# Fish Passage Plan (FPP) Change Form

**Change Form # & Title**: 21AppI001 – Dworshak Maintenance

**Date Submitted**: 16 March 2021

**Project**: Dworshak (Appendix I)

**Requester Name, Agency**: Jay Hesse, Nez Perce; Chris Peery, USACE NWW

**Final Action: APPROVED – 9 September 2021**

**FPP Section**:

Appendix I – Dworshak Dam

**Justification for Change**:

**Section 1 – FISH**: add language regarding the annual Dworshak Board Operation Plan to release 200 kaf from the Dworshak reservoir, per the SRBA agreement.

**Section 2.3 – TURBINE O&M**: add language regarding Doble testing.

**Section 2.4 – FPOM COORDINATION**: add language regarding September maintenance that may impact the Dworshak Board’s annual Operation Plan.

**Proposed Change**:

*See following pages with edits to existing text in “track changes”.*

**Comments**:

9/9/21 FPOM: FPOM had no comments.

**Record of Final Action**: Approved at FPOM on 9/9/21.

**Dworshak Dam (DWR)**

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| **Corps Project Acronym**  | DWR |
| **Location** | North Fork Clearwater River (RM 1.9) - Ahsahka, ID |
| **Reservoir** | Dworshak Reservoir |
| **Available Flood Storage Space**  | 2,016 kaf |
| **Forebay Normal Operating Range**  | 1,445 ft – 1,600 ft |
| **Minimum Instantaneous Flow** | 1.0 kcfs |
| **Tailrace Rate of Change Limit** | 1 ft/hr at Peck gauge |
| **Turbine Units** | 3 Francis turbines |
| **Turbine Generating Capacity**  | 400 MW (Units 1, 2 @ 90 MW each + Unit 3 @ 220 MW) |
| **Powerhouse Hydraulic Capacity**  | 10.5 kcfs |
| **Spillbays**  | 2 Spill Gates + 3 Regulating Outlets (RO) |
| **Spillway Hydraulic Capacity**  | Spill Gates = 150 kcfs; Regulating Outlets (ROs) = 40 kcfs |

1. Fish
	1. Fish Hatcheries

Dworshak Dam was constructed without fish passage facilities and blocks access to anadromous fish spawning habitat on the North Fork Clearwater River upstream of the dam. To mitigate for the loss of habitat, the Corps built the Dworshak National Fish Hatchery (DNFH) downstream of the dam at the confluence of the North Fork Clearwater and the mainstem Clearwater. The DNFH is co-managed by the U.S. Fish & Wildlife Service and Nez Perce Tribe to raise B-run steelhead smolts for annual release. The Nez Perce Tribe also raises coho at DNFH. The DNFH and Clearwater Fish Hatchery (CFH) also raise and release both spring Chinook and B-run steelhead as part of the *Lower Snake River Compensation Plan*[[1]](#footnote-1)*.* The CFH is solely operated on reservoir water and shares any excess with DNFH. Providing water that is free of IHN disease is critical for successful hatchery operations.

During large hatchery releases, the hatchery will coordinate with the Corps to request sufficient outflow from Dworshak Dam to promote downstream migration. The Corps NWW Water Management will notify hatchery staff when flows in the North Fork Clearwater River are anticipated to have elevated levels of total dissolved gas (TDG).

* 1. Dworshak Board Annual Operation Plan

As part of the Snake River Basin Adjudication (SRBA) settlement, the Nez Perce Tribe and the United States entered into an Agreement[[2]](#footnote-2) for the use of 200,000 acre-feet (200 kaf) of water in the Dworshak Reservoir. The water is to be used for flow augmentation to benefit fish and is implemented pursuant to the operational Memorandum of Agreement (MOA, included in the Agreement as Appendix A) between the Nez Perce Tribe, the Corps, NOAA Fisheries, Bonneville Power Administration, and the State of Idaho. The MOA signatories comprise the Dworshak Board, which is chaired by the Nez Perce Tribe and meets annually to develop the Operational Plan for the release of the water each year. The Dworshak Board’s annual Operational Plan is presented to regional salmon managers of the Technical Management Team (TMT), typically in August, and posted to the meeting agenda website. The Dworshak Board Annual Operational Plan volume and timing criteria should guide release of the SRBA 200 kaf. Deviation from the planned operations requires Dworshak Board approval.

2.3. Turbine Unit Maintenance & Testing

* + - 1. Turbine maintenance and testing will be coordinated with FPOM as described below in **section 2.4**.
			2. Each unit requires annual preventative maintenance to maintain operational condition. Annual maintenance is typically performed one unit at a time and requires the unit out of service for 2–6 weeks.
			3. The annual maintenance period is September 15 through the end of February to coincide with the refill period after summer flow augmentation and prior to flood risk management operations.
			4. Required transformer maintenance and condition testing (Doble testing) requires one or two generating units out of service beginning September 21 every two out of three years.
			5. In addition, one unit each year requires a 4 to 6-week outage for cavitation repair.
			6. If maintenance requires unwatering the draft tube, the project will implement procedures defined below in **Section 3** (*Fish Salvage Procedures for Turbine Unwatering*).
			7. After maintenance, testing is required to validate the unit is functioning properly. The required testing sequence is defined below in **Section 4** (*Unit Startup Procedure*).
			8. During testing, the project will implement fish protection measures including using the draft tube depression system.
			9. The duration of testing will be minimized to the extent possible with no more than 5 minutes at SNL.
			10. If testing is anticipated to require more than 5 minutes at SNL, or if the draft tube depression system is out of service, the operation will be coordinated with FPOM per **section 2.4** and monitored by trained staff (NPT or DFH staff will also be invited to assist with observation).
			11. Should there be an unplanned need to extend testing at SNL for longer than 5 minutes due to a specific problem, the project may operate at SNL for longer than 5 minutes to resolve the problem in order to limit the starts/stops affiliated with unit shutdown that would occur with the 5-minute threshold.
			12. Should further monitoring disclose that unit starts/stops are the primary cause of adult fish mortality, rather than SNL, the restriction on SNL will be reviewed.
			13. Cyclical maintenance testing (e.g., model validation and efficiency testing) typically involves starting and stopping a unit, which requires periods of SNL for up to 5 minutes. To the extent possible, cyclical maintenance testing will be performed when fish are less likely to be present in the tailrace (April, May, or September). If testing is performed outside of these months and is anticipated to require more than 5 minutes at SNL, the operation will be monitored by trained staff and coordinated with FPOM, per **Section 2.4**.

2.4. FPOM Coordination

**2.4.1. SNL > 5 Minutes**

* + - 1. All turbine operations, maintenance, or testing that require periods of SNL longer than 5 minutes when adult fish are likely present in the tailrace (October–March and June–August) will be coordinated with FPOM.
			2. Prior to the operation, FPOM will be provided with a proposed sequence to review for potential adverse impacts.
			3. A Fisheries Biologist will monitor the operation for fish impacts and report findings to FPOM (see template for “*Dworshak Unit Maintenance Monitoring Form*” at the end of this Appendix). In the event of any observations of fish injury or mortality, the monitoring Biologist will immediately contact the Project Chief of Operations or authorized designee to suspend testing.
			4. In the event of an emergency that requires operating a unit at SNL for more than 5 minutes or for station power (light load with low flow through the draft tube) when adult fish are likely present in the tailrace (October–March and June–August), project staff will coordinate with CENWW-OD-T and fill out a maintenance monitoring form identifying specific time interval(s) and develop a *Memo for the Record* (MFR) for distribution to FPOM if any mortality is observed.

**2.4.2. September Maintenance**

* + - 1. Required transformer maintenance and Doble testing occurs every two out of three years starting September 21. The annual Doble testing schedule will be provided to FPOM via the Fish Passage Plan Appendix A (Special Operations & Studies).
			2. Other required September maintenance that may impact the Dworshak Board’s annual Operation Plan to draft 200 kaf for the benefit of fish (see **section 1.2**) will be pre-coordinated with Nez Perce Tribe and FPOM prior to March of that year, or as soon as the need is known.
1. Lower Snake River Compensation Plan: <https://www.fws.gov/lsnakecomplan/Reports/LSRCPreports.html> [↑](#footnote-ref-1)
2. SRBA Dworshak Agreement & MOA: http://pweb.crohms.org/tmt/SRBA-Dworshak-Agreement.pdf [↑](#footnote-ref-2)