Exploring Ecosystem Improvements through the Columbia River Treaty

Info Sheet – Background and Overview June 2022

Columbia River Treaty Ecosystem Function Sub-Committee

Context

The Columbia River Treaty (CRT) between Canada and the U.S.A. was ratified and implemented in 1964 to reduce destructive flooding and act on a shared interest to develop hydroelectric power across the Columbia Basin. The Treaty resulted in the construction of three large dams and reservoirs in Canada: Mica Dam and Kinbasket Reservoir, and Hugh Keenleyside Dam and Arrow Reservoir on the upper Columbia River; and Duncan Dam and Reservoir north of Kootenay Lake. Libby Dam was constructed in Montana on the Kootenay River, creating Koocanusa Reservoir, which extends upstream into British Columbia.

In 2011 B.C. and the U.S. undertook independent CRT Reviews to decide whether to continue, modernize or terminate the CRT. Both decided to modernize the CRT and negotiations began in 2018 between Canada and the U.S. to achieve this goal.

There is strong Indigenous Nations and public interest in including the protection and restoration of ecosystems as a third leg, alongside hydropower and flood control, in CRT modernization. The five governments (Canada, B.C., and the Ktunaxa, Secwepemc and *Syilx* Okanagan Nations) involved in the renegotiation of the CRT in Canada are collaboratively working to respond to and realize this interest.

The concept of improving 'Ecosystem Function' has been adopted. Columbia Basin Indigenous Nations (Canada) and tribes (US) have adopted the following definition of ecosystem function:

> *"Since time immemorial, the rivers of the Columbia Basin have been, and continue to be, the lifeblood of the Columbia Basin tribes and First Nations. Our nations view ecosystem-based function of the Columbia Basin watershed as its ability to provide, protect and nurture cultural resources, traditions, values and landscapes throughout its length and breadth. Clean and abundant water that is sufficient to sustain healthy populations of fish, wildlife, and plants is vital to holistic ecosystem-based function and life itself."*

One western science definition of ecosystem function is: "the ecological processes that control the fluxes of energy, nutrients and organic matter through an environment."

Roles

This work is being conducted by the CRT Ecosystem Function Subcommittee, which was established by the CRT Negotiations Advisory Team to explore how ecosystems could be considered and, ideally, enhanced in a modernized Treaty. This Subcommittee is led by the Ktunaxa, Secwepemc and *Syilx* Okanagan Nations and includes representatives from provincial and federal agencies and consultants. The Negotiations Advisory Team includes representatives from Canada, B.C., BC Hydro and the three Nations and provides advice and information to Canada's CRT Negotiating Team.

Process to Date

Workshops were convened in 2015 (Revelstoke) and 2017 (Nelson) to begin the technical work to support the incorporation of ecosystem function into a modernized Treaty. Workshops in late 2018 and early 2019 resulted in the development of a background draft 'Ecosystem Function Synthesis Report' and initial agreement on ecosystem function themes, goals, objectives and priority studies. There have been engagement activities to seek public input on this foundational information.

The work is currently focused on providing information to the Columbia River Treaty Planning Model (CRT PM), a customized computer model of the Columbia River hydroelectric dam operations in B.C. and the U.S., including the Kootenay River. This model shows how different Treaty dam operations would affect ecosystems, Indigenous cultural values, power generation, flooding and the social and economic health of communities. It will help Canadian negotiators see how U.S. proposals for Treaty changes could impact Basin interests, and explore what level of flexibility is needed for Canadian operations to improve conditions in B.C.

The model uses performance measures (PMs) to evaluate how different river management scenarios can affect Basin interests. The current studies are providing PMs for ecosystems and information to develop operating scenarios that are best for ecosystems.

The model is functioning and has been used in workshops to explore alternative operating scenarios to improve ecosystem functions and values. The model, and particularly the user interface, are being continually enhanced.

Progress and Next Steps

The table below summarizes progress on the ecosystem function studies and PMs.

Initiative	Status	Current Next Steps
Synthesis Background Report	• Drafted and externally reviewed in 2019; foundation for decisions on study priorities	• Reformat and revise to fully incorporate external review comments and study results
Information compilation	• Completed for the current studies • Non-confidential data and reports will be publicly available through a Data Portal at Selkirk College	• Establish the Project Council to plan the public launch of the Data Portal

Initiative	Status	Current Next Steps
Climate change integration	• Key references compiled • Webinars provided for study teams • Team of experts is available to advise study teams	• Study underway to gather stream temperature information and options for modelling stream temperature conditions that may be affected by CRT operations. • Projected changes in stream inflows and timing are being added to the CRTPM
Ecosystem productivity studies	• Reservoirs – report and PM for Arrow completed; awaiting Water Use Plan study reports on Kinbasket and Duncan reservoirs productivity • Koocanusa reservoir study initiated	• Complete the Koocanusa study
	• Riverine – draft report completed; additional field data collected; PM approved and coding completed	• Finalize PM implementation • Complete the external review and finalize the report
	• Terrestrial – draft report completed; PM approved	• PM coding • Complete the external review and finalize the report
Floodplain, riparian and wetland studies	• Arrow, Duncan and Kinbasket - PMs approved; draft report completed; PM coding underway • Koocanusa reservoir – ground-based field work completed; PMs developed	• Complete PM coding including for Koocanusa reservoir using the new digital elevation model • Complete the external review and finalize the report
	• Kootenay Lake wetlands - Background information gathered	• Engage the study team
Aquatic studies	• Functional (ecosystem-based) flows – Draft report and PMs completed; external review underway • Mainstem, side channel and tributary stream habitats – Draft report as well as Kinbasket, Arrow and Duncan PMs completed • Tributary stream access – Draft report near completion • Fish stranding – Draft report near completion	• Complete the external review and finalize the report • Complete the Koocanusa PM with the new digital elevation model • Complete the draft report • Complete the draft report and PMs

Initiative	Status	Current Next Steps
Salmon/Anadromous Species	• Background information collected • Juvenile model development and testing continues • Adult life-cycle model design drafted, workshop review completed and development underway • Substantial and important salmon restoration work is being undertaken through the Columbia River Salmon Reintroduction Initiative (CRSRI)	• Refine the juvenile model • Continue the adult life-cycle model design and coding
Scenario development	• Workshops held in April 2021 and January, February and April 2022	• Complete implementation of the ecosystem function PMs and model development before holding further workshops in the fall
Communications	• EF SC members participated in the CRT Virtual Town Hall in February 2021 and in sessions with some Nations over the summer	• June 15 CRT EF Info Session

Summary of Next Steps

- Continue to incorporate Indigenous Knowledge in ecosystem function studies;
- Complete study reports for all ecosystem function objectives, including external review and public input;
- Implement all remaining ecosystem function performance measures in CRT PM;
- Hold further ecosystem function scenario workshops to develop optimum ecosystem function operating scenarios; and
- Participate in scenario development and evaluation processes to address the full range of interests affected by CRT: indigenous cultural values, socio-economic, ecosystem function, hydropower, flood control.

Feedback Invited

Your feedback on this work is appreciated. You are encouraged to provide your input through the online survey or contact columbiarivertreaty@gov.bc.ca to receive a digital or paper copy. We hope to hear from you by 4 PM Pacific Time on July 11, 2022.