State, Federal and Tribal Fishery Agencies Joint Technical Staff

US Fish and Wildlife Service

Columbia River Inter-Tribal Fish Commission

Idaho Department of Fish and Game

Oregon Department of Fish and Wildlife

Washington Department of Fish and Wildlife

Shoshone-Bannock Tribes

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Dear Mr. Brown and Mr. Ruff:

The technical staffs of the Columbia River Inter-Tribal Fish Commission, the Oregon Department of Fish and Wildlife, the Washington Department of Fish and Wildlife, the Idaho Department of Fish and Game, the U. S. Fish and Wildlife Service and the Shoshone-Bannock Tribes have serious concerns regarding NOAA Fisheries' recent decision to support the federal operators in curtailing daytime spill at Ice Harbor Dam. This spill is required under the 2000 FCRPS Biological Opinion. A series of rapid conclusions were drawn and decisions were made primarily based upon preliminary data that has not been available for our review. At the June 20, 2003 NOAA Fisheries' Implementation Team meeting, NOAA Fisheries and the federal operators made a decision to implement and study two options: a bulk spill pattern operation and a no-spill operation. In addition to the process by which the decision-making took place, we do not agree with the conclusions drawn or the summer post-study operations decision. We believe that the 24 hour Biological Opinion (BiOp) spill, either the existing or bulk spill pattern, should be implemented until information from ongoing studies identify alternative operations can provide higher survival benefits than the BiOp.

We have serious concerns regarding the application of the recent Ice Harbor passage study results to short and long term fishery operations decisions at Ice Harbor Dam. Our primary concern is that NOAA Fisheries is making passage mitigation decisions on the basis of data that do not adequately support those decisions. We believe that the studies recently conducted at Ice Harbor Dam are significantly flawed with respect to study design. Further, the studies are insufficient for making project operational decisions for fish passage because, among other things, they are not robust in describing project (reservoir, dam and tailrace) mortality[1] or adequate in determining indirect and delayed effects that are only possible in smolt-to-adult survival studies. In addition, the NOAA Fisheries' decision-making process did not allow for adequate participation by the co-managers, since recent results were not available for review when the decision was made. NOAA Fisheries' decision-making process was faulty because it incorporated recent study results without adequate consideration of the weaknesses of the research results. The decision process was finalized without recognition of the value of collecting data in a comparable fashion across years and without adopting a precautionary approach in examining the likely detriments of no-spill operations. NOAA Fisheries should be joining the co-managers in developing broadly-based and comprehensive monitoring and evaluation programs to provide early detection to avoid significant impacts to stock productivity from passage as noted by Hilborn (1987).

We expand on the details of our specific concerns in the following discussion. In summary, they are:

- Recent studies (in 2003) at Ice Harbor (although preliminary) raise issues regarding validity of the results from studies conducted in 2000 and 2002.

- Studies at Ice Harbor have not provided information on relative survival through specific passage routes, yet NOAA Fisheries is making management decisions on survival through specific passage routes assumed in the 2000 Biological Opinion.

- A no-spill operation is not a normative river condition and will likely decrease migration rates and increase forebay delay, which could result in significant mortality via predation, disease and residualization of the run at large. A no-spill operation likely increases injury and mortality for adult fall chinook and steelhead that fall back through the powerhouse (turbines and juvenile bypass system) rather than over spillway. While NOAA Fisheries identified reduction of fall back mortality as a key concern for recovery (NMFS 1999), they have not considered it in making the operational decision to curtail Ice Harbor daytime spill during hours of peak adult passage.

- A scientifically rigorous study design adopted with the concurrence of the fishery managers must be developed to evaluate spill passage at Ice Harbor. The results of studies conducted under such an agreed-upon design would provide a common acceptable basis for future fish passage management decisions.

[1] The 2000 FCRPS Biological Opinion specifies that project mortality should be measured as the preferred metric to assess individual project effects on salmon passing the project.

As outlined in our previous technical memorandum, for a mark-recapture study to be valid, marked fish must reflect the actual conditions that fish will experience arriving at, passing through, and traveling below the dam. To date, it appears that none of the studies to estimate spillway survival at Ice Harbor have achieved this criterion, and therefore cannot be considered sufficient for changing BiOp requirements. In particular, we question the use of the hose releases in selected locations for representing the experience of a smolt passing through the spillway. This is an extremely important study design requirement at Ice Harbor since mechanical injury of fish has been shown to be highly influenced by the depth of fish passing over a spillgate with higher mortality observed for fish that were released deeper in the water column.

The only final report available addressing Ice Harbor Spillway survival is Eppard et al. (2002). In this study conducted in 2000, river-run hatchery yearling and subyearling chinook salmon were collected at Lower Monumental Dam, PIT tagged, transported to Ice Harbor Dam, and released. The treatment groups were released through a 10.2 cm diameter hose into spillbays 3, 5 and 7; release depth is not specified in the report. The control groups were released from a barge at mid-channel 0.8 km below the dam. Relative spillway survival for hatchery yearling chinook was estimated to be 97.8%. Relative spillway survival for hatchery subyearling chinook was estimated to be 88.5%. For both yearling and subyearling chinook the relative survival estimates increased with both total dam discharge and spillway gate position (number of stops). However, hose releases inject fish into a specific depth within the water column and thus do not reflect the actual conditions experienced by fish arriving at and passing through a spillway. Because the hose depth may differ from the depth at which fish pass through the spillway, the depth of the release point may affect the study results.

Eppard and Gores conducted a similar study in 2002 at Ice Harbor Dam with the addition of radio tags, but to-date only the research proposal is available for review. Consequently, we are unable to comment on the research methods or the validity of the results that were generated. However, NOAA Fisheries has repeatedly cited these results in support of the change in summer operations.

Balloon tag studies on yearling chinook were conducted at Ice Harbor Dam during the spring of 2003. In this study, the proportion of fish without injuries was estimated. Summarizing the preliminary results into a deep release group (3 feet above ogee, with 2, 3, or 4 stops) and a shallow release group (7 feet above ogee, with 5 stops or more) resulted in estimates of 82.2% and 94.4% uninjured fish, respectively. These preliminary results suggest that either the depth of release or the spillway gate position (stops) may affect the injury rate of yearling chinook. However, these results also force us to question how the depth of release and the number of stops affected the survival estimates reported in Eppard et al. (2002). If release depths or gate stops can affect injury rates, then it is reasonable to expect that these factors will also affect survival estimates. This is a significant shortcoming, which calls into question the validity of the results for 2000 and the preliminary results for 2002.

While we understand the concern these data have generated, a thorough review of all relevant studies needs to be conducted before extensive alterations are made to a study design that was agreed upon before the season. Two years of similar data are not enough to make a

dramatic change in operations, especially considering the situation the region witnessed at The Dalles Dam, where two years of data showed similar results, but the third year showed significantly different results from the previous years. Each year is unique with regard to flow, temperature, time of freshet, fish condition, and migration time. Two years of data, one of which we have been unable to review, is hardly enough to justify radical changes in fish passage operations. We support continued evaluations at Ice Harbor, however, we need several (at least three) years of replicated and standardized treatments to insure that data are adequate to make management decisions.

No recent turbine survival estimates are available at this time. The only turbine survival study conducted at Ice Harbor was in 1968. This study indicated an 81 to 90% turbine survival of coho salmon with a substantially higher predation loss. While the predation loss may have improved over time with better project operations (units 4-6 were skeleton bays at that time) and predator removal, the direct turbine survival may have decreased due to substantial wear on the turbine units, particularly units 1-3 (which are scheduled for rehab in the next few years). The current turbines at Ice Harbor are getting close to the end of their design life. Fatigue and failures have occurred both recently and in the past. Turbine unit #3 is out of service for an extended period after part of the turbine blade broke off and was discharged into the draft tube. It is likely that the other turbines in the powerhouse are similarly nearing their life expectancy and not operating at peak operations, which could be negatively impacting juvenile survival through the units. It is therefore likely that the 90% survival estimate that was used in the 2000 BiOp and in model studies, is overestimating survival. The Dalles turbines, which are also scheduled for rehabilitation over the next several years, have survival estimated to be in the low 80 percentile range. The spring migrant survival estimate for turbine passage at units 1 and 3 in 2003 was estimated at 87%. This is likely an optimistic estimate since the fish were directly released into the turbines, and therefore did not account for any forebay mortality prior to the release point in the turbine. Further, predation upon spring migrants is less of a factor than predation upon summer migrants due to lower water temperatures, predator abundance, and behavior. Summer migrants are likely to be more stressed due to high temperatures combined with disease and parasite concerns, since the Snake River regularly surpasses the 68 degree F water temperature standard. There are no summer migrant survival data related to the bypass system. Guidance has been estimated to be 54% from the 2000 FCRPS Biological Opinion, using upstream projects as an estimate. A no-spill operation could potentially put 46% of the migrants through the turbines.

A no-spill operation would also increase forebay delay. Venditti et al. (2000) studied the migration of fall chinook in the Snake River, specifically at Little Goose Dam. They compared migration times and patterns from 1995 – 1997. The July flows for this time period were considered above normal, with the years ranking eighth, tenth, and fifth in flow overall. While the bulk of the migrants passed through the upper reach within 5 days, a significant proportion, 10-20% of population, delayed in the lower reservoir and forebay reach for 7 days or more. In the slack water forebays of dams without spill, Venditti et al. found that nearly 22% of the fish reversed migration and migrated back upstream. These excursions and delays waste finite energy reserves necessary for survival to saltwater and exacerbate the low energy reserves noted in fall chinook from lack of quality food in Lower Snake River reservoirs (Bennett et al.1999). Further, delays and upstream excursions subject salmon migrants to increased exposure to high water

temperatures. These temperatures are correlated with increased predation rates associated with elevated temperatures (Poe et al. 1991), diseases and parasites (McCullough 1999), impairment to migration and reversal of smoltification (Zaugg 1981). Migration times in a low flow year (e.g., 2003) would likely be even worse. This increased delay exposes migrants to two deleterious conditions (predation and high water temperatures), which can increase the likelihood for considerable mortality among smolts that experience lengthy delay. None of this was accounted for in the discussions about a no-spill option.

In conclusion, we request that NOAA Fisheries reconsider their decision to curtail daytime spill at Ice Harbor Dam and collaborate with co-managers to develop a robust study design incorporating passage through the entire project (with smolt to adult returns if feasible) that will support the management decision-making process. We encourage NOAA Fisheries to seriously consider the concerns and comments of the co-managers in short and long-term fish passage management decisions at Ice Harbor and other projects where we share management responsibility. Changes to dam operations for fish passage specified by the 2000 FCRPS Biological Opinion are significant and should not occur based upon uncertain and inadequate technical information and without full consultation leading to concurrence by the state, tribal and other federal fishery co-managers. We request that NOAA fisheries respond to this letter and specifically describe their technical justification for recommending this variation from the spill measures contained in the 2000 Biological Opinion.

Sincerely,

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