

USACE Portland District (NWP) FFDRWG Update Form
30 April, 2019

PROJECT INFORMATION

Project Title	The Dalles Dam Fish Unit Rehab
SCT Reference Number	
Project Manager (PM)	Eric Bluhm (NWP, 503-808-4759)
Technical Lead (TL)	Tom White (NWP 503-808-4446)
Biologist/Coordination	Jon Rerecich (NWP, 503-808-4779)

PROJECT DESCRIPTION

The East Fish Ladder at The Dalles Dam receives auxiliary fish attraction water from two Kaplan turbine-generators specifically designed for this purpose with both units required to be running to meet the flow requirements. Approximately 80% of all adult fish migrating past The Dalles use this ladder. These units were placed online in 1957 and the turbines are reaching the end of their service life with a condition assessment of the turbines being marginal.

Project objective: Increase the reliability of the fish units and the overall fish unit system

Project Scope: Evaluate the existing fish unit system to ensure the reliability of the fish units. Primary focus will be on the turbines, spare equipment to reduce unit outage times, and redundancies/dependencies of subsystems.

The Phase 1A report covers the analysis and results developed by the Project Development Team (PDT): outlines the need for, applicable assumptions to, and the roles and importance of Units 1 and 2 within the fish guidance system; describes the existing conditions of the major equipment components; identifies the criteria and constraints for the Alternatives evaluated; applies the criteria and constraints to each Alternative; includes cost estimates for each Alternative; and concludes with a Recommended Alternative as well as the Next Best Alternative.

CURRENT SCHEDULE

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| 1. Phase 1A - Report Complete | May 2019 |
| 2. Phase 1 - Plans & Specifications Funding | FY 2022 |

PROGRESS AND KEY ISSUES (List)

Recently, the Portland District, with the support of FFDRWG, has decided to allow the AWS Backup System to be operated in conjunction with one FU in an emergency situation when one of the two FUs is

taken out of service. With both fish units operating the total fish attraction discharge is approximately 5,000 cfs to the fish ladder. Presently, both fish units must be in operation to maintain full entrance flow criteria conditions as specified in the Fish Passage Plan. However, results of the recent operational testing of the fish units and the AWS Backup System at the end of 2018 demonstrated the capability to provide minimum acceptable fish flow attraction water with only one FU operating in conjunction with the AWS Backup System. This testing at the end of 2018 confirmed that the AWS could be operated continuously during any season, 24/7, to reliably augment attraction flow of the FUs.

The recommendation of the PDT is to take advantage of AWS contribution to augment FU flows as necessary, especially during maintenance or repair periods when either FU is out of service.

With the ability to use the 1,400 cfs flow from the AWS Backup System the importance of recommending an uprated Kaplan turbine to have redundancy in the system is removed. The PDT therefore recommends that the best option is Alternative B, the replacement of the turbine with a propeller unit and no uprate required. This recommendation is also the least expensive alternative. The PDT strongly recommends that FU generators also be rewound to fully improve the reliability of the entire fish attraction water system.

Recommended Alternative. Alternative B, Replace Turbines with Propeller Runners, with the Same Rated Output as Existing, 13.74 MW. This Alternative provides the fishway attraction water system with the same flows as the current Kaplan units and with an alternate type of reliable turbine runner. Use of the propeller turbine runners, if coupled with AWS operation, assures attraction water flows will be more than sufficient to meet fishway criteria. It should be emphasized that the flexibility to provide sufficient flow to continuously meet the marginal flow criteria of the fish attraction system is a critical consideration. For Alternative B this flexibility is contingent on the capability to have an integrated single FU and AWSBS operation that at least marginally meets entrance criteria. Additionally, the propeller turbine runners are very good environmentally since the runner hubs do not contain oil.

FFDRWG REVIEW NEEDED AT MEETING? (If YES, list discussion topics below)

The draft final report will be sent to FFDRWG for review and comment in early May.