

MEMORANDUM FOR Biologist, Operations Division (CENWP-OD)

SUBJECT: Bonneville Project, Fishway and Fish Activities for Week 45 of 2021, which covers the period from 31 October to 06 November 2021.

1. OPERATION SUMMARY:

- a. Daily average river flows ranged from 79.8 to 134.6 kcfs. Daily average powerhouse forebay elevation ranged from 75.1' to 76.3' msl. Daily average project tailwater ranged from 7.1' to 11.9' msl. Secchi disk measurements ranged from 4.0 to 7.0+'. Daily average water temperature ranged from 54 to 56°F.
- b. Daily average spill ranged from 1.0 to 1.1 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
3	0006 on 07 Sept	---	P.O., Annual Overhaul/PT Install	---
4	0006 on 07 Sept	---	P.O., Annual Overhaul/PT Install	---
5	0839 on 04 Oct	1407 on 01 Nov	P.O., BPA Work	28 days, 5 hours, 28 mins
6	0839 on 04 Oct	1407 on 01 Nov	P.O., BPA Work	28 days, 5 hours, 28 mins
7	0839 on 04 Oct	1407 on 01 Nov	P.O., BPA Work	28 days, 5 hours, 28 mins
8	0839 on 04 Oct	1407 on 01 Nov	P.O., BPA Work	28 days, 5 hours, 28 mins
13	1428 on 04 Nov	---	F.O., Gov Sight Glass Leak	---

- 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
10/31	0.1'	0.1'
11/01	0.2'	0.2'
11/02	0.1'	0.1'
11/03	0.3'	0.4'
11/04	0.2'	0.3'
11/05	0.6'	0.7'
11/06	0.7'	0.8'

2. MAINTENANCE ACTIVITIES:

- a. Auxiliary Water System Closures:
 - FV 1-1 was closed for cleaning from 0735 to 0847 on 04 November.
 - FV 3-7 and 3-9 were placed in manual for cleaning from 1012 to 1025 on 04 November.

- FV 3-7 (Bradford Island) was placed in manual and pinched down to reduce flow in the BI AWS to prevent blown diffuser grating and further damage to FG 3-3. FG 3-4, FG 3-5, and FG 3-6 are all OOS due to mechanical failure. These settings for the A-Branch AWS and diffusers will likely remain until the problems can be addressed during the 2021-2022 winter maintenance period. Please see 21BON014 MFR A-Branch FV 3-7 and FG 3-4,5,6 OOC for further explanation on the [FPOM BON Coordination page](#).

b. STS/VBS Inspections. November STS inspections went well with nothing to report.

UNIT	Previous STS HRS	Present readings	STS-A	STS-B	STS-C	HRS RUN	REMARKS
11	62035	62516				481	
12	47415	47883				468	
13	6700	7182				482	
14	17198	17563				365	
15	25207	25435				228	
16	37750	37805				55	
17	7310	7779				469	
18	8200	8678				478	

c. Dewatering and Fish Salvages.

- The dewatering of all LPS systems occurred on the morning of 01 November. No fish were salvaged from any systems.

3. RESEARCH:

- Four Peaks Environmental - Fish counting contract: Daytime visual counting (0500 to 2100 PDT) began on 01 April. Night video (2100 to 0500 PDT) counting began 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: Smolt monitoring operations concluded for the season at the Bonneville SMF at 0700 on Sunday, 31 October. The system was put into bypass mode at that time. Full flow PIT tag interrogation will remain active until the 2-mile pipe is dewatered, in mid-December.
- USDA – Pinniped and Avian Hazing: Deck-based hazing concluded for the season on 31 October.
- WDFW/ PSMFC – Pikeminnow Sampling: Hook and line angling activities continue for native non-salmonid fish species within the BON BRZ as a constituent of Gas Bubble Trauma (GBT) monitoring.
- WDFW – Bright and Tule Chinook Stock Observation: Observation research of fall Chinook at Bonneville Dam started on 01 August.
- State Agency Pinniped Trapping: Sea lion trapping is in progress.

4. FISHWAYS:

- a. Project biologists inspected 31 October to 06 November.
- b. Fish Passage Plan observations.

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

Date	Location	FPP Violation	Cause	Response
PH1				
10/31-11/06	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., Currently dewatered to inspect end gate slot
Bradford Island				
10/31-11/06	A-Branch	FG 3-4 Partially Open	FG 3-4 Mechanically Bound Partially Open/Closed	W.O.
10/31, 11/01-03,06	A-Branch	Weir Staff Gauge Diff >1.1'	Unknown	N.A.
10/31	B-Branch	FG 3-27 Open, Should be Closed	FG 3-27 Mechanically Bound in the Open Position	Caution Order
11/01-06	BI Exit	FV 3-7 Low	Currently in Manual	Caution Order
Cascades Island: Nothing to Report.				
Washington Shore				
11/06	DSM	13AS Orifice Should be Closed	Mechanical Issue	W.O.

- Bonneville Dam is no longer in compliance with fishway temperature monitoring protocols set in the FPP (BON 2.4.2.11). Two of the twelve temperature probes at specified locations are unserviceable (B-Branch Entrance and Washington Shore LPS). One of the remaining ten serviceable temp. probes (Cascades Island Entrance Bay) is not accurately portraying current fishway temperatures when tailwater is below 10 feet. There appears to be an issue in this probe's stillwell near the bottom of the fishway. We hope to remedy this issue during the 2021-2022 winter maintenance period. Until that time, the temperature data collected from the CI Entrance Bay probe is only reliable when tailwaters are around 10 feet and above. FPC has been notified of these issues as they arise.
- 5 avian lines were cut from the B2CC avian line array on 02 September. Avian lines are installed by 10 April every year and normally remain up as a form of avian abatement through the start of winter when they may be taken down if winter maintenance activities require. These 5 lines were damaged and hanging extremely low to the water, creating a hazard for a survey vessel entering BON BRZ for a hydrosurvey on 03 Sept. These avian arrays are slated to be re-installed during the 1st or 2nd week of March 2022.
- FV 3-7 (Bradford Island) was placed in manual and pinched down to reduce flow in the BI AWS to prevent blown diffuser grating and further damage to FG 3-3. These settings for the A-Branch AWS and diffusers will likely remain until the problems can be addressed during the 2021-2022 winter maintenance period.
- FG 3-4 (A-Branch) was found mechanically bound and unable to move from the "almost closed" position in December of 2020. This diffuser will likely remain in this position until the 2021-2022 winter maintenance period.
- FG 3-5 (A-Branch) was not operating correctly on 07 June 2021 and was banging heavily underwater due to an assumed broken fish gate. To prevent further damage to the fishway and equipment, a clearance has been issued for FG 3-5 to be closed and taken out of service until the winter maintenance period.

- FG 3-6 (A-Branch) was found mechanically bound in the closed position on 07 June 2021. This diffuser will likely remain in this position until the 2021-2022 winter maintenance period.

c. Adult Fishways.

- (1) The AFF remains in service.
- (2) Sensor calibration occurred on 02 and 03 November.
- (3) SLEDs are installed at all locations.
- (4) Bradford Island, Cascades Island, and Washington Shore Fishways are in service.

d. Juvenile Fishways.

- (1) The ITS remains in service (auto-chain gates 3B, 6C, & 10B only).
- (2) The hydro-cannon was placed out of service for the winter season on 01 November.
- (3) The B2CC was closed for the season 01 September when spill season ended. The B2CC was open to float trash from 0830 to 1125 on 26 October.
- (4) The DSM remains in service.
- (5) STSs remain in service.

e. Lamprey Fishways.

- (1) BI, CI, and WA Shore LPS's were taken out of service on 01 November.
- (2) The Bradford Island Wetted Wall (BIWW) remains out of service.
- (3) The PH2 Lamprey Flume Structure (LFS) remains out of service.
- (4) The AFF lamprey trap and CI Lamprey trap remain out of service.

f. Avian Monitoring. Avian counts are recorded 01 April – 31 October.

- (1) On 02 September, 5 avian lines were cut from the B2CC avian line array. Avian lines are installed by 10 April every year and normally remain up as a form of avian abatement through the start of winter when they may be taken down if winter maintenance activities require. These 5 lines were damaged and hanging extremely low to the water, creating a hazard for a survey vessel entering BON BRZ for a hydrosurvey on 03 Sept. These avian arrays are slated to be re-installed during the 1st or 2nd week of March 2022.

Table 5. *Avian Counts for 31 October.*

Date	Gulls	Cormorants	Terns	Wh. Pelicans	Grebes
10/31	72	7	0	0	0

5. WATER QUALITY MONITORING:

- a. Fishway Temperatures. Temperature logs began on 28 February and concluded on 09 October.
- 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 sent out on 01 September with revisions to fall/winter spill priority list and fall/winter spill caps provided the order that projects spill for lack of load conditions. This order is to be used until further notice. Please see teletype BON R 090121 1544 for details.
- A teletype was sent out 06 October requesting a specific Bonneville Dam forebay operating range for sluiceway work. Effective 0600 HRS on 12 October to 1800 HRS on 29 October, Bonneville Dam is to operate their forebay within the following ranges:
 1. Soft Constraint: 73.5 – 74.5 ft (1 ft operating range)
 2. Hard Constraint: 73.0 – 74.5 ft (1.5 ft operating range)Please see teletype BON R 100621 0845 for more details.
- A teletype was sent out on 28 October cancelling the BON R 100621 0845 “Bonneville Dam Forebay Operating Range for Sluiceway Work” teletype. The work was complete, and the sluiceway was able to open early. Please see teletype BON R 102821 0947 for further details.
- A teletype was sent out on 22 October requesting that Bonneville Lock & Dam operate at a minimum forebay level of 73.5 ft, soft constraint from 29 October to 15 November. The purpose of this operation is to support the Little White Salmon Fish Hatchery with appropriate water levels for improved access to the ladder system at the hatchery during the peak of the fall Chinook run. Please see teletype BON R 102221 0905 for further details.
- A teletype was sent out on 27 October outlining BON tailwater operations for chum spawning. Effective 01 November at 0600 HRS, and until further notice, the Bonneville Dam must maintain tailwater in the following order of operating ranges as project outflow increases:
 1. During all hours, operate project outflow to provide a tailwater elevation in the range of 11.3 to 13.0 feet.
 2. Then, if necessary to increase project outflow, the tailwater may be operated up to 16.5 feet during the nighttime hours (1700-0600) with highest elevations concentrated around 2400 HRS.
 3. Then, if necessary to increase project outflow, the tailwater may be operated up to 18.5 feet during nighttime hours (1700-0600)
 4. Then, if increasing river flow precludes the ability to manage the tailwater within the step above, operate to provide a tailwater in the range of 13.0 to 16.5 feet during daytime hours (0600-1700) and up to the maximum within project 24-HR ramp rate limits during nighttime hours (1700-0600).

The goal of this operation is to improve spawning conditions at the Ives/Pierce Island Complex for chum salmon. Please see teletype BON R 102721 1011 for further details.

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