Final

Fish Salvage & Temporary Fish Barrier Report for the Wallowa Falls Hydroelectric Project Tailrace

(FERC No. P-308)

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1.0 INTRODUCTION

The Federal Energy Regulatory Commission (FERC) issued a new operating license for the Wallowa Falls Hydroelectric Project (Project) on January 5, 2017. Elements of the new license address fishery resources within the Project area, specifically as they pertain to the Project tailrace. **Article 411** of the license calls for a *Fish Salvage Plan* to be developed within six months of license issuance, "*the licensee must file for Commission approval a fish salvage plan that describes its proposed procedures for capturing, handling, and relocating any fish trapped in the tailrace channel during planned or unplanned unit outage events that dewater the tailrace channel. The fish salvage plan must be implemented each year following license issuance until the permanent tailrace barrier required by Appendix A condition 2(a) and Article 409 is installed and operating. In addition to the handling procedures specified by Appendix C, condition 2, the plan must include the following provisions: (1) Salvaging of fish from the tailrace channel within two hours of the installation of any temporary fish passage barrier required by Appendix A, condition 2(b); and (2) Salvaging of fish from the tailrace channel prior to complete dewatering of the tailrace channel due to a planned or unplanned outage event*."

With the bringing online of the permanent tailrace fish barrier in June 2020, it was anticipated that construction of temporary tailrace fish barriers and tailrace fish salvages would no longer be necessary. The unexpected identification of a small side-channel of the West Fork Wallowa River immediately downstream of the tailrace discharge plume made it necessary for this Plan to once again be implemented in 2020.

It was identified that this small side-channel would lose connectivity with the main channel of the West Fork Wallowa River as the main channel receded to base flow, at which time the total flow into the side-channel would be provided by the Project tailrace channel discharge. The concern was then raised that if the Project unit tripped and the tailrace dewatered, the small side-channel would also then dewater. An Emergency Action Plan was developed to identify measures to limit risk to aquatic species in the vicinity of the side-channel should the unit trip and tailrace dewater (Appendix A). The Action Plan was approved by stakeholders on August 17 and implemented on August 23 (Appendix A).

Though no empirical fishery data existed for the small West Fork Wallowa River side-channel, it was assumed that resident and migratory fish species encountered at other locations in close proximity to also currently inhabit the channel at varying densities, depending on time of year. Fish species encountered within other locations near to the side-channel and assumed to also reside within the side-channel consist of rainbow trout (*Oncorhynchus mykiss*), bull trout (*Salvelinus confluentus*), brook trout (*Salvelinus fontinalis*), mountain whitefish (*Prosopium williamsoni*), kokanee (*Oncorhynchus nerka*), and *cottid ssp*.

This Report and the information contained therein fulfill Plan implementation reporting requirements of Article 411 of the FERC license as well as actions necessary to protect and preserve fishery resources within the Project area.

2.0 STUDY AREA

The Project is located on the East Fork Wallowa River approximately 11 miles (17 kilometers) outside of the City of Joseph in Northeastern Oregon. The Project (Figure 1) reservoir/forebay lies over 5,200 feet (1,600 meters) above mean sea level (msl) and is approximately 0.2 surface acres (0.08 ha) in size and averages 5 feet (1.5 m) deep. Because the Project operates as run of river, there is no measurable storage. Though no measurable storage is present in the forebay, habitat in this area is lacustrine, and given the shallow water depth no thermal stratification is present. Substrate in the forebay consists of deposited silt, sand, and other glacial fines.

Water diverted at the forebay travels through the flow line and penstock to the generating turbine in the Project powerhouse. Water exits the turbine and is discharged into an approximately 985-foot (300 m) long tailrace discharge channel that empties into the West Fork Wallowa River. This channel has an average wetted-width of 10 feet (3.1 m) and an average depth of one foot (0.3 m). The habitat type within the tailrace channel is dominated by high gradient riffle with very few pools.

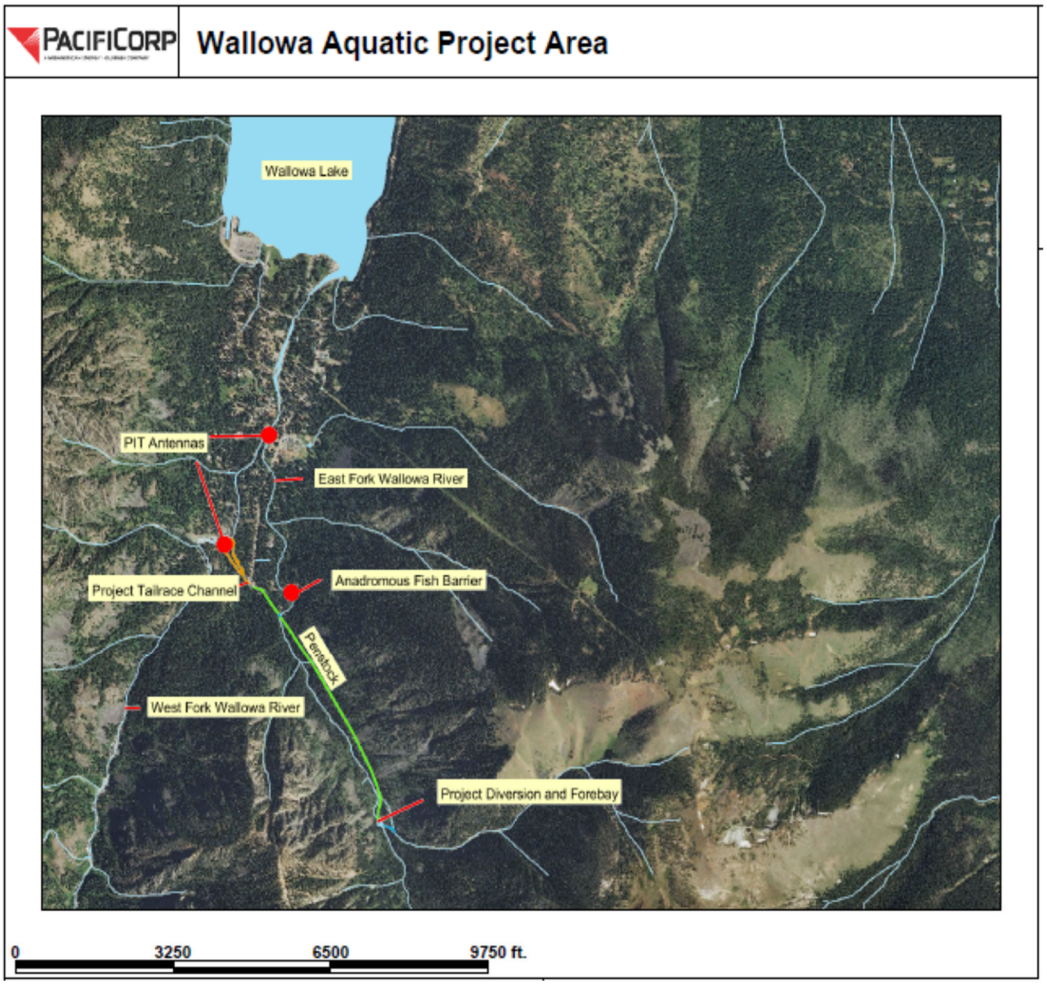

Figure 1 Wallowa Falls Hydroelectric Project.

3.0 METHODS

Onsite observations indicate when the unit trips and the headgate closes it takes approximately 90 minutes for the entire tailrace channel to drain completely of water. Conversely, if the unit trips and the headgate does not close a constant flow of approximately 3 cubic feet per second (cfs) is supplied to the tailrace channel. Thus, a fish salvage event was only triggered if the unit trips along with a subsequent headgate closure. Unit trips that do not cause the headgate to close shall trigger no salvage response as the amount of water available within the tailrace channel during this scenario is sufficient for fish survival until the unit is brought back online and full flow once again commences. Fish salvages of the tailrace channel were only necessary January-May in 2020. After the permanent tailrace fish barrier was brought online and found to be operating within specifications in June, fish salvages if the tailrace dewatered were no longer required.

January – May, upon notification of a unit trip with corresponding headgate closure, regardless of time of day, a local on-call qualified biologist was immediately notified by an operator at Merwin Hydro Control and commenced with physically rescuing stranded fish from the tailrace channel. The local qualified biologist lives in close proximity to the Project so as to be on-site and walking the tailrace channel within 60 minutes of the unplanned unit trip. A Smith-Root LR-24 (or similar model) backpack electrofisher or long-handled dip net was utilized to capture stranded fish. If a backpack electrofisher was utilized, it was set to Direct Current (DC) and applied at the lowest voltage setting possible to still allow capture of stranded fish species. All electrofishing activities followed protocols as set forth in the National Marine Fisheries Service Backpack Electrofishing Guidelines (NMFS 2000). To remain compliant with stipulations contained within the USFWS issued Biological Opinion (BiOp) for the Wallowa Falls Hydroelectric Facility, PacifiCorp ensured that fish capture and removal operations were conducted by a qualified biologist, and that all staff participating in the operation had the necessary knowledge, skills, and abilities to ensure safe handling of fish. All planned unit outages with headgate closure occurred early in the morning to ensure the lowest possible water temperatures for safe fish handling.

In 2020, salvage activities due to a unit trip began in the fenced area immediately downstream of the turbine discharge and proceeded in a downstream manner until all areas of the tailrace were thoroughly fished. All captured fish were held in five gallon buckets or small coolers with aerators until liberation into the West Fork Wallowa River downstream of the Project tailrace confluence. Fish capture and removal operations took all appropriate steps to minimize the amount and duration of handling. The operations maintained captured fish in water to the maximum extent possible during seining/netting, handling, and transfer for release, to prevent and minimize stress.

Prior to liberation, all captured fish were quantified and measured to their caudal fork. Due to the presence and possible capture of Endangered Species Act listed bull trout in the Project area, recording of information following contact with said species complied with stipulations contained within the USFWS issued BiOp for this Project which states, “PacifiCorp shall document all bull trout encountered during work site isolation by submitting a fish handling and injury-occurrence report to the Service. The report shall include: 1) the name and address of the supervisory fish biologist; 2) methods used to isolate the work area and minimize disturbances to bull trout; 3) stream conditions before and following placement and removal of temporary barriers; 4) the means of fish removal; 5) approximate the number of fish removed by species and age class, the number of bull trout removed; 6) condition of all bull trout released; and 7) any incidence of observed

injury or mortality to bull trout. Specifically, for all bull trout captured, we ask that the fisheries biologist in charge of handling record the date and time, capture location, capture method used, length and weight of the specimen, condition (if abnormal), search for and record identification numbers from any tags that may be present, and provide the collector's name." This Report and information contained therein shall qualify also as the "fish handling and injury-occurrence report" as stipulated within the USFWS issued BiOp for the Project.

Also in 2020, as stipulated within the Introduction, a sandbag and block net barrier were constructed to serve as a temporary fish exclusionary device at the top, middle, and bottom end of the small West Fork Wallowa River side-channel located immediately downstream of the tailrace barrier discharge plume. The fish barrier at the upstream end, and middle of the side-channel utilized sandbags, stacked one on top the other for the entire width of the side-channel (Figure 2 and Figure 3). A barrier net was strung across the entire bottom end exit of the side-channel (Figure 4). The openings of this barrier net were 6.35 mm and the net was held in place by large sandbags placed end to end along the stream bottom and spanning the entire stream-width. Further specifics to the Emergency Action Plan concerning this side-channel can be found in Appendix A.

Figure 2. Photo of Wallowa Falls side-channel barrier on upstream end.

Figure 3. Photo of Wallowa Falls side-channel barrier of small channel halfway down the main side-channel.

Figure 4. Photo of Wallowa Falls side-channel barrier at the downstream end.

4.0 RESULTS

Fish Salvage

No unit trips with subsequent headgate closures occurred at the Wallowa Falls Project January – May, 2020 and as such no fish salvages were ever required. One fish salvage occurred on the Project during 2020, that of a salvage of the West Fork Wallowa River side-channel immediately downstream of the tailrace barrier discharge plume after fish barriers were installed on August 23, 2020. No fish were encountered or observed.

Temporary Fish Barrier

Per the Emergency Action Plan submitted to stakeholders on August 17, 2020, a temporary fish barrier was installed at the upstream and downstream end of the West Fork Wallowa River side-channel immediately downstream of the Project tailrace barrier discharge plume on August 23, 2020. The tailrace fish barrier was visually inspected twice per week until taken out on November 15, 2020. At no time during weekly inspections was the barrier visually assessed to be ineffective in precluding fish from entering the side-channel (Appendix B).

5.0 CITATIONS

National Marine Fisheries Service. 2000. National Marine Fisheries Service Backpack Electrofishing Guidelines.

United States Fish and Wildlife Service. 2016. Biological Opinion for the Wallowa Falls Hydroelectric Project.

APPENDIX A

EMERGENCY ACTION PLAN – WF WALLOWA SIDE-CHANNEL TEMPORARY FISH BARRIERS

August 10, 2020

Emergency Action Plan: Wallowa Falls Temporary Fish Barriers to identified side-channel below Project Tailrace discharge

Background:

Upon completion of the newly realigned tailrace and permanent tailrace fish barrier at the Wallowa Falls Hydroelectric Project, a side-channel directly below the tailrace discharge outlet was identified as being susceptible to unplanned Project induced dewatering events. Under normal water years, the side-channel in question may lose connectivity to the main channel of the West Fork Wallowa River as it recedes to base flow, and may naturally go dry. With new construction recently completed, the Project tailrace now will provide some flow to the sidechannel
even at times of hydraulic loss of connectivity with the West Fork Wallowa River.
Under this scenario, in the event of an unplanned unit trip with subsequent headgate closure at the Wallowa Falls Project, the side-channel could now unexpectedly dewater. Potential impacts of this possible event are exacerbated during the bull trout and kokanee spawn timeframe, as redds that may have been excavated earlier would then become desiccated.

Study Area:

The side-channel in question (stranding channel) is located immediately downstream of the Wallowa Falls Project tailrace discharge channel, and within the flood plain of the West Fork Wallowa River (see Figure A, Sketch of side-channel and approximate locations of tailrace discharge outlet and barrier placements: Location 1). It is approximately 79 meters (260 feet) long, with an average wetted-width of 3 meters (10 feet). Figure 1 shows Location 1 on the sketch, the top-end of the stranding side-channel looking downstream. The West Fork Wallowa River main channel is on the left, the tailrace discharge is in the middle and the side-channel is on the right. The photograph in Figure 1 was taken on August 8, 2020, during West Fork Wallowa River midsummer flows. Based on August 8 field observation, the West Fork main channel has recently further down-cut below the entrance of the stranding side-channel. As a result, the tailrace is now providing the majority of flow, approximately 3cfs, into the stranding channel. However, during the August 8 field visit, it was discovered that a small channel connecting the main thalwag of the West Fork to the stranding channel also exists (Figure A, location 2). The channel in Location 2 (Figure 2) is contributing very little flow (approximately 0.5-1 cfs) to the stranding channel.

Action:

To prohibit fish from entering the stranding side-channel immediately below the Project tailrace discharge outlet from the downstream side during the bull trout and kokanee spawn, a block net (barrier net) will be installed by August 24, 2020 to serve as a temporary fish exclusionary device (Figure A, Location 3). The barrier net will be laid across the entire bottom of the upstream side of the side channel (Figure 3). The openings of the barrier net will be 6.35 mm. The net will be held in place by large sandbags placed end to end along the stream bottom and spanning the entire stream-width. The net will span the entire wetted width of the side channel, rise above the water surface, and will be pinned to the stream bank on either side with rebar to hold it in place in the event of higher than anticipated flows. The barrier net will be visited on a bi-weekly basis to clean debris and assess it is functioning as intended.

To prohibit fish and tailrace discharge from accessing the stranding side-channel from the topend immediately below the weir (Figure 1), a diversion (using sandbags, bio-blocks, or similar) will be built. The planned construction method is a sandbag berm approximately 3 meters (10 feet) long and 0.75 meter (2.5 feet) high. The diversion will prohibit water flow and connection between the West Fork Wallowa River, and the stranding side-channel, while diverting water from the tailrace discharge to the main thalwag of the West Fork.

To prohibit fish and main West Fork channel water from entering the stranding side-channel at Location 2 (Figure 2), a diversion using sandbags will be built. The planned construction method is a sandbag berm approximately 1.5 meters (5 feet) long and 0.6 meter (2 feet) high. After the three side-channel temporary barriers are placed, all fish will be salvaged from the stranding side-channel and liberated to the main channel West Fork Wallowa River by means of electrofishing. All side-channel barriers will be dismantled and taken out of the river no earlier than November 15, 2020, after conclusion of the bull trout and kokanee spawn season.

APPENDIX B

TAILRACE BARRIER WEEKLY INSPECTION NOTES

Date	Observer	Comments
8/23/2020	PacifiCorp staff	Weir completed and installed
9/12/2020	Bioresources staff	Weir in place and working well.
9/15/2020	Bioresources staff	Weir in place and working well.
9/19/2020	Bioresources staff	Weir in place and working well.
9/22/2020	Bioresources staff	Weir in place and working well.
9/24/2020	Bioresources staff	Weir in place and working well.
9/27/2020	Bioresources staff	Weir in place and working well.
10/2/2020	Bioresources staff	Weir in place and working well.
10/7/2020	Bioresources staff	Weir in place and working well.
10/9/2020	Bioresources staff	Weir in place and working well.
10/12/2020	Bioresources staff	Weir in place and working well.
10/17/2020	Bioresources staff	Weir in place and working well.
10/21/2020	Bioresources staff	Weir in place and working well.
10/24/2020	Bioresources staff	Weir in place and working well.
10/28/2020	Bioresources staff	Weir in place and working well.
11/6/2020	Bioresources staff	Weir in place and working well.
11/10/2020	Bioresources staff	Weir in place and working well.
11/15/2020	Bioresources staff	Weir disassembled and taken out of tailrace channel.