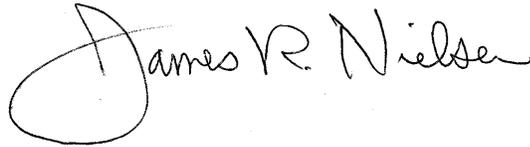


SYSTEM OPERATIONAL REQUEST: #98-29

TO: Brigadier General Griffin COE-NPD
William Branch COE-RCC
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FROM: Jim Nielsen, Chairperson, Fish Passage Advisory Committee

DATE: July 28, 1998

SUBJECT: Operations at Brownlee through August 31
Operations at Dworshak through August 31
Operations at Grand Coulee, Hungry Horse, and Libby through August 31

SPECIFICATIONS:

All Projects

- All of the requested operations are based upon flow and operations projections provided by the federal operators and regulators. If projected conditions change significantly, Jim Nielsen, WDFW, or the Fish Passage Center should be contacted. Questions regarding the request should be referred to Jim Nielsen or the Fish Passage Center.

Snake/Clearwater River Operations:

Dworshak/Lower Granite

- For week ending August 9, continue outflow not to exceed 14 kcfs, to meet a resulting weekly average flow of 40 kcfs at Lower Granite Dam. Regulate outflow to a temperature of about 48°F.
- Operate Dworshak through August 31 to reach elevation 1520 feet no later than August 31.

Brownlee

- Maintain Hells Canyon at a hydraulic capacity of approximately 20 kcfs daily average to draft 237 KAF from Brownlee, and shape an estimated 139 KAF of the USBR's 427 KAF delivery by July 31. When the reservoir elevation reaches 2049, pass inflow.

Columbia River Operations:

Libby

- Operate Libby Project to elevation 2439 feet by drafting at a steady rate from now to that date in August that allows the full amount of water to reach McNary Dam by August 31. In recognition that the federal operators are considering a Libby/Arrow swap will take place (SSARR dated 7/24/98), they plan to operate Libby to elevation 2448 ft by August 31. The federal operators need to assure that the volume of water released from Arrow reservoir is equal to the volume retained in Libby reservoir between elevation 2448 and 2439 ft. That volume of water must be in addition to planned treaty and non-treaty storage releases from Arrow.

Kootenai Lake

- Kootenai Lake elevations between June and August 31 should be managed to assure the ability to draft the Libby Project the full 20 feet and pass through that volume to augment flows in the Lower Columbia River for summer migrating salmon.
- The planned draft of Kootenai Lake from its present elevation to elevation 1743 on August 31 should be implemented in a manner that provides benefit for summer migrant salmon.

Hungry Horse

- Draft Hungry Horse at steady rate between July 6 and August 31 to reach elevation 3540 feet by August 31. As with Libby Reservoir, draft at a rate that accounts for water routing time between Hungry Horse and McNary Dam in order to assure that the full volume is drafted and delivered to the lower Columbia.

Grand Coulee

- Operate Grand Coulee to meet McNary Dam flows for the week ending August 9.
NOTE: Additional proposals are being considered and are part of on-going discussions. These include: 1) providing additional water (100 KAF) by not pumping into Banks Lake and 2) drafting Grand Coulee to elevation 1277 feet by August 31.

McNary

- Meet weekly average flows of 150 kcfs.
- Weekend flows should not decrease to less than 80% of the previous five-day average flow.
- Biological Opinion seasonal flow targets will not be met at McNary Dam for the summer migration. Efforts should be made to discuss and consider all proposals to provide additional water at McNary.

All Sites

- The agencies and tribes have serious concerns regarding the high water temperatures occurring at Columbia and Snake river sites. Water temperatures are exceeding State and Federal water quality standards at most projects. Increased water temperature has been shown to have cumulative stress effects on fish.

Transportation Sites

- To avoid cumulative stress on juvenile migrants from holding in warmer water temperatures, fish collected for transportation should be transported **daily**.

JUSTIFICATION:

This request is based upon review of the present and projected reservoir operations and flows. Present and past summer migrant passage and survival data were also taken into consideration. The Brownlee operations are designed to provide the 237 KAF contribution from

Brownlee Reservoir, and to shape the Bureau of Reclamation water from the Payette and Upper Snake.

All of the fall chinook passage and life history data together support the emphasis on providing July and August flows for improved juvenile survival. In the 1995 fall chinook studies, NMFS researchers noted that PIT tagged hatchery fall chinook subyearling migrating between Lower Granite and Lower Monumental dams had a significant correlation between survival and flow, with survival decreasing as flow decreased (p. 61 in 1995 Annual Report Fall Chinook Salmon Survival and Supplementation Studies in the Snake River and Lower Snake River Reservoirs). Also, travel time of PIT tagged subyearling chinook increased as the flows decreased. Connor and Burge (1998, In Press) demonstrated that subyearling chinook salmon mean detection rate at Lower Granite Dam (1992 – 1995) was positively related to mean summer flow and negatively related to maximum summer water temperature. Travel time data indicates that past passage of sub-yearling migrants at Lower Granite beginning on July 8, will arrive at McNary during the week ending July 26.

Figure 1 illustrates that historically nearly 90% of juvenile fall chinook migrants pass Lower Granite Dam by August 31. In 1996 the peak passage of Clearwater marked fall chinook occurred from July 24 through August 8. In 1998, the USFWS estimates that most of the subyearling chinook will migrate in July. Figure 2 shows that the 1998 migration past Lower Granite Dam of wild subyearling chinook has been rapidly increasing in magnitude since the last week of June. To date, the cumulative passage index has exceeded 60,000 fish, well above our initial expectation using pre-season projections of NMFS for ESA permitting purposes. Provision of higher flows will help maintain a strong outmigration. In 1998 83,000 fall chinook from Lyons Ferry Hatchery were released over time at two locations, Canyon Creek in the Clearwater River drainage and Pittsburgh Landing on the Snake River. These planned releases are used to estimate survival and travel time under 1998 river conditions. PIT tagged fall chinook from research conducted by USFWS and the Nez Perce Tribe, marked in the Clearwater and Snake rivers, have been detected in significant numbers at Lower Granite Dam since July 6. Figure 3 depicts the recoveries of the fall chinook recoveries at Lower Granite to-date. Detections of small numbers of PIT tagged sub-yearling fall chinook have occurred at McNary Dam throughout June. Figure 4 shows significant increases in detections at McNary Dam of PIT tagged fall chinook from the Snake and Clearwater rivers over the past ten days.

Water temperatures in the Snake are near or at the upper limits of the state and federal water quality standards. Forebay temperatures at both Lower Granite and Little Goose projects appear to have been stabilized as a result of cooler water releases from Dworshak.

The above information strongly suggests that the best use of reservoir releases for flow augmentation and temperature control to achieve the maximum fishery benefit for all components of the juvenile migration will be achieved by the implementation of this operation as recommended. This SOR recommends operations through August 31, 1998. Additional operational proposals for adult migrants are being evaluated.