**USACE Portland District (NWP) FFDRWG Update Form**  
**August 2014**

**PROJECT INFORMATION**

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| Project Title | Bonneville Adult Fish Facility Improvements |
| SCT Reference Number |  |
| Project Manager (PM) | Jeff Ament (NWP, 503-808-4713) |
| Technical Lead (TL) | Steve Sipe (NWP, 503-808-4957) |
| Biologist/Coordination | Jon Rerecich (NWP, 503-808-4779) |

**PROJECT DESCRIPTION**

Initial general problem statement: *Adult fish exiting the brail pool and being bypassed were getting trapped against the grizzly.* The following improvements were made in the 2012-2013 IWW period

* Add an observation box to aid in fish recovery before fish enter the brail pool
* Change the design of the valve 15 overflow weir, just downstream of the grizzly, to add a porosity plate, to draw some flow from lower in the water column
* Extended the bypass pipes into the channel outside the lab (the invert elevation was designed to be about 6” above the water line, but the invert ended up at the waterline). Also added more water to these pipes.
* Added a baffle and floor and wall plating to the pool just outside of the brail pool. This was to provide lower velocities at the exit of the brail pool and breakup an eddy that was forming in this area. This was added after it was determined that the porosity plate listed above didn’t provide enough reduction in velocities at the exit of the brail pool.

During the 2013 fish collection season additional mortalities were noted, it was unclear if these additional morts were due to better reporting, or an actual increase in mortality. In addition many shad built up against the trash rack causing a blockage and raising the water level. This raise in water level resulted in water being backed up into the bypass pipes, and seemingly allowing bypassed fish to stay in the pipe attempting to go back upstream in the pipe, to the point of exhaustion. Midseason in 2013, the extensions to the fish bypass pipes were removed. All of this requires follow-on modifications.

After analyzing these additional morts the PDT decided to pursue the following actions:

1. Strengthen the center divider on the observation boxes.
2. Provide for better trash raking, to minimize build-up of shad on the grizzly.
3. Determine optimum exit channel flow conditions
   1. Perform additional testing on the minimize floor and wall plating and the minimum depth of baffle to allow shad (and other fish) better egress conditions. This testing resulted in the baffle submergence being reduced, and some plating being removed.
   2. Investigate bypass mode for nighttime operations, that would provide zero flow (or as low as possible) in the lab to entice fish to exit – should greatly improve shad departure over night, and minimize fish falling into the lab overnight.
   3. Make baffle movable
4. Bypass pipes
   1. Investigate a greatly increased volume of water into the bypass pipes
   2. Investigate a new layout of the bypass pipes, to provide for better passage

**CURRENT SCHEDULE**

With the limited funding that was available in FY14, only items 1, 2 3a&b, and limited 4a was implemented. These actions, although limited from the original list, showed promising hydraulic conditions. Therefore, currently the PDT is watching and awaiting results of this year’s fish collection season to determine if any additional actions are required.

**PROGRESS AND KEY ISSUES (List)**

Regarding hydraulic conditions – the changes made regarding 3 a and/or b have caused an increase in water elevation in the exit channel. This is causing a water level sensor alarm, and keeping us running at 20% valve opening in the overnight bypass mode, instead of 0%. The PDT is working with the Bonneville crew to acquire a new level sensor and get it installed. Once this happens the PDT will reevaluate the possibility of a true zero flow overnight.

With the changed hydraulic conditions during sample mode, reduced flow overnight in bypass mode, and improved raking conditions, it was easier to perform a complete raking of the grizzly. During these raking events fewer shad were found trapped at the grizzly, than was noted last year. Both the fewer numbers and the better raking provided much better hydraulic conditions for the salmon.

So far in the FY14 collection season, run sizes have been larger, with reduced Chinook mortality rates. Two of four Chinook and four of eleven sockeye mortalities being sampled fish. Thirty lamprey mortalities to date. The changes implemented so far show great promise for chinook.

2013 morts to date – 13 Aug include: 22 chinook, 10 sockeye, one steelhead, and 35 lamprey.

However, the PDT is waiting for the warmer water temp season in August and September, where a large number of mortalities occurred last year.

**FFDRWG REVIEW NEEDED AT MEETING? (If YES, list discussion topics below)**

A separate meeting will be scheduled in September or early October to review results from the warm water period and discuss reconnecting the bypass pipes. One question that the team is faced with is - What is the acceptable mortality rate for this lab given the modifications and operations changes thus far?