

State, Federal and Tribal Fishery Agencies Joint Technical Staff

Columbia River Inter-Tribal Fish Commission
Idaho Department of Fish and Game
Nez Perce Tribe
NOAA Fisheries
Oregon Department of Fish and Wildlife
Shoshone-Bannock Tribes
US Fish and Wildlife Service
Washington Department of Fish and Wildlife

February 8, 2005

Cathy Hlebechuk
US Army Corps of Engineers
PO Box 2870
Portland, OR 97208-2870

Dear Ms Hlebechuk:

The fishery agencies and tribes are concerned about the action agencies' use of perceived flexibility in operations at Dworshak reservoir to enhance revenue through hydropower production. The COE presented their proposal at the January 19 Technical Management Team (TMT) meeting. The COE action to draft Dworshak was based upon their Extended Streamflow Prediction model (ESP) and was applied before any review of the methodology with the fishery co-managers. After considering the COE proposal we have concluded that drafting Dworshak reservoir based upon the ESP model study as presented by the COE will increase the risk of meeting spring flow objectives in the Snake River this year. We recommend that the COE, in recognition of the decreasing water supply forecasts, and predictions of low streamflows operate Dworshak and other reservoirs to conserve water for spring and summer out-migrating salmon and steelhead.

The extended stream flow prediction (ESP) was developed to predict stream flow over periods ranging from one week to an entire season. These periods are typically beyond the National Weather Service (NWS) ability to predict the weather. The ESP uses short-term forecasts and historical precipitation, temperature, and evaporation over the rest of the simulated period. The ESP assumes that past meteorological conditions are representative of what may occur for the simulated period¹.

¹ Information taken from "Review of Extended Stream Flow Prediction of the National Weather Service River Forecast System" by Joseph A Pica of Portland State Universities Civil Engineering Department
http://www.nwrfc.noaa.gov/nwrfc/papers/esp_review/esp_review.html.

Joseph Pica, Portland State University, used ESP to simulate the April-July forecast at Dworshak Dam using each year of metrological data from 1950 to 1988 and compared these forecasts to the actual observed data. Pica states “for Dworshak inflow, the historical simulations at lower volumes are higher than the observed data, while simulations at the highest volumes are slightly lower than the observed data.” In short, Pica found that the ESP over-predicted April-July water supply at Dworshak Dam in lower water years. Therefore, caution should be had in applying the ESP to lower volume water years at Dworshak Dam as the ESP may predict a higher runoff volume than actual observed runoff, leading to increased risk to spring flows and out migration conditions.

Past years provide some examples of use of the ESP to draft Dworshak for hydropower, and the resulting reductions in early spring flows. The COE used the ESP model to implement flexibility in Dworshak operations in 2004. The COE announced that they had operational flexibility at the February 18th, 2004 TMT Meeting. The amount of flexibility was not stated, however over 101 Kaf was released from Dworshak between 2-18-04 and 3-2-04. The March 31st Flood Control elevations were 1538.3 feet for system flood control and 1547.2 feet for local flood control. At the end of March, Dworshak was at an elevation of 1530.1 feet, 8.2 feet and 111.9 Kaf below system flood control and 17.1 feet and 236 Kaf below local flood control. The COE did meet the April 10th FC elevation but had to refill 14.7 feet between March 31st and April 10th, 11.4 feet of that refill came after April 3rd – the beginning of the Spring Biological Opinion flow period on the lower Snake river. According to the RFC, the observed April-July inflow at Dworshak was 90% of average. In 2004, the ESP was used to determine some flexibility at Dworshak. In the end, Dworshak was well below the end of March FC elevations and had to refill aggressively over the start of April to meet the BIOP required April 10th elevation. As a result, the flexibility determined through ESP and then used late in February 2004 by the COE came at the cost of reduced early spring flows for juvenile out migrants.

In 2005, the COE has again utilized the ESP and concluded that they have some operational flexibility at Dworshak Dam. In the presentation at the 1-19-05 TMT, the COE used the ESP predicted water supply volumes over forty-four water years of differing conditions to predict flexibility at Dworshak. According to the plot “Additional Volume Available” in this presentation, at the 25th percentile water year (of the 44 years), approximately 50 Ksfd (or 100 Kaf) would be available to use with flexibility.

All available data indicate that the water supply forecast is decreasing through the winter. The RFC January Final (Apr-Jul) WSF at Dworshak was 1960 Kaf (74% of average); the February Early-Bird (Apr-July) forecast is down 140 Kaf to 1820 Kaf (69% of average). The February Early Bird included the actual precipitation through January 24th, assumed precipitation to be 50% of average from the 24th to the end of the month, assumed future precipitation to be normal, and did include snow. Additionally, according to the Natural Resources Conservation Service (NRCS), snowpack for the Clearwater and Salmon basins has dropped from 70% of average on January 1st to 60% of average on January 30th. The COE’s February Final forecast for Dworshak was down to 1642 Kaf (62% of normal).

In conclusion, all indicators are that Dworshak water supply be lower than average in 2005. Additionally, water supply at Dworshak is decreasing. This is likely to result in failure to

meet the NOAA Biological Opinion flow targets at Lower Granite Dam. The ESP forecast, based upon the assumption that the 2005 water year is near the 25th percentile of historical water years, indicates that 50 Kcfs of operational flexibility is possible at Dworshak. However, according to the Joseph Pica, study, there is likelihood that ESP will over predict the inflows to Dworshak in lower water years and therefore this method is likely to increase risk for juvenile migrants and exacerbate failure to meet flow targets at Lower Granite dam in a low water year, such as 2005. We recommend and encourage the COE to operate Dworshak and other projects conservatively, maintaining the upper rule curve operation to maintain as much volume as possible for juvenile spring salmon and steelhead migrants. This can help avoid the necessity to refill as much in late March and early April, and reduce the impact to spring migration flows.

If the Corps plans to continue using the ESP as a decision making tool, we would appreciate including the fisheries agencies in a review of the analysis, through the Regional Forum process, prior to making a final operational decision.

Sincerely,



Dave Statler, NPT



Ron Boyce, ODFW



Keith Kutchins, SBT



Kyle Martin, CRITFC



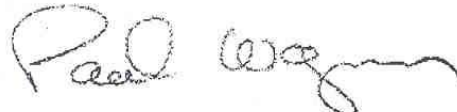
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