

# International Columbia River Board of Control

## 2019 Annual Report to the International Joint Commission



**Cover photo (U.S. Bureau of Reclamation):** Grand Coulee Dam in Washington State. Grand Coulee Dam was completed in 1941 and created Franklin D. Roosevelt Lake. The lake is about 150 miles (240 km) long and extends to within about 15 miles (24 km) south of the international boundary, with a transitional reach that extends upstream of the boundary due to backwater effects. The lake covers an area of about 80,000 acres (320 km<sup>2</sup>) and is the largest lake in Washington State.

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The Order of the International Joint Commission (IJC) dated December 15, 1941, in the matter of the application of the United States for approval of the construction and operation of the Grand Coulee Dam and reservoir (Franklin D. Roosevelt Lake) provided for the creation of an engineering board to be known as the International Columbia River Board of Control. The Order provides that the Board shall conduct studies under the supervision of the Commission as to the effect of the operation of Grand Coulee Dam and Franklin D. Roosevelt Lake on water levels at and upstream of the international boundary and shall submit a report to the Commission annually. The Board's studies are currently limited to the monitoring and reporting of the lake elevation at Grand Coulee Dam and discharge and backwater of the Columbia River at the international boundary.

The monitoring function of the Board is intended to ensure compliance with the terms of the IJC Order, which specifies that the operation of Grand Coulee Dam must comply with the following conditions with respect to the backwater effect across the international boundary:

- When the lake elevation at Grand Coulee Dam is 1,290 ft (393 m) above mean sea level, the increase in water level at the boundary due to backwater must not exceed about 2.5 ft (0.76 m) when Columbia River discharge at the boundary is 20,000 cubic feet per second (cfs) (570 cubic meters per second [cms]), or about 1.0 ft (0.31 m) when the discharge is 50,000 cfs (1,400 cms), and there must be no effect on the water level at the boundary when Columbia River discharge at the boundary is 400,000 cfs (11,000 cms).
- There must be no appreciable or measurable increase in the water level at Columbia Gardens, British Columbia (located 4.5 miles [7.2 km] from the boundary), when Columbia River discharge at the boundary is less than 50,000 cfs (1,400 cms), and no appreciable or measurable increase in water level at Trail, British Columbia (located 10.5 miles [16.9 km] from the boundary), regardless of Columbia River discharge or lake elevation at Grand Coulee Dam up to 1,290 ft (393 m) above mean sea level.

## **ACTIVITIES OF THE BOARD IN 2019**

The Board determined that the Applicant was in compliance with the IJC Order in 2019.

The Board presented a progress report during the Fall semi-annual IJC meeting on October 22, 2019 in Ottawa, ON. The 2019 Washington DC, Spring semi-annual meeting was cancelled due to lack of quorum. The October meeting was attended in person by the Canadian and U.S. section Co-chairs Bruno Tassone and Cindi Barton, respectively, and was supported in person by the secretary of the Canadian section. The U.S. section secretary attended remotely via teleconference.

On October 25, 2019, following the Ottawa IJC appearance, the term of the Canadian section chair, Bruno Tassone, ended, at which point he was replaced by David Hutchinson, who had previously been nominated by Environment and Climate Change Canada (ECCC), and approved by the IJC Commissioners.

The Board website (<https://ijc.org/en/crbc>) was updated to include the Board's 2018 annual report to the IJC.

## **HYDROLOGIC CONDITIONS IN 2019**

During 2019, the U.S. Geological Survey continued the collection of information concerning the water level of Franklin D. Roosevelt Lake at Grand Coulee Dam (USGS gaging station 12436500) and, in cooperation with the Water Survey of Canada (Environment and Climate Change Canada), the water level and discharge of the Columbia River at the international boundary (USGS gaging station 12399500). Discharge is computed for the Columbia River at the international boundary using a stage-discharge rating during non-backwater conditions. During backwater conditions, discharge is computed using a slope rating from the water-surface slope measured between the base and auxiliary gages. Backwater at the international boundary was estimated by the U.S. Geological Survey by computing the difference between the gage height measured at the Columbia River at the international boundary and the equivalent gage height using the stage-discharge rating for the reported discharge.

The annual flow of the Columbia River at Grand Coulee Dam for calendar year 2019 totaled 61.7 million acre-feet (76.2 cubic kilometers), or 79 percent of the mean annual volume for the 91-year period of record of 77.9 million acre-feet (96.0 cubic kilometers). The instantaneous maximum (peak) discharge of the Columbia River at the international boundary was 143,000 cfs (4,049 cms) on June 9, which is 55 percent of the mean annual peak discharge for the 83-year period of record of 261,000 cfs (7,391 cms). Daily mean discharge for the Columbia River at the international boundary for 2015-2019 is shown in figure 1A.

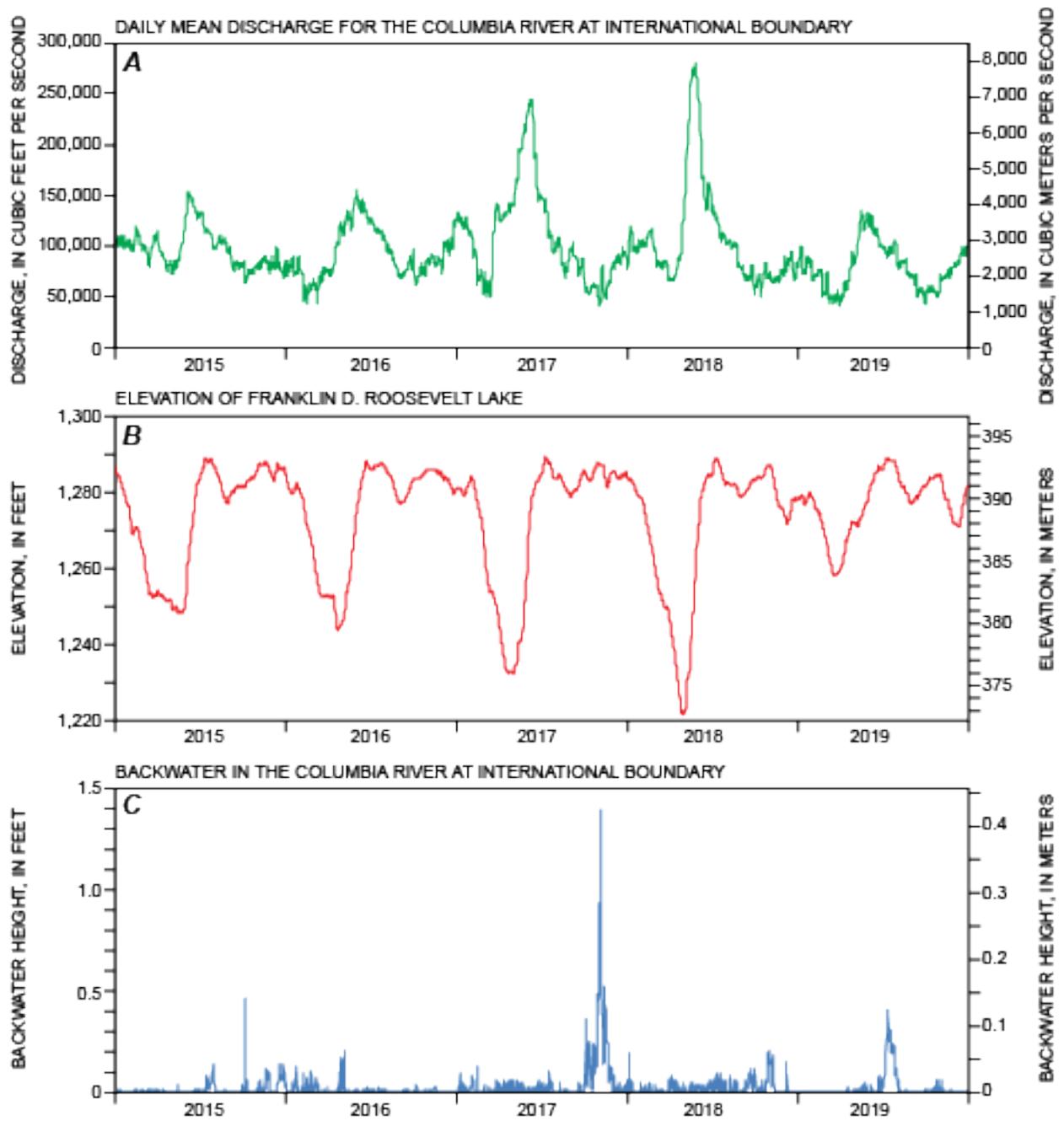
Extremes of instantaneous stage recorded on the Lake Roosevelt in 2019 varied between elevations 1,257.91 ft (383.41 m) at 02:00 PDT on March 22 and 1,289.53 ft (393.05 m) at 06:00 and 11:00 PDT on July 16. Elevations reported are above mean sea level, with respect to a U.S. Bureau of Reclamation datum adjusted in 1937. This datum is 1.425 ft (0.434 m) above the U.S. National Geodetic Vertical Datum of 1929 (NGVD 29). The stage

at midnight on December 31, 2019, was 1,281.93 ft (390.73 m). Water-level elevation in Franklin D. Roosevelt Lake for 2015-19 is shown in figure 1B.

An analysis of the data was used to compute that backwater at the international boundary varied during the year between 0.00 ft (0.00 m) and 0.40 ft (0.122 m). The discharge at the international boundary was 91,400 cfs (2,588 cms) when backwater was 0.40 ft (0.122 m) on July 11, 2019. Backwater on December 31, 2019 was 0.00 ft (0.00 m). Backwater that occurred at the international boundary during 2015-19 is plotted in figure 1C. Backwater since the time of filling of Franklin D. Roosevelt Lake in June 1942 to December 31, 2018, is plotted on the charts submitted with previous annual reports.

## **COLUMBIA RIVER TREATY REVIEW**

Grand Coulee Dam (subject of the 1941 IJC Order of Approval) was completed in 1942 and pre-dates the Columbia River Treaty. It is not a Treaty Dam in this context, but it operates as part of the Columbia River System, in coordination with other hydro-electric dams, some of which were constructed as part of the Columbia River Treaty. The 1964 Columbia River Treaty is an agreement between Canada and the United States for the cooperative development and operation of water resource regulation for the upper Columbia River. The Treaty has no specified termination date; however, either Canada or the United States can terminate the Treaty any time on or after September 16, 2024, with a minimum 10 years written notice. Because either country may give notice to terminate the Treaty, government agencies in Canada and the United States have been in the process of evaluating future options regarding the Treaty, with respective Canadian and U.S. Entities having provided recommendations to their respective governments prior to September 2014 (earliest date for 10-year termination notice). The respective recommendations did not promote Treaty termination. Through 2019 there was no announcement by either country of intent to terminate or seek changes to the Treaty.



**Figure 1.** Hydrographs of A) daily mean discharge for the Columbia River at the international boundary, B) elevation of Franklin D. Roosevelt Lake, and C) backwater in the Columbia River at the international boundary.

**INTERNATIONAL COLUMBIA RIVER BOARD OF CONTROL MEMBERSHIP**

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