

2025 Annual Fishway Status Report for Bonneville Project



Jeanette Wendler, Tucker Gossett, Becca Cates
and Jase Owens

U. S. Army Corps of Engineers
Bonneville Lock & Dam
Cascade Locks, OR 97014
(541) 374-4598

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Glossary

AFF -----	Adult Fish Facility. Research lab associated with the Washington Shore ladder.
AIS -----	Aquatic Invasive Species
AWS -----	Auxiliary Water Supply.
B2CC -----	Powerhouse Two Corner Collector. A surface bypass system located in the southern corner of the Bonneville Second Powerhouse forebay.
BI-----	Bradford Island Fishway.
BIWW -----	Bradford Island Wetted Wall.
BiOp -----	Biological Opinion.
BPA -----	Bonneville Power Administration.
CI-----	Cascades Island Fishway.
CC-----	Collection Channel - Part of the adult fishway spanning the length of the downstream side of each powerhouse.
CPUE -----	Catch Per Unit Effort. Also known as catch rate.
DSM2-----	Downstream Migrant transportation channel (PH2). Transport channel for juvenile fish from gateway orifices to the juvenile transport pipe.
FDX-----	Full-duplex Pit detection; smaller and faster tag that can receive and transmit simultaneously.
FG -----	Fish diffusion gate.
FGE -----	Fish Guidance Efficiency.
FOG-----	Floating Orifice Gate.
Forebay -----	That area of a reservoir immediately upstream of a dam.
FPOM-----	Fish Passage Operations and Maintenance Coordination Team
FPP -----	Fish Passage Plan.
FG-----	Fish Gate
FO -----	Forced Outage not planned or coordinated with the FPP.
FU -----	Fish Unit. Provides auxiliary water to PH2 entrance diffusers.
FV -----	Fish Valve.
HDX -----	Half-duplex Pit detection; larger & slower tag that transmits then receives.
ITS -----	Ice and Trash Sluiceway.
IWW -----	In water work period (01-December through 28-February).
JBS -----	Juvenile Bypass System.
JMF -----	Juvenile Monitoring Facility. Lab associated with the PH2 JBS.
LFS-----	Lamprey Flume System.
LPS -----	Lamprey Passage Structure
MU -----	Main Unit. PH1 turbine units 1-10, PH2 units 11-18.
MUB -----	Main Unit Breaker
NA -----	Not Available
NDE-----	North Downstream Entrance. Overflow weir adult fishway entrances at PH2.
NUE-----	North Upstream Entrance. See NDE.
NOAA -----	National Oceanic and Atmospheric Administration.
NZMS -----	New Zealand Mud Snails.
OH -----	Overhaul
OOS-----	Out of Service.
OWS -----	Oil Water Separator.
PH1-----	Bonneville Powerhouse One.
PH2-----	Bonneville Powerhouse Two.
PIT -----	Passive Integrated Transponder. A tag inserted into juvenile and adult fish. Detectors are installed at all fish passage systems.
Project -----	Bonneville Lock & Dam.
PO -----	Planned Outage
ROV-----	Remotely Operated Vehicle.
RS -----	Reserve Shutdown; A unit in reserve shutdown is available, but not currently generating power.
RTS -----	Return To Service
SDE -----	South Downstream Entrance. See NDE.
SLED -----	Sea Lion Exclusion Device
SUE -----	South Upstream Entrance. See NDE.
STS-----	Submersible Traveling Screen.

Tailrace -----	The portion of a river immediately downstream of a dam or powerhouse.
TDG-----	Total dissolved gas.
TMT -----	Technical Management Team.
UMT-----	Upstream Migrant Transportation channel. This channel connects Cascades Island ladder to Washington Shore ladder through PH2.
VBS -----	Vertical Barrier Screen.
WDFW -----	Washington Department of Fish & Wildlife.

1. INTRODUCTION

1.1 Introduction

This **2025** Project Fisheries Annual Report for Bonneville Project summarizes activities occurring from **01 December 2024 through 30 November 2025** and is required by the Fish Passage Plan (FPP), per **FPP Section 2.5.2.3**.

The Project includes two powerhouses, a spillway, and one operating navigation lock. There are three adult fish ladders, with entrances located at the north and south ends of each powerhouse and spillway for upstream migration. There are five primary routes of downstream passage at the Project, the Main Dam spillway, an Ice and Trash Sluiceway (ITS) at Powerhouse 1 (PH1), a Downstream Migrant Transportation Channel (DSM2) at Powerhouse Two (PH2), the Corner Collector at PH2 (B2CC), and the turbines at both powerhouses. **(Figure 1)**.

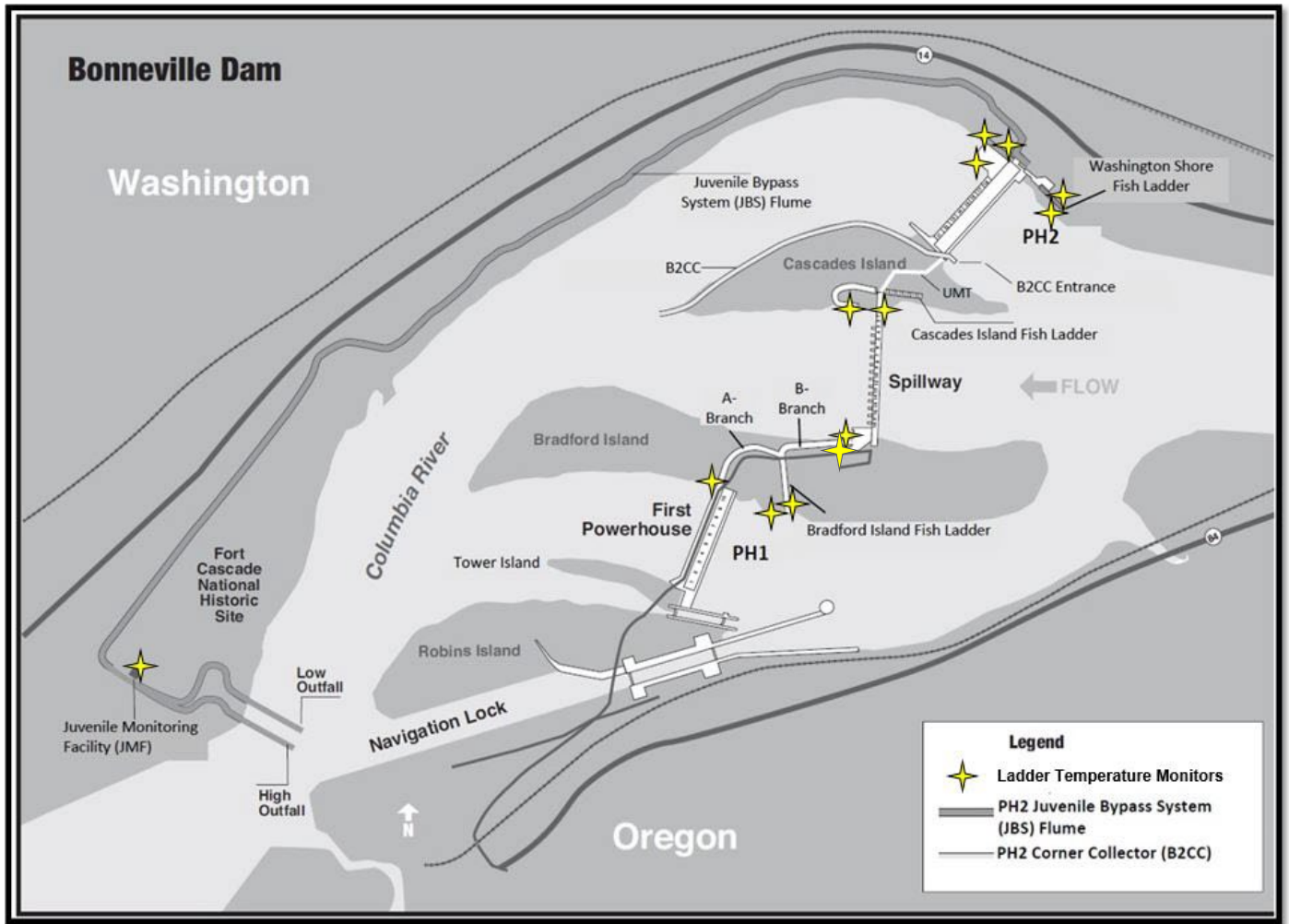


Figure 1. Bonneville Lock and Dam. Image obtained from FPP (2025).

2. OPERATIONS

2.1 Fish Facility Outages

Table 1 shows the outage dates for Bonneville fishways, fish facilities, and lamprey passage structures.

Table 1. Seasonal Fish Facility Outages.

Fish Facility	OOS DATE 2024	IN SERVICE DATE 2025	OOS DATE 2025	REASON FOR OUTAGE
BI LADDER	N/A	N/A	10-Dec	Winter Maintenance
A-BRANCH	N/A	N/A	10-Dec	Winter Maintenance
B-BRANCH	N/A	N/A	10-Dec	Winter Maintenance
CI LADDER	04-Dec	05-Mar	N/A	Winter Maintenance
WA SHORE LADDER	03-Dec	05-Mar	N/A	Winter Maintenance
UMT	04-Dec	05-Mar	N/A	Winter Maintenance
BI LPS	07-Nov	09-Apr	31-Oct	Winter Maintenance
CI LPS	07-Nov	09-Apr	31-Oct	Winter Maintenance
WA AWS LPS	07-Nov	10-Apr	31-Oct	Winter Maintenance
B-BRANCH LAMPREY TRAP	05-Sept	16-Jun	04-Sep	Low CPUE (seasonal)
AFF LAMPREY TRAP	05-Sept	04-Jun	05-Sep	Low CPUE (seasonal)
CI LAMPREY TRAP	06-Sept	30-Jul	05-Sep	Low CPUE (seasonal)
BI WETTED WALL	07-Nov	09-Apr	23-Apr	Maintenance Issues
B2CC	01-Sep	01-Mar	01-Sep	End of Juvenile Spill Operations
DSM	23-Dec	18-Feb	22-Dec	Winter Maintenance
AFF	18-Nov	20-Mar	17-Nov	Winter Maintenance
SMF	23-Dec	18-Feb	22-Dec	Winter Maintenance

2.2 Turbine Outages

Table 2 shows turbine outages that lasted 24 hours or longer. Note that turbine outages lasting less than 24 hours did occur but are not included for the sake of brevity.

Table 2. Turbine Outages Lasting Greater Than 24 Hours.

Definitions: Planned Outage (P.O.), Forced Outage (F.O.), and Reserve Shutdown (R.S.)

Unit	OOS Date	RTS Date	Duration	Reason For Outage
18	0756 on 16 Dec 2024	1609 on 27 May 2025	162 days, 8 hours, 13 minutes	P.O., 4 Year Overhaul turned into F.O., due to stator ground
10	1714 on 03 Jan 2024	1437 on 23 Jan 2025	385 days, 21 hours, 23 minutes	F.O., Oil Leak Investigation
9	1220 on 11 Jan 2024	1559 on 16 April 2025	461 days, 3 hours, 39 minutes	F.O., Oil Leak Investigation
7	1409 on 15 Feb 2024	1456 on 01 July 2025	537 days, 0 hours, 47 minutes	F.O., Oil Leak Investigation
2	1013 on 26 Feb 2024	---	---	F.O., Oil Leak Investigation
8	1359 on 26 Feb 2024	1541 on 12 August 2025	533 days, 1 hour, 42 minutes	F.O., Oil Leak Investigation
5	1433 on 26 Feb 2024	1242 on 21 May 2025	449 days, 22 hours, 9 minutes	F.O., Oil Leak Investigation
1	0522 on 10 Feb 2025	1432 on 27 Feb 2025	17 days, 9 hours, 10 minutes	P.O., Annual Overhaul
17	1841 on 05 Mar 2025	1650 on 06 Mar 2025	1 day, 10 hours, 9 minutes	F.O., STS Failure
12	1300 on 07 April 2025	1649 on 08 April	1 day, 3 hours, 49 minutes	F.O., Leak in Governor Valve
16	1155 on 14 April 2025	1415 on 11 June 2025	58 days, 2 hours, 20 minutes	P.O., 4 Year Overhaul/ T12 Transformer Maintenance
15	1234 on 14 April 2025	1552 on 01 May 2025	17 days, 3 hours, 18 minutes	P.O., Annual T12 Outage
17	1552 on 01 May 2025	1146 on 05 May 2025	3 days, 19 hours, 54 minutes	F.O., Cooling Water Pipe Leak
14	0008 on 02 June 2025	1253 on 05 June 2025	3 days, 12 hours, 45 minutes	P.O., Annual Overhaul
1	0743 on 05 June 2025	---	---	F.O., Air Cooler Leaks
5	1155 on 04 June 2025	0821 on 19 November	167 days, 21 hours, 9 minutes	F.O., Air Cooler Leaks
18	0654 on 04 July 2025	1322 on 07 July 2025	3 days, 6 hours, 28 minutes	F.O. Broken SSG plate and wiring interference
6	0712 on 21 July 2025	1600 on 31 July 2025	10 days, 8 hours, 48 minutes	P.O., Bank 5/6 Outage
18	2122 on 02 August 2025	1051 on 11 August 2025	8 days, 13 hours, 29 minutes	F.O., STS "A" Slot Trip
11	0006 on 04 August 2025	1508 on 20 August	16 days, 15 hours, 2 minutes	T11 Maintenance Outage
12	0006 on 04 August 2025	1508 on 20 August	16 days, 15 hours, 2 minutes	T11 Maintenance Outage
13	0006 on 04 August 2025	1508 on 20 August	16 days, 15 hours, 2 minutes	T11 Maintenance Outage
14	0006 on 04 August 2025	1508 on 20 August	16 days, 15 hours, 2 minutes	T11 Maintenance Outage

18	1212 on 25 August	1421 on 02 September	8 days, 2 hours, 9 minutes	F.O., Turbine Bearing Oil Leak
9	1043 on 15 October	---	---	F.O., Air Cooler Leaks
13	0302 on 03 November	1524 on 06 November	3 days, 12 hours, 22 minutes	P.O., Annual OH

2.3 Fish Removal

Fish passage facilities and turbine units are taken out of service and dewatered to allow for inspection, preventative maintenance, repairs, and modifications. As facilities and turbine units are dewatered, project biologists follow procedures outlined in the FPP to minimize impacts on fish. Adult salmonids and adult lamprey are generally released into the forebay above the new navigation lock. Juvenile salmonids, juvenile lamprey, and sturgeon are generally released below the dam at the Hamilton Island boat ramp. **Table 3** is a summary of the number of fish that were removed during facility and turbine unit dewatering's. All fish were recovered in good condition unless otherwise noted.

Table 3. Fish Salvages at Bonneville December 2024 – November 2025.

<u>Date</u>	<u>Location</u>	<u>Fish Salvaged</u>	<u>Release Site</u>	<u>Reason for Outage</u>
12/3/2024	WA Shore Serpentine/AWS	18 Suckers, 729 Peamouth, 4 Sculpin, 73 Pikeminnow, 20 Adult Coho, 22 Adult Steelhead, 49 Lamprey, 1 Adult Chum, 1 Bullhead Catfish, 11 Smallmouth Bass	Upstream, Navlock Forebay	Winter Maintenance
12/4/2024	UMT	395 Peamouth, 35 Pikeminnow, 7 Adult Steelhead, 3 Smallmouth Bass, 1 Catfish, 2 Sculpin, 2 Lamprey, 3 Walleye, 6 Juvenile Salmonids	Upstream, Navlock Forebay	Winter Maintenance
12/4/2024	CI Serpentine/AWS	2 Pikeminnow, 11 Peamouth, 9 Adult Steelhead, 2 Sculpin, 2 Adult Lamprey, 8 Smallmouth Bass, 2 Juvenile Salmonids, 6 Pumpkinseed, 2 Bluegill, 19 Yellow Perch, 15 Shad, 6 Stickleback	Upstream, Navlock Forebay	Winter Maintenance
12/5/2024	WA Shore UMT	4 Juvenile Salmonids, 1 Juvenile Lamprey, 6 Sculpin, 8 Carp, and Approximately 100 Various Northern Pikeminnow, Peamouths, Suckers, and Chiselmouths.	Downstream, Hamilton Island Boat Launch	Winter Maintenance
12/10/2024	Unit 6 Scroll Case	1 Juvenile Lamprey	Downstream, Hamilton Island Boat Launch	Preparation for RTS after F.O.
12/10/2024	Unit 6 Draft Tube	1 Juvenile Sturgeon (~3ft)	Downstream, Hamilton Island Boat Launch	Preparation for RTS after F.O.
12/11/2024	PH2 North Collection Channel	3 Adult Steelhead, 4 Adult Coho, 2 Rainbow Trout, 4 Juvenile Salmonids, 7 Adult Carp, 3 Bass, 23 Peamouth, 2 Adult Shad, Approximately 378 Juvenile Shad, and Approximately 12 Yellow Perch.	Upstream, Navlock Forebay	Winter Maintenance
12/12/2024	PH2 South Collection Channel	4 Adult Steelhead, 2 Adult Coho, 1 Subadult White Sturgeon, 2 Juvenile White Sturgeon, 5 Juvenile Salmonids, 1 Juvenile Lamprey, Approximately 350 Juvenile American Shad, and Approximately 50 Yellow Perch.	Upstream, Navlock Forebay	Winter Maintenance
12/16/2024	Unit 18 Scroll Case	1 Yellow Bullhead.	Downstream, PH2 Tailrace	4-Year Overhaul

12/17/2024	Unit 18 Draft Tube	No Fish.	N/A	4-Year Overhaul
12/17/2024	PH2 AWS	1 Juvenile Salmonid, 5 Yellow Perch, 19 Sculpin, 4 Crawdads, 8 Juvenile American Shad, 1 Juvenile Catfish	Downstream, Hamilton Island Boat Launch	Winter Maintenance
12/18/2024	Cascade Island-Upper Diffuser Pits	1 Live Adult Coho Salmon, 2 Live Adult Steelhead, 1 Dead Adult Coho Salmon (MFR).	Upstream, Navlock Forebay	Winter Maintenance
12/23/2024	PH2 DSM2 Channel	1 Juvenile Sculpin.	Downstream, PH2 Tailrace	Winter Maintenance
1/7/2025	Cascades Island Entrance	1 Perch	Downstream	Winter Maintenance
1/17/2025	Unit 10 Tail logs	1 Juvenile Lamprey, 17 Crawdad, 11 Sculpin, 28 Bluegill/Pumpkinseed/Crappie, 2 Yellow Perch, 8 Peamouth/Suckers	Downstream	Preparing Unit for Commissioning (RTS)
1/21/2025	Cascades Island FG6-5 Diffuser Pit	2 Rainbow Trout, 1 Juvenile Salmonid, 7 Juvenile Lamprey (Ammocoetes), 1 Yellow Bullhead Catfish, 2 Suckers, 1 Pikeminnow, 10 Sculpin, 3 Sticklebacks, 3 Crawfish	Downstream	Winter Maintenance
1/21/2025	Cascades Island FG6-6 Diffuser Pit	2 Juvenile Lamprey (Ammocoetes), 1 Bullhead Catfish, 1 Bluegill/Pumpkinseed/Crappie, 2 Sculpin	Downstream	Winter Maintenance
1/21/2025	Cascades Island FG6-7 Diffuser Pit	2 Sculpin, 1 Smallmouth Bass	Downstream	Winter Maintenance
1/22/2025	Cascades Island FG6-8 Diffuser Pit	1 Catfish, 1 Crawdad, 1 Peamouth/Pikeminnow	Downstream	Winter Maintenance
1/22/2025	Cascades Island FG6-9 Diffuser Pit	70 Stickleback, 38 Banded Killifish, 24 Sculpin, 2 Bullhead Catfish, 2 Juvenile Salmonids, 1 Pumpkinseed/Bluegill, 2 Crawdad, 2 Smallmouth Bass	Downstream	Winter Maintenance
1/22/2025	Cascades Island FG6-10 Diffuser Pit	1 Juvenile Steelhead, 24 Stickleback, 8 Sculpin, 1 Banded Killifish	Downstream	Winter Maintenance
1/23/2025	Cascades Island FG6-11 Diffuser Pit	11 Stickleback, 2 Bullhead Catfish, 1 Sculpin, 1 Juvenile Carp, 1 Juvenile Pacific Lamprey (Ammocoete)	Downstream	Winter Maintenance
1/23/2025	Cascades Island FG6-15 Diffuser Pit	12 Sculpin, 1 Crappie/Bluegill/Pumpkinseed/Lepomis Spp, 8 Stickleback	Downstream	Winter Maintenance
1/23/2025	Cascades Island FG6-14 Diffuser Pit	2 Stickleback, 1 Sculpin	Downstream	Winter Maintenance
1/23/2025	Cascades Island FG6-13 Diffuser Pit	0 Fish	N/A	Winter Maintenance
1/23/2025	Cascades Island FG6-12 Diffuser Pit	0 Fish	N/A	Winter Maintenance
1/23/2025	Cascades Island FG6-18--6-20 Diffuser Pits	5 Sculpin, 8 Stickleback	Downstream	Winter Maintenance
1/23/2025	Cascades Island FG6-16 and 6-17 Diffuser Pits	0 Fish	N/A	Winter Maintenance

2/19/2025	PH1 Unit 9 Scroll Case	3 Juvenile Sculpin	Upstream, Navlock Forebay	Oil Leak Investigation
2/19/2025	PH1 Unit 9 Draft Tube	2 Live Juvenile Smallmouth Bass, 1 Dead Juvenile Smallmouth Bass, 8 Stickleback	Upstream, Navlock Forebay	Oil Leak Investigation
3/6/2025	PH1 Unit 5 Scroll Case	1 Salmonid Fry	Downstream	Oil Leak Investigation
3/6/2025	PH1 Unit 5 Draft Tube	9 Salmonid Fry, 1 Stickleback	Downstream	Oil Leak Investigation
3/5/2025	Unit 6 Tail Logs	20 Sculpin, 5 Peamouth, 20 Crawdad	Downstream	Oil Leak Investigation
3/11/2025	Navigation Lock 2 Upper Sill	7 Juvenile Salmonids, 1 Salmonid Fry, 1 Crawdad	Downstream	Annual Outage
4/15/2025	PH1 Unit 9 Tail Logs	5 Sculpin, 3 Crawdads, 2 Three-Spined Sticklebacks, 1 Carp	Downstream	F.O., Oil Leak Investigation & Repairs
4/17/2025	Unit 16 Scroll Case	No Fish	N/A	P.O., 4 Year Overhaul
4/17/2025	Unit 16 Draft Tube	4 Juvenile Salmonids, 4 Sculpin, 4 Peamouth	Downstream	P.O., 4 Year Overhaul
5/20/2025	Unit 18 Tail Logs	55 Sculpin, 25 Siberian Prawns, 20 Pacific Lamprey Ammocoetes, 6 Crawdads, And 2 Smallmouth Bass.	Downstream	P.O., 4 Year Overhaul turned into F.O., due to stator ground
5/21/2025	Unit 5 Tail Logs	Approximately 200 Sculpin, 2 Peamouth, 1 Pumpkinseed, And 1 Juvenile Salmonid, And 25 Crawdads	Downstream	F.O., Oil Leak Investigation & Repairs
5/22/2025	Unit 7 Scroll Case	1 Juvenile Pacific Lamprey (Ammocoete), 4 Pumpkinseed, 3 Smallmouth Bass, 3 Sculpin, 6 Crawdads	Upstream, Navlock Forebay	Preparing Unit for Commissioning (RTS)
5/23/2025	Unit 7 Draft Tube	1 Sculpin	Downstream	Preparing Unit for Commissioning (RTS)
6/11/2025	Unit 16 Tail Logs	10 Sculpin, 1 Walleye	Downstream	Preparing Unit for Commissioning (RTS)
6/30/2025	Unit 7 Tail Logs	13 Sculpin, 1 Bluegill, 20 Crawdad	Downstream	Preparing Unit for Commissioning (RTS)
7/9/2025	Unit 8 Scroll Case	11 Juvenile Three-Spined Sticklebacks	Upstream	F.O., Oil Leak Investigation & Repairs
7/9/2025	Unit 8 Draft Tube	8 Sculpin, 1 Crawdad	Upstream	F.O., Oil Leak Investigation & Repairs
8/5/2025	Unit 2 Scroll Case	5 Sculpin, 3 Crawdad, 6 Juvenile Shad, 1 Stickleback	Upstream	F.O., Oil Leak Investigation & Repairs
8/5/2025	Unit 2 Draft Tube	5 Sculpin, 6 Juvenile Shad	Upstream	F.O., Oil Leak Investigation & Repairs
8/7/2025	Unit 8 Tail Logs	16 Sculpin, 17 Crawdad	Downstream	F.O., Oil Leak Investigation & Repairs

8/8/2025	Unit 1 Scroll Case	1 Juvenile Salmonid, 1 Three-Spine Stickleback, 4 Northern Pikeminnow, 10 Juvenile Smallmouth Bass, 15 Sculpin, 6 Crawdads	Hamilton Island Boat Launch	F.O., Air cooler failure
8/8/2025	Unit 1 Draft Tube	1 Subadult Sturgeon (3.5' Total Length), 5 Sculpin, 1 Juvenile Smallmouth Bass, 2 Crawdads	Hamilton Island Boat Launch	F.O., Air cooler failure
8/27/2025	Unit 18 Scroll Case	8 Juvenile Carp, 7 Juvenile Brown Bullhead, 5 Juvenile Shad	Downstream	F.O. High Hat O-Ring Oil Leak
9/2/2025	Unit 18 Tail Logs	5 Juvenile Shad, 3 Smallmouth Bass, 1 Sculpin, 1 Crawdad	Downstream	F.O. High Hat O-Ring Oil Leak
11/17/2025	Adult Fish Facility	9 Adult White Sturgeon, 2 Adult Steelhead, 15-20 Smallmouth Bass, and Approximately 2,000 various Peamouth, Pike minnow, Suckers, and Shad	Downstream (Sturgeon), WA Shore Ladder (Rest of fish)	Dewater/Salvage for Winter Maintenance

2.4 Fish Unit Outages

A list identifying all Fish Unit 1 and Fish Unit 2 shutdowns (RS and OOS) is shown in **Table 4**. Throughout the year, the fish units are cleaned using a crane-operated trash rake during working hours. On weekends when personnel are unavailable to operate the trash rake, debris accumulation may occur to the point of causing excessive drawdowns, requiring the units to be “floated” to prevent potential trash rack or unit damage. During high debris loading, this may also occur overnight between daytime trash raking. When floating, the units may be placed in RS between 2200 and 0400 hours to minimize impact on adult fish passage. An adjacent unit is then operated to pull trash away from the Fish Unit trashracks. Nighttime Lamprey Operations occur 01 June to 31 August. This operation requires reduced fish unit output to operate all north (NUE, NDE) and south (SUE, SDE) entrances at 0.5' of entrance head.

Table 4. List of Fish Unit Outages.

Definitions: Reserve Shutdown (R.S.) and Planned Outage (P.O.).

<u>Unit</u>	<u>OOS/RS</u>	<u>RTS</u>	<u>Duration</u>	<u>Reason For Outage</u>
F1	0836 on 02 Dec	1315 on 05 Mar	93 days, 4 hours, 39 minutes	P.O., 2-Yr Overhaul
F2	0836 on 02 Dec	1324 on 05 Mar	93 days, 4 hours, 48 minutes	P.O., Annual Overhaul
F2	0856 on 13 April	1156 on 13 April	3 hours	F.O. Water in Turbine Guide Bearing
F2	1846 on 30 May	1933 on 30 May	47 minutes	P.O., Float Trash
F1	2359 on 31 May	0526 on 01 June	5 hours, 27 minutes	R.S., Nighttime Lamprey Ops
F2	1950 on 01 June	2058 on 01 June	1 hour, 8 minutes	R.S., Float Trash

F2	2227 on 01 June	0534 on 02 June	7 hours, 7 minutes	R.S., Nighttime Lamprey Ops
F1	2227 on 02 June	0527 on 03 June	7 hours	R.S., Nighttime Lamprey Ops
F2	2230 on 03 June	0530 on 04 June	7 hours	R.S., Nighttime Lamprey Ops
F1	2230 on 04 June	0533 on 05 June	7 hours, 3 minutes	R.S., Nighttime Lamprey Ops
F2	2230 on 05 June	0558 on 06 June	7 hours, 28 minutes	R.S., Nighttime Lamprey Ops
F1	2229 on 06 June	0532 on 07 June	7 hours, 3 minutes	R.S., Nighttime Lamprey Ops
F2	2231 on 07 June	0531 on 08 June	7 hours	R.S., Nighttime Lamprey Ops
F1	2230 on 08 June	0532 on 09 June	7 hours, 2 minutes	R.S., Nighttime Lamprey Ops
F2	2230 on 09 June	0531 on 10 June	7 hours, 1 minute	R.S., Nighttime Lamprey Ops
F2	2230 on 10 June	0533 on 11 June	7 hours, 3 minutes	R.S., Nighttime Lamprey Ops
F1	2230 on 11 June	0530 on 12 June	7 hours	R.S., Nighttime Lamprey Ops
F2	2230 n 12 June	0535 on 13 June	7 hours, 5 minutes	R.S., Nighttime Lamprey Ops
F1	2228 on 13 June	0528 on 14 June	7 hours	R.S., Nighttime Lamprey Ops
F2	2230 on 14 June	0518 on 15 June	6 hours, 48 minutes	R.S., Nighttime Lamprey Ops/Float Trash
F2	2227 on 15 June	0540 on 16 June	7 hours, 13 minutes	R.S., Nighttime Lamprey Ops
F1	2227 on 16 June	0531 on 17 June	7 hours, 4 minutes	R.S., Nighttime Lamprey Ops
F2	1730 on 17 June	1823 on 17 June	53 minutes	R.S., Float Trash
F1	1812 on 17 June	1816 on 17 June	4 minutes	R.S., Float Trash
F2	2237 on 17 June	0530 on 18 June	6 hours, 53 minutes	R.S., Nighttime Lamprey Ops
F2	2228 on 18 June	0534 on 19 June	7 hours, 6 minutes	R.S., Nighttime Lamprey Ops
F1	2244 on 19 June	0536 on 20 June	6 hours, 52 minutes	R.S., Nighttime Lamprey Ops
F2	2230 on 20 June	0529 on 21 June	6 hours, 59 minutes	R.S., Nighttime Lamprey Ops
F1	2230 on 21 June	0540 on 22 June	7 hours, 10 minutes	R.S., Nighttime Lamprey Ops
F2	2238 on 22 June	0535 on 23 June	6 hours, 57 minutes	R.S., Nighttime Lamprey Ops
F1	2230 on 23 June	0542 on 24 June	7 hours, 12 minutes	R.S., Nighttime Lamprey Ops

F2	2230 on 24 June	0605 on 25 June	7 hours, 35 minutes	R.S., Nighttime Lamprey Ops
F1	2231 on 25 June	0535 on 26 June	7 hours, 4 minutes	R.S., Nighttime Lamprey Ops
F2	2231 on 26 June	0540 on 27 June	7 hours, 9 minutes	R.S., Nighttime Lamprey Ops
F2	2231 on 27 June	0527 on 28 June	6 hours, 56 minutes	R.S., Nighttime Lamprey Ops
F1	2230 on 28 June	0541 on 29 June	7 hours, 11 minutes	R.S., Nighttime Lamprey Ops
F2	2230 on 29 June	0530 on 30 June	7 hours	R.S., Nighttime Lamprey Ops
F1	2230 on 30 June	0537 on 01 July	7 hours, 7 minutes	R.S., Nighttime Lamprey Ops
F2	2229 on 01 July	0530 on 02 July	6 hours, 59 minutes	R.S., Nighttime Lamprey Ops
F2	2230 on 02 July	0210 on 03 July	3 hours, 40 minutes	R.S., Nighttime Lamprey Ops
F1	0200 on 03 July	0531 on 03 July	3 hours, 31 minutes	R.S., Nighttime Lamprey Ops/Float Trash
F2	2300 on 03 July	0531 on 04 July	6 hours, 31 minutes	R.S., Nighttime Lamprey Ops
F1	2300 on 04 July	0542 on 05 July	6 hours, 42 minutes	R.S., Nighttime Lamprey Ops
F1	2259 on 05 July	0535 on 06 July	6 hours, 36 minutes	R.S., Nighttime Lamprey Ops
F2	2300 on 06 July	0531 on 07 July	6 hours, 31 minutes	R.S., Nighttime Lamprey Ops
F2	2300 on 07 July	0531 on 08 July	6 hours, 31 minutes	R.S., Nighttime Lamprey Ops
F1	2302 on 08 July	0535 on 09 July	6 hours, 33 minutes	R.S., Nighttime Lamprey Ops
F2	2300 on 09 July	0535 on 10 July	6 hours, 31 minutes	R.S., Nighttime Lamprey Ops
F1	2300 on 10 July	0531 on 11 July	6 hours, 31 minutes	R.S., Nighttime Lamprey Ops
F2	2300 on 11 July	0531 on 12 July	6 hours, 31 minutes	R.S., Nighttime Lamprey Ops
F2	2301 on 12 July	0533 on 13 July	6 hours, 32 minutes	R.S., Nighttime Lamprey Ops
F1	2259 on 13 July	0541 on 14 July	6 hours, 42 minutes	R.S., Nighttime Lamprey Ops
F2	2300 on 14 July	0534 on 15 July	6 hours, 34 minutes	R.S., Nighttime Lamprey Ops
F1	2300 on 15 July	0538 on 16 July	6 hours, 38 minutes	R.S., Nighttime Lamprey Ops
F1	2300 on 16 July	0527 on 17 July	6 hours, 27 minutes	R.S., Nighttime Lamprey Ops
F1	2300 on 17 July	0538 on 18 July	6 hours, 38 minutes	R.S., Nighttime Lamprey Ops

F2	2300 on 18 July	0531 on 19 July	6 hours, 31 minutes	R.S., Nighttime Lamprey Ops
F1	2300 on 19 July	0531 on 20 July	6 hours, 31 minutes	R.S., Nighttime Lamprey Ops
F2	2300 on 20 July	0530 on 21 July	6 hours, 30 minutes	R.S., Nighttime Lamprey Ops
F1	2300 on 21 July	0531 on 22 July	6 hours, 31 minutes	R.S., Nighttime Lamprey Ops
F2	2300 on 22 July	0532 on 23 July	6 hours, 32 minutes	R.S., Nighttime Lamprey Ops
F1	1210 on 23 July	1038 on 25 July	1 day, 22 hours, 28 minutes	F.O., Air Cooler Leaks
F2	2258 on 25 July	0531 on 26 July	6 hours, 33 minutes	R.S., Nighttime Lamprey Ops
F1	2302 on 26 July	0531 on 27 July	6 hours, 29 minutes	R.S., Nighttime Lamprey Ops
F2	2259 on 27 July	0531 on 28 July	6 hours, 32 minutes	R.S., Nighttime Lamprey Ops
F1	2300 on 28 July	0540 on 29 July	6 hours, 40 minutes	R.S., Nighttime Lamprey Ops
F2	1046 on 29 July	1056 on 29 July	10 minutes	Slip Ring/Brush Inspection
F2	2308 on 29 July	0532 on 30 July	6 hours, 24 minutes	R.S., Nighttime Lampreys Ops
F1	2258 on 30 July	0532 on 31 July	6 hours, 34 minutes	R.S., Nighttime Lamprey Ops
F2	2300 on 31 July	0601 on 01 August	7 hours, 1 minute	R.S., Nighttime Lamprey Ops
F2	2247 on 01 August	0603 on 02 August	7 hours, 16 minutes	R.S., Nighttime Lamprey Ops
F1	2325 on 02 August	0601 on 03 August	6 hours, 36 minutes	R.S., Nighttime Lamprey Ops
F2	2246 on 03 August	0558 on 04 August	7 hours, 12 minutes	R.S., Nighttime Lamprey Ops
F2	2308 on 04 August	0559 on 05 August	6 hours, 51 minutes	R.S., Nighttime Lamprey Ops
F2	2246 on 05 August	0557 on 06 August	7 hours, 11 minutes	R.S., Nighttime Lamprey Ops
F1	2247 on 06 August	0556 on 07 August	7 hours, 9 minutes	R.S., Nighttime Lamprey Ops
F2	2247 on 07 August	0600 on 08 August	7 hours, 13 minutes	R.S., Nighttime Lamprey Ops
F2	0726 on 08 August	1055 on 08 August	3 hours, 29 minutes	ROV Inspection
F1	0730 on 08 August	1057 on 08 August	3 hours, 27 minutes	ROV Inspection
F1	2248 on 08 August	0605 on 09 August	7 hours, 17 minutes	R.S., Nighttime Lamprey Ops
F2	2244 on 09 August	0604 on 10 August	7 hours, 20 minutes	R.S., Nighttime Lamprey Ops

F1	2251 on 10 August	0604 on 11 August	7 hours, 13 minutes	R.S., Nighttime Lamprey Ops
F2	2244 on 11 August	0602 on 12 August	7 hours, 18 minutes	R.S., Nighttime Lamprey Ops
F1	2251 on 12 August	0613 on 13 August	7 hours, 22 minutes	R.S., Nighttime Lamprey Ops
F2	2244 on 13 August	0601 on 14 August	7 hours, 17 minutes	R.S., Nighttime Lamprey Ops
F1	2244 on 14 August	0601 on 15 August	7 hours, 17 minutes	R.S., Nighttime Lamprey Ops
F2	2243 on 15 August	0606 on 16 August	7 hours, 23 minutes	R.S., Nighttime Lamprey Ops
F1	2130 on 16 August	0601 on 17 August	8 hours, 31 minutes	R.S., Nighttime Lamprey Ops
F2	2130 on 17 August	0559 on 18 August	8 hours, 29 minutes	R.S., Nighttime Lamprey Ops
F1	2130 on 18 August	0533 on 19 August	8 hours, 3 minutes	R.S., Nighttime Lamprey Ops
F2	2131 on 19 August	0559 on 20 August	8 hours, 28 minutes	R.S., Nighttime Lamprey Ops
F1	2131 on 20 August	0555 on 21 August	8 hours, 24 minutes	R.S., Nighttime Lamprey Ops
F2	2131 on 21 August	0711 on 22 August	9 hours, 40 minutes	R.S., Nighttime Lamprey Ops
F1	2128 on 22 August	0618 on 23 August	8 hours, 50 minutes	R.S., Nighttime Lamprey Ops
F2	2129 on 23 August	0600 on 24 August	8 hours, 31 minutes	R.S., Nighttime Lamprey Ops
F1	2131 on 24 August	0612 on 25 August	8 hours, 41 minutes	R.S., Nighttime Lamprey Ops
F2	2130 on 25 August	0559 on 26 August	8 hours, 29 minutes	R.S., Nighttime Lamprey Ops
F1	2132 on 26 August	0609 on 27 August	8 hours, 37 minutes	R.S., Nighttime Lamprey Ops
F1	0720 on 27 August	0723 on 27 August	3 minutes	Test Synchronizer
F2	2133 on 27 August	0559 on 28 August	8 hours, 26 minutes	R.S., Nighttime Lamprey Ops
F2	2141 on 28 August	0601 on 29 August	8 hours, 20 minutes	R.S., Nighttime Lamprey Ops
F1	2145 on 29 August	0601 30 August	8 hours, 16 minutes	R.S., Nighttime Lamprey Ops
F2	2130 on 30 August	0601 on 31 August	8 hours, 31 minutes	R.S., Nighttime Lamprey Ops
F1	1945 on 06 November	2004 on 06 November	19 minutes	R.S., Float Trash
F2	1909 on 06 November	1959 on 06 November	50 minutes	R.S., Float Trash
F1	0002 on 24 November	1430 on 11 Dec	17 days, 14 hours, 28 minutes	P.O., Annual Overhaul

F2	2148 on 25 November	2223 on 25 November	25 minutes	P.O., Float Trash
F2	0043 on 13 December	---	---	P.O., Float Trash
F2	0000 on 15 December	---		P.O., Two-Year Overhaul
F1	0536 on 15 December	0606 on 15 December	30 minutes	R.S., Drawdowns 20'+
F1	0727 on 17 December	0737 on 17 December	10 minutes	R.S., Float Trash, 10' Drawdown
F1	2218 on 17 December	2251 on 17 December	33 minutes	R.S., Float Trash
F1	1102 on 19 December	1112 on 19 December	10 minutes	R.S., Float Trash
F1	2111 on 19 December	2142 on 19 December	31 minutes	R.S., Float Trash
F1	0023 on 25 December	0108 on 25 December	45 minutes	R.S., Float Trash
F1	1809 on 29 December	1841 on 29 December	32 minutes	R.S., Float Trash

Note: Due to the planned outage of F1 for its Annual Overhaul between 24 November—11 December, Powerhouse 2 was operating under single-Unit fish operations outlined in FPP 2025 Table BON-12. For this reason, F2's P.O. on 13 December to float trash does not have a return to service to allow for the fishway to remain in single-Unit fish operations through the end of F2's 2-year overhaul P.O.

3. FISH PASSAGE PLAN COMPLIANCE

3.1 Fish Passage Plan Violations

Project Fisheries and the Project Operators conduct fishway inspections each day during fish passage season and at least three days per week during the winter maintenance period. Project Biologists conducted 99.04% (311/314) of the required daily fishway inspections. The number of FPP violations and the percentage of days the item was in criteria were calculated using Project Biologist's inspection data only (**Table 5**). Items in criteria 100% of the time are not listed. Explanations for items that were in criteria less than 90% of the reporting year, or having unusual circumstances, are given below.

Table 5. Fish Passage Plan Violations and Percent in Criteria.

Violation	Occurrences	In Criteria (%)
Unit Priority	187	40.45%
Spillway-Spill Pattern vs. FPP	8	97.45%
Missed Fishway Inspections	3	99.04%
PH1		
PH1CC South Entrance Differential	68	78.34%
PH1CC North Entrance Differential	19	93.95%
PH1 ITS	1	99.68%
FG 2-19 (PH1CC)	314	0.00%
FG 2-21 (PH1CC)	314	0.00%
A-Branch Weir Differential	196	37.58%
FG 3-3 (A-Branch)	301	4.14%
FG 3-4 (A-Branch)	177	43.63%
FG 3-5 (A-Branch)	3	99.04%
FG 3-9 (A-Branch)	1	99.68%
B-Branch Staff Gauge	8	97.45%
FG 3-23 (B-Branch)	9	97.13%
FG 3-24 (B-Branch)	1	99.68%
FG 3-25 (B-Branch)	1	99.68%
FG 3-31 (B-Branch)	26	91.72%
FG 3-32 (B-Branch)	2	99.36%
Bradford Island Weir Differential	4	98.73%
PH2		
Cascades Island Fishway Entrance Differential	6	98.09%
UMT Weir Differential (Cascades Island)	7	97.77%
FG 6-12 (Cascades Island)	25	92.04%
FG 6-13 (Cascades Island)	2	99.36%
FG 6-18 (Cascades Island)	2	99.36%
WA Shore NUE Monolith Ent/TW Differential	20	93.63%
WA Shore NDE Monolith Ent/TW Differential	17	94.59%
WA Shore SUE Monolith Ent/TW Differential	20	93.63%

WA Shore SDE Monolith Ent/TW Differential	24	92.36%
Weir 37 Differential	15	95.22%
Weir 38 Differential	5	98.41%
Weir 67 Differential	10	96.82%

- **3.1.1. Units Running Out of Priority Order:** There were several occurrences when the units ran out of priority according to FPP guidance (**Table BON-13 Bonneville Dam Turbine Unit Priority Order, 2024 FPP**). Multiple oil sheens have been observed in the PH1 tailrace by Bonneville Staff on several occurrences over the 2024 year. Please refer to MFRs 24BON001, 24BON003, 24BON004, 24BON005, 24BON007, and 24BON009 for details. Consequently, Units 2, 5, 6, 7, 8, and 9 were forced out of service and remained OOS until a full dewater, inspection, and investigation of each Unit was completed.
- On 03 January 2024, an oil sheen was observed at the North end of the PH1 tailrace. Units 6 and 10 were both running and taken out of service at that time as potential sources for the oil leak.
 - Unit 10 was returned to service on 23 January 2025.
 - Unit 6 was returned to service on 31 July 2025.
- On 11 January 2024, Unit 9 was slowly brought up to speed for station service operations. During this short period of time, another oil sheen was observed in the North end of the PH1 tailrace. Unit 9 was forced out of service immediately and remained out of service until a full investigation and inspection of the unit, including a full dewater of the Unit, was completed. Unit 9 was returned to service on 16 April 2025.
 - Unit 9 was again forced out of service on 15 October 2025 due to air cooler leaks and remains out of service until repairs can be made.
- On 15 February 2024, Bonneville Operations began to bring down Unit 7. Upon unit shutdown, Operations observed a small oil sheen in the Powerhouse 1 tailrace. By the time the Project Environmental team arrived, the sheen dissipated. Due to this event Unit 7 was forced out of service and remained out of service until a thorough investigation and inspection was completed, including a full dewater of the unit.
 - Unit 7 was returned to Service on 01 July 2025.
- On 26 February 2024, Unit 2 was brought to service to assist with switching operations. Due to a lack of power generation need, Unit 2 was returned to reserve shutdown (RS) status. Upon unit shutdown, Project Operations observed small spots of oil in the tailrace just downstream of the unit which dissipated quickly, and no environmental cleaning action was required. No sheen was observed beyond the PH1 tailrace. Unit 2 was forced out of service and will remain out of service until a thorough investigation and inspection is complete, including a full dewater of the unit.
- Also, on 26 February 2024, a sheen was observed in the Powerhouse 1 tailrace. Start/stop testing was being performed on Units 5 and 8 at this time with coordination from the Project Environmental and Compliance teams, Project Engineers, and Project Operations. Upon shutdown of Units 5 and 8, small droplets of oil were seen to be rising below each Unit. Small rainbow sheens were noticed upon contact with the surface water but dissipated within seconds of making contact. Droplets appeared to discontinue within 10 minutes after shutdown of each Unit shutdown. Crews stationed at the tailrace remained to observe for about 45 mins after shutdown and no further sheen was noticed. No sheen was observed beyond the tailrace. Units 5 and 8 remained out of service until a thorough investigation and inspection was completed, including a full dewater of both Units.
 - Unit 5 was returned to service on 21 May 2025.

- Unit 8 was returned to service on 12 August 2025.
- First Powerhouse Main Units 1 (U1) and 5 (U5) were forced out of service on 05 June, 2025 at 0743, after both units experienced dual air cooler failures. These air coolers are critical for maintaining safe operating temperatures by cooling the air in between the rotor and stator. Due to the loss of both coolers on each Unit the Project has determined that continued operation would pose risk of uneven cooling and potential damage to components.
 - Unit 5 was returned to service on 19 November 2025.
 - Unit 1 remains out of service and repairs are underway.

*At the time of this publication, 30 January 2026, Units 1, 2, and 9 at Powerhouse 1 remain out of service and are currently undergoing investigation and repairs for the oil sheen events listed above.

3.1.2. PH1CC South Entrance Differential: The recently replaced PH1 South Tailwater staff gauge is located near the plunging jet of the PH1 ITS outfall, which creates turbulence and wave action. These conditions can make precise visual readings of the staff gauge difficult, at times requiring biologists to approximate water surface elevations. As a result, occasional entrance differential readings may appear outside FPP criteria despite best efforts to ensure accuracy.

3.1.3. FG 2-19 Position: 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 this section of the PH1CC can be dewatered. A work order has been issued.

3.1.4. FG 2-21 Position: PH1 Collection Channel diffuser FG 2-21 was found mechanically bound in the mostly closed position on 02/24/22 by PH1 Mechanics. No repairs can be made until this section of the PH1CC can be dewatered. A work order has been issued.

3.1.5. A-Branch Weir Differential: Leakage from the FV3-7 conduit along A-Branch is believed to be the cause for slightly above average differentials. Often the differential is +0.1' above criteria during the year.

3.1.6. FG 3-3: FG3-3 was found mechanically bound in the closed position on 09/26/24. Bonneville Mechanics believe the problem is in the limitorque. This problem is currently being addressed during the current winter maintenance period, and the diffuser is expected to return to normal operations by the start of the 2026 fish passage season.

3.1.7. FG 3-4: This diffuser has been operated in manual in place of FG3-3 until repairs can be made.

3.2 STS / VBS Inspections

Submersible traveling screens (STS) and vertical barrier screens (VBS) are typically inspected once a month (**Table 6**). Each STS has a timer that automatically shows elapsed time of operation, with thirty-one days of continuous operation equaling 744 hours. Bonneville uses an underwater video camera to inspect STSs and VBSs, allowing inspection of the screens while they are installed and while the unit is running. PH2 STSs are generally installed in operational units from the end of February until mid-December for juvenile fish passage and for adult fallbacks. PH1 screens have been permanently removed.

Table 6. 2025 STS / VBS Inspections.

Unit	Install Dates & Run Hours Upon Installation	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	Removal Dates & Run Hours at Removal
11	26-Feb-25	1	782	744	742	863	591	325	743	742	721	331	15-Dec-25
	82013												88598
12	26-Feb-25	1	765	714	487	282	25	281	743	742	723	334	15-Dec-25
	58553												63651
13	25-Feb-25	19	790	622	351	97	16	131	600	742	648	337	15-Dec-25
	26785												31138
14	25-Feb-25	22	790	484	249	36	10	78	307	616	723	389	16-Dec-25
	31528												35232
15	25-Feb-25	25	790	266	117	49	11	405	137	362	721	388	16-Dec-25
	37847												41118
16	24-Feb-25	44	790	266	0	0	10	277	57	151	713	385	16-Dec-25
	49013												51706
17	24-Feb-25	48	767	339	584	295	15	631	651	744	723	387	17-Dec-25
	22184												27368
18	22-Feb-25	1	0	0	115	778	561	368	667	743	723	325	17-Dec-25
	29104												33385

3.3 Avian Counts and Abatement Measures

Bonneville Project Fisheries recorded daily bird counts between 01 April through 31 October 2025 (**Figure 2**). These counts consist of the total numbers of gulls, cormorants, pelicans, grebes, and Caspian Terns that were observed in the forebay and tailraces of Powerhouse 1, Powerhouse 2, and Spillway, and the outfalls of the B2 Corner Collector outfall, and the Juvenile Bypass. See **Figure 3** for a visual representation of the avian count zones.

USDA Wildlife Service's avian hazing occurred from 01 April through 31 July and 15 August to 31 October. This hazing was focused on shorelines around the powerhouses, the spillway, and fish passage outfalls. Due to the Federal Government hiring freeze, USDA WS could not fill all their vacant hazing positions which caused a reduction in hazing efforts. Please see *MFR 25BON018 Reduced Avian and Pinniped Hazing* for more details.

The passive hazing abatements at Bonneville Lock & Dam are the avian wires and hydro-cannons. Avian wires are installed prior to April 10 of each year, in the tailraces of Powerhouse 1, Powerhouse 2, and the spillway. The hydro-cannon is operated continuously on top of the outfall flumes of the Smolt Monitoring Facility from 01 March through 01 November 2025 (**Figure 3**).

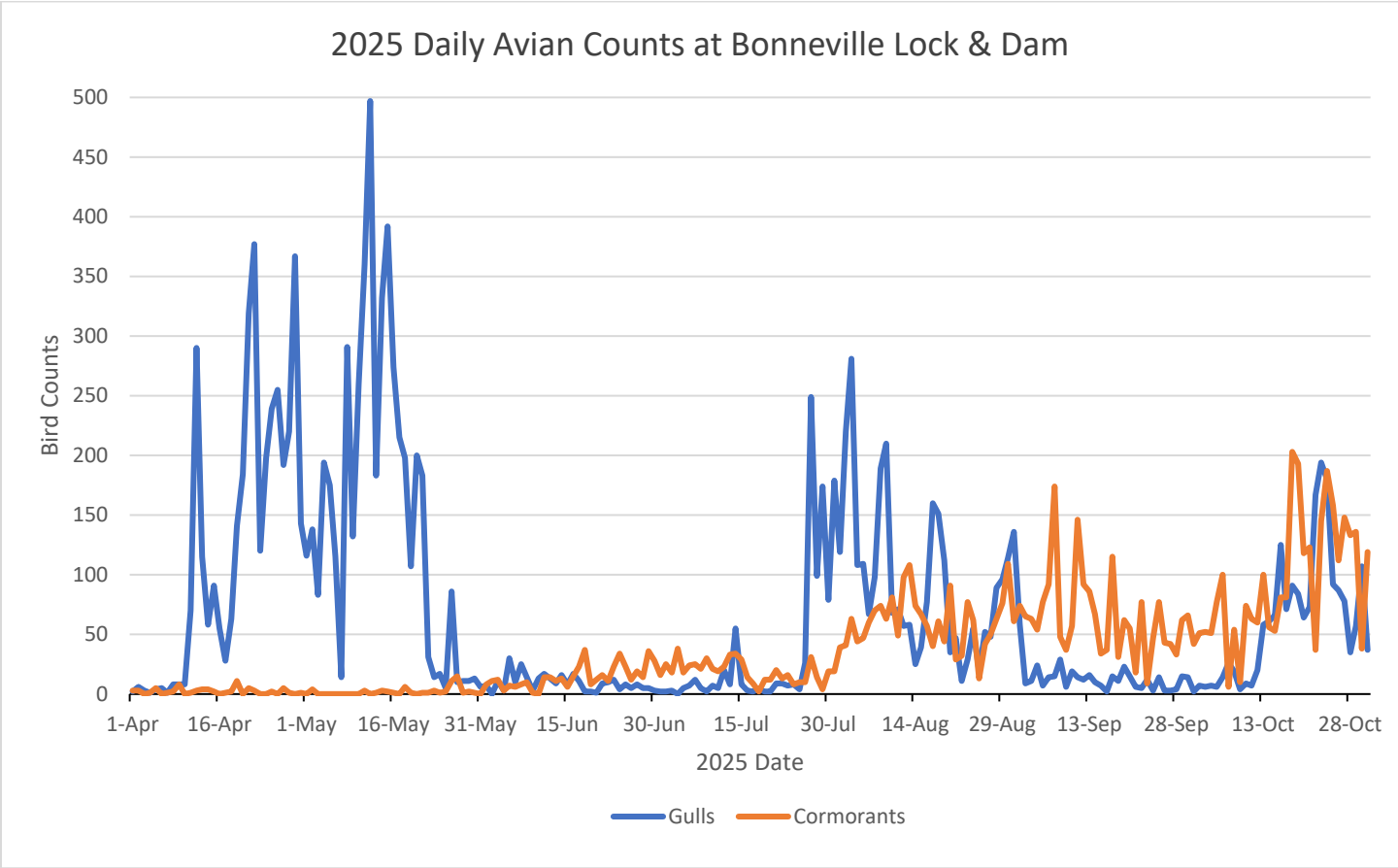


Figure 2. 2025 Daily Gull and Cormorant Counts at Bonneville Lock & Dam
Please note pelicans and terns were not observed at the dam this reporting year and are therefore excluded from the figure. Grebes were also omitted due to very low counts (3 individuals on 13 June). Specific data are available upon request.

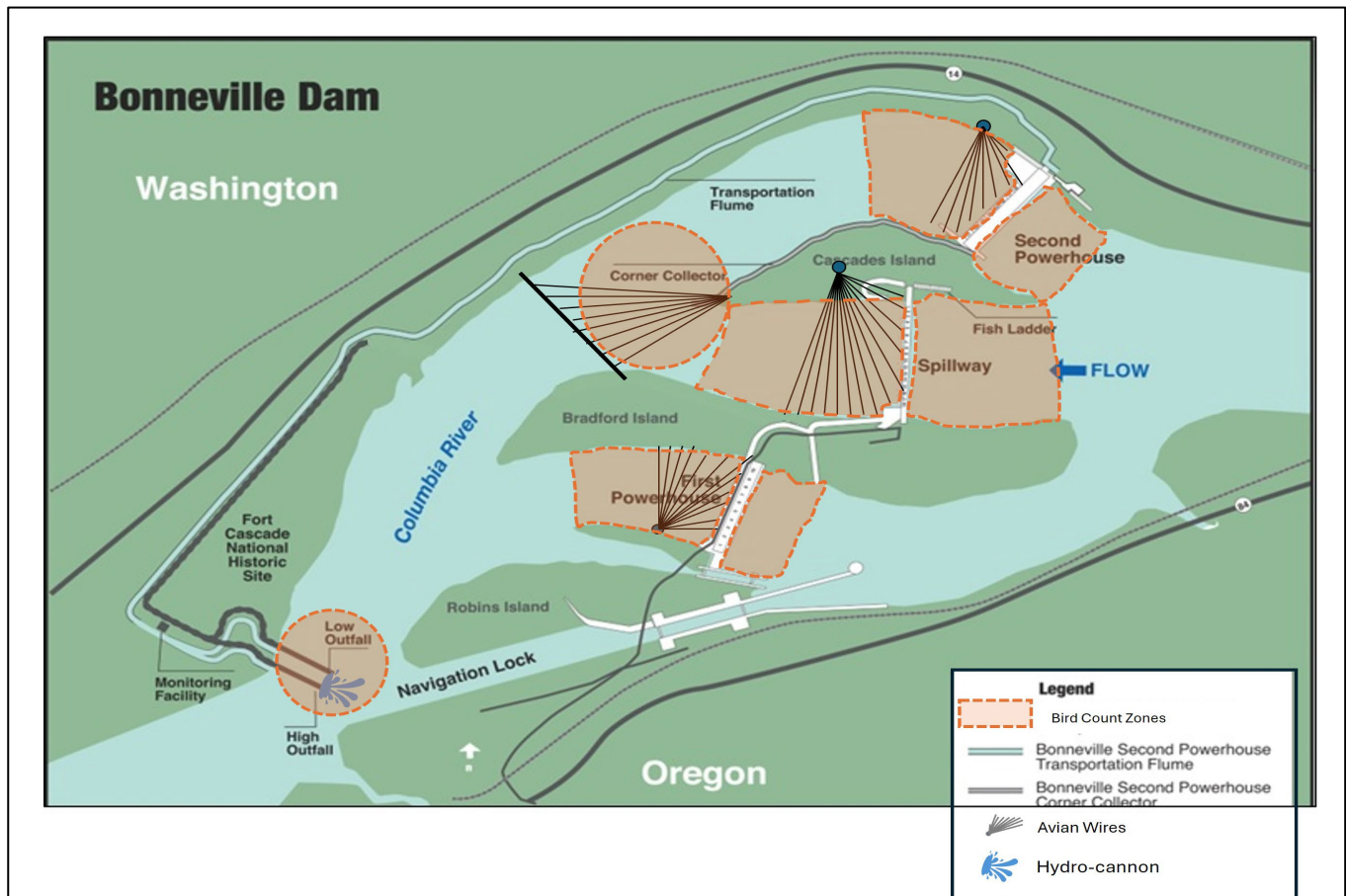


Figure 3. Map of Piscivorous Bird Count Zones and Locations of Avian Wires and Hydro-Cannon at Bonneville Lock & Dam

3.4 Fish Counts

The Corps of Engineers contracted Four Peaks Environmental for fish counting at the Bradford Island and Washington Shore count stations during the 2025 fish passage season. The fish count season is year-round with visual counts from April through November and video counts during the rest of the year. All fish count numbers may be found at the [Fish Passage Center](http://www.fpc.org/) (<http://www.fpc.org/>).

In 2025, hourly passage data from the Bradford Island, Cascades Island, and Washington Shore Lamprey Passage Structures were published daily on the Fish Passage Center website during the lamprey passage season (April–October).

4. WATER QUALITY MONITORING

4.1 Zebra/Quagga Mussels

Through monthly inspections of the monitoring station at PH1 and of all dewatered fishways, no indication of zebra or quagga mussel colonization was found. The Project stays involved in regional preparation for zebra/quagga mussel arrival by sending project personnel to trainings and seminars to stay abreast of the latest information concerning these invasive species. Monitoring will continue with hopes that control programs can be initiated at the first indication of the mussel's arrival in the Pacific Northwest.

In June 2025, researchers conducting a study in the BON Smolt Monitoring Facility (SMF) observed the presence of suspected New Zealand Mud Snails (NZMS) in the rearing tanks and filter media. This observation was immediately reported to Washington Department of Fish and Wildlife (WDFW) Aquatic Invasive Species (AIS) team by the researchers following the guidelines and conditions of their Scientific Collection Permit. The WDFW AIS team positively identified the snails as the invasive NZMS. This is the first known detection of NZMS at Bonneville Lock & Dam, however, NZMS were first documented in the Columbia River in 1997 and have since been identified in multiple water bodies throughout Oregon and Washington and beyond in the United States, with detections at The Dalles and John Day Dams as early as 2008. To date, NZMS have not been observed in any other locations at the dam, but biologists have been diligent during inspections and are continuing to monitor and help with education and prevention of aquatic invasive species.

4.2 Fishway Temperature Monitoring

Project biologists monitor fishway temperatures throughout the fish passage season, from 01 June through 30 September (**Figure 3**). Temperature probes are installed at the following locations: A-Branch Entrance, B-Branch Entrance, Bradford Island Exit, Washington Shore Entrance (NDE), Washington Shore Exit (near FV6-9), AFF, SMF, BI LPS, CI LPS, WA LPS, and the LFS. Additionally, the Technical Management Team (TMT) tracks BON forebay temperature on their [website](#). The TMT temperature is publicly accessible in real-time, and is the standard utilized per the FPP to determine when high-temperature fish sampling restrictions are operative in BON facilities. Detailed daily temperatures can be found in the weekly reports and are available upon request.

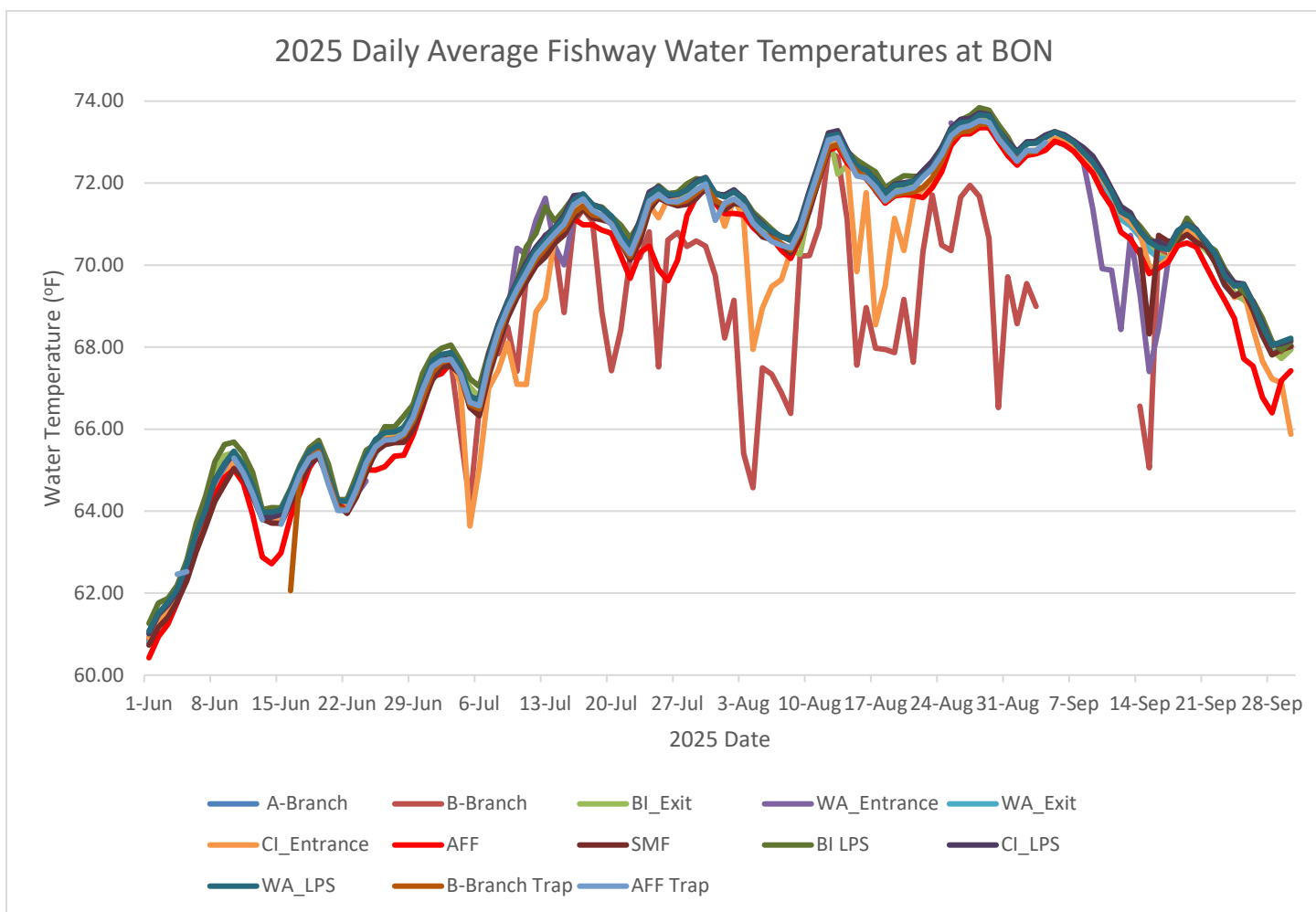


Figure 4. 2025 Temperatures at Bonneville.

Please note the following: 1) During dewatering of the Bradford Island B-Branch Fish Ladder in December 2025 for Winter Maintenance, crews discovered that the B-Branch Entrance temperature probe stillwell had broken off several feet from the bottom. This damage may have caused the probe to record temperatures from a different depth than other fishway probes, potentially explaining the observed discrepancies in temperature readings for this location and loss of data between 29 August—03 September reporting period. 2) The SMF sample tank was dewatered due to high temperature sampling protocols between the reporting period of 13 August—17 September temperature data is not available for the reporting period. 3) The CI LPS temperature probe failed on 19 June and was replaced on 01 July. Therefore, no temperature data was recording for the dates 29 June—01 July reporting period. 4) The WA Shore NDE Entrance stillwell that houses the temperature probe at this location is bent and due to fluctuations in tailwater, the probe can become stuck within the stillwell, which can account for periods of data loss or outlier temperature readings. Work is planned to straighten out the stillwell this FY26 Winter Maintenance Period to prevent this from reoccurring.

5. FISHWAY MODIFICATIONS (1996 - present)

POWERHOUSE ONE ADULT

2024. Fishway controls updated to replace the 1980's Programmable Logic Controller (PLC) with current technology. The updated PLC provides increased visibility and control of the system to improve control of fish gates, fish valves, weir gates, and elevation sensor monitoring. The updated controls enable the B1 fishway controls and the B2 fishway controls to be viewed from one system.

2018. Installed HOBO temperature monitors.

2012. Replaced PIT tag antenna in Bradford Island serpentine section.

2012. Dredged along the exit channel for the Bradford Island fish ladder.

2011. Repaired erosion cavities under the B-branch ladder of Bradford Island.

2006-present. Sea lion exclusion devices (SLEDs) are installed at the fishway entrances to prevent sea lion access to the fish ladder.

2005/06. Bulkheads were installed in the orifice gate and telescoping gate slots. Gates were removed along with the associated electronic and mechanical equipment.

2005/06. Passive Integrated Transponder (PIT) tag detectors installed in four serpentine weirs in the Bradford Island fishway.

2004-present. Utilize ROVs for fishway inspections instead of divers.

2003/04. Installed new electronic velocity meter at the north end of the PH1CC. No longer used.

2002/03. PH1CC orifice gates and telescoping gates are closed and disabled. Studies indicated more fish exited these gates than entered. Weir gates were left in service.

2001/02. Extra orifices in the overflow weirs were filled with concrete.

2000/01. PIT tag detectors installed in four orifice weirs in A-branch and four orifice weirs in B-branch.

1998/99. FG3-10 through 17 disabled and filled with concrete. FG3-14 (at the junction pool) covered with metal plates instead of concrete.

POWERHOUSE ONE JUVENILE

2025. Minor repairs and debris removal from trolley pipes occurred to prepare for acoustic telemetry system survival studies.

2023. ITS End Gate reinstalled.

2021. ITS end gate slot inspected by USACE engineers to facilitate the future gate repair.

2019. Broken ITS end gate removed.

2013/14. ITS gate removed for repairs, gate slot plated for fish passage during removal.

2012/13. Spillway erosion hole and ogee repair.

2010/11. Welded elevation indicators on chain gates 3B, 6C, and 10B.

2010. PH1 JBS outfall pipe removed.

2009/10. Removal of the wall separating the Powerhouse 1 downstream migrant channel (DSM1) from the ITS completed to improve surface passage at PH1. The floor was raised and sloped.

2009. All remaining PH1 screens scrapped.

2008/09. ITS automated chaingates installed in 3B, 6C, and 10B.

2004-2007. The Powerhouse 1 downstream migrant channel (DSM1) is disabled as a juvenile bypass route. Screens are not installed during fish passage season except from 15 September until 15 December for adult fallback. DSM1 runs south during this time.

2001-2003. Unit 8 extended submerged bar screens were deemed undesirable and replaced with standard STSs.

2001-present. The 2000 Biological Opinion (BiOp) required the removal of impediments to fish passage from the turbine environments. Removal and replacement of excess metal, with fish friendly alternatives, occurs as

units go out of service for rehab.

2000-2010. Turbine rehab involves installing minimum gap runners on all PH1 main units.

POWERHOUSE ONE LAMPREY

2025. Daily counts from the Bradford Island LPS became available on the FPC website.

2023/24. Lamprey ramp and bollards installed in B-Branch Entrance Bay for new B-Branch lamprey trap. Variable width entrance weir also installed.

2023/24. Additional lamprey orifices cut into concrete of serpentine section of Bradford Island Fishway.

2022. B-Branch fishway orifices were chamfered on the downstream side and plates were placed on diffuser grating downstream of orifices to provide improvements for lamprey passage. Lamprey orifices were cut into concrete of two serpentine section weirs of the Bradford Island Fishway.

2022. Optical counters were installed on Bradford Island LPS exit ramp

2022. Lamprey orifices were cut into the concrete of the serpentine section at Bradford Island Fishway

2020. Lamprey refuge boxes were moved to their permanent locations in the BI flow control section.

2019. Bradford Island LPS exit ramp had grooves deepened and lid installed to dissuade algae growth and avian predation.

2018/19. Tested reduced nighttime entrance velocities at PH1 and B-branch entrances.

2018/19. Field tested the Bradford Is. Wetted Wall (BIWW).

2018. Installed HOBO temperature monitors.

2017/18. Modified the Bradford Is. LPS exit. Objective was to allow for adjustable slope and to release lamprey further from the adult ladder exit thus reducing fallback.

2017/18. Orifice slots drilled in lower serpentine weir walls (weirs 1, 3, and 5); trial rest boxes installed.

2015/16. Modified Bradford crowder station to reduce lamprey mortality due to crowder run-over and those dying in area behind crowder. Perf plate in count slot, skirt in bottom of crowder, plating on sides of crowder.

2013/14. Lamprey passage structure pumps relocated from forebay location to within the AWS to minimize debris buildup. Fry criteria screens placed on lamprey pumps.

2012. Picket lead modifications to insure one inch spacing between leads and sill plate and prevent lead bending. Spacers installed.

2011. Lamprey count improvements including video verification network at exit flume.

2011. Picket lead spacers for lamprey passage removed on 29 June.

2011. One inch picket lead spacers installed on 24 May to allow lamprey passage under leads.

2005/06. PIT tag detection and expanded lamprey ramp installed in the Bradford Island FV3-9 AWS channel.

2003/04. Lamprey ramp installed in the Bradford Island FV3-9 AWS channel.

CASCADES ISLAND FISHWAY/ UMT

2024. Fishway controls updated to replace the 1980's Programmable Logic Controller (PLC) with current technology. The updated PLC provides increased visibility and control of the system to improve control of fish gates, fish valves, weir gates, and elevation sensor monitoring.

2021. PSMFC installed new PIT antennas at UMT Entrance and count station window.

2004-present. Utilize ROVs for fishway inspections instead of divers.

2004/05. UMT fish count window crowder and window cleaner removed.

2001/02. New diffuser covers built and installed.

2000/01. More PIT tag detectors installed in four orifice weirs.

1999/00. FG6-1 through 4 filled in with concrete.

1998/99. PIT tag detectors installed in four orifice weirs.

1996-2000. The UMT drain is blind flanged and no longer used.

CASCADES ISLAND LAMPREY

2025. Daily counts from the CI LPS became available on the FPC website.

2022. Fishway orifices from upper portions of ladder down to tailwater chamfered on the downstream side to improve lamprey passage through weirs.

2022. Optical sensors added to the CI LPS exit for count testing.

2020. Cascade Island lamprey trap was constructed and placed into service 3 June 2020.

2017/18. FDX PIT systems installed.

2016. Gaps in picket leads fixed with addition of new pickets to reduce lamprey incursion into AWS.

2014/15. Picket lead spacing reduced and side gaps amended to block lamprey access to the AWS and ladder exit area above the lower pickets.

2012/13. Lamprey passage system extension into the forebay and conversion to volitional passage system.

2008/09. Lamprey ramp and bollards installed in CI entrance pool. Variable width entrance weir installed in May.

2005/06. HDX PIT tag detectors were installed along the picket leads to track lamprey.

POWERHOUSE TWO ADULT

2025. A derelict radio telemetry antenna was removed from the Washington Shore exit channel and replaced with a new PIT antenna fabricated by NOAA and PSMFC which was deployed in June 2025 to evaluate fish passage times in the newly redesigned Washington Shore Flow Control Section.

2025. WA Shore Flow Control Section redesign complete. See PH2 Lamprey modification sections for more details.

2024. Construction contract awarded to modify WA Shore Flow Control Section to remove serpentine weirs to improve adult lamprey and salmonid passage. Construction will occur during next reporting year.

2023/24 Fishway controls updated to replace the 1980's Programmable Logic Controller (PLC) with current technology. The updated PLC provides increased visibility and control of the system to improve control of fish gates, fish valves, weir gates, and elevation sensor monitoring. The updated controls enable the B1 fishway controls and the B2 fishway controls to be viewed from one system.

2021. PSMFC installed four new PIT antennas in WA Shore Flow Control Section.

2017. Removal of Collection Channel velocity meter.

2017. Permanent SLEDs (Sea Lion Exclusion Devices) were fabricated and installed on top of FOGs to prevent Sea Lions from entering the fishway.

2017. Four floating orifice gates (FOGs) were removed and replaced with bulkheads to minimize locations for potential sea lion entry. This reduced the number of FOGs from 12 to 8.

2017. An opening in the wall separating the crowder area of the main ladder from the AWS was covered with screen to prevent possible Sockeye incursion into the AWS.

2017. Installed ID plates at bases of "C" diffusers in the collection channel for ROV inspections.

2017. The base of the AWS picket leads was modified to reduce possible Sockeye incursion into the AWS.

2013-2015. Modifications to the AFF to improve water velocity and sampling conditions.

2013. Replaced PIT antenna in WA Shore ladder serpentine section.

2013. Forebay dredging in front of the Fish Unit intakes.

2012/13. Repairs to the gates and guides on B-valves 3 and 4.

2012. Debris removal from the AWS and accompanying diffusers.

2011. SA-24 board replaced with new PH2 Collection Channel Fishway PLC.

2011. Reattached blown off diffuser grating in ladder at North Monolith and debris removal from AWS and accompanying diffusers.

2010/11. AFF sample flume modified to accommodate an auxiliary sample tank used by WDFW. CRITFC obtained and installed a new, larger sample tank complete with a PIT tag detector at the entrance to the tank.

2008/09. Picket leads installed perpendicular to existing AFF picket leads. Not used after 2009 sample season.

2007/08. Manufactured new FOG SLEDs.
2006/07. Installed new staff gauges in the monoliths.
2006/07. AFF lamprey orifice gate removed due to pulley failure resulting in salmon passage blockage and dewatering difficulties.
2005-present. SLEDs installed at fishway entrances to prevent sea lion access to the fish ladders.
2005/06. AFF count window crowder removed due to structural failure.
2004-present. Utilize ROVs for fishway inspections instead of divers.
2004/05. Repaired the AWS conduit.
2004/05. Installed new velocity meter at South Upstream Entrance (SUE).
2004/05. PIT tag detectors installed in four serpentine weirs.
2004/05. AFF bail pool modifications made. The bail pool is now the primary recovery pool.
2003/04. AFF electrical upgrades complete.
2003/04. Picket leads for the triangle section were removed.
2002/03. Removed old metal staff gauge frames from monolith entrances.
2001/02. PIT tag detectors installed in eight orifice weirs, four upstream and four downstream of the AFF.
1999/00. AFF exit ladder equipped with orifice PIT tag detectors.

POWERHOUSE TWO JUVENILE

2025. Minor repairs and debris removal from trolley pipes occurred to prepare for acoustic telemetry system survival studies.
2024. Post construction evaluation of FGE gatewell modifications occurred during spring and summer.
2023. FGE modifications to the remainder of the PH2 Unit's A & B gatewells occurred.
2022. The testing of the hydraulic environment in the gatewells of Unit 14 and Unit 15 occurred after modifications were made to Unit 15 gatewells A & B to improve FGE flow criteria.
2022. A concrete corbel was added behind the VBSs of Unit 11 gatewells A & B to improve FGE flow criteria.
2021. A concrete corbel was added behind the VBSs of Unit 15 gatewells A and B to improve FGE flow criteria. Pending tests in Spring 2022 to determine hydraulic environment after modifications.
2018. Removal of FGE flow control plates from all units.
2018. Installed HOBO temperature monitors.
2018. Major electrical upgrades to the SMF PLC.
2016/17. LED lighting improvements to DSM.
2016/17. Flow control plates installed in 'A' & 'B' gatewells of all PH2 units, plating on upper sections of VBSs.
2014. Testing of a flow control plate in Unit 15 "A" slot.
2013. Gantry 7 rehabilitation.
2013. Turbulence Reduction Device (TRD) testing in Unit 14 "A" slot.
2013. Alarm installed on the 2-way rotating gate at the SMF.
2012. B2CC bulkhead converted to permanent hoist with automatic control.
2012. B2CC joint repair to fix spalling and decrease channel roughness.
2008/09. Release pipe attached to JMF outfall pipe for juveniles trucked from Walla Walla District.
2007/08. Behavioral Guidance Structure (BGS) installed in PH2 forebay. Removed in December 2010.
2007/08. PH2 Downstream Migrant transportation channel (DSM2) LED lights returned to halogen lights due to the unknown effects of LEDs.
2007/08. Units 14 and 18 are modified for new VBSs and improved FGE.
2006/07. New LED lights replace the halogen lights. The LED lights are cooler and will last years longer than the halogens. These lights were salvaged from DSM1.
2006/07. Units 11, 15, 16 are modified for new VBSs and improved FGE.
2005/06. B2CC PIT tag antenna installed.

2005/06. SMF full flow PIT tag antenna installed.

2005/06. Units 12 and 13 modified for new VBSs and improved Fish Guidance Efficiency (FGE).

2004/05. VBS modifications for Unit 17 result in screen failure. The design for the new VBSs is re-examined and redrawn.

2004/05. SMF Outfall hydro-cannon piping is replaced.

2004/05. B2CC complete and online.

2003/04. Unit 17 VBSs and gatewells are modified to improve FGE. Modifications include gap closure devices on the STSs and modified VBSs.

2002/03. NOAA Fisheries fyke net frame is removed from the tailrace.

2002/03. Unit 15 gatewells are partially modified to improve FGE. Modifications include gap closure devices on the STSs.

2002/03. Biologists noticed places of ovality while inspecting the two mile pipe. The pipe has been monitored regularly to document potential changes.

2002-present. The 2000 BiOp required the removal of impediments to fish passage from the turbine environments. Removal and replacement of excess metal, with fish friendly alternatives, occurs as units come out of service for maintenance.

2001/02. Raised the DSM2 walkway grating to prevent fish from impacting it.

2001/02. Modified the DSM2 add-in screen to vertical bars to allow juveniles to move out of the add-in water and into the channel. The bars didn't reach the walkway so a perforated plate was added later in the season to prevent adults from jumping into the add-in section.

2001/02. Flume covers were added over the switch gates. This was to encourage fish to stay in the main channel and not seek shade by swimming under the switch gates.

2000/01. Saltwater rearing moved into the SMF.

2000/01. Modifications were made to the primary dewatering structure drain pipe to divert more water into the wetlands. This reduced the flow fluctuations and air bubbles under the perforated plate in the primary dewatering structure.

1998-2000. SMF construction completed. The facility goes online.

POWERHOUSE TWO LAMPREY

2025. Daily counts from the WA Shore AWS LPS optical sensors became available on the FPC website.

2025. The Washington Shore Flow Control Section redesign was completed in March 2025 to replace the serpentine weirs with nine baffle pairs, each featuring a vertical slot and two orifices. The new configuration includes floor-flush orifices with rounded edges, lamprey refuge boxes aligned with lamprey-specific orifices, partially plated wall diffuser grating, and updated PIT antenna infrastructure. Modifications are intended to enhance upstream passage for Pacific Lamprey and reduce passage times for adult salmonids.

2024. Construction contract awarded to modify WA Shore Flow Control Section to remove serpentine weirs to improve adult lamprey and salmonid passage. Construction will occur during next reporting year.

2022. The Lamprey Flume Structure was taken OOS indefinitely on May 29 due to mortalities.

2021. Four new pumps for the lamprey passage structures installed at WA shore.

2021. Lamprey refuge boxes were moved in the WA flow control section.

2021. Experimental optical sensors were added to the WA AWS LPS exit flume for testing to replace mechanical paddle counters.

2020. Repair of the blown LFS inspection hatch by District Dive Safety.

2019. Orifice slots in weir 1 closed permanently. Six additional slots drilled in odd numbered weirs to exit (7, 9, 11, 13, 15, & 17).

2019. Lamprey weir caps installed on NDE and NUE.

2018. Replaced the two-winch deployed AFF lamprey traps for a permanently installed single ramp trap.

2018. Installed HOBO temperature monitors.

2018. WA AWS LPS exit “plunge box” installed.

2017. Blackout blinds were installed over visitor center viewing windows in order to reduce in-ladder nighttime light pollution.

2017. The count station crowder was modified with perf plating and a rubber “skirt” to reduce incidences of lamprey being run over. Grating was installed on the downstream side of the crowder to reduce fish incursion into the area behind the crowder.

2016/17. Lamprey weir caps installed on SDE and SUE.

2016/17. Orifice slots drilled in lower serpentine weir walls (weirs 1, 3, and 5); trial rest boxes installed.

2016/17. LFS velocity barrier plate installed to reduce areas of high velocity.

2016/17. Removed lamprey plating in N entrance area, replaced with orifice plates. AWS LPS extensions and new pump system.

2016. LFS repairs. Divers replaced missing hatch; hydraulic air entrainment ‘dampener’ installed.

2013. Lamprey refuge boxes installed in the WA Shore ladder, near the UMT confluence.

2012/13. Construction of Lamprey Flume System and associated LPS at NDE on the north monolith.

2012/13. Picket lead modifications to insure 1 ½ inch spacing between leads and sill plate and prevent lead bending. Spacers installed.

2011. Picket lead spacers for lamprey passage removed on 29 June.

2010/11. NOAA installed a picket lead sill ramp to ease the transition from the ladder into the AWS. NOAA also installed ¾ inch crowder picket leads at the count station.

2010. One-inch spacers were installed on the AWS picket leads on 25 May for lamprey passage under leads.

2007/08. Lamprey ramp installed in the Washington Shore FV6-9 AWS channel.

2004/05. Lamprey ramp installed at North Downstream Entrance (NDE).

2000/01. Lamprey plates are installed over the Washington Shore diffuser grates.

BASS LAKE

2017. Salvaged logs added to Bass Lake to provide habitat.

2006. The leaking drain is repaired. The lake holds water and Coho are seen spawning in the outlet (Moffett Creek) of Bass Lake. The salvaged logs create log jams over the sink hole.

2004. Salvaged logs are placed in Bass Lake to provide habitat.

REFERENCES

2024-2025. Weekly reports and daily fishway inspections for Bonneville Dam. U.S. Army Corps of Engineers, Portland District. Bonneville Lock and Dam.

2025. Fish Passage Plan for Corps of Engineers Projects. U. S. Army Corps of Engineers, Northwestern Division, Portland, Oregon.

Cover Photos 2025: **Top Left:** Main Dam forebay wired up for 2025 acoustic telemetry passage studies. **Top Right:** Bonneville Fisheries staff preparing to salvage fish from Bradford Island Fishway the 2025/2026 winter maintenance period. **Bottom Left:** Bonneville Rangers and Bonneville Fisheries celebrating Lampreypalooza 2025. **Bottom Right:** First time watering up the newly constructed Washington Shore Flow Control Section redesign. **Middle:** One of the many enthusiastic attendees of Lampreypalooza 2025.