COMMENT RESOLUTION:
ODFW COMMENTS ON "OCHOCO IRRIGATION DISTRICT'S BOWMAN DAM HYDROPOWER DRAFT FISH PASSAGE WAIVER APPLICATION"
MAY 1, 2020

BACKGROUND

Ochoco Irrigation District submitted the draft Fish Passage Waiver Application to the Oregon Department of Fish and Wildlife (ODFW) for review on March 12th, 2020. ODFW staff provided comments on April 17th, 2020. The purpose of this document is to address ODFW's comments on the initial draft.

COMMENTS

ODFW Comment 1: It would be helpful to have references included for the feasibility and cost analysis/evaluation used as basis for this determination.

Applicant Response: *References provided in text.*

ODFW Comment 2: How is TDG (paragraph 2) relevant to this section? We recommend TDG be moved from this section and added to the section where mitigation measures are described. While the Department cannot provide mitigation credit for TDG, as we have previously identified, TDG treatments can be presented in the application as additional information.

Applicant Response: *Improving water quality in the Crooked River is one of the primary reasons the applicants are pursuing a FPW. This project will provide the resources necessary to address elevated TDG in the Crooked River and support NMF conservation projects, such as those included in the mitigation strategy. The cost of installing passage would exceed the anticipated revenue generating capacity of the hydropower facility and preclude such conservation and water quality improvement projects. We believe this is important background information for the Fish Passage Task Force and the Fish and Wildlife Commission.*

ODFW Comment 3: Beyond the postulated TDG benefits what are the anticipated benefits for fish communities on the lower Crooked River?

Applicant Response: *Addressed in text. Also note that ODFW qualitatively acknowledges the value of the proposed mitigation in their subsequent comment (Comment 4). Finally, below is a table of each mitigation measure and the associated benefit to native migratory fish.*

Mitigation Action	Native Migratory Species	Benefits
TDG Reduction	Redband Trout Mountain Whitefish Chinook Salmon steelhead trout	Directly reduce mortality caused by Gas Bubble Disease; improve water quality
Gravel Augmentation	Redband Trout Mountain Whitefish Chinook Salmon steelhead trout	Restore coarse substrates used for spawning; improve benthic invertebrate production
Ochoco Creek Passage	Redband Trout Mountain Whitefish Chinook Salmon steelhead trout Bridgelip Sucker Largescale Sucker	Provide access for anadromous species to 2.5 miles of good quality habitat; improve genetic exchange and interactions among resident fish
Ochoco Preserve Restoration	Redband Trout Mountain Whitefish Chinook Salmon steelhead trout Bridgelip Sucker Largescale Sucker Northern Pikeminnow	Restore approx. 1 mile of river channel and riparian habitat on the Crooked River and 0.5 mile on McKay and Ochoco creeks; restore upland and wetland habitat on 185-acre property

ODFW Comment 4: While the proposed mitigation measures are of important value to NMF restoration on the Crooked River basin, the Department does not believe that the currently available information can support a conclusion that the downstream, "habitat and water quality improvements is expected to be of equal or greater value" as that of having passage restored at Bowman Dam.

Applicant Response: *Addressed in text to the extent possible. Our statement was predicated on a recent assessment of habitat conditions in the upper Crooked River basin (MHE 2020b), as well as the available literature for assessments completed downstream of Bowman Dam. Taken together, these studies indicate that migratory fish reintroduction into the upper Crooker River basin will have a low probability of success under current conditions, particularly for anadromous fish. Therefore, we expect habitat and water quality projects downstream of Bowman Dam to provide a greater benefit to aquatic resources than would be expected by providing passage at Bowman Dam. This conclusion is consistent with the opinions of NMFS, who previously considered the importance of passage at Bowman Dam for salmon/steelhead reintroduction in the Upper Deschutes Basin (Scott Carlon, personal communication, November 5, 2019). ODFW's opposition to this conclusion appears to be based on the lack of complete habitat survey information in the upper Crooked River basin. However, the available data, though not comprehensive, is substantial and supports our inference.*

ODFW Comment 5: In respect to the referenced "MHE2020b – Assessment of native Migratory Fish Habitat in the Upper Crooked River Sub-basin report as prepared by Mount Hood Environmental: Several of the Department's comments and recommendations provided to the Applicant for the October 20, 2019 Review draft MHE Technical Report on December 13, 2019, remain salient and unaddressed in respect to the MHE2020b version. These include: the need for more information (including a detailed description) regarding historic salmonid population abundance and historic distributions. The number of kilometers or miles of summer steelhead trout and spring Chinook salmon habitat that might be available.

Applicant Response: *The number of kilometers potentially available to summer steelhead trout and spring Chinook salmon were reported on page 8 of the analysis. We believe the information contained in MHE (2020b) and in the FPWA accurately describes the existing habitat conditions upstream of Bowman Dam and historic salmonid abundance and distribution. Additionally, the level of detail provided is sufficient and greatly exceeds the level of detail found in the FPWA examples provided by ODFW.*

ODFW Comment 6: A much better and thorough discussion in respect to the specific tributary drainages of the upper Crooked River.

Applicant Response: *We provided a level of detail consistent with the information found in ODFW's Crooked River Basin Plan. Providing additional detail would require extensive field surveys, which we believe is beyond the scope of the FPWA process because such thorough data collection and discussions of upstream habitat conditions have not been included in previous FPW applications for similar projects (see FPWA Applications for Warmsprings Dam and Mason Dam).*

ODFW Comment 7: The issue of the assessment being greatly under unrepresentative of the range of available stream habitats and current conditions in the entirety of the upper Crooked River basin. This being a result of the habitat qualification and quantification assessment being based on dated data and limited only to those tributaries with available AIP data.

Applicant Response: *The AIP data used in the analysis was collected between 1993 and 2003, and to our knowledge, no significant land use changes or restoration projects have occurred in the upper Crooked River basin since the time of the AIP surveys. Therefore, this is the best currently available data for evaluating habitat conditions upstream of Bowman Dam.*

ODFW Comment 8: More details about how the productivity estimates were expanded to unsurveyed streams

Applicant Response: *Please note that productivity estimates were not included in the updated version of MHE (2020b) because ODFW requested that we remove that component of the analysis (ODFW comments on MHE (2020b) received by OID on December 13th, 2019 available upon request).*

ODFW Comment 9: An outlined methodology to address data gaps

Applicant Response: *This comment is no longer pertinent as the productivity quantification component of the analysis is not included in the updated analysis.*

ODFW Comment 10: More information to address the timing of instream flows in respect to the life history of all the species considered

Applicant Response: *We made the simplifying assumption that stream flows would be adequate to support NMF in all accessible survey reaches. We know from aerial photography and site visits that flows regularly drop below levels necessary to support fish passage during much of the year, but we chose to give the fish the benefit of the doubt and we erred on the side of higher habitat suitability scores for NMF in the upper Crooked River basin.*

ODFW Comment 11: A proposal in the Report for additional field surveys necessary to provide a basis for a representative depiction of the quality and quantity of suitable habitat resulting from fish passage at Bowman Dam.

Applicant Response: *We believe use of the existing data is adequate to inform the FPWA. ODFW staff have expressed the opinion that the level of mitigation proposed is not likely to be equivalent to the value of passage at Bowman Dam. The primary basis for this opinion appears to be the amount of watershed area upstream of Bowman Dam. ODFW has also rejected our assertion that the habitat upstream of the Dam is lacking key attributes necessary for high NMF productivity. Therefore, as was discussed during the conference call on January 17th, 2020, the applicants believe that additional fieldwork would not result in changing the Department's opinion, and all resources spent on fieldwork would only serve to reduce the amount of funding available for habitat restoration downstream of the Dam.*

ODFW Comment 12: The Department believes that addressing its recommendations would have strengthened the analysis and made the report more useful for conducting a benefit analysis.

Applicant Response: *While additional data and pertinent information is always beneficial for informing a decision, we believe the information presented in the analysis and FPWA exceeds the level of detail found in previous FPWA's. The analysis involved quantifying more than 49 miles of habitat for summer steelhead trout and spring Chinook Salmon, representing a thorough evaluation of fish habitat conditions with publicly available data.*

ODFW Comment 13: Please provide the River mile (RM) location for each of the listed barriers.

Applicant Response: *Addressed in text.*

ODFW Comment 14: This description of the "Rice Baldwin Dam" should reflect that summer steelhead have been documented passing upstream of this dam.

Applicant Response: *Addressed in text.*

ODFW Comment 15: The description of the "Downstream 2: Opal Springs Dam is hydroelectric project on the mainstem Crooked River" should more accurately reflect that resident redband, bull trout, mountain whitefish, northern pike minnow, large scale sucker and bridge lip sucker have all been observed passing upstream of the dam since completion of the passage fish structure in November 2019.

Applicant Response: *Addressed in text.*

ODFW Comment 16: The Twin Buttes Dam barrier description should better reflect the nature of the barrier. It is seasonal irrigation wood flashboards and tarp barrier. It is typically operated within the April to October irrigation timeframe with fish passage realized outside this period. Also, please provide the RM for the barrier.

Applicant Response: *Addressed in text.*

ODFW Comment 17: Please note that under the "Downstream" column in this table, the section labeled "land use/zoning", should include reference to the Federal Wild and Scenic Designation and Oregon State Park land use. In this vein recreation should be included as a use.

Applicant Response: *Addressed in text.*

ODFW Comment 18: The Department needs more specific details on each of the proposed mitigation actions so we can evaluate how each action will factor into the Department's Benefit Analysis. Without these design details, the Department cannot effectively evaluate how this mitigation proposal contributes towards a net benefit to native migratory fish.

Applicant Response: *Addressed in text.*

ODFW Comment 19: Please explain the purpose of including the statement "Installation of Howell Bunger Valve to mitigate total dissolved gas (TDG) levels will occur at Bowman Dam (AO)." in this section?

Applicant Response: *Addressed in text.*

ODFW Comment 20: The TDG discussion should be de-emphasized and moved to the end of the fish passage waiver mitigation section. An introductory sentence should be included that more clearly explains why this action is ineligible for fish passage mitigation pursuant to OAR 635-412- 0040(3). The overall discussion and importance of TDG appears inconsistent as it is discussed in various sections in the FPWA and the attachments.

Applicant Response: *Given the significance of the proposed TDG reduction in both scope and anticipated benefit to NMF in the Crooked River, we do not agree that this component of the Project should be "de-emphasized." TDG reduction is an integral part of our proposed project and this water quality improvement is expected to provide substantial fisheries benefits. Discussion pertaining to the eligibility of this action as mitigation within the FPWA is included in section 10, consistent with the Department's recommendation to acknowledge* OAR 635-412-0040(3).

ODFW Comment 21: The Sept 2018 BOR TDG document discusses a rock weir to reduce TDG concentration: Is it a component of the TDG mitigation action? Does a need for the rock weir suggest that the TDG will still remain high in the river reach between the project discharge and the rock weir structure? The design of this structure will need to be reviewed and subsequently approved by the Department for fish passage. Is this rock weir structure consistent with the Federal Wild and Scenic River designation?

Applicant Response: *The rock weir is not a component of the TDG mitigation action. Results from the BOR (2018) literature review indicate the combined effect of installing a hydropower turbine and replacing the current outlet structure with Howell Bunger valves could reduce TDG saturation downstream of Bowman Dam to 113% when flows are at 1500 cfs.*

ODFW Comment 22: Also, please be aware that there may be other impacts to fish associated with entrainment and passage through a Howell Bunger valve assembly that will need to be addressed as part of the larger licensing process.

Applicant Response: *Acknowledged.*

ODFW Comment 23: More specificity is needed on this mitigation action: The specifics need to include details on gravel augmentation locations, volumes, frequency and timing, target species, access and methods to deliver gravel, type and size of gravel, and source of gravel. More specific information on the expected outcome is necessary so the department has a basis for conducting its benefit analysis.

Applicant Response: *Project specifics have been included in the FPWA. The purpose of the gravel augmentation project is to restore the supply of coarse substrates to the Crooked River that have been trapped by Bowman Dam since 1961. Therefore, the project does not include a specific goal with regards to the quantity of spawning habitat created. Rather, the project will improve spawning habitat and promote benthic invertebrate production by restoring the supply*

of coarse sediments that have been depleted in this section of the river. A table of potential spawning habitat created by gravel augmentation is included in the attached project proposal.

ODFW Comment 24: The gravel augmentation proposal calls for placing 300-500 yd3 every three years as needed, and gravel mobilization is expected under normal flow conditions. How were the 300-500 yd3 gravel volumes and liberation locations derived and how will these details relate to improved spawning of target species?

Applicant Response: *The methodology proposed in this gravel augmentation plan, including the quantity of gravel, is similar to other passive augmentation projects in the Pacific Northwest, such as those on the Cowlitz River, WA, and the Klamath River, CA (below J.C. Boyle Dam). The aim of the proposed project is to supply coarse sediments to the Crooked River. Annual monitoring of the gravel recruitment pile will be implemented to ensure an adequate supply of gravel is present.*

ODFW Comment 25: How and where will gravels be distributed and how will this action be monitored for efficacy?

Applicant Response: *Gravel will be naturally distributed downstream of the gravel recruitment pile by the Crooked River flow. See Comment 26 for monitoring.*

ODFW Comment 26: What are the monitoring methods and procedures? The description seems focused on showing the gravel moved, not showing a positive change in downstream gravel composition and how this translates to improved habitat conditions. How will "tracer gravel evaluation" be used to determine efficacy for improved spawning and by species?

Applicant Response: *The proposed monitoring methods and procedures are described in MHE 2020A. The purpose of the project is to restore the supply of coarse sediments to this section of the Crooked River. Therefore, monitoring the downstream movement of gravel using tracer gravels is a necessary component of the project. The monitoring will help to identify potential gravel sinks and inform future gravel placements.*

ODFW Comment 27: Is gravel being removed from the Crooked downstream and hauled and relocated upstream to be recycled through the system or is this truly new and appropriate gravel? If not, where is the source of the materials?

Applicant Response: *Addressed in text.*

ODFW Comment 28: How is "as needed" (page 11, 2nd paragraph) defined and who makes the decision whether or not gravel is needed?

Applicant Response: *Addressed in text.*

ODFW Comment 29: The success of passive gravel augmentation depends on undisturbed downstream gravel conveyance to ensure that the added gravel does not disappear in a gravel sink but is available for deposition at a location suitable for forming spawning habitat. As only a fraction of the added gravel may be deposited at site where flow hydraulics are suitable for spawning habitat, indirect placement of gravel may involve relatively large annual quantities per site.

Applicant Response: *Acknowledged. Monitoring will be an important component of the gravel augmentation project as it will help to identify gravel sinks and inform the placement of future gravel recruitment piles.*

ODFW Comment 30: Information needs to be collected on those sites where flow hydraulics are suitable for spawning habitat.

Applicant Response: *We will work with ODFW staff to identify one or more reference monitoring sites downstream of the gravel recruitment pile.*

ODFW Comment 31: What is the expected outcome for creation of spawning habitat? For example, how many spawning areas would be created, and how many potential redds could be supported based on minimum redd patch size, appropriate water velocity and depth, and appropriate substrate?

Applicant Response: *See Comment 23.*

ODFW Comment 32: The Department believes it is important to be flexible for evaluation and monitoring. For example, annual monitoring may need to be conducted for the first few years of implementation to better document the extent and pattern of gravel deposition.
Information will need to be collected on patch size, flow depth and velocities to be expected after the gravel has been supplied and ensure it is acceptable to spawning salmon, steelhead, and redband (e.g., habitat suitability curves, PHABSIM).

Applicant Response: *We agree that monitoring of gravel transportation and deposition should occur annually for the first three years following implementation. The gravel augmentation project will require collaboration with ODFW staff and an adaptive management approach with regards to the placement of gravel recruitment piles and monitoring efforts.*

ODFW Comment 33: Flood events that have the potential to move gravel should definitely prompt a project monitoring survey.

Applicant Response: *Addressed in text.*

ODFW Comment 34: More clarity and specific details on each of these passage and screening mitigation actions is needed.

Applicant Response: *Addressed in text.*

ODFW Comment 35: The FPWA (pg.14) (first paragraph) states, "fish screens will be evaluated and added as needed to both structures". The Department has no clear way of knowing what this means so far as what action(s) will be complete. Who will perform this evaluation and how will decisions be made related to specific fish screening actions at these locations.

Applicant Response: *Addressed in text.*

ODFW Comment 36: If there is to be no certainly that fish screens are to be installed then the mitigation measure should more appropriately be referenced only in regard to the providing of fish passage as the proposed mitigation action.

Applicant Response: *Addressed in text.*

ODFW Comment 37: Consistent with OAR 635-412-0040, fish passage mitigation actions, shall meet fish passage design criteria and shall be evaluated, monitored and reported. We have no way to determine how these two fish passage mitigation actions align with these administrative rule requirements. Furthermore, there is no information in the FPWA describing who will own and manage these mitigation actions and how the project proponents will evaluate, monitor and report on these mitigation actions.

Applicant Response: *Addressed in text.*

ODFW Comment 38: Are Redband Trout the only NMF currently present in this reach as indicated in the table?

Applicant Response: *Addressed in text.*

ODFW Comment 39: This paragraph describes Ochoco Creek conditions, but the last sentence refers to Bowman Dam. Is this a typo?

Applicant Response: *Addressed in text.*

ODFW Comment 40: Details in the FPWA on funding contributions for fish passage and screening mitigation actions are vague. Please provide clarity on project and funding specifics, particularly what the project proponents are providing funding for. The FPWA (pg. 17) says the projects will cost $215,879, OWEB has secured $125,379, and the applicants will fund $90,500. The OWEB application has a total cost of 162,879 and OWEB request of $123,779. This leaves a difference of $39,100 if no one else, including the barrier owners, are contributing anything.

Applicant Response: *The funding description has been clarified in the text. The Crooked River Watershed Council has updated the project cost estimate since the OWEB grant application was originally submitted. The current cost estimate for implementing the passage project at Prineville Golf and Country Club is $80,000. We will provide a funding contribution of $90,500 to cover the cost of project implementation and to help cover some of the additional costs associated with project, such as passage design.*

ODFW Comment 41: How does this ensure that the mitigation actions will be evaluated for effectiveness and maintained beyond the 10-year time frame? Fish screening and passage mitigation actions will need to be maintained for the life of the project, not 10 years. The FPWA should be revised to include a commitment for the long-term maintenance of the project. If the Fish and Wildlife Commission approves a fish passage waiver, such a condition would be included in the draft waiver agreement.

Applicant Response: *Addressed in text.*

ODFW Comment 42: The Ochoco Preserve mitigation action(s) have limited to no detail on what will be specifically implemented or accomplished with the proposed funding contribution. Without clarity on what these proposed mitigation funds will complete on the ground and how these actions will mitigate, the Department cannot evaluate how this/these mitigation action(s) contribute towards a fish passage mitigation plan and a net benefit to native migratory fish. The Department will need specific details on this proposed mitigation action(s) to evaluate how the mitigation action(s) contribute towards a net benefit to native migratory fish. The Department recommends the applicant consider a formal letter from Deschutes Land Trust describing what they will be doing and how they will use these funds and provide this as an attachment to the FPWA.

Applicant Response: *This mitigation action was discussed with ODFW during a conference call on February 20th, 2020. During the call, ODFW staff described funding for restoration at Ochoco Preserve as a good mitigation option. ODFW expressed their belief that this project would have a greater potential to benefit NMF than the alternative habitat restoration project upstream of the Crooked River Wetlands. During that call, our contractors explained that the Ochoco Preserve project was in its planning phase and a description of specific restoration actions could not be provided by the Deschutes Land Trust. Subsequently, ODFW staff suggested that the project description in the fish passage waiver application include the quantity of land and stream channel that will be restored, and that the project would emphasize restoring habitat for spring Chinook Salmon and summer steelhead trout. This description is included in the*

FPWA. The Deschutes Land Trust confirmed again on April 23, 2020, that additional details with respect to specific restoration actions at Ochoco Preserve are not available.

ODFW Comment 43: More information (including a detailed description) regarding historic salmonid population abundance and historic distributions.

Applicant Response: *Addressed in the Summary Table (6B) in the Artificial Obstruction section.*

ODFW Comment 44: What are the source references for those barriers identified on the map?

Applicant Response: *Addressed in text.*