

International Osoyoos Lake Board of Control

2008 Annual Report to the International Joint Commission



TABLE OF CONTENTS

ACTIVITIES OF THE BOARD 1

 Meetings 1

HYDROLOGIC CONDITIONS IN 2008 2

 Drought Criteria 2

 Osoyoos Lake Levels 2

 River Discharges 3

APPENDIX 5

INTERNATIONAL OSOYOOS LAKE BOARD OF CONTROL MEMBERSHIP 6

Cover: Osoyoos Lake from Osoyoos, B.C. Photograph taken by Daniel Millar

International Osoyoos Lake Board of Control

2008 Annual Report to the International Joint Commission

The International Osoyoos Lake Board of Control was established on September 12, 1946, by the International Joint Commission (IJC) to carry out the provisions of the Commission's Order. The present Board operates under the authority of the Commission's Order dated December 9, 1982, and the Supplementary Order of Approval dated October 17, 1985.

ACTIVITIES OF THE BOARD

Meetings

On March 18-19, 2008, several Board members attended the International Joint Commission's Workshop on the International Watersheds Initiative (IWI) held in Vancouver, British Columbia. The workshop provided an opportunity for representatives of the IWI, IJC boards, and IJC Commissioners and staff to review progress, exchange ideas, and discuss the future direction of the IWI. At the workshop, the Board Chairs provided the Commissioners with a status report on the Osoyoos Lake Order renewal process.

On September 9, 2008, the Board held its annual Board and Public meetings in Oroville, Washington. At the Board meeting, the Washington Department of Ecology discussed the results of the Okanogan channel capacity verification survey conducted in 2006-07. The Board also discussed the funding and initiation of studies that were recommended in the Plan of Study prepared for addressing the renewal of the Osoyoos Lake Orders. The Okanogan Public Utility District provided Board members and IJC Commissioners and staff with a tour of the Enloe Dam Relicensing and Shanker's Bend Projects on the Similkameen River. The Orders renewal was the main topic of discussion at the public meeting. Minutes for the both meetings are available to the public at http://www.ijc.org/conseil_board/osoyoos/en/osoyoos_home_accueil.htm.

On October 21-23, 2008, several Board members attended a conference in Kelowna, B.C. on Okanogan Basin water issues entitled One Watershed - One Water. The conference was sponsored by the Canadian Water Resources Association and the Okanogan Basin Water Board.

The Board did not participate in the Commission's Fall Semi-Annual meeting in Ottawa on October 30, 2008. Having recently attended the Osoyoos Board's public and annual meetings, the Commission felt that they were up to date on Osoyoos issues.

During 2008, the Board met by teleconference on January 17, March 11, April 18, and June 6 to advance implementation of the Plan of Studies and review and approve four priority statements of work.

HYDROLOGIC CONDITIONS IN 2008

Drought Criteria

Condition 8 of the Commission's Order of Approval dated December 9, 1982, provides three criteria for declaring a year of drought. In a year of drought, the level of Osoyoos Lake during summer may be managed within a wider range as compared to non-drought years. The actual water-level ranges are discussed in the next section. During 2008, none of the drought criteria were met (table 1) and lake levels were managed within the non-drought range for the entire year.

Table 1. Summary of drought criteria and actual values in 2008. [ac-ft, acre-feet; ft, feet]

Criteria for declaring a drought	Actual value in 2008	Drought criteria met?
Condition 8(a) - Volume of flow in the Similkameen River at Nighthawk, WA, for the period April through July is less than 1 million acre-feet	1,221,000 ac-ft	No
Condition 8(b) - Net inflow to Okanagan Lake for the period April through July is less than 195,000 acre-feet	306,380 ac-ft	No
Condition 8(c) - Level of Okanagan Lake in June or July is less than 1,122.80 feet (Canadian Geodetic Survey Datum)	1,123.74 feet	No

Osoyoos Lake Levels

Throughout any given year, the level of Osoyoos Lake may fluctuate in accordance with criteria specified in the IJC's Order of Approval dated December 9, 1982. Lake levels are influenced naturally by discharge in the Okanagan and Similkameen Rivers and by the operation of Zosel Dam, situated at the outlet of the lake. The Oroville-Tonasket Irrigation District operates Zosel Dam under authority from the State of Washington, Department of Ecology.

The blue area in figure 1 shows the authorized range of normal operating elevations, 909.0 to 911.5 feet (277.06 to 277.83 meters) in the winter months and 911.0 to 911.5 feet (277.67 to 277.83 meters) in summer. The area contained within the dotted line in figure 1 shows the authorized range of elevations, 910.5 to 913.0 feet (277.52 to 278.28 meters) that may be used to manage storage from April 1 to October 31 if at least one of the drought criterion listed in table 1 is declared in effect by the Board. Condition 9 of the 1982 Order recognizes that backwater from high flow in the Similkameen River and (or) excessive flow in the Okanagan River may cause Osoyoos Lake levels to rise above the authorized range.

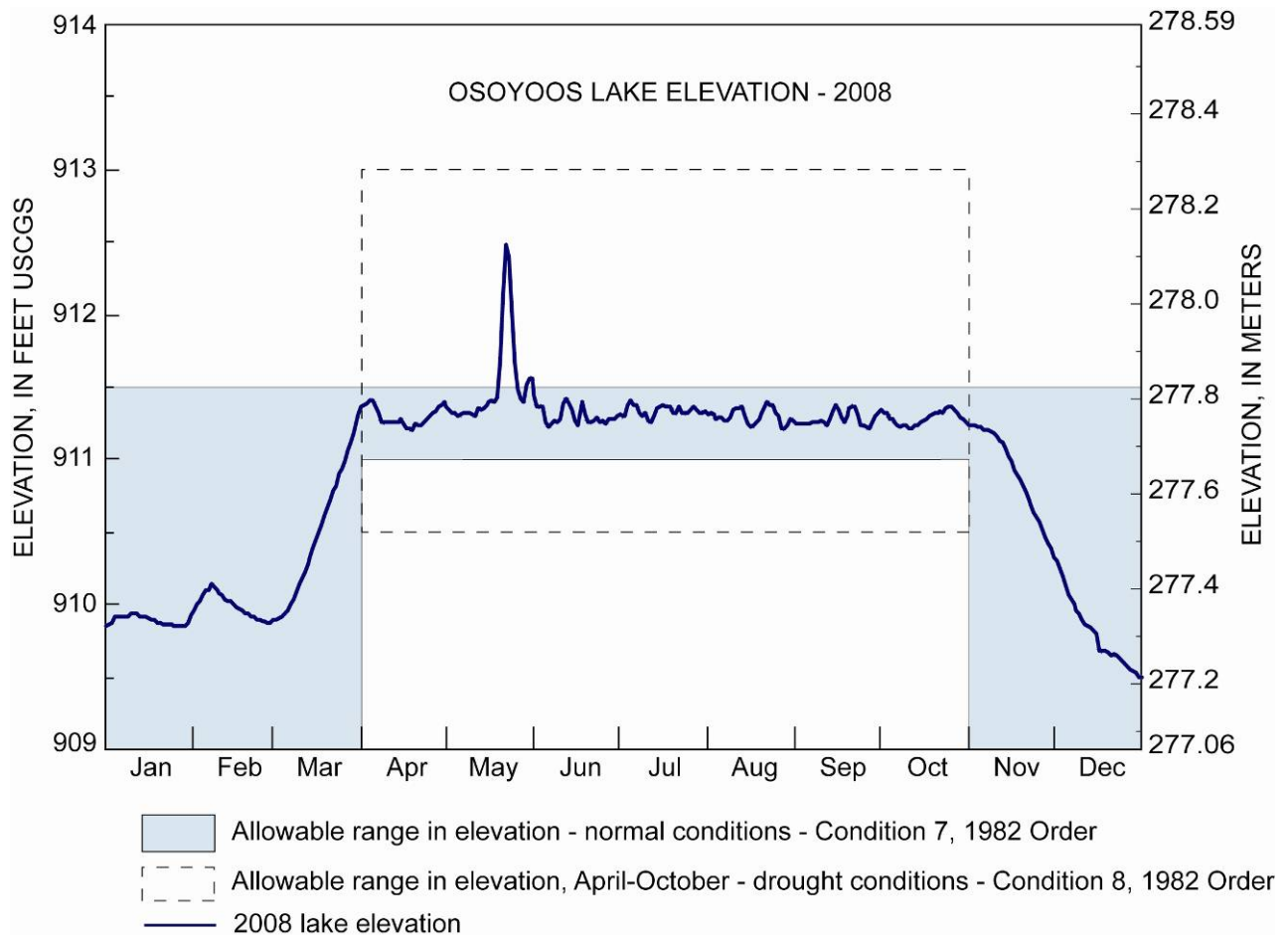


Figure 1. Osoyoos Lake elevation in 2008, and the range of lake levels permitted under the IJC Order of Approval dated December 9, 1982.

Since a year of drought was not declared, lake levels were maintained between 909.0 and 911.5 feet for the entire year (figure 1). From May 19-25, 28-31, 2008, lake levels were above 911.5 feet in response to backwater in the Okanogan River caused by high flows in the Similkameen River. The maximum instantaneous elevation on Osoyoos Lake of 912.54 feet (278.14 meters) occurred on May 22, 2008. The maximum daily-mean elevation of 912.48 feet (278.12 meters) also occurred on May 22. The minimum instantaneous elevation of 909.49 ft (277.21 meters) occurred on December 31.

River Discharges

The maximum instantaneous discharge of the Okanogan River at Oroville (downstream from Zosel Dam) occurred on June 11, 2008, and was 2,160 cubic feet per second (61.2 cubic meters per second). The peak flow did not exceed 2,500 cubic feet per second (70.8 cubic meters per second); thus, the capacity of the outlet channel was not verified in accordance with Condition 3 of the 1985 Order. The last occurrence of an instantaneous discharge in the Okanogan River at Oroville greater than 2,500 cubic feet per second was on June 16, 2006 (2,690 cubic feet per second). In November, 2007, the State of Washington submitted HEC-RAS model results to the Board, thus completing the 2006 channel capacity analysis. The results verified the conveyance of the Okanogan River above Zosel Dam is at least 2,500

cubic feet per second at a lake elevation of 913 feet. The assurance of conveyance upstream of the dam is included in condition 4 of the 1985 Supplementary Order of Approval and is in accord with the Board's requirements for step-backwater hydraulic analysis as approved in their September 16, 1998 meeting.

The maximum instantaneous discharge of the Similkameen River occurred on May 20, 2008, and was 20,300 cubic feet per second (575 cubic meters per second). The maximum daily-mean discharge of 19,700 cubic feet per second (558 cubic meters per second) occurred on May 21. High flow in the Similkameen River created variable backwater at the Okanogan River at Oroville gaging station from May 16 to June 24.

Data on Osoyoos Lake elevation and relevant river flows for 2008 are summarized in the appendix and river hydrographs are depicted in figure 2.

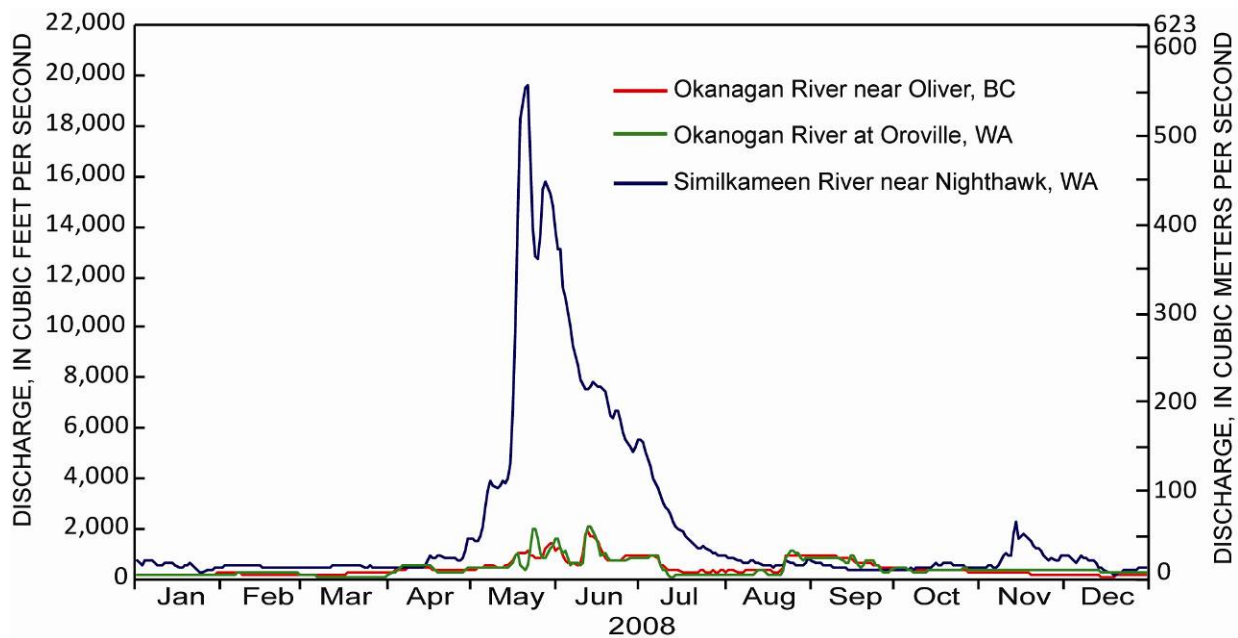


Figure 2. Hydrographs of daily-mean discharge for the Similkameen and Okanogan (Okanogan in Canada) Rivers, 2008.

APPENDIX

OSOYOOS LAKE LEVELS, INFLOWS, AND OUTFLOWS

[cubic feet per second, cfs; cubic meters per second, cms]

A. International gaging stations in operation throughout the year:

(1) For Stage Records

Osoyoos Lake near Oroville, Washington
Okanogan River at Oroville, Washington (auxiliary gage)

(2) For Discharge Records

Okanogan River near Oliver, British Columbia
Okanogan River at Oroville, Washington (base gage)
Similkameen River near Nighthawk, Washington

(3) Reports

Monthly summary reports of stage and discharge data were forwarded to the International Joint Commission and to the Board of Control members.

B. Compliance with the lake levels specified in the Orders of Approval is measured at the station "Osoyoos Lake near Oroville," where elevations are expressed in terms of USCGS datum.

C. Osoyoos Lake

Maximum daily mean elevation	912.48 feet (278.124 meters)– May 22
Maximum instantaneous elevation	912.54 feet (278.140 meters)– May 22
Minimum instantaneous elevation	909.49 feet (277.213 meters)– December 31
Lake elevation at time of peak flow for Okanogan River at Oroville	911.48 feet (277.819 meters)– June 11

D. Okanogan River at Oroville

Maximum instantaneous discharge	2,160 cfs (61.2 cms)– June 11
Maximum daily mean discharge	2,100 cfs (59.5 cms)–June 12
Annual mean discharge	464 cfs (13.1 cms)



The annual mean discharge was 69 percent of the 66-year average of 675 cfs.

E. Similkameen River near Nighthawk

Maximum instantaneous discharge	20,300 cfs (575 cms)– May 20
Maximum daily mean discharge	19,700 cfs (558 cms)– May 21

High Similkameen River discharges created variable backwater at the Okanogan River at Oroville gaging station for the period May 16 – June 24.

INTERNATIONAL OSOYOOS LAKE BOARD OF CONTROL MEMBERSHIP

 Canadian Membership	 U.S. Membership
<p>Kirk Johnstone Chair, Canadian Section Chief, Pacific Prediction Centre Meteorological Service of Canada Environment Canada 201 – 401 Burrard Street Vancouver, British Columbia V6C 3S5 Phone: (604) 664-9120 Fax: (604) 676-2666 Email: Kirk.Johnstone@ec.gc.ca</p>	<p>Dr. Cindi Barton Chair, United States Section Center Director USGS Washington Water Science Center U.S. Geological Survey 934 Broadway, Suite 300 Tacoma, Washington 98402-4300 Phone: (253) 552-1602 Fax: (253) 552-1581 Email: cbarton@usgs.gov</p>
<p>Glen Davidson Director, Management and Standards Branch Water Stewardship Division BC Ministry of Environment PO Box 9340 STN PROV GOVT Victoria, British Columbia V8W 9M1 Phone: (250) 387-6949 Fax: (250) 387-1898 Email: Glen.Davidson@gov.bc.ca</p>	<p>Colonel Michael McCormick to July 24, then Colonel Anthony Wright District Engineer Seattle District U.S. Army Corps of Engineers P.O. Box 3755 Seattle, Washington 98124-3755 Phone: (206) 764-3690 Fax: (206) 746-6544 Email: Anthony.Wright.COL@usace.army.mil</p>
<p>Brian Symonds Director, Regional Operations Water Stewardship Division BC Ministry of Environment 102 Industrial Place Penticton, British Columbia V2A 7C8 Phone: (250) 490-8255 Fax: (250) 490-2331 Email: Brian.Symonds@gov.bc.ca</p>	<p>Kris Kauffman Civil Engineer 12228 Nyanza Road SW. Lakewood, Washington 98499-1444 Phone: (253) 581-9752 – Message Email: waterrightsinc@msn.com</p>
<p>Secretaries</p>	
<p>Daniel Millar Secretary, Canadian Section Water Issues Environment Canada 201 - 401 Burrard Street Vancouver, British Columbia V6C 3S5 Phone: (604) 664-9345 Fax: (604) 713-9527 Email: Daniel.Millar@ec.gc.ca</p>	<p>Robert Kimbrough Secretary, U.S. Section Assistant Center Director for Hydrologic Data USGS Washington Water Science Center U.S. Geological Survey 934 Broadway, Suite 300 Tacoma, Washington 98402-4300 Phone: (253) 552-1608 Fax: (253) 552-1581 Email: rakimbro@usgs.gov</p>