

MEMORANDUM FOR Biologist, Operations Division (CENWP-OD)

SUBJECT: Bonneville Project, Fishway and Fish Activities for **Week 32** of 2022, which covers the period from **31 July to 06 August 2022**.

1. OPERATION SUMMARY:

- a. Daily average river flows ranged from 171.3 to 198.4 kcfs. Daily average powerhouse forebay elevation ranged from 73.9' to 75.1' msl. Daily average project tailwater ranged from 14.7' to 16.4' msl. Secchi disk measurements ranged from 5.0' to 7.0+'. Daily average water temperature remained at 71°F.
- b. Daily average spill ranged from 94.6 to 95.7 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
13	1628 on 18 Feb	---	F.O., Generator Ground and BPA Work – Grounded Clearance	---
12	0702 on 05 July	---	P.O., SU Panel Upgrade/Installation, Annual Overhaul, and BPA Work – Grounded Clearance	---
7	0857 on 11 July	---	P.O., 5-Year Overhaul	---
11	0802 on 18 July	---	P.O., BPA Work - Grounded Clearance and SU Panel Upgrade/Installation	---
14	0804 on 18 July	---	P.O., BPA Work – Grounded Clearance	---
8	0002 on 25 July	---	P.O., Annual Overhaul	---
4	0000 on 01 Aug	1559 on 03 Aug	P.O., Annual Overhaul	2 days, 15 hours, 59 mins
16	1022 on 01 Aug	1129 on 01 Aug	F.O., Loss of DC-Unit Tripped	1 hour, 7 mins
18	1022 on 01 Aug	1130 on 01 Aug	F.O., Loss of DC-Unit Tripped	1 hour, 8 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 placed 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	1142 on 28 June	1620 on 02 Aug (RTS)	F.O., Water in Hub	35 days, 4 hours, 38 mins
F1	1901 on 31 July	2004 on 31 July	R.S., Float Trash	1 hour, 3 mins
F2	2239 on 02 Aug	0543 on 03 Aug	R.S., Nighttime Lamprey Ops	7 hours, 4 mins
F1	1805 on 03 Aug	2040 on 03 Aug	R.S., Float Trash	2 hours, 35 mins
F2	2247 on 03 Aug	0604 on 04 Aug	R.S., Nighttime Lamprey Ops	7 hours, 17 mins
F1	1056 on 04 Aug	1125 on 04 Aug	OOS, Switching	29 mins
F2	2247 on 04 Aug	0604 on 05 Aug	R.S., Nighttime Lamprey Ops	7 hours, 17 mins
F1	2244 on 05 Aug	0559 on 06 Aug	R.S., Nighttime Lamprey Ops	7 hours, 15 mins
F2	2247 on 06 Aug	---	R.S., Nighttime Lamprey Ops	---

**** Single Fish Unit Ops Initiated on 28 June due to the Forced Outage of Fish Unit 2 (F2). Please see 22BON022 MFR PH2 Fish Unit 2 Outage for more details ****

****UPDATE: Single Fish Unit Ops ended on 02 August when F2 returned to service (RTS)****

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

Date	F1	F2
07/31	2.0'	---
07/31	0.1'	---
08/01	0.9'	---
08/02	1.8'	0.3'
08/03	3.5'	0.3'
08/03	0.1'	0.9'
08/04	0.1'	0.8'
08/05	0.5'	0.4'
08/06	0.0'	1.9'

2. MAINTENANCE ACTIVITIES:

- a. Auxiliary Water System Closures:
 - FV 3-9 was placed into manual for cleaning from 1024 to 1033 on 04 Aug.
- b. STS/VBS Inspections: Nothing to report.
- c. Dewatering and Fish Salvages: Nothing to report.
- d. Fishway ROV Inspection: A fishway ROV inspection is scheduled for the week of 15 August for the PH1 Collection Channel (PH1CC), lower section of the A-Branch Ladder, Cascade Island Entrance Bay, and PH2 Collection Channel. The PH1CC and A-Branch Ladder will be inspected for possible damage incurred to the Auxiliary Water Supply (AWS), Fish Gates, and diffuser grating when Bonneville experienced prolonged high flows this summer. The Cascades Island and PH2 Collection Channel will be inspected as part of pre-winter maintenance period activities.

3. RESEARCH:

- a. 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](#).
- 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 ranged from 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 28 July (sample end-date of 29 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 daily average descends to 69.5°F. Sample and bypass mode occurs on alternating 24-hour periods (0700-0700).
Gas Bubble Trauma (GBT) examinations were modified to one collection effort per week beginning on 01 August in conjunction with higher temperature sampling protocols. Results of this week's Gas Bubble Trauma (GBT) examinations: 15 subyearling Chinook were examined with no GBT symptoms observed. Please follow this link <https://www.fpc.org/currentdaily/gbtsumbybatchdate.pdf> to the FPC web page for more details.
Non-salmonid GBT Monitoring was suspended after the 27 July sample due to river temperatures at Bonneville reaching 68°, as per guidance from Oregon DEQ. Please follow this link: https://www.fpc.org/currentdaily/Summer_NS_gbtsumbybatchdate_realtime.pdf to the FPC web page for specific details for results through 27 July.
For research purposes, a total of one fin clip was obtained from a Pacific Lamprey ammocoete for Columbia River Inter-Tribal Fish Commission's (CRITFC) genetic studies this week.
Truck releases of summer/fall out-migrants originating from Little Goose and Lower Granite dams began at Bonneville on 03 August and occur every other day.
- d. USDA – Pinniped and Avian Hazing: Deck-based pinniped hazing started 14 March and concluded for the Spring season on 31 May. Fall pinniped hazing will start on 15 August. Avian hazing started 01 April and ended 31 July.
- e. USGS TDG Monitoring: USGS placed TDG monitoring equipment back in service on Cascades Island above and below the Main Dam on 31 March. 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 21 April and typically occurs 5 days per week. High water temperature sampling protocols started on 28 July.
- g. CRITFC – Lamprey Translocation: Adult lamprey collection and translocation began on 08 June and will occur daily through 30 September.
- h. ODFW – Adult Steelhead Sampling: Steelhead sampling in the AFF began on 05 July and occurs in conjunction with CRITFC Adult Salmonid Sampling. High water temperature sampling protocols started on 28 July.
- i. WDFW – Bright and Tule Chinook Stock Observation: Observation research of fall Chinook at Bonneville Dam started 01 August.

4. FISHWAYS:

- a. Project biologists inspected from 31 July – 06 August.

b. Fish Passage Plan observations:

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

Date	Location	FPP Violation	Cause	Response
PH1				
07/31 – 08/06	PH1 ITS	S. End Gate Inoperable and Chain Gates 1a & 1b Closed	S. End Gate Inoperable, 1a and 1b Closed for Safety Reasons	W.O.
07/31 – 08/06	PH1CC	FG 2-19 Stuck in the Mostly Closed Position, Should Be Open	Mechanically Bound	W.O.
08/02-03	PH1CC	South Ent/TW Diff <1.0'	FV 1-1 Not Operating Correctly	W.O.
Bradford Island				
08/04	A-Branch	A-Branch Staff Gauge High >1.1'	Unknown	N/A
Cascades Island				
07/31 – 08/02	CI Fishway	FG 6-11 Mechanically Bound in the Closed Position, Should Be Open	Mechanically Bound	W.O.
07/31 – 08/06	Cascades Island Tailrace	1 B2CC Avian Array Line is Broken	High Tailwater Elevations	N/A
Washington Shore				
07/31 – 08/06	PH2CC	A2 Diffuser Stuck Mid-Travel	Unknown	W.O.
08/01 – 04	PH2CC	SUE Ent/TW Diff <1.0'	Unknown	Adjustments to Entrance Gate Submergence
08/01 – 04	PH2CC	SDE Ent/TW Diff <1.0'	Unknown	Adjustments to Entrance Gate Submergence
08/04	PH2CC	NUE Ent/TW Diff <1.0'	Unknown	Adjustments to Entrance Gate Submergence
08/04	PH2CC	NDE Ent/TW Diff <1.0'	Unknown	Adjustments to Entrance Gate Submergence
08/01 – 02	PH2CC	Channel Velocity < 1.5 fps	Single Fish Unit Ops	W.O.

- 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 Washington Shore/Cascades Island Fishway Winter Maintenance Period (winter 2022/2023).

c. Adult Fishways:

- (1) The AFF remains in service.
- (2) Sensor calibrations were conducted on 02 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 only).

(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 for the year.

(4) The AFF lamprey trap and CI lamprey trap both remain in service.

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

Table 5. *Avian Counts 31 July – 06 August.*

Date	Gulls	Cormorants	Terns	Wh. Pelicans	Grebes
07/31	12	8	0	0	0
08/01	22	8	0	0	0
08/02	4	1	0	0	0
08/03	8	5	0	0	0
08/04	10	9	0	0	0
08/05	22	19	0	0	0
08/06	18	7	0	0	0

5. WATER QUALITY MONITORING:

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

Table 6. Fishway Temperatures for 31 July to 06 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	LFS
31-Jul	71.80		71.92	71.71	71.82		71.79	71.72	72.04	72.12	72.15	OOS
1-Aug	71.87		71.94	71.76	71.88		71.80	71.79	72.05	72.14	72.21	OOS
2-Aug	71.85		71.94	71.75	71.85		71.73	71.77	72.03	72.04	72.13	OOS
3-Aug	71.96		72.06	71.78	71.89		71.77	71.80	72.14	72.07	72.18	OOS
4-Aug	71.40		71.52	71.30	71.40		71.26	71.34	71.57	71.48	71.63	OOS
5-Aug	71.40		71.45	71.28	71.39		71.30	71.30	71.54	71.52	71.68	OOS
6-Aug	71.66		71.76	71.57	71.67		71.62	71.59	71.85	71.89	71.98	OOS

** The B-Branch Entrance temp probe was unserviceable this week.

** The Cascade Island Entrance probe is currently unserviceable.

** The LFS was taken out of service on 16 June.

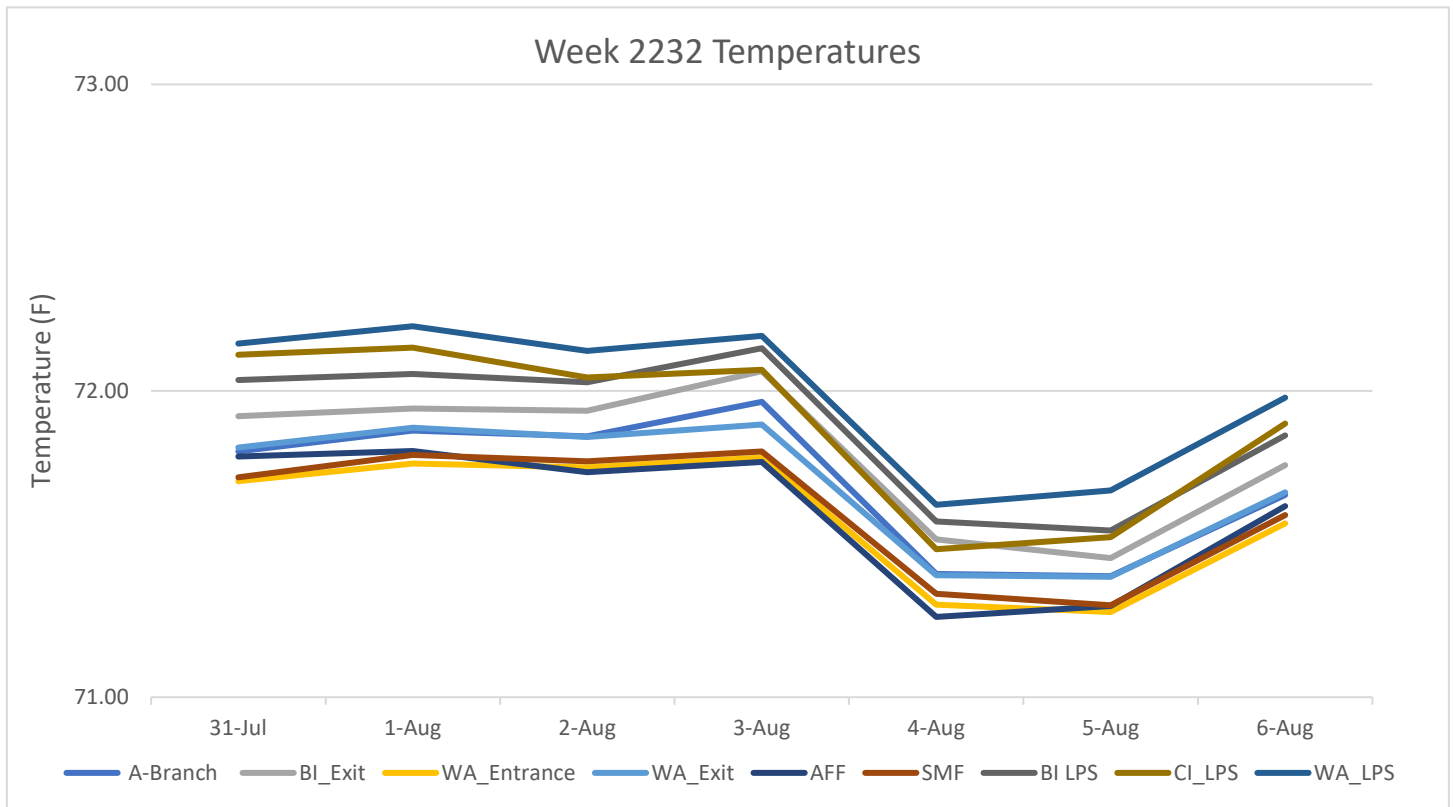


Figure 1. Average fishway temperatures for 31 July to 06 August at Bonneville Lock & Dam.

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

6. CONSTRUCTION: Nothing to report.

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

8. TELETYPES CURRENTLY IN EFFECT:

- A teletype was sent on 13 June detailing Summer Spill Operations for fish passage at Bonneville Lock & Dam. Effective Thursday 16 June at 0001 HRS, through Wednesday August 31 at 2359 HRS, operate Bonneville Dam in accordance with the 2022 Fish Operations Plan (FOP) to provide Summer Spill for fish passage as described below:
 - Pursuant to FOP Table 4, the 2022 Summer Spill Operation at Bonneville Dam is as follows:
 - June 16 at 0001 HRS to August 14 at 2359 HRS: Target Spill = 95 kcfs
 - August 15 at 0001 HRS to August 31 at 2359 HRS: Target Spill = 50 kcfs
 - Distribute spill according to spill patterns in the 2022 Fish Passage Plan (FPP) Table BON-16. Follow the pattern spill rate that is closest to the target. Actual spill may range +/-3 kcfs from the target from the target due to Project operational limitations.
 - Continue to operate the Powerhouse 2 Corner Collector (B2CC) throughout Summer Spill, then close B2CC within one hour of the end of spill on 31 August. B2CC operating criteria are found in the FPP Section 2.3.2.5.v.
 - 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 involuntary 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.
 - During periods of low flow, it may be necessary to operate outside the minimum operation range defined in FOP Table 1 in order to maintain reserves for transmission reliability, as defined below.
 - 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).
Please see Teletype BON R 061322 0955 for more details.
- A teletype was sent on 18 July updating the Spill Priority List and is to be used until further notice. The teletype outlines maximum spill level estimated not to exceed the applicable TDG water quality standard and lack of load spill levels and order to which should be spilled. Please see teletype BON R 071822 1314 for more details.

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