

MEMORANDUM FOR Biologist, Operations Division (CENWP-OD)

SUBJECT: Bonneville Project, Fishway and Fish Activities for Week 49 of 2021, which covers the period from 28 November to 04 December 2021.

1. OPERATION SUMMARY:

- a. Daily average river flows ranged from 125.1 to 166.4 kcfs. Daily average powerhouse forebay elevation ranged from 72.2' to 73.8' msl. Daily average project tailwater ranged from 11.8' to 14.8' msl. Secchi disk measurements ranged from 6.0 to 7.0+'. Daily average water temperature ranged from 48 to 50°F.
- b. Daily average spill ranged from 0.5 to 1.0 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	---
6	1604 on 09 Nov	1507 on 01 Dec	F.O., Oil in Tail Logs; Investigation in Progress	21 days, 23 hours, 3 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
F1	0001 on 29 Nov	---	P.O., Annual Overhaul	---
F2	1110 on 02 Dec	1120 on 02 Dec	Checking Exciter Brushes	10 mins

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

Date	F1	F2
11/28	0.2'	2.2'
11/29	---	0.3'
11/30	---	0.3'
12/01	---	0.3'
12/02	---	0.3'
12/04	---	0.5'

2. MAINTENANCE ACTIVITIES:

- a. Auxiliary Water System Closures:
- FV 1-1 was closed for cleaning from 1246 to 1310 on 29 November.
 - FV 3-7 and 3-9 were placed in manual for cleaning from 1504 to 1605 on 29 November.
 - FV 3-9 was closed for cleaning from 1600 to 1610 on 01 December.
 - 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. Nothing to report.
- c. Dewatering and Fish Salvages.
 - On 30 November, Project Fisheries assisted in the fish salvage of the Unit 6 scroll case. The reason for this outage was to investigate the source of an oil leak. No fish were recovered.
 - On 01 December, Project Fisheries conducted fish salvage operations during the removal of the Unit 6 tail logs. Biologists recovered 5 sculpin and 2 smallmouth bass in good condition and released them downstream.

3. RESEARCH:

- a. 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](#).
- b. USFWS – Lamprey Metamorphosis Study: Juvenile lamprey researchers are onsite, and the work is underway.
- c. 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.

4. FISHWAYS:

- a. Project biologists inspected 28 November to 01 December.
- b. Fish Passage Plan observations.

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

Date	Location	FPP Violation	Cause	Response
PH1				
11/28-12/04	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.
Bradford Island				
11/28-12/04	A-Branch	FG 3-4 Partially Open	FG 3-4 Mechanically Bound Partially Open/Closed	W.O.
11/30	A-Branch	Weir Staff Gauge Diff.>1.1'	Unknown	N.A.
Cascades Island				
11/30,12/01	Cascades Island	FG 6-18 Closed, Should be Open	Unknown	Mechanics Notified
Washington Shore. Nothing to Report.				

- 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 December.
- (3) SLEDs are installed at all locations.
- (4) Cascades Island and Washington Shore Fishways are in service. The Bradford Island Fishway was taken to orifice flow on 02 December to prepare for the Bradford Island Fishway dewatering starting on 06 December.

d. Juvenile Fishways.

- (1) The ITS remains in service (auto-chain gates 3B, 6C, & 10B only).
- (2) The hydro-cannon remains out of service.
- (3) The B2CC was closed for the season 01 September when spill season ended.
- (4) The DSM remains in service.
- (5) STSs remain in service.

e. Lamprey Fishways.

- (1) BI, CI, and WA Shore LPS's remain out of service.
- (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.

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 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.

- A teletype distributed on 18 November stated a Bonneville forebay restriction. The document requests that BPA operate the Bonneville forebay below a maximum of 74.0 feet, soft constraint during the following dates and times:
 1. 29 Nov – 03 Dec, 0600-1800 HRS
 2. 06 Dec – 10 Dec, 0600-1800 HRS
 3. 13 Dec – 17 Dec, 0600-1800 HRS
 4. 20 Dec – 22 Dec, 0600-1800 HRS

This forebay operation supports marine construction in the Bonneville Pool near the mouth of Rock Creek in the Columbia River, river mile 150. Please see teletype BON R 111821 1135 for more details.

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