CENWP-PM-E 06 June 2018

MEMORANDUM FOR THE RECORD

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

The meeting was held in the Mt St Helens Conference Room at the National Marine Fisheries Service Office, Lloyd Center in Portland, OR. In attendance:

Last name	First Name	Agency	Email
Ament	Jeff	NWP	Jeffrey.M.Ament@usace.amry.mil
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Schwabe	Lawrence	Grand Ronde Tribe	Lawrence.Schwabe@grandronde.org
Ziller	Jeff	ODFW	Jeffrey.S.Ziller@state.or.us

On the phone: Hudson, Malone, Meyers, Neuenhoff, Richards, Spear, Schwabe, Tarbox, and Ziller.

Meeting Purpose:
Finalize previous meeting notes. Provide an update on status of active design projects.

All documents related to this meeting can be found at:
http://pweb.crohms.org/tmt/documents/FPOM/2010/Willamette_Coordination/Willamette%20FPT/

1. Final decisions made at this meeting.
   1.1. May meeting minutes - NMFS will review and finalize by the end of the week.

2. Discuss utilizing a spreadsheet format for EDR and DDR review comments. Intent is to standardize the format for any review comments – currently sometimes in spreadsheet, sometimes Word, sometimes in PDF.
   2.1. Khan requested all Corps design reports (EDR and DDR) review comments be documented in spreadsheet. Spreadsheet would be provided with the report with project name and title etc. Numbered rows for each comment, input page number for comment in corresponding column. Corps can then respond to reviewer with questions. Currently hard to distribute comments among PDT members. Will be easier for both Corps and agencies. Will be a column for the Corps evaluator and their response to each comment, so it provides tracking for agencies. Spreadsheet will be sent back to reviewer so they see how their comment was addressed and tracked. This spreadsheet will be implemented moving forward from today. Khan will send out a blank spreadsheet template with each report for review.

3. Updates on active design/construction projects
   2.1. Fall Creek AFF – Richards said the final inspection was completed last week. No new items. Working on items reported at last meeting. Main one for fish is finger weir (ongoing) and plug in anesthetic tank. [Finger weir at the pre-sort pool requires some modification to function properly.] Rest is cosmetic for facility. Finger weir mods is funded and hope to have it done this summer, but are trapping fish there now. Mullen asked if flows changed to level Fall Creek needed (drop to 200 from higher level?). Richards wasn't aware there was a flow issue. Will have to research and get back. Mullen said they'd be able to talk about it this afternoon during a flow call with Mary Karen. There was a document about it, she was just wondering if it was implemented. Richards said she would look into it and report results back to Khan. **ACTION ITEM: Richards will update the WFFDWG on the status of the mods during the July meeting.**

   2.2. Foster DSP – Khan says new fish weir is being tested right now, currently evaluating the high pool. Completed low pool study last month and will start high pool study next week. The DDR is not quite complete, usually wait for structure to be in place and tested. Finalizing DDR now and will send it out in next few weeks or so. Mullen asked if there was a second low-pool evaluation, Khan said yes, next year. It's a 2-3 year study.

      2.2.1. Khan said started using surrogate fish in ~2015, and one of the [steelhead] fish tagged in 2016 showed up at Foster this summer. Unfortunately it only went halfway up ladder, stayed in the lower ladder for a couple of days, and then went downstream, was detected at Lebanon Dam spillway. Burning question is now that fish are coming back, do we treat them as wild fish, will need an answer from NMFS and ODFW. May be a discussion for RME or WFPOM. Mullen said she heard the surrogate fish wasn't detected at Willamette Falls which is unusual, so it's possible that the fish never got to the ocean. Khan said will start having more study fish coming back, so need to discuss disposition of those fish.

Mullen said the fish could be out-of-subbasin so that complicates things too. Griffith said it was.

2.3. Detroit Temp Control and DSP – Fortuny, Ament, Rerecich, and Litzenberg.

2.3.1. Schedule – Working towards 90% DDR for Selective Withdrawal Structure (SWS) [/Temperature Control Tower]. Out for FFDWG review in August. DDR compete in October, Plans and Spec in April 2020, Construction award in Oct 2020, then Phase 1 complete in 2023. Phase II (FSS) 60% DDR internal review will go to BPA today for pre-review, then FFDRWG group mid-June. 90% around Sept, DDR complete Nov 2018. FSS DDR goes on shelf while building Cougar and testing that, then dust it off and complete DDR in 2023, then Plans and Specs completion and Construction award in 2025, Phase II complete in 2028. Mullen asked what is Phase II? Fortuny said Part II was after evaluating Cougar and incorporating any lessons learned. Ament said we wanted to do both DDRs now so we know temperature and fish work together, but we're building the temperature structure first. Lessons learned from all the other collectors will be used for Detroit collector.

2.3.2. Fortuny presented diagrams of SWS. Mullen asked how fish would be moved, Rerecich said let's table until later in discussion. Fortuny said our AE is looking at trap and haul because they needed a scope and something to work on, so that will be in the DDR. Rerecich said debris management in DDR is from trash rack (TR) downstream. Change from 30% DDR is the two TRs moved from inside to outside FSS. CFD modeling showed two TRs better than one large one. Spacing of TR – 3 ft of finely spaced TR then 8" spacing below that. Considering kelt in design. Litzenberg presented FSS velocity information. Mullen asked why acceleration is occurring in the primary screen, Litzenberg said you're raising the floor, pulling more water out of the screens. Decelerating after that – pull less water out of the sides. Weir is 26.7 ft when full open. Going for 2 ft head drop between forebay and backside of weir. PDT is looking at ways to limit dead space in front of weir. Fortuny said once PDT has more CFD data we may want to set up a Detroit-specific meeting. Rerecich said debris would need to be manually removed from TRs. There's a subsample switch-gate in the transport flume for condition and mortality. Right now tanks are 250 and 500 gal (3x3x4). May go bigger, make uniform tanks for DET and CGR. Question is if fry refuge is needed – more handling. Griffith asked how they'll meter fish to know tank loading density. Rerecich said subsample will give an idea, looking at automated counting systems.

2.3.3. PIT Detection – Fielding asked if the Detroit PDT is considering PIT detection in the FSS. Rerecich said they had thought they could add it in at some point. Khan said would be easier to design for it now. Rerecich said they'll ask AE for best point for detection.

2.3.4. Mullen said there's study looking at fish that stay near surface vs those that stay deeper (movers vs stayers). Rerecich wondered if fry would actually go into the

fry refuge. If folks think is worth the floor space can keep in the design. Jundt said yes she thinks it is. Rerecich said OK.

2.3.5. Fortuny provided a total construction cost of $343 million; $254.5 million for construction, $49 mil for design, and $39.7 mil for S&A (supervision and administration/construction management). O&M will be calculated for 90% DDR. Ziller asked if there are any ballpark costs. Cougar team are zeroing in on it but nothing yet. Ament pointed out that starting out costs were a lot less. Between the COP and DDR effort they realized most collectors aren't collecting any fish. That was assuming 1000 cfs in collector and competing flow through dam. So now FSS is designed to not have competing flow and the collector is now the size of a football field which is expensive. PDT evaluating ways to cut cost – smaller design, etc. Now that we're looking at flow rates can generate estimate of cost. Includes anticipated inflation costs until time of construction.

2.3.6. Piped bypass – Ament said have 3 teams looking at downstream passage. Detroit, Cougar and High-head Bypass teams. They gave trap and haul (TAH) concept to AE so they could get a design concept down. The way he could see it playing out, some device in back you could flip for fish to go into hoppers or out to the back. DET has advantage of test conduit, so High-head bypass team will be looking at how to get fish into and through a pipe, downstream of Big Cliff.

2.3.7. Jundt asked if the PDT is considering piped bypass. Ament explained that a separate High Head Bypass Team is looking at feasibility of piped bypass for both Detroit and Cougar. If piped bypass is feasible for the Detroit DSP, the pipe could be attached to the back of the FSS. The pipe would extend to below Big Cliff Dam, where fish would be released.

2.3.8. **ACTION ITEM: Litzenberg will complete the CFD models for the FSS and present them during the July meeting.**

2.4. Cougar DSP –

2.4.1. Concept for conveyance to reduce handling. Griffith said with new alternative there will be some compromise in holding capacity. Need regional thumbs up so PDT can charge ahead, can't keep changing directions. Defined transfer as any movement of fish from one water or vessel to another (crowding, sluicing, brailing, nets). Includes release of fish to river. Varying level of stress for each. Three transfers in old design. PDT looked at three alternatives (existing, direct to transfer hopper – 2 transfers, direct to transfer pod – 1 transfer). This uses a pod system, fish go through all flumes to a pod, and the pod is then set on amphibious vehicle (AV), then taken to river and released. One body of water the whole time. Souders provided schematics and walked through fish conveyance. Griffith pointed out that last meeting/design there was a divided cell on stern for marine safety reasons. Now have increased flotation around cell so they feel confident they can have a single area and one set of pods. Overall volume is lower now however due to increase in buoyancy. Souders said now have a single monorail hoist system to move pod. Griffith said now have same vessel for holding and transport, so have gone from 1000 gallons to 750. Due to reduced area, went

from 6 holding tanks to 3. Though before you couldn't load fish from one side of FSS to other, so didn't really lose number of tanks/pods. Haven't worked through whether could store excess pods on FSS. Assuming a daily max of 51,000 fish, three pods could hold just under 21,000 fish (long-term holding capacity). Holding criteria would hit every 3.2 hours, at 5.4 hours you're at complete capacity even with the transport criteria. Can accommodate the 51,000 fish using 2 AVs to cycle the fish. Total cycle of picking pod to when pod back in place fishing = 3 hours (conservative). Fielding pointed out fish won't come into FSS evenly distributed in time, will be pulsed. Mullen asked if 51,000 fish is 30% of monthly fish in one day, Fielding said yes. Griffith said that number is conservative.

2.4.1.1. Jundt said this, in a TAH mode, is super responsive to agency comments and this is a big improvement. She likes the idea. Ziller asked if on the tertiary screen you could alter flow allowed into the pipe back to the pod. Souders said you could, depending on what flume downstream could receive, and would have to be able to dewater that again downstream. Ziller said he's thinking in terms of being able to push all the fish through the tertiary screens through the pipes so they go out and hit some kind of pipe that goes out through the dam instead of to a pod. Souders said they're planning on putting ports on back of vessel so it's easily converted to piped bypass system, but just know that in order to do that it would be a major modification to the sorting area and back section of FSS. But they've decided to design a system that doesn't design us into a corner. Reis asked how you would be doing that, in some ways aren't you making a higher bar to incorporate piped bypass later. Budai said will have this discussion soon, but PDT isn't tasked with piped bypass, so they haven't figure out how that works, they just made it so it can be done in the future, they're on a tight schedule and so are focused on TAH unless a decision is made. Reis said given discussion on piped bypass, the more you can build that into design, would be preferred if it's possible. Budai said if they did that, would be taking the eye off the ball. They'll do what they can, but they have a really tight timeline. Griffith said Souders is also on the high-head bypass (HHB) team, so will be some crossover. Need to know the size and location of the pipe outside of vessel to know what size of port and where that would need to be on the FSS. Cougar team has milestone dates they need to know that, to integrate that into the design. It may be that we don't have tertiary screens – we're just not there yet, the HHB team is playing catch-up. To keep this PDT moving forward, just to meet milestones for TAH will be a challenge. HHB team will be working with Cougar team. Budai said naval architect will need that to compete designs. Reis said the phrase 'major remodel' made her nervous. Souders said HHB team doesn't know what they have to do yet to get fish out of the vessel. Those holes have to be designed now by naval architect. Would need another system

to convey water to back of vessel. To him it's major, but could be done in a season.

2.4.1.2. Griffith asked if there were any other concerns about this system (pod system) and shelving what they presented last month. Ziller said he likes it (pod system), cuts down on transfers, the one thing he wants to make sure of is that it's compatible with whatever piped thing we come up with in the future. In some different alternatives for piped bypass, this equipment doesn't become obsolete. It has a switch to go back and forth. He looks at the back of the FSS and doesn't see the room to make that transition. He'd prefer if they can design flexibility into the piping system for piped bypass. This design looks promising. Reis said she like the pod concept and appreciates the PDT looking at ways to reduce handling.

2.4.1.3. Fielding asked if they could play with holding criteria – difference between transport and a regular holding density. Jundt said she doesn't have an answer right now, they're still working on it. Griffith said he'd be getting nervous with any holding over 5 hours. Griffith said if anybody has experience with pod systems they like, they should send them to the Corps. Jundt asked if on the pods, there was a possibility to have an additional volume of flow and then dewater it. Souders said probably not because the pods need to be 100% full and sealed to prevent sloshing. Jundt asked about a distended top, Souders couldn't picture it but wouldn't say it was impossible. Pierce asked about adults and large fish. Griffith said may look at hybrid bridge/rail crane. Jundt asked about a back-up AV, Souders and Fielding said there will be 3 AVs, 2 dedicated to fish and 1 to debris. The debris AV could be used for fish transport if one of the AV goes down. Jundt is ok with that. Hall asked if there's a problem with the hoist for the pods, is there a back-up system to get fish out? Souders said that's a good point, he'll look at it. Could add a back-up hoist that could lift the pod and release fish back into the reservoir if unable to load on the AV.

2.4.2. Fielding gave a brief PowerPoint presentation on Cougar release site. They picked a release location but haven't gone into details on what that would look like. It is near the adult fish facility. It is already paved, can release fish into a pipe. It's on the powerhouse side. Jundt said she'd like to look at it. Reis asked why Fielding thinks predation wouldn't be an issue there. Jundt said they need to get velocities there. Fielding said he'll look at different criteria within the next couple weeks and get back to the group. Pierce said there's not a lot of access to the river behind the locked gates. Maneuvering an AV in that space will be tricky. Would want flushing flow into AV tank, would want your own independent pump. Want pipe to go out far enough to deal with tailrace depth fluctuations. Ziller said any place with any sort of depth will have fish hanging out in it, don't really want to release fish in those locations. Spots are really

limited down there. Pierce said the other option is really swift water. The water there varies a lot. **ACTION ITEM: Fielding will investigate different discharge scenarios and look at what velocities are in that area.** Pierce asked Ziller if he's more concerned with fry or juveniles in general. Ziller said juveniles in general, fish will be disoriented, can be set up to be a predation issue. Jundt said desirable velocities on the Yakima were 2 ft/s, was somewhat successful. She asked about using a bubbler system to distort the water to make predators less successful. Said they just need to go look at it. Khan suggested having a field WFFDWG meeting, or Fielding could organize a smaller group. Jundt suggested also having transient release locations. Fielding said this location is already developed. Mullen asked if would be difficult to find a 3 ft minimum depth close enough, Pierce said he looked at depth with turbines and RO running, also looked at records. Generally, at minimum would never drop below 3 ft depth at that area. Mullen asked if it's much deeper on a normal operation, Pierce said at least a couple feet deeper, it really depends on where you position the pipe. Jundt said it's an iterative process, can pick a spot and then measure velocity. Malone said predator avoidance criteria is 4 ft/s for smolts. Malone asked what RO operations are in November, if the RO is prioritized then flows could be different. Griffith said if we have FSS operating then that would change that. Malone said that's true if we're collecting 80% of fish, but if collection is low then maybe not. Khan said we'd need to dial in those things after the FSS was operating. Pierce said we should figure out when we want the release location to be optimized, Fielding said he would say in Oct and Nov to get the most fish, peak passage. **ACTION ITEM: Fielding will coordinate a site visit to the release location, will either be a special WFFDWG or a side site visit.**

4. Next Steps
   - 4.1. Next WFFDWG meeting.
     - 4.1.1. Khan suggested to the Group that because this meeting falls on the day before July 4th, we could have the meeting at a later date in July. The Group agreed.
       ACTION ITEM: Khan will set up a doodle poll for the July meeting.
   - 4.2. Upcoming reviews
     - 4.2.1. Detroit Temp Control and DSP FSS 60% DDR will be sent to the Group before the end of June for review.