



**International
Joint
Commission**

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International Kootenay Lake Board of Control

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March 24, 2009

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Dr. Lawson and Dr. Clamen:

We hereby submit the 70th Annual Report of the International Kootenay Lake Board of Control covering the calendar year 2008. This report sets forth the operation of the control works on Kootenay Lake under the terms of the Order of Approval dated November 11, 1938.

Respectfully submitted,

Colonel Anthony Wright
Chair, United States Section

Kirk Johnstone
Chair, Canadian Section



International Kootenay Lake Board of Control

2008 Annual Report to the International Joint Commission

Kootenai Flats



From the southeast shoulder of Burton Peak (Selkirk Mountains) near Bonners Ferry, looking across the Kootenai National Wildlife Refuge wetlands, the Kootenai River (in the line of trees midfield) meanders across its broad floodplain in northern Idaho. The 2007 State of Idaho Hazard Mitigation Plan reports that “over 95 miles of levees protect 32,000 acres along 51 river miles” in this three-mile-wide valley. The Flats are a prime farming area in the State, with a variety of crops that includes hay, hops, and grains. The 1938 IJC Order of Approval helps protect the Flats from flooding and seepage from the river by limiting the water level in Kootenay Lake and hence the backwater up the Kootenai into Idaho. In addition, the Order calls for a stipend to be paid to farmers on the Flats to counter increased pumping costs related to higher river levels caused by water storage behind Corra Linn Dam.

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Kootenay Lake 2008 Summary

Throughout 2008, FortisBC (the Applicant) regulated the level of Kootenay Lake below the maximum limits prescribed by the 1938 Kootenay Lake Order. The maximum instantaneous water level for the lake at Queens Bay was observed at 12:15 PST on June 4th at elevation 533.303 metres¹ (1749.68 feet). The minimum instantaneous water level was observed at 10:50 PST on April 9th at elevation 529.704 metres (1737.87 feet). Kootenay Lake discharged 22.0 cubic kilometres (17.9 million acre-feet) of water in 2008, with an average flow of 697 cubic metres per second (24,600 cubic feet per second).

The Board and the Applicant jointly determined the date of the commencement of the spring rise as April 29th.

2008 Annual Report

This Annual Report covers the operations of FortisBC with respect to their management of the water level of Kootenay Lake by controlling discharge through and around Corra Linn Dam in accordance with requirements of the Order of the International Joint Commission dated November 11, 1938. [FortisBC cooperates with BC Hydro, which also manages a lake level control structure—the Kootenay Canal Plant—at the lake’s outlet.]

Board Membership

The Board members during 2008 were as follows:

for the United States,

Colonel Michael McCormick, District Engineer, Seattle District, United States Army, Corps of Engineers, Seattle, Washington, to July 24;

Colonel Anthony Wright, District Engineer, Seattle District, United States Army, Corps of Engineers, Seattle, Washington from, July 25;

Ms. Kathy Peter, Director, USGS Idaho Science Center, United States Geological Survey, Boise, Idaho;

and for Canada,

Mr. Kirk Johnstone, Chief, Pacific Storm Prediction Centre, Environment Canada, Vancouver, British Columbia;

Mr. Glen Davidson, Director, Water Stewardship, BC Ministry of Environment, Victoria, British Columbia.

Mr. Larry Merkle and Mr. Daniel Millar provide secretariat support to the US and Canadian sections, respectively.



In 2008, Colonel Anthony Wright joined the Board of Control as the US co-Chair.

¹ All elevations are referred to G.S.C. 1928 datum.

1938 Kootenay Lake Order Sections 2(4) 2(5) and 2(6)

2(4) ...the Applicant shall be permitted to store water in the main body of Kootenay Lake to a maximum elevation of 1745.32, Geodetic Survey of Canada datum, 1928 adjustment (i.e. six feet above zero of the Nelson gauge), in accordance with the rule curve detailed in Sub-section (5).

(5) That after the high water of the spring and early summer flood and when the lake level at Nelson on its falling stage recedes to elevation 1743.32, Geodetic Survey of Canada datum, 1928 adjustment, the gates of the dam may be so operated as to retain it at said level until August 31st, and after said date, the level of the main body of the lake may be raised to elevation 1745.32, which shall be the maximum storage level until January 7, and thereafter it shall be lowered so that it shall not exceed elevation 1744 on February 1, elevation 1742.4 on March 1, and elevation 1739.32 (i.e. zero of the Nelson gauge) on or about April 1, except under extraordinary natural high inflow conditions, when sufficient gates shall be opened and remain open throughout such period of excess so as to lower the level of the main body of Kootenay Lake to the storage level at that time obtaining as above defined.

(6) ...throughout the period of flood flow in each and every year, (i.e. from the commencement of the spring rise in March or April until the level of the lake at Nelson returns to elevation 1743.32, Geodetic Survey of Canada, 1928 adjustment, on the falling stage), a sufficient number of gates and sluiceways of the dam shall be opened to provide, in conjunction with the flow through the turbines, for the lowering of the main body of Kootenay Lake ... by at least the amounts ... as follows:

Discharge from Kootenay Lake under original conditions (in second feet) [vs.] Amount of lowering to be affected on the main body of Kootenay Lake (in feet)

10,000	1.0
25,000	1.3
50,000	1.7
75,000	2.1
100,000.....	2.6
125,000.....	3.0
150,000.....	3.2
175,000.....	3.5
200,000.....	3.8
225,000.....	4.0



Kootenai River looking upstream from the Copeland Bridge in Idaho

Lake Regulation

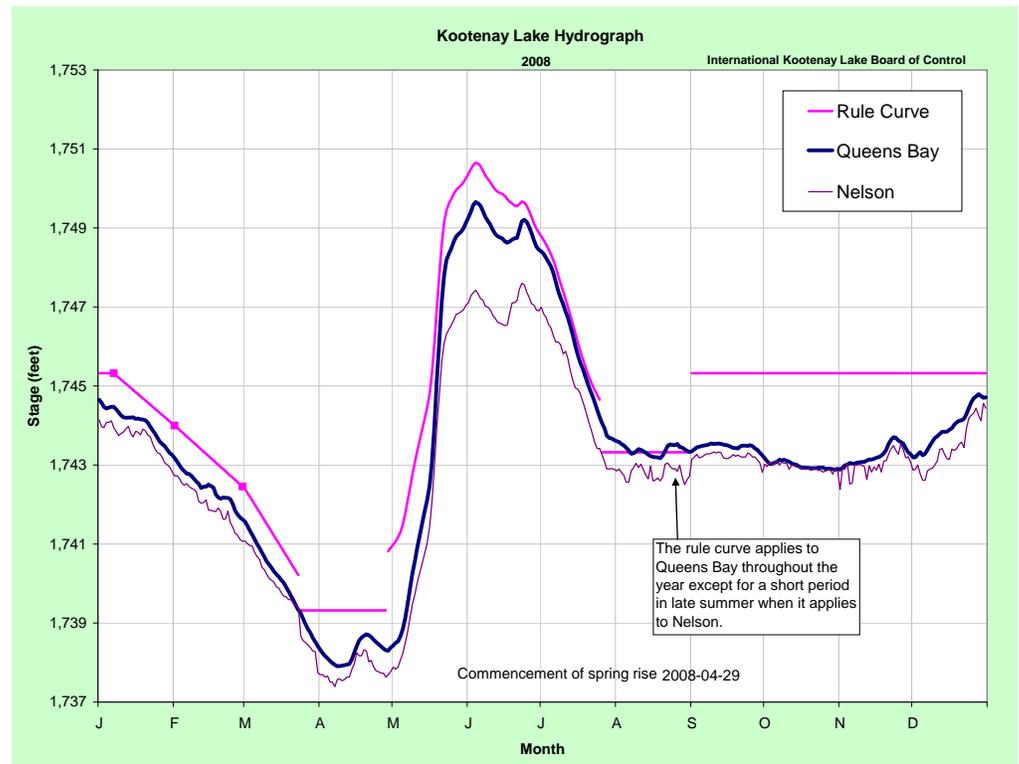
The level of Kootenay Lake was in accordance with the 1938 Order throughout 2008.

The maximum instantaneous water level of 533.303 metres (1749.68 feet) for the lake at Queens Bay was reached on June 4th at 12:15 PST. The minimum instantaneous water level was observed on April 9th at 10:50 PST, elevation 529.704 metres (1737.87 feet). Relative to the 78-year period of record (1931 to 2008 with two years missing), this year's maximum water level ranked 48th highest, and the minimum was the 6th lowest annual minimum for the lake. Water levels in the lake have ranged from a high of 537.042 metres (1761.95 feet) in 1961 to a low of 529.563 metres (1737.41 feet) in 1944.

Kootenay Lake discharged 22.0 cubic kilometres (17.9 million acre-feet) of water this year through Corra Linn Dam and the Kootenay Canal Plant, with an average flow of 697 m³/s (24,600 cfs). Relative to the 71 years of available discharge data, the annual volume of flow out of the lake was 52nd highest. Total lake outflow has ranged from a high of 33.8 km³ (27.4 million acre-feet) in 1954 to a low of 13.8 km³ (11.2 million acre-feet) in 1944. The maximum daily mean outflow was 1,957 m³/s (69,100 cfs) on June 5th; the minimum was 235 m³/s (8,300 cfs) on April 15th.

The Board and the Applicant jointly determined the commencement of the spring rise to be 00:00 PST on April 29th, 2008.

FortisBC has continued to supply the Board with complete records of the regulation of Kootenay Lake as affected by the operations of Corra Linn Dam and the Kootenay Canal Plant. Pictured below is a hydrograph showing observed water levels on Kootenay Lake and allowable elevations specified in the November 11, 1938 Order.



On October 14, FortisBC wrote to the Board to provide a status report on the water level gauges operated by the company in accordance with section six of the Order. The letter indicated that the gauges were in order and described their maintenance and upgrade plans.

In the same letter, the Applicant advised the Board that, in reference to section three of the Order, the State of Idaho had not made a request for recovery of pumping costs in Kootenai Flats since 2006.

At Issue

Since the exceedence of the rule curve in March and April of 2007 (see last year's report), the Board has considered two questions: Is the subjective method used to determine the commencement of spring rise still satisfactory?; and, During a period of exceedence, what operational regimes of the two upstream dams are consistent with the Order?

The Board's decision on the method for determining the commencement of the spring rise is to continue using weather, streamflow and snowmelt information, along with advice from the Applicant, to determine when spring rise naturally begins each year. This decision comes after seeking the opinion of the Applicant, BC Hydro, the Northwestern Division of the U.S. Army Corps of Engineers, upstream farming interests, First Nations and Tribes, and local governments. While the dam operators suggested a fixed date for spring rise, other respondents and attendees at the Board's annual meeting unanimously asked the Board to retain its current method. The Board agreed with these respondents.



Grain field stretching south up Kootenai Flats

With regard to the upstream dams, the Board has concluded that it has no authority to direct their operations, whether through the 1938 Order or the Columbia River Treaty. The Commission supported this conclusion stating that the 1938 Order is directed solely to the Applicant, and operation of the upstream dams is a matter for the two federal governments to determine. Both the Commission and the upstream dam operators—BC Hydro and the Northwestern Division of the U.S. Army Corps of Engineers—have indicated an interest in raising this issue with the federal governments.

Board Meetings

The Board held its annual and public meetings in Bonners Ferry, Idaho, on September 11th, the minutes of which were delivered to the Commission shortly thereafter. Guests raised a series of questions about lake levels, dyke erosion, damage caused by wind-driven floating woody debris, and the accretion of lakeside properties into shoreline areas that the lake frequently inundates. One guest spoke about the changes in the river and lake since 1938 and recommended that the Commission reopen the Order.

Prior to the meetings, Board members along with attending IJC staff toured the Kootenai National Wildlife Refuge and the west side of Kootenai Flats to survey areas that benefit from the lake level restrictions specified in the 1938 Order.