

**MEMORANDUM FOR Biologist, Operations Division (CENWP-OD)**

**SUBJECT:** Bonneville Project, Fishway and Fish Activities for **Week 35** of 2021, which covers the period from **29 August to 04 September 2021**.

**1. OPERATION SUMMARY:**

- a. Daily average river flows ranged from 90.6 to 131.3 kcfs. Daily average powerhouse forebay elevation ranged from 74.6' to 75.3' msl. Daily average project tailwater ranged from 8.4' to 11.6' msl. Secchi disk measurements remained at 7.0'. Daily average water temperature ranged from 68°F to 70°F.
- b. Daily average spill ranged from 0.6 to 51.5 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)
- On 03 September, the Bonneville Spillway was tagged out for a hydrosurvey lasting 5 hours. Please see 21BON075 MOC Pre-Rock Removal Hydrosurvey for more details.
- 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
2	0012 on 09 Aug	0213 on 01 Sept	P.O., Annual Overhaul	23 days, 2 hours, 1 min
8	1152 on 30 Aug	1252 on 30 Aug	P.O., Switch DC Pref. AC Power	1 hour
12	1201 on 31 Aug	1337 on 31 Aug	P.O., Change DC Bank	1 hour, 36 mins
11	1342 on 31 Aug	1407 on 31 Aug	P.O., Change DC Bank	25 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	2130 on 28 Aug	0558 on 29 Aug	R.S., Nighttime Lamprey Ops	8 hours, 28 mins
F2	2129 on 29 Aug	0559 on 30 Aug	R.S., Nighttime Lamprey Ops	8 hours, 30 mins
F1	1403 on 30 Aug	1412 on 30 Aug	R.S., DC Swap	9 mins
F2	1415 on 30 Aug	1434 on 30 Aug	R.S., DC Swap	19 mins
F1	2129 on 30 Aug	0559 on 31 Aug	R.S., Nighttime Lamprey Ops	8 hours, 30 mins
F1	1456 on 31 Aug	1506 on 31 Aug	R.S., DC Swap	10 mins
F2	2139 on 31 Aug	0631 on 01 Aug	R.S., Nighttime Lamprey Ops	8 hours, 52 mins

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

Date	F1	F2
08/29	0.2'	0.5'
08/30	0.2'	0.2'
08/31	0.2'	0.5'
09/01	0.2'	0.1'
09/02	0.3'	0.2'
09/03	0.3'	0.2'
09/04	0.2'	0.2'

## 2. MAINTENANCE ACTIVITIES:

- Auxiliary Water System Closures.
  - FV 1-1 was closed for cleaning from 1519 to 1535 on 02 September.
  - 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.  
<http://pweb.crohms.org/tmt/documents/FPOM/2010/>
- STS/VBS Inspections. September 2021 STS Inspection Results: No issues to report.

UNIT	Previous STS HRS	Present readings	STS-A	STS-B	STS-C	HRS RUN	REMARKS
11	60362	61010				648	
12	45979	46397				418	
13	5624	5816				192	
14	16536	16646				110	
15	24902	24966				64	
16	37623	37673				50	
17	5908	6292				384	
18	6523	7170				647	

- Dewatering and Fish Salvages. Nothing to report.

## 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. Researchers are installing lights on tanks for photoperiod.
- Pacific States Marine Fisheries Commission - Smolt Monitoring: Sample collections at the 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 aquatic macrophytes, a few sticks and dead adult American shad. Normal sampling operations (24-hour sampling, everyday) resumed on 24 August (Sample end-date of 25 August) when average daily forebay temperatures descended to 69.5°F. Gas Bubble Trauma (GBT) examinations concluded for the season as of 25 July due to high river temperatures, low TDG levels and the inability to meet the 50 fish minimum sample size criteria.

Three salmon fallbacks were observed this week. Truck releases of summer/fall out-migrants originating from Little Goose and Lower Granite dams continued at Bonneville every other day. No fish collections for research purposes were conducted this week. More details can be found on the [FPC web page](#).

- d. USDA – Pinniped and Avian Hazing: Deck-based hazing continues for the late summer/fall season.
- e. 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.
- f. CRITFC – Adult Salmonid Sampling: Adult Salmonid sampling in the AFF began on 20 April and typically occurs 5 days per week. Normal sampling protocols are in place.
- g. WDFW – Bright and Tule Chinook Stock Observation: Observation research of fall Chinook at Bonneville Dam started on 01 August.
- h. Pre-Rock Removal Hydrosurvey: On 03 September, a pre-rock removal hydrosurvey was conducted in the Main Dam tailrace. To conduct this survey, the spillway was locked out/tagged out for the morning including closing spill bays 1-18. Spill bays 1 and 18 would normally be open to 1 stop during the day hours on this day for attraction flow. Please see 21BON075 MOC Pre-Rock Removal Hydrosurvey for more details.
  - On 02 September, during pre-hydrosurvey preparation, 5 avian wires from the B2CC were discovered damaged and hanging extremely low to the water, creating a hazard for the survey vessel entering BON BRZ for the hydrosurvey. These 5 lines were cut.

**4. FISHWAYS:**

- a. Project biologists inspected 29 August to 04 September.
- b. Fish Passage Plan observations.

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

Date	Location	FPP Violation	Cause	Response
PH1				
08/29-09/04	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.
09/04	PH1CC	North Ent/TW Diff >2.0'	Unknown	N.A.
Bradford Island				
08/29-09/04	A-Branch	FG 3-4 Partially Open	FG 3-4 Mechanically Bound Partially Open/Closed	W.O.
08/29, 09/02,04	A-Branch	Weir Staff Gauge Diff >1.1'	Unknown	
08/29-09/04	B-Branch	FG 3-27 Open, Should be Closed	FG 3-27 Mechanically Bound in the Open Position	Caution Order
08/29-09/04	BI Exit	FV 3-7 High	Currently in Manual	Caution Order
Cascades Island: Nothing to Report.				
Washington Shore				
08/30, 09/03	WA Shore Fishway	Weir 37 High >1.1'	Unknown	N.A.

- 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.
- 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.
- On 03 September, the Bonneville Spillway was tagged out for a hydrosurvey lasting 5 hours. Please see 21BON075 MOC Pre-Rock Removal Hydrosurvey for more details. This operation put BON Spillway OOC for attraction flow during these hours.
- 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 01 September.
- (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 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) was placed back into service on 01 September.
- (4) The AFF lamprey trap remains in service
- (5) The CI Lamprey trap remains in 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.

**Table 5.** Avian Counts for 29 August to 04 September.

Date	Gulls	Cormorants	Terns	Wh. Pelicans	Grebes
08/29	40	6	0	0	0
08/30	54	4	0	0	0
08/31	54	7	0	0	0
09/01	24	1	0	0	0
09/02	12	7	0	0	0
09/03	13	2	0	0	0
09/04	7	4	0	0	0

**5. WATER QUALITY MONITORING:**

a. Fishway Temperatures. Temperature logs began on 28 February and will continue through 30 November.

**Table 6.** Bonneville Fishway Temperatures for 29 August to 04 September.

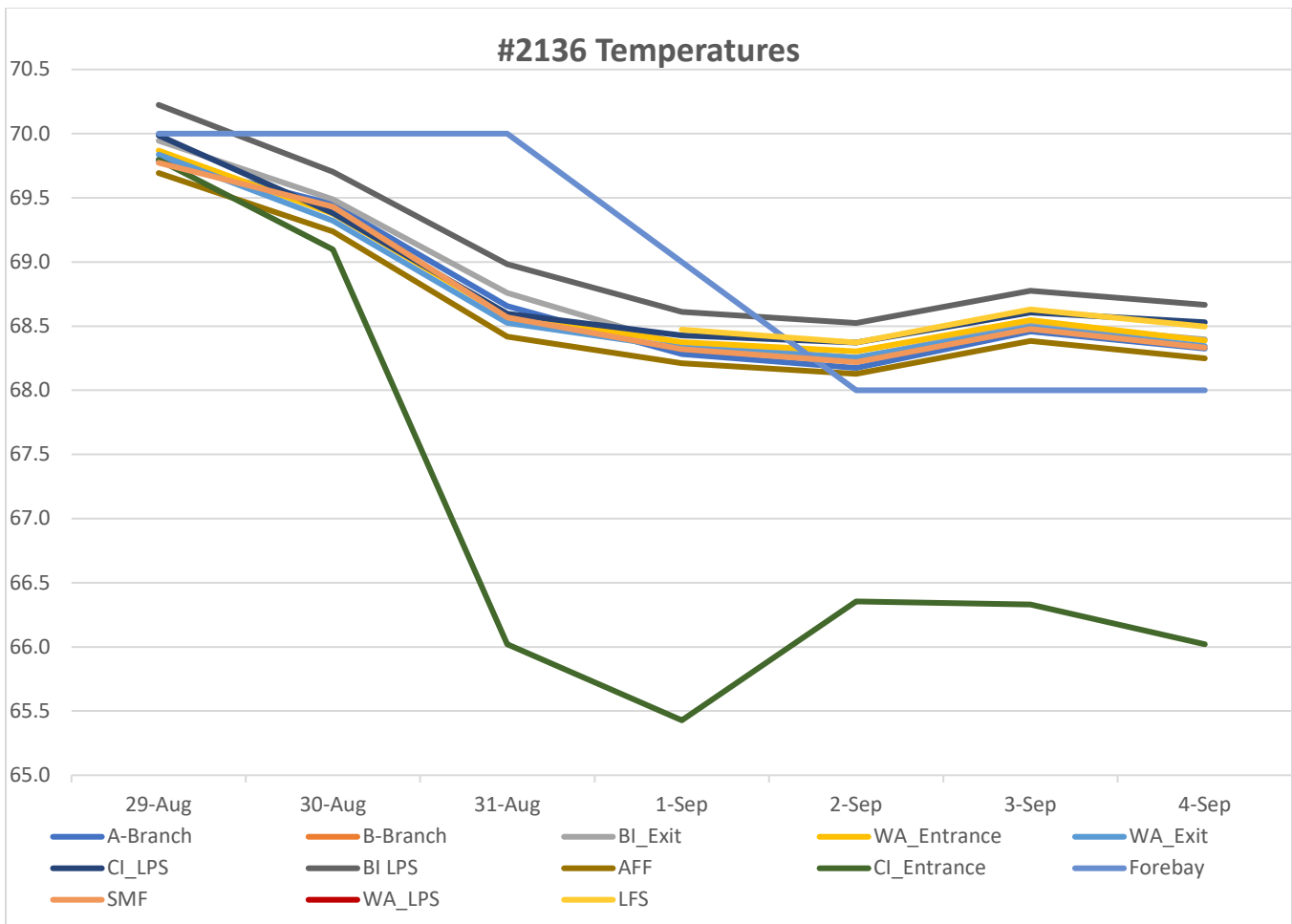
Date	A-Branch	B-Branch	BI_Exit	WA_Entrance	CI_Entrance	WA_Exit	CI_LPS	WA_LPS	BI_LPS	AFF	LFS	SMF	Forebay
29-Aug	69.8	***	69.9	69.9	69.8	69.8	70.0	***	70.2	69.7	***	69.8	70
30-Aug	69.4		69.5	69.4	69.1	69.3	69.4		69.7	69.2		69.4	70
31-Aug	68.7		68.8	68.6	66.0	68.5	68.6		69.0	68.4		68.6	70
1-Sep	68.3		68.4	68.4	65.4	68.3	68.4		68.6	68.2	68.5	68.3	69
2-Sep	68.2		68.3	68.3	66.4	68.3	68.4		68.5	68.1	68.4	68.2	68
3-Sep	68.5		68.5	68.5	66.3	68.5	68.6		68.8	68.4	68.6	68.5	68
4-Sep	68.3		68.4	68.4	66.0	68.3	68.5		68.7	68.2	68.5	68.3	68

\*\*\*The LFS Trap was placed back into service on 01 September\*\*\*

\*\*\*B-Branch Entrance temp. probe is no longer serviceable. We are currently working on finding a replacement temp. probe\*\*\*

\*\*\*The WA Shore LPS temp. probe is no longer transmitting data. We are working to find a replacement probe\*\*\*

\*\*\*The Cascades Island temp. probe has not been collecting data correctly at low tailwaters. The data collected does not provide an accurate representation at the low tailwaters we had this week.\*\*\*



**Figure 1.** Average fishway temperatures for 29 August to 04 September at Bonneville Lock & Dam.

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 and is to be used until further notice. Please see teletype BON R 090121 1544 for details.
- A teletype sent out on 31 August stated Bonneville spillway would be locked out and unavailable from 0900 to 1500 HRS on 03 September during an outage for a hydrosurvey taking place in the Main Dam tailrace. Please see teletype BON R 083121 1050 for details.
- A teletype was sent out on 18 August requesting that Bonneville pool operate at a 1.5 ft band, hard constraint for the following periods:  
 From 0600 HRS Monday August 23 to 1800 HRS Thursday August 26 2021  
 From 0600 HRS Monday August 30 to 1800 HRS Thursday September 2 2021  
 The purpose of this operation is for treaty fishery. Please see teletype BON R 08182021 1405 for more details.

- A teletype was sent out on 03 September requesting that the Bonneville pool operate at a 1.5 ft band, hard constraint from 0600 HRS on 06 September to 1800 HRS on 10 September. The goal of this operation is to limit pool fluctuation for treaty fishery. Please see teletype BON R 090321 1200 for more details.

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