Water Governance in the Columbia River Basin

James S. Mattison, P.Eng.
Michele-Lee Moore, M.Sc.
Land and Water British Columbia, Inc.

Jim Mattison
Director Drought Task Force
Land and Water B. C. Inc.
Victoria, British Columbia Canada

Introduction

Crossing two countries including one province and seven states, with 13 dams on its mainstem and over 400 dams on its tributaries, the Columbia River Basin is an extensively developed and extremely important resource. As a result, the management of the Columbia River system is highly complex, involving international agreements, Canadian and American federal policies, state and provincial level regulations, and numerous communities and First Nations and Tribal governments. The fact that the management structure continues to be a successful and cooperative arrangement demonstrates the opportunity that working together for the mutual benefit of two countries can provide. This paper discusses how the use of water in the Columbia River Basin is managed, focusing on the complexity and mutual benefits, the governance, the current resource issues, and the organizations that have evolved from the Basin's developments.

The Columbia River Treaty

Although only 18% of the Columbia River Basin is in Canada, 25% of the runoff originates from the Canadian portion of the Basin. Historically, high volumes of runoff caused severe flooding in the U.S. Working together to form a solution, the Columbia River Treaty (CRT) was ratified in 1964 by Canada and the United States. The Treaty provided a political and technical framework to manage and regulate the Columbia River in a manner that would maximize the mutual benefits of the resource for the two countries, through flood control and power production. The Treaty required Canada to provide 15.5 million acre feet of storage for this water, which was accomplished through the construction of 3 dams in British Columbia, Canada, including: Duncan (1968), Keenleyside (1969), and Mica (1973). A fourth dam, Libby, was built in the U.S. with a reservoir that extends 67.6 km into Canada. Together, these dams more than doubled the storage capacity of the Columbia River Basin. In return for providing storage and flood control, the U.S. made a one time payment of US$64.4 million. The additional power, which is generated in the U.S. and results from Canadian storage, is equally shared between the two countries. With the effective and cooperative relationship of the two countries, the management efforts are able to focus on the

delicate balance between ecosystem needs, flood control and protection for communities in the basin, and the power demands of the northwest electricity grid.

Governance of the Columbia River

At the international and federal operational level, the CRT is implemented by the Treaty Entities. The Canadian Entity is BC Hydro, and the U.S. Entity is comprised of both the U.S. Army Corps of Engineers and Bonneville Power Administration. The activities of these Entities are regulated by the Permanent Engineering Board. The responsibilities of the Permanent Engineering Board include the approval of operating plans of the entities, and the reporting of activities to both Canadian and U.S. Federal governments.

Within each province and state however, additional regulatory bodies govern the use of the Columbia River water resource. Within British Columbia, the use of all water must be authorized by a water licence. The authorization is provided under the *Water Act* through the office of the Comptroller of Water Rights and regional managers. The construction, operation, maintenance and safety of all dams in BC are also regulated by the province under this authority.

In Canada, fisheries are a federal jurisdiction. Fisheries and Oceans Canada has a mandate to protect and conserve fish and fish habitat. In addition, there is a *Species At Risk Act* that gives the Canadian federal government authority to protect endangered species and their habitats if the provincial authorities do not take action. In the U.S., the United States Fish and Wildlife Service uses the U.S. Endangered Species Act to ensure state water regulations are adequately protecting endangered and threatened species.

Resource Concerns

A critical issue facing managers of the Columbia River today concerns the populations of White Sturgeon— one of the largest freshwater fish in North America. The Columbia River is an important habitat for White Sturgeon. Although several factors influence the quality of these habitats, the extensive number of dams on the river system has affected the hydrograph, which in turn has affected spawning success and contributed to declining populations (see for example, United States Fish and Wildlife Service's Biological Opinion, 2000). In fact, the remaining Kootenai River population of White Sturgeon is isolated between the Cora Linn Dam in British Columbia at Kootenay Lake and the Libby Dam in Montana.

The Kootenai River White Sturgeon population was listed as endangered in 1994 by the U.S. Fish and Wildlife Service under the *Endangered Species Act*. The National Marine Fisheries Service Biological Opinion and the United States Fish and Wildlife Services developed recommendations for the recovery of the White Sturgeon. The

recommendations included modifying spring flows to follow the natural hydrograph of the area more closely, implementing a conservation aquaculture program, and re-establishing suitable habitat conditions. In British Columbia, the Provincial Fisheries Program is responsible for the management and conservation of freshwater species. The Fisheries Program has designed a number of studies under the Columbia River White Sturgeon Program to increase our knowledge about white sturgeon biology and habitat requirements in efforts to further protect this species. The Canadian Entity, BC Hydro, is also working towards further understanding how to fully protect White Sturgeon populations through the Upper Columbia White Sturgeon Recovery Initiative. This initiative is a collaborative effort between BC Hydro, the provincial government, First Nations, industrial and environmental stakeholders, and the public.

In response to the increase in knowledge and awareness about the environmental effects of hydroelectric dams, the government of BC has initiated Water Use Plans. The Water Use Planning process involves the development of detailed plans for day-to-day operations of each hydroelectric facility, which consider the needs of all stakeholders in the area. Through this process water management options will be evaluated and will consider any resource concerns, such as White Sturgeon populations.

Organizational Developments

Stemming from the fact that alterations of the natural flow of the Columbia River had effects beyond mere flood protection and hydroelectric production, public stakeholders chose to become involved. One organization, the Columbia Basin Trust, was created by the Columbia Basin Trust Act in 1995 to benefit the areas most adversely affected by the construction of the dams. At its inception, the Columbia Basin Trust received a $295 million endowment by the Province. Basin residents decided to reinvest $45 million directly into the Basin for economic and business development, and the remaining $250 million was committed to finance the construction of power projects through the Columbia Power Corporation—the Trust's partner in power projects. From 1996 to 2012, the Trust will also receive $2 million per year. Through the activities of the Trust, the Trust ensures that residents of the region are empowered during any decision-making process in the Basin to ensure economic, environmental, and social health of the region remains a priority.

Also as a result of the Columbia River Basin developments, the Canadian Columbia River Inter-tribal Fisheries Commission (CCRIFC) was created by Columbia Basin First Nations. CCRIFC's mandate included the coordination and provision of technical support for the efforts of the First Nations to conserve and restore fish and fish habitat within the basin, including their long-term efforts to restore anadromous salmon. CCRIFC has provided technical advice to Columbia Basin First Nations with respect to water governance in the following areas:

- environmental assessments and associated water license application reviews for several hydro projects, with a focus on load/flow shaping, flow ramping, fish entrainment impacts and construction impacts on water quality,
- the development of Water Use Plans for BC Hydro facilities in the basin,
- transboundary water management, and
- Phillips reservoir and Joseph Creek flow management, concentrating on the conservation of fish populations and habitat.

Currently, CCRIFC is working with Land and Water British Columbia Inc., Fisheries and Oceans Canada, the Ministry of Sustainable Resource Management and the Ministry of Water, Land and Air Protection on a project to map (using GIS technology) low-flow sensitive streams in the Columbia-Kootenay region.

Conclusion

The management of the Columbia River is highly complex due to the number of development structures and competing demands on the river. However, the collaborative efforts between Canada the U.S., and organizations such as the Columbia Basin Trust and CCRFIC, in managing the river has lead to extremely positive results, with both countries benefiting equally from the arrangement. As with any developed ecosystem, resource management concerns do exist, but finding effective solutions is much less complicated when both countries involved are working towards the optimization of mutual benefits. As the fourth largest river by volume in North America, the management and governance of the Columbia River Basin is exemplary international cooperation.