

MINUTES

International Osoyoos Lake Board of Control (IOLBC) of the International Joint Commission (IJC) Public Meeting

Walnut Beach Resort
Vista Room
Osoyoos, BC

Tuesday, September 10, 2013
7:00-9:00 PM

Attendance

United States

Canada

Chairs

Bruno Tassone

Members

Col. Bruce Estok

Brian Symonds
Glen Davidson

Secretary

Marijke van Heeswijk

Gwyn Graham

Guests

Rich Moy (IJC Commissioner, U.S. Section), Dr. Mark Colosimo (IJC Engineering Advisor, U.S. Section), Ted Yuzyk (IJC Engineering Advisor, Canadian Section), Al Josephy (WA Dept. of Ecology), Amy Reese (U.S. Army Corps of Engineers)

Regrets

Dr. Cynthia Barton (IOLBC Chair, U.S. Section), Kris Kauffman (IOLBC member, U.S. Section)

15 public guests. Total of about 26 (public + officials).

Minutes

1. Welcome and Introductions

Bruno Tassone welcomed and led introduction of the Board members and guests.

2. Review of the Agenda

Bruno Tassone led a review of the agenda which was adopted without change.

3. IJC and Osoyoos Order context

Bruno Tassone provided a brief overview presentation describing the IJC and the IOLBC, including their membership and functions, as well as key changes to the IJC Order and Osoyoos Lake rule curve as a result of the 2013 IJC Supplementary Order of Approval. Additional information was provided on lake level status and trends through the IOLBC website.

4. Osoyoos Lake Levels 2013

Brian Symonds gave a presentation describing the hydrological factors that affect water level changes to Osoyoos Lake during the freshet period, focusing on the backwater effect caused by high flows (e.g. >10,000 cfs) in the Similkameen River at the confluence with the Okanogan River downstream from the lake and the inflows to the lake originating upstream from regulated parts of the Okanogan River system and unregulated tributaries. There were two peak water level periods in Osoyoos Lake in 2013. The period with the highest water level occurred in mid-May (914.17 ft on May 15th) and was largely due to snowmelt driven runoff. The next period occurred in late June (912.72 ft on June 29th) and was due to rainfall associated with the same weather system responsible for intense rainfall and flooding in the Calgary area of Alberta during that time. Brian also explained that hydrologic conditions in 2013 did not trigger IJC's drought declaration criteria for Osoyoos Lake.

A presentation of the Osoyoos Lake hydrograph for 2013 through early September showed that operations at Zosel Dam have been in compliance with the new rule curve described in the 2013 Supplementary Order of Approval for Osoyoos Lake.

5. Questions and comments from the public

Stu Wells (Mayor, Town of Osoyoos) would like both the IJC and IOLBC to have more local community input for improved transparency and greater involvement of the Osoyoos and Oroville communities. Mr. Wells suggests that this may be accomplished through expanded Board membership or through some other structure. In general, he believes the IJC and IOLBC should find a way for residents of the basin to be more involved.

Ivo Tyl – identified himself as a 27-year resident of Osoyoos who has been critical over the years of the lake management process.

Regarding the 1909 Boundary Water Treaty - Article VIII, 6th Paragraph provides for suitable and adequate provisions for protection and indemnity for all affected. He is of the opinion that the new Supplementary Order doesn't honour this Article, particularly with regard to high-water conditions and flooding issues that he has experienced due to failure to implement mitigation measures with regard to Similkameen River backwater effects. Mr. Tyl feels that there are inexpensive engineering solutions to mitigate effects from the Similkameen River.

Regarding Zosel Dam, Mr. Tyl views the dam as serving to retain flash flooding and provide a reservoir for other uses. He warns that climate change will result in greater flash flooding concerns and that these situations are problematic for those living on the shore of Osoyoos Lake who have to pump water from their basement and think this should be managed better.

Regarding the Supplementary Order, Mr. Tyl feels that it has removed retention capacity from Osoyoos Lake and increases the chance of flooding, placing properties at risk with regard to sewerage and drainage. He also believes that the new lake level criteria were not properly surveyed and that property owners have not been properly compensated as per the Indian Band.

He has communicated in writing to Health Canada following the issue of e.coli detection in the potable water supply to Bayview #3, requiring special flushing. Increased lake levels have other negative impacts, including on sewage and domestic water lines and underground water. Mr. Tyl feels that water contamination in the town has increased with increased lake levels, as per the editorial in the Osoyoos Times re. the Solana Bay blue-green algae problem.

Mr. Tyl asks that the 2013 IJC Supplementary Order of Approval be rescinded and a full technical study of Osoyoos Lake be conducted to evaluate the risk of higher lake levels. He points to the 2011 Osoyoos Lake Water Forum presentations and issues related to increased incidence of waves and erosion which he feels are still an issue.

Mr. Tyl pointed out that these comments have already gone to the IOLBC by e-mail and he believes that the changes to lake level management were not properly managed.

Bruno Tassone responds to Mr. Tyl: The Board has previously responded to Mr. Tyl's concerns, and also noted that some of these issues are beyond the authority of the Board. Some of the issues might be within the jurisdiction of other agencies. Mr. Tassone also noted that the board is balancing many different interests (tourism, recreation, water supply, fish habitat, etc.) and that the new rule curve seeks to accommodate a wide range of interests.

David Smith: Where did the 911.5 ft level come from?

Bruno Tassone responds to Mr. Smith: Mr. Tassone believes the 911.5 ft level may have gone back to the 1946 Order (Mr. Tyl says it's the 1985 Order, the reference point at Osoyoos Lake). The mill pond just upstream of Zosel Dam used to be the reference point but this changed with construction of the new dam in the late 1980s. **Gwyn Graham adds** that lake levels are typically set to balance the natural inputs, outflows and consumptive uses, with the goal to generate optimal levels that work for a range of priorities. **Brian Symonds reads:** 1948-1981 lake level analysis for April 1 – October 31 lake levels were above 911.0 ft 80% of the time, between 911.0 and 911.5 ft 32% of the time, above 912.5 ft 11% of the time and above 913 ft 6% of the time. This points to a statistical rationale for a 911.5 ft operating level. **Mr Symonds adds** that original engineering studies considered 911.0 ft as a minimum elevation for the old millpond and downstream flow conditions.

Rose-Marie Voakes: Asked for clarification of the rule curve. States that every year, we get extra water between May and July. Why did we have to raise the water level May-July? Ms. Voakes does not like the fact that we allow the water level to come up in the early spring, before the freshet, because then flooding is worse when the freshet comes.

Brian Symonds responds to Ms. Voakes: We cannot release more water in the winter to make room for high spring flows, because additional winter flows would impact fish habitat. Also, if lake levels are too low, irrigation pumps would not be submerged.

Anna Warwick-Sears: What Rose-Marie is asking is why don't we keep the lake level lower before the freshet?

Al Josephy responds to Ms. Warwick-Sears: The issue is management of a small lake with a small storage capacity. If the water levels are kept low and insufficient runoff occurs in mid-late spring, then there's a problem of not enough water to maintain desired summer levels. Also, there are many fish returning below the dam (endangered steelhead in spring); there's a need to keep steelhead redds submerged, yet we cannot wash them out with flows that are too high. It's an issue of managing risk at that time of year (~March). **Mr. Symonds adds** that next year, he will present the inflow/outflow balance of Osoyoos Lake to highlight the storage effect. Given the small area of the lake, he does not think that you could gain much additional storage capacity by lowering the lake level.

Lee McFadyen: What flood years have there been and how often has backwater from the Similkameen River affected outflow from Osoyoos Lake? Secondly, how did the backwater affect the outflow?

Brian Symonds responds to Ms. McFadyen: There are both "backwater" and "backflow" effects. (In the case of backflow, water flows from south to north up the Okanogan River from the confluence with the Similkameen River; backflow conditions are rarer than backwater conditions.) The backwater effect is a hydraulic effect restricting discharge of Osoyoos Lake through the Okanogan River. This year, we saw backwater effects due to high flows in the Similkameen River.

Anna Warwick-Sears: Expressed concern over zebra mussels (invasive species). Would like support from IJC and IOLBC in communicating the issue, e.g., boat inspections at border crossings and getting Canada's Department of Fisheries and Oceans and BC Ministry of Forest, Lands and Natural Resource

Operations interested. This is an issue that affects both the U.S. and Canada with potential serious repercussions to Osoyoos Lake quality, Sockeye salmon runs, etc. She is concerned that federal legislation is slow to happen and would like help from the IJC and IOLBC in speeding it up.

Bruno Tassone responds to Ms. Warwick-Sears: He will take her suggestion and communicate it to senior decision makers in government.

Anna Warwick-Sears: Asks that if there is a dam that goes in on the Similkameen River at Princeton, can this dam incorporate a flood protection element to help prevent/reduce flooding at Osoyoos? She also would like to suggest another Osoyoos Lake Water Science Forum meeting next year, to discuss all the changes in the revised order, other issues, etc. Suggests a joint conference with the IJC and IOBLC.

Bruno Tassone responds to Ms. Warwick-Sears: He is uncertain about the proposed dam's storage capacity. A new dam may not be able to avoid all flooding; studies would be needed to assess the impact of the proposed dam on the backwater issue. **Mr. Symonds added** that Princeton is high up in the basin and a dam there would not affect water entering the system between Princeton and Nighthawk. The purpose of the dam is power generation, not flood control of Osoyoos Lake.

Lee McFadyen: Fortis is a business and they will build dam to generate power, i.e., they are not likely to be interested in preventing flooding per se. She does not think that the BC Water Act applies to enforce reservoir operations for flood management benefits.

Glenn Davidson responds to Ms. McFadyen: There would likely be some benefits from the dam for flood management, but the dam would likely have little impact on large flood events.

Stu Wells comments: We talk about what we know or have experienced, i.e., flooding. We also need to discuss/think about drought and consider climate change impacts to reservoirs further south in the U.S. Someday there will be a major drought year.

Ivo Tyl: In 1982 a proposal for a small dam was blocked (Similkameen/Okanagan uplands). It would be good to revisit the idea. It could reduce the backwater issue/change the channel.

Bruno Tassone responds to Mr. Tyl: The IOLBC will review/consider if the dam proposal can be looked at again, but this may be hard.

Bruno Tassone asked question of audience: How well are we doing on getting information out? Regarding water levels, etc.

Anna Warwick-Sears: Is volunteering the services of the Okanagan Basin Water Board to help with communication.

Stu Wells: The town of Osoyoos website has a lot of info.

Bruno Tassone asked for a show of hands about website usage by the audience: Web sites by the town of Osoyoos, IJC, and USGS are mostly used.

Comment from audience: USGS graph is great, but it would be helpful if we added explanatory text on the graph itself. Also, it would be helpful to include notices, such as "everything is working normally."

Bruno Tassone responds: The public could look at the IJC website for explanations.

David Smith: He is new to the area, and finds this meeting very informative. He learned about competing issues/interests, fish, boating, shorelines, etc.

Bruno Tassone responds to an earlier question by Ms. McFadyen: The flood of record occurred in 1894. If such a flood happened again, under natural (unregulated) conditions the Osoyoos Lake level would be about 918 ft. In 1972, the lake level was about 917 ft.

6. Adjourn

Bruno Tassone thanked the audience for attending and participating and declared the official Board Meeting adjourned.

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DRAFT

International Osoyoos Lake Board of Control

2013 Annual Public Meeting

Sept.10, 2013

Osoyoos, BC

Attendance Record:

NAME	CONTACT
David Smith	david@sdbsmith.com
Gwen Monteith	robgwen@telus.net
Lee Chapman	Lchapman@ncidata.com
Mark Pendergraft	mpendergraft@rdos.bc.ca
Ivo Tyl	
Vera Turek	vturek@persona.ca
Robin McNeil	rymcneil@shaw.ca
Ramona Sherlock	cempmoni@eastlink.ca
Rose-Marie Voakes	rgvoakes@yahoo.com
Lee McFadyen	mariposaorgf@hotmail.com
Patrick Bouillet	pboui@fastmail.fm
Sue McKortoff	smckortoff@osoyoos.ca
Anna Warwick-Sears	
Stu Wells	
Des Anderson	

The International Joint Commission Osoyoos Lake Board of Control

Public Meeting

September 10, 2013

Osoyoos, BC

Presented by:

Bruno Tassone

Chair, Canadian Section

[Bruno.Tassone@ec.gc.ca](mailto: Bruno.Tassone@ec.gc.ca)

Agenda

- **Welcome and Introductions**
- **Overview of the IJC**
- **Implementation of the New Supplementary Order 2013**
- **Consolidation of IJC Orders for Osoyoos Lake**
- **Hydrologic Conditions and Lake Levels in 2013**
- **Drought Criteria in 2013**
- **Public Comments and Questions**

International Joint Commission



- To prevent and resolve issues, the Commission...
 - Undertakes investigations
 - Holds hearings
 - Issues Orders (e.g. IJC Order of Approval for Osoyoos Lake)
- The Commission appoints Boards of Control to monitor its Orders

International Joint Commission

Lana
Pollack
U.S., Chair



Joseph
Comuzzi
Canada,
Chair



Rich Moy, U.S.



Dereth Glance, U.S.



Gordon Walker, Canada



Benoît Bouchard, Canada

Osoyoos Lake Board of Control

Canada:

- **Bruno Tassone**
Environment Canada
- **Glen Davidson**
BC Ministry of FLNRO
- **Brian Symonds**
BC Ministry of FLNRO

United States:

- **Cynthia Barton**
US Geological Survey
- **Col. Bruce Estok**
US Army Corps of Engineers
- **Kris Kauffman**
Water Resources Engineer

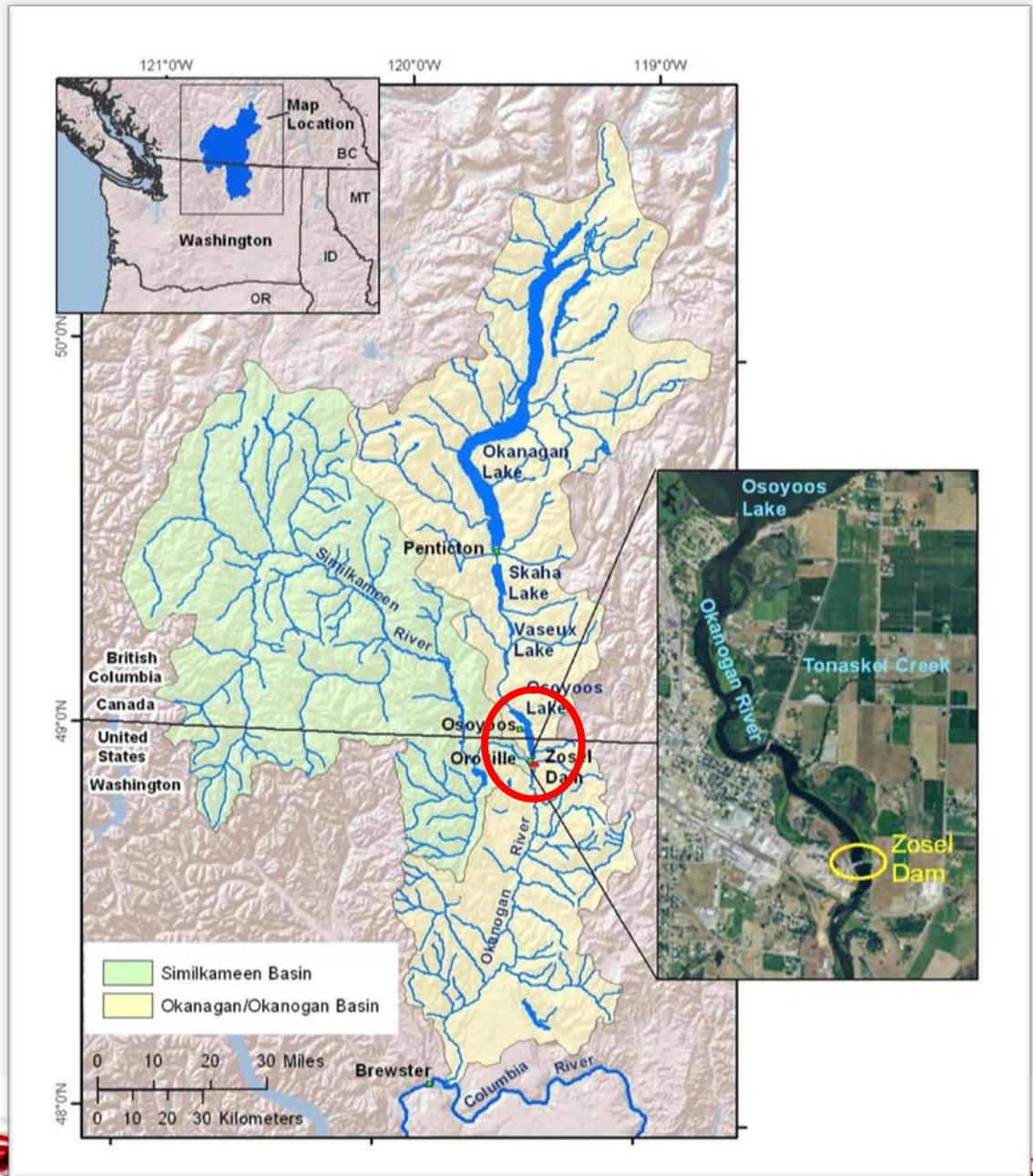
Secretariat

Gwyn Graham
Environment Canada

Marijke van Heeswijk
US Geological Survey

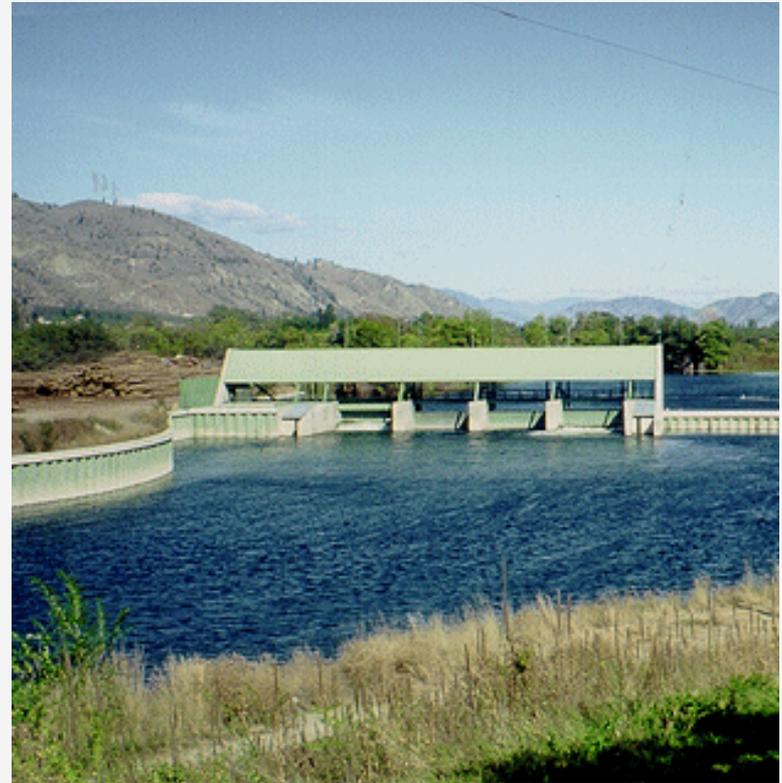


Osoyoos Lake



IJC and Osoyoos Lake

- Water levels generally controlled by Zosel Dam
- IJC issued Orders of Approval for managing lake levels (1946, 1978, 1982, 1985 and 2013)
- Appointed Osoyoos Lake Board of Control to monitor provisions of the Orders



Current Zosel Dam,
constructed in 1987

IJC Supplementary Order of Approval January 2013

- **Previous IJC Osoyoos Lake Order was due to expire in February 2013.**
- **IJC process to renew the Osoyoos Lake Order**
 - **IJC plan of study, Board recommendations, public hearings, public comment period, and renewed application for Zosel Dam by State of Washington.**
- **New Supplementary Order of Approval for Osoyoos Lake in effect as of Jan. 29, 2013**

2013 Supplementary Order

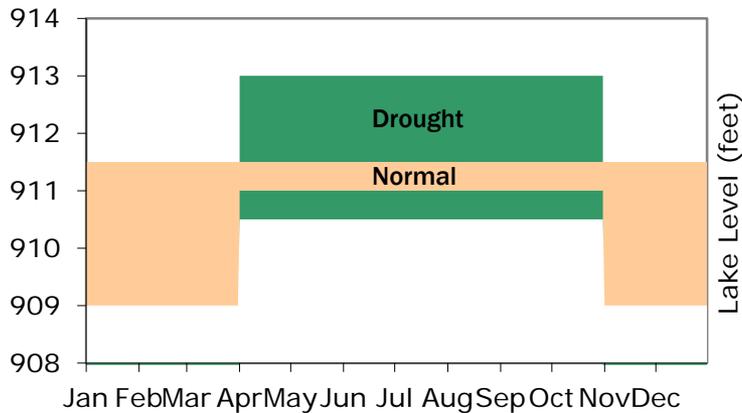
Response to Public Comments & Concerns

- **New IJC Order reflects interest in gradual seasonal water level transitions rather than abrupt changes at fixed dates.**
- **New IJC Order limits Drought Criteria to 912.5 ft due to concerns that 913 ft level was too high (issues re. flooding, erosion, riparian area, endangered species, and navigation concerns, etc.).**
- **Summer operating range in new IJC Order provides greater flexibility for range of interests (new max “normal” summer range of 912 ft) but actual summer operations are maintaining levels close to previous maximum of 911.5 ft.**
- **Board has added a Water Level information page to the IJC Board website (also linked to Town of Osoyoos website) for better communication of changes to lake levels.**
- **USGS improved Osoyoos Lake water level website (+ IJC Rule Curve).**

Key Changes in 2013 IJC Order

• Previous

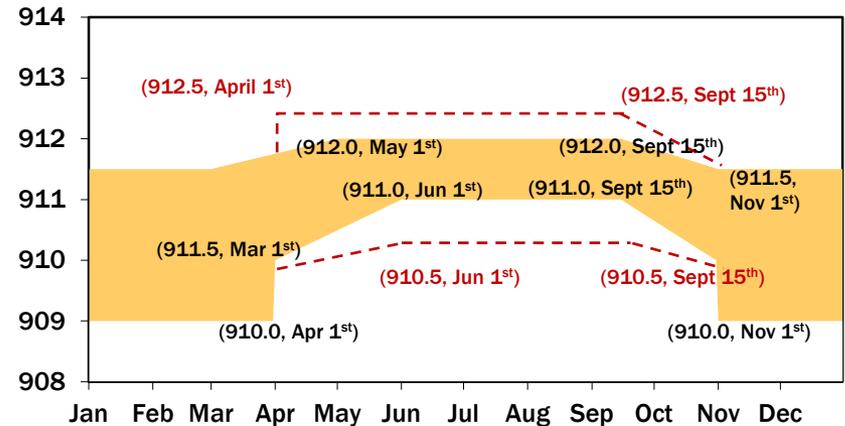
- Old IJC Rule Curve (Condition 7)



- 1 of 3 Drought Criteria (Condition 8).
- High Water
 - return to rule curve in shortest time possible).
- Considers only water level issues under Board of Control purvue.
- Fixed expiry date

• New

- New IJC Rule Curve (Condition 7)

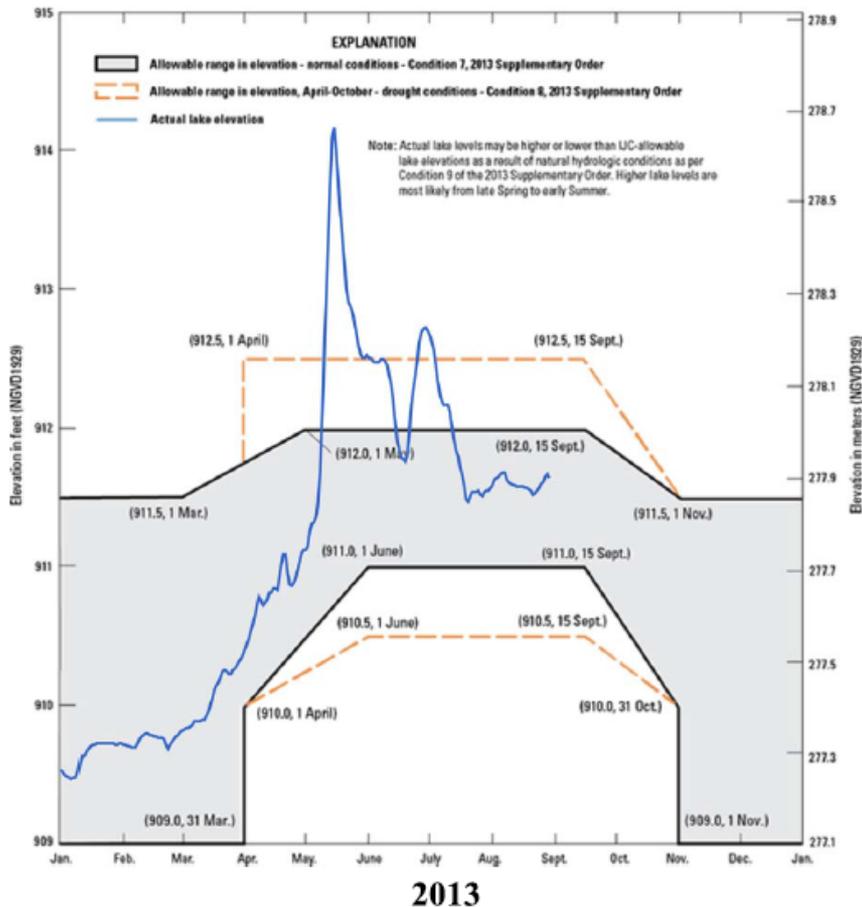


normal conditions
 drought conditions

- 2 of 3 Drought Criteria (Condition 8)
- High Water (Condition 9)
 - return to rule curve in shortest time with ramping rate consideration
- IJC Board Directive (Condition 14)
 - considers adaptive management, IWI, etc.
- Maximum review period (25 yrs), flexible renewal
 - 25 years; consider monitoring information

Improved Information on Lake Level Change

Actual and Allowable Lake Elevations per IJC Orders of Approval, Osoyoos Lake near Oroville, Washington, USGS Station 12439000



<http://wa.water.usgs.gov/data/12439000.html>



International Osoyoos Lake Board of Control

Lake Level Forecasts

For current and past water level information for Osoyoos Lake, please click on the following link:

http://waterdata.usgs.gov/wa/nwis/uw/?site_no=12439000

For real-time Osoyoos Lake water levels plotted against the IJC rule curve, please click on the following link:

<http://wa.water.usgs.gov/data/12439000.html>

Update: July 22 2013; Osoyoos Lake Water Level Trends – International Osoyoos Lake Board of Control

Decreasing inflow to the lake from the upstream Okanagan river and tributaries has resulted in a lowering of the water level of Osoyoos lake to within the Summer period operating range of 911.0 to 912.0 ft. (re. IJC Osoyoos Lake Supplementary Order of Approval, January 2013). Lake levels are expected to remain within this range for the remainder of the summer with Zosel Dam operations aiming to maintain a mid-range lake level elevation during this summer period.

Update: July 2 2013; Osoyoos Lake Water Level Trends – International Osoyoos Lake Board of Control

The level of Osoyoos Lake had been rising over the past week, reaching a peak lake level elevation of 912.73 ft. on June 29th and the lake level is now beginning to fall (lake level elevation was 912.67 ft. on July 1st). The rise in lake level was primarily due to increased flows in the Okanagan River due to heavy rainfall over the past two weeks which led to increased discharge from Okanagan Lake and tributary streams. Flows in the Similkameen River had also been increasing early last week, with a peak of 9680 cfs (cubic feet per second) on June 25th, but have been receding to lower flow rates since (e.g. 7170 cfs on July 1st). At these flow rates, a backwater effect on Okanagan River discharge (downstream of Zosel Dam) from the Similkameen River is considered a minor possible influence on Osoyoos Lake levels compared to the high inflows to Osoyoos Lake from the Okanagan River. The trend of receding tributary inflows is expected to continue over the next two weeks with the result that Osoyoos Lake levels are expected to fall into the normal summer operating range of 911.0-912.0 ft. by mid-July.

http://ijc.org/en_/iolbc/Lake_Level_Forecasts

Consolidated IJC Order of Approval for Osoyoos Lake

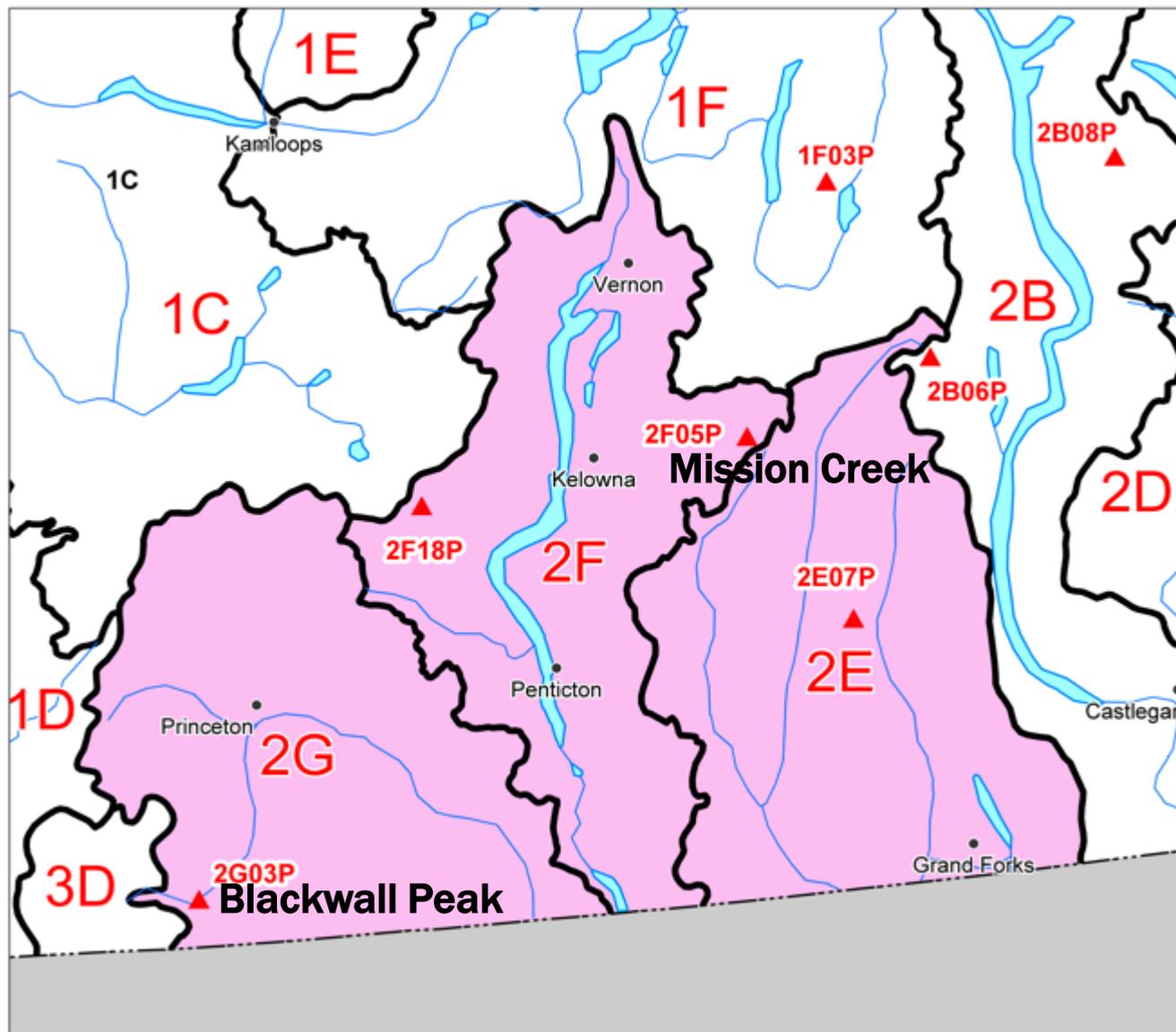
- **Since the Original IJC Order of Approval in 1946:**
 - **1978 IJC Supplementary Order of Approval**
 - **1982 (December) IJC Order of Approval**
 - **1985 IJC Supplementary Order of Approval**
 - **2013 IJC Supplementary Order of Approval**
- **With new 2013 Supplementary Order, certain terms still carry through from 1982 and 1985 Orders.**
- **Board has been working with the Commission to develop a single Consolidated Order of Approval for Osoyoos Lake.**
- **New Consolidated Orders issued (Sept.10, 2013) and will be posted to on IJC Board website in near future.**

Presentation of 2013 Okanagan/Similkameen Hydrology

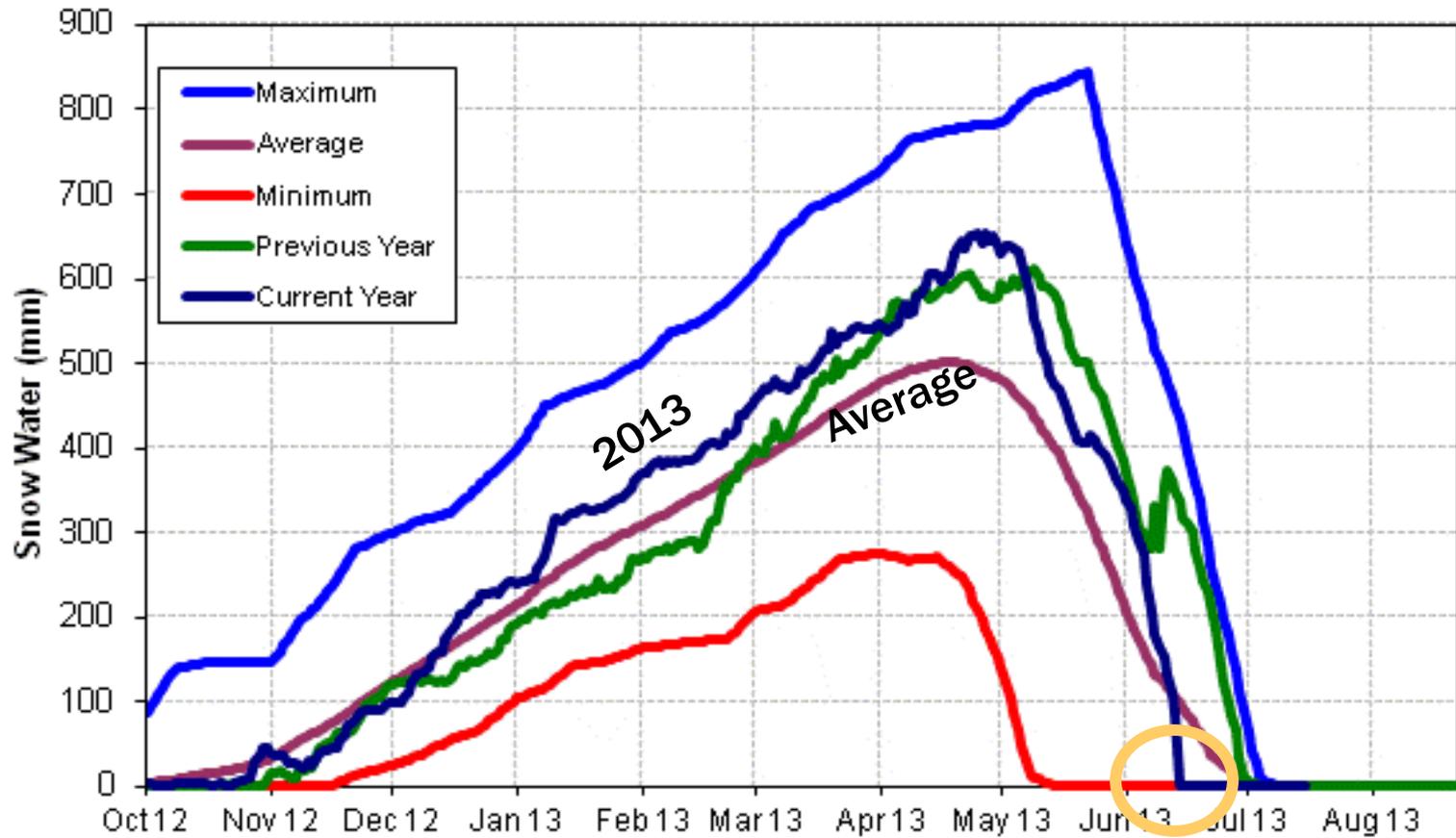
Brian Symonds:

- **Overview of Hydrologic Conditions affecting Osoyoos Lake levels in 2013.**

Map of BC Snow Pillow Sites

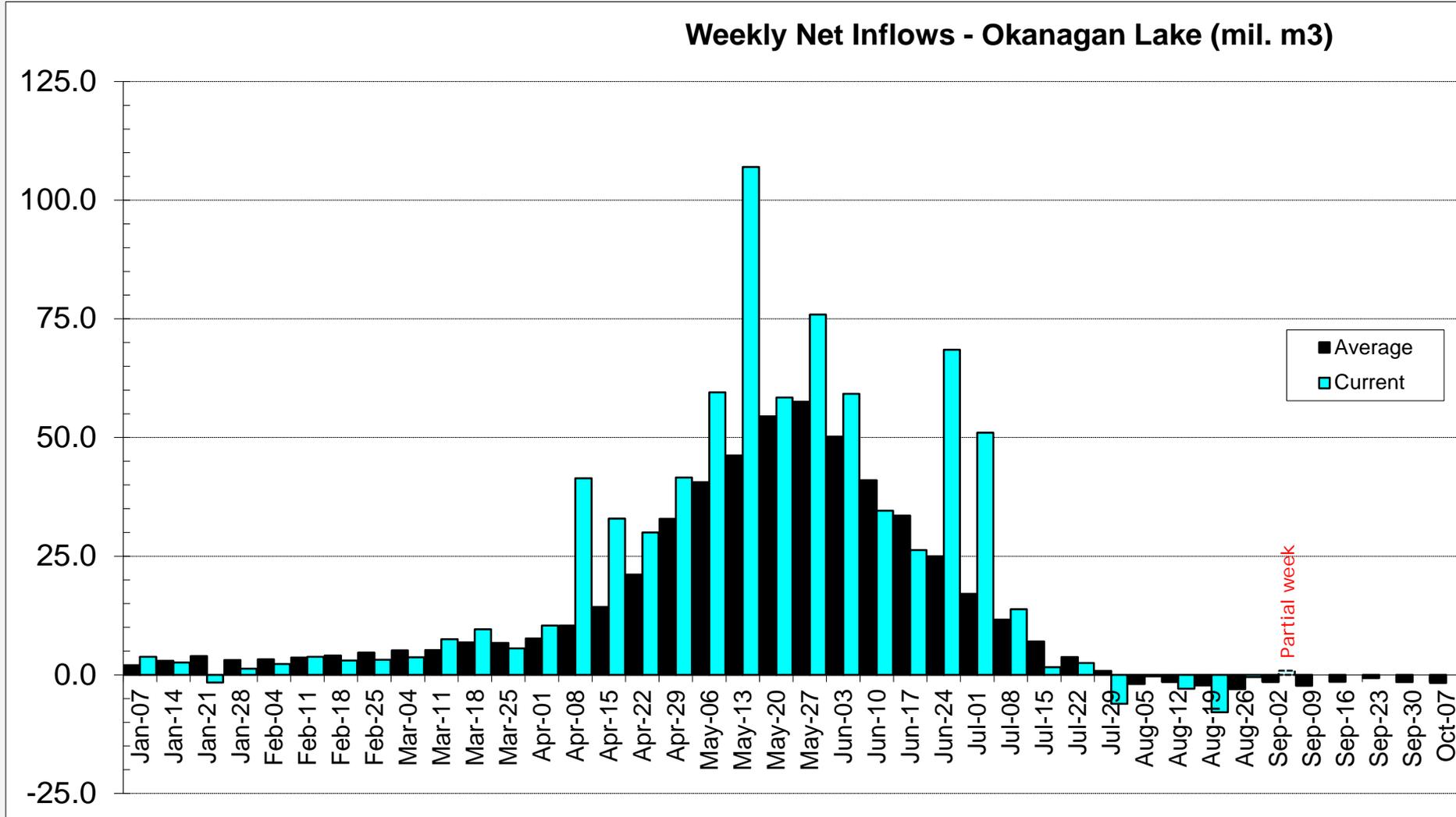


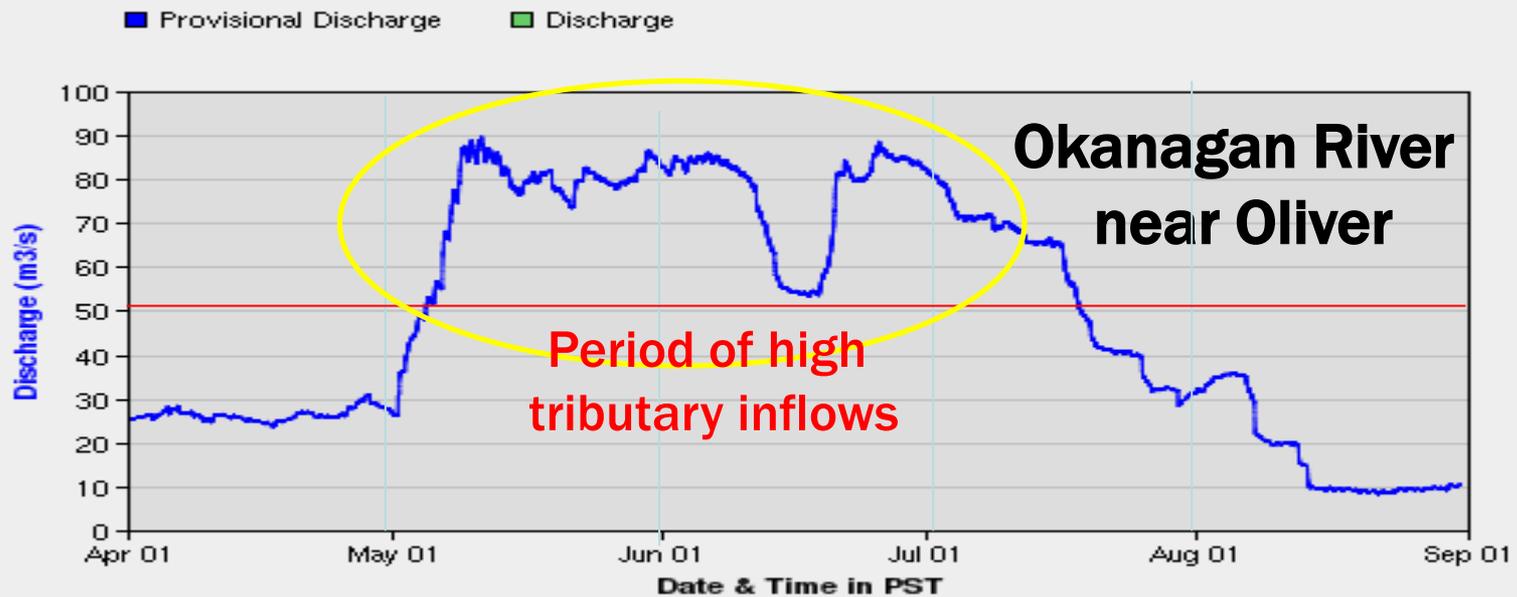
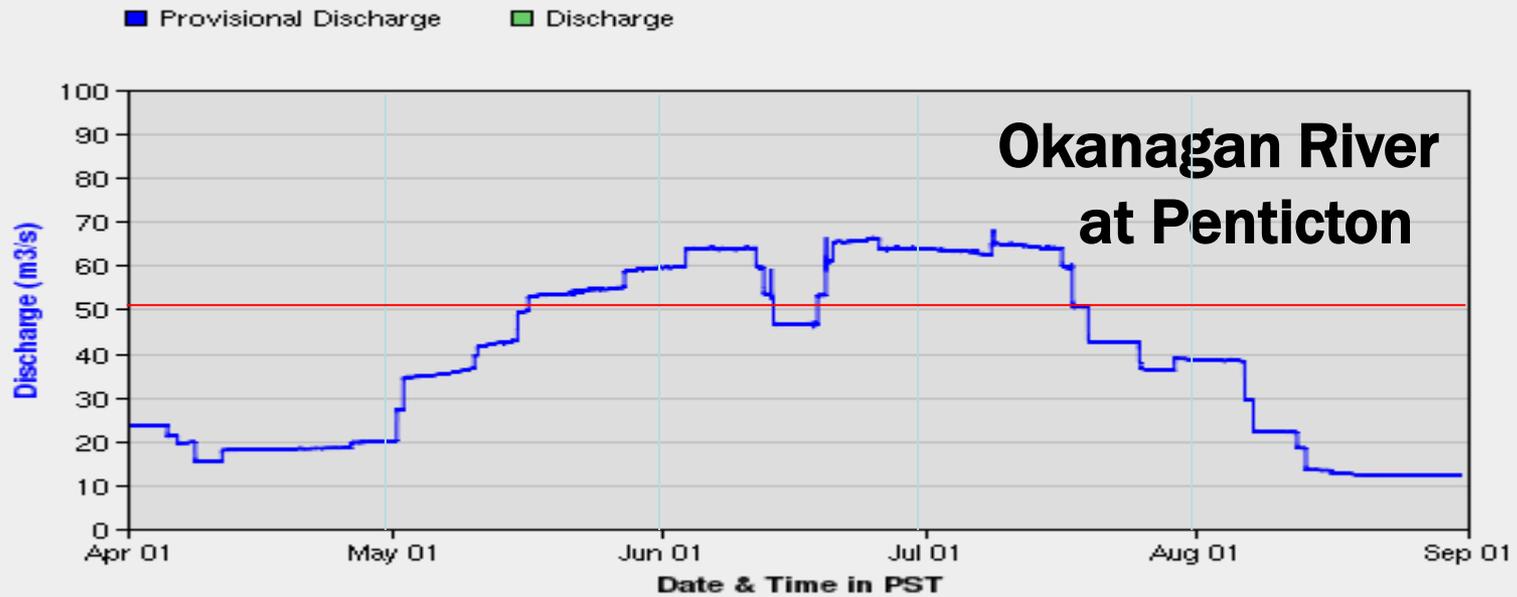
Mission Creek Snow Pillow (Okanagan)



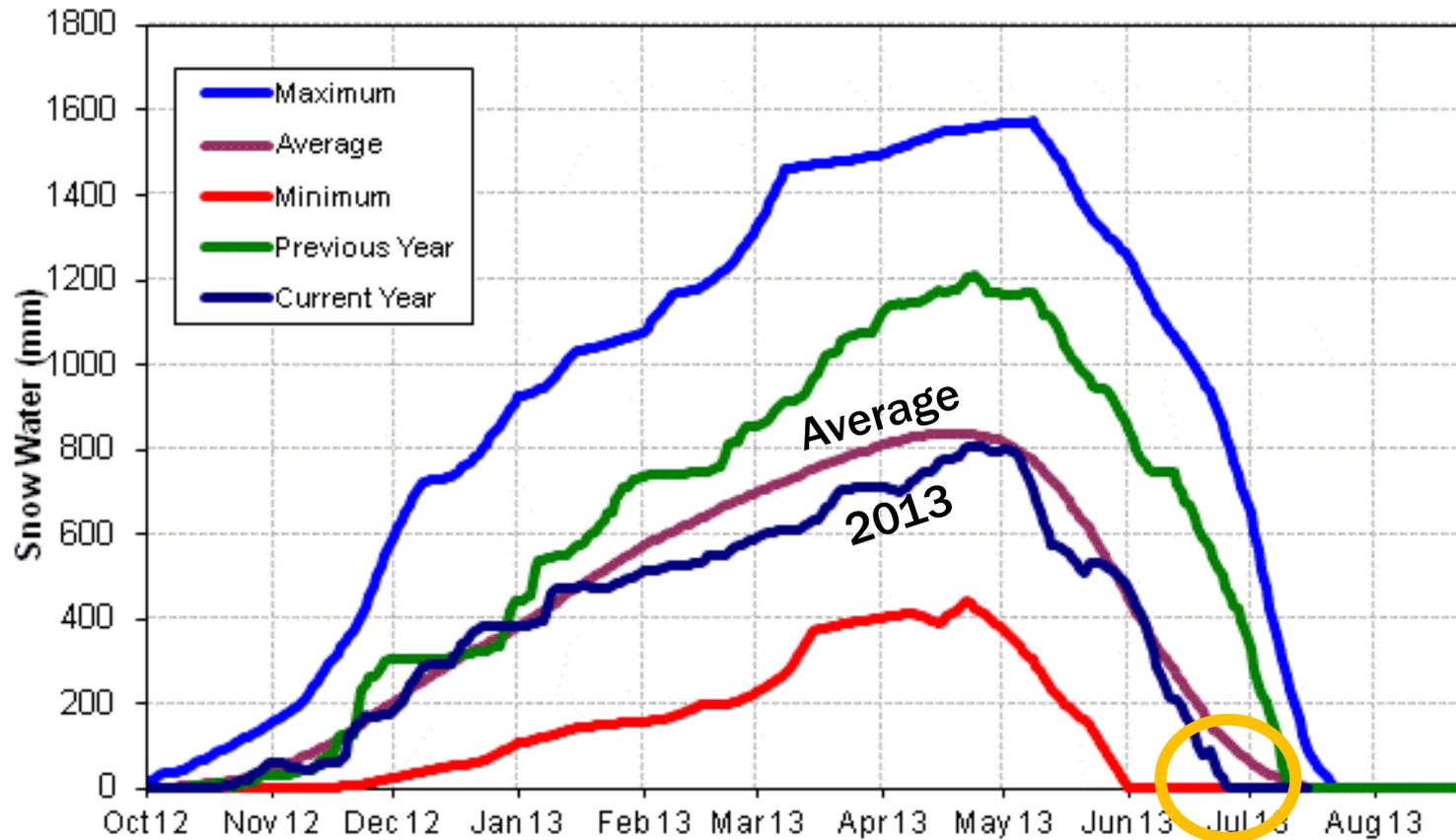
Current to noon 2013-07-14
Updated 2013-07-15 10:27:19 AM

Weekly Net Inflows to Okanagan Lk

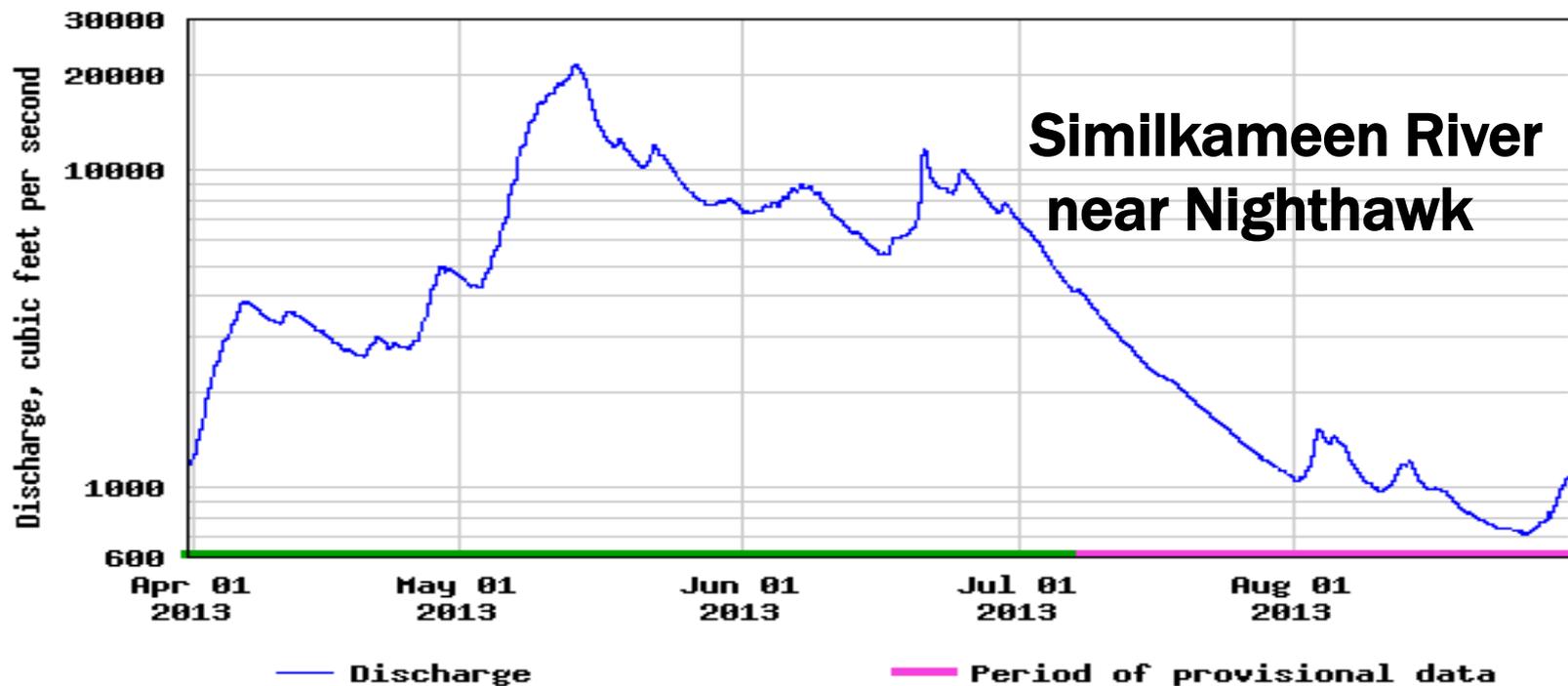
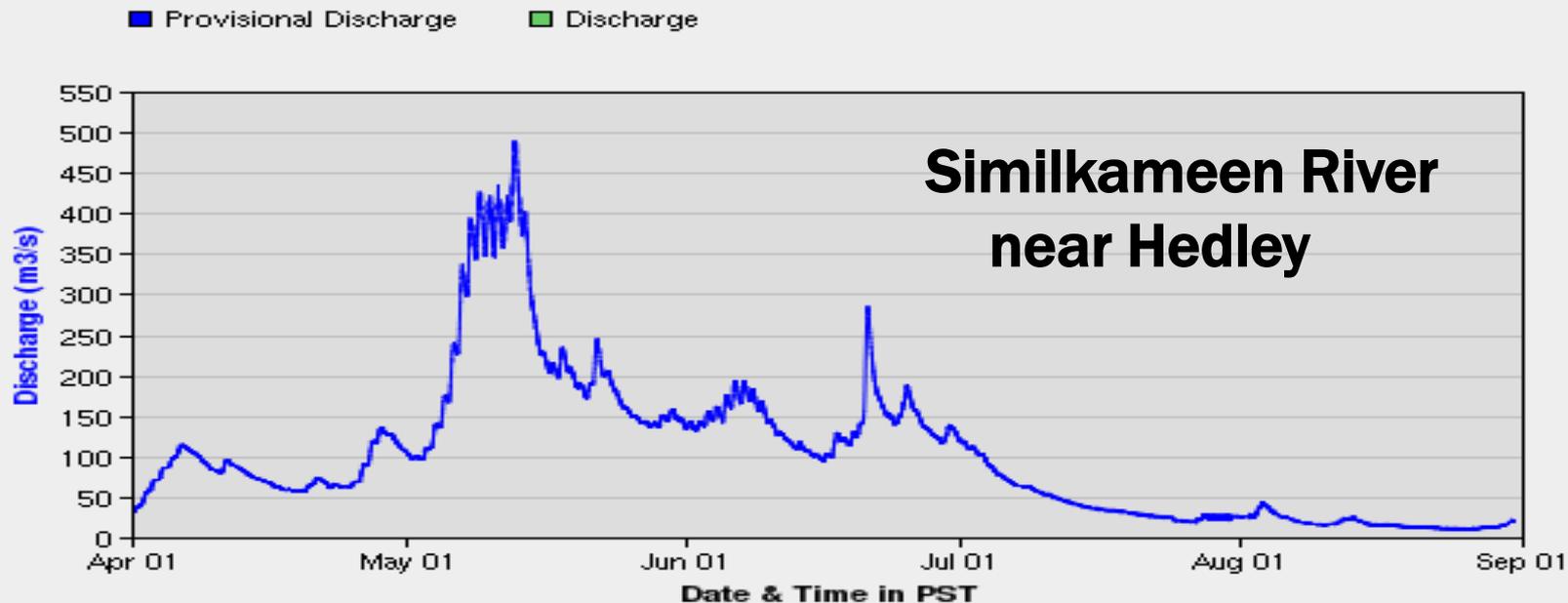




Blackwall Peak Snow Pillow (Similkameen)



Current to noon 2013-07-14
Updated 2013-07-15 10:27:21 AM





**Was 2013
a
Drought Year ?**



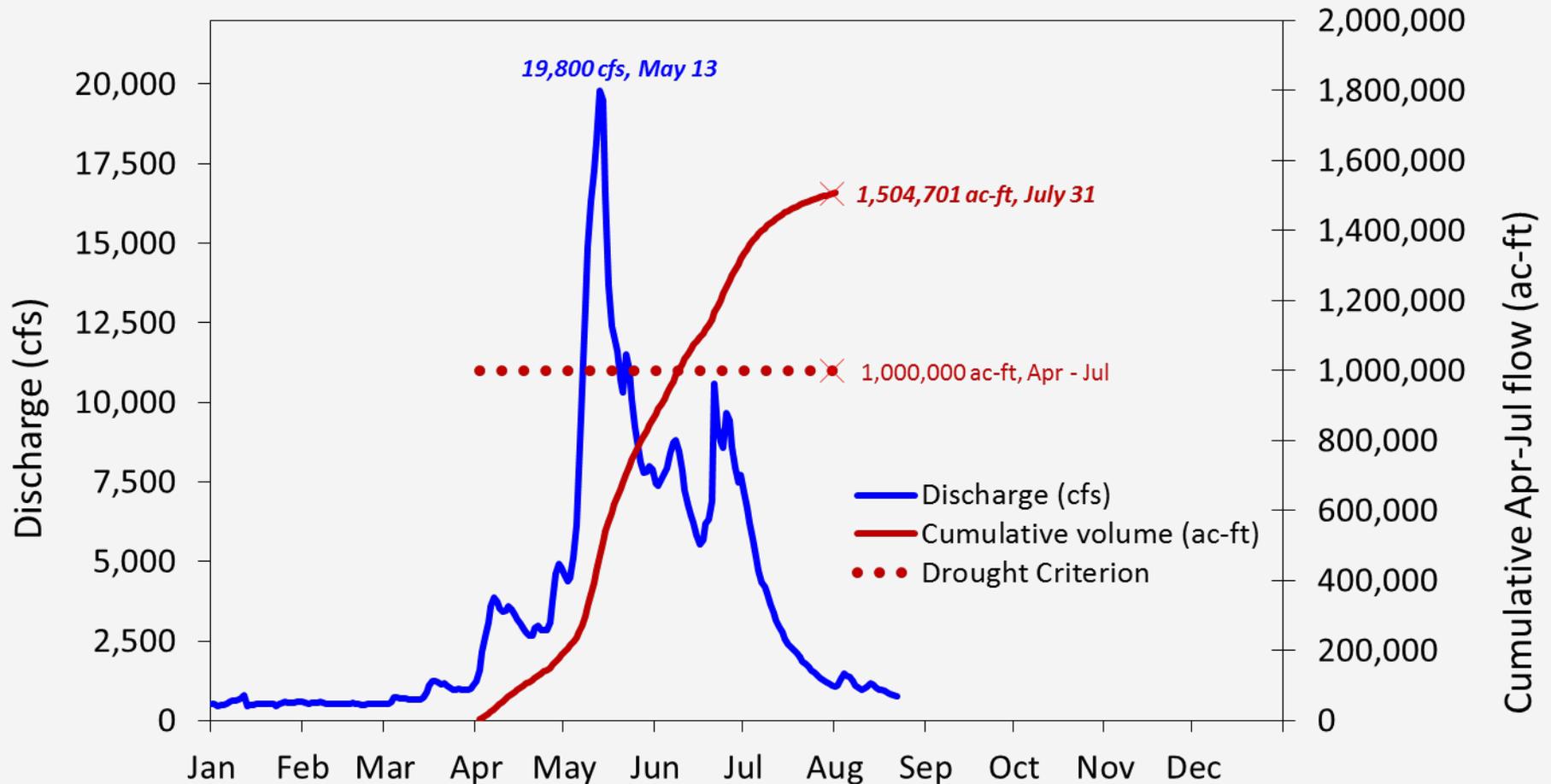
Osoyoos Lake Orders (Section 8)

April 2013 Drought Criteria Forecasts

Drought Criteria	April 2013 Forecast	Drought criteria met?	Significance
a) Total flow in the Similkameen River during April-July is less than 1 million acre-feet	1,136,000 acre-feet	No	Required for drought declaration
b) i) Net inflow to Okanagan Lake during April-July is less than 195,000 acre-feet	437,800 acre-feet	No	One of these two required for drought declaration
ii) Maximum level of Okanagan Lake in June or July is less than 1,122.6 feet	1123.5 feet	No	



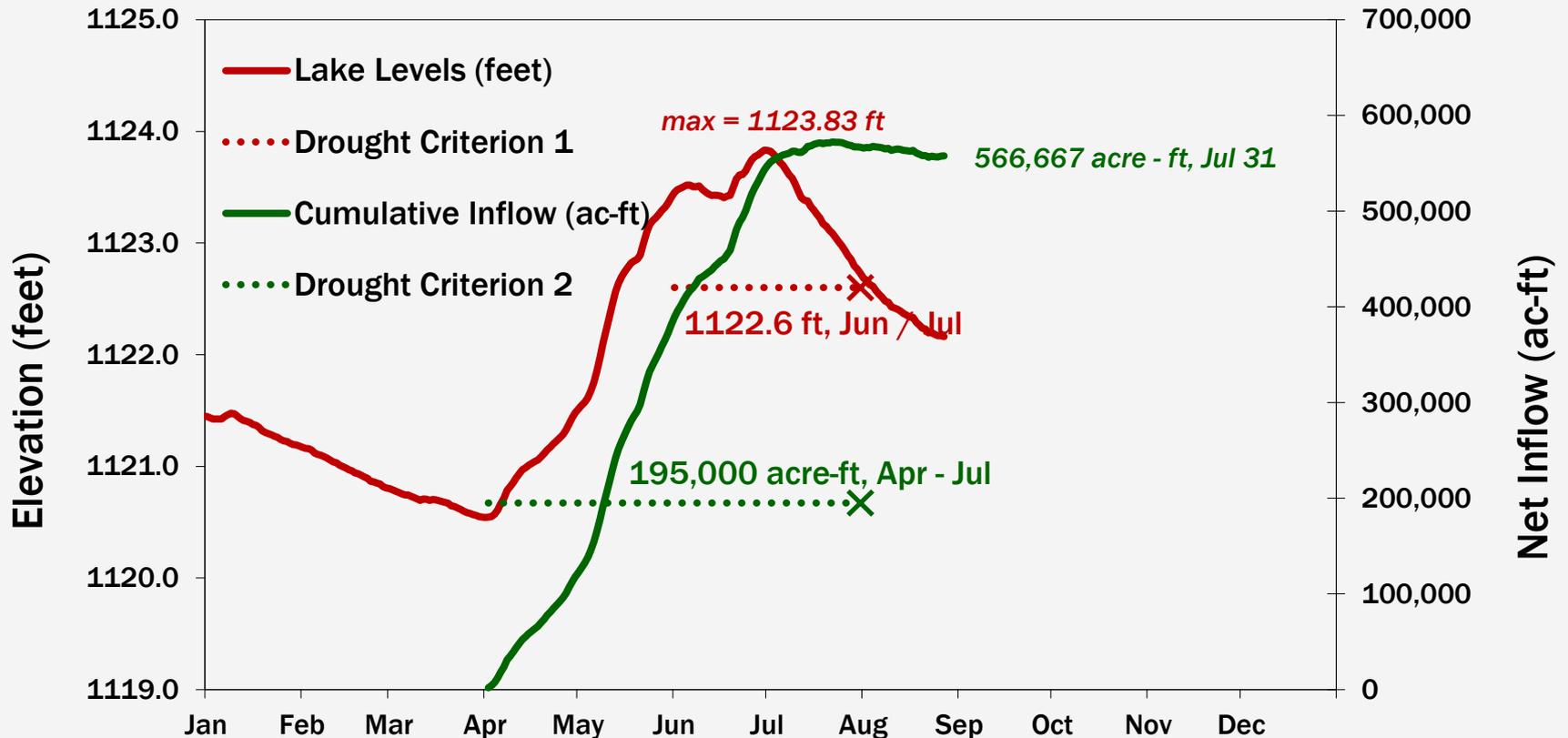
Similkameen River Criterion



Drought Criterion -- The volume of flow in the Similkameen River at Nighthawk, Washington for the period April through July as calculated or forecasted by United States authorities is less than 1.0 million acre-feet.

Okanagan Lake Criteria

2013 Okanagan Lake Levels & Net Inflows



Drought Criterion 1: The level of Okanagan Lake fails to or is forecasted by Canadian authorities to fail to reach, during June or July, elevation 1122.6 feet Canadian Geodetic Survey Datum.

Drought Criterion 2: the net inflow to Okanagan Lake for the period April through July as calculated or forecasted by Canadian authorities is less than 195,000 acre-feet.

Osoyoos Lake Orders (Section 8)

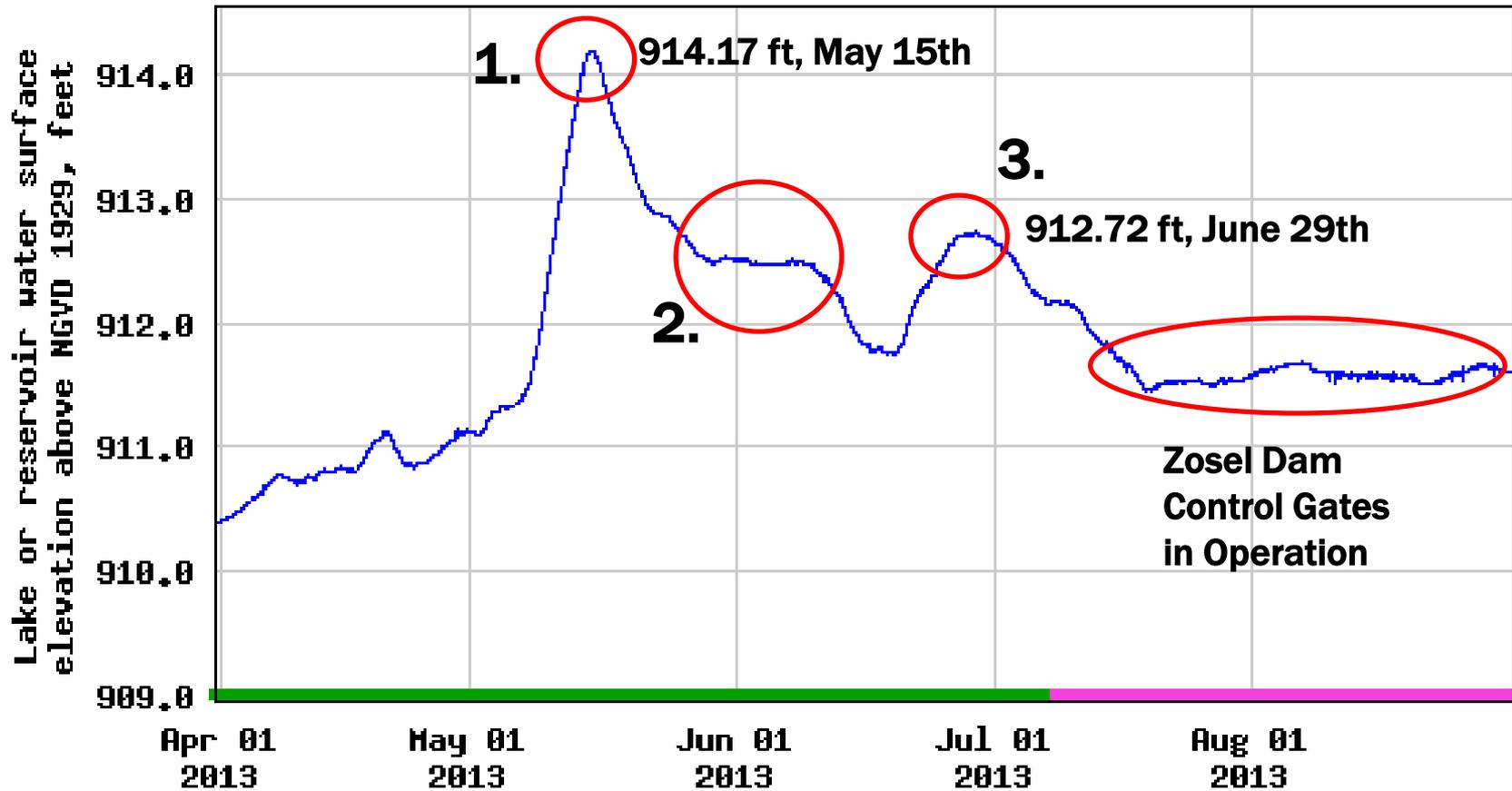
Drought Criteria – 2013 Actual

Drought Criteria	2013 Actual	Drought criteria met?	Significance
a) Total flow in the Similkameen River during April-July is less than 1 million acre-feet	1,504,700 acre-feet	No	Required for drought declaration
b) i) Net inflow to Okanagan Lake during April-July is less than 195,000 acre-feet	566,667 acre-feet	No	One of these two required for drought declaration
ii) Level of Okanagan Lake in June or July is less than 1,122.6 feet	1123.83 feet	No	

Factors Impacting the Level of Osoyoos Lake in 2013

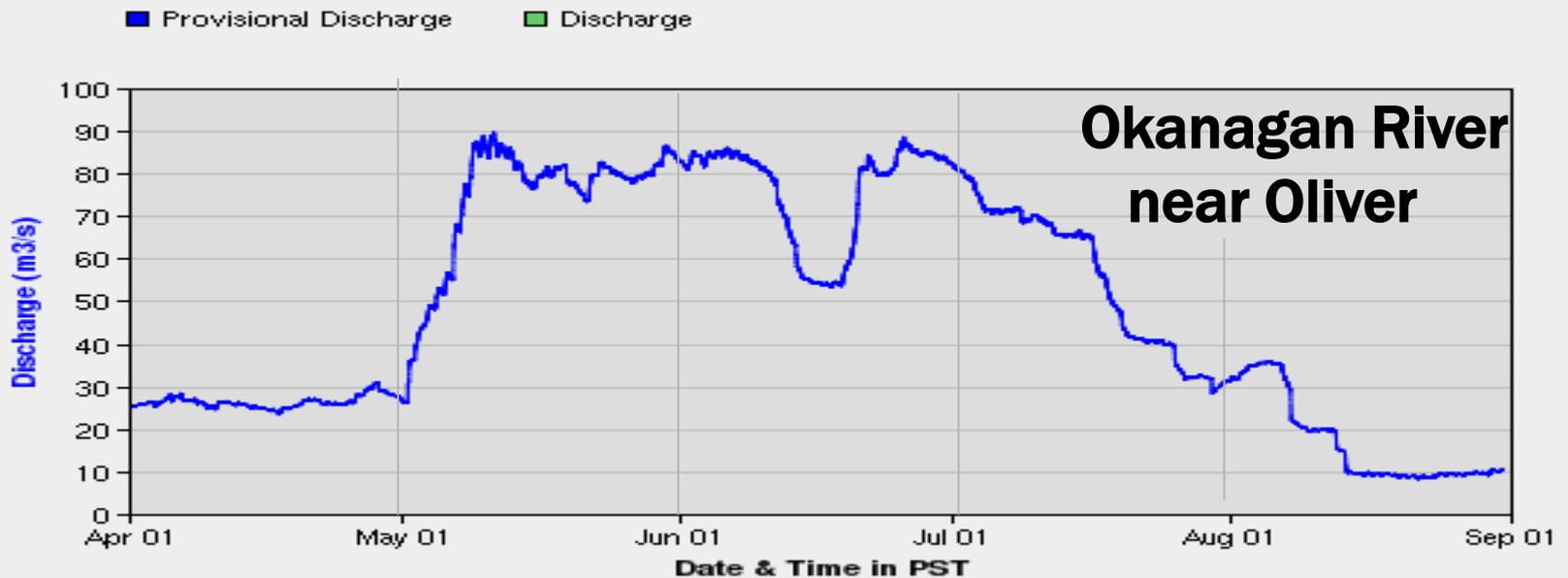
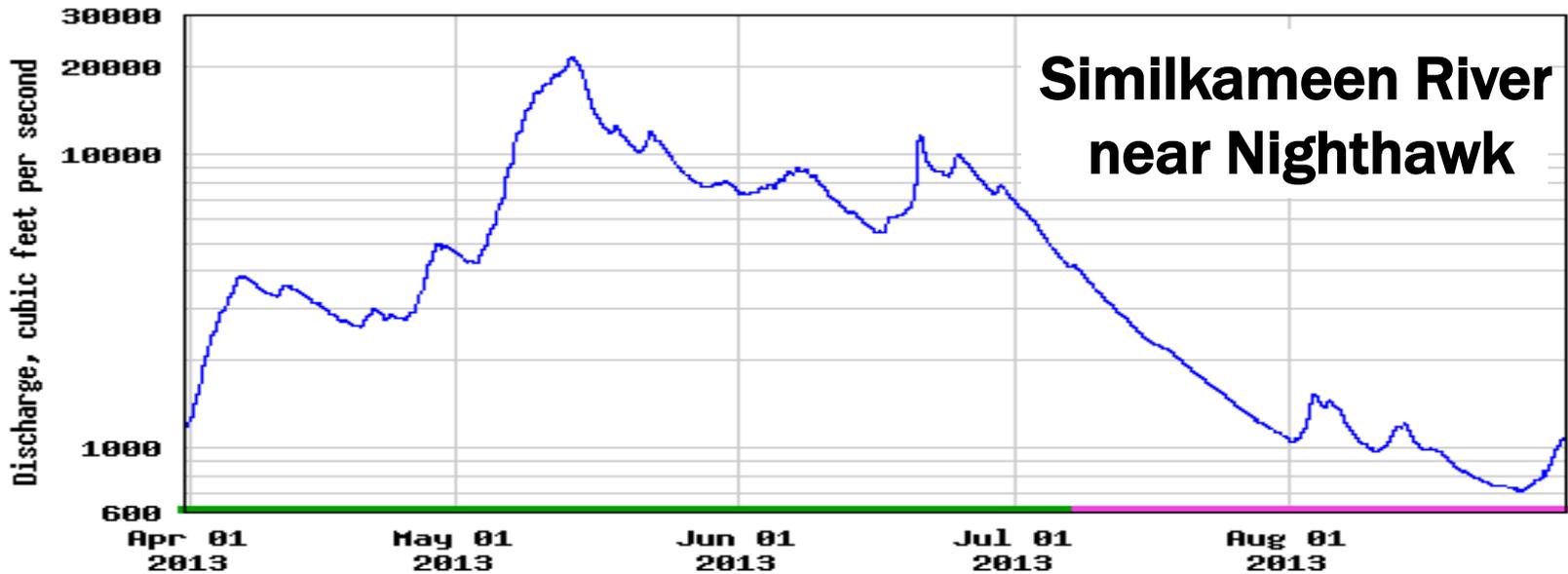
- **Backwater Conditions at confluence of Okanogan River and Similkameen River (Similkameen River near Nighthawk)**
- **Rate of inflow (Okanagan River near Oliver)**
- **Operation of Zosel Dam Control Gates**

USGS 12439000 OSOY00S LAKE NEAR OROVILLE, WA

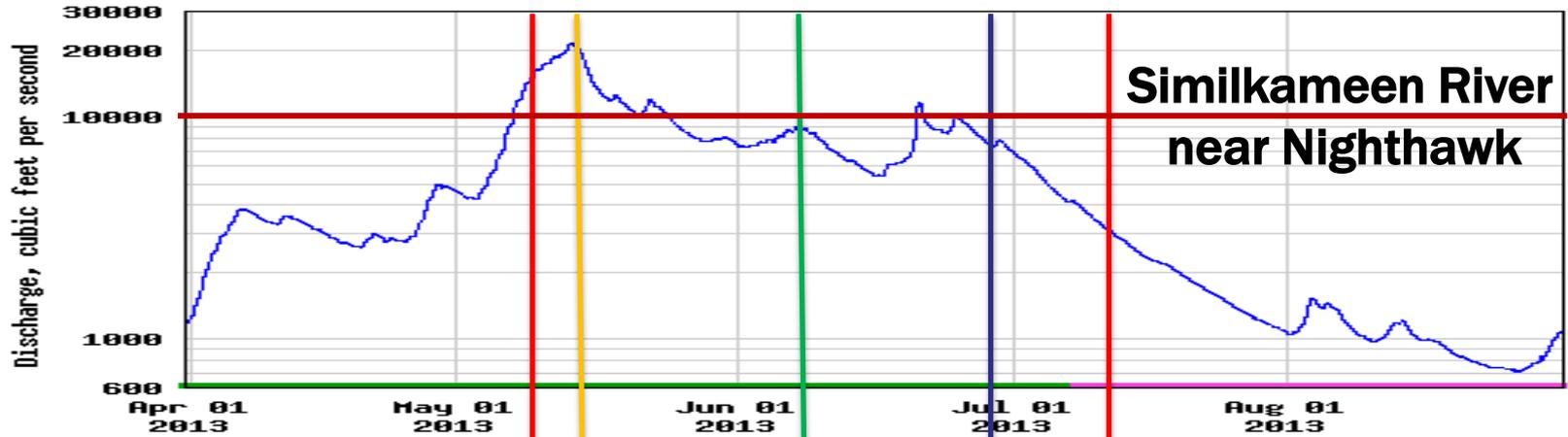


- Lake or reservoir water surface elevation above ngvd 1929
- Period of approved data
- Period of provisional data

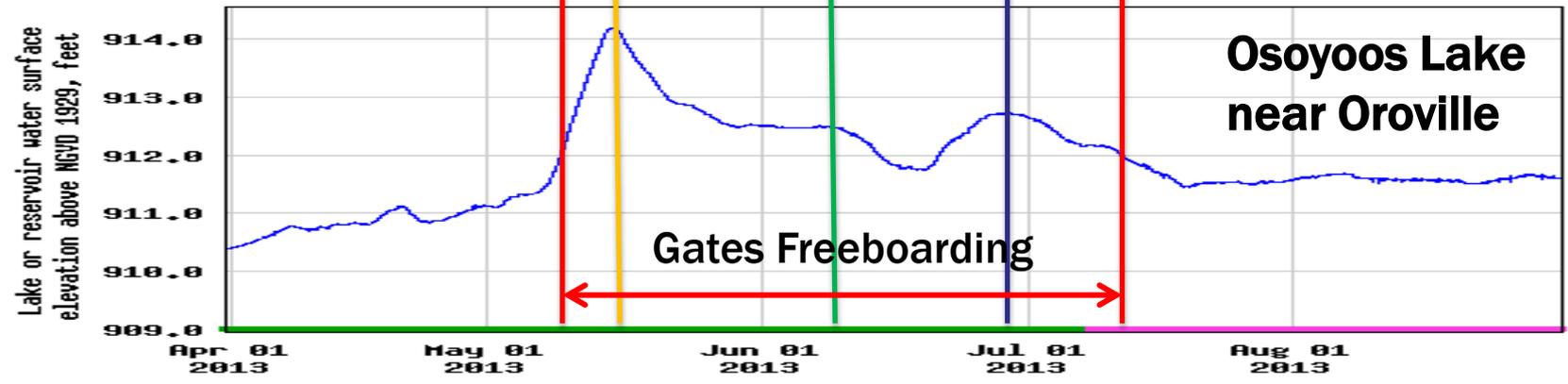
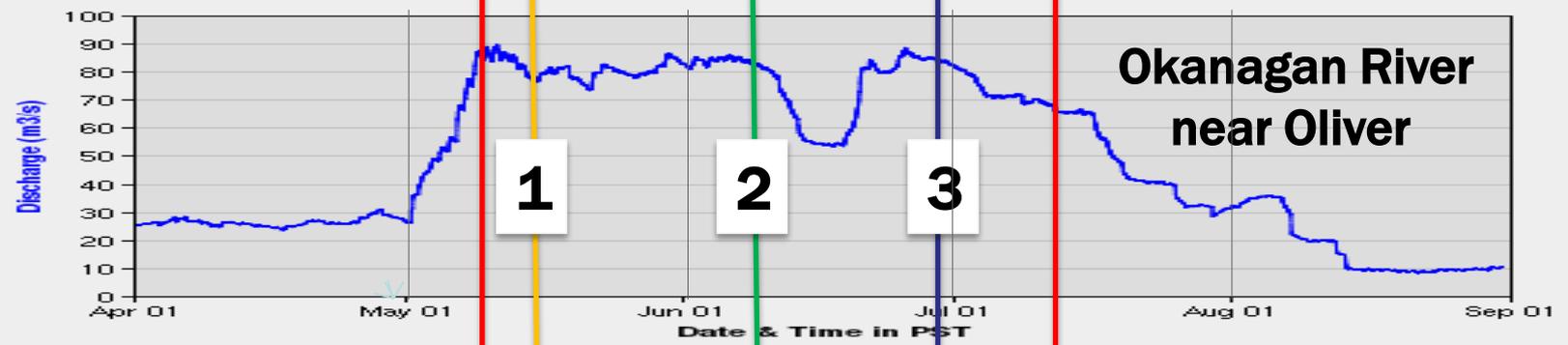
USGS 12442500 SIMILKAMEEN RIVER NEAR NIGHTHAWK, WA



USGS 12442500 SIMILKAMEEN RIVER NEAR NIGHTHAWK, WA



■ Provisional Discharge ■ Discharge



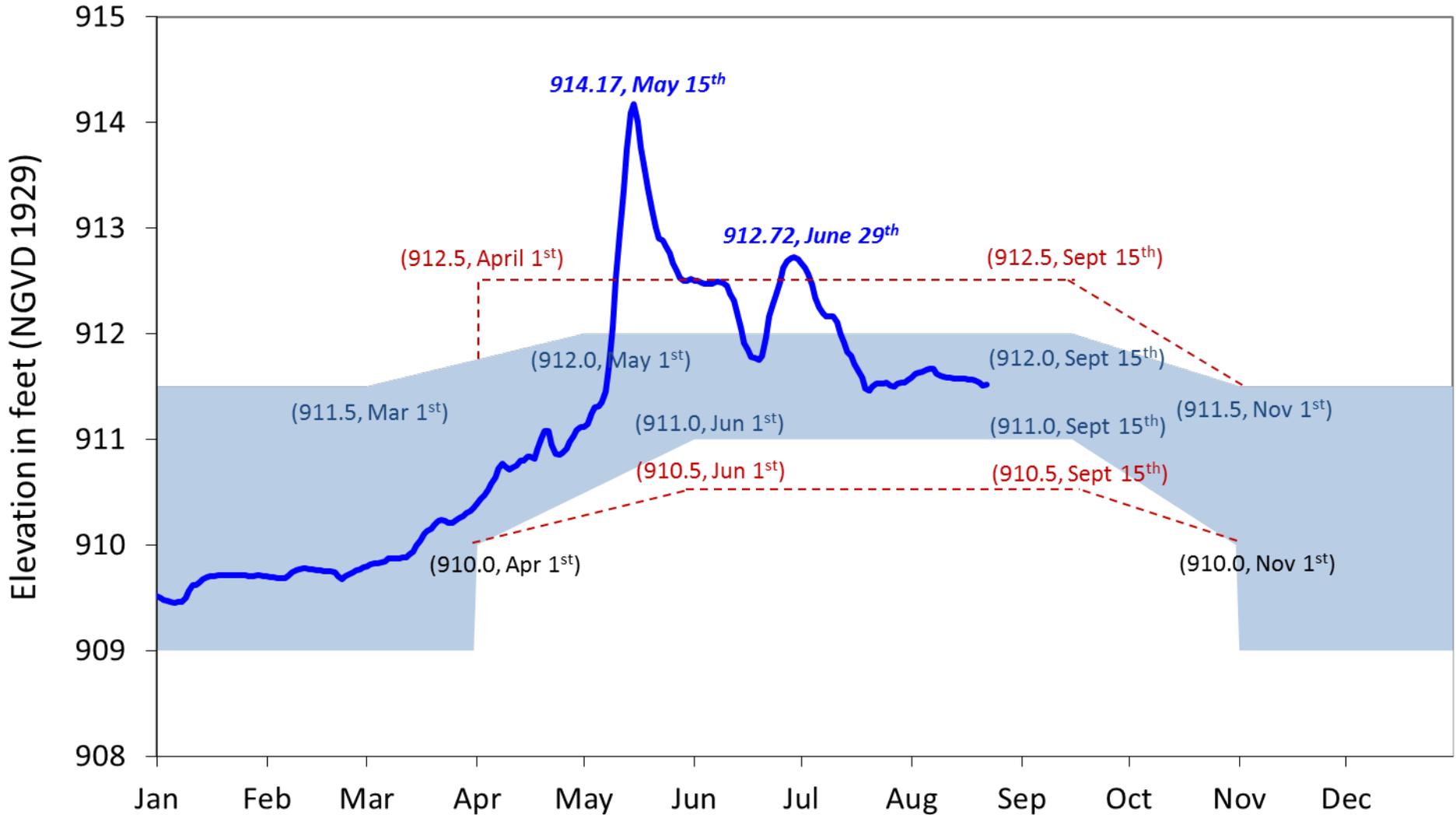
— Lake or reservoir water surface elevation above ngvd 1929
— Period of approved data

Summary of Hydrologic Conditions and Osoyoos Lake Levels in 2013

- Drought conditions not in effect.
- High flows caused lake levels above max regulated level of 912.0 ft for two separate high water periods:
 - May 9 – June 14, 2013 (max. 914.17; May 15th)
 - June 21 - July 12, 2013 (max. 912.72; June 29th)
- High flows in the Similkameen River caused a significant backwater effect in mid-May and minor effect in late June.
- High flows on Similkameen River and backwater effect restricted lake outflow in May, leading to high water during onset of spring freshet.
- High Okanagan River system inflows to Osoyoos Lake resulted in second high water period (late June)

**How did
2013 Zosel Dam
Operations Compare
with 2013 Order?**

Actual and Allowable Lake Elevations per IJC Orders of Approval, Osoyoos Lake near Oroville, Washington, USGS Station 12439000



- 2013 Osoyoos Lake elevation
- Allowable range in elevation - normal conditions - Condition 7, Jan 2013 Order
- - - Allowable range in elevation - drought conditions - Condition 8, Jan 2013 Order

Public Comments & Questions?

Open discussion