



# FISH PASSAGE CENTER

1827 NE 44<sup>th</sup> Ave., Suite 240, Portland, OR 97213

Phone: (503) 230-4099 Fax: (503) 230-7559

<http://www.fpc.org/>  
e-mail us at [fpcstaff@fpc.org](mailto:fpcstaff@fpc.org)

## MEMORANDUM

TO: Ed Bowles, ODFW

FROM: Michele DeHart, FPC

DATE: July 15, 2011

RE: Juvenile Fish Travel Time and Survival – a common currency for evaluating fish passage operations

In response to your request the FPC staff reviewed spill passage and travel time data. The attached memorandum which is a response to another data request begins to explore the concept of spill as a mitigation measure for low flow periods such as the summer migration period and low run-off volume years. Our review of the observations and analyses from annual monitoring indicates that fish survival and travel time are improved with higher spill levels. The attached memorandum includes a conceptual consideration of fish travel time with and without spill, and we also utilized CSS modeling of the juvenile out migration to simulate survivals and travel time response to additional spill. **However, our overall conclusions are:**

- **The data and analyses are not adequate to develop the “common currency” for spill and flow and to specifically define how additional increments of spill will affect fish survival and travel time and eventual adult return.**
- **In our simulation, attached, in which 50% average spill was simulated in the low flow conditions of 2001, the addition of spill was not adequate to reduce travel time or increase survival to necessary levels. This is particularly problematic because summer flow requirements for fall Chinook have not been met in the past eleven years.**
- **Although higher spill proportions in similar Water Transit time conditions, improve fish travel time and survival, the opposite may not be true. Higher flows and lower**

**spills may result in lower survivals and SAR because a larger proportion of fish are forced to pass through the powerhouse.**