

MEMORANDUM FOR Biologist, Operations Division (CENWP-OD)

SUBJECT: Bonneville Lock & Dam, Fishway and Fish Activities for Week 17 of 2023, which covers the period from 23 to 29 April 2023.

1. OPERATION SUMMARY:

- a. Daily average river flows ranged from 149.1 to 184.6 kcfs. Daily average powerhouse forebay elevation ranged from 73.8’ to 75.0’ msl. Daily average project tailwater ranged from 13.6 to 15.7’ msl. Secchi disk measurements ranged from 5.0’ to 6.0’. Daily average water temperature ranged from 48 to 50°F.
- b. Daily average spill ranged from 104.6 to 139.1 kcfs.
- 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
16	0751 on 15 Mar	0806 on 27 Apr	P.O., FGE Gatewell Improvement / Annual Overhaul	43 days, 0 hours, 15 mins
4	1631 on 29 Mar	---	F.O., Oil Leak Investigation	---
3	1600 on 30 Mar	---	F.O., Oil Leak Investigation	---
7	0630 on 25 Apr	1600 on 25 Apr	P.O., Omega Temp Sensors	9 hours, 30 mins

- d. Fish Units: Second Powerhouse Fish Units provide attraction flow for the Washington Shore (WS) fish ladder.

Fish Unit Outages: Fish Units are periodically paced into reserve service (RS) to float trash when debris differentials become excessive and trash raking is not possible.

- **Table 2.** Fish Unit Outages: Nothing to report.
- **Table 3.** Fish Unit Drawdowns, in Feet.

Date	F1	F2
04/23	0.2’	0.7’
04/24	0.1’	0.6’
04/25	0.3’	1.0’
04/26	0.1’	0.9’
04/27	0.1’	0.1’
04/28	0.1’	0.2’
04/29	0.3’	0.4’

2. MAINTENANCE ACTIVITIES:

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

- c. Dewatering and Fish Salvages: Fish Biologists assisted in fish salvage operations from the Unit 16 taillogs on the morning of 24 April. Six sculpin were recovered in good condition and released downstream. U16 was out of service for FGE gatewell improvements.

3. RESEARCH

- a. Four Peaks Environmental - Fish counting contract: Daytime visual counting (0500 to 2100 PDT) began on 01 April. 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: Sample collections at the Smolt Monitoring Facility (SMF) began at 0700 on 02 March. Debris at the primary dewatering structure (PDS) and fish/debris separator was light consisting mostly of sticks. Fallbacks observed this week: two steelhead. Gas Bubble Trauma (GBT) examinations began on 10 April and are typically performed two days per week through the end of spill. Results of this week’s GBT examinations: 200 combined yearling Chinook and steelhead examined with no GBT symptoms observed. Please follow this link <https://www.fpc.org/currentdaily/gbtsumbybatchdate.pdf> to the FPC web page for further details. A total of one fin clip was obtained from Pacific Lamprey macrophthalmia and one from a Pacific Lamprey ammocoete for Columbia River Inter-Tribal Fish Commission’s genetic studies this week.

4. FISHWAYS:

- a. Project Biologists inspected 23 to 29 April.
- b. Fish Passage Plan observations:

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

Date	Location	FPP Violation	Cause	Response
PH1				
04/23 – 29	PH1 ITS	S. End Gate Inoperable and Chain Gates 1b Closed	S. End Gate Inoperable, 1b Closed for Safety Reasons	W.O.
04/23 – 29	PH1CC	FG 2-19 Stuck in the Mostly Closed Position, Should Be Open	Mechanically Bound	W.O.
Bradford Island				
04/23-25, 27,28	A-Branch	A-Branch Staff Gauge High >1.1’	Unknown	N/A
04/23	A-Branch	FG 3-4 Closed, Should Be Open	Tagged Out	W.O.
Cascades Island				
04/27 – 29	Cascades Island	FG 6-11 Closed, Should be Open	Mechanically Bound in Closed Position	W.O.
Washington Shore				
04/24,27	WA Shore Fishway	Weir 38 High, >1.1’	Unknown	N/A

- 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 24 April.
 - (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 remains in service.
 - (4) The DSM remains in service.
 - (5) STSs remain in service.
- e. Lamprey Fishways:
- (1) BI, CI, and WA Shore LPS's remain in service.
 - (2) The Bradford Island Wetted Wall (BIWW) remains out of service.
 - (3) The PH2 Lamprey Flume Structure (LFS) remains out of service.
 - (4) The 2023 lamprey trapping and translocation activities have not started yet this season.
 - (5) Avian Monitoring: Avian counts are recorded 01 April – 31 October.

Table 5. Avian Counts 23 – 29 April.

Date	Gulls	Cormorants	Terns	Wh. Pelicans	Grebes
04/23	27	0	0	0	0
04/24	12	3	0	0	0
04/25	18	0	0	0	0
04/26	17	0	0	0	0
04/27	18	0	0	0	0
04/28	19	0	0	0	0
04/29	7	3	0	0	0

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 has been completed.

8. HAZMAT, SPILLS AND CLEANUP: Nothing to report.

9. TELETYPES CURRENTLY IN EFFECT:

- 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 units 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.

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