

MEMORANDUM FOR Biologist, Operations Division (CENWP-OD)

SUBJECT: Bonneville Lock & Dam, Fishway and Fish Activities for Week 31 of 2023, which covers the period from 30 July to 05 August 2023.

1. OPERATION SUMMARY:

- a. Daily average river flows ranged from 126.2 to 141.4 kcfs. Daily average powerhouse forebay elevation ranged from 73.3’ to 75.0’ msl. Daily average project tailwater ranged from 11.5’ to 12.6’ msl. Secchi disk measurements ranged from 5.0 to 7.0+’. Daily average water temperature ranged from 70 to 72°F.
- b. Daily average spill ranged from 82.1 to 93.7 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/5-YR Overhaul	---
3	1105 on 12 Jun	---	F.O., Oil Leaks	---
14	0735 on 20 Jun	1632 on 03 Aug	P.O., FGE Gatewell Improvement/Annual Overhaul/QTCI	44 days, 8 hours, 57 mins
15	0729 on 10 Jul	---	P.O., 4-Year Overhaul	---

- 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
F2	2259 on 29 Jul	0529 on 30 Jul	R.S., Nighttime Lamprey Ops	6 hours, 30 mins
F1	0159 on 30 Jul	0227 on 30 Jul	R.S., Float Trash	28 mins
F1	2259 on 30 Jul	0530 on 31 Jul	R.S., Nighttime Lamprey Ops	6 hours, 31 mins
F2	2300 on 31 Jul	0605 on 01 Aug	R.S., Nighttime Lamprey Ops	7 hours, 5 mins
F1	2245 on 01 Aug	0559 on 02 Aug	R.S., Nighttime Lamprey Ops	7 hours, 14 mins
F2	2244 on 02 Aug	0559 on 03 Aug	R.S., Nighttime Lamprey Ops	7 hours, 15 mins
F1	2244 on 03 Aug	0601 on 04 Aug	R.S., Nighttime Lamprey Ops	7 hours, 17 mins
F2	2245 on 04 Aug	0601 on 05 Aug	R.S., Nighttime Lamprey Ops	7 hours, 16 mins
F2	2244 on 05 Aug	---	R.S., Nighttime Lamprey Ops	---

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

Date	F1	F2
07/30	0.3'	0.6'
07/31	0.2'	1.3'
08/01	0.3'	0.5'
08/02	0.2'	1.0'
08/03	0.2'	0.3'
08/04	0.2'	0.7'
08/05	0.2'	0.4'

2. MAINTENANCE ACTIVITIES:

- Auxiliary Water System Closures:
 - FV 3-9 was closed for cleaning from 0735 to 0742 on 03 August.
 - FV 1-1 was placed into manual for cleaning from 0747 to 0800 on 03 August.
- STS/VBS Inspections: Nothing to report.
- Dewatering and Fish Salvages: Nothing to report.

3. RESEARCH

- Four Peaks Environmental - Fish counting contract: Daytime visual counting (0500 to 2100 PDT) began on 01 April. Night video counting (2100 to 0500 PDT) began on 15 May. Fish counts can be viewed [here](#).
- USFWS – Lamprey Metamorphosis Study: Juvenile lamprey researchers are onsite and the work is underway.
- 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 aquatic macrophytes, a few sticks, and dead adult American shad. No fallbacks were observed this week.
Higher temperature sampling protocols were initiated on 15 July (sample end-date of 16 July) when daily average river temperatures at Bonneville ascended to 70°F. Modified sampling during higher temperatures means Index/Condition sampling will take place every other day until the average descends to 69.5°F. Sample and bypass mode will occur on alternating 24-hour periods (0700-0700).
Truck releases of summer/fall out-migrants originating from Little Goose and Lower Granite Dams began at Bonneville on 02 August and occur every other day.
Gas Bubble Trauma (GBT) examinations were terminated for the season this week due to current high river temperatures, low TDG levels and inability to meet the 50 fish minimum sample size criteria. The final GBT collection effort occurred on 01 August. Please follow this link <https://www.fpc.org/currentdaily/gbtsumbybatchdate.pdf> to the FPC web page for further details.
Non-salmonid GBT Monitoring has concluded in conjunction with the end of salmonid GBT monitoring. Please follow this link https://www.fpc.org/currentdaily/Summer_NS_gbtsumbybatchdate_realtime.pdf to the FPC web page for specific details.
No fin clips were obtained from Pacific Lamprey macrophthalmia or ammocoetes for Columbia River Inter-Tribal Fish Commission’s genetic studies as no juvenile lamprey were sampled this week.
- USDA – Pinniped and Avian Hazing: Deck-based avian hazing operations concluded on 31 July per FPP Appendix L, Section 3.2. Pinniped hazing will resume 15 August.
- 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.

- f. CRITFC – Adult Salmonid Sampling: Adult salmonid sampling in the Adult Fish Facility (AFF) began on 19 April and typically occurs 5 days per week. Warm water sampling protocols are being followed at this time due to elevated water temperatures.
- g. CRITFC – Lamprey Translocation: Adult lamprey collection and translocation began on 05 June.

4. FISHWAYS:

- a. Project Biologists inspected 30 July to 05 August.
- b. Fish Passage Plan observations:

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

Date	Location	FPP Violation	Cause	Response
PH1				
07/30 – 08/05	PH1 ITS	S. End Gate Inoperable and Chain Gates 1b Closed	S. End Gate Inoperable, 1b Closed for Safety Reasons	W.O.
07/30 – 08/05	PH1CC	FG 2-19 Stuck in the Mostly Closed Position, Should Be Open	Mechanically Bound	W.O.
Bradford Island: Nothing to report				
Cascades Island				
07/30,31, 08/02 - 05	CI Fishway	FG 6-18 Open, Should be Closed	Mechanically Bound	W.O.
Washington Shore				
07/31 – 08/03	WA Shore Fishway	SUE Ent/TW Diff <1'	Unknown	N/A
07/31 – 08/03	WA Shore Fishway	SDE Ent/TW Diff <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 limiter torque 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 01 August.
- (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) is in service.

(3) The PH2 Lamprey Flume Structure (LFS) remains out of service.

(4) The AFF Lamprey Trap and Cascades Island Lamprey Trap remain in service.

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

Table 5. Avian Counts for 30 July – 05 August.

Date	Gulls	Cormorants	Terns	Wh. Pelicans	Grebes
07/30	323	11	0	0	0
07/31	673	24	0	0	0
08/01	474	10	0	0	0
08/02	143	26	0	0	0
08/03	247	34	0	0	0
08/04	---	---	---	---	---
08/05	382	14	0	0	0

5. WATER QUALITY MONITORING:

- a. Fishway Temperatures: Fishway temperature monitoring is currently underway.

Table 6. Daily Average Fishway Temperatures for 30 July to 05 August at Bonneville Lock & Dam.

Date	A-Branch	B-Branch	BI_Exit	WA_Entrance	WA_Exit	CI_Entrance	AFF	SMF	BI_LPS	CI_LPS	WA_LPS
30-Jul	71.72	71.61	71.78	71.50	71.67	---	71.64	71.55	71.86	71.70	71.85
31-Jul	71.59	71.55	71.65	71.43	71.61	---	71.54	71.45	71.75	71.66	71.81
1-Aug	71.64	71.55	71.72	71.41	71.60	---	71.56	71.45	71.84	71.67	71.81
2-Aug	71.64	71.50	71.71	71.34	71.53	---	71.41	71.38	71.84	71.64	71.76
3-Aug	71.50	71.40	71.54	71.26	71.45	---	71.37	71.30	71.66	71.55	71.67
4-Aug	71.39	71.33	71.39	71.20	71.37	---	71.16	71.26	71.51	71.42	71.55
5-Aug	71.37	71.37	71.40	71.24	71.43	---	71.29	71.26	71.50	71.50	71.60

*The Cascades Island Entrance probe is currently unserviceable.

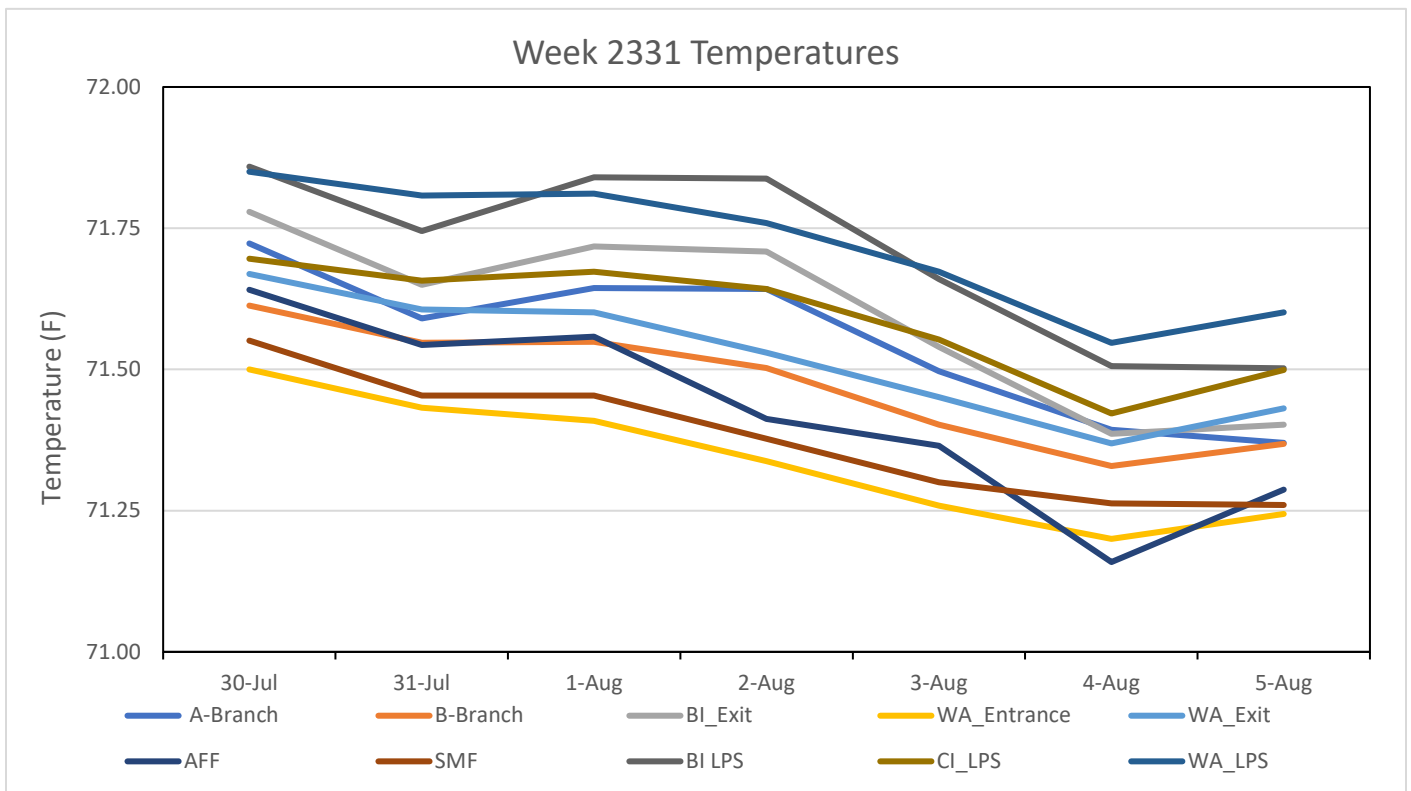


Figure 1. Average Fishway Temperatures for 30 July to 05 August at Bonneville Lock & Dam.

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

7. CONSTRUCTION:

- Preparation for FGE modification work on U13 Gatewells has initiated.

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

9. TELETYPES CURRENTLY IN EFFECT:

- A teletype was distributed on 15 June updates Summer Spill Caps. Effective 0001 hours on June 16, operate Bonneville Dam in accordance with table listed in teletype BON R 061523 0839. Per the FOP (Level 1) spill to 140kcfs, levels beyond that cap spill at 150kcfs.
 - A teletype was distributed on 12 June regarding FOP Summer Spill for fish passage. Effective 16 June through 31 August, operate Bonneville Dam in accordance with the 2023 Fish Operations Plan (FOP) to provide summer spill for fish passage, as described below.
 - Pursuant to FOP Table 4, the 2023 Summer Spill operation at Bonneville Dam is as follows:
 - 16 June, 0001 HRS – 14 August, 2359 HRS: Spill 95 kcfs, 24 HRS/DAY
 - 15 August, 0001 HRS – 31 August, 2359 HRS: Spill 50 kcfs, 24 HRS/DAY
 - Distribute spill according to spill patterns in the 2023 Fish Passage Plan (FPP) Table BON-16. Follow the spill pattern that is closest to the intended spill rate. Actual spill may vary up to +/- 3 kcfs from the target due to Project operational limitations described in the FOP sections 3 and 8.8.3.
 - Continue to operate the Powerhouse 2 Corner Collector (B2CC) throughout Summer Spill, then close the B2CC within one hour of the end of spill on 31 August. B2CC operating criteria are defined in FPP Section 2.3.2.5.v (Page BON-20).
 - Maintain spill at the FOP target as long as it does not exceed the spill cap in Level 1 of the most recent spill priority list teletype. Do not spill above the Level 1 spill cap except as required during forced spill, pursuant to the spill priority list teletype.
 - 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.
 - During periods of low flow, it may be necessary to operate outside of the minimum generation range defined in FOP Table 1 in order to maintain reserves for transmission reliability, as defined blow.
 - If notified that BPA has declared a “Transmission System Reliability Need” or “Transmission System Emergency”, adjust operations as instructed by BPA Hydro Scheduling or Transmission Dispatch (per FOP Section 4.4).
 - If the adjustment results in a deviation from the FOP target spill level, or results in operating outside of the minimum generation requirements in the FOP Table 1, describe details of the even in the Project Operator Logbook and provide to RCC upon request for reporting requirements.
- Please see teletype BON R 061223 1145 for details.
- A teletype was distributed on 02 August describing a Bonneville Spillway outage for hydrosurvey operations. On Wednesday, 06 September, from 0800 to 1500 HRS, the entire Bonneville Spillway will be tagged out and not available for spill. The purpose of this operation is for a hydrographic survey in the Bonneville Spillway stilling basin. Surveyors will be in the spillway basin during the date and times listed above. Please see teletype BON R 080223 1200 for further details.

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