

MEMORANDUM FOR THE RECORD 17 IHR 001 – Juvenile steelhead mortality during upper South fish ladder unwatering.

SUBJECT: Apparent juvenile steelhead mortality incurred January 30, 2017 during the unwatering of the Ice Harbor upper south fish ladder for annual inspection and maintenance.

- A. Species – *Salmo Gairdner*.
- B. Origin – Unknown.
- C. Length – Approximately 12”.
- D. Marks and tags – Unknown, as fish were not removed from the ladder during the unwatering operation. The fish mortality was observed in the bottom of the water column.
- E. Marks and injuries found on carcass – None seen.
- F. Location – Inside the south fish ladder, where the ladder reaches tailwater elevation.
- G. Cause and time of death – On January 30, during the unwatering process, approximately 6” of water from the upper diffuser and leakage through the ladder exit bulkhead flowed through the ladder weir orifices to help flush fish to the lower ladder. The upper diffuser was shut off just before personnel started traveling down the ladder on creepers (to ensure that fish retreated with the water receding down the ladder). Diffuser shutdown was necessary as this action prevents personnel from being submerged when laying on the creepers. By the time personnel had reached the count station, leakage from the ladder exit bulkhead still provided approximately 3” of water flow (depth) through the weir orifices. The preferred amount of water is 4” in depth through the orifices, but for safety reasons, the upper diffuser setting could not be changed when personnel remained in the ladder. Slow moving fish were stressed from being partially exposed out of water downstream of the fish count station. All fish recovered when they reached tailwater elevation, except for the one steelhead, which is presumed to have died at approximately 1600 hours on January 30. The following morning (January 31), facility personnel could not see the dead fish from the deck, but it is doubtful that the fish recovered and swam off.
- H. Future and preventative measures – During the next unwatering of the upper fish ladder, the Fish Biologist will remain at the upper diffuser after it is closed down, to verify that there is 4” of water flow through orifices before personnel enter the fish ladder. The diffuser could have been kept open a small amount as needed to maintain the 4” of depth.
- I. Pictures included – none.

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