

May 9, 2012

F/NWR-5

FILE MEMORANDUM

FROM: Gary Fredricks, Ed Meyer and Trevor Conder

SUBJECT: Bonneville Dam PH2 Orifice Improvements Study 90% Engineering Documentation Report (EDR)

The following comments pertain to the subject report dated March 2012. We previously submitted comments on the 60% report on February 1, 2012. We also verbally commented on elements of the 90% report at an April 30, 2012, ad hoc Fish Facility Design Review Work Group meeting.

In reviewing the current EDR, we note that some of our comments from our February 1 memo were adopted and some were not. We appreciate the clarification added to the purpose and scope of the program and the elimination from further consideration of several of the alternatives that were a concern to us. However, we do note that one of our primary concerns (reduction in orifice ring size) was actually adopted as part of the preferred alternative. We remain concerned that any reduction in gateway orifice size is a negative step for a system that passes a large number of adult salmon and steelhead. We also expressed this concern again at the April 30 meeting along with a few new comments and thoughts which included:

1. Completely achieving all the stated goals of this project may not be practical given the expense associated with re-coring the orifices or the need to accept the biological consequences associated with some of the other alternatives. We do, however, believe that achieving ease of inspection and improved gateway orifice lighting is possible and that some improvement in orifice jet is possible through less intrusive and expensive methods.
 - **Many FFDRWG members expressed strong reluctance to a reduction of orifice ring size (Alternative A4) from the current 12 5/8 inch orifice to the original design specification of 12 inch. This was due to a possible biological risk to adult fish that pass through the orifices. A reduction to a 12 inch orifice ring, with the ability to operate more orifices, is linked to the FGE program and the ongoing investigation to reduce gateway residence time. The 100% EDR will recommend a phased approach to implementing alternatives to improve jet quality. Orifice ring size reduction will be the final phase. Future examination of alternatives in the Design Documentation Report (DDR) of the orifice system to enhance jet cohesiveness, inspection efficiency, and orifice lighting is expected to contribute to overall improved jet quality at the Second Powerhouse. The FGE program is examining alternatives to improve the gateway hydraulics and the FGE program's preferred alternative may be a contributing factor to achieving jet cohesiveness.**

2. Replacing the current orifice lighting with LED rings (with a failure warning system) as described in Alternative A12 will achieve the lighting objective.
 - **Concur. Plans are in progress to test a low profile light ring with a 12 5/8 inch orifice diameter in spring 2013. Design refinement will be conducted in the DDR.**
3. Improved orifice inspection could be achieved by improving the view the current light tubes give of the back side of the orifice. We already use these light tubes to view the orifice for plugs but the light fixture is difficult to move out of the way and the light tube lens is difficult to see through. An improved observation system should be combined with an improved air flush system (something easier and more positive to use than the current valves) to allow a better, albeit temporary, orifice jet condition for viewing.
 - **We anticipate lighting improvements with an orifice ring will help illuminate the orifice jet providing ease to the inspection. Eliminating primary use of the halogen lights could significantly reduce the water scale on the orifice lens and enhance the visual inspection of the orifice for debris. Installation of a local manual control switch to eliminate manually overriding the solenoid valves will be further investigated in the DDR.**
4. Improvements in the orifice jet can be achieved through the implementation of Alternative A11 (minimizing overall length of pipe and mounting flanges) combined with the second component of Alternative A4 (mining out concrete in the collection channel). We recognize that these improvements will be unlikely to result in perfect jets for all the orifices and forebay levels, but they should result in a significant improvement over the existing condition.
 - **Concur. Alternatives A11 – Minimize Overall Pipe Length and Mounting Flange and A12 – Replace Existing Orifice Ring with Lighted Orifice Ring will be carried to the DDR.**

We look forward to working with the Corps in pulling these thoughts together into a final regionally preferred alternative for this project.

Thank you for your comments.