CENWP-OD 02 October 2018

MEMORANDUM FOR THE RECORD

Subject: Final minutes for the 02 October 2018 Willamette Fish Facility Design Work Group meeting.

The meeting was held in the Mt. St. Helen's Room at NOAA/NMFS Lloyd Center Building in Portland, OR. In attendance:

Last name	First Name	Agency	Email
Ament	Jeff	NWP-PM-F	Jeffrey.M.Ament@usace.amry.mil
Dishman	Diana	NOAA	Diana.Dishman@noaa.gov
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Jundt	Melissa	NMFS	melissa.jundt@noaa.gov
Kelley	Elise	ODFW	elise.x.kelley@state.or.us
Khan	Fenton	NWP-PM-E	Fenton.o.Khan@usace.army.mil
Kovalchuk	Erin	NWP-ODT-F	Erin.H.Kovalchuk@usace.army.mil
Murauskas	Josh	Four Peaks Consulting	jmurauskas@fourpeaksenv.com
Phillips	Marie	NWP-ENC-HD	Marie.J.Phillips@usacea.rmy.mil
Pierce	Todd	NWP	Todd.M.Pierce@usace.army.mil
Reis	Kelly	ODFW	Kelly.E.Reis@state.or.us
Rerecich	Jon	NWP-PM-E	Jonathon.G.Rerecich@usace.army.mil
Schwabe	Lawrence	Grand Ronde Tribe	Lawrence.Schwabe@grandronde.org
Ziller	Jeff	ODFW	Jeffrey.S.Ziller@state.or.us

On the phone: Kelley, Murauskas, Pierce, Reis, Schwabe and Ziller.

Meeting Purpose:
Finalize previous meeting notes. Provide an update on status of active design projects and a presentation and discussion High Head Bypass (HHB) Design Parameter Table and 60% Report.

1. Final decisions made at this meeting.
    1.1. September meeting minutes were approved.

2. Action items
    2.1. ACTION: Khan will invite key folks to the RM&E who don't normally attend the meeting for the Foster Fish weir preliminary results discussion.
    2.2. ACTION: The HHB team will send the references out ahead of the 60% report.

3. Updates on active design/construction projects
    3.1. Upcoming review schedule

Cougar 90% DDR and EA	05 November
High Head By-pass 60% Report	Late November/early December

Detroit revised SWS 60% DDR	Late November/December
Detroit SWS DDR90%	March
Detroit FSS DDR 90%	Late November
Detroit FSS DDR 95% new tower location	unknown
Detroit EIS	February/March

3.2. **Fall Creek AFF** – Richards provided an email update - a contract to fix the braille and a few other items has been obligated; the PDT met about the dewatering fix which is coming this fall and the team is finishing the O&M manuals.

3.3. Foster DSP and AFF ladder

3.3.1. The new fish weir evaluation started this spring. Field observations indicated more injuries than expected but the actual preliminary study results will not be available until late October. Based on the field observations, the PDT is already looking at modifying the weir. Regional agencies and the COE flow management team decided to change the flow of the S. Santiam to 1,000cfs (from 1,500) due to the dry summer and anticipated dry fall. At 1,000cfs, redds shouldn't be at risk of dewatering. The flow through the weir for the fall evaluation was to be at 500cfs but the remaining flow would be too small to pass at any other route, i.e. turbine and spillway. The weir was designed to pass 300-800cfs and the team was planning on testing 300cfs next year. The schedule of the tests will be interchanged to accommodate the flow change this year. Kelley asked why the fish are being injured. Khan is still investigating. There are three types of preliminary data that will be available late October that should help shed light of the injury issue – sensor fish (giving hydraulic data), balloon tag (the types of injuries) and radio telemetry (downstream survival estimates and fish collection efficiency). Mid October starts the next round of testing and all three types of data will be collected again. Khan has told the researcher that this next round of data is extremely important and he is hoping to get the fall evaluation as early as November. The spring evaluation preliminary data will be shared at the RME meeting (26 October) and at the 06 November WFFDWG. ACTION: Khan will invite key folks to the RM&E who don't normally attend the meeting for the discussion. From the WFPOM topic, Dishman and Kelley decided that the balloon tagged fish should be given to Boyd after the study and not be released into the river.

3.3.2. **Foster AFF ladder** – Chane is waiting for new FY funds to start the PDT but the RM&E study will be done again this year.

3.4. **Cougar DSP** – The DDR is in DQC (District Quality Control) and will be sent out to the region for review in a month. The release site visit was a success. The site meets all the criteria; however, the COE will need to improve the road. Fielding is considering a back-up site if there are a lot of fish where they pull over to the side of the road to release fish. Ziller asked if there would be different release sites for different sized fish. Fielding said that the fish will be held in separate tanks. Fielding will follow up with Ziller after the meeting. The construction of the physical model is starting and they will have the ability to review entrance modifications. The scale is 1 to 10. The physical model is located in Seattle. Several site trips will be scheduled for regional agencies to see the physical model. The team is also working on the EA to be sent out at the same time as the DDR. Britton will be going over the Cougar DDR at the next WFFDWG and Janes will follow him to explain the EA.

3.5. **Detroit Temp Control and DSP** – The SWS revised 60% DDR is due in late November/December timeframe and the 90% in March. The contractor will have the FSS 90% DDR using the original tower location in late November. On 28 September, a modification to the AE contract was awarded to have a 95% report to reconfigure for the new location of the tower and shrink the entire size of the facility. Ament suggests skimming the 90% and waiting until the 95% to do a complete review. The team is continuing to work on the EIS and the review is scheduled for the February/March timeframe. Janes is coordinating a float down the N. Santiam 19 or 24 October with DEQ, USGS, ODFW, NMFS and COE personnel. The purpose is to look at stream reaches with a lens of what it will look under construction. A new development for the alternative of drawing down below 1400 is that fish could be collected from Minto under low flow that previously was not thought possible. Holding fish may be another issue. In order to make this work, the AWS flow would be lowered while trying to maintain enough attraction water but it is still a benefit over how hard it is to get fish from Bennett. This option is only needed if the reservoir drawdown goes to 1400 which hasn't been decided. Kelley asked if the flow would increase with the change of the location of the temperature tower. Ament said that original tower location was a build in the dry situation and that is why they moved to the attached to the dam location. The drawdown options are being looked at in order to minimize diving depth but still maintain as much flow as they can. The EIS will have this alternative with an analysis. The minimum of 900cfs was the design criteria to meet the NMFS exceedance flows but the engineer said the facility was designed to go lower and keep the ladder running. Going lower increases the risk of debris problems since the cross section of flow and ladder entrance will be a lot smaller. A major debris event could shut down the facility. Griff said that there will be a discussion with ODFW about the risks of holding fish in the fall. Dishman wants to add capacity and holding locations in the alternative analysis. The team is still modeling what the pool will look like under different elevations. Griff pointed out that the winter Steelhead and spring chinook will have passed Bennet before the flows drop. Kelley said in 2015 fish came in early because of the temperatures at Willamette Falls. Griff said that the fish came in early in 2015 but also under typical flows, the fish should have passed already.

3.6. High Head Bypass - Presentation of the HHB Design Parameter Table and Report [Handout posted to the website] – Phillips read aloud each of the criteria. The following is a summary of the discussions on individual criteria; some criteria had no comments. The HHB 60% draft report coming out in December will include how they came up with the table with applicable data and references. This table was developed as general guidance for projects with over 100 - 150 feet of head.

3.6.1. General

3.6.2. Holding/handling – Jundt said it is better to summarize the NMFS criteria as "an assumption of there is no holding and handling in a volitional by-pass system".

3.6.3. Debris Management and Prevention

3.6.4. Access

3.6.5. Deceleration – NMFS understands the need to decelerate and reviews each situation on a case by case basis. Ziller asked about the velocity in a free fall, waterfall type condition. Griff said although it is greater than 0.2 fps, it is within a pipe and only under special circumstances would it be possible to have such high velocities. Ament pointed out that this criteria is only for the entrance so fish do not stall in front of the entrance. Jundt said that

this criteria (NMFS) is based on early research and it is not always possible to apply a natural system scenario in an artificial system.

3.6.6. Vertical Conduit, Bifurcations and Merges

3.6.7. Pressure – Jundt would like the full Abernathy report. The team actually used several reports and will pass all of them on. Griff said that the two keys are depth acclimation that the fish are at prior to being exposed to a negative pressure spike and the magnitude of the spike. Jundt pointed out that the criteria maximums need to be avoided and suggests adding "with the goal of avoiding the maximum levels". Jundt asked if the all the criteria were at their maximum would it have a compounding effect on the fish. The team needs to look into this question.

3.6.8. Bends

3.6.9. Diameter/Geography

3.6.10. Depth of Water – Jundt said that the criteria is really about debris concerns. A larger pipe may have plenty of depth for the number of fish and debris.

3.6.11. Velocity – Ziller asked about the velocities of the Clackamas by-pass. Jundt said that it meets NMFS criteria completely. She can forward the results of the survival studies to the group. Clackamas has a head of 330' and the by-pass system in order to meet criteria is spread over seven miles and three dams. Jundt suggested looking at the helix bypass at Cle Elum which has a steep drop in a short distance. Griff explained that the range of criteria is all safe for fish passage. Jundt pointed out that although some velocities may be within the criteria, there are other factors that may contribute to make it not acceptable. She is reluctant to give an okay when she is not sure what the COE is planning on building. There are two examples were velocities are much higher than NMFS criteria; B2CC and Green Peter. Dishman said that there is still a question about the final fate of the fish after going through GP (downstream survival). Survival in the pipe is fine but after they leave the pipe, very few fish have been detected. More RME needs to be done and in addition, it needs to be done on compromised fish. Khan said that steelhead from the GP RME study in 2017 were year old fish and they may have stayed to rear around due to life cycle. RME study in 2016 with two year old steelhead and yearling Chinook showed most fish entered the Foster reservoir and few passed Foster dam. Ament said in order for it to be feasible to build a pipe, the criteria will have to be 12fps and possibly towards the upper end of the limit. The team is developing the criteria to give to an AE contractor in order for them to come up with options. It will be the same EDR/DDR process. Kelley asked about the pipe velocity for releasing adult fish and if the velocity is similar to this proposed velocity for bypass pipe. Griff said it (adult fish release) was about 20-25fps due to the impact velocity associated with the river. ODFW was not comfortable with how high those velocities. Griff suggested looking at the deceleration and the transition between the pipe and river.

3.6.12. Closure Valves/Flow Control - A weir may be necessary in providing safe hydraulics in connecting the collector to the dam. The transition could have a variable geometry. Jundt said she would not like to see a weir in the pipe but there is language in the NMFS criteria already for an exception. Jundt suggests being specific about where a closure valve could go or including what won't work like a weir in the middle of a pipe. Ziller asked if Griff had suggested a full flow pipe instead of an over flow pipe. Griff would prefer a full flow pipe

for the transition because you can control the water by how much water the end lets out. A full flow pipe is pressurized.

3.6.13. Deceleration – Slowing the flow down slowly is the key. Griff reviewed research from the late 90s exposing fish to extreme conditions for this criteria. Across all tests with different species and sizes, as long as the fps was under 30, there were no injuries. It is not necessarily the speed but the stopping that kills fish. Debris at high velocity is deadly. Phillips said that they need to add some wording to this criteria. There is sensor fish data from GP that can be used. Kelley wants to know the fastest the fish will be going when they hit the deceleration and when they hit the river. Ziller would like a graphic diagram like a profile explaining this criteria in detail. The team is working on the parameters but they don't know what the final design looks like.

3.6.14. Overview – This table along with the report will be coming out in the next month or so for a formal review process. The report will have more information on how the HHB team came up with the criteria and the studies/reports supporting it. The goal is get the parameters to the contractor to work on their bid in the next couple of months. The contracting process in the COE is very slow. Jundt has concerns that the contractor would jump to the maximum of the criteria in order to make the design cheaper. Ament said the engineering contract is based on technical competence. Jundt asked about a sense of compounding the criteria and what the range is. Griff said the criteria is not just cost but feasibility of building as well. Jundt has some concerns about pressure but is mainly apprehensive about the velocity (>50fps) criteria. Jundt wants to know what a reasonable survival estimate is from this criteria. If the team is proposing an experimental by-pass system, it should perform up to the standards of a NMFS criteria by-pass system. Jundt suggests proposing performance standards so she can move this work forward. ACTION: The team will send the references out ahead of the report. Dishman suggested adding goals to the criteria. Phillips said that goals are in the report.

4. Next Steps

4.1. Next WFFDWG meeting (November 6, 2018) – Corps Block 300 Lobby conference room.

4.2. Upcoming reviews – Cougar DDR and EA - 05 November
High Head By-pass 60% Report – late November –December
Detroit revised SWS 60% DDR - November –December
Detroit FSS 90% - late November/December