



Province of British Columbia *Water Act*

Water Act Section 88

File No. 76975-35/Duncan

WHEREAS British Columbia Hydro and Power Authority (BC Hydro) is the operator of the Duncan Dam and reservoir, in respect of which it holds Conditional Water Licence 27027;

WHEREAS BC Hydro has engaged in public consultation to determine values for system parameters and to develop operating procedures which may provide benefits as described below;

WHEREAS the licensee has submitted the Duncan Dam Project Water Use Plan, which recommends changes to the operations of the Duncan Dam Project and physical works which are intended to benefit fish and wildlife, shoreline conditions and recreation;

WHEREAS the Duncan Dam Water Use Plan proposes a monitoring programme to determine whether operating the project in accordance with the operating parameters, works and procedures in the Plan will provide the expected benefits; and

WHEREAS I have accepted the Duncan Dam Project Water Use Plan dated December 20, 2007;

I HEREBY ORDER THAT:

1. The licensee shall release a daily average minimum flow of 3.0 cubic metres per second (m³/s) from Duncan Dam (PD 25003). The licensee may decrease this quantity to facilitate bull trout passage between May 1 and June 30 of each year.
2. In addition to clause 1 above, the licensee shall release water from Duncan Dam in such manner as to follow the flow protocol specified in Schedule A, as measured below the confluence of Duncan and Lardeau Rivers in the vicinity of Water Survey Canada gauge 08NH118.
3. The reservoir shall be maintained between the elevations of 576.38 and 576.68 metres GSC from August 1 to August 10. After an elevation of 576.68 metres is reached, or on August 11 if this level is not reached, the reservoir will be drafted to 575.5 metres \pm 0.3 metres and maintained at this level until Labour Day. The flow

rates specified in clauses 1 and 2 above take priority over the elevations specified in this clause.

4. The licensee shall meet the following ramping rates:
 - a) any decrease in the rate of release from Duncan Dam shall not exceed 28 m³/s/hour and shall not exceed 113 m³/s in 24 hours;
 - b) any increase in the rate of release from Duncan Dam shall not exceed 113 m³/s/day; and
 - c) the obligations in 4a and 4b take precedence over meeting the scheduled changes to flow requirements specified in Schedule A.
5. The licensee shall submit, within 9 months of the date of this order, for approval by the Comptroller, terms of reference for the following:
 - a) plans for erosion protection in Argenta Slough;
 - b) plans for boat ramp extension at Glacier Creek including annual maintenance;
 - c) an action plan to minimize the stranding of Kokanee spawning in Duncan River side channels downstream of the Duncan dam;
 - d) plans to assess nutrient retention in Duncan Reservoir and the downstream nutrient reduction associated with Duncan Dam operations;
 - e) plans for an adaptive stranding protocol to manage fish stranding based on ramping trials, fish habitat use studies, hydraulic assessments, and fish stranding assessments;
 - f) an archaeological overview assessment of the reservoir drawdown zone; and
 - g) non-intrusive erosion monitoring of archaeological resources at two previously identified sites in the drawdown zone.
6. The licensee shall submit within 12 months of the date of this Order, for approval by the Comptroller, terms of reference for the following effectiveness monitoring programmes:
 - a) monitor kokanee spawning in Lower Duncan River in order to evaluate flow release benefits;
 - b) monitor bull trout migration through the Duncan Dam to evaluate benefits of current management practice;
 - c) monitor temperature and total gas pressure in Duncan River to determine whether changes occur through revised operations;
 - d) monitor cottonwood recruitment and wildlife habitat use in the Lower Duncan River floodplain;
 - e) monitor mosquitoes in the Lower Duncan River to determine whether reproductive success is reduced through operations;
 - f) monitor kokanee and rainbow trout populations in Duncan Reservoir;

- g) monitor burbot populations in Duncan Reservoir; and
 - h) monitor riparian vegetation and wildlife habitat, including nesting birds, in the drawdown zone of the Duncan Reservoir.
7. Upon receiving, from the Comptroller, approval of the above terms of reference and leave to commence, the licensee shall
- a) implement the works, feasibility studies, and effectiveness monitoring programmes in clauses 5 to 6 above in accordance with the approved terms of reference; and
 - b) submit annual reports to the Comptroller of Water Rights on the results of the works, plans and monitoring approved in clauses 5 to 6 above until the conclusion of the programmes as specified in each terms of reference.
8. With respect to the maintenance and provision of records the licensee must:
- a) Keep records of
 - i) flow release from Duncan Dam into Duncan River;
 - ii) Duncan Reservoir levels; and
 - iii) discharges measured in the vicinity of Water Survey Canada Gauge 08NH118.
 - b) Provide a written report to the Comptroller of Water Rights on or before February 1 of each year summarizing the records from the previous calendar year; and
 - c) Provide on request of the Comptroller of Water Rights records collected under 8a).
9. The licensee may operate the works in an alternate manner during annual maintenance and in the event of an emergency, dam safety requirement, an extreme hydrological event or to meet obligations under the Columbia River Treaty.
10. All emergency operations or other deviations from operations ordered above shall be reported to the Comptroller of Water Rights in a timely manner.

Dated at Victoria, B.C., this 21 day of December, 2007.



James S. Mattison, P.Eng.
Comptroller of Water Rights

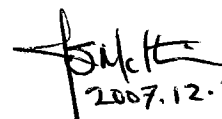
**Schedule A
Target Flow Protocol**

1. The licensee shall provide flows below the confluence of Duncan and Lardeau Rivers, in the vicinity of Water Survey Canada gauge 08NH118 as follows:

Dates	Cubic Metres per Second	
	minimum	maximum
August 1 - August 24	73	400*
August 25 - September 24	73	250
September 25- 27	73	190
September 28-30	73	130
October 1-21	73	76
October 22 - December 21	73	110
December 22 - April 9	73	250
April 10 - May 15	73	120
May 16 - July 31	73	400

*during this time, the licensee will target a maximum of 250 cubic metres per second

2. Flows within 5% of the above figures are acceptable provided that the 3 day rolling average meets the minimum and maximum figures above.
3. The licensee shall adjust discharges from Duncan Dam at least once per working day in order to meet the flows in clause 1 above.
4. In the event that the maximum flows between December 22 and April 9, or minimum flows between March 1 and May 30 cannot be met as a result of reservoir level constraints under the Columbia River Treaty, BC Hydro will:
 - a) request a flood control variance from the US Army Corps of Engineers, and
 - b) if the variance is not granted,
 - i) increase the maximum flow to 300 cubic metres per second between December 22 and April 9 and inform the Comptroller of Water Rights in a timely manner or
 - ii) consult with federal and provincial fisheries agencies and seek direction from the Comptroller of Water Rights to implement a revised minimum or maximum flow for a specified time period.
5. This flow protocol takes priority over the target reservoir levels set in clause 3 of the Order.


2007.12.21