

MEMORANDUM FOR THE RECORD

Subject: Final notes for the 07 March 2017 Willamette Fish Facility Design Group meeting.

The meeting was held at the BPA conference room in Portland, Oregon. In attendance:

Last name	First Name	Agency	Email
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On the phone: Khan

All documents may be found at [http://www.nwd-
wc.usace.army.mil/tmt/documents/FPOM/2010/Willamette_Coordination](http://www.nwd-
wc.usace.army.mil/tmt/documents/FPOM/2010/Willamette_Coordination).

Meeting Purpose:

Review status of projects, discuss downstream fish passage design status for Cougar Dam.

Agenda:

1. Review the February 14th meeting notes – Comments need to be in by 14 March.
2. Review current project status
 - 2.1. General project schedule table –
 - 2.2. Detroit – The Downstream Passage EDR is out to BPA for review and will be sent out to outside agencies in Mid-March – Mid-April. The Temp Control 30% DDR will out to the Water Review in May.
 - 2.3. Fall Creek – The schedule is proceeding as planned. Formwork and rebar placement is ongoing for numerous concrete placements at the pre-sort and facility water supply building. Concrete placement for pre-sort pool wall scheduled for 7 March. Excavation has started for the post sort area. Offsite fabrication is ongoing at Greenberry for the miscellaneous metal. Contractor is working 5 days per week/ 10 hours per day.

- 2.4. Foster Weir – The agencies have finished their review of the 90% DDR and 60% Plans and Specs. All comments will be addressed in the next round of reporting. The design is moving forward at about 80% complete. The normal operation is at 500 cfs but the design incorporates the minimum flow of 300 cfs. If there was a really low water year, then the weir could still be used. The minimum operation needs to 300 for a range of flows. The expected operation is 500 or 530 but the design has to include the minimum flow. The general schedule is to have the contract awarded before the end of the fiscal year (September 2017), build in the fall/winter and have available for use in the spring 2018. The testing will start at the beginning of March 2018.
3. Cougar Downstream Passage DDR (slideshow presentation)–
 - 3.1. Current Focus of Design – The team is designing a floating screen structure (FSS) with truck transport. The PDT is focusing on the configuration of the FSS and the hydraulic connectivity to the water temperature control tower. The A/E contractor from the EDR is carried over to the DDR. URS is the primary contractor. At this time, the contractor has been tasked with coming up with alternatives related to mooring, crew access and transporting the fish off the structure.
 - 3.2. Design Goals for Current Focus – Tarbox discussed the current design goals.
 - 3.3. Configuration – The figure in the slide show is just a starting point. The A/E contractor was given the Lower Baker design which passes 500 cfs as a starting point to design the moorings. The PDT is looking at options to shrink the footprint with the using multiple entrances and changing design of the channels to get the entrances as close as possible to the water temp control tower.
 - 3.4. Mooring Alternatives: The first alternative was submitted by the A/E contractor. To anchor the structure, the team has looked at winches and anchors but has decided on a three point fixed mooring connection. This is a huge footprint and it has to be because the structure is so large. The mooring extends into the heel of the dam and discussions with dam safety have already started. One alternative is having two entrances with a channel system that is sinuous to shorten the footprint. To prevent fish from going around the structure, the stair tower would be designed to keep water from flowing through it and the slide slope of the hillside or a head wall might be used as a physical deterrent. There are a couple of other multiple entrance scenarios that the team is considering.
 - 3.5. Alternative #2: This alternative is using the three battered piles.
 - 3.6. Fish Removal and Crew Access Monorail Plan– Tarbox explained the diagram. The truck transport location should be moved back to the tower instead of in the parking lot and the monorail may need to be shortened. A monorail system might be used for both fish and crews. The fish will be in hoppers. A crane will remove the hopper from the FSS and put it on the monorail/truck. There will definitely be separate hoppers for large

and small fish but there might be up to four hoppers. The lower deck is needed for dam operations and will not be available for this project.

- 3.7. Fish Hopper Barge Plan – A boat brings the hopper and a crane moves the hopper to a truck. Crew access would be a stair system or floating walkway. The cable barge from the FSS to the tower could not be used all the way to the parking lot due to elevations.
- 3.8. Some Other Alternatives – A duck boat could be used for transporting the hoppers and crew. The road at the lower elevation is precarious especially during the winter. This alternative is not being pursued. A crane from a lower elevation was considered but it would involve a blind pick.
- 3.9. Current Concerns Recapped – *Configuration* – The foot print is very large (60' x 180') and the team is trying to minimize this. If the entrance is too close to Rush Island, there may not be flow at low elevations. The footprint could go wider instead of out further but the team doesn't know what they can achieve by first changing the sinuosity of the channels and the multiple entrances. Adding width to the structure could help to incorporate the sinuosity of the channel. The flume length was not included in the 180' and puts the footprint out that much further. For the submerged weir, the project is looking at the Detroit project but has not decided on anything yet. Jundt mention concerns of water slowing down right past the weir that may increase predation inside the structure like at the debris settling pond at Detroit. The velocities need to stay high enough to prevent predators from holding in the structure. To help reduce the length, the team is using multiple entrances and design sinuosity. A suggestion of an artificial shoreline or guide nets could help also. The channel length gets the velocities to the design goal criteria of 0.4 fps. COE doesn't have guide net data on spring chinook but will look at the results at Swift where they were testing lead nets. The stair tower for the crew access would be 20 flights of steps (240'); the concerns of the operating project have been heard but the design is not final. *Mooring* – the size is really big and the location on the heel of the dam. The dam is earthen and putting something in the heel requires the approval from dam safety. *Fish removal and Crew access* - Reliability concerns, winds, operating and maintenance of a large system are major concerns. *Competing flows* – what is going through the FSS and the water temperature control tower will be followed up in the next design phase.
- 3.10. Next Design steps – The next steps include: determining the monthly max, min and average flows; determining the flow water routes, determine if alternative WTC tower operations can achieve the downstream temperature targets; develop a plan to hydraulically connect to the tower and debris management. There will be a multi- level debris management with active cleaning system like screen cleaners, crane system, debris barge and debris booms. The FSS would operate in a full operating range.
- 3.11. Discussion – At a previous meeting, it was determined that the collector needs to be close to the dam like the B2CC. This design appears to be more of a reservoir collector because the configuration is still too large. Once it is shrunk, the collector will

be placed as close to the dam as it can. At Cougar, a hardened structure would be better than anchors due to the range of flows. To add input to the design process, special workshops can be scheduled and comments from the WFFDWG meeting will be included. Tarbox suggested mid to late May for a special workshop on hydrology and operations but will check in next month at this meeting with an update on the design.

4. Next Steps

4.1. Upcoming reviews