

MEMORANDUM FOR Biologist, Operations Division (CENWP-OD)

SUBJECT: Bonneville Lock & Dam, Fishway and Fish Activities for Week 18 of 2023, which covers the period from 30 April to 06 May 2023.

1. OPERATION SUMMARY:

- a. Daily average river flows ranged from 187.9 to 356.3 kcfs. Daily average powerhouse forebay elevation ranged from 73.5’ to 74.6’ msl. Daily average project tailwater ranged from 16.1 to 25.2’ msl. Secchi disk measurements ranged from 3.0 to 7.0’. Daily average water temperature ranged from 50 to 53°F.
- b. Daily average spill ranged from 143.9 to 149.4 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
4	1631 on 29 Mar	---	F.O., Oil Leak Investigation	---
3	1600 on 30 Mar	---	F.O., Oil Leak Investigation	---
17	0729 on 01 May	---	P.O., FGE Gatewell Improvement	---

- 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

Unit	OOS/RS	RTS	Reason	Duration
F1	1749 on 03 May	1941 on 03 May	P.O., Float Trash	1 hour, 52 mins
F2	2008 on 03 May	2211 on 03 May	P.O., Float Trash	2 hours, 3 mins
F2	2216 on 05 May	0000 on 06 May	P.O., Float Trash	1 hour, 44 mins
F1	2256 on 05 May	0000 on 06 May	P.O., Float Trash	1 hour, 4 mins
F2	2157 on 06 May	2349 on 06 May	P.O., Float Trash	1 hour, 52 mins
F1	2327 on 06 May	2350 on 06 May	P.O., Float Trash	23 mins

• **Table 3.** Fish Unit Drawdowns, in Feet.

Date	F1	F2
04/30	0.2’	0.3’
05/01	0.2’	1.6’
05/02	1.3’	0.3’
05/03	3.5’	0.8’
05/04	0.3’	1.5’
05/05	3.1’	6.5’
05/06	0.3’	4.0’

2. MAINTENANCE ACTIVITIES:

- a. Auxiliary Water System Closures: Nothing to report
- b. STS/VBS Inspections: May STS inspection results are shown in the table below. There were no issues to report.

UNIT	Previous STS HRS	Present readings	STS-A	STS-B	STS-C	HRS RUN	REMARKS
11	69391	70034				643	
12	55056	55275				219	
13	8806	9020				214	
14	24681	24911				230	
15	32157	32323				166	
16	43288	43318				30	
17	13389	13550				161	OOS
18	16052	16777				725	

- c. Dewatering and Fish Salvages:
 - Fish Biologists assisted in fish salvage operations within the Unit 17 Scroll Case and Draft Tube on 02 May. No fish were found in the Scroll Case. Eight adult salmonids and one sturgeon were recovered in good condition from the Draft Tube. All fish were released upstream. Unit 17 was taken out of service for FGE Gatewell Improvement operations.
 - Fish Biologists assisted in a secondary fish salvage operation of the Unit 17 Scroll Case on 03 May after bulkheads were placed upstream of the headgates in the U17 Gatewells 17A and 17B. Three juvenile salmonids were recovered in good condition and released downstream.

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: six steelhead and one salmon.
 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: one fish (0.5%) was observed with GBT symptoms. Please follow this link <https://www.fpc.org/currentdaily/gbtsumbybatchdate.pdf> to the FPC web page for further details.
 A total of eight fin clips were obtained from Pacific Lamprey macrophthalmia for Columbia River Inter-Tribal Fish Commission’s genetic studies this week.
 Separation by Code was active for Round Butte Hatchery this week.
- d. USDA – Pinniped and Avian Hazing: Deck-based pinniped and avian hazing operations are underway.
- e. State Agency Pinniped Trapping: Sea lion trapping operations are underway.
- f. USGS TDG Monitoring: USGS placed TDG monitoring equipment back in service on Cascades Island above and below the Main Dam on 04 April. Water-quality data collection will continue through the end of spill season.

- g. ODFW SMF Sampling: ODFW sampled this week using the sort-by-code system to target juvenile spring Chinook from the Round Butte Hatchery for post-release pathogen screening.
- h. CRITFC – Adult Salmonid Sampling: Adult salmonid sampling in the Adult Fish Facility (AFF) began on 19 April and typically occurs 5 days per week.

4. FISHWAYS:

- a. Project Biologists inspected 30 April to 06 May.
- b. Fish Passage Plan observations:

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

Date	Location	FPP Violation	Cause	Response
05/03 – 06	BON	Unit Priority	U3 & U4 Forced OOS	W.O./Investigation
PH1				
04/30 – 05/06	PH1 ITS	S. End Gate Inoperable and Chain Gates 1b Closed	S. End Gate Inoperable, 1b Closed for Safety Reasons	W.O.
04/30 – 05/06	PH1CC	FG 2-19 Stuck in the Mostly Closed Position, Should Be Open	Mechanically Bound	W.O.
Bradford Island				
04/30, 05/02	A-Branch	A-Branch Staff Gauge High >1.1'	Unknown	N/A
Cascades Island				
04/30 – 05/06	Cascades Island	FG 6-11 Closed, Should be Open	Mechanically Bound in Closed Position	W.O.
Washington Shore				
05/3, 5, 6	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 limiterque 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 03 May.
 - (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 2022 lamprey trapping and translocation activities have concluded for the year.

(5) Avian Monitoring: Avian counts are recorded 01 April – 31 October.

Table 5. Avian Counts 30 April – 06 May.

Date	Gulls	Cormorants	Terns	Wh. Pelicans	Grebes
04/30	34	1	0	0	0
05/01	50	3	0	0	0
05/02	33	1	0	0	0
05/03	26	0	0	0	0
05/04	---	---	---	---	---
05/05	133	2	0	0	0
05/06	30	2	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 U17 Gatewell slots 17A and 17B began this week.

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.

MICHAEL ADAMS, P.E.
Operations Project Manager
Bonneville Project