

MEMORANDUM FOR Biologist, Operations Division (CENWP-OD)

SUBJECT: Bonneville Lock & Dam, Fishway and Fish Activities for Week 22 of 2023, which covers the period from 28 May to 03 June 2023.

**1. OPERATION SUMMARY:**

a. Daily average river flows ranged from 232.7 to 293.3 kcfs. Daily average powerhouse forebay elevation ranged from 74.0' to 74.9' msl. Daily average project tailwater ranged from 18.6' to 21.8' msl. Secchi disk measurements ranged from 3.0 to 5.0'. Daily average water temperature ranged from 58 to 60°F.

b. Daily average spill ranged from 149.0 to 150.2 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	0001 on 01 Jun	0526 on 01 Jun	R.S., Nighttime Lamprey Ops	5 hours, 25 mins
F2	2232 on 01 Jun	0545 on 02 Jun	R.S., Nighttime Lamprey Ops	7 hours, 13 mins
F2	2228 on 02 Jun	0530 on 03 Jun	R.S., Nighttime Lamprey Ops	7 hours, 2 mins
F2	2230 on 03 Jun	---	R.S., Nighttime Lamprey Ops	---

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

Date	F1	F2
05/28	0.2'	0.8'
05/29	0.2'	0.8'
05/30	0.2'	1.1'
05/31	0.1'	0.1'
06/01	0.2'	0.6'
06/02	0.4'	0.1'
06/03	0.4'	0.3'

**2. MAINTENANCE ACTIVITIES:**

a. Auxiliary Water System Closures:

- FV 6-9 was placed into manual for cleaning from 0730 to 0740 on 30 May.

- b. STS/VBS Inspections: Nothing to report.
- c. Dewatering and Fish Salvages: Fish Biologists assisted in fish salvage operations in the Unit 3 Scroll Case on the afternoon of 31 May. No fish were discovered. U3 was partially unwatered for an oil leak investigation.

### 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 varied from light to moderate consisting mostly of sticks and aquatic macrophytes. Fallbacks observed this week: two steelhead and four 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, subyearling Chinook, and steelhead examined: 3 fish (1.5%) 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 130 fin clips were obtained from Pacific Lamprey macrophthalmia for Columbia River Inter-Tribal Fish Commission’s genetic studies 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. CRITFC – Adult Salmonid Sampling: Adult salmonid sampling in the Adult Fish Facility (AFF) began on 19 April and typically occurs 5 days per week.
- h. CRITFC – Lamprey Translocation: Adult lamprey collection and translocation began on 05 June.

### 4. FISHWAYS:

- a. Project Biologists inspected 28 May to 03 June.

b. Fish Passage Plan observations:

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

Date	Location	FPP Violation	Cause	Response
<b>PH1</b>				
05/28 – 06/03	PH1 ITS	S. End Gate Inoperable and Chain Gates 1b Closed	S. End Gate Inoperable, 1b Closed for Safety Reasons	W.O.
05/28 – 06/03	PH1CC	FG 2-19 Stuck in the Mostly Closed Position, Should Be Open	Mechanically Bound	W.O.
06/03	PH1CC	N. Ent/TW Diff < 1'	Unknown	N/A
<b>Bradford Island</b>				
05/30	BI Fishway	B-Branch Ent/TW Diff >2'	Unknown	N/A
<b>Cascades Island</b>				
05/28 – 06/03	CI Fishway	FG 6-11 Closed, Should be Open	Mechanically Bound in Closed Position	W.O.
06/02 – 03	CI Fishway	FG 6-6 Open, Should be Closed	Electrical Failure	W.O.
06/01 – 03	CI Fishway	FG 6-7 Partially Open, Should be Closed	Electrical Failure	W.O.
06/01 – 03	CI Fishway	FG 6-8 Open, Should be Closed	Electrical Failure	W.O.
06/02 – 03	CI Fishway	FG 6-9 Open, Should be Closed	Electrical Failure	W.O.
06/03	CI Fishway	CI Ent/TW Diff <1'	Unknown	Adjustments Made
<b>Washington Shore</b>				
06/02	WA Shore Fishway	Weir 37 High, >1.4'	Unknown	Ops Notified
06/03	WA Shore Fishway	SUE Ent/TW Diff <1'	Unknown	N/A
06/03	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 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 29 May.
- (3) SLEDs are installed at all locations.

- (4) Bradford Island, Cascades Island, and Washington Shore Fishways remain in service and were placed into shad mode on 29 May.

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 (7<sup>th</sup>) trash rack was installed in the 1A gate slot, extending the height of stacked trash racks to approx. +80' el. Without the 7<sup>th</sup> 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 was placed into service on 05 June. The CI lamprey trap will be placed into service on 12 June.
- (5) Avian Monitoring: Avian counts are recorded 01 April – 31 October.

**Table 5.** Avian Counts for 28 May – 03 June.

<b>Date</b>	<b>Gulls</b>	<b>Cormorants</b>	<b>Terns</b>	<b>Wh. Pelicans</b>	<b>Grebes</b>
05/28	13	1	0	0	0
05/29	6	3	0	0	0
05/30	11	1	0	0	0
05/31	8	1	0	0	0
06/01	34	4	0	0	0
06/02	18	2	0	0	0
06/03	28	2	0	0	0

**5. WATER QUALITY MONITORING:**

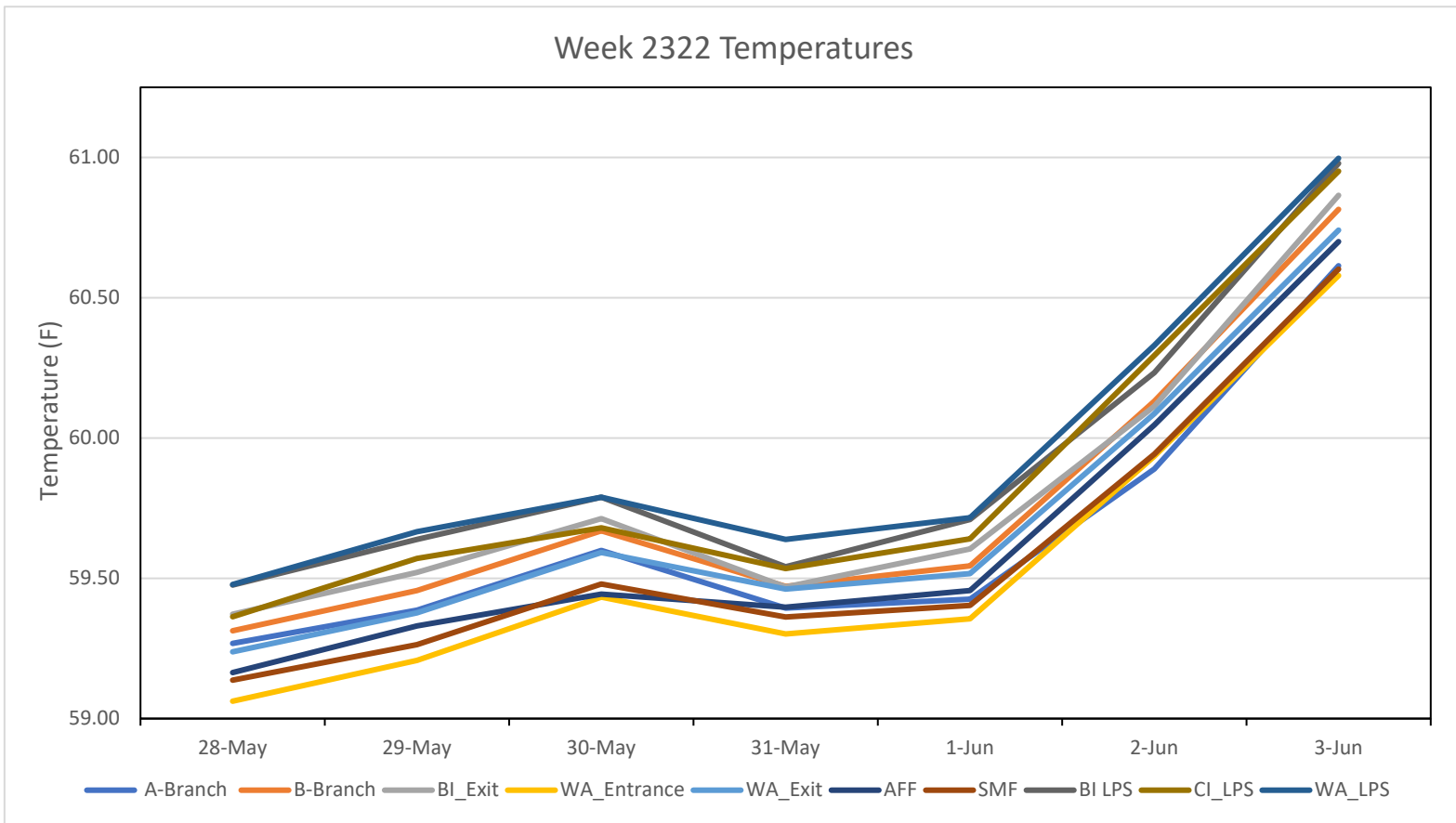
a. Fishway Temperatures: Fishway temperature monitoring is currently underway.

**Table 6.** Daily Average Fishway Temperatures for 28 May to 03 June 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
28-May	59.27	59.31	59.37	59.06	59.24		59.16	59.14	59.48	59.36	59.48	OOS
29-May	59.39	59.46	59.52	59.21	59.38		59.33	59.26	59.64	59.57	59.67	OOS
30-May	59.60	59.67	59.71	59.43	59.59		59.44	59.48	59.79	59.68	59.79	OOS
31-May	59.39	59.47	59.47	59.30	59.46		59.40	59.36	59.54	59.54	59.64	OOS
1-Jun	59.43	59.54	59.61	59.36	59.52		59.46	59.40	59.71	59.64	59.72	OOS
2-Jun	59.89	60.13	60.11	59.94	60.09		60.05	59.94	60.23	60.29	60.33	OOS
3-Jun	60.61	60.82	60.87	60.58	60.74		60.70	60.60	60.98	60.95	61.00	OOS

\*The Cascades Island Entrance probe is currently unserviceable

\*The LFS is OOS for the unforeseeable future.



**Figure 1.** Average Fishway Temperatures for 28 May to 03 June at Bonneville Lock & Dam

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 is ongoing.

## 8. HAZMAT, SPILLS AND CLEANUP:

- U3 oil investigation occurred this week. U3 has been OOS since 30 March due to a suspected oil leak. U3's scroll case was dewatered and no oil sheen or remnants were observed during the fish salvage operations of the scroll case on 31 May. After exercising the runner blades, the draft tube hatch was opened to observe for any oil leakage evidence in the remaining safety pool of water or near the hub. No evidence of oil leakage was observed in the draft tube on 31 May or 01 June.

## 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.

- A teletype was sent out on 07 June regarding a Bonneville high pool operation for bridge construction. Beginning 24 June at 0600 HRS through 30 June at 1800 HRS, operate Bonneville Forebay above a minimum of 75.5 feet, soft constraint and above 74.5 feet, hard constraint. This request was made to support construction activities for the BNSF Railroad Bridge replacement at River Mile 150 at the mouth of Rock Creek in the Bonneville Pool. Please see teletype BON R 060723 1245 for more details.

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