



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
1201 NE Lloyd Boulevard, Suite 1100
PORTLAND, OREGON 97232-1274

December 15, 2016

VIA ELECTRONIC FILING

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE
Washington, D.C., 20426

Re: Emergency Consultation, Priest Rapids Hydroelectric Project (FERC No. 2114-266)

Dear Ms. Bose:

On September 14, 2015, NOAA's National Marine Fisheries Service (NMFS) received your request for written concurrence that the Federal Energy Regulatory Commission's (FERC) authorization of emergency measures taken by Public Utility District No. 2 of Grant County, Washington (Grant) in response to a fracture in the Wanapum Dam spillway resulted in a *not likely to adversely affect* determination for Upper Columbia River (UCR) spring-run Chinook salmon and UCR steelhead. The emergency measures are described in Grant's March 21, 2014, Interim Fish Passage Operations Plan (Interim Plan), approved by FERC on March 26, 2014. Our assessment of the Interim Plan is taken in context of our February 1, 2008, biological opinion, your May 6, 2015, biological assessment, and operation of the Priest Rapids Hydroelectric Project during the emergency period of February 27, 2014, through March 21, 2015. We find the emergency measures set forth in the Interim Plan and employed by Grant did not exceed take limits set in our February 1, 2008, biological opinion, nor were listed species or critical habitat affected in a manner or extent materially different from that opinion's analyses, and therefore a new consultation under the Endangered Species Act (ESA) is not required. Additionally, while the emergency was not concluded before March of 2015, this letter only addresses effects that occurred during the 2014 passage season as all fish passage functions were normal prior to the start of the 2015 passage season.

BACKGROUND

The 1,993-megawatt Priest Rapids Hydroelectric Project (Project) is owned and operated by Grant PUD and consists of two developments: Priest Rapids at river mile 397 and Wanapum at river mile 415. The Project occupies about 58 miles of the Columbia River in central Washington in portions of Grant, Yakima, Kittitas, Douglas, and Chelan Counties. This portion of the Columbia River is designated critical habitat for both UCR spring-run Chinook salmon and UCR steelhead (Sept. 2, 2005, 70 FR 52630), and primarily serves as a migration corridor for both juvenile and adult migrants. The UCR Spring-run Chinook salmon Evolutionarily Significant

Unit (ESU) was listed under the ESA as endangered on March 24, 1999 (64 FR 14308) and the UCR Steelhead Distinct Population Segment (DPS) was upgraded from endangered to threatened on August 24, 2009 (74 FR 42605). As stated above, NMFS completed ESA consultation with the Commission on these species on February 1, 2008. The Commission issued a new license for the Project on April 17, 2008.

On February 27, 2014, Grant discovered a 2-inch wide by 65-foot long horizontal fracture in spillway monolith 4 at Wanapum Dam. We received notification of the event on February 28, 2014. To stabilize the monolith, Grant initiated a controlled drawdown of the reservoir from a surface elevation of 571 feet mean sea level (msl) to an operating range of 545 to 541 feet msl, which was reached on March 4, 2014. In anticipation of the fish ladders becoming inoperable, Grant staff evacuated fish from the Wanapum Dam left bank (looking downstream) fish ladder during the drawdown period. The right bank ladder was already dewatered for annual winter maintenance. By letter dated March 11, 2014, FERC issued an order requiring Grant to remain at the lower operating range until further notice.

Due to the emergency drawdown the fish ladder exits at Wanapum Dam were dewatered, effectively blocking all upstream migrating fish from passing Wanapum Dam. Both fish ladders at Priest Rapids Dam, however, were not impacted and continued to operate as normal. As Grant investigated the origin of the fracture and potential repair options, it became apparent that the fish ladders would not be operable in time for the start of the fish passage season. Adult UCR spring-run Chinook salmon typically start returning to the Project area in early to mid-April, consequently Grant had little time to devise and construct alternative upstream passage measures at the Project.

EMERGENCY CONSULTATION

After the fracture was discovered, Grant immediately began consulting with NMFS and the Priest Rapids Coordinating Committee (PRCC)¹ concerning alternative upstream passage measures. This work resulted in the final Interim Plan. By email dated March 18, 2014, we provided Grant the following list of recommendations to minimize take of listed UCR spring-run Chinook salmon and UCR steelhead.

Trap and Haul at Priest Rapids Dam

- Involve NMFS' fish passage engineers and the PRCC as design modifications to the off ladder adult fish trap (OLAFT) move forward.
- Take care not to drop adult fish in the transport tanks such that they impact the tank walls.
- Limit the time that fish are held in the transport tanks to 4 hours.
- For adult spring Chinook, use an average weight of 14 pounds per fish for calculating transport load density rather than the proposed weight of 10 pounds per fish.

¹ Priest Rapid Coordinating Committee members include representative from the NMFS, US Fish and Wildlife Service, Washington Department of Fish and Wildlife, Yakama Nation, Confederated Tribes of the Colville, Confederated Tribes of the Umatilla Reservation, and Grant.

- If possible, collection of brood stock or test fish for research purposes be eliminated or limited as much as possible at the OLAFT; we are concerned that activities around the OLAFT could slow or stop adult fish from entering the trap and create significant delay.

Wanapum Fish Ladders

- Involve NMFS' fish passage engineers and the PRCC to the best of your ability as designs and plans for modifying the Wanapum Dam fish ladders move forward. As soon as practicable, design and install an extension to the flume leading from the ladder exits down to the Wanapum forebay; current designs allow fish to free fall 9 to 11 feet which increases the potential for injury.
- The flume should extend to a point where fish are limited to a maximum free fall of 4 feet.
- The flume should also be designed to handle large numbers of fish as could be expected during the sockeye salmon run.
- Modifications to the OLAFT should remain in place until we are certain that the Wanapum fish ladder modifications are working as designed, and suggest that the trap and haul be conducted on alternate days until we know that fish are safely passing Wanapum Dam and Rock Island Dam.
- When it is established that the fish ladders at Wanapum and Rock Island Dams are functioning properly, the trap and haul effort should stop and at that point all fish ladders should remain open.

Monitoring and Evaluation

- We recommend that Grant PUD include use of Passive Integrated Transponder (PIT) tag data to evaluate the passage efficiency of the trap and haul and fishway modifications.

Because of Grant's ongoing consultation with NMFS and the PRCC, these recommendations were being implemented at the time we sent this list and were included in the final IFPOP. FERC issued an order on March 19, 2014, designating Grant as its non-Federal representative for purposes of ESA consultation and initiated consultation under the emergency provisions of section 7 of the ESA. Throughout the response period of February 27, 2014 through March 21, 2015, Grant convened roughly 84 site visits, conference calls and meetings and adaptively managed implementation of the IFPOP in consultation with NMFS and the PRCC (Grant 2015c).

Emergency Measures

Specific emergency actions taken to facilitate upstream passage of UCR spring-run Chinook salmon and UCR steelhead included modifications to the Priest Rapids Dam Off-Ladder Adult Fish Trap (OLAFT), a trap and transport program, modifications to the Wanapum Dam fish ladders, monitoring and evaluation program, and an evaluation of juvenile migrant survival through the Project.

Priest Rapids Dam Trap and Haul

The OLAFT is located on the left bank ladder and is used to capture fish for research purposes or brood collection for supplementation programs. In the event that ladder modifications at Wanapum dam were ineffective, Grant made modifications to the OLAFT so that adults could be captured and transported to release locations upstream of Wanapum Dam. The right bank ladder remained operational but auxiliary fish attraction water was turned off to encourage fish to use the left bank ladder and OLAFT. The modifications included installation of a transport chute and pipe to direct fish from the OLAFT to transport vehicles without physically handling fish, i.e., water to water transfer. Grant secured up to eight transport vehicles in the event they were needed. A PIT tag antenna located in the OLAFT detected PIT-tagged fish prior to loading on transport vehicles. The modifications were completed on April 11, 2014, and were put into operation on April 15, 2014. All trapped and transported fish were released at the Rocky Coulee Boat Launch, located on the right bank of the Columbia River roughly 26 miles upstream of Priest Rapids Dam and about 5.5 miles upstream of Wanapum Dam near Vantage, Washington (Grant 2015).

Wanapum Dam Fish Ladder Modifications

Grant, in consultation with NMFS and the PRCC, simultaneously made modifications to the left bank ladder at Wanapum Dam while completing changes to the OLAFT. Because roughly 70 percent of upstream passage occurs at the left bank ladder, modifications were completed there first, followed by the same changes to the right bank ladder. To water-up the ladder, Grant installed false weir boxes fabricated from steel plating at the ladder exit and attached a flume constructed from marine plywood on the upstream side of the false weir box. About 40 cubic feet per second (cfs) of water was supplied to the weir box by four 90 horsepower submersible pumps located in the forebay. About 35 cfs was directed to the ladder and 5 cfs to the flume. The false weir was designed to create about a 1-foot high cascade of water to encourage fish to jump over the weir and become captured in the flume. Fish would slide down the flume and free fall between 9 and 13 feet into the forebay. The ladder modifications were completed and operational on April 15, 2014. Grant completed the same modifications to the right bank ladder on April 26, 2014. Grant installed spiral chutes, attached at the end of the flumes, to reduce the free fall of adult salmon and steelhead from a maximum of 15 feet to 5 feet. Installation was completed at the left bank ladder on June 12, 2014, and at the right bank ladder on June 19, 2014.

Monitoring and Evaluation

Normal flow volume through the Wanapum Dam fish ladder is 70 cfs but the emergency modifications resulted in about half this flow or 35 cfs through the ladder. The PRCC was concerned that adults may delay in the ladder or not pass at all, thus being forced to trap and haul all salmon and steelhead returning to the upper Columbia Basin. To assess the success of the modifications at the Wanapum Dam ladders, and to determine if trap and haul could be abandoned in favor of complete volitional passage through the Project, Grant agreed to measure the following (Grant 2014a):

1. *Travel Time:* Travel time was determined as migration time from the Priest Rapids Dam PIT tag array to the Rock Island Dam PIT tag array. Based on data from a 10 year period (2003-2013), travel time from Priest Rapids Dam to Rock Island Dam was <356 hours for 90% of the fish detected at Priest Rapids Dam and Rock Island Dam. This value represented the highest 90th percentile travel time observed since 2003 when ladders were operating under normal conditions. The majority of observations are <350 hours, however, travel times above 350 hours have occurred under normal circumstances.

2. *Conversion Rates:* In combination with measured travel time between Priest Rapids and Rock Island Dams, Grant assessed conversion rates (a measure of the proportion of PIT-tagged fish detected at Priest Rapids Dam and again detected at Rock Island Dam) for the same reach. NMFS and the PRCC agreed that if conversion rates were 80 percent or greater, then that would be one consideration for ceasing the trap and haul program. These conversion rates were *uncorrected*, meaning they would not have been adjusted for array detection efficiencies and detections upstream of Rock Island Dam. During the passage evaluation, uncorrected conversion rates were available in real time and therefore used for the ladder passage criteria.

3. *Direct Observation:* Grant agreed to directly observe fish exiting the flumes at both Wanapum Dam ladders to watch for mortality or injury. The objective was to have <5% observed instantaneous mortality.

Juvenile UCR Spring-run Chinook Salmon and UCR Steelhead Study

Grant, in consultation with NMFS and the PRCC, modified juvenile steelhead and yearling Chinook survival and behavior evaluations that were already scheduled to occur within the Project during the spring of 2014. This provided information on survival of juvenile steelhead and yearling Chinook migrating through the lowered Wanapum Reservoir and route-specific structures at Wanapum Dam (turbines, bypass and spillway).

Results

UCR Spring-run Chinook Salmon

Adults

A total of 23,742 adult UCR spring-run Chinook salmon were counted at Priest Rapids Dam in 2014. About 3.6 percent (n=855) of the 2014 run were trapped at the OLAFT. For the evaluation of travel time and conversion rates between Priest Rapids Dam and Rock Island Dam, 250 hatchery-origin adults were tagged with PIT (n=200) and acoustic (n=50) tags and released in the Priest Rapids Reservoir immediately upstream of Priest Rapids Dam. An additional 605 adults were trapped and transported upstream of Wanapum Dam and released at the Rocky Coulee location in the Wanapum Reservoir.

The travel time criteria of <356 hours and conversion rate criteria of >80 percent were satisfied. Median travel time between Priest Rapids and Rock Island Dams was 167 hours. The

uncorrected conversion rate was 100 percent and 92 percent for acoustic tagged and PIT-tagged fish, respectively. No mortalities or injuries were observed at the Wanapum Dam ladder flumes. Thus, the trap and haul program was terminated on May 19, 2014, and all adult fish were allowed to pass volitionally through the Project (Grant 2014b). The trap and haul modifications were left intact in case they were needed.

After PIT-tag array detection efficiencies were determined, and after detections upstream of Rock Island Dam were included, Grant determined that the *corrected* conversion rates were 100 percent for acoustic tagged fish and 99 percent for PIT-tagged fish. Two adult UCR spring-run Chinook salmon mortalities did occur at the OLAFT, which were the only two observed during the 2014 run.

Juvenile Migrants

The Project survival standard for all juvenile salmon and steelhead is 86.49 percent (93.0 percent for each development) (NMFS 2008). The estimated survival of juvenile UCR spring-run Chinook salmon migrating through the Project in 2014 was 90.8 percent, or 4.3 percent above the standard. The estimated Wanapum Development (dam and reservoir) survival was 94.5 percent while survival through the Priest Rapids Development was 96.1 percent. The Wanapum and Priest Rapids dam only passage survival was 98.8 percent and 97.1 percent, respectively (Skalski *et al.* 2014)

UCR Steelhead

Adults

Adult UCR steelhead are present in the Project area year round, but peak migration through the Project typically runs from July through October. While a total of 19,843 adult UCR steelhead were counted at Priest Rapids Dam in 2014, just 0.2 percent, or 42 adults, were trapped at the OLAFT and transported to the Rocky Coulee release site in the Wanapum Reservoir during the early startup and evaluation phase of the emergency modifications. No mortalities were observed during the total 2014 run. Further analysis was conducted on the run-at-large to determine if there were potential impacts related to the emergency response. Based on that analysis, survival for adult steelhead passing through the Project in 2014 was determined to be 98.0% (Grant 2015).

Juvenile Migrants

The survival estimate for juvenile steelhead migrating through the Project in 2014 was 89.3 percent, which is 2.8 percent above the required juvenile salmonid and steelhead project passage survival standard of 86.49 percent. Estimated Wanapum Development passage survival for juvenile migrants was 92.9 percent and survival through the Priest Rapids Development was 96.1 percent. Estimated dam-only passage survival for Wanapum and Priest Rapids dams was 97.8 percent and 98.5 percent, respectively.

Termination of Emergency Measures

After months of work to repair the fracture on the Wanapum Dam spillway, Grant received approval on November 25, 2014, to conduct a partial refill of the reservoir (FERC 2014) and by December 1, 2014, reached their target elevation of 562 feet msl. Grant maintained an operational range of 558-562 feet msl while repairs to the Wanapum Spillway continued. With the partial refill, Grant was able to remove all of the emergency modifications at the Wanapum Dam fish ladders and put back into normal operation. Grant also removed the temporary modifications to the OLAFT at Priest Rapids Dam.

On January 30, 2015, Grant filed a letter with FERC indicating it believed the emergency response that occurred throughout 2014 and in the first quarter 2015 would conclude by May 1, 2015, and thus requested that FERC determine that implementation of the Interim Plan be discontinued on May 1, 2015. FERC issued an Order on March 19, 2015, approving Grant's request to discontinue emergency operations under the Interim Plan and made it effective immediately. On March 16, 2015, Grant initiated the final refill and reached the target elevation of 569 feet msl on March 21, 2015. Although this was 2.5 feet short of the normal operating maximum pool elevation, it was necessary due to the presence of a caisson along a portion of the spillway. Once the caisson was moved on April 30, 2015, Grant PUD had full use of its full operating range up to 571.5 feet msl.

CONCLUSION

NMFS (2008) requires a minimum survival standard of 93.0 percent for listed juvenile migrants passing through each development; or a Project-level (both developments combined) standard of 86.49 percent (0.93×0.93). For listed adult migrants, a 98 percent survival is required for each development or a Project-level standard of 96 percent (0.98×0.98). In addition, a combined juvenile and adult standard of 91 percent (0.93×0.98) per development, or Project-level standard of 82.8 percent (0.91×0.91), may also be applied.

Adult and juvenile survival standards were met or exceeded during the 2014 migration season. Estimated Project survival for UCR spring-run Chinook salmon and UCR steelhead was 90.8 percent and 89.3 percent, respectively. Juvenile survival through the Wanapum Development, where the emergency occurred, was 94.5 percent for UCR spring-run Chinook and 92.9 percent for UCR steelhead (0.1 percent short of the minimum standard of 93.0 percent). For adult migrants, estimated Project survival for UCR spring-run Chinook salmon and UCR steelhead was 99.0 percent and 98.0 percent, respectively. Since take limits set in NMFS (2008) were not exceeded, and the effects of actions taken were not materially different from those actions considered in our 2008 biological opinion, NMFS concludes that reinitiation of ESA section 7 consultation is not required.

We greatly appreciate FERC's assistance with emergency ESA consultation procedures during the emergency period. If you have any questions, please contact Scott Carlon of my staff at 503.231.2379 (email: scott.carlon@noaa.gov).

Sincerely,



Michael Tehan
Assistant Regional Administrator
Interior Columbia River Basin

cc: Stephan Lewis, USFWS – Wenatchee, WA
Tom Dresser, Grant County PUD – Ephrata, WA
Jeff Grizzel, Grant County PUD – Ephrata, WA

REFERENCES

- FERC (Federal Energy Regulatory Commission). 2014. Authorization for interim pool raise to el. 562 feet, Wanapum Dam, Priest Rapids Project, FERC No. 2114. Federal Energy Regulatory Commission, Washington, DC.
- Grant (Public Utility District No. 2 of Grant County, Washington). 2014a. P-2114-266 – Priest Rapids Hydroelectric Project, Wanapum Dam spillway monolith No.4 – interim fish passage operations plan first status report. Public Utility District No. 2 of Grant County, Ephrata, Washington.
- Grant. 2014b. P-2114-266 – Priest Rapids Hydroelectric Project, Wanapum Dam spillway monolith No.4 – interim fish passage operations plan second status report. Public Utility District No. 2 of Grant County, Ephrata, Washington.
- Grant. 2015. After the fact biological assessment – implementation of an interim fish passage operation plan in response to Wanapum Dam fracture and resulting emergency drawdown of Wanapum Reservoir. Public Utility District No. 2 of Grant County, Ephrata, Washington.
- Skalski, J. R., R. L. Townsend, J. M. Lady, M. A. Timko, L. S. Sullivan and K. Hatch. 2014. Survival of acoustic-tagged steelhead and yearling Chinook salmon smolts through the Wanapum – Priest Rapids Project in 2014. Columbia Basin Research, University of Washington, Seattle, Washington and Blue Leaf Environmental, Ellensburg, Washington.

**UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION**

Public Utility District No.2 of Grant County, Wa.

)Priest Rapids

)Hydroelectric Project

)FERC No. P-2114-266

I hereby certify that I have this day served, by electronic or first class mail, a letter to Kimberly D. Bose, Federal Energy Regulatory Commission, from the National Marine Fisheries Services an Emergency Consultation, Priest Rapids Hydroelectric Project (FERC No. 2114-266) and this certificate of Service has been served to each person designated on the official service list compiled by the Commission in the above captioned proceedings.

Dated on December 15, 2015



Bonnie J. Hossack
Administrative Assistant

Document Content(s)

Priest Rapids Emergency Consultation FERC-P-2114-266.PDF.....1-10