

## MEMORANDUM FOR THE RECORD

Subject: Final minutes for the 06 March 2018 Willamette Fish Facility Design Group meeting.

The meeting was held in the Lobby Conference Room at Block 300 US Army Corps of Engineers in Portland, OR. In attendance:

Last name	First Name	Agency	Email
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On the phone: Benson, Hudson, Kelley, Litzenberg, Malone, Reis, Richards, Romer, Schwabe and Ziller.

**Meeting Purpose:**

Finalize previous meeting notes. Provide an update on status of active design projects. Provide the Team an update of the Detroit Floating Screen Structure 30% DDR.

All documents related to this meeting can be found at:

[http://pweb.crohms.org/tmt/documents/FPOM/2010/Willamette\\_Coordination/Willamette%20FPT/](http://pweb.crohms.org/tmt/documents/FPOM/2010/Willamette_Coordination/Willamette%20FPT/)

1. Final decisions made at this meeting.
  - 1.1. January meeting minutes were approved.
2. Updates on active design/construction projects
  - 2.1. Cougar DSP – Team is moving forward with the design and trying to get a contractor for the naval design section. Possibly in May, the team will give a presentation on the layout design and the overall status. The 60% comments were addressed and will be sent out after internal approval. The 90% review should be completed in September. From October – December, there will be several reviews including an independent peer review, outside agency and internal review. The immediate goal is get the DDR completed this year. The physical model is moving forward; contract award is in process. The physical model will verify the internal hydraulics and fine tune the entrance configuration. Janes has been coordinating public outreach for both the Cougar and Detroit projects. The two projects will not be drawn down at the same time. EA public review is scheduled about the same time as the other reviews.
  - 2.2. Fall Creek AFF – Work is ongoing and still on schedule. Rebar and formwork is ongoing for several weirs on the interior of the fish ladder in pools 9-11. Knife gates are still in fabrication. Isolation valve cover structure and fish ladder access walkway installation is ongoing with foundations being placed this week. Existing ladder-Gate E-4 gate install is ongoing. Gate E-1, E-2, E-3, W-3, and H-1 actuators installed. Fish transfer pipe fit-up continuing with connections made to primary transport flume and recovery tank complete. The electrical work is in progress. Commissioning will start on 27 March.
  - 2.3. Foster DSP – The project tried to install the weir last week but there was an issue with the lifting beam. Modifications have been made and the weir should be installed on 06 March.
  - 2.4. Detroit Temp Control and DSP – Last month the selective withdrawal structure was presented.

3. Detroit Floating Screen Structure 30% DDR update and discussion – [Presentation]

The schedule is the same as last month. The VE study had suggested an inclined tower to save on construction time. After analyzing the configuration, the team was not sure that the warm water gates would work operating on an incline. The other example of inclined towers were not for temperature control as this one is. The team has decided on the vertical tower. The 30% DDR review should be out very soon. The schedule might shift a little to make sure that Detroit and Cougar are not drawn down at the same time. Fortuny reviewed the layout of the structure. Trash rack location and the fish handling locations have undergone significant changes. The design shows locations for pumps because the AE was asked to design in the ability to add pumps if needed in the future. The plan is to build and test without pumps. If the collection efficiency is not as high as they expect then pumps can be added. Rerecich explained the changes to the original design. The trash racks have been moved 20' to the outside of the weir which is better for debris management. There will probably be an overhead crane running the length of the structure for cleaning the trash racks. With the elliptical weir design, the velocity would be 4fps at the trash rack. This helps for maximizing discovery to the entrance. Rerecich described the problems with the original fish handling area. The volume of water going into the holding tank was too much causing colliding jets of water. The exit out of the tank was dangerous for fish and little access for personnel. Schlenker went over the velocity parameters in the transportation channel – not screens velocity but flow in the corridor. Using a moveable weir instead an open entrance allows the team the operational flexibility

that they need. The weirs will react to the difference between the forebay and the dip in the water surface downstream of the weir. The AE designed a ramp (bar screen) behind the elliptical weir to prevent fish from going behind. Litzenburg is checking the CFD model to see if a solid or screen would work better hydraulically for the ramp. In the dewatering screen plan, there is a flat spot in the middle of the channel that will need to be sloped. Screens will be cleaned by water jet. Jundt said she has seen great results with water cleaning systems. Mechanical brush screens would require a lot of engineering to have enough pressure at depth. The fish handling layout will be in detail in the 60% document. The new design reduces the flow and adds in isolation gates. The flume velocity is 35cfs until the coarse debris rack. The debris from the coarse debris rack will have to be manually removed and the rack is 7' deep. The bars are sloped to push the debris toward the surface. Custom rakes may have to be made. Coarse debris trash rack spacing is adjustable to allow kelts and other adults to go through. The coarse trash rack is the second layer of defense after the first trash rack. The trash racks are staggered. Downstream of the coarse trash racks are a set of dewatering screens with pumps. The team is looking at traveling screens on the walls for debris management and/or adding pegs. Jundt said that the pegs could be added later if needed. As the flume goes to the adult and juvenile separator, the flow reduces to 5cfs which is a significant improvement over the first design. Adults go over the top of the bars to an adult holding tank. The adult holding tank/sample sorting area is still evolving. Kelley asked how the design would change if fish were to be transported below Big Cliff via piped by-pass instead of truck. A switch gate could be installed that would send the fish to a flume instead of holding tanks. There is a fry refuge area at TDA PUD trap that may be a good idea for this project. There will be two juvenile sorting areas for sorting and sampling. The design includes a trash grinder to chop up debris; the AE would like to return the ground up debris back to the river. Janes is working on this issue at Cougar with DEQ. Minto has problems keeping the screens clean downstream. Fielding asked about PIT detection. PIT detection has not yet been designed into the system. The project is for ESA listed wild chinook which would be not be tagged but steelhead and bull trout could have tags and the performance testing would require PIT detection capability. This contract is tasked with moving the fish off the FSS to a place where the COE could then access the fish/hopper of fish. The next crane lift is 120' which would be on the COE to figure out. The details of that crane will be figure out and will come with the SWS design. One of the goals is to minimize handling so most fish will be by-passed and some will be sampled. Any fish that goes into the system except an adult will go downstream. The potential to catch incidentals are high. The team has been using disposition tables and historical information for sizing averages. Other facilities have seen major shifts in run timing after operating for several years. Malone asked how long the turbines run during the power peaking. Schlenker looked at the statistics which depends on the time of year. In the summer, the turbine runs in the afternoon/early evening and then again in the morning. Winter can be all day. Spring is more like winter but not as much. The concern is for the holding capacity where a lot of fish may come in a short time period instead of all day. In the summer, there is expected to be less fish when the power is not constant. The team is designing for subsampling fish but not counting every fish. The counts will be factored out of the subsample. Kelley asked why the weir is made for 40' depth. The weir structure has to be more than 20' deep to have a better chance of catching juvenile chinook. Temperature operation also plays a part in this. The weir also needs to accommodate the flow range. This collector is the only one in the area to have a weir at the end of it. Ziller asked why the design isn't a leaf system to collect only where fish are most concentrated. This design creates a capture velocity going over the weir so the fish enter the system and do not back out in addition it can function for temperature control. Ziller requested the engineers consider options for incorporating volitional downstream fish passage into the Floating

Screen Structure design. Ziller is concerned the Corps is invested in the trap and haul design that was contracted prior to discussions about stresses on fish and decreased survival associated with copepods. Volitional passage designs could reduce handling stress, especially important in the face of increased awareness of stress associated with outmigrating copepod-infested reservoir fish. Consequently, ODFW would like to re-emphasize consideration of volitional passage design as part of the 30% review process.

Ziller also stated that he would prefer not to have so many moving parts or any fish separation devices at the forebay end of the collector and instead have fish transported with water volitionally through the dam. He also stated that he would prefer having any fish sampling occur at the base of the volitional pipe rather than at the upstream (reservoir) end. The bypass has not yet been worked out yet. Jundt would prefer a more simple design. There is a gap in the schedule for revising the FSS DDR before it is built if the COE wants to design for a pipe by-pass below Big Cliff. The AE contractor is designing with the truck transport option. The team can add to the executive summary of the 60% that the truck transport is one option but other options will be considered in the future for transporting fish. The FSS is over 300' long and 100' wide. The minimum operating pool for the FSS is 1445 which is 5' below the minimum power production pool.

Jundt asked if it would make more sense to add the pumps originally since it would look bad publicly if it doesn't work after spending all this effort and money. Ament said that if they start with pumps then the pumps will remain and have to be maintained when they may not have been needed. Hall asked if the amphibious vehicle would be considered for Detroit. There is not any place to launch an amphibious vehicle. Rerecich stressed that the timeline is very strict to influence the design of this project.

#### 4. Next Steps

4.1. Next WFFDWG (April 3, 2018)

4.2. Upcoming reviews