U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#21-2023

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: July 21-27, 2023

Turbine Operation

Yes	No	Turbine Unit Status		
	X	All 14 turbine units available for service? (See table & comments below for details.)	Hard	Soft
X		Available turbines operated within 1% peak efficiency? Constraint in effect.	X	

Table 1. McNary Unit Outages (OOS) and Return to Service (RTS)

	OOS		RTS		
Unit(s)	Date	Time	Date	Time	Outage Description
1 & 2	7/10	0648	8/10	NA	Transformer 1 gasket replacement
10	6/5	0758	8/17	NA	Nine-year overhaul
13 & 14	6/12	0636	12/21	NA	Control system upgrades
4	7/24	0705	7/27	1252	Annual maintenance
1, 3 & 12	7/25	1000	7/25	1130	ESBS camera inspections, rotated through units

Comments: RTS dates are subject to change. The sawtooth unit priority pattern for temperature abatement continues.

Adult Fish Passage Facilities

Measured inspections of the adult fishways occurred on July 21, 23 and 26. Visual adult fish counting, and video review of nighttime lamprey passage continues.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
X		Oregon Exit	Head over weir 1.0’ to 1.3’	1.0’ to 1.1’
X		Oregon Count Station Differential	0.0’ to 0.5’	0.2’
X		Washington Exit	Head over weir 1.0’ to 1.3’	1.1’
X		Washington Count Station Differential	0.0’ to 0.5’	0.2’ to 0.3’

Comments: Debris loads were very light to light (woody material) near the Oregon shore exit and minimal (aquatic material) near the Washington shore exit. The general maintenance staff has been cleaning the picketed leads at both exits as needed including on Saturday.

At the Oregon shore exit, a traveling screen alarm came in and was reset on July 26.

At the Washington shore exit, a regulating weir alarm came in and was reset on July 21.

There are no other problems to report.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.3' to 1.4'
X			NFEW2 Weir Depth	≥ 8.0'	8.3' to 8.5'
X			NFEW3 Weir Depth	≥ 8.0'	8.3' to 8.5'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.5' to 1.6'
X			SFEW1 Weir Depth	≥ 8.0'	8.4' to 8.6'
X			SFEW2 Weir Depth	≥ 8.0'	8.4' to 8.6'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 2.2 fps
X			Washington Entrance Head Differential	1.0' – 2.0'	1.3' to 1.4'
	X		WFE2 Weir Depth	≥ 8.0'	7.8' to 9.0'
X			WFE3 Weir Depth	≥ 8.0'	8.9' to 10.3'

Comments: The Washington shore entrance, WFE2, was on its lower limit during the inspections on July 21 and 23. Due to low tailwater elevation, the weir was out of criterion on July 23.

Three floating orifice gates (FOG's) slots, W32, W37 and W 41 remain closed. Nine of 12 slots are open.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Blade angle	Auxiliary Water Supply System (AWS)
Yes				WA shore Wasco County PUD Turbine Unit
	Yes			WA shore Wasco PUD Bypass
Yes			23° to 24°	Oregon Ladder Fish Pump 1
Yes			22°	Oregon Ladder Fish Pump 2
Yes			20° to 21°	Oregon Ladder Fish Pump 3
Yes				OR North Powerhouse Pool supply from juvenile fishway

Comments: There are no problems to report.

Juvenile Fish Passage Facility

Every other day sample collection continues with no interruptions in the schedule this week. Installation of a new forebay (intake) deck crane continues. This will add some challenges to various task.

There are no mortality issues to report. The smolt monitoring staff is still looking to relocate their internet dish.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Minimal to light
X			Gatewell drawdown measured this week?	Daily
X			Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: Debris loads were minimal to light near the powerhouse. New incoming debris was minimal. Weather changes move the debris throughout the forebay. Residual debris loads beside the spillway were light to moderate until about half of the debris was spilled on July 27, which will be reported in the River Conditions section below. Most of the debris was fine or woody material and aquatic vegetation.

No trash rack cleaning occurred this week and none is scheduled.

An algae bloom remains visible in the 10A gatewell slot.

For the new intake crane assembly, units 12 to 14 gatewells slots remained covered over. Only unit 12 will be online for the remainder of the crane assembly. To allow vehicle access to the west side of the intake deck, the gatewell in 7C slot also remained covered over. There are openings around the covers which will allow for VBS differential monitoring in unit 12 and 7C slot. For VBS cleaning and ESBS camera inspections, the covers in unit 12 were removed from July 24 to 25.

Extended-length submersible bar screen (ESBSs)/Vertical barrier screen (VBSs):

Yes	No	NA	Item
X			ESBSs deployed in all slots and in service?
X			ESBSs inspected this week?
X			ESBSs inspection results acceptable?
X			VBSs differentials checked this week?
X			VBSs differentials acceptable?

Comments: ESBS's are deployed in all units. Camera inspections occurred in units 1, 3 and 12 this week. No problems were found.

Daily VBS differential monitoring continued. No high differentials were recorded. The three screens in unit 12 cleaned on as a preventive measure on July 24. Scheduled VBS inspections, which includes cleaning, occurred in units 6 and 11on July 26. During cleaning and inspections, screen retainer clips were replaced, and sponge was washed off the back side of the VBS's. Also, no fish were observed.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe:

Yes	No	NA	Item	Number of orifices in service
X			Did orifices operate satisfactory?	42
X			Dewatering and cleaning systems operating satisfactory?	

Comments: Orifice were adjusted for VBS cleaning and inspection as required. Attraction lighting was replaced as needed. The attraction light in 8A slot, south orifice, would not remain on. The north orifice replaced the south orifice on July 23, at 1205 hours. The south light was examined and repaired on July 25. After the light appeared to be completely functional, the south orifice returned to service on July 27, at 1125 hours.

A channel high-water alarm came in on July 25. Orifice cycling protocols were reviewed with the fisheries staff.

Bypass Facility:

Yes	No	NA	Item
X			Sample gates on?
		X	PIT-tag sampling system on?

Comments: The sample gates continue to operate every other day for sample collection. The PIT sample tag system will not be used again this year.

This week, 100 juvenile lamprey and 2,128 smolts, mostly sub-yearling Chinook, were bypassed during secondary bypass. Juvenile shad continue to be the predominate species in the sample. The smolt monitoring staff reports fish data in a separate report.

The JFF was without power on July 24, a primary bypass day, from 1218 to 1330 hours to tie in the new project sewer system with the electrical controls at the juvenile fish facility. No issues occurred.

TSW Operations: Both TSW's remain out of service with standard gates in bays 19 and 20.

River Conditions

Table 2. River Conditions at McNary Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
156.6	133.5	86.9	76.4	71.7	69.9	6.0	6.0

Comments: The above data is provided by the smolt monitoring staff except the water clarity, which is provide by the control room. The data day runs from 0700 to 0700 hours. The summer spill season, with 57 percent of the flow being spilled, continues. However, due to only one adjustment in the pattern being made at midnight, the percentage of flow being spilled may not always be exactly 57 percent.

The smolt monitoring staff continued to collect water temperature data related to juvenile passage and will report the data along with any issues in daily and weekly reports. The new crane construction on the intake deck does effect data collection at times. Adult passage temperature monitoring is year-round.

Bay 2 remains set at 4 feet and bay 6 remains set at 6 feet. This week, district personnel allowed for cranes 6 and 7 to perform a third overloaded lift before April 18, 2024. This lift will be used to close bays 2 and 6 when spill volume is reduced to 20 kcfs on August 15.

All hoists are functional.

Also, this week, funding came in for repairing the spillgate dogging mechanisms. In preparation to remove the dogging assemblies from bays 1, 3 and 21, the actions listed below occurred.

Per MOC 23MNC10, Bays 1, 3 and 4 were closed on July 27, at 0655 hours. The next step was to spill debris. The gate in bay 6 was set to split leaf at 0741 hours. The gate in bay 1 was set to split leaf at 0830 hours. Debris was spilled from bays 1 and 6, from 0830 hours to 1010 hours. Then, bays 3, 4 and 6 returned to normal service at 1029 hours. Bay 1 was on seal and removed from service at 1029 and 1206 hours, respectively. So, bay 1 is now prepared for dogging assembly removal.

To facilitate more preparations and to move stored spillgate sections, bays 15, 16 and 17 were on seal from 1207 to 1307 hours, bays 19, 20 and 21 were on seal from 1307 to 1438 hours and bays 3 and 4 were on seal from 1537 to 1602 hours.

Bay 3 will be removed from service on July 28.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections will occur on August 8.

Avian Activity: Avian counts continue. The results are recorded in Table 3 below.

For the report week, all species were counted.

In the spillway zone, pelicans and terns were noted along with an occasional gull or osprey. Pelican and tern numbers decreased. Most birds were feeding or roosting.

At the bypass outfall zone, pelicans, gulls, terns, and cormorants were noted in low numbers. Most of the birds were roosting except pelicans.

In the powerhouse zone, pelicans were noted to be feeding just outside the Oregon ladder south entrances or roosting on the water. One tern was observed. No pelicans were observed in the Oregon ladder. One pelican was observed

on the Washington ladder wall on July 23. One pelican was noted just outside the Washington ladder entrance on July 23 and 26.

In the forebay zone, a few grebes and pelicans were noted feeding or roosting along with juvenile gulls and an occasional osprey. Outside the zone, a few gulls, cormorants, pelicans, terns, and osprey were noted.

The two large bird distress calls remain deployed and active on the navigation lock wing wall. These calls are very effective at reducing roosting. The laser and LRAD remained deployed on the outfall walkway and appear to be functioning fairly well. USDA Wildlife Services continues shore and boat hazing. Both are extended to July 29

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
July 21	Spill	0	0	2	57	0
	Powerhouse	0	0	0	13	0
	Outfall	1	0	0	3	0
	Forebay	5	0	0	4	0
July 22	Spill	0	0	2	30	0
	Powerhouse	0	0	1	25	0
	Outfall	0	0	0	3	0
	Forebay	0	0	0	0	0
July 23	Spill	1	0	2	24	0
	Powerhouse	0	0	0	6	0
	Outfall	0	0	0	2	0
	Forebay	4	0	0	1	2
July 24	Spill	0	0	4	21	0
	Powerhouse	0	0	0	16	0
	Outfall	2	0	2	0	0
	Forebay	0	0	0	3	2
July 25	Spill	0	0	4	36	0
	Powerhouse	0	0	0	18	0
	Outfall	3	2	0	6	0
	Forebay	25	0	0	6	0
July 26	Spill	0	0	0	15	0
	Powerhouse	0	0	0	4	0
	Outfall	4	2	0	0	0
	Forebay	2	0	0	3	0
July 27	Spill	0	0	2	12	0
	Powerhouse	0	0	0	1	0
	Outfall	4	0	0	1	0
	Forebay	1	0	0	4	0

Invasive Species: The mussel station examinations revealed no issues on July 26.

Siberian Prawn: No prawns were observed in this week's samples or for the season to date.

Fish Rescue/Salvage**:** No fish rescue occurred this week.

Research: USGS equipment for a juvenile passage study along the upstream edge of the powerhouse and spillway remains in place. The receiver in bay 1 may have been lost on July 27. For a CRITFC study, there were tissue samples removed from 10 juvenile lamprey collected at the facility this week for a total of 705 fish this season. All fish were returned to the river unharmed. Gas bubble trauma examinations occurred on July 25. The data is reported the next day. Examinations were reduced to once a week. One fish showed signs of trauma during the report week.

Project: Ice Harbor
Biologist: Ken Fone
Biological Science Technician: Ben McArthur
Dates: July 21 – July 27, 2023

Turbine Operation

Yes	No	Turbine Unit Status
	x	All 6 turbine units available for service (see table & comments below for details).
x		All available turbine units are operated in accordance with Appendix C of the Fish Passage Plan

Ice Harbor Unit Outages (OOS) and Return to Service (RTS)

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
1	6/27/23	0708	---	---	Turbine runner replacement and stator rewind
6	7/20/23	1703	---	---	Current surge, annual maintenance

Comments: None.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on July 24, 25, and 26.

Fish Ladders:

Yes	No	Location	Criteria	Measurements
x		North Ladder Exit Differential	Head ≤ 0.3’	
x		North Ladder Picketed Lead Differential	Head ≤ 0.3’	
x		North Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
x		South Ladder Exit Differential	Head ≤ 0.3’	
x		South Ladder Picketed Lead Differential	Head ≤ 0.3’	
x		South Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
		x	South Shore Entrance (SFE-1) Weir Depth	≥ 8.0’ or on sill	
x			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
x			South Shore Channel Velocity	1.5 – 4.0 fps	
x			North Powerhouse Entrance (NFE-2) Weir Depth	≥ 8.0’ or on sill	
x			North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	
		x	North Shore Entrance (NEW-1) Weir Depth	≥ 8.0’ or on sill	
x			North Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: None.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System
5 pumps	3 pumps		Status of the 8 south shore AWS pumps
2 pumps		1 pump	Status of the 3 north shore AWS pumps

Comments: North shore AWS pump #1 has been out of service since March 1 because of a hydraulic cylinder leak on the butterfly valve. The hydraulic cylinder needs to be rebuilt but is on hold until funding is available.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 3 square yards
x			Gatewell drawdown measured this week?	
x			Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-2%
	x		Any oil seen in gatewells?	

Comments: None.

Submersible Traveling Screens / Vertical Barrier Screens (VBSs):

Yes	No	NA	Item
x			STSs deployed in all slots that are in service?
	x		STSs in continuous-run mode (Note: if not, then STSs are in cycle-run mode)?
	x		STSs/VBSs inspected this week?
		x	STS/VBS inspection results acceptable?
		x	VBSs differentials checked this week?
		x	VBSs differentials acceptable?

Comments: None.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
x			Orifices operating satisfactory?	20
	x		Dewaterer and cleaning systems operating satisfactory?	

Comments: The actuator for the water regulating weirs in the collection channel is in local control due to a problem with the automatic control function. The weirs are being operated at the actuator to adjust the water level as needed until the problem can be fixed.

Juvenile Fish Facility: The juvenile fish facility is operating in primary bypass.

Fish Sampling: The juvenile fish sampling season officially ended on July 17, although the last sample occurred on July 10 due to elevated water temperatures.

Removable Spillway Weir (RSW): Summer spill for fish passage is occurring.

River Conditions

River conditions at Ice Harbor Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
33.9	27.4	10.1	8.2	72	72	8.0	5.2

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine unit cooling water strainers will not be regularly inspected again until juvenile shad start plugging them up in the fall.

Avian Activity: There were moderate to high numbers of piscivorous birds seen around the project (see table below). The number of terns, gulls, and cormorants counted on July 24 exceeded the threshold number for initiating incident response actions (see Section 7.4 of Appendix L in the Fish Passage Plan). The exceedance was mainly due to a higher number of Caspian terns and gulls compared to the average from prior years. The birds were mostly roosting on Eagle Island, but also foraging in the spillway tailrace. The regularly scheduled bird hazing season finished at Ice Harbor Dam on June 30, but additional boat and/or land-based hazing occurred during the reporting week (weekdays) as incident response actions. The slightly reduced bird numbers through the end of the week may indicate that the hazing became more effective after birds were subjected to several days of harassment.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
---	---	---	---	---	---
---	---	---	---	---	---
---	---	---	---	---	---
July 24	57	0	26	0	42
July 25	22	2	34	0	6
July 26	25	0	23	0	18
July 27	36	2	8	0	22

Invasive Species: No exotic species that are new to the area have been found.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by the fish sampling contractor, frozen and properly disposed of in a landfill.

Fish Rescue/Salvage: None.

Research: No on-site research is occurring at this time.

Project: Lower Monumental
Biologists: Denise Griffith and Raymond Addis
Dates: July 21 - 27, 2023

Turbine Operation

Yes	No	Turbine Unit Status		
X		All 6 turbine units available for service (see table & comments below for details).	**Hard**	**Soft**
X		Available turbines operated within 1% peak efficiency? Constraint in effect.	X	

Comments: All available turbine units are operated in accordance with App. C of the Fish Passage Plan.

Lower Monumental Unit Outages (OOS) and Return to Service (RTS)

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
Unit 1	7/24/23	0600	8/03/23	ERTS	T-1 Doble testing
Unit 2	7/24/23	0600	8/03/23	ERTS	T-1 Doble testing
Unit 3	7/24/23	0600	8/03/23	ERTS	T-1 Doble testing
Unit 4	7/10/23	0710	8/31/23	ERTS	Annual/Overhaul/OPTO Upgrade
Unit 5	Daily	~0600	Daily	~1800	T-1 Doble testing
Unit 6	Daily	~0600	Daily	~1800	T-1 Doble testing

Comments: Unit 5 was taken out of service at 0600 on July 24 and placed on "speed no load" to supply station service power for T-1 Doble testing during working hours and returned to service each night of the reporting period. Unit 6 was taken out of service at 0600 on July 24 for T-1 Doble testing during working hours and returned to service each night of the reporting period. This will continue until approximately August 3.

Adult Fish Passage Facility

Lower Monumental fish facility, EAS and WDFW staff inspected the adult fishways on July 21, 22, 23, 24and 26.

Fish Ladder:

Yes	No	Location	Criteria	Measurements
X		North Ladder Exit Differential	Head $\leq$ 0.5'	
X		North Ladder Picketed Lead Differential	Head $\leq$ 0.4'	
X		North Ladder Depth over Weirs	Head over weir 1.0' to 1.3'	
X		South Ladder Exit Differential	Head $\leq$ 0.5'	
X		South Ladder Picketed Lead Differential	Head $\leq$ 0.3'	
X		South Ladder Depth over Weirs	Head over weir 1.0' to 1.3'	

Comments: None.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X		X	North Shore Entrance (NSE-1) Weir Depth	$\geq$ 8.0' or on sill	
X		X	North Shore Entrance (NSE-2) Weir Depth	$\geq$ 8.0' or on sill	
X			North Shore Channel/Tailwater Differential	1.0'–2.0'	
		X	South Powerhouse Entrance (SPE-1) Weir Depth	$\geq$ 8.0' or on sill	
		X	South Powerhouse Entrance (SPE-2) Weir Depth	$\geq$ 8.0' or on sill	
X			South Powerhouse Entrance Channel/Tailwater Differential	1.0'–2.0'	
		X	South Shore Entrance (SSE-1) Weir Depth	$\geq$ 8.0'	
X			South Shore Entrance (SSE-2) Weir Depth	$\geq$ 6.0'	
X			South Shore Channel/Tailwater Differential	1.0' – 2.0'	

Comments: North Shore Entrance NSE-1 weir was at sill during the July 21, 22 and 24 inspections with readings of 8.2, 8.1 and 8.5 feet respectively. North Shore Entrance NSE-2 weir was at sill during the July 23 inspection with a reading of 8.1 feet. South Powerhouse Entrance SPE-1 weir was at sill during all inspections with readings of 5.2, 5.2, 5.6, 5.4 and 5.2 feet respectively. South Powerhouse Entrance SPE-2 weir was at sill during all inspections with readings of 5.2, 5.2, 5.6, 5.4 and 5.2 feet respectively. South Shore Entrance SSE-1 weir was at sill during all inspections with readings of 5.8, 5.8, 6.4, 6.5 and 5.6 feet respectively.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
X			AWS Fish Pump 1
X			AWS Fish Pump 2
X			AWS Fish Pump 3

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
	X		Forebay debris load acceptable? (amount)	105 yd^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 10%
	X		Any oil seen in gatewells?	

Comments: None.

STSs/VBSs:

Yes	No	NA	Item
X			STSs deployed in all slots and in service?
	X		STSs in continuous-run mode (Note: if not, then STSs are in cycle-run mode)?
	X		STSs inspected this week?
		X	STSs inspection results acceptable?
		X	VBSs differentials checked this week?
		X	VBSs differentials acceptable?

Comments: The STSs were on cycle mode due to average sub-yearling Chinook and sockeye lengths being greater than 120 mm.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	18
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: None.

Collection Facility: The facility went into every-other day condition sampling after barging was ended. Approximately 589 fish were collected and 589 fish being bypassed during the week. In order to not violate the Washington State Permit, the collection scheduled for July 27 did not occur due to the water temperature in the fish facility system being higher than 21º C.

Transport Summary: Collection for transport ended for the season.

Spillway Weir: Summer spill continues.

River Conditions

River conditions at Lower Monumental Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (°F) *		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
34.2	27.0	17.1	12.2	71.5	69.0	7.0	4.6

*Scrollcase temperatures.

Other

Cooling Water Strainers: The cooling water strainers will not be examined again until December.

Avian Activity: Tailrace counts of foraging piscivorous birds at Lower Monumental Dam began on April 1.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
7/21/2023	730	5	1	45	0	17
7/22/2023	815	5	1	31	0	5
7/23/2023	700	7	2	14	0	8
7/24/2023	800	30	4	26	0	14
7/25/2023	715	0	0	12	0	13
7/26/2023	800	3	1	2	0	1
7/27/2023	800	6	1	6	0	2

Comment: Bird hazing by USDA personnel ended on July 1. Corps personnel continues to haze with pyrotechnics when pelicans are found inside the adult fishways. The five broken bird detourant wires over Powerhouse 1 zone will be replaced by USDA personnel in September or October of 2023.

Invasive Species: Inspection for zebra or quagga mussels will occur again in August.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by EAS, frozen and properly disposed of in a landfill. No sample on July 21, 23, 25 and 27.

Date	Sample (euthanized)	Collection*
July 22	47	188
July 24	42	168
July 26	102	408
Totals	191	764

*Collection and sample numbers are the same as the facility when sampling at 100%

Fish Rescue/Salvage: No Fish Rescue/Salvage took place during this reporting period.

Research: GBT examinations occurred on July 26. A total 1 clipped subyearling Chinook and 40 unclipped subyearling Chinook were examined. No gas bubble trauma was detected.

A PNNL study on behavior and survival of juvenile Pacific lamprey at Lower Monumental Dam will start on April 1 and run to September 30. PNNL removed most of the monitoring equipment from the raceways on June 22.

The Nez Perce steelhead kelt study and rehabilitation collection ended on June 30.

Project: Little Goose Dam
Biologist: Deb Snyder, Brooke Gerard, Cole Reeves
Dates: July 21 – July 27, 2023

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 6 turbine units available for service? (See table and comments below for details)

Little Goose Unit Outages (OOS) and Return to Service (RTS)

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
5	4/14/2017		07/31/2023	ERTS	Spider and upper guide bearing repair.
6	7/10/2023	0745	7/27/2023	1630	Unit annual maintenance

Comments: Contractual obligations and performance issues realigned the Unit 5 ERTS date into 2023, testing remains in progress, reference 23 LGS 07 MOC. Unit 6 came back online at the close of this report period.

Adult Fish Passage Facility

EAS Bio staff inspected the adult Fishway on July 21, July 24, and July 25.

Fish Ladder:

Yes	No	NA	Location	Criteria	Measurements
X			Fish Ladder Exit Differential	Head ≤ 0.5’	
X			Fish Ladder Picketed Lead Differential	Head ≤ 0.3’	
X			Fish Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
	X		Fish Ladder Cooling Water Pumps in Service		
	X		Fish Ladder Exit Cooling Water Pumps Operating Satisfactorily		

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.6 – 7/21
X	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.4 – 7/21
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 7.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 7.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
X	X*		North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	4.5 – 7/21*
X	X*		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	4.3 – 7/21*
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

*taken with NSE FSC board, which shows readings discrepant from physical weir height measurements
Comments: The adult fishway was initially returned to service on February 14, dewatered February 16 due to discovery of a second fish viewing window leak, then subsequently watered back up and commissioned for the season on February 23. The AWS pumps returned to service on February 23. The Fish Ladder Exit Cooling Water Pump was pulled, inspected, and readied for modest repairs on February 21. The Collection Channel Surface Velocity is measured at NPE. Rickly channel velocity measurements were completed and met criteria on July 27. Transponder readings documenting the Fish Ladder Depth over Weirs began displaying data inconsistent with physical staff gauge measurements beginning March 30. The North Shore fish entrance weirs continue to

experience discrepancy readings between the Fish System Control (FSC) board and physical weir height measurements. We are working with SMP contracted personnel to standardize reporting to default to physical staff gauge measurements when FSC board discrepancies are detected. Criteria for activation of Fish Ladder Exit Cooling Pump was met, and the system was started at 2030 hours on June 7. The Fish Ladder Exit Cooling Pump failed during the 0900 hour on June 29th initially from two ground fault alarms, details outlined in 23 LGS 09 MFR.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
X			AWS Fish Pump 1
X			AWS Fish Pump 2
X			AWS Fish Pump 3

Comments: Fish pumps 1, 2, and 3 were returned to service February 23.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comment
X			Forebay debris load acceptable? (amount)	High 25 ft² - Low 10 ft²
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	6-C: 1% 7/25, 7/23, 7/21
	X		Any oil seen in gatewells?	

Comments: The forebay maintained minimal floating debris inside the trash shear boom with the highest measurement occurring on July 22 at 15 ft². The overall total forebay debris high occurred July 22 at 25 ft². Drawdowns were only available on Unit 1.

ESBS/VBS:

Yes	No	NA	Item
X			ESBSs deployed in all slots and in service?
X			ESBSs inspected this week?
X			ESBSs inspection results acceptable?
X			VBSs differentials checked this week?
X			VBSs differentials acceptable?
	X		VBSs inspected this week?

Comments: Installation of Unit 4-6 ESBS's were completed on March 13 and installation of units 1-3 took place March 14. Underwater camera inspections of all unit gatewell VBS screens occurred June 12, 13, and 14. No deficiencies were found; detailed notes were taken and forwarded to mechanical crew personnel in preparation for upcoming scheduled unit annual maintenance activities. During unit 6 annual, VBS screens in slot A were pulled and the few remaining stainless-steel fasteners are being refurbished with nylon replacements. Differential measurements were only available for Unit 1.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	20
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: The juvenile bypass system was initially watered up March 6, was halted to fix pinhole leaks discovered in the 42" primary emergency fish bypass pipe, resumed and was fully commissioned on March 7.

Collection Facility: The juvenile collection facility watered up on March 21. Every other day collection for condition monitoring in conjunction with secondary bypass began March 25 with the first sample being conducted on March 26. Everyday collection began April 23 coinciding with every other day barge transportation. Barging transportation concluded with the final barge departure of June 19 returning to a combination of everyday condition sampling and secondary bypass operations. Every-other day primary by-pass was initiated on July 11 due to water temperatures above 68°F. A total of 1,921 fish were collected, 1,912 were bypassed. There were 9 sample or facility mortalities. The descaling and mortality rates were 1.0% and 0.47%, respectively. The collection and transport facility operated within criteria. Fourteen adult lamprey were removed from the collection facility during this report period.

Transport Summary: Collection for fish transportation began April 23 with the first barge departure on April 24. Every other day barging is scheduled thereafter pending situational transition to everyday barging due to any unforeseen increase in fish numbers. Barge transportation for the season ended with the final barge departure on June 19. Truck transport operations are scheduled to begin August 1 with the first truck departure on August 2.

Spillway Weir: Little Goose began operation of the adjustable spillway weir (ASW) on March 1 to facilitate passage of adult steelhead overshoots. Operation occurred three days each week every other day for four hours in the morning. Spring spill operations began as scheduled on April 3. On June 12 the ASW was adjusted to high crest at 0840 hours per teletype instructions reducing ASW outflow from 11 to 7.4 kcfs due to decreased reservoir inflows. Summer spill operations began as scheduled on June 21.

River Conditions

River conditions at Little Goose Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
31.80	28.10	11.00	10.60	70.4	69.6	6.0	6.0

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inline cooling strainer inspections commenced on December 1, 2022. Inspections will continue in accordance with the Fish Passage Plan (FPP) and results will be submitted to the District.

Avian Activity: Daily piscivorous bird counts at Little Goose Dam are scheduled to begin April 1, while USDA-APHIS bird abatement contract services are in place.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
7-21	0730	20	0	0	2
7-22	0730	30	2	0	2
7-23	0730	40	0	0	2
7-24	0800	43	0	0	5
7-25	1530	39	0	0	3
7-26	0830	38	2	0	4
7-27	0830	19	0	0	3

Invasive Species: No invasive species have been observed on the mussel station.

Siberian Prawn: Juvenile fish collection began March 25. Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by Oregon Department of Fish and Wildlife and EAS Bio personnel, frozen and properly disposed of in a landfill

Date	Sample	Collection*
7-21	198	792
7-22	n/a	n/a
7-23	225	450
7-24	n/a	n/a
7-25	200	400
7-26	n/a	n/a
7-27	235	470
Totals	858	2112

*Collection and sample numbers are equal when sample rates change to 100%

Gas Bubble Trauma (GBT): Oregon Department of Fish and Wildlife began GBT monitoring services starting on April 4, 2023. GBT monitoring occurred on July 26 and 27th. Of the 46 fish examined, 0 fish exhibited signs of GBT.

Fish Rescue/Salvage: On July 21, 23, 25, and 27 flume rescues occurred during switching from collection and secondary bypass to primary bypass operations. Fish rescue reports were submitted to District.

Research: The Nez Perce Tribe (NPT) began adult steelhead kelt collection efforts on March 26 and concluded collection on July 1.

Project: Lower Granite
Biologists: Elizabeth Holdren and David Miller
Dates: July 21-27, 2023

Turbine Operation

Yes	No	Turbine Unit Status		
	X	All 6 turbine units available for service (see table & comments below for details).	**Hard**	**Soft**
X		Available turbines operated within 1% peak efficiency? Constraint in effect.	X	

Lower Granite Unit Outages (OOS) and Return to Service (RTS)

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
5	07/10	0721	07/27	1054	Annual maintenance

Comments:

Adult Fish Passage Facility

Lower Granite biologists inspected the adult fishway on July 21, 22, 26, and 27.

Fish Ladder:

Yes	No	NA	Location	Criteria	Comments
X			Fish Ladder Exit Differential	Head ≤ 0.5’	
X			Fish Ladder Picketed Lead Differential	Head ≤ 0.3’	
X			Fish Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
X			Fish Ladder Cooling Water Pumps in Service		
X			Fish Ladder Cooling Water Pumps Operating Satisfactorily		

Comments:

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.8’, 7.8’
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.8’, 7.8’
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 8.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0’ or on sill	
	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	0.6’, 0.7’
X			North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.8’, 0.7’
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: Ladder collection channel operation and configuration will continue to be evaluated this season to resolve ongoing issues. FOGs 1, 4, 7, and 10 are in operation. North powerhouse continues to not meet channel/tailwater head differential criteria. Electrical crew continues to calibrate the ladder when issues are reported.

Auxiliary Water Supply System:

Operating Satisfactorily	Standby	Out of Service	Auxiliary Water Supply (AWS)
Yes			AWS Fish Pump 1
No		Yes	AWS Fish Pump 2
Yes			AWS Fish Pump 3

Comments: AWS pumps 1 and 3 remain in service.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	55.7 yd^2
X			Trash rack differentials measured this week?	
X			Trash rack differentials acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments:

ESBSs/VBSs:

Yes	No	NA	Item
X			ESBSs deployed in all slots and in service?
	X		ESBSs inspected this week?
		X	ESBSs inspection results acceptable?
X			VBSs differentials checked this week?
X			VBSs differentials acceptable?

Comments: N/A

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	21
X			Dewaterer and cleaning systems operating satisfactory?	

Comments:

Collection Facility: The collection facility is secondary bypass mode and collecting for condition sampling and USGS research. Lamprey genetic sampling for CRITFC continues. Collection for truck transport is scheduled to start at 0700 hours August 1.

Transport Summary: Transport is scheduled to resume with the first truck departing LWG August 3.

Spillway Weir: Summer spill started June 21. There have been 165 adult and 84,581 juvenile Chinook salmon, 623 adult and 54,965 juvenile steelhead, 2,981 juvenile Coho salmon, and 12,162 juvenile Sockeye salmon detected at the RSW since March 1. There have been 22 adult and 45,155 juvenile Chinook salmon, 137 adult 38,032 juvenile steelhead, 1,209 juvenile Coho salmon, and 1,141 juvenile Sockeye salmon detected through the Juvenile Bypass System since March 15 (DART).

River Conditions

River conditions at Lower Granite Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
35.0	29.8	18.3	17.5	66.0	65.0	5.0	5.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainers were inspected July 27. One live lamprey was released to the river and 31 juvenile lamprey mortalities were recovered.

Invasive Species: No zebra/quagga muscles were detected on the trap substrate. There were 2,639 Siberian prawns collected in the sample.

Avian Activity: Biologist daily piscivorous bird counts and bird hazing began April 1.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
July 21	1650	0	1	0	0
July 22	0920	0	0	0	0
July 23	1320	0	1	0	0
July 24	0616	4	0	0	0
July 25	1330	0	1	0	0
July 26	1257	0	4	0	0
July 27	1045	3	6	2	1

Gas Bubble Trauma (GBT) Monitoring: N/A

Adult Fish Trap Operations: Fish will continue to be sampled Monday through Friday until broodstock collection starts August 18. LWG biologists flushed the adult trap July 23.

Fish Rescue/Salvage: The adult fish trap was flushed to clean debris and fish mortalities from the drain screens. Mortalities included 1 unclipped adult Chinook, 2 Sockeye (1 clipped and 1 unclipped), and about 65 shad mortalities. Live fish flushed to the tailrace included 2 small mouth bass, and about 75 shad.

Research:

National Marine Fisheries Service (NMFS) PIT tagging of Adult Wild Chinook and Adult Steelhead for ISEMP-Related Dispersal Monitoring:

The goal of this project is to PIT tag up to 4000 unclipped adult Chinook and 4000 unclipped adult steelhead collected in the adult trap daily sample for dispersal monitoring.

Sampling of Steelhead, Chinook salmon, and Sockeye salmon by the Idaho Department of Fish and Game (IDFG) and NOAA Fisheries for Biological data collection.

Upriver migrating steelhead, spring/summer Chinook salmon, and sockeye salmon are collected from the adult trap beginning March 1 through November 30. The goal is to collect 5-20% of adult steelhead, spring/summer Chinook salmon, and sockeye salmon ascending the ladder March 1-November 30. Data collection includes fish scales, genetics tissue, sex and length, wild/hatchery composition, and non-adipose clipped hatchery fish assessment. All natural origin adult steelhead and spring/summer Chinook salmon trapped will be PIT tagged to estimate headwater

tributary escapement. Sockeye salmon may be PIT tagged in the future to estimate metrics regarding conversion rates. Some steelhead and spring/summer Chinook salmon may be radio-tagged or spaghetti-tagged. This information on adult fish forms the basis for status information used in several forums including BiOp-RPA identified needs.

Sampling and PIT tagging of Walleye by the Idaho Department of Fish and Game (IDFG) and NOAA Fisheries.

Walleye collected in the adult fish trap are PIT tagged and released back into the ladder to investigate movement and ascension rate of walleye that successfully exit the fish ladder into the upstream reservoir. PIT tag data collected will be used to gain an understanding of the potential expansion and threat of walleye upstream of LWG to ESA-listed salmonids and guide future management actions of walleye in the Snake River Basin.

PIT Tagging and Genetic Sample Collection from Bull Trout for USFWS:

Bull trout will be collected as part of the normal adult trap daily sample and using the adult SbyC system to recapture previously PIT tagged fish. Untagged bull trout will be PIT tagged, fin clipped for genetic analysis, and have morphometric data collected including weight and length etc. Fin clips will be sent to USFWS to determine the fish's origin. Previously PIT tagged bull trout will only have morphometric data collected. All fish will be released back into the adult fish ladder.

PNNL Juvenile Pacific Lamprey Passage Behavior and Survival at Lower Granite:

The goal of the study is to address questions regarding potential effects of dam operations and configurations on juvenile Pacific lamprey behavior and survival using The Juvenile Salmon Acoustic Telemetry System (JSATS). A target of 450 juvenile and 450 larval lamprey will be collected, implanted with a juvenile Eel/Lamprey Acoustic Transmitter (ELAT), and released upstream of LWG. An additional 1000 juvenile or larval lamprey will be implanted with PIT tags. Distribution and approach routes (including vertical, horizontal, and temporal), primary routes of passage (proportions) at LWG, project survival from forebay to tailrace, and reach survival and reservoir residence time will be evaluated using the telemetry system. In addition, 50 dead tagged juvenile lamprey will be released from LGR and 50 from LMN to estimate dam passage survival using the virtual release/dead-fish correction (ViRDCt) model. Detection of tagged individuals will be summarized to evaluate passage routing and estimate dam passage survival at LGR and LMN, estimate reach survival downstream of LWG and downstream of LMN, and evaluate travel time between detection arrays. There have been 493 larval and 1170 juvenile lamprey have been collected for PNNL this season. Of the total collection, 437 larval and 1074 juvenile lamprey have been either PIT tagged or acoustic tagged at LWG and released at Blyton Landing, 55 larval and 196 juveniles were handled and released without being tagged, and there were 1 larval and 14 juvenile lamprey recovery mortalities. Collection of juvenile lamprey will resume in September.

Columbia River Inter-Tribal Fisheries Commission (CRITFC) Pacific Lamprey Genetic Study:

CRITFC has requested that the SMP collect non-lethal tissue samples from up to 2000 juvenile and 1000 larval Pacific lamprey, not to exceed 10 juvenile or larvae daily, during the routine smolt monitor condition sampling from March through September. The purpose of this study is to fill two objectives; 1) Determine relative proportion of translocation offspring among the total abundance of larval and juvenile lamprey passing the juvenile bypass systems at BON, JDA, MCN, and LWG. 2) Describe life history characteristics of larval and juvenile lamprey emigrating from the Columbia and Snake River basins. The genetic information collected will be used to evaluate the tribal Pacific lamprey programs efficacy and assist with guiding future management. LWG SMP collected genetic samples from 325 juvenile and 728 larval lamprey this season.