

# MINUTES

## International Osoyoos Lake Board of Control Annual Meeting

Oroville-Osoyoos Port of Entry  
Oroville, Washington

Tuesday October 26, 2004  
2:30 PM

### Attendance

	<b>United States</b>	<b>Canada</b>
Chairs	Dr. Cynthia Barton (host)	Kirk Johnstone
Members	Col. Debra Lewis Kris Kauffman	Glen Davidson Brian Symonds
Secretaries		Daniel Millar
Guests	Commissioners: Irene Brooks, Jack Blaney Tom McAuley (Canadian Section, IJC), James Chandler (US Section, IJC), Larry Merkle (USACOE), Ray Newkirk (WA Dept of Ecology)	

### Agenda

1. Welcome and introductions Cynthia Barton
2. Review of the agenda Cynthia Barton

Dr. Barton reviewed the agenda. Brian Symonds asked the Chair to add an item to the agenda concerning the geodetic elevation of Okanogan Lake (see 5.3).

3. Resigning Board member; appointment of new Board member Kirk Johnstone

Kirk Johnstone introduced Glen Davidson, the new Canadian-section Board member replacing Jim Mattison. Mr. Davidson is the Deputy Comptroller of Water Rights for British Columbia, and is employed by Land and Water BC, Inc.

4. Business from previous meeting
- 4.1 Georeferencing outlet channel survey reference points (Ray Newkirk) Cynthia Barton

Dr. Barton reviewed the issue of Okanogan River channel capacity and georeferencing the channel survey reference points. (See Appendix 1 and 2 for details.)

Ray Newkirk, the Washington State employee responsible for the day-to-day operation of Zosel Dam, replied that the georeferencing was complete and the monuments were marked. The coordinates for the monuments are listed in the Washington Department of Ecology 2003 Annual Report of Zosel Dam/Osoyoos Lake Operation sent to the Board on September 28, 2004. Mr. Newkirk added that the procedures manual for the dam had not yet been updated with respect to the channel conveyance procedure. He will try to have that completed by next year.

Briefing material related to this issue appeared to contain contradictions. The Washington Dept. of Ecology annual report stated that 2003 was the fourth (hence 2004 the fifth) consecutive year that channel capacity above the dam had not been demonstrated by natural flows. However, the material produced by the U.S. Secretary of the Board suggested that appropriate conveyance had been demonstrated in 2002, i.e. 2,520 cubic feet per second at 912.14 feet.

In an email sent to the Board and Ray Newkirk on November 10, 2004, the U.S. Secretary of the Board verified that on June 9, 2002, daily-mean discharge in the Okanogan River at

Oroville was 2,520 cfs and the mean elevation of Osoyoos Lake was 912.14 feet.

According to the criteria for verifying channel capacity approved by the Board in September 1998, the 4 control sections shall be resurveyed at least every 10 years, commencing September 1996 (Criteria 3, Appendix 1). Therefore, the control sections shall be resurveyed in September 2006.

4.2

Re-issuance of the Osoyoos Orders in 2013

Kirk Johnstone

- Applicant's response to IJC's letter
- Draft Plan of Study charge and budget discussion

The Board has made progress on the steps it outlined last year needed in preparation for the Osoyoos Order renewal. The Board prepared both a draft Plan of Study Charge and an accompanying budget proposal. The Commission wrote to the Governor of the State of Washington asking if the state intended to seek renewal. The Governor replied in the affirmative, noting that the state and the province of BC had been discussing the issue, and adding that the State felt that water quality and fishery issues were best dealt with through existing venues not related to the Order.

Jim Chandler advised that Commission staff (not the Commissioners) had discussed the draft Plan of Study charge and budget, and offered these comments:

- The charge should clearly reflect that the Commission, not the Board, would make appointments to the Plan of Study team;
- Costs related to the Plan of Study team should be borne by the members' parent agencies, and public members of the team should volunteer their time, leaving only the actual expenses of the public meetings to be covered by the Commission;
- Members of the Plan of Study team should not represent their agency, rather, they should participate in their personal and professional capacity; and
- Tribes and First Nations should be considered for membership on the Plan of Study team.

Discussion followed.

Some parent agencies may not be in a position to sponsor a member of the Plan of Study team. The Plan of Study charge could simply state that the Commission may need to consider how it will deal with the team's costs.

Governments may wish to have a representative on the team, rather than a person acting at arm's length. Rather than the Board nominating team members, the Commission might consider seeking nominees directly from the appropriate government agencies. It would be appropriate for the province and state to elevate the priority of this issue.

While the Governor recommends that fishery issues be dealt with in other venues, this should not negate studies that relate lake levels to fish health as suggested in the draft charge.

In selecting team members from First Nations or Tribes, the Commissioners should be aware of the traditional cultural suasion to bring fishery issues to the table, and the potential expectation for compensation of those participating.

Presently, there is no conception of how many studies will be needed for the renewal, or how many researchers may wish to conduct related studies. The Plan of Study team would need to consult with scientists and the public to determine the scope of study proposals.

Mr. Johnstone suggested specific changes to the draft Plan of Study charge. The Board members decided on the following immediate actions.

**Action:** Secretaries, adjust the draft charge based on Mr. Johnstone's edits and the Board's discussion. Members, gather names for nominations. Secretaries, draft letters to be sent from the Commission to the nominees. Chairs, within one month, formally send this revised package to the Commission for decision and action.

5. New Business

5.1 Compliance with the IJC Orders in 2003-2004 Cynthia Barton

Dr. Barton reviewed the briefing material concerning compliance with the Osoyoos Lake Orders to date in 2004 (Appendix 3). Members noted that the Applicant has been operating Zosel Dam according to the provisions of the Order.

5.2 2004 drought conditions and rescindment Cynthia Barton

- Reservoir drawdown during the 2004 rescindment
- Rescindment procedures for future years
- August 2004 fish kill below Zosel Dam

Dr. Barton reviewed briefing material concerning drawdown of the lake after rescindment of drought conditions (Appendix 4). At issue was the rapid rate of the drawdown this year, and an early suggestion of a possible link to a fish kill (Appendix 5).

It's been learned that water temperature, rather than flow is the key factor in signaling fish to begin migrating upstream. However, the Board does need to be cognizant of the potential effects of rapid lake level changes, including detrimental effects to recreational use of the lake.

Through discussion, the Board came up with improved procedures for handling a drought rescindment:

- The period that the Board gives the Applicant to complete the drawdown should allow a relatively small average drawdown rate. The Applicant should be clearly advised that the target date allows a modest drawdown rate, and that higher rates could be detrimental to other uses. (The Members did not wish to be prescriptive about the drawdown rate.)
- The Applicant should be advised of a rescindment order by certified mail with receipt. The letter should be copied to the Oroville Tonasket Irrigation District since they are the day-to-day operators of the dam. The letter should also be faxed, or sent by email to the applicant and the Irrigation District on the date of issuance, and its receipt should be confirmed by telephone with the Applicant, and particularly with Ray Newkirk. It is the Board's role to ensure that the rescindment notice has been received and acted upon.
- The letter should advise the Applicant that they should immediately advise the Board if circumstances may prevent an orderly drawdown of the lake with a reasonable drawdown rate by the target date.

5.3 Okanagan Lake Water Levels Brian Symonds

One of the drought criteria (8c) for Osoyoos Lake refers to the level of Okanagan Lake. Brian Symonds advised the Board that Canadian agencies have discovered the correction factor to convert Okanagan Lake gauge readings to Geodetic Survey of Canada elevations is suspect due to possible movement of the reference bench mark and related notification procedures. Water Survey of Canada and the BC Ministry of Water Land and Air Protection are cooperating to determine the appropriate correction factor. Once determined, lake managers will need to deal with this change as it affects the lake's operating rules, and similarly will need to advise the Board about past and future application of drought condition 8c. A proposed path to resolve this issue will be brought to the Board next year.

6. Preparation for Public Meeting

6.1 Review of Agenda Cynthia Barton

Dr. Barton reviewed the agenda for the evening's public meeting. Members raised concern about the difficulty the public may have in finding the meeting location, particularly the appropriate parking lot and entrance.

7. Adjourn

## **Appendix 1**

### **Channel Capacity below Osoyoos Lake** International Osoyoos Lake Board of Control Annual Meeting, October 26, 2004

#### **BACKGROUND**

Condition 4 of the 1985 Supplementary Order of Approval calls for the Applicant (State of Washington) to ensure that the control structure for Osoyoos Lake (Zosel Dam) can pass a flow volume of at least 2,500 cubic feet per second ( $\text{ft}^3/\text{s}$ ) when the elevation of Osoyoos Lake is 913 feet and there is no appreciable backwater effect from the Similkameen River.

#### **NEW CRITERIA FOR VERIFYING CHANNEL CAPACITY**

September 1996, State of Washington petitioned the Osoyoos Lake Board of Control (OLBOC) to use annual hydrologic records for verifying the hydraulic capacity of the outlet channel and Zosel Dam.

September 1998, the OLBOC approved the following new criteria:

1. Hydrologic records of Osoyoos Lake level and Okanogan River at Oroville discharge can be used in lieu of control section surveys for verifying the hydraulic capacity of the outlet channel and Zosel Dam.
2. If the hydrologic conditions that could verify the channel's capacity do not occur for five consecutive years ( $2,500 \text{ ft}^3/\text{s}$  at lake elevation 913 feet), then the 4 control sections must be resurveyed prior to the 6<sup>th</sup> year.
3. The 4 control sections shall be resurveyed at least every 10 years, commencing September 1996.
4. A HEC-2 or equivalent step-back-water hydraulic analysis shall be made whenever a resurvey is done.

#### **ACTION ITEMS**

The State of Washington will incorporate the alternate procedures into the Zosel Dam Operating Procedures Manual and copies will be made available to the OLBOC.

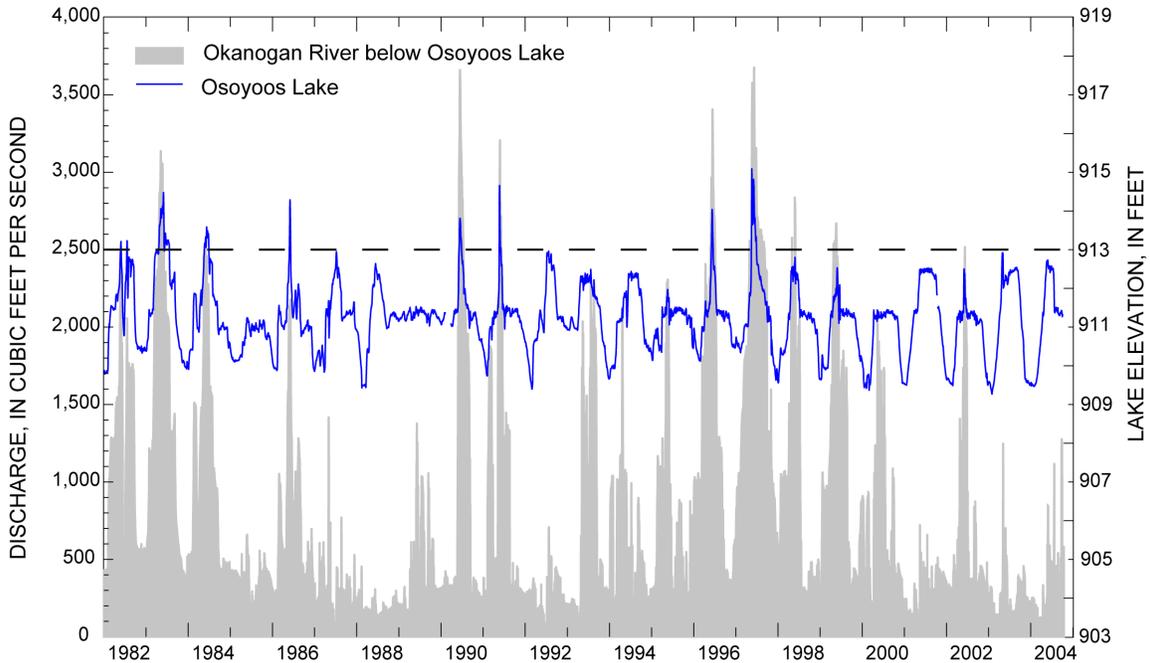
The State of Washington will mark the location of the 4 cross sections with surface monuments.

The State of Washington will georeference the location of the four cross sections by the September 2003 annual meeting of the OLBOC and will notify the Board when this is complete.

**Appendix 2.**

**Hydrologic data for verifying the hydraulic capacity of the  
Osoyoos Lake Outlet Channel**

International Osoyoos Lake Board of Control  
Annual Meeting, October 26, 2004

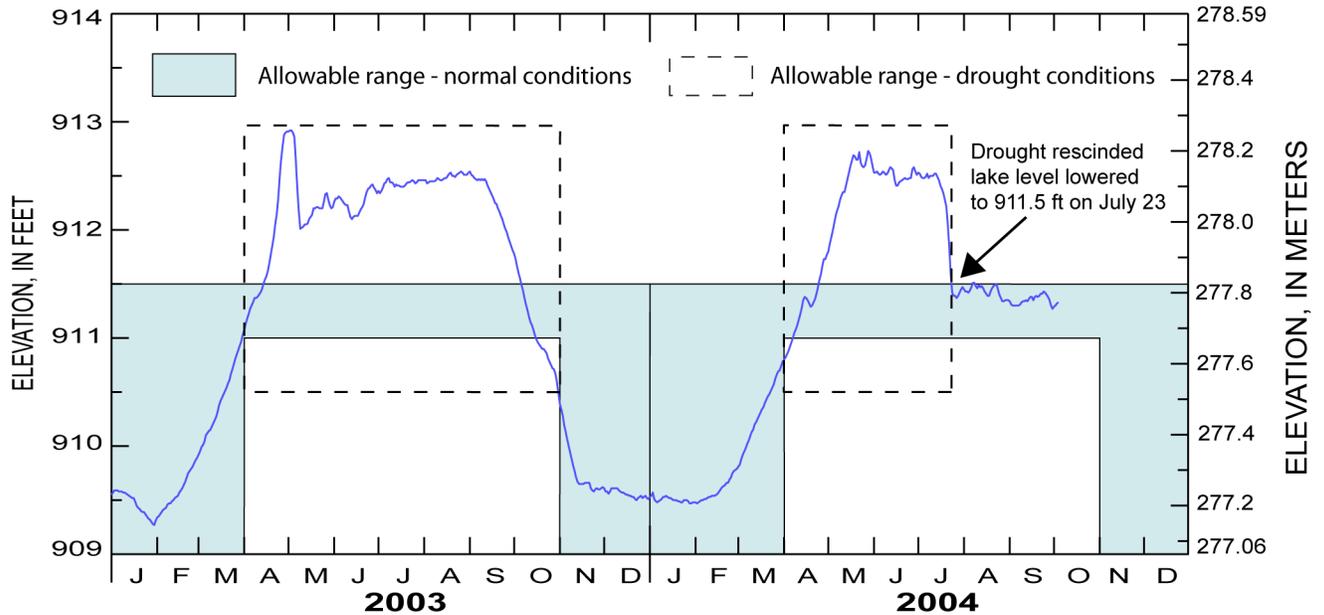


**Figure.** Osoyoos Lake elevation and daily mean discharge in the Okanogan River at Oroville, 1982-2004.

**Table.** Summary of data for years when discharge was at least 2,500 cubic feet per second, 1982-2004.

Year	Range in daily mean discharges at least 2,500 ft <sup>3</sup> /s	Range in daily mean lake elevation when discharge at least 2,500 ft <sup>3</sup> /s
1983	2,510 - 3,140	913.08 - 914.13
1984	2,510	913.30
1990	2,510 - 3,660	912.42 - 913.81
1991	2,620 - 3,210	912.22 - 914.34
1993	2,610 (instantaneous)	911.54 (instantaneous)
1996	2,500 - 3,410	912.01 - 914.04
1997	2,500 - 3,680	911.86 - 915.09
1998	2,550 - 2,840	912.33 - 912.80
1999	2,500 - 2,670	911.77 - 911.97
2002	2,520	912.14

**Appendix 3. Compliance with the IJC Orders in 2003-2004**  
 2004 IOLBC annual meeting  
 October 26, 2004



**Figure 1.** Osoyoos Lake elevation and allowable range in elevation, 2003-04.

**HYDROLOGIC CONDITIONS - 2003**

In 2003, lake levels were maintained within ranges specified by the Orders of Approval. On April 8, 2003, the Board issued a drought declaration based on the forecast volume of flow in the Similkameen R. As a result, lake levels were maintained between 910.5 - 913.0 ft from April 1 - October 30, 2003.

**HYDROLOGIC CONDITIONS - 2004**

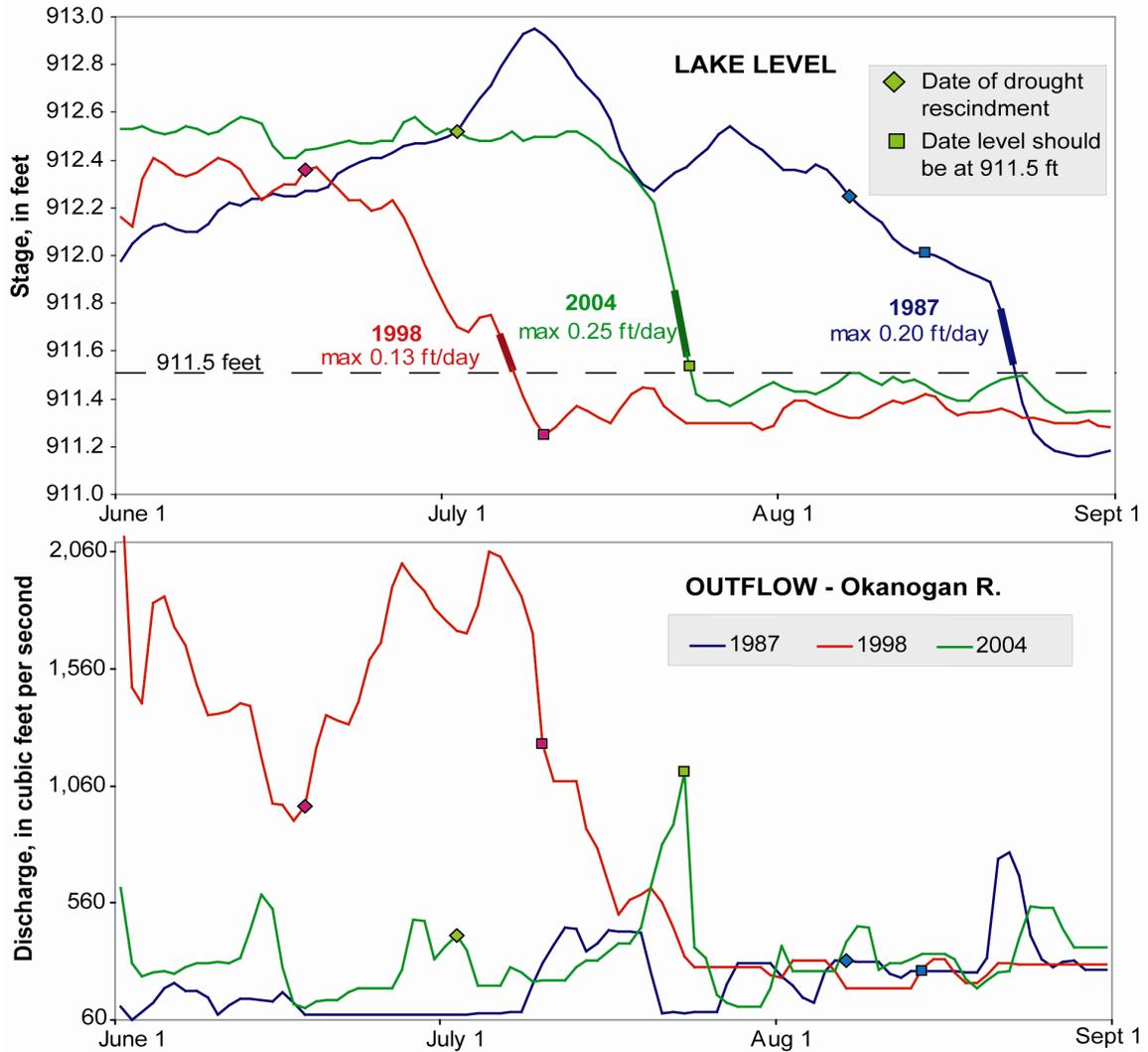
To date, lake levels in 2004 have been maintained within ranges specified by the Orders of Approval, except on August 7-8, when daily mean lake level was 911.51 ft, or 0.01 ft above the permissible range. In addition, lake levels were technically out of range for the first few days of April until those days were retroactively included in the drought period. On April 9, 2004, the Board issued a drought declaration based on the forecast volume of flow in the Similkameen R. Due to higher-than-forecast spring runoff volumes in the Similkameen and Okanagan Basins, none of the drought criteria were met, and on July 2, 2004, the Board rescinded the drought declaration. The rescindment stipulated that lake levels be lowered to the normal non-drought range of 911.0-911.5 ft by July 23. During the evening of July 23, lake levels returned to this range.

**Table 1.** Summary of drought criteria and hydrologic conditions in 2004.

<b>Drought Criteria</b>	<b>Forecast value and date issued</b>	<b>Actual value</b>	<b>Drought criteria met?</b>
Flow in the Similkameen less than 1 million ac-ft	970,000 ac-ft (April 7, 2004)	1.14 million ac-ft	No
Inflow to Okanagan Lake less than 195,000 ac-ft	260,000 ac-ft (April 7, 2004)	tentatively 260,000 ac-ft	No
Level of Okanagan Lake less than 1,122.8 ft	1,122.6 (April 7, 2004)	1122.8 ft	No

Appendix 4.

Hydrologic Data for Osoyoos Lake Drought Rescindments - 1987, 1988, 2004



Year	Days ordered for drawdown	Days used for drawdown	Average daily drawdown needed (feet/day)	Maximum daily drawdown observed (feet/day)	Average discharge needed (ft <sup>3</sup> /second)*	Maximum daily discharge during drawdown (ft <sup>3</sup> /second)
1987	7	16	0.11	0.20	510	774
1988	22	20	0.04	0.13	1,400	2,060
2004	21	11	0.05	0.25	420	1,120

\*Assuming about 80 percent of inflow is discharged as outflow

## **Appendix 5.**

### **Discussion of Fish Kill below Zosel Dam, August, 2004**

#### **BACKGROUND**

In late August 2004, the IOLBOC was informed by Washington Dept. of Ecology that a fish kill occurred around Aug. 13 in the Okanogan River just below Zosel Dam and may have been related to the rapid drawdown of Osoyoos Lake in late July, 2004. On Sept 3, 2004, the Board requested a written accounting from Ecology describing the incident.

#### **WA ECOLOGY REPORT**

Ecology's report (dated Oct. 5, 2004, attachment A), states that on Aug. 13th, 200-300 Sockeye and Chinook salmon were observed in front of Zosel Dam, and by the evening of Aug. 14th, the salmon were dead. Hundreds of dead salmon were also observed in the Similkameen River.

Ecology believes a cooling of instream water temperature was the primary reason for prompting fish to travel from the Columbia River, up the Okanogan River. Based on past experience, Ecology believes the initiation of salmon runs in the Okanogan River in the fall is determined by water temperature and not water quantity. Fish biologists contacted by the Oroville-Tonasket Irrigation District about this kill did not think the July water release caused the kill although it may have contributed to it.

#### **DISCUSSION**

The literature indicates that water temperature does play an important role in initiating sockeye salmon migration in the Okanogan River. Hyatt and others (2003) concluded that sockeye salmon migrations from the Columbia River into the Okanogan River ceases at water temperatures greater than 21 degrees C, and migration resumes when temperature decreases below 21 degrees C. Once fish move into the Okanogan River, it takes 5 to 7 days on average for fish to travel from the mouth of the river to Zosel Dam.

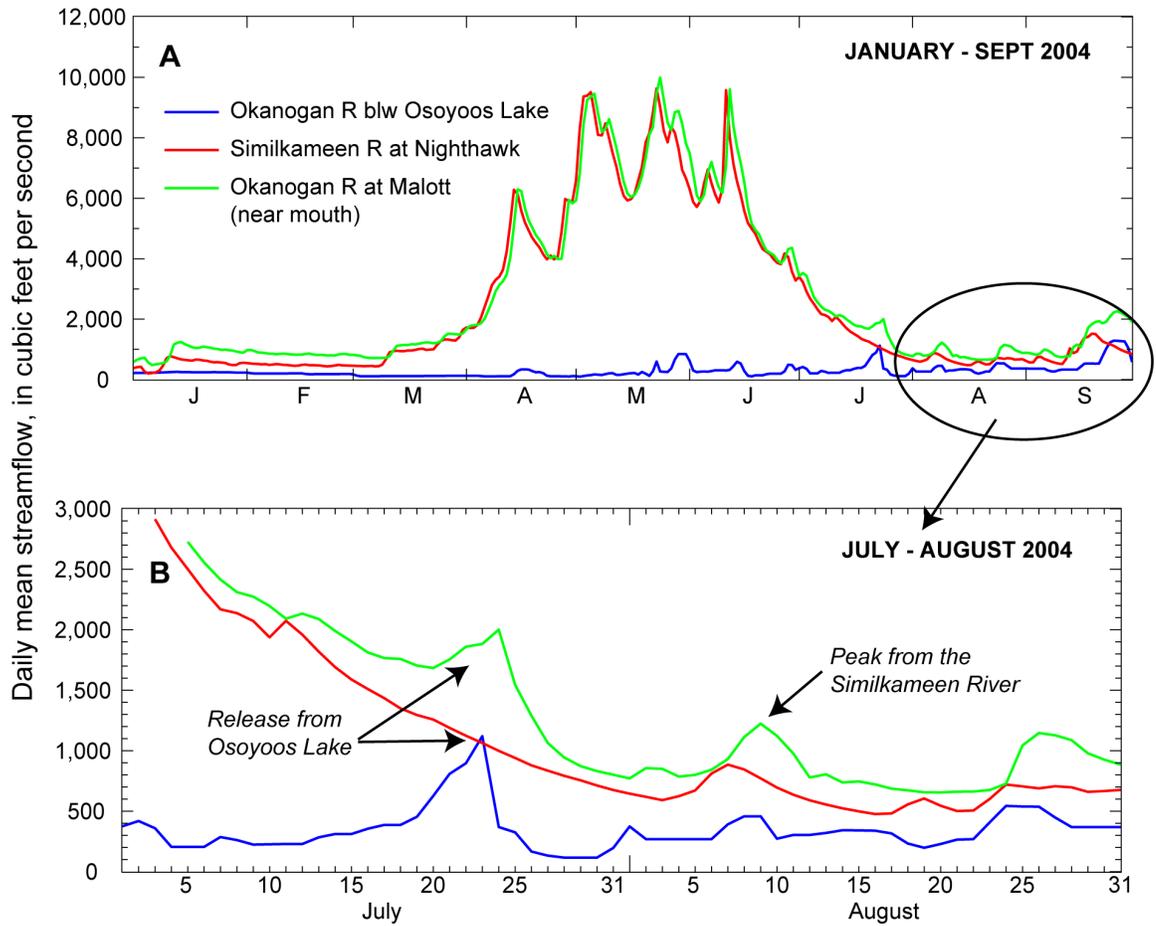
Figure 1A shows that flow in the Okanogan River near the mouth is primarily influenced by the Similkameen River. Figure 1B, shows a peak in streamflow at the mouth caused by the release from Zosel Dam on July 23, and a peak on August 9, caused by a natural increase in flow in the Similkameen River, two days prior.

In Figure 2, a continuous record of water temperature for the Similkameen River, obtained from the Washington Dept. of Ecology, shows that water temperature in the Similkameen was greater than 21 degrees C from July 16-Aug. 5, and decreased to less than 21 degrees C on Aug. 6-8. The decrease in temperature coincides with an increase in flow, most likely caused by rainfall runoff.

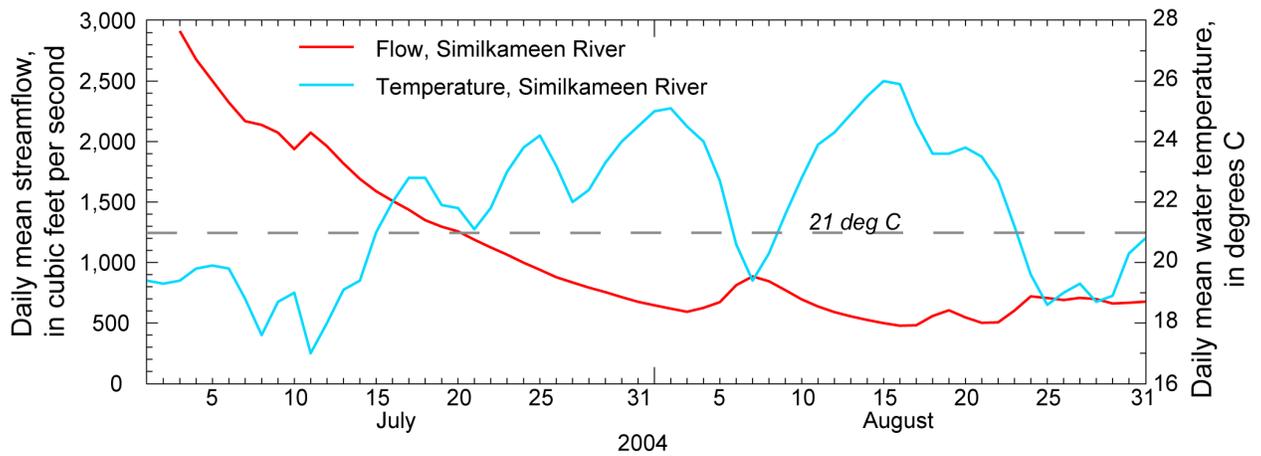
Assuming that water temperature near the mouth of the Okanogan River is primarily influenced by the temperature of the Similkameen, and using a two day travel time for Similkameen flow to reach the mouth of the Okanogan, we can assume that water temperature at the mouth of the Okanogan River may have

been less than 21 degrees C on August 8-10, or 3-5 days before the fish were observed at the base of Zosel Dam.

**REFERENCE** Hyatt, K.D., and others, 2003, Impact and adaptation responses of Okanagan River sockeye salmon (*Oncorhynchus nerka*) to climate variation and change effects during freshwater migration: stock restoration and fisheries management implications, *Canadian Water Resources Journal*, Vol. 28, No. 4, pages 689-698.



**Figure 1A & 1B - Streamflow in the Okanogan and Similkameen Rivers**



**Figure 2 - Streamflow and temperature in the Similkameen River**

## Attachment A

### Report on August 2004 fish kill at Zosel Dam

from the Washington Department of Ecology  
to the International Osoyoos Lake Board of Control  
October 5, 2004

From: "Newkirk, Ray" <rnew461@ECY.WA.GOV> 10/05/2004 02:35 PM  
To: "cbarton@usgs.gov" <cbarton@usgs.gov>  
cc: "Stohr, Joe" <jost461@ECY.WA.GOV>  
Subject: Requested report on fish kill at Zosel Dam

This report is based on information supplied by Tom Scott, Manager, Oroville-Tonasket Irrigation District to Ray Newkirk.

Around July 18th we began releasing more water thru the dam to comply with the request to go from drought storage to normal storage by July 23rd. The range of mean daily releases went from 386 cfs on July 18th to 1120 cfs on July 23rd. We reached normal storage during the evening of July 23rd with a lake elevation of 911.42 feet.

During the morning of August 13th, 200 to 300 salmon were observed in front of Zosel Dam. During the evening of August 14th the salmon in front of Zosel Dam were dead. Also, there were hundreds of dead salmon in the Similkameen River during this same time frame. The dead salmon were Sockeye and Chinook.

Apparently, a period of cool weather occurred prior to the fish kill drew the fish into the Okanogan River from the Columbia pool. Our increased releases may have contributed to this, but primarily it is cool water temperatures which draw the fish. Several years ago Bob Steele, WDFW, and I released a weekend slug of water from Osoyoos Lake during hot weather and when we were in drought storage. No fish came up the system from that release and we concluded that the fish run is determined by water temperature and not water quantity. This experiment confirmed the fact that the Okanogan River system is a thermal block and that salmon will not migrate until temperatures drop.

Both of our fish ladders were open and operating when the fish arrived, but the weather had warmed back-up, thus warming-up the water. Tom Scott has talked to fish biologists about this kill and they don't think our releases caused the kill although they may have contributed to it. Apparently, a fish kill happens almost annually this time of year, although not in the numbers we saw this year.