

MEMORANDUM FOR Biologist, Operations Division (CENWP-OD)

SUBJECT: Bonneville Project, Fishway and Fish Activities for **Week 36** of 2022, which covers the period from **28 August to 03 September 2022**.

1. OPERATION SUMMARY:

- a. Daily average river flows ranged from 101.0 to 145.4 kcfs. Daily average powerhouse forebay elevation ranged from 73.7’ to 74.5’ msl. Daily average project tailwater ranged from 9.5’ to 12.8’ msl. Secchi disk measurements remained at 7.0+’. Daily average water temperature ranged from 70 to 71°F.
- b. Daily average spill ranged from 1.1 to 50.8 kcfs.
 - Beginning 01 September through 09 April, only Spillbays 1 and 18 are required to operate at 1 stop during day hours for attraction flow. **(BON 2.2.4)**
 - A hydrosurvey was conducted in the Main Dam tailrace on 02 September. To conduct this operation safely and successfully, Spillbays 1 and 18 were alternately closed through the workday. Spillbay 1 was closed from 0809 to 1203 and Spillbay 18 was closed from 1203 to 1444. Normal attraction flow resumed after the completion of this operation.
- c. **Unit Operation: Split Flow Operation** began on 01 September in accordance with FPP guidelines **(BON 2.1.5)** and will remain in effect until total adult and jack salmonid counts fall below 20,000 fish. The unit priority is currently:
 - **PH1:** 1,10 (or top two available PH1 priority units)
 - **Then PH2:** 11,18,12,17,13,14,15,16
 - **Then PH1:** 3,6,9,4,5,8,7,2

• **Table 1. Main Unit Outages**

| Unit | OOS | RTS | Reason | Duration |
|------|-----------------|-----|--|----------|
| 13 | 1628 on 18 Feb | --- | F.O., Generator Ground and BPA Work – Grounded Clearance | --- |
| 7 | 0857 on 11 July | --- | P.O., 5-Year Overhaul | --- |
| 8 | 0002 on 25 July | --- | P.O., Annual Overhaul | --- |
| 16 | 0729 on 22 Aug | --- | P.O., Annual Overhaul/Shaft Sleeve Repair | --- |
| 15 | 0001 on 29 Aug | --- | P.O., T12 Maintenance | --- |
| 17 | 0001 on 29 Aug | --- | P.O., T12 Maintenance | --- |
| 18 | 0002 on 29 Aug | --- | P.O., T12 Maintenance | --- |

- 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 | 2132 on 27 Aug | 0658 on 28 Aug | R.S., Nighttime Lamprey Ops | 9 hours, 28 mins |
| F1 | 2131 on 28 Aug | 0557 on 29 Aug | R.S., Nighttime Lamprey Ops | 8 hours, 26 mins |
| F2 | 2132 on 29 Aug | 0600 on 30 Aug | R.S., Nighttime Lamprey Ops | 8 hours, 28 mins |
| F1 | 2107 on 30 Aug | 2133 on 30 Aug | R.S., Float Trash | 26 mins |
| F2 | 2130 on 30 Aug | 0602 on 31 Aug | R.S., Nighttime Lamprey Ops | 8 hours, 32 mins |
| F1 | 1755 on 31 Aug | 1854 on 31 Aug | R.S., Float Trash | 59 mins |
| F1 | 2130 on 31 Aug | 0114 on 01 Sept | R.S., Nighttime Lamprey Ops | 3 hours, 44 mins |
| F2 | 0010 on 02 Sept | 0354 on 02 Sept | R.S., Float Trash | 3 hours, 44 mins |
| F1 | 0247 on 02 Sept | 0353 on 02 Sept | R.S., Float Trash | 1 hour, 6 mins |
| F1 | 2252 on 02 Sept | 0043 on 03 Sept | R.S., Float Trash | 1 hour, 51 mins |
| F2 | 2209 on 03 Sept | --- | R.S., Float Trash | --- |
| F1 | 2213 on 03 Sept | --- | R.S., Float Trash | --- |

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

| Date | F1 | F2 |
|-------|------|------|
| 08/28 | 1.1' | 0.2' |
| 08/29 | 0.4' | 2.5' |
| 08/30 | 1.0' | 1.5' |
| 08/30 | 0.1 | --- |
| 08/31 | 1.5' | 1.3' |
| 09/01 | 2.3' | 2.3' |
| 09/02 | 2.6' | 0.3' |
| 09/03 | 3.6' | 2.8' |

2. MAINTENANCE ACTIVITIES:

- a. Auxiliary Water System Closures:
 - FV 6-9 was momentarily closed for cleaning at 1520 on 29 August.
 - FV 3-9 was momentarily closed for cleaning at 0849 on 30 August.
 - FV 6-9 was closed for cleaning from 1250 to 1310 on 01 September.
 - FV 3-7 was closed for cleaning from 1550 to 1602 on 01 September.
- b. STS/VBS Inspections: Nothing to report.
- c. Dewatering and Fish Salvages: Nothing to report.

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 was light to moderate 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 have concluded for the season. Please follow this link <https://www.fpc.org/currentdaily/gbtsumbybatchdate.pdf> to the FPC web page for more details.

For research purposes, a total of 7 fin clips were obtained from Pacific Lamprey ammocoetes 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 started 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 occurred daily through 07 September when trapping operations concluded.
- 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 28 August to 03 September.
- b. Fish Passage Plan observations:

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

| Date | Location | FPP Violation | Cause | Response |
|------------------------------------|--------------------------|---|---|----------|
| 08/29 – 09/03 | BON | Unit Priority | U13 Forced Outage | W.O. |
| PH1 | | | | |
| 08/28 – 09/03 | 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. |
| 08/28 – 09/03 | PH1CC | FG 2-19 Stuck in the Mostly Closed Position, Should Be Open | Mechanically Bound | W.O. |
| Bradford Island: Nothing to report | | | | |
| Cascades Island | | | | |
| 08/28 – 09/03 | Cascades Island Tailrace | 1 B2CC Avian Array Line is Broken | High Tailwater Elevations | N/A |
| Washington Shore | | | | |
| 08/28 – 09/03 | PH2CC | A2 Diffuser Stuck Mid-Travel | Unknown | 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 30 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 was closed for the season 01 September when spill season ended. The B2CC is available to reopen for passing trash or to provide surface passage for fish if spill occurs outside fish passage spill season.
- (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 were both taken out of service on 07 September. The 2022 lamprey translocation activities have concluded for the year.
- (5) Avian Monitoring: Avian counts are recorded 01 April – 31 October.

Table 5. Avian Counts 28 August – 03 September.

| Date | Gulls | Cormorants | Terns | Wh. Pelicans | Grebes |
|-------------|--------------|-------------------|--------------|---------------------|---------------|
| 08/28 | 83 | 18 | 0 | 0 | 0 |
| 08/29 | 16 | 1 | 0 | 0 | 0 |
| 08/30 | 15 | 9 | 0 | 0 | 0 |
| 08/31 | 1 | 1 | 0 | 0 | 0 |
| 09/01 | --- | --- | --- | --- | --- |
| 09/02 | 4 | 6 | 0 | 0 | 0 |
| 09/03 | 11 | 6 | 0 | 0 | 0 |

5. WATER QUALITY MONITORING:

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

Table 6. Fishway Temperatures for 28 August to 03 September 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-Aug | 70.76 | 70.75 | 70.93 | 70.65 | 70.78 | | 70.69 | 70.72 | 71.00 | 70.85 | 71.00 | OOS |
| 29-Aug | 70.59 | 70.66 | 70.67 | 70.55 | 70.80 | | 70.61 | 70.61 | 70.77 | 70.87 | 71.09 | OOS |
| 30-Aug | 70.98 | 70.97 | 71.05 | 70.84 | 70.99 | | 70.92 | 70.89 | 71.16 | 71.25 | 71.30 | OOS |
| 31-Aug | 71.53 | 71.55 | 71.71 | 71.42 | 71.57 | | 71.51 | 71.42 | 71.81 | 71.80 | 71.87 | OOS |
| 1-Sep | 72.08 | 72.16 | 72.15 | 72.03 | 72.16 | | 72.08 | 72.03 | 72.24 | 72.34 | 72.40 | OOS |
| 2-Sep | 72.19 | 72.26 | 72.25 | 72.12 | 72.25 | | 72.15 | 72.15 | 72.33 | 72.43 | 72.50 | OOS |
| 3-Sep | 71.69 | 71.79 | 71.72 | 71.62 | 71.73 | | 71.60 | 71.71 | 71.77 | 71.83 | 71.88 | OOS |

** The Cascade Island Entrance probe is currently unserviceable.

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

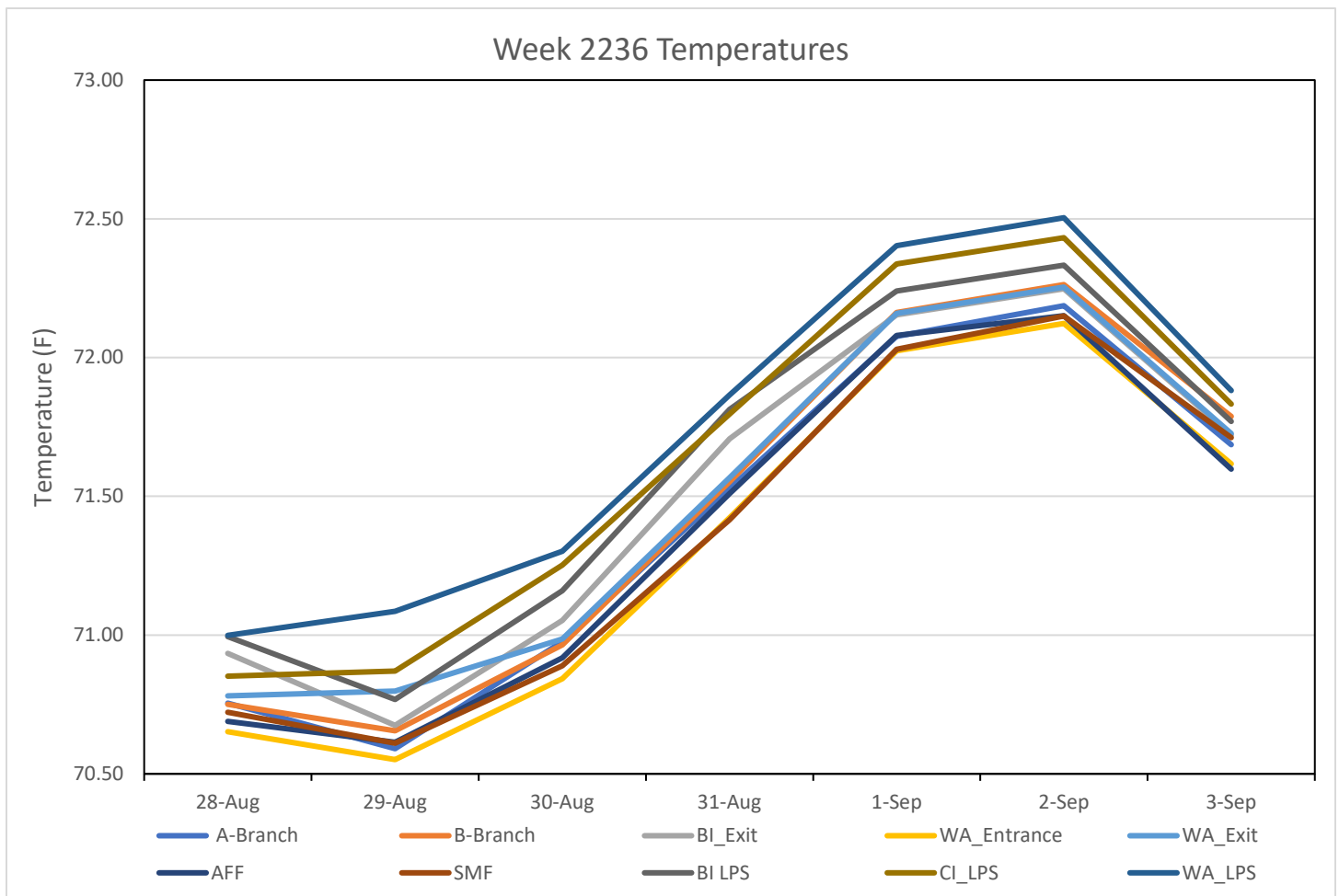


Figure 1. Average fishway temperatures for 28 August to 03 September at Bonneville Lock & Dam.

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

7. CONSTRUCTION: Nothing to report.

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

9. 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 out on 18 August outlining the Bonneville Spillway outage for a hydrosurvey operation. On Friday, 02 September from 0700-1500 HRS, the entire Bonneville Spillway will be tagged out and not available for spill. The hydrographic survey will be occurring in the BON spillway stilling basin. Fish attraction flow from Spillbays 1 and 18 will be coordinated between operations personnel and Bonneville Control Room during the hydrosurvey as follows:
 - Maintain spillbays 1 and 18 open one stop (approx. 1.1 kcfs per bay) during daytime hours, per the 2022 FPP Section 2.2.4.4., except when requested by surveyors to close one of the two bays.
 - When requested by surveyors, close only on bay at a time. One of the two bays must remain open during the hydrosurvey.
 - In order to complete the hydrosurvey, surveyors will request the Control Room to implement one of the following operations:
 - Close Bay 1 and maintain Bay 18 open
 - Close Bay 18 and maintain Bay 1 open
Please see teletype BON R 081822 1330 for further details.
- A teletype was sent out on 19 August regarding Bonneville Forebay operation for fall treaty fishery. This teletype requests that Bonneville Pool operate within a 1.5-foot band hard constraint, for the periods listed below:
 - From 0600 Monday, 22 August to 1800 Thursday, 25 August 2022
 - From 0600 Monday, 29 August to 1800 Friday, 02 September 2022
 - From 0600 Monday, 05 September to 1800 Saturday, 10 September 2022The goal of this operation is to limit pool fluctuation to avoid debris in fishing nets, reduce rapid water level drops that entangle nets, minimize boat access problems, and avoid being torn from their anchors. Please see teletype BON R 081922 1137 for more details.

- A teletype was distributed on 31 August regarding the Snake and Columbia River Projects fall/winter spill priority list and fall/winter spill caps. This teletype provides the order that projects spill for lack of load conditions and is to be used until further notice. Outside of the fish passage season, all state TDG standards are 110%. The lack of load spill level and the order in which to spill from top to bottom and other details can be found in the teletype BON R 082122 1615.

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