

Annual Report  
to the  
International Joint Commission  
for  
Calendar Year 2003



**INTERNATIONAL JOINT COMMISSION  
UNITED STATES AND CANADA**



**International Osoyoos Lake Board of Control**

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April 1, 2004

Ms. Lisa Bourget  
Secretary, United States Section  
International Joint Commission  
1250 23rd Street NW., Suite 100  
Washington, DC 20037

Dr. Murray Clamen  
Secretary, Canadian Section  
International Joint Commission  
234 Laurier Avenue W., 22nd Floor  
Ottawa, Ontario K1P 6K6

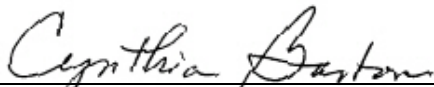
Dear Ms. Bourget and Dr. Clamen:

We hereby submit the Calendar Year 2003 Annual Report of the International Osoyoos Lake Board of Control.

The report sets forth the operation of the control works on Osoyoos Lake under the terms of the Commission's Orders dated December 9, 1982, and October 17, 1985.

Respectfully submitted:  
For the United States

For Canada



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Cynthia Barton, Ph.D., LG, LHG  
Chair, United States Section  
Director, Washington Water Science Center  
Water Resources  
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Tacoma, Washington



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Kirk Johnstone  
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**INTERNATIONAL OSOYOOS LAKE BOARD OF CONTROL**  
**ANNUAL REPORT**  
**for**  
**CALENDAR YEAR 2003**

The International Osoyoos Lake Board of Control was established on February 12, 1986, by the International Joint Commission (IJC) to carry out the provisions of the Commission's Order of Approval dated December 9, 1982, and the Supplementary Order of Approval dated October 17, 1985.

**ACTIVITIES OF THE BOARD**

On April 8, 2003, the Board notified the Washington State Department of Ecology in writing that based on snowmelt forecasts, drought conditions for operating Osoyoos Lake would be invoked in 2003 and summer lake levels would be managed between 910.5 and 913.0 feet (277.52 and 278.28 meters) per the Order. A notice of the drought declaration (shown below) was published in local newspapers on both sides of the International Border and was posted on the Board's public Web page. The Board received no public complaints about the 2003 lake levels.

**NOTICE OF OSOYOOS LAKE  
DROUGHT YEAR OPERATION**

The U.S. National Weather Service's April 8, 2003 forecast of volume of flow in the Similkameen River at Nighthawk, Washington, for April through July 2003 is 950,000 acre-feet. This forecast meets the criteria for a drought-year declaration for Osoyoos Lake as specified in Condition 8a of the International Joint Commission Order of Approval dated December 9, 1982. Between April 1, 2003, and October 31, 2003, the State of Washington is required to maintain a lake elevation of at least 910.5 feet USCGS (U.S. Coast and Geodetic Survey), and may raise Osoyoos Lake to a maximum elevation of 913.0 feet USCGS. This drought declaration will be rescinded before October 31 if hydrologic conditions change such that none of the drought criteria specified in Condition 8 continue to be met.

International Osoyoos Lake Board of Control  
April 8, 2003

For additional information contact:

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<http://wa.water.usgs.gov/IJC/osoy.homepage.html>

During drought conditions the maximum allowable level of Osoyoos Lake from April through October is increased from 911.5 to 913.0 feet (277.82 to 278.28 meters) to allow for additional water storage. On May 5, 2003, the State of Washington and Province of British Columbia reached an informal agreement to transfer the top one-half foot of Osoyoos Lake drought storage to Okanagan Lake and/or Skaha Lake (located upstream), thereby limiting the maximum level on Osoyoos Lake to 912.5 feet (278.13 meters) for the duration of the drought period. This top half foot (912.5-913.0 feet) (0.15 meter between 278.13 and 278.28 meters) may negatively impact tourism and groundwater, and may encroach on properties surrounding the lake.

Also on April 8, 2003, the Board participated in a video teleconference with the IJC. The Board presented a brief overview of Osoyoos Lake, Zosel Dam, and the Osoyoos Lake Orders of Approval, which have an expiry date of 2013. In a discussion of the Orders

renewal process, the Board briefly reviewed the type of studies that may be needed prior to renewal, and the key steps of a renewal work plan.

A formal meeting of the Board was held on September 9, 2003, in Osoyoos, B.C. Topics of discussion included channel capacity below Osoyoos Lake, the re-issuance of the Osoyoos Orders of Approval, and hydrologic conditions and compliance with the Orders in 2003.

A public meeting was held in the evening following the Board meeting. Board members gave presentations on the IJC and Osoyoos Lake Board of Control, hydrologic conditions and management of lake levels in 2003, and the Orders renewal process. The presentation on Orders renewal summarized the basic components of the renewal process, including: identifying the applicant; developing a draft Plan of Study; obtaining input from the public; finalizing the Plan of Study; conducting studies; holding Commission consultations; and renewing or approving a new Order. Following the presentation, members of the public suggested additional issues that might be considered in the renewal process, including the timing and range of lake level fluctuations, and the link between lake levels and water quality, irrigation, recreation, and fisheries.

### **OSOYOOS LAKE LEVELS IN 2003**

Throughout any given year, the level of Osoyoos Lake may fluctuate in accordance with criteria outlined 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.

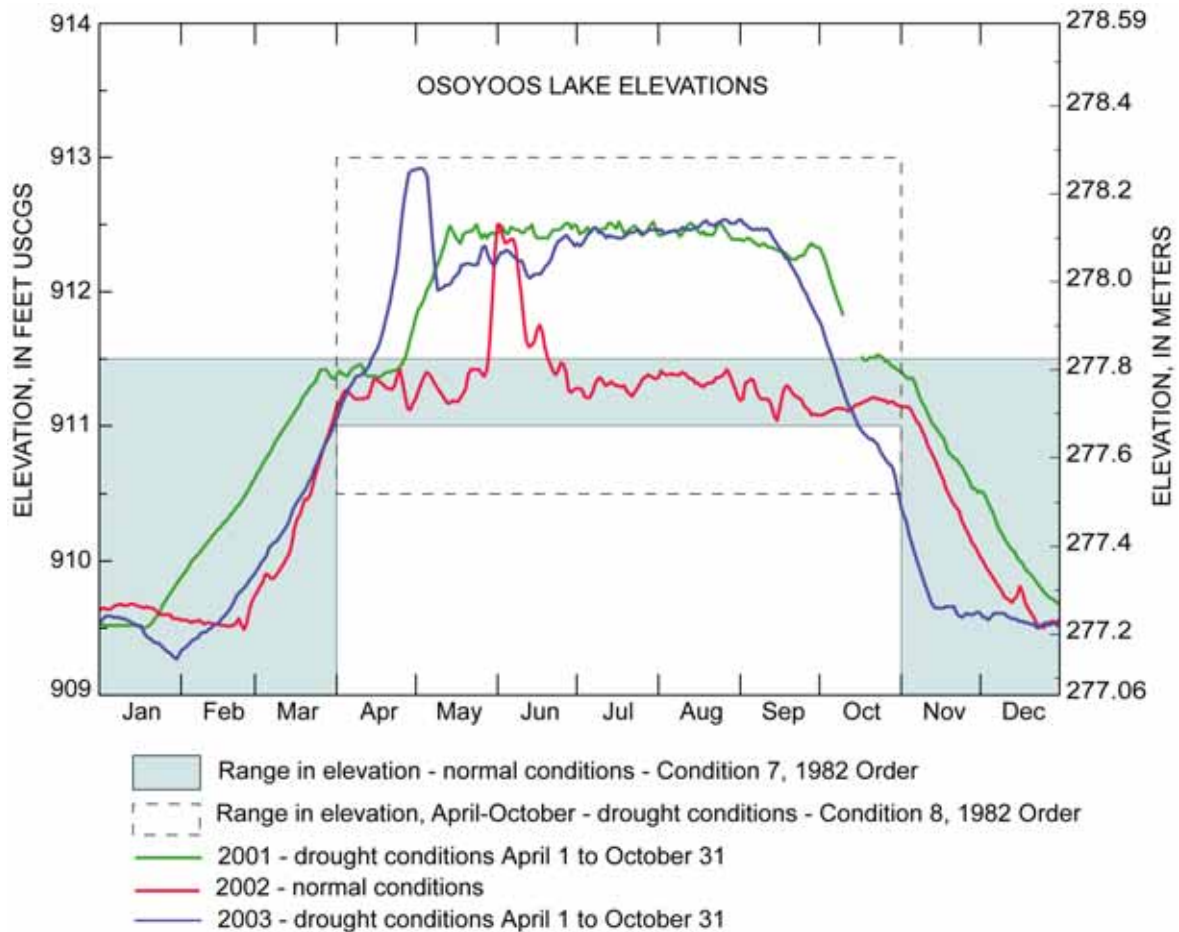
The blue area in figure 1 shows the authorized range of normal operating elevations, 909.0 to 911.5 feet (277.06 to 277.83 meters). The area contained within the dotted line in figure 1 shows the authorized range of elevations, 910.5 to 913.0 feet (277.52 to 278.28 meters) that may be used to manage storage from April 1 to October 31 if at least one of the drought criterion described in Condition 8 of the Order are declared in effect by the Board. Condition 9 of the 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.

During 2003, all three drought criteria set forth in Condition 8 of the Order of Approval were met (table 1). As a result, lake levels were maintained in the authorized range of 910.5 to 913.0 feet (277.52 to 278.28 meters) from April 1 to October 31.

**Table 1.**—Hydrologic conditions in 2003 compared to drought criteria.

<b>Criteria</b>	<b>Actual value in 2003</b>	<b>Drought criteria met?</b>
Volume of flow in the Similkameen River at Nighthawk, WA for the period April through July is less than 1 million acre-feet	779,500	Yes
Net inflow to Okanagan Lake for the period April through July is less than 195,000 acre-feet	138,000	Yes
Level of Okanagan Lake in June or July is less than 1,122.80 feet (Canadian Geodetic Survey Datum)	1,122.46	Yes

The maximum instantaneous elevation on Osoyoos Lake of 912.95 ft (278.27 meters) occurred on May 2 and 3, 2003. The maximum daily-mean elevation of 912.92 ft (278.26 meters) occurred on May 2 and 3 (figure 1). Lake elevations greater than 912.5 (258.13 meters) in late April and early May occurred prior to the arrangement between Washington and British Columbia that limited the maximum water level to 912.5 feet for the remainder of the drought period. High river discharges and stages created backwater conditions in the Okanogan River downstream from Osoyoos Lake for 22 days in 2003; however, the backwater conditions did not cause lake levels to rise above the authorized range in 2003. (Backwater conditions did cause lake elevations above the authorized range in May and June 2002).



**Figure 1.**—Osoyoos Lake Elevations, in accordance with IJC Order of Approval dated December 9, 1982, and Supplementary Order of Approval dated October 17, 1985.

The maximum instantaneous discharge of the Okanogan River at Oroville occurred on May 5 and was 1,330 cubic feet per second (37.67 cubic meters per second). Because a flow in excess of 2,500 cubic feet per second (70.80 cubic meters per second) was not observed this year, the capacity of the outlet channel was not verified in accordance with Condition 3 of the 1985 Order. Data on Osoyoos Lake elevation and relevant river flows are summarized in appendix 1 and depicted in figures 2 and 3.

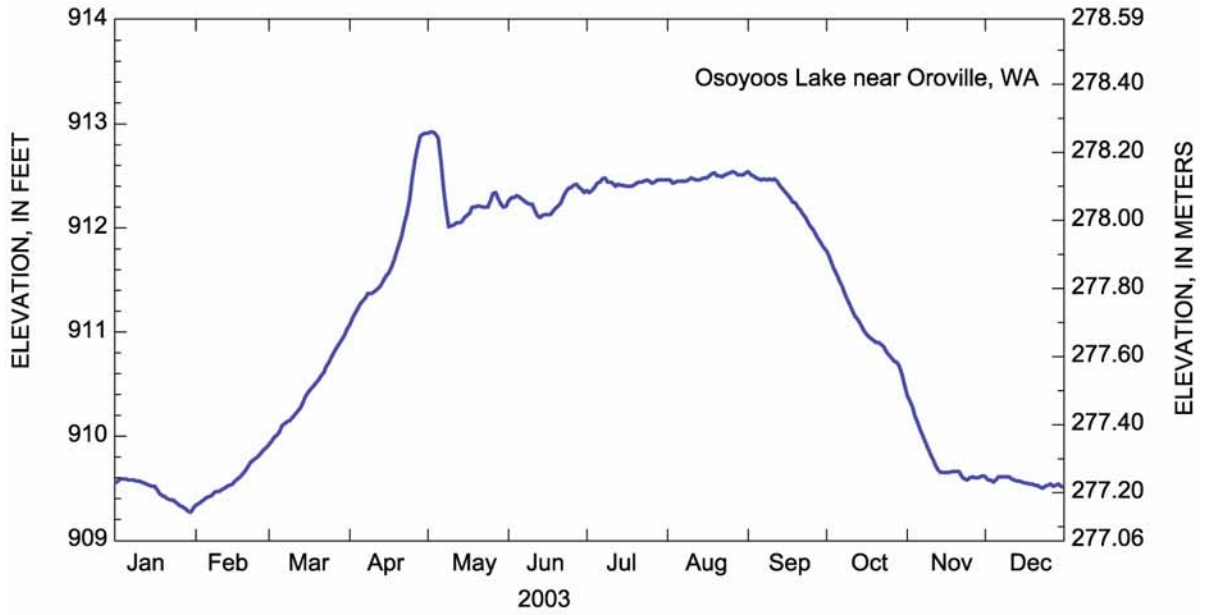


Figure 2. Hydrograph of Osoyoos Lake elevation.

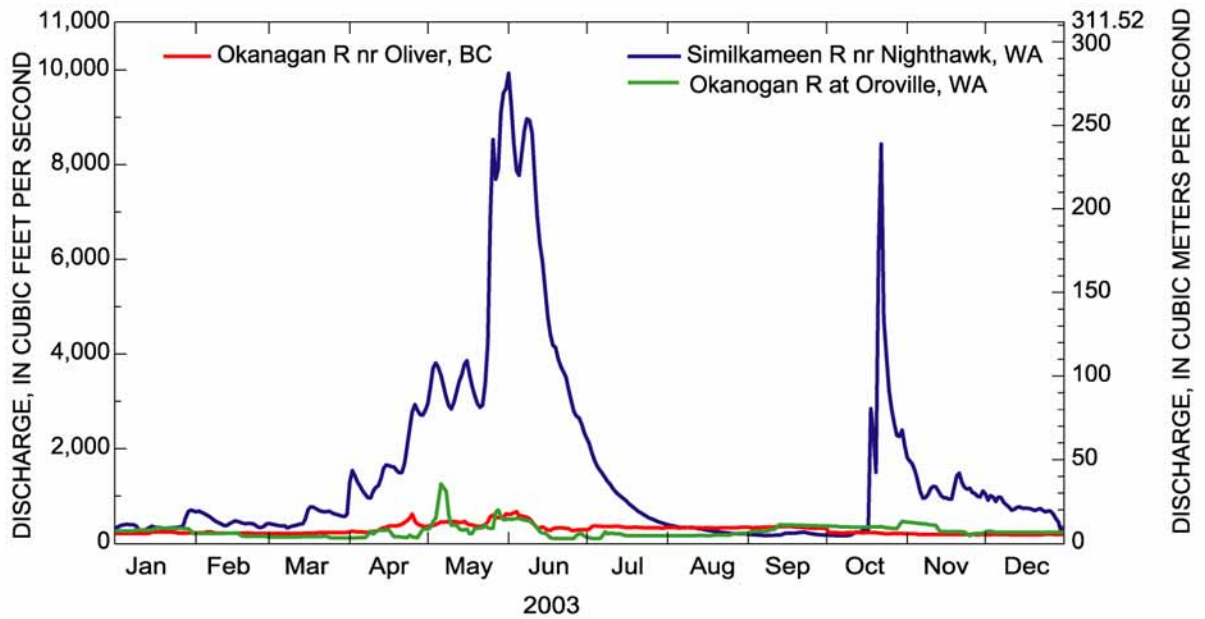


Figure 3. Hydrographs of discharge for the Similkameen and Okanogan (Okanogan in Canada) Rivers.

**APPENDIX 1.—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 near 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	912.92 feet– May 2 and 3 (278.258 meters)
Maximum instantaneous elevation	912.95 feet– May 2 and 3 (278.267 meters)
Minimum instantaneous elevation	909.26 feet– January 30 (277.142 meters)
Lake elevation at time of peak flow for Okanogan River at Oroville	912.87 feet– May 5 (278.243 meters)

D. Okanogan River at Oroville

Maximum instantaneous discharge	1,330 cfs– May 5 (37.7 cms)
Maximum daily mean discharge	1,250 cfs– May 6 (35.4 cms)
Annual mean discharge	258 cfs (7.31 cms)

The annual mean discharge was 38 percent of the 61-year average of 688 cfs.



E. Similkameen River near Nighthawk

Maximum instantaneous discharge	12,000 cfs– October 21 (340 cms)
Maximum daily mean discharge	9,930 cfs– June 1 (281 cms)

High river discharges and stages created backwater conditions for the Okanogan River at Oroville gaging station for 22 days.



## International Osoyoos Lake Board of Control Membership

 <b>Canadian Membership</b>	 <b>U.S. Membership</b>
<p><b>Kirk Johnstone</b>            Chair, Canadian Section            Manager, Aquatic &amp; Atmospheric Sciences            Environment Canada            201 – 401 Burrard Street            Vancouver, British Columbia V6C 3S5            Phone: (604) 664-9120            Fax: (604) 664-9126            Email: Kirk.Johnstone@ec.gc.ca</p>	<p><b>Cindi Barton</b>            Chair, United States Section            Director, Washington Water Science Center            U.S. Geological Survey            1201 Pacific Avenue, Suite 600            Tacoma, Washington 98402-4300            Phone: (253) 428-3600 x 2602            Fax: (253) 428-3614            Email: cbarton@usgs.gov</p>
<p><b>James Mattison</b>            Executive Director, Strategic Initiatives Div.            Land and Water British Columbia Inc.            P.O. Box 9475            STN PROV GOVT V8W 9W6            5<sup>th</sup> Floor – 609 Broughton Street            Victoria, British Columbia            Phone: (250) 387-1649            Fax: (250) 952-6237            Email: Jim.Mattison@gems7.gov.bc.ca</p>	<p><b>Colonel Debra M. Lewis</b>            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: Debra.Lewis.COL@nws02.usace.army.mil</p>
<p><b>Brian Symonds</b>            Head, Flood Hazard Management            Ministry of Water, Land and Air Protection            102 Industrial Place            Penticton, British Columbia V2A 7C8            Phone: (250) 490-8255            Fax: (250) 490-2231</p>	<p><b>Kris Kauffman</b>            Civil Engineer            12228 Nyanza Road SW.            Lakewood, Washington 98499-1444            Phone: (253) 581-9752 – Message            Email: waterrightsinc@msn.com</p>
<p><b>Daniel Millar</b>            Secretary, Canadian Section            Environment Canada            201 – 401 Burrard Street            Vancouver, British Columbia V6C 3S5            Phone: (604) 664-9345            Fax: (604) 664-9126            Email: Daniel.Millar@ec.gc.ca</p>	<p><b>Robert Kimbrough</b>            Secretary, U.S. Section            Assistant Director for Hydrologic Data            Washington Water Science Center            U.S. Geological Survey            1201 Pacific Avenue, Suite 600            Tacoma, Washington 98402-4300            Phone: (253) 428-3600 x 2608            Fax: (253) 428-3614            Email: rakimbro@usgs.gov</p>