

EXECUTIVE SUMMARY

A Water Use Plan (WUP) is a technical document that, once reviewed by provincial and federal agencies and accepted by the provincial Comptroller of Water Rights, defines how water control facilities will be operated. The purpose of a water use planning process is to develop recommendations defining a preferred operating strategy using a multi-stakeholder consultative process.

The Campbell River water use planning Consultative Committee process was initiated in September 1999 and completed in March 2003. The consultative process followed the steps outlined in the 1998 provincial government's *Water Use Plan Guidelines*.

This report summarizes the consultative process and records the consensus agreements arrived at by the Campbell River Water Use Plan Consultative Committee (Consultative Committee). It is the basis for the Campbell River Draft Water Use Plan. Both the Campbell River Consultative Committee Report and the Campbell River Draft Water Use Plan will be submitted to the Comptroller of Water Rights.

Campbell River Hydroelectric Facilities

The Campbell River hydroelectric system is located within the Regional District of Comox-Strathcona on central Vancouver Island. The system comprises three reservoirs and four diversions. The chain of three reservoirs are the Upper Campbell Lake Reservoir, the Lower Campbell Lake Reservoir and the John Hart Reservoir, which supply the Strathcona, Ladore and John Hart generating stations respectively. The Heber River and Crest Creek diversions provide additional flows into the Upper Campbell Lake Reservoir. The Salmon River and Quinsam River diversions provide additional flows into the Lower Campbell Lake Reservoir. The majority of system flows enter the Campbell River after passing through the John Hart generating station, while a small continuous flow is released from the John Hart Reservoir down the Elk Falls Canyon.

The Campbell River generating stations have a combined generating capacity of 237 MW and contribute about 52 per cent of BC Hydro's Vancouver Island hydroelectric generation, or about 2.3 per cent of BC Hydro's total hydroelectric generation.

The Consultative Committee

The Campbell River Water Use Plan Consultative Committee consisted of eighteen active representatives. Interests included power, fish, wildlife, First Nations heritage and culture, recreation, water quality and supply, flooding and erosion. The representatives included BC Hydro, local, regional, provincial and federal agencies, Hamatla Treaty Society (representing the Comox, Campbell River and Cape Mudge First Nations), Mowachaht/Muchalaht First Nation, local interest groups and industry. The main Consultative Committee held a total of eighteen multi-day meetings, ultimately reaching consensus on a preferred operating alternative for the Campbell River hydroelectric facilities, and a program of monitoring and physical works.

Issues, Objectives and Performance Measures

During the initial stages of the Campbell River Water Use Plan, a series of consultation sessions helped to identify key issues and interests related to the operation of the hydroelectric facilities. The Consultative Committee explored these issues and interests and agreed to the following objectives for the Campbell River Water Use Plan:

- **Recreation and Tourism**
Enhance and protect the quality of recreation and tourism amenities and increase the quantity of recreation and tourism opportunities within sustainable carrying capacity.
- **Flooding and Erosion**
Minimize adverse effects of flooding and high water levels on private and public property and personal safety.
- **Fish**
Maximize the abundance and diversity of indigenous fish populations.
- **Wildlife**
Protect and enhance the quantity and quality of wildlife habitat.
- **Water Quality and Supply**
Protect and maintain drinking water quality, and maximize the availability of drinking water supply.
- **Heritage and Culture**
Protect heritage values and enhance opportunities for cultural activities.
- **Power, Financial and Greenhouse Gas Management**
Maximize the value of power generation to BC Hydro, Vancouver Island, the District of Campbell River and the Province.

Minimize greenhouse gas emissions.

Performance measures were developed to indicate the degree to which these objectives could be achieved by proposed system operating alternatives. The performance measures not only revealed how good an alternative might be, but they also served as a consistent set of criteria by which to evaluate and compare alternatives.

Operating Alternatives, Physical Works and Monitoring Plan Proposals

Operating alternatives were developed to address the various objectives. Given the complexity of the operations and the sheer number of locations of interest in the Campbell River system, the Consultative Committee conducted several iterative rounds of alternative development and refinement, evaluation and trade-off analysis. Initially, two rounds of broad system-wide assessments were undertaken to help establish broad system operating parameters (e.g., maximum/minimum reservoir elevations, inclusion of diversions, etc.). This was followed by detailed assessments for all diversions and the

Elk Falls Canyon. Finally, another two rounds of alternative evaluations and trade-off assessments were undertaken on a refined and detailed set of system-wide operating alternatives. In each case, operating alternatives were run through BC Hydro's system operations model and the consequences for each objective were discussed by the Committee based on the performance measures results.

Through the course of developing the operating alternatives for all parts of the system, and in the context of the trade-offs associated with some of the preferred operating alternatives, Consultative Committee members proposed specific physical works solutions to address remaining site specific issues.

Also through the course of developing the operating alternatives, data gaps and significant uncertainties were noted. These data gaps and uncertainties became the basis of proposed monitoring plans.

Consensus Recommendations and Expected Consequences

Using a structured decision making process that involved the analytical consideration of trade-offs between objectives across alternatives, a consensus agreement was reached on a preferred operating regime that demonstrated the best balance of Consultative Committee member values. Table 1 provides the operating constraints for each component of the Campbell River system. Consultative Committee members also agreed on the scope of a proposed set of physical works projects and monitoring plans.

The final consensus recommendations of the Campbell River Water Use Plan Consultative Committee are:

1. Operate the system according to the specifications for Alternative T as summarized in Table 1.
2. Decommission the Heber Diversion in 2010. Until that time, operate the diversion facilities according to the recommended regime.
3. Operate the Salmon Diversion with an allowable maximum diversion rate of 30 m³/s during the period of April through December, once a new fish screen and erosion control works along the Sayward Canoe Route are in place.
4. Design and construct all physical works within a specified annual budget cap.
5. Design and implement all monitoring plans within a specified annual budget cap.
6. Establish a Campbell River Water Use Plan Monitoring Advisory Committee to oversee and support implementation of the physical works and monitoring plans.
7. Conduct a formal mid-term technical review of all operating and monitoring results approximately five years after the start of implementation, and a formal comprehensive review of the Water Use Plan approximately ten years after the start of implementation.

Table 2 provides a summary of the expected consequences for all of the Campbell River Water Use Plan recommendations.

Table 1: Key Features of the Recommended Operating Constraints

Alternative	Alternative T = Recommended Operations			
Upper Campbell Reservoir¹	<ul style="list-style-type: none"> • Normal operating maximum = 220.5 m during the peak summer season (21 June to 10 September) • Normal operating minimum = 217 m during the peak summer season (21 June to 10 September) • More stable peak season operations near a 219 m target 			
Lower Campbell Reservoir	<ul style="list-style-type: none"> • Normal operating maximum = 177.5 m during the peak summer season (21 June to 10 September) • Normal operating minimum = 176.5 m during the peak summer season (21 June to 10 September) 			
Campbell River Constraints (John Hart Releases and Elk Canyon flows)	Target Ranges (m ³ /s):			
	Date	low	target	high
	1 Jan – 31 Jan	80	122	126
	1 Feb – 28 Feb	80	106	126
	1 Mar – 14 Apr	60	100	104
	15 Apr – 30 Apr	80	80	126
	1 May – 30 Jun	100	100	126
	1 Jul – 19 Jul	28	40	126
	20 Jul – 14 Sep	28	40	126
	15 Sep – 21 Sep	28	40	126
	22 Sep – 14 Oct	28	100	104
	15 Oct – 15 Nov	80	122	126
	16 Nov – 31 Dec	80	106	126
	<ul style="list-style-type: none"> • Staged transitions down to and up from the 40 m³/s summer target flows • Load-factoring at John Hart from 1 Jan to 15 Feb only 			
Elk Canyon Flows	<ul style="list-style-type: none"> • 4 m³/s minimum flow year-round • Bi-weekly, 2-day pulse flows of 10 m³/s in spring • Weekly, 2-day pulse flows of 7 m³/s in fall • 2-week spawning flow up to 7 m³/s in April 			
Salmon Diversion	Salmon River Minimum Flow:			
	<ul style="list-style-type: none"> • 4 m³/s year-round minimum flow 			
	Maximum Diversion Flows:			
	Date	Max Flow	Fish Screen	
	1 Jan – 31 Mar	42.5 m ³ /s	Off	
	1 Apr – 31 Dec	30.0 m ³ /s	On	
Heber Diversion²	Minimum Flows:			
	Date	Min Flow		
	1 Jan – 14 Jan	1.0 m ³ /s		
	15 Jan – 31 Mar	1.8 m ³ /s		
	1 Apr – 30 Jun	1.5 m ³ /s		
	1 Jul – 30 Sep	2.5 m ³ /s		
	1 Oct – 31 Oct	1.5 m ³ /s		
	1 Nov – 31 Dec	1.0 m ³ /s		
Quinsam Diversion	Minimum Flows:			
	Date	Min Flow	Wokas Gates	
	1 Jan – 30 Apr	2.0 m ³ /s	10 cm	
	1 May – 31 Oct	1.0 m ³ /s	8 cm	
	1 Nov – 31 Dec	0.6 m ³ /s	8 cm	

1. The flood buffer management protocol for Alternative T is similar to Alternative REF
2. There is a recommendation to decommission the Heber Diversion in 2010.

Table 2: Summary of Expected Consequences of the Campbell River WUP Recommendations

Location	Interest	Summary Consequences
Upper Campbell Lake Reservoir	Erosion	+ Reduction in the number of days that reservoir levels are expected to exceed 220 m under normal operations. + Erosion control works at specific sites expected to provide further protection for infrequent high water levels under flood management conditions.
	Recreation	+ A general increase in the number of days that support high quality recreation, particularly during the peak summer season. + Facilities improvements at specific locations expected to improve access and usability across a wider range of reservoir elevations during the shoulder seasons. + Re-vegetation activities expected to improve both visual aesthetics and terrestrial habitat.
	Fish	+ A general increase in fish productivity expected as a result of improved littoral zone habitat and spawning conditions in tributary mouth areas.
Heber River	Heritage & Culture	+ Decommissioning of the Heber Diversion in 2010 viewed as a major benefit to Mowachaht/Muchalaht and Strathcona Park interests.
	Fish	+ The interim operation and the 2010 decommissioning are expected to benefit fish.
Lower Campbell Lake Reservoir	Erosion	O Neutral – No expected change.
	Recreation	+ Facilities improvements at specific locations expected to improve access and usability across a wider range of reservoir elevations during all seasons.
	Fish	+ A general increase in fish productivity expected as a result of improved spawning conditions in tributary mouth areas.
Campbell River	Flooding	+ Reduction in the number of days that flows are expected to exceed critical flooding thresholds.
	Recreation	- Potential loss in recreation quality for some activities that prefer lower summer flows. + Improved viewing experience expected due to increased minimum flow.
	Fish	+ Significant gains expected in fish productivity in Elk Canyon expected due to improved flow regime. + A general increase in fish productivity in the mainstem expected as a result of improved spawning conditions, and reduced flood flows.
Salmon River	Sayward Canoe Route	O Potential safety and erosion concerns over increased diversion flows are expected to be mitigated through increased signage, portage route improvements, and erosion control works.
	Fish	+ Fish screen improvements are expected to eliminate fish entrainment and improve fish condition. O No significant change in habitat risk downstream of the diversion, although the increased minimum flows are considered to benefit fish.
Quinsam River	Fish	+ New operation is expected to benefit fish.
System-Wide	Power/Financial	O A gain in annual revenues is offset by the costs for physical works and monitoring. Overtime completion of Crest Creek Review is viewed as positive because the decision was to retain the diversion facility. Also positive from a relationship perspective.