# Fish Passage Plan (FPP) Change Request Form

**Change Form # & Title**: 20BON002 – PH2 Mid-Range

**Date Submitted**: 1/16/2020

**Project**: BON

**Requester Name, Agency**: Scott Bettin, BPA

**Final Action:**

**FPP Section**: BON 5.2.1.2 – Turbine Operating Range / In-Season (April 1 – October 31)

**Justification for Change**: During spring spill when the “juvenile trigger” is in effect, constraining PH2 units to the mid-range reduces PH2 capacity by about 3 kcfs/unit (total reduction of 24 kcfs if all 8 units available). This constraint results in spilling more than 150 kcfs and causing erosion in the spillway stilling basin when total project outflow is above approximately 392 kcfs (see flow summary below).

To minimize spillway erosion, PH2 units could be operated above the mid-range to the upper 1% limit prior to spilling more than 150 kcfs. This would avoid involuntarily spilling above 150 kcfs and causing erosion in the stilling basin until outflow is above approximately 416 kcfs.

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| --- | --- |
|  | ApproximateCapacity |
| Spill limit for erosion | 150 kcfs |
| Misc flow (corner collector, ladders, etc) | 12 kcfs |
| PH1 BOP (10 units) | 110 kcfs |
| PH2 (8 units) | Mid-Range: 120 kcfs | Upper 1%: 144 kcfs |
| **TOTAL CAPACITY (higher flows = spill)** | **392 kcfs**  | **416 kcfs** |

**Proposed Change**: *See following page for edits to existing FPP text in track changes.*

**Comments**:

1/23/2020 FPOM FPP Meeting:

Lorz and Conder understand the need to protect the spillway but are concerned with impacts to juveniles by operating PH2 above the mid-range. They want to go back to PH2 mid-range at higher flows when spill is already well above 150 kcfs and asked that FPOM be notified if PH2 units go above the mid-range for spill management. Bellerud and Morrill concurred.

Van Dyke questioned the 150 kcfs limit for erosion and was concerned this was a power benefit by reducing fish protection measures. Lorz and others responded that the 150 kcfs limit was established after ERDC modeling and has been regionally agreed to in the Flex Spill Agreement. Bettin added that the intent is to protect the spillway. Loads are typically light during high flows and they might need to find load so it’s not a power benefit.

Assuming all 8 units are available, there would be 24 kcfs that could be pushed through PH2 instead of the spillway. After extensive discussion, additional criteria were defined to go back to the PH2 mid-range if involuntary spill increases above 180 kcfs, as well as adding FPOM notification as soon as possible and no later than 3 business days.

There are still concerns with timing and impacts to Spring Creek releases, as well as how it would play out with the 16 hours of gas cap spill and 8 hours of performance standard 100 kcfs. FPOM needed more time to consider the complexities of the operation and try to come up with something that is implementable.

PENDING FURTHER REVIEW.

**Record of Final Action**:

**Proposed Change**:

**5.2. Turbine Operating Range**

**5.2.1.2.** April 1 – July 31: PH2 units will be operated per the modified guidelines below in order to minimize gatewell turbulence until structural modifications are completed. *RCC will issue a teletype with any in-season modifications to unit operating ranges as construction and testing is completed.*

During this time period, units will be operated in the order of priority in **Table BON-13** with PH2 units held to the 1% mid-range (13-15 kcfs) and PH1 units up to BOP. Then, additional flow will be passed in one of the following ways, or as otherwise determined by Project Fisheries based on observed conditions:

April 1–9 and June 16 – July 31: PH2 units up to the 1% upper limit.

April 10 – June 15 (Spring Spill):

* Adult Trigger: when adult spring Chinook total passage counts[[1]](#footnote-1) (excluding jacks) are greater than juvenile spring Chinook collection counts[[2]](#footnote-2) for two consecutive days, Project Fisheries will notify the control room to increase PH2 units up to the 1% upper limit in order from north to south: 18, 17, 16, 15, 14, 13, 12, 11.
* Juvenile Trigger: when juvenile spring Chinook collection counts2 are greater than adult spring Chinook total passage counts1 (excluding jacks) for three consecutive days, Project Fisheries will notify the control room to maintain PH2 units within the 1% mid-range as a hard constraint and pass additional flow as spill up to a maximum of 150 kcfs to avoid erosion of the spillway stilling basin.
	+ If necessary to pass additional flow, available PH2 units will be increased above the mid-range up to the 1% upper limit in priority order from south to north (11 to 18) prior to increasing spill above 150 kcfs.
	+ If involuntary spill increases above 180 kcfs, resume operating PH2 units within the 1% mid-range and pass additional flow as spill.
	+ FPOM will be notified no later than 3 business days (sooner if possible) if PH2 units are operated above the mid-range to minimize spilling above 150 kcfs.
1. **Adult spring Chinook** reported as “*Adult Chinook daily*” in the Corps’ Adult Fish Count Running Sum Report for Bonneville, online at: <http://www.fpc.org/environment/home.asp> [↑](#footnote-ref-1)
2. **Juvenile spring Chinook** reported as “*CollCount*” in SMP Smolt Data (query current year, BO2, Combined Chinook Yearling), online at: <http://www.fpc.org/smolt/smolt_queries/Q_smolt_dailypassageindex_query.php> [↑](#footnote-ref-2)