

MEMORANDUM FOR Biologist, Operations Division (CENWP-OD)

SUBJECT: Bonneville Lock & Dam, Fishway and Fish Activities for **Week 13** of 2023, which covers the period from **26 March to 01 April 2023**.

1. OPERATION SUMMARY:

- a. Daily average river flows ranged from 114.7 to 135.6 kcfs. Daily average powerhouse forebay elevation ranged from 73.0' to 73.8' msl. Daily average project tailwater ranged from 10.6 to 12.0' msl. Secchi disk measurements ranged from 6.0 to 7.0'. Daily average water temperature ranged from 42 to 43°F.
- b. Daily average spill ranged from 1.0 to 1.7 kcfs.
 - Spillbay 18 was closed during B-Branch rock erosion work from 2030 on 26 March to 1111 on 31 March.
- c. Unit Operation: **PH2** remains the priority powerhouse. Main unit drawdowns are measured every Monday and more frequently as needed

• **Table 1. Main Unit Outages**

Unit	OOS	RTS	Reason	Duration
11	0740 on 30 Nov 2022	---	P.O., FGE Gatewell Improvement / Annual Overhaul / Extended for Bull Ring Wear	---
18	0743 on 25 Jan	1527 on 27 Mar	P.O., FGE Gatewell Improvement	61 days, 7 hours, 44 mins
16	0751 on 15 Mar	---	P.O., FGE Gatewell Improvement / Annual Overhaul	---
4	1631 on 29 Mar	---	F.O., Oil Leak Investigation	---
3	1600 on 30 Mar	---	F.O., Oil Leak Investigation	---

- d. Fish Units: Second Powerhouse Fish Units provide attraction flow for the Washington Shore (WS) fish ladder.
 - **Table 2. Fish Unit Outages.** Nothing to report.
 - **Table 3. Fish Unit Drawdowns, in Feet.**

Date	F1	F2
03/26	0.2'	0.3'
03/27	0.3'	0.5'
03/28	0.3'	0.5'
03/29	0.3'	0.5'
03/30	0.3'	0.4'
03/31	0.1'	0.1'
04/01	0.1'	0.2'

2. MAINTENANCE ACTIVITIES:

- a. Auxiliary Water System Closures: Nothing to report.
- b. STS/VBS Inspections: Nothing to report.

- c. Dewatering and Fish Salvages: Nothing to report.

3. RESEARCH

- a. Four Peaks Environmental - Fish counting contract: Daytime video counting (0400 to 2000 PDT) began on 01 December. Fish counts can be viewed [here](#).
- b. USFWS – Lamprey Metamorphosis Study: Juvenile lamprey researchers are onsite, and the work is underway.
- c. Pacific States Marine Fisheries Commission - Smolt Monitoring: Smolt monitoring operations began at 0700 on 02 March. Debris at the primary dewatering structure (PDS) and fish/debris separator ranged from light to moderate\consisting mostly of sticks. Fallbacks observed this week: 1 steelhead.
A total of 40 fin clips were obtained from Pacific Lamprey macrophthalmia for Columbia River Inter-Tribal Fish Commission’s genetic studies this week. A total of 432 Eulachon (smelt) were found in samples on 25 March, the first occurrence of smelt at the BO2-SMF since March of 2014. Eulachon were present in samples every day this week.

4. FISHWAYS:

- a. Project biologists inspected 26 March to 01 April.
- b. Fish Passage Plan observations:

- **Table 4. FPP Items Out of Criteria.**

Date	Location	FPP Violation	Cause	Response
03/31	BON	Unit Priority	U3 Forced OOS	Investigation Underway
PH1				
03/26 – 04/01	PH1 ITS	S. End Gate Inoperable and Chain Gates 1b Closed	S. End Gate Inoperable, 1b Closed for Safety Reasons	W.O.
03/26 – 04/01	PH1CC	FG 2-19 Stuck in the Mostly Closed Position, Should Be Open	Mechanically Bound	W.O.
Bradford Island				
03/28,30, 04/01	A-Branch	A-Branch Staff Gauge High >1.1’	Unknown	N/A
Cascades Island				
03/26-28, 30-31, 04/01	Cascades Island	FG 6-18 Open, Should Be Closed	Unknown	WOR Created
Washington Shore: Nothing to report.				

- PH1 Collection Channel diffuser FG 2-19 was found mechanically bound in the mostly closed position on 02/24/22 by PH1 Mechanics. No repairs can be made until the PH1CC can be dewatered in the next Oregon Fishway Winter Maintenance Period (winter 2023/2024).
- The Cascades Island Fishway diffuser FG 6-11 is mechanically bound in the closed position due to stripped shaft threads. A work order has been created and repairs will be made during the next full dewater of the Cascades Island Fishway.
- Cascades Island Fishway diffuser FG 6-12 is mechanically bound in the open position for unknown reasons. A work order has been created and repairs will be made during the next full dewater of the Cascades Island Fishway.
- Cascades Island Fishway diffuser FG 6-18 was found stuck in the open position with limitorque

problems in the fall of 2022. A work order has been created and repairs have been attempted, but full repair requires complete dewatering of the fishway. These repairs will be made during the next full dewater of the Cascades Island Fishway.

c. Adult Fishways:

- (1) The AFF remains in service.
- (2) Sensor calibration checks occurred on 27 March.
- (3) SLEDs are installed at all locations.
- (4) Bradford Island, Cascades Island, and Washington Shore Fishways remain in service.

d. Juvenile Fishways:

- (1) The ITS remains in service.
 - Auto-chain gates 3B, 6C, & 10B remain operational.
 - Mechanical-chain gate 1A was opened on 10 January 2023 to increase downstream surface passage and reduce trash raking workloads on the FV 1-1 trash racks. For safety measures, an additional (7th) trash rack was installed in the 1A gate slot, extending the height of stacked trash racks to approx. +80' el. Without the 7th trash rack, the existing 6 trash racks extend from the river floor (approx. -2' el) to +68' el. This additional trash rack provides a safety barrier to block accidental sluiceway entry of a person, vessel, or other undesirable object floating uncontrollably downstream.
- (2) The hydro-cannon remains in service.
- (3) The B2CC was placed into service 24 HRS/day starting 26 March. This operation will continue according to guidance found in CBT Message BON R 021523 0920. Please see this teletype for more details.
 - An emergency closure of the B2CC occurred from 0823 to 1046 on 28 March due to an unmanned boat drifting in the PH2 Forebay upstream of the B2CC. The B2CC was closed during this time to remove the boat with assistance from Bonneville Rangers and CRITFC PD.
- (4) The DSM remains in service.
- (5) STSs remain in service.

e. Lamprey Fishways:

- (1) BI, CI, and WA Shore LPS's were taken out of service for the season on 01 November.
- (2) The Bradford Island Wetted Wall (BIWW) remains out of service.
- (3) The PH2 Lamprey Flume Structure (LFS) remains out of service.
- (4) The 2022 lamprey trapping and translocation activities have concluded for the year.

f. Avian Monitoring: Avian counts are recorded 01 April – 31 October.

5. WATER QUALITY MONITORING:

- a. Fishway Temperatures: Fishway temperature monitoring has concluded for the 2022-2023 cool weather season.

- b. Zebra Mussel Monitoring: No signs of colonization were observed this reporting week.

7. CONSTRUCTION:

- FGE modification work in U16 gatewell slots 16A and 16B is underway.
- B-Branch erosion repairs began on 21 February in the Main Dam Tailrace. This work was complete on 31 March.

8. HAZMAT, SPILLS AND CLEANUP:

- Sheens were observed at Bonneville (PH1 Tailrace) on March 7th, 9th, and 11th. Source of sheens were initially believed to be biological because Bonneville had completed multiple oil accountability checks during this time frame and no source of loss was identified and biological material was observed on the river during this time frame.
 - March 14th: To confirm this assumption Bonneville began investigations and a report was made though the source was still unknown.
 - March 16th: Two members of the US Coast Guard visited Bonneville and observed biological material, but no sheen in both the forebay and tailrace of Powerhouse I. Bonneville continued to investigate.
 - March 20th: In an attempt to identify the source, a trial operation was conducted, a sheen was visible and a sample was taken and sent to the laboratory for analysis and comparison.
 - March 29th: USACE received a report from the lab that the sheen collected on March 20th matched 90% to the provided turbine oil sample.
 - March 30th: A source dye was added to Unit 4 turbine pit water to investigate a possible source. Unit 4 was then operated for 5 minutes and then shut back off and a sheen was observed. A similar operation was then performed with turbine 3 and a similar sheen was observed. Importantly the sheen was not observed during operation but appears after the shutdown process. The fact that sheens have not been observed at Powerhouse 1 during continuous operation would confirm this conclusion.
 - Path forward – The units where this sheen has been observed will not be run until protective measures are in place.

9. TELETYPES CURRENTLY IN EFFECT:

- A teletype was distributed on 15 February detailing new FPOM / FPP approved Bonneville Powerhouse Two Corner Collector (B2CC) operations from 01 March to 31 August. Effective during the dates defined below, BON is to open the B2CC:
 - 01 – 08 March, daily from 0600 – 1000 HRS. Open the B2CC within 30 mins of the start time and shift the end time as needed to achieve a continuous 4-HR block.
 - 09 – 25 March, daily from 0600 – 1000 HRS and 1600 – 2000 HRS. Open the B2CC within 30 mins of the start time and shift the end time as needed to achieve a continuous 4-HR block.
 - Starting 26 March at 0600 HRS, open the B2CC continuously (24 HRS/day) through the end of Summer Spill on 31 August. Close the B2CC within 1 hour of the end of Summer Spill.

This operation is pursuant to new criteria in the 2023 Fish Passage Plan (FPP) that was coordinated in the FPP change form “23BON002” and approved on 03 February 2023. The change form is available online at: <https://pweb.crohms.org/tmt/documents/fpp/2023/changes/>. This operation will be included in the Final 2023 FPP in Section 2.3.2.5.v on page BON-20. <https://pweb.crohms.org/tmt/documents/fpp/2023/>.

- A teletype was distributed on 15 March detailing a Bonneville Dam low pool operation. Beginning 15 March at 1700 HRS through 31 March at 2359 HRS, Bonneville is to operate its forebay below a maximum elevation of 74.0 feet, soft constraint. This low pool operation is intended to reduce TDG downstream of Project by reducing flow through the B2CC, Spill Bays 1 and 18, and the Ice and Trash Sluiceway. This operation is needed to meet the Oregon’s TDG Standard for shallow water of 105%. Please see teletype BON R 03152023 1353 for more details.

- A teletype was distributed on 24 March detailing a Bonneville Spillway outage for B-Branch repairs. The entire Bonneville Spillway, with the exception of Spillbay 1, will be tagged out and not available for spill during the following times:
0500 HRS 27 March through 1700 HRS 31 March, continuous.
The purpose of this operation is to support repair work being done in the area near the B-Branch Fish Ladder. Spillbay 1 will remain open 0.5' continuously during the repair work (approximately 1.1 kcfs). Please see teletype BON R 032323 1246 for more details.
- A teletype was distributed on 30 March updating the spring spill caps and lack of load spill priority list for Snake and Columbia River Projects and BPA. This teletype is to be used from 03 April 2023 at 0001 HRS until further notice. In the table provided in this teletype, Level 1 contains the spill level at the applicable State Water Quality Standard (WQS). For fish passage projects, the WQS is the level of spill specified in the 2023 Fish Operations Plan (FOP). The spill rate for the 125% gas cap is in the Level 2 for fish passage projects. The table provides lack of load spill levels (kcfs) and the order in which to spill from top to bottom, exhausting the complete list at each level before proceeding with the spill order at the next level. Please see teletype BON R 03302023 0815 for detailed operational guidance.
- A teletype was distributed on 04 April for a dive operation occurring in the Cascades Island Fishway to repair a blown diffuser hatch. The teletype states that on 05 April from 0730 to 1200 HRS, Bonneville Spillbay 1 will be closed, deenergized, and unavailable for spill. Fish Valves 5-3 and 5-4 will be closed and deenergized during this time as well. Please see teletype BON R 040423 1242 for more information.
- A teletype was distributed on 05 April describing a Bonneville Spillway outage and closure of the B2CC for avian wire replacement. On 07 and 08 April, the entire Bonneville Spillway will be tagged out and not available for spill between 0700 and 1700 HRS, daily. The B2CC will also be closed during this time. Please see teletype BON R 040523 1501 for more details.
- A teletype was distributed on 05 April describing Spring Spill for juvenile fish passage at Bonneville. Effective Monday, 10 April at 0001 HRS, through Thursday, 15 June at 2359 HRS, operate Bonneville Dam in accordance with the 2023 Fish Operations Plan (FOP) to provide spring spill for juvenile fish passage as described below:
 - Pursuant to FOP Table 3, the 2023 spring spill operation at Bonneville Dam is as follows:
125% gas cap, 24 HRS/day. During all hours, spill at the rate defined in the Level 2 of the most recent spill priority list teletype. This spill rate is estimated to meet but not exceed 125% total dissolved gas (TDG) in the Bonneville Dam Tailrace (unless otherwise adjusted due to Project constraints or current conditions). The spill cap for Bonneville Dam will not exceed a maximum of 150 kcfs to avoid causing erosion in the spillway stilling basin.
Distribute spill according to spill patterns in the 2023 Fish Passage Plan (FPP) Table BON-16. Follow the pattern in the table for the spill rate that is closest to the target. Actual spill may range up to +/- 3 kcfs from the target due to Project operational limitations described in the FOP Sections 3 and 8.8.3.
Operate turbine unites within the operating ranges defined in FPP Section 4.2.1.1 (PH1) and 4.2.1.2 (PH2), unless otherwise instructed via teletype.
During periods of high spill, there may be a need to temporarily reduce spill or modify patterns to maintain safe navigation in the tailrace (per FOP Section 4.6).
If river flow is too low to maintain FOP spill and minimum generation requirements in FOP Table 1, operate at minimum generation and spill the remainder of outflow. This operation supports power system reliability during low flows.
Please see teletype BON R 040523 1710 for more thorough details.
- A teletype was distributed on 10 April describing tailwater operation for chum incubation (version 4). Effective, Monday 10 April, end reference CBT MSG BON R 030123 1119 Tailwater Operation for Chum Incubation (version 3), and Bonneville Dam may resume normal tailwater operations. Please see teletype BON R 041023 0740 for more details.

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