

Canadian Columbia River Dam and Reservoir Ecosystem Management Backgrounder

CBRAC CONTENT TEST

December 4, 2017

Cindy Pearce, Mountain Labyrinths Inc.

Purpose

❖ Meet CBRAC's recommendation:

'up-to-date information about ecosystem interests and management be compiled in a new document'

Goals from CBRAC Input

- ❖ Focus on information needed over next 2-5 years during CRT negotiations
- ❖ System-wide
- ❖ Not complicated
- ❖ Bite sized chunks of information/range of formats
- ❖ Include recent reports and First Nations knowledge
- ❖ More on how dam operations impact ecosystems

'CONTENT TEST' – or Straw Dog

- ❖ Provide content outline first
- ❖ Get CBRAC input before diving into the details, updating, correcting, expanding info
- ❖ Minimal sourcing of additional info/no First Nations input
- ❖ *Italics mean more work is needed*
- ❖ No review yet

Outcomes from Today

Direction about:

- *Who is the intended audience?*
- *Does this information and format meet their needs?*
- *Any key interests or activities missing, need to be changed or removed?*

Bite Sized Chunks

- ❖ Stand alone Summary
- ❖ Main document
- ❖ Summary of ecosystem activities by geography
- ❖ Detailed ecosystem mitigation activities

Stand Alone Summary

- ❖ Target audience – General public
- ❖ Ideally maximum 4 pages
- ❖ Very plain language

Main Document

- ❖ Target audience – Interested public
- ❖ 20ish pages
- ❖ Plain language with bulleted lists and some simple tables/graphics
- ❖ Full of weblinks to more detailed information

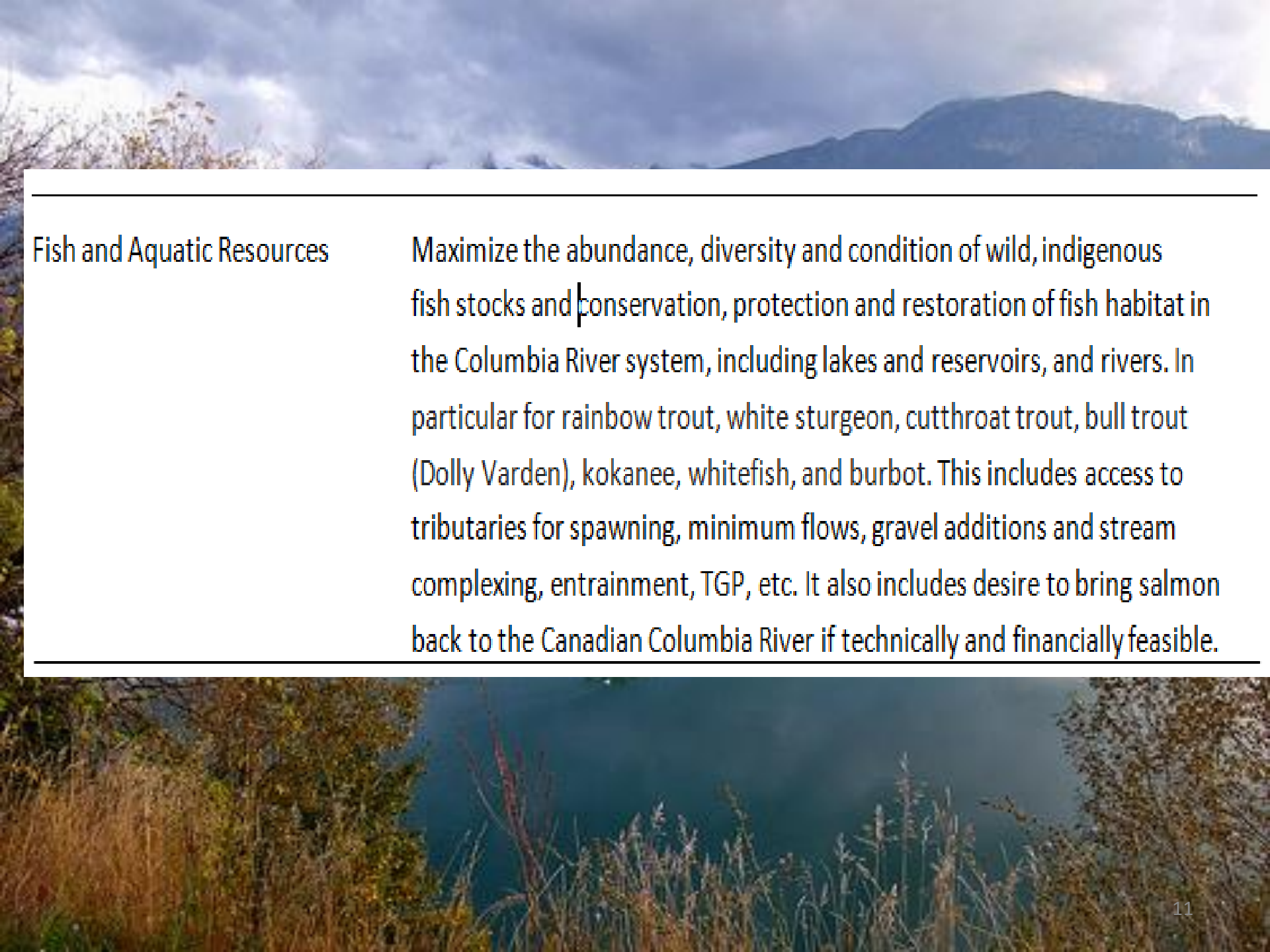
1. Overview

- ❖ New section
- ❖ Brief history
- ❖ Dam/reservoir description – written or table?
- ❖ Additional info?

2. Interests

- From CRT Environment Discussion Paper (DP)

Category	Main Interest	Specific Interest
Ecosystems and Climate Change	Climate Change	Minimize negative impacts associated with climate change. Understand and develop adaptation strategies. Ensure flexibility in the Columbia River Treaty to respond to climate change impacts.
	Ecosystem function and resilience	Maximize the diversity, productivity and resilience of the ecological systems, including supporting nutrient programs, supporting a more natural hydrograph, flooding for riparian (cottonwood) productivity, flushing flows, preservation, enhancement of wetlands etc.



Fish and Aquatic Resources

Maximize the abundance, diversity and condition of wild, indigenous fish stocks and conservation, protection and restoration of fish habitat in the Columbia River system, including lakes and reservoirs, and rivers. In particular for rainbow trout, white sturgeon, cutthroat trout, bull trout (Dolly Varden), kokanee, whitefish, and burbot. This includes access to tributaries for spawning, minimum flows, gravel additions and stream complexing, entrainment, TGP, etc. It also includes desire to bring salmon back to the Canadian Columbia River if technically and financially feasible.



Wildlife and vegetation

Maximize riparian and wetland habitat, diversity and productivity. Including floodplain ecology, grasslands, protected areas, riparian habitat and drawdown zone, wetlands, littoral productivity, and wildlife and nesting habitat. There is a special emphasis on plants for traditional use as well as herbaceous and shrub communities.

Maximize the wildlife abundance and diversity in the Columbia River system within the limits of existing habitats, including shorebirds, spring nesting and fall migratory birds (in particular refuge habitat for Great Blue Heron), resident birds, amphibians, bats, reptiles and species associated with hunting interests.



3. How Dams and Reservoirs Impact Ecosystem Interests

❖ New section

❖ Sources:

Historical Footprints

➤ *Dam Footprint Impact Summary*

Operations Impacts

➤ *CRT Technical Studies Report*

4. How Environmental Interests are Currently Being Managed

- ❖ Based on DP with revisions to reflect regional activities and some additions to fill gaps
 - Provincial and Federal Government Province-wide Roles
 - Region-Specific Hydro-operations Related Management

Provincial and Federal Government Province-wide Roles

- ❖ Environmental regulation and enforcement
 - Environmental impact assessments and Office of the Water Comptroller added
- ❖ Species at risk, recovery strategies and management plans
- ❖ Funding opportunities - added

Region-Specific Hydro-operations Related Management

- ❖ CRT – much reduced from DP
- ❖ Environmental assessments – added
- ❖ Water Use Planning and Water License Requirements – how much geographic detail to include?
- ❖ Advisory and Collaborative Groups – refined
- ❖ Compensation Programs - expanded
- ❖ Columbia Basin Trust

5. Dam and Reservoir Specific Management Actions for Ecosystem Interests

Appendix 1 – Lists the active ecosystem management programs and initiatives at each reservoir/dam facility and free-flowing river segments - **new**

Appendix 2 - detailed information about how each ecosystem interest is being managed generally and within each reservoir/dam river segment – **from DP and needs verification, updating and expansion**

No State of...

- ❖ Doesn't include assessments of the current status of ecosystems
- ❖ Can quickly change (e.g. Kokanee populations) and date the document

Appendix 1 - Summary of Ecosystem Management Activities by Geography

❖ **New**

- ❖ Target audience – Interested public wanting to know more about their local area
- ❖ Listing of activities with very brief descriptions and weblinks to more information



Geographic Area/Activity	Description
SYSTEM-WIDE	
• BC Hydro Total Dissolved Gas Strategy	Risk assessments are being conducted and management plans have been developed in partnership with DFO, MOE, and First Nations.
• BC Hydro Fish Entrainment Strategy	Action planning and implementation is a technical process that has been undertaken on a case by case basis between BC Hydro, DFO, Ministry of Environment, and First Nations.



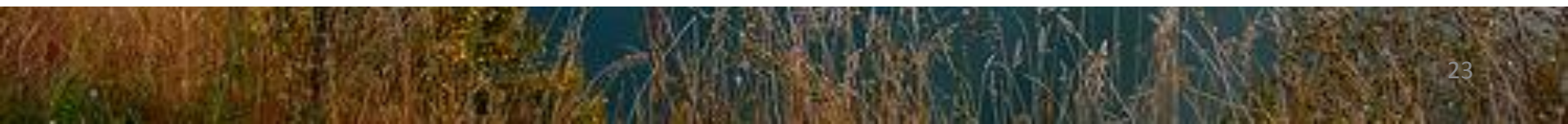
Geographic Area/Activity	Description
Duncan Reservoir/dam	
<ul style="list-style-type: none"> • Duncan WUP operational constraints 	<ul style="list-style-type: none"> - Reservoir level: Reach full pool (576.4 meters and 576.7 meters) between 1 and 10 August. After full pool is reached or after 10 August, decrease reservoir elevation to 575.5 m and maintain within 0.3 m of this level until 5 September - Year round minimum flow - Maximum flow targets in the Duncan River downstream of the <u>Lardeau River</u> confluence at defined times of the year to support kokanee and whitefish spawning, ensure riparian productivity through reduced winter inundation and minimize stranding during <u>Lardeau River</u> freshet flows
<ul style="list-style-type: none"> ▪ Duncan WUP Management Plan 	<ul style="list-style-type: none"> - \$13 million (total program) including <u>burbot</u> monitoring and kokanee spawning studies <i>verify</i>
<ul style="list-style-type: none"> • Bull trout passage 	Facilitated by low level outlet discharge channel
<ul style="list-style-type: none"> • Spawning channel? 	<i>Verify</i>

Appendix 2 – Detailed Ecosystem Mitigation Activities

- ❖ Based on Discussion Paper at this point
- ❖ Target audience – Very interested public and technical specialists wanting to know more about specific areas
- ❖ Listing of activities by interest with detailed descriptions - **weblinks to more information to be added**



General			
Category	Sub-Category	Specific Interests	Mitigation
Ecosystem function and resilience	Species conservation	Maintaining or improving the populations and ranges of species at risk, or species of interest in the Basin.	<p>Fish and Wildlife Compensation Program, and specific work with species at risk such as the Northern Leopard Frog project; Vaux's swift nesting habitat, etc.</p> <p>Conducting inventory and identification of species at risk, such as the Columbia Basin Amphibian Inventory.</p> <p>Establishing teams, developing and implementing recovery plans, such as the Columbia River White Sturgeon Management Plan under BC Hydro's WLR. Coordinating with other power producers, such as Columbia Power Corporation operating requirements take into account sturgeon as part of their license. These requirements are coordinated with BC Hydro.</p>



Koocanusa Reservoir and Kootenay River

Category	Sub-Category	Specific Interests	Mitigation
Ecosystem Integrity	Backwatering	When reservoir levels drop below about 2400 ft there is no backwatering effect on the Canadian side of the border.	
Fish	Bull Trout (threatened)	Maximize the abundance, diversity and condition priority species	
	Cutthroat Trout	Minimize possible negative effects on other resident fish and their habitats on CDN side of the border.	
	White Sturgeon	Enhance the recruitment of the white Sturgeon population in the Kootenay River below Libby dam.	VarQ flood control strategy is currently being implemented by the US Army Corp. of Engineers. The strategy involves a spring pulse to assist in sturgeon migration followed by a summer and fall flow regime to promote improved sturgeon spawning and rearing requirements as a result of increased volume and a more appropriate temperature regime. Bull trout and cutthroat trout also benefit from the flow increases.
Wildlife and vegetation	Riparian Habitat and Littoral Productivity	Opportunity to initiate greater restoration activities.	Operating Koocanusa Reservoir to a lower annual maximum elevation, with infrequent exceedances, could provide for increased riparian, wetland, and floodplain habitats.
	Grassland	Loss of grassland at Northern end of reservoir due to higher water levels in the spring time during VarQ flows.	No specific mitigation.
	Floodplain ecology	Improvements to ecological functioning of the flood plain (Creston Valley)	There are higher and more natural flows for certain periods under VarQ.
Protected Areas	Protected Areas	Flooding impacts of protected areas (e.g. Wildlife Management Areas) or other important habitats (Northern Leopard Frog breeding grounds)	No specific mitigation but there is collaboration with US Army Corps.
	Nesting Habitat	<u>Kootenay River Region (Duck Lake)</u> Preferred elevation range 1744' – 1746' (Spring) Detrimental elevation(s) >1749', <1744' (May 15 – Aug 31)	

Appendix 2 – Refinements Needed

- ❖ Verify current content and update
- ❖ Add missing pieces i.e. EAs, First Nations
- ❖ Expand to include all major dams/reservoirs –
Seven Mile, Waneta
- ❖ Do first then complete Appendix 1

Next Steps

- ❖ CBRAC input

- ❖ Work with others to verify, update and fill in the blanks

- ❖ Layout/formatting

Discussion Group Questions

- *Who is the intended audience?*
- *Does this information and format meet their needs?*
- *Any key interests or activities missing, need to be changed or removed?*

A scenic landscape featuring a large, calm lake in the foreground, surrounded by lush greenery and trees. In the background, there are majestic mountains with patches of snow, under a sky filled with dramatic, grey clouds. The overall atmosphere is serene and natural.

Thank you!

Questions??