

INTERNATIONAL KOOTENAY LAKE BOARD OF CONTROL

# 2004 Annual Report to the International Joint Commission

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## Summary

On June 1<sup>st</sup> of this year, the Applicant, Aquila Networks Canada, was purchased by the Newfoundland and Labrador-based Fortis Inc. and became FortisBC. Throughout 2004, the Applicant regulated the level of Kootenay Lake below the maximum prescribed limits according to the 1938 Kootenay Lake Order. The maximum instantaneous water level for the lake at Queens Bay was observed at 17:00 PST on June 14<sup>th</sup> at elevation 532.219 metres<sup>1</sup> (1746.13 feet). The minimum daily water level was observed on March 30<sup>th</sup> at elevation 530.027 metres (1738.93 feet). Kootenay Lake discharged 21.3 cubic kilometres (17.3 million acre-feet) of water in 2004, with an average flow of 674 cubic metres per second (23,800 cubic feet per second).

The Board and the Applicant jointly determined the commencement of the spring rise to be 00:00 PST on April 7<sup>th</sup>.

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<sup>1</sup> All elevations are referred to G.S.C. 1928 datum.

## 2004 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.]

Details leading up to the appointment of the Board by Order of the Commission dated November 11, 1938, are fully covered in the First Annual Report.

### BOARD MEMBERSHIP

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The Board members during 2004 were as follows:

for the United States,

Colonel Debra M. Lewis, District Engineer, Seattle District,  
United States Army, Corps of Engineers, Seattle, Washington;

Ms. Kathy Peter, District Chief,  
United States Geological Survey, Boise, Idaho;

and for Canada,

Mr. Kirk Johnstone, Manager, Aquatic and Atmospheric Sciences,  
Environment Canada, Vancouver, British Columbia;

Mr. James Mattison, Executive Director,  
Land and Water BC, Inc., Victoria, British Columbia  
January 1<sup>st</sup> to April 21<sup>st</sup>;

Mr. Glen Davidson, Director, Water Management  
Land and Water BC, Inc., Victoria, British Columbia  
who replaced Mr. Mattison beginning June 1<sup>st</sup>.

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

FortisBC regulated the level of Kootenay Lake in accordance with the 1938 Order throughout 2004.

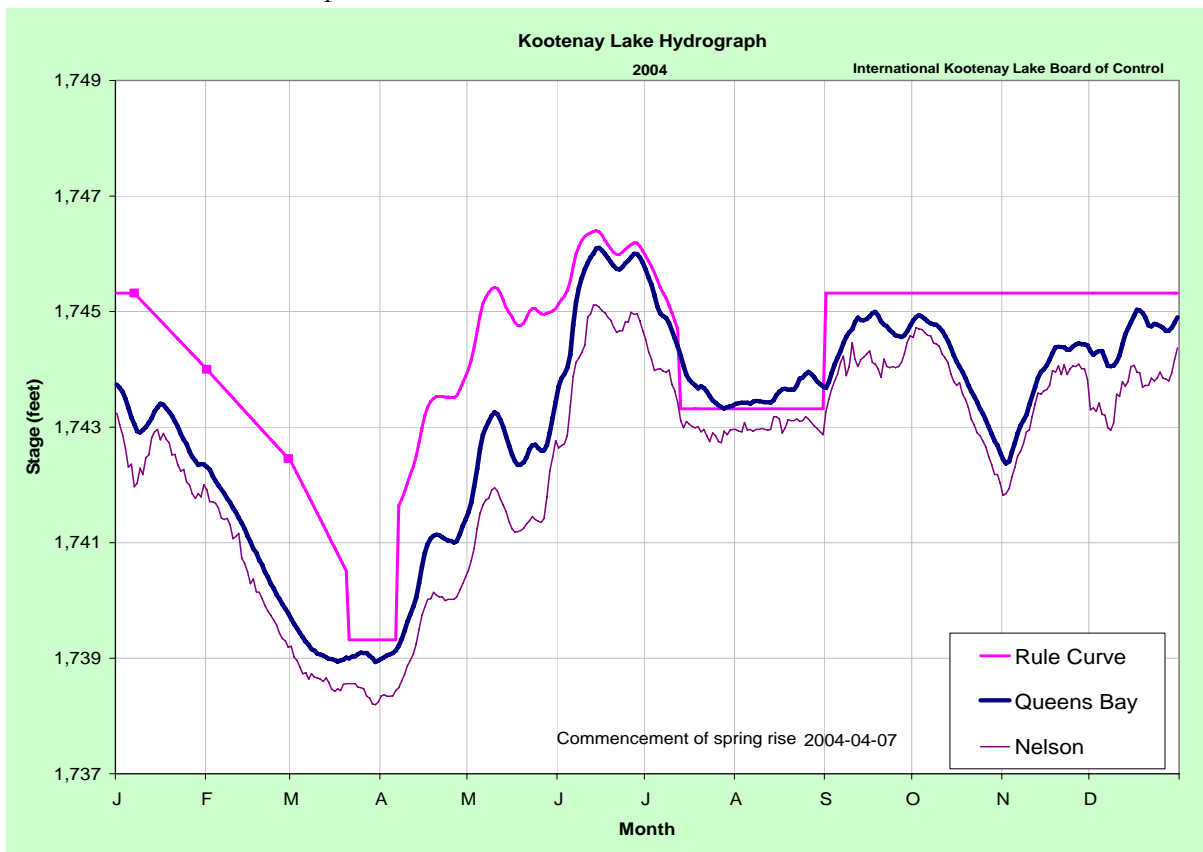
The maximum instantaneous water level of 532.219 metres (1746.13 feet) for the lake at Queens Bay was reached on June 14<sup>th</sup> at 17:00 PST. The minimum daily water level was observed on March 30<sup>th</sup>, elevation 530.027 metres (1738.93 feet). The maximum daily mean outflow was 1,130 m<sup>3</sup>/s (39,900 cfs) on July 2<sup>nd</sup>; the minimum was 326 m<sup>3</sup>/s (11,500 cfs) on March 19<sup>th</sup>. Relative to the 74-year period of record (1931 to 2004), this year's maximum water level ranked 64<sup>th</sup> highest, and the minimum ranked the 26<sup>nd</sup> lowest. 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 21.3 cubic kilometres (17.3 million acre-feet) of water this year through Corra Linn Dam and the Kootenay Canal Plant, with an average flow of 674 m<sup>3</sup>/s (23,800 cfs). Relative to the 67 years of available data, the annual volume of flow out of the lake was 49<sup>th</sup> highest. Total lake outflow has ranged from a high of 33.8 km<sup>3</sup> (27.4 million acre-feet) in 1954 to a low of 13.8 km<sup>3</sup> (11.2 million acre-feet) in 1944.

The Board and the Applicant jointly determined the commencement of the spring rise to be 00:00 PST on April 7, 2004.

According to Section 6 of the 1938 Order, the Applicant is responsible for operating a water level gauge at Nelson, among other places. 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.

Attached hereto is a hydrograph showing observed water levels on Kootenay Lake and allowable elevations specified in the November 11, 1938 Order.



The Board held its annual and public meeting in Bonners Ferry, Idaho, on October 28<sup>th</sup>. Prior to the meeting, Board members along with attending Commissioners and staff visited the Elk Mountain Hop Farm on the Kootenai flats. This farm, one of the largest in the area and owned by the Anheuser-Busch Company, has significant areas that are subject to flooding from seepage during high water periods on the river. The farm managers highlighted the potential extent of flooding and explained the high cost of such an event to the operation.





Seepage flooding in hops fields at Elk Mountain Farm, Kootenai Flats, Idaho (1997). Courtesy Elk Mountain Farms, Inc.

Board Members and Commissioners also visited the Kootenai Tribe and their fish hatchery near Bonners Ferry. The hatchery is a significant source of young sturgeon for the Kootenai system. During the visit, the community also presented their Kootenai Valley Resource Initiative program. KVRI is designed to restore and enhance the resources of the Kootenai Valley and foster community involvement and development. It is recognized as a watershed advisory group for the lower Kootenai by the Idaho Department of Environmental Quality. Their programs include wetland/ riparian conservation, burbot restoration, and white sturgeon recovery.



White Sturgeon Fry. Courtesy Kootenai Tribe