



Grant County
PUBLIC UTILITY DISTRICT
Innovation & Excellence...Yesterday, Today and Tomorrow

MEMORANDUM

April 19, 2007

TO: Dispatch
Wanapum Dam Control Room
Priest Rapids Dam Control Room

VIA: Stephen Brown, Natural Resources Director *SB*
Tom Dresser, Fish, Wildlife, and Water Quality Manager *JH*

FROM: Curt Dotson, Sr. Biologist *CD*

Purpose: Turbine Operations During Spring Fish Out-Migration

Background: On May 3, 2004 Grant PUD was issued a Biological Opinion by NOAA Fisheries, which was adopted by FERC on December 16, 2004. In that Biological Opinion, 40 Reasonable and Prudent Alternatives (RPA) are required of Grant PUD. Six of these RPAs address how Priest Rapids and Wanapum dams are to be operated (i.e. "fish spill" and "fish mode") during the spring out-migration of juvenile salmonids

A "fish mode" turbine operations program was developed for Wanapum Dam shortly after the first biological testing of fish passage through a turbine unit in 1996. Following the 2005 biological testing of turbine fish passage at Priest Rapids Dam, a similar fish mode turbine operations program was developed for Priest Rapids Dam (see attached). Upon further investigation of the issue concerning smolt passage survival through turbines, it was determined that passage survival rates for out-migrating juvenile salmonids is influenced not only by how a turbine is operated (i.e. "fish mode"), but also how the dam's powerhouse is operated. This determination lead to the concept of "ganging" turbine units in conjunction with operating turbines in fish mode. "Ganging units" is defined as concentrating operating turbines into blocks of adjacent units, thus reducing the "edge-effect" in regards to predation on salmon smolts as they exit the turbine draft tube.

Discussion: During this spring fish out-migration season, in an effort to meet its required obligations, Grant PUD will need all turbine units (both Wanapum and Priest Rapids dams) to be operated in "fish mode" at all times when that turbine unit is on-line.

In addition to operating each turbine in “fish mode”, the powerhouse needs to operate in such a manner as to “gang” units together – both of these practices showing documented improvement to juvenile survival through our Project.

With all turbines at both plants operating in “fish mode”, the available capacity of the dams, for power sales, will need to be confined to within the parameters of “fish mode” for each plant. These will be 15.7 kcfs (approx. 88 MW) per unit at Wanapum and 17.5 kcfs (approx. 84 MW) per unit at Priest Rapids.

Due to times that river flows exceed our present powerhouse hydraulic capacity, inadvertent spill may take place (in addition to required fish spill). In an effort to manage this inadvertent spill, which has the potential to elevate TDG levels, Dispatch will determine needed spill amounts for Wanapum and Priest Rapids dams through forebay elevation control.

Turbine Operations at Wanapum and Priest Rapids Dams:

| <u>Hydro Project</u> | <u>Start Date</u> | <u>Start Time</u> | <u>Turbine Operation</u> | <u>Duration</u> |
|----------------------|-------------------|-------------------|-----------------------------|-----------------|
| Wanapum Dam | April 20, 2007 | 0800 hrs. | All turbines in “Fish Mode” | 24 hours/day |
| Priest Rapids Dam | April 20, 2007 | 0800 hrs. | All turbines in “Fish Mode” | 24 hours/day |

Please give Curt Dotson a call (509-750-1999) if you have any questions.