SYSTEM OPERATIONAL REQUEST: #2009-01

The following Salmon Managers have participated in the preparation and support this SOR: Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife, and the Nez Perce Tribe,*.

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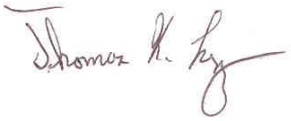

FROM: Tom Lorz, Vice Chairperson, Salmon Managers

DATE: March 11, 2009

SUBJECT: Bonneville Second Powerhouse Corner Collector Operation

SPECIFICATIONS:

Immediately begin operation of the Bonneville Second Powerhouse corner collector on Thursday, March 12, 2009 after completion of the BGS inspection and divers are out of the water, and maintain its use throughout the spill season. This is considered part of the roll-over of 2008 operations.

JUSTIFICATION:

Presently, early migrating juvenile salmon have been shown passing the Bonneville Second Powerhouse and have averaged over 1000 fish per day over the past week (FPC 2009). These numbers represent early migrating Chinook, including the Klickitat Hatchery release of 600,000 yearling spring Chinook released on February 25, 2009. Based on the 2004 and 2005 juvenile survival studies, the corner collector passage survival has consistently been in the high 90% range for juvenile spring Chinook and steelhead while the second powerhouse turbines have

been somewhat lower with juvenile Chinook survivals in the mid 90% range and steelhead survival in the upper 80% range.

In the past, opening the corner collector without spill flow to provide egress conditions at the collector outfall was not preferred due to concerns regarding predation on juvenile salmon migrants. However, the predation issue was addressed when the use of the corner collector for early Spring Creek NFH releases was considered, and a conclusion was reached that the water temperatures during this time of the year were sufficiently low that predation would likely not be a significant problem.

While offering some protection for early migrating juvenile salmonids, the corner collector also affords protection for steelhead kelts. PNNL (Weiland et al. 2009) evaluated kelt passage via hydroacoustic monitoring in the corner collector during the early pre-spill season (~ March 1 to ~April 10) in 2007 and 2008. The data collected indicated 172 and 223 kelt sized fish passed the collector in each year, respectively. Daily passage ranged from 4 to 7 fish per day. Temporal passage appeared to be fairly constant through the study period with some higher peaks in early April. An analysis of the PIT tag database for the same March to early April timeframe indicated that 6 and 12 tagged steelhead passed this route in 2007 and 2008, respectively. While tagged to untagged ratios and origin of these fish is not definitive from the database, the point is that these fish are present during this time and do pass the corner collector when it is open.

Route specific return rate relationships for steelhead kelts are impossible to determine based on existing sparse data. However, the limited adult passage survival data for the turbine route based mostly on other Kaplan turbine equipped dams in the region have reported mortality and injury rates in the 20 to 40% range (Wagner and Ingram, 1973, Liscom and Stuehrenberg, 1985). Boggs and Peery (2006) found that 8 of the 15 fall Chinook and steelhead that fell back through the second powerhouse turbines during their 2002-04 studies were unaccounted for after the fallback event. Given these observations, it is reasonable to assume that the corner collector would be a safer route of passage for adult salmon (including kelts) than the second powerhouse turbines.

In conclusion, the potential for improved juvenile survival of migrants passing during this no spill period and the Biological Opinion's reliance on kelt survival, it is appropriate to make a decision to operate the Bonneville Second Powerhouse corner collector beginning immediately after the inspection of the behavioral guidance screen has taken place on March 12, 2009.

* CRITFC and 3 Accord tribes are working with the AA directly to address this matter pursuant to the Fish Accords.

Literature Cited:

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