate historical, current conditions and scenarios

##### **Community outreach**

- Likely to be a lot of interest
- Need community outreach to publicize this work
- Community engagement/consultation plan is needed including who, timing, etc.
- People who live in the area and were interviewed need to be provided the opportunity to review the report
- Send the draft report to the Columbia WUP Committee members and Rev 6 Consultative Committee members for their input
- Ensure First Nations and community sector specialists are deeply involved
- Include upstream and downstream communities in consultations
- Clarify this is not a request for choosing between “scenarios” as in the usual request for input from government; it is a request for input on the information gathered to date
- Be crystal clear that high reservoir levels in 1 in 5 years does not mean “year 5 is a flood” or “it won’t flood less than every five years”
- Use this process to increase understanding of the whole system – everything effects everything
- Continue to raise education and awareness about peak energy demand load and reservoirs being storage batteries for energy production
- Having BC Hydro or BC government staff lead is likely to create suspicion

##### **CBRAC**

- CBRAC members need more time to review the report and provide feedback
- Complete upstream and downstream impacts/benefits then come back to CBRAC for input (*Note: Input received before Oct. 31 will be considered in the next round of investigations.*)

##### **Further investigations**

- Widespread support for continued investigation and analysis to explore a stable Arrow option
- Determine upstream and downstream effects for the whole basin
- Look at other stable elevations

- Explore impacts of recreational use, particularly terrestrial use and especially motorized use, on exposed areas under the scenarios; potential for ecosystems to be damaged by use instead of being re-established; identify regulation and enforcement to protect newly exposed terrestrial areas
- Examine how to control use of the drawdown zone by the public if it isn't inundated to ensure no fires and no motorized recreation that would negate the development of vegetation and use by wildlife
- Explore how to mitigate for vegetation losses by looking at impacts, options and enhancement potential
- Build Chinook and Sockeye impacts into future scenarios
- Look at salmon and sturgeon impacts, their needs and preferences
- Include a list of factors that define hydro operations to describe available flexibility including:
  - geomorphological perspective and the limitations of the reservoir
  - provincial and federal regulatory requirements including SARA
- Explore impacts on values/interests that are functioning under current regime and how they'll be affected
- Has climate change been adequately incorporated? Heavy rains, snowpack changes?
- Do the scenarios allow for drawdown/surcharge for dam repair/maintenance?
- Look at alternatives such as pumped storage