



Independent Scientific Review Panel

for the Northwest Power & Conservation Council
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Memorandum (2020-7)

June 30, 2020

To: Richard Devlin, Chair, Northwest Power and Conservation Council

From: Stan Gregory, ISRP Chair

Subject: Review of Zone 6 Fisheries CRITFC Accord Project (#2008-527-00)

Background

In response to the Northwest Power and Conservation Council's June 2, 2020 request, the ISRP reviewed a [proposal](#) from the Columbia River Inter-Tribal Fish Commission (CRITFC) for the Zone 6 Fisheries CRITFC Accord Project, #2008-527-00. The ISRP has been aware of this proposal for several years, but until recently, the specifics of the project were not fully developed. The ISRP reviewed the proposal as part of the Mainstem and Program Support Category Review in May 2019 ([ISRP 2019-2](#)) and found the proposal "not applicable" because, at that time, the proposal primarily involved planning activities and was not amenable to scientific review. The ISRP was further introduced to the project during our review of the *Revised Master Plan for Yakima Subbasin Summer-and Fall-run Chinook, Coho Salmon and Steelhead*, Project #1988-115-25 ([ISRP 2020-3](#)). CRITFC, with consensus from the *U.S. v. Oregon* parties, has now refined the proposal and re-submitted it for scientific review.

As part of the 2008 Accord Agreement between the Action Agencies and CRITFC, monies were set aside to help pay for needed infrastructure modifications at the Yakama Nation's Prosser Hatchery. Chapter Six, in Volume I of *The Revised Master Plan for Yakima Subbasin Summer-and Fall Chinook, Coho Salmon and Steelhead* (Yakama Nation 2019), provides a summary of the existing fish cultural resources at the Prosser Hatchery. The overview indicates that additional infrastructure and modifications to existing facilities are needed to meet Tribal goals for the subbasin's natural and hatchery Chinook, coho, and steelhead populations.

Among the modifications listed is the requirement for twelve 30-foot diameter circular tanks and associated Partial Recirculating Aquaculture System (PRAS) equipment. The tanks would be used to support the segregated upriver bright fall Chinook harvest augmentation program currently occurring at the hatchery. Both yearling (~210,000) and subyearling (1.7 million) upriver bright fall Chinook are currently reared and released from the Prosser Hatchery.

This capital project's purpose is to improve fish quality and survival, and to optimize release timing for the existing 210,000 yearlings and a portion (340,000) of the 1.7 million subyearling upriver bright fall Chinook released annually from the Prosser Hatchery. The production of upriver fall Chinook at the Prosser Hatchery is part of the US Army Corps of Engineers (Corps) John Day/The Dalles Mitigation effort. The project aims to help adjust the stock composition of harvested fall Chinook from the current ratio of 50:50 upriver bright to Tule fall Chinook stocks to the target ratio of 75:25 upriver bright to Tule stocks. It also helps move fall Chinook releases to areas directly impacted by the construction of John Day and The Dalles dams, thereby maximizing availability of returning adults to the Zone 6 Tribal fishery.

The proposed capital work applies existing 2008 Accord funds to partially replace aging infrastructure at Prosser Hatchery that is currently used to rear upriver bright fall Chinook. The funds available in this proposal are, however, only enough to install four of the needed twelve 30-foot diameter circular tanks and two of six PRAS modules. Other monies will be needed to complete the desired twelve-tank complex. The Corps funds the operations and maintenance for rearing and acclimating John Day/The Dalles Mitigation fall Chinook production at Prosser Hatchery and anticipates continued funding of operations and maintenance so long as Prosser Hatchery is used in the suite of facilities that support the John Day/The Dalles Mitigation program.

ISRP Recommendation

Meets scientific review criteria

This is solely a construction project and therefore not strictly amenable to scientific review. Adding new circular tank facilities is expected to improve the quality and post release survival of juvenile upriver bright fall Chinook currently produced by the hatchery as part of its upriver bright fall Chinook segregated harvest augmentation program. The rationale and advantages for using circular tanks with recirculating water capacities are briefly explained. This additional information helps justify the proposed work. The proposal, however, would have been more complete if a link to text in a revised Master Plan (Yakama Nation 2019) had been included. The Master Plan provides a more detailed description of the circular tank infrastructure and the fish cultural benefits that are anticipated to occur. Given the information at hand, the proposed work appears reasonable.

Although not the responsibility of this construction project, the ISRP expects that the Yakama Nation will dedicate effort under its Yakima Klickitat Fisheries Program umbrella project (YKFP, #1995-063-25) toward monitoring juvenile salmon quality, post release survival, and the harvest contribution and straying rates of the upriver bright fall Chinook produced by the program.

ISRP Review Comments

1. *Technical Background and Significance to Program*

Technical Background

The current proposal and revised Master Plan describe the possible fish cultural advantages that may be provided by using circular tanks and associated PRAS equipment. The water reuse system will allow fish to be raised in pathogen-free groundwater throughout their entire rearing period. Under present conditions, surface water from the Yakima River is typically used during parts of the rearing period, which can lead to deleterious sediment, pathogen, and temperature issues. Other environmental benefits include relatively homogenous flow velocities that are expected to promote swimming speeds that improve fish condition and overall health. Additionally, gas saturation levels (e.g., CO₂, DO) and other water quality attributes can be monitored and adjusted. Removal of Total Settleable Solids (TSS) including excess food and feces is facilitated by a center drain and exterior standpipe. Currently, the release timing of yearling upriver bright fall Chinook at Prosser is controlled by the water and space needs of subyearling upriver bright fall Chinook and thus may not always occur at optimal times. The expansion of rearing space and available water due to the PRAS system will provide managers with greater flexibility on when to release upriver bright yearlings.

Significance to the Program

The segregated upriver bright program at the Prosser Hatchery is an important component of the Corps effort to mitigate for the effects of the John Day and The Dalles dams on mainstem Columbia River fall Chinook. Negotiations among the U.S. v Oregon parties and the Corps resulted in several jointly approved mitigation goals. One was to strive for a total adult production (TAP) goal of 107,000 Chinook salmon. Another was to create in-kind and in-place tribal fisheries in Zone 6 where the composition of harvested fish would be 75% upriver bright and 25% Tule fall Chinook. The CRITFC proposal indicates that neither of these long-term goals have been met. The use of circular tanks with accompanying PRAS equipment and the consistent release of both yearlings and subyearling upriver bright fall Chinook from Prosser appear to be reasonable steps that can be used to help reach harvest augmentation and desired upriver bright/Tule ratio goals. The production goals have many consequences for the historical stocks of the middle and upper Columbia River, which are an ongoing challenge for fisheries management.

2. *Goals, Objectives, and Methods*

The goals, objectives, and methods are generally described. However, a workplan or schedule with time-specific deadlines is lacking. This makes it difficult to know when planning, permitting, construction, tank and PRAS installation, testing, and other associated tasks are

anticipated to occur. Instead, five general work elements are described, (a) project design, (b) planning and construction, (c) construction management or oversight, (d) project administration, and (e) production of environmental compliance documentation. Additionally, it is not clear which parties (CRITFC personnel, Yakama Nation staff, or others) will be responsible for the various steps that will be needed to complete the project.

The plan for incorporating the monetary support from CRITFC into the larger effort to modify and expand the facilities at the Prosser Hatchery is not clearly described. For example, the four circular tanks and accompanying two PRAS modules that this project proposes to install are identified as parts of the 12-tank complex scheduled to rear and release upriver bright fall Chinook at Prosser. Will the 4-tank complex supported by CRITFC funding be built prior to the installation of the remaining 8-tanks? Or will CRITFC support be combined with other resources so that the entire 12-tank complex can be installed at the same time?

3. Relationships to Other Projects and Monitoring and Evaluation

The proposed project is linked exclusively to the YKFP (project #1995-063-25). Because the proposed work is a construction project, its monitoring responsibilities are limited, and they will occur only during the project's construction phase. Any biological monitoring, including effectiveness monitoring of the circular/PRAS system, will need to be conducted by the YKFP.

4. Facilities and Equipment

The proposal indicates the project is responsible for installing four 30-foot circular rearing tanks and two associated PRAS modules and for designing and constructing a roof cover with predator barrier walls and PRAS equipment. No details about the tanks, PRAS equipment, roof cover, and other items are provided in the current proposal. Nevertheless, a description of the tanks, PRAS equipment, and how they are expected to function is provided in Chapter 6 of the Revised Master Plan (Yakama Nation 2019). Final specifications and equipment will be determined during the planning and design phases of the project.

The idea of using circular rearing tanks equipped with a partial recirculating water system is innovative. Yet, a key uncertainty is how well the circular/PRAS system will function. Will this type of rearing approach produce juvenile fish with higher survival rates than the existing system and better support expected numbers of harvestable adults in fisheries? Chelan and Grant county PUDs have used circular tanks and recirculating water systems to rear salmonid juveniles. We urge CRITFC and Yakama Nation personnel to contact these programs. Their experience with establishing and using these systems may provide valuable insights that the proponents could use during the planning and installation phases of their project.