

MEMORANDUM FOR Biologist, Operations Division (CENWP-OD)

SUBJECT: Bonneville Project, Fishway and Fish Activities for Week 21 of 2022, which covers the period from 15 to 21 May 2022.

1. OPERATION SUMMARY:

- a. Daily average river flows ranged from 247.9 to 297.2 kcfs. Daily average powerhouse forebay elevation ranged from 72.6' to 75.1' msl. Daily average project tailwater ranged from 20.5' to 22.3' msl. Secchi disk measurements ranged from 4.0' to 6.0'. Daily average water temperature ranged from 52 to 54°F.
- b. Daily average spill ranged from 148.8 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 |
|------|----------------|----------------|------------------------|-------------------------|
| 13 | 1628 on 18 Feb | --- | F.O., Generator Ground | --- |
| 3 | 0920 on 04 Apr | --- | P.O., 5-Year Overhaul | --- |
| 17 | 0719 on 18 Apr | --- | P.O., 4-Year Overhaul | --- |
| 14 | 0702 on 16 May | 0844 on 19 May | P.O., FGE Work | 3 days, 1 hour, 42 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.* Nothing to report

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

| Date | F1 | F2 |
|-------|------|------|
| 05/15 | 0.5' | 0.8' |
| 05/16 | 0.3' | 0.8' |
| 05/17 | 0.3' | 0.8' |
| 05/18 | 0.5' | 1.1' |
| 05/19 | 0.3' | 0.3' |
| 05/20 | 0.2' | 0.2' |
| 05/21 | 0.2' | 0.4' |

2. MAINTENANCE ACTIVITIES:

- a. Auxiliary Water System Closures: Nothing to report.
- b. STS/VBS Inspections: Nothing to report.
- c. Dewatering and Fish Salvages:
 - On the morning of 18 May, Fish Biologists assisted in fish salvage operations during the removal of Unit 3's tail logs. Unit 3 was out of service for its 5-year overhaul. A total of 2 juvenile salmonids and

17 sculpin were recovered in good condition and were released downstream at the Hamilton Island Boat Launch.

- On the morning of 18 May, Fish Biologists assisted in fish salvage operations during the removal of Unit 14's tail logs. Unit 14 was out of service as part of the FGE Testing with U14 and U15. A total of 6 sculpin and 1 smallmouth bass were recovered in good condition and were released downstream.

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 light-moderate consisting mostly of sticks. 17 steelhead and 8 salmon fallbacks were observed this week.
Gas Bubble Trauma (GBT) examinations began on 12 April and are typically performed two days per week through the end of spill. Results of this week's GBT examinations: 200 yearling Chinook and steelhead examined: two fish (1.0%) were observed with GBT symptoms. 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 8 fin clips were obtained from Pacific lamprey macrophthalmia for Columbia River Inter-Tribal Fish Commission's (CRITFC) genetic studies this week.
- d. USDA – Pinniped and Avian Hazing: Deck-based pinniped hazing started 14 March and avian hazing started 01 April.
- e. State Agency Pinniped Trapping: Sea lion trapping started on 04 April and concluded this week.
- f. ODFW SMF Sampling: ODFW ended their sampling at the SMF using the sort-by-code system to target juvenile spring Chinook from the Round Butte Hatchery for post-release pathogen screening.
- g. 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.
- h. CRIFC – Adult Salmonid Sampling: Adult salmonid sampling in the Adult Fish Facility (AFF) began on 21 April and typically occurs 5 days per week.

4. FISHWAYS:

- a. Project biologists inspected from 15 – 21 May.

b. Fish Passage Plan observations:

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

| Date | Location | FPP Violation | Cause | Response |
|------------------|------------|---|---|--------------------|
| 05/15 – 21 | BON | Unit Priority | U13 F.O., Generator Ground | Repairs in Process |
| PH1 | | | | |
| 05/15 – 21 | 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. |
| 05/15 – 21 | PH1CC | FG 2-19 Stuck in the Mostly Closed Position, Should Be Open | Mechanically Bound | W.O. |
| Bradford Island | | | | |
| 05/17, 19 | A-Branch | Weir Staff Gauge >1.1' | Unknown | N/A |
| Cascades Island | | | | |
| 05/15 – 21 | CI Fishway | FG 6-11 Mechanically Bound in the Closed Position, Should Be Open | Mechanically Bound | W.O. |
| Washington Shore | | | | |
| 05/15 – 21 | PH2CC | A2 Diffuser Stuck Mid-Travel | Unknown | W.O. |
| 05/19 | WA Shore | Weir 38 Staff Gauge Low, <0.9' | 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 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 17 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 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 in service.
- (4) The AFF and CI lamprey traps remain out of service.
- (5) Avian Monitoring: Avian counts are recorded 01 April – 31 October.

Table 5. Avian Counts 15 to 21 May.

| Date | Gulls | Cormorants | Terns | Wh. Pelicans | Grebes |
|-------|-------|------------|-------|--------------|--------|
| 05/15 | 10 | 0 | 0 | 0 | 0 |
| 05/16 | 1 | 1 | 0 | 0 | 0 |
| 05/17 | 3 | 3 | 0 | 0 | 0 |
| 05/18 | 5 | 0 | 0 | 0 | 0 |
| 05/19 | 15 | 0 | 0 | 0 | 0 |
| 05/20 | 9 | 1 | 0 | 0 | 0 |
| 05/21 | 3 | 0 | 0 | 0 | 0 |

5. WATER QUALITY MONITORING:

- a. Fishway Temperatures: Temperature monitoring concluded for the season on 09 October 2021.
- 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 out 07 April regarding Bonneville Spring Spill for Juvenile Fish Passage. This teletype is a revision to the original Spring Spill for Juvenile Passage teletype (BON R 040422 1038) with revisions to include the current location of the 125% gas cap spill rate, which is now in the Level 2 of the spill priority list.

Effective Sunday 10 April at 0001 HRS through Wednesday 15 June at 2359 HRS, Bonneville Dam is to operate in accordance with the 2022 Fish Operations Plan (FOP) to provide spring spill for juvenile fish passage, as described below:

- Pursuant to FOP Table 3, the 2022 spring spill operation at Bonneville is as follows:
 - 125% gas cap, 24 HRS/Day:
 - The spill rate for the 125% gas cap is defined in the current spill priority list teletype, Level 2. This spill rate is estimated to meet but not exceed 125% TDG in the Bonneville Dam Tailrace, unless otherwise determined based on current conditions or Project constraints. The spill cap for BON will not exceed a MAX of 150 kcfs to avoid causing erosion in the spillway stilling basin.
 - Distribute spill according to spill patterns in the 2022 Fish Passage Plan (FPP) Table BON 16. Actual spill may range up to +/- 3 kcfs from the target due to project operational limits described in the FOP Sections 3 and 8.8.3.
 - Operate PH2 Units within the restricted operating ranges defined in the FPP Section 4.2.2.2, 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).

- Spill adjustments for navigation safety may be made at the discretion of the Project Operator based on current conditions and the navigation situation. Make best efforts to minimize the magnitude and duration of the adjustment to the extent possible.
 - Coordinate all spill adjustments with BPA Hydro Scheduling
- 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.
- 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 040722 1620 for more details of this teletype. Please see teletype BON R 04072022 1525 for specifics on the 125% Gas Cap in Level 2 for fish passage projects pursuant to the 2022 FOP.

- A teletype was sent out on 27 April for the Columbia and Snake River Projects and BPA regarding revisions to the order of lack of load spill priority. Please see teletype BON R 04272022 1439 for more details.
- A teletype was sent out on 13 May regarding operational specifications for U14 and U15 testing for FGE work.
 - Friday, 20 May from 0700 to 2100 HRS, for U14 pressure testing:
 - Forebay Ops:
 - Operate BON Forebay within the following constraints: Hard constraint: 71.5 - 73.0 ft during the daytime hours of 0700 to 2100 HRS. Outside these hours, BON may operate within the normal forebay operating range of 71.5 to 76.5 ft.
 - Powerhouse Priority:
 - PH2 revised turbine unit priority for U14 testing: 11, 18, 14, 13, 15, 12, 17, 13.
 - PH1: No change from 2022 FPP.
 - U14 Ops:
 - For BPA hydro-scheduling purposes, U14 will not be on AGC during this time but U14 may be online for testing purposes.
 - Tuesday, 31 May from 0700 to 2100 HRS, for U15 wet run/equipment shake down:
 - Forebay Ops:
 - Operate BON Forebay within the following constraints: 71.5 to 73.0 ft during daytime hours of 0700 to 2100 HRS. Outside these hours, BON may operate within the normal forebay operating range of 71.5 to 76.5 ft.
 - Powerhouse Priority:
 - PH2 revised turbine unit priority for U15 testing: 11, 18, 15, 14, 16, 12, 17, 13.
 - PH1: No change from 2022 FPP.
 - U15 Ops:
 - For BPA hydro-scheduling purposes U15 will not be on AGC during this time but U15 will be online and will be used for testing.
 - Adjacent Unit Ops:
 - During the U15 test, operate the adjacent units at the midpoint of the 1%.
 - Wednesday, 1 June, through Thursday 2 June, daily from 0700 to 2100 HRS, for U15 pressure/velocity testing:
 - Forebay Ops:
 - Operate BON Forebay within the following constraints: Hard constraint 71.5 – 73.0 ft during the daytime hours of 0700 to 2100. Outside these hours, BON may operate in accordance with the normal forebay operating range of 71.5 to 76.5 ft.
 - Powerhouse Priority:
 - PH2 revised turbine unit priority for U15 testing: 11, 18, 15, 14, 16, 12, 17, 13.
 - PH1: No change from 2022 FPP.
 - U15 Ops:

- For BPA hydro-scheduling purposes, U15 will not be on AGC during this time but U15 will be online and used for testing.
 - Adjacent Unit Operations:
 - During the U15 test, operate the adjacent units at the midpoint of the 1%.
- Monday, 6 June, through Thursday, 9 June, daily from 0700 to 2100 HRS, for U15 pressure/velocity testing (daily VBS cleaning required).
 - Forebay Ops:
 - Operate BON Forebay within the following constraints: 71.5 to 73.0 ft during the daytime hours of 0700 to 2100 HRS. Outside these hours, BON may operate within the normal forebay operating range of 71.5 to 76.5 ft.
 - Powerhouse Priority:
 - PH2 revised turbine unit priority order for U15 testing: 11, 18, 15, 14, 16, 12, 17, 13.
 - PH1: No change from 2022 FPP.
 - U15 Ops:
 - For BPA hydro-scheduling purposes, U15 will not be on AGC during this time but U15 will be online and will be used for testing.
 - Adjacent Unit Ops:
 - During U15 test, operate the adjacent units at the midpoint of the 1%.

The goal of this operate is to maintain a project head of 57 ft or less in order to provide hydraulic conditions to facilitate the testing of U14 and U15. Additional information on U14 and U15 test operations are described in Memorandum of Coordination 22BON007 U14 and U15 B2FGE Hydraulic Testing. This may be found on the FPOM website:

<https://pweb.crohms.org/tmt/documents/FPOM/2010/NWP%20Memos%20of%20Coordination%20and%20Notification/BON%20MOC%20and%20MFR/>

Outside the dates and times of this CBT message, ensure BON continues operating in accordance with reference to CBT message BON R 040422 1038 Spring Spill for Juvenile Fish Passage 4/10 – 6/15.

- A teletype was sent out on 23 May for Model Validation Testing for Units 1, 2, 9, and 10 at Bonneville.
 - On Tuesday 24 May, from 0700 to 1600 HRS testing is to occur for Units 1 and 2. Unit priority order is to remain unchanged from FPP guidance. Testing of each unit is estimated to take 4 hours, including:
 - 1 hour off line
 - 1 hour speed, no load
 - 1 hour mid load
 - 30 mins maximum load
 - 30 mins return to service.
 - On Wednesday 25 May, from 0700 to 1600 HRS, testing is to occur for Units 9 and 10. Unit priority order is to remain unchanged from the FPP guidance. Testing of each unit is to take 4 hours, as described above.
 - On Thursday 26 May from 0700 to 1600 HRS, potential retesting for Units 1, 2, 9, and 10 may occur with the same guidance as previous days.

If testing of any units requires modification to the turbine unit priority in order to achieve Spring Spill, then modify the unit priority as necessary to ensure testing of Units 1, 2, 9, and 10. Do not reduce Spring Spill for turbine unit testing.

Please see teletype BON R 052322 1509 for further details.

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