Priest Rapids Coordinating Committee

Statement of Agreement of NOT installing Gatewell Exclusion Screens at Wanapum and Priest Rapids dams

Submitted to the Priest Rapids Coordinating Committee: December 14, 2011
Approved by the Priest Rapids Coordinating Committee: January 03, 2012

Statement: Based on the results of the 2010 study to evaluate gatewell exclusion screens and smolt escapement at Wanapum and Priest Rapids dams (Wright et al. 2010) and the potential impact to maintenance operations at the dams, the PRCC has agreed that the installation of gatewell exclusion screens at both Wanapum and Priest Rapids dams is not required.

Background: Grant PUD was required to file for FERC approval, within six months of issuance date of the license, a plan for studying the effects of installing gatewell exclusion screens on juvenile salmon, steelhead, and lamprey survival during turbine passage. The plan was required to include: (1) detailed design drawings describing construction and installation of experimental exclusion screens at one turbine at each dam; (2) descriptions of methodologies for estimating the effect of the experimental screens on juvenile salmon and steelhead passage survival; (3) descriptions of methodologies or models for estimating the effects of the screens on juvenile lamprey passage survival; and (4) an implementation schedule, including dates for conducting studies, reporting results, and making recommendations for the installation of gatewell screens.

After consultation with the PRCC the proposed study plan was filed with FERC on October 17, 2008. On December 19, 2008, FERC issued an Order approving the Gatewell Exclusion Screen Study Plan. Specific requirements of this order required Grant PUD to file (by January 15, 2011) a Gatewell Exclusion Screen Study Report. The report was to include the following elements; (1) results from the study and a plan and schedule for additional testing if deemed necessary; and (2) recommendations for the installation of gatewell exclusion screens in all of the bulkhead gatewell slots at Wanapum and Priest Rapids dams and an associated schedule.

The Study: During the spring and early summer months of 2010, gatewell exclusion screens and gatewell escapement were monitored at Wanapum and Priest Rapids dams. The first objective, gatewell exclusion screen testing, was to monitor a single screen installed at each project in a bulkhead slot of a turbine intake. Prior to the juvenile salmonid downstream migration, a dual frequency identification sonar (DIDSON) camera was installed on the end of the screen that allowed 69% of the screen surface to be effectively imaged. Fishes were enumerated as they passed within the insonified area near the screen, and interactions with the screen were classified by type (contact or non-

contact). A total of 18 days of data collection throughout the spring and summer salmonid migration periods were analyzed at each dam.

The fishes observed had a low level of interaction with the screens and a very low level of multiple or extended contact. At Wanapum Dam, 10,632 fishes were observed near the exclusion screen with 784 (7.4%) coming in contact with the screen. At Priest Rapids Dam, 29,340 fishes were observed with 360 (1.2%) contacts with the screen. Numerous juvenile lamprey were also observed passing both the Wanapum and Priest Rapids dams by the DIDSON acoustic systems. These lamprey were part of an established downstream migration coinciding with the spring runoff throughout the Columbia Basin.

The second objective, gatewell escapement, was tested with a series of acoustic tagged steelhead and sockeye that were released into a single bulkhead and wheel gate slot at each dam between May 8, 2010 and May 23, 2010. Residence times of fish released into the slots were recorded 24 hours a day. At both dams, fish volitionally exited the gatewell slots. Sockeye exited more quickly than steelhead with median residence times of 0.2 d (4.5 hr.) and 1.7 d, respectively, at Wanapum Dam and 0.1 d (2.9 hr) and 1.9 d, respectively, at Priest Rapids Dam. The majority of the study fish exited through the turbine intake associated with the release gatewell slot; however, some fish did move upstream into the forebay and were detected passing at other turbine units or a surface bypass route.

Uncertainties: At the time of filing the study results with FERC on January 15th, 2011, there were still uncertainties as it relates to installation of the gatewell exclusion screens at Wanapum and Priest Rapids dams and gatewell escapement and survival for juvenile salmonids that find their way into the gatewell slots. The PRCC and NOAA Fisheries recommended installation of the “gatewell exclusion screens at both dams, in as many gatewell slots as plausible” (NOAA-Fisheries Memo dated January 6, 2011), however they also believe that “more time and additional studies are needed to adequately consider all aspects and ramification of screen installation.”

The PRCC identified the following uncertainties, recognizing that it was unlikely a complete list; (1) long term maintenance of the gatewell screens, (2) seasonal maintenance of the screens, (3) source of test fish for future survival studies, (4) potential impacts to juvenile steelhead and/or sockeye and (5) potential impacts to summer Chinook.

Initial capital costs for the fabrication of sixty (60) screens is estimated at $2,970,000.00, and additional annual maintenance costs of $44,000.00. With the removal and re-installation of the screens anytime that a turbine needs to be bulkheaded for maintenance (3 – 4 times a year at each dam), it is also estimated an addition of 2-3 days will be added to the time needed to conduct the turbine maintenance.

Based on study estimates of the percentage of the fish population that utilize turbine passage and the percentage of that sub-population that might find their way into a gatewell slot (2.6%), it is estimated that the installation of gatewell screens would

prevent between 0.6% and 1.4% of the out-migrating salmonid population from finding their way into a gatewell slot and experiencing some delay to their migration due to gatewell retention time.

Upon further evaluation of the DIDSON camera data from the 2010 study, it was determined that summer migrants (i.e. sub-yearlings) have less than half of the interactions with the gatewell exclusion screens as seen by spring out-migrants.

Literature Cited:

Wright, C.D., L.S. Sullivan, R.R. O'Connor, M.A. Timko, S.E. Rizor, J.L. Hannity, C.A.

Fitzgerald, M.L. Meager and J.D. Stephenson. 2010. Evaluation of Gatewell Exclusion Screens and Escapement at the Priest Rapids Hydroelectric Project in 2010.