



Province of British Columbia *Water Act*

Order Section 88

File Nos.: 0182525 & 2002750

WHEREAS British Columbia Hydro and Power Authority (BC Hydro) is the operator of the Walter Hardman Power Development, in respect of which it holds Final Water Licence 121741 and Conditional Water Licence 121742;

WHEREAS, the works authorized by Final Water Licence 121741 and Conditional Water Licence 121742 at the Walter Hardman Power Development include: diversion dam (PD28719), diversion channel, stoplog structure, control structure, saddle dams, closure dam, spillway and cut-off dam, Walter Hardman Dam (PD28765) Cranberry Lake reservoir, power intake, dispersion valve and discharge culvert, penstock and powerhouse;

WHEREAS, the operation of the works can also benefit the viability of fish and fish habitat with respect to Cranberry Creek downstream from the diversion dam and in the Cranberry Lake reservoir (also known as Walter Hardman headpond);

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

WHEREAS the licensee has submitted the Walter Hardman Water Use Plan, which recommends changes to the operations of the Walter Hardman Power Development which are intended to provide specific benefits to fish and fish habitat;

WHEREAS, I have accepted the Water Use Plan for the Walter Hardman Power Development, dated March 21, 2006; and

WHEREAS, BC Hydro has proposed a monitoring program to determine if operating the works in accordance with the operating parameters and procedures in the Walter Hardman Water Use Plan will provide the above listed expected benefits;

I HEREBY ORDER THAT:

1. The licensee must install a minimum flow bypass facility as set out in Schedule A.
2. The licensee must operate the Walter Hardman Power Development in accordance with Schedule B.
3. The licensee must evaluate the effectiveness of operating in accordance with 2 above by undertaking a monitoring program as set out in Schedule C.

4. With respect to the maintenance and provision of records the licensee must:
 - a. Keep records of
 - i. Flow from Cranberry Creek into the Cranberry Lake reservoir.
 - ii. Flow release into Cranberry Creek downstream from the diversion dam
 - iii. Reservoir elevations
 - iv. Any fish salvage operations
 - v. Gravel placement operations;
 - 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 4.a.
5. The licensee may operate the works in an alternate manner in the event of an emergency, dam safety requirement, or an extreme hydrological event.
6. 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 BC this 22 day of March, 2006



Pieter J. Bekker
Deputy Comptroller of Water Rights

SCHEDULE A
Minimum Flow Bypass Facility

In lieu of regulating the existing water release structures of the Walter Hardman Power Development in a manner which would result in greater power values being foregone the licensee must, in accordance with the following conditions, alter the works in a manner which makes them suitable to release minimum flows as required in Schedule B.

- 1) The licensee must within twelve months of the date of issue of this order prepare and submit for approval of the Comptroller of Water Rights plans for the installation of a release facility on the Walter Hardman Power Development that will release a minimum flow into Cranberry Creek downstream from diversion dam which is suitable to make the controlled release of water as specified in Schedule B (1).
- 2) On written approval by the Comptroller of Water Rights of the plans submitted and upon receiving leave to commence construction, install the release facilities at the Walter Hardman Power Development.

Schedule B
Operating Parameters and Procedures

1. After the minimum flow bypass facility has been installed as set out in section 1 of the order, the licensee must at all times release a minimum flow of 0.1 cubic metres per second, or all the natural inflow if it is less than 0.1 cubic metres per second, from Cranberry Creek into Cranberry Creek downstream from the diversion dam.
2. When inflows to the reservoir are 0.25 cubic metres per second or higher, the licensee must operate Cranberry Lake Reservoir (headpond):

- a. within 0.5 metres of a 700.3 metre elevation from March 15 to November 15; and
- b. within 0.5 metres of 701.0 metres elevation, from November 16 to March 14.

When inflows to the reservoir are less than 0.25 cubic metres per second the reservoir may be drafted to the minimum operating elevation of 698.0 metres.

3. If the elevation of the reservoir reaches or exceeds 701.5 metres the licensee must adjust the stop log and orifice control structures to minimize spill from Cranberry Lake.
4. The licensee must implement fish salvage operations to the satisfaction of the Comptroller of Water Rights as set out below:
 - a. Downstream from the Cranberry Lake spillway after a spill event;
 - b. In the diversion channel between the dam and the reservoir when it is dewatered for maintenance purposes; and
 - c. In the diversion dam headpond if it is dewatered for maintenance purposes.
5. Within six months of the date of this order, the licensee shall submit to the Comptroller of Water Right terms of reference for an annual gravel placement program which transfers up to 5000 cubic metres of gravel deposited in the diversion dam pond into Cranberry Creek downstream from the diversion dam. Following approval by the Comptroller of Water Rights the licensee shall conduct this gravel placement program.

**SCHEDULE C
MONITORING PROGRAMS**

- 1) Within six months of the date of issue of this order, the licensee shall develop terms of reference for a monitoring program with a proposed budget, schedule of work, and reporting with the following objectives in accordance with the monitoring plans and procedures in the Walter Hardman Water Use Plan, dated March 21, 2006. The terms of reference will outline procedures to:
 - a) Assess how kokanee spawning and incubation habitat in Lower Cranberry Creek has changed as a result of the provision of minimum flow.
 - b) Measure the change in the quantity and quality of rainbow trout rearing and over-wintering habitat in the middle section of lower Cranberry Creek as the result of the provision of the minimum flow.
 - c) Assess the fish stranding risk and exposure to reduced dissolved oxygen concentrations as the result of Cranberry Lake reservoir drawdown.
 - d) Determine whether there are temperature effects resulting from the minimum release into Cranberry Creek downstream from the diversion dam which may affect rainbow trout rearing and kokanee egg incubation in lower Cranberry Creek.
 - e) Monitor rainbow trout population size and age structure in the middle section of lower Cranberry Creek.
 - f) Determine kokanee use of the tailrace during the spawning season in September and October; assess the potential of the powerhouse discharge acting as an attraction flow; and determine if zero discharge events may result in dewatering of kokanee redds.
- 2) Following review and acceptance in writing of the terms of reference, prepared in accordance with 1 above, by the Comptroller of Water Rights, the licensee shall undertake the aforementioned monitoring program as directed.
- 3) The licensee shall submit reports as set out in the terms of reference which summarize the data collected in accordance with the program initiated under 1 above and address the following topics:
 - a) Effectiveness of the ordered parameters and procedures in providing the expected benefits.
 - b) A summary of deviations from the parameters and procedures, reasons for and the responses to those deviations.
 - c) Recommendations for future changes to the parameters and procedures.