U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#20-2023

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: July 14-20, 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
10	6/5	0758	7/28	NA	Nine-year overhaul
13 & 14	6/12	0636	12/21	NA	Control system upgrades
1 & 2	7/10	0648	8/10	NA	Transformer 1 gasket replacement
4, 5 & 11	7/18	1000	7/10	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 14, 16 and 19. 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'	0.9' to 1.2'
X		Oregon Count Station Differential	0.0' to 0.5'	0.2' to 0.3'
X		Washington Exit	Head over weir 1.0' to 1.3'	1.1' to 1.2'
X		Washington Count Station Differential	0.0' to 0.5'	0.2' to 0.3'

Comments: Debris loads were minimal to very light (woody material) near the Oregon shore exit and minimal to light (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.

The out of criterion point listed above for the Oregon ladder occurred on July 14 and was resolved with a set point adjustment.

At the Washington shore exit, a regulating weir alarm came in and was reset on all three inspection days.

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 1.6'
X			NFEW2 Weir Depth	≥ 8.0'	8.4' to 8.5'
X			NFEW3 Weir Depth	≥ 8.0'	8.4' to 8.5'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.6' to 1.7'
X			SFEW1 Weir Depth	≥ 8.0'	8.5' to 8.6'
X			SFEW2 Weir Depth	≥ 8.0'	8.5' to 8.6'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 2.1 fps
X			Washington Entrance Head Differential	1.0' – 2.0'	1.3' to 1.4'
X			WFE2 Weir Depth	≥ 8.0'	8.5' to 8.7'
X			WFE3 Weir Depth	≥ 8.0'	8.5' to 8.8'

Comments: There are no problems to report.

Three floating orifice gates (FOG's) slots, W32, W37 and W41 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			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.

Eight subyearling Chinook mortalities were removed from the sample recovery raceway on July 14. The sample tanks' mortality rate was 4.17 percent on July 16. Sample collection and mortality will continue to be adjusted and monitored.

The smolt monitoring staff had no internet access issues this week. However, they are looking at relocating their 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, and some debris has been spilled. Residual debris loads beside the spillway were light to moderate. 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. There are openings around the covers which will allow for VBS differential monitoring in unit 12 and 7C slot.

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 4, 5 and 11 this week. No problems were found.

Daily VBS differential monitoring continued. No high differentials were recorded. The three screens in unit 9 were inspected per schedule and cleaned on July 20. 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 as required. Attraction lighting was replaced as needed.

There are no problems to report.

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, 1,190 juvenile lamprey and 12,310 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.

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
167.5	145.0	92.9	83.6	70.2	69.6	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 may not be exactly 57 percent at times during the day.

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.

Cranes 6 and 7 cannot perform an overloaded lift until April 18, 2024. We are unable to adjust spillway gates 2 and 6 for flow this season, as prescribed by the Fish Passage Plan, potentially we will be unable to perform critical maintenance and repairs on spillway equipment, and we will be unable to close spillway gates 2 and 6 at the end of this spill season.

Work on the hoist in bay 16 continued as outlined here. With bay 16 still being closed, bays 15 and 17 were closed on July 17, from 0751 to 1550 hours. Bays 15 and 17 were closed on July 18, from 1245 to 1410 hours. Bay 16 returned to service that day at 1410 hours. Spill volume was spread through the other bays and the spill pattern for July was being followed.

With bay 20 closed, hoist inspection and brake replacement began on July 17. Bays 19 and 21 were closed, that day, from 1448 to 1544 hours. Bays 19 and 21 were closed on July 18, from 1007 to 1617 hours. Bay 20 returned to service on July 19, at 0818 hours. Spill volume was distributed through other bays during the outages.

Currently, bay 2 is set at 4 feet and bay 6 is set at 6 feet.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections will occur on August 1.

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 cormorant or osprey. Pelican and tern numbers were stable and decreased, respectively. Most birds were feeding or roosting.

At the bypass outfall zone, the number of feeding pelicans decreased. Roosting cormorants, gulls and terns were also observed. These birds would occasionally feed.

In the powerhouse zone, pelicans were noted to be feeding just outside the Oregon ladder floating orifice gates and the 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 and just outside the Washington ladder entrance, one pelican was observed on July 16.

In the forebay zone, a few grebes and pelicans were noted feeding or roosting along with juvenile gulls and an occasional cormorant. 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 were reprogrammed, reinstalled on the outfall walkway and functional on July 14. That day, the LRAD was tested near the Oregon ladder before being reinstalled. In order to be operating in a more critical time frame, the LRAD was restarted on July 20.

USDA Wildlife Services continues shore hazing and may be extended past July 22. Due to funds still being available, hazing from the boat resumed on July 14.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
July 14	Spill	0	0	8	43	0
	Powerhouse	0	0	0	13	0
	Outfall	3	0	0	4	0
	Forebay	0	0	0	2	3
July 15	Spill	0	0	4	66	0
	Powerhouse	0	0	0	26	0
	Outfall	5	2	0	4	0
	Forebay	2	0	0	0	2
July 16	Spill	0	1	2	67	0
	Powerhouse	0	0	0	28	0
	Outfall	3	4	4	2	0
	Forebay	0	1	0	3	3
July 17	Spill	0	0	4	34	0
	Powerhouse	0	0	1	24	0
	Outfall	0	0	0	5	0
	Forebay	0	0	0	0	2
July 18	Spill	0	0	4	66	0
	Powerhouse	0	0	0	30	0
	Outfall	4	3	0	6	0
	Forebay	4	0	0	3	0
June 19	Spill	0	0	2	44	0
	Powerhouse	0	0	0	38	0
	Outfall	3	0	2	4	0
	Forebay	1	0	0	2	4
July 20	Spill	0	0	2	43	0
	Powerhouse	0	0	0	20	0
	Outfall	3	0	0	1	0
	Forebay	14	0	0	4	3

Invasive Species: The next mussel station examinations will occur 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. For a CRITFC study, there were tissue samples removed from 19 juvenile lamprey collected at the facility this week for a total of 695 fish this season. All fish were returned to the river unharmed. Gas bubble trauma examinations occurred on July 17. The data is reported the next day. Examinations were reduced to once a week. One fish showed signs of trauma during the report week. Six subyearling Chinook mortalities were removed from the recovery raceway on July 17.

Project: Ice Harbor
Biologist: Ken Fone
Biological Science Technician: Ben McArthur
Dates: July 14 – July 20, 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
4	7/17/23	10:30	7/17/23	17:00	Doble testing
3	7/17/23	10:30	7/20/23	12:47	Doble testing and submersible traveling screen (STS) replacement
6	7/18/23	08:14	7/18/23	12:50	Hub tap and STS inspection
5	7/19/23	08:38	7/19/23	11:30	Hub tap and STS inspection
2	7/20/23	14:02	7/21/23	08:30	STS inspection and replacement
6	7/20/23	1703			Current surge

Comments: None.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on July 17, 18, and 19.

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’	0.7’
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’	0.8’
		x	North Shore Entrance (NEW-1) Weir Depth	≥ 8.0’ or on sill	
x			North Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: The differential at the south ladder picketed leads was above criteria on July 18 due to a quick buildup of filamentous algae. The picketed leads were cleaned immediately after the inspection. The differential across the picketed leads will be checked daily and cleaned as often as needed to keep it in criteria.

The north powerhouse channel/tailwater differential was below criteria on July 18. This was probably due to calibration issues with the tailwater transducer. As the spill volume continues to decrease with the lessening river flow, the reduced turbulence in the tailrace will be more conducive for doing an accurate calibration.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System
6 pumps	2 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 4 square yards
x			Gatewell drawdown measured this week?	
x			Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-20%
	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: Unit 6, 4, 3, and 2 STSs and unit 3 VBSs were inspected on July 18, 19, and 20.
STS screens 2B and 3A were each discovered to have a minor tear. The screens were swapped with undamaged ones from Unit 1 which is not in service. There are currently no back up screens if any of the in-place ones are damaged. Repairs to damaged screens will be made once manpower can support.

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 except when collecting fish for sampling.

Fish Sampling: Juvenile fish sampling is scheduled to occur on Mondays and Thursdays each week. Sampling on July 17 and July 20 was cancelled because the water temperature in the lab was slightly above 70.0 degrees F that morning (temperature limit in the Fish Passage Plan, Ice Harbor section 2.3.2.5.ii and section 4.1 of Appendix J). See the table below for a summary of the sampling results. Damage to STS screens may be possible cause of slightly high that normal fish injuries in previous week's sample.

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
37.2	31.4	11.12	9.09	72	70	7.0	5.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers from all of the turbine units were inspection on July 10. A total of 8 juvenile lamprey, 5 juvenile shad, and 63 Siberian prawns (all mortalities) were found.

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 17, 18, 19 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 compared to the average from prior years. The terns were mostly foraging in the spillway tailrace and roosting on Eagle Island. The scheduled bird hazing season is done at Ice Harbor, but additional boat-based hazing occurred on July 17 and 20 and more is planned for the rest of the month. The terns were not significantly dissuaded by the hazing on July 17, but were observed to be moving further away from hazing locations on July 20.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
July 17	15	0	55	0	7
July 18	25	0	60	0	11
July 19	32	0	55	0	14
July 20	10	1	31	0	0

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 14 - 20, 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 4	7/10/23	0710	8/31/23	ERTS	Annual/Overhaul/OPTO Upgrade

Comments: None.

Adult Fish Passage Facility

Lower Monumental fish facility, EAS and WDFW staff inspected the adult fishways on July 14, 16, 18 and 20.

Fish Ladder:

Yes	No	Location	Criteria	Measurements
X		North Ladder Exit Differential	Head ≤ 0.5’	
X		North Ladder Picketed Lead Differential	Head ≤ 0.4’	
X		North Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
X		South Ladder Exit Differential	Head ≤ 0.5’	
X		South Ladder Picketed Lead Differential	Head ≤ 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			North Shore Entrance (NSE-1) Weir Depth	≥ 8.0’ or on sill	
			North Shore Entrance (NSE-2) Weir Depth	≥ 8.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
		X	South Powerhouse Entrance (SPE-1) Weir Depth	≥ 8.0’ or on sill	
		X	South Powerhouse Entrance (SPE-2) Weir Depth	≥ 8.0’ or on sill	
X			South Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
		X	South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	
X			South Shore Entrance (SSE-2) Weir Depth	≥ 6.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: Depth South Powerhouse Entrance SPE-1 weir was at sill during all inspections with readings of 6.3, 5.5, 5.5 and 5.5 feet respectively. South Powerhouse Entrance SPE-2 weir was at sill during all inspections with readings of 6.3, 5.5, 5.5 and 5.5 feet respectively. South Shore Entrance SSE-1 weir was at sill during all inspections with readings of 6.7, 6.4, 6.4 and 6.4 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		X*	AWS Fish Pump 3

Comments: *AWS fish pump 3 was taken out of service on July 13 and returned to service at 0950 on July 17, due to a hot bearing.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
	X		Forebay debris load acceptable? (amount)	110 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 1,637 fish were collected and 1,636 fish being bypassed during the week.

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
37.5	31.3	17.2	14.4	70.0	68.9	5.9	4.5

*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
7/14/2023	800	5	3	3	0	9
7/15/2023	630	17	0	9	0	14
7/16/2023	630	12	1	15	0	31
7/17/2023	715	11	5	32	0	28
7/18/2023	645	6	2	13	0	10
7/19/2023	645	0	2	3	0	10
7/20/2023	1100	0	1	8	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. During bird hazing on June 28, five of the bird detourant wires over Powerhouse 1 zone were found broke. They 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 7, 9, 11 and 13.

Date	Sample (euthanized)	Collection*
July 14	5	100
July 16	12	60
July 18	14	70
July 20	13	52
Totals	44	282

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

Fish Rescue/Salvage: A fish rescue/salvage took place on July 18 in Unit 4's draft tube. No fish were found.

Research: GBT examinations occurred on July 19. A total 22 clipped subyearling Chinook and 82 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 14 – July 20, 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	7/28/2023	1700	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.

Adult Fish Passage Facility

EAS Bio staff inspected the adult Fishway on July 15th, July 16th, July 18th, and July 19th.

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			South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	
X	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.5 – 7/16, 7.9 – 7/18
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	5.0 – 7/16*
X	X*		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	4.9 – 7/16*
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 with 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. Rickley channel velocity measurements were completed and met criteria on June 29. 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 200 ft² - Low 0 ft²
	X		Gatewell drawdown measured this week?	
		X	Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	
	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 20 at 15 ft². The overall total forebay debris high occurred July 19 at 200 ft².

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.

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 every day 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 3,190 fish were collected, 3,186 were bypassed. There were 4 sample or facility mortalities. The descaling and mortality rates were 1.0% and 0.12%, respectively. The collection and transport facility operated within criteria. Eleven 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
35.30	31.00	11.70	9.30	69.4	67.8	6.0	5.5

*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
7-14	0800	14	0	0	4
7-15	0730	16	0	0	3
7-16	0745	17	0	0	6
7-17	0800	45	0	0	10
7-18	1545	60	0	0	1
7-19	0800	30	0	0	2
7-20	0800	25	2	0	0

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*
7-14	n/a	n/a
7-15	8	80
7-16	n/a	n/a
7-17	39	312
7-18	n/a	n/a
7-19	96	480
7-20	n/a	n/a
Totals	143	872

*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 19th. Of the 95 fish examined, 0 fish exhibited signs of GBT.

Fish Rescue/Salvage: On July 15, 17, and 19 flume rescues occurred during switching from collection and secondary bypass to primary bypass. 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 14-20, 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			Annual maintenance

Comments:

Adult Fish Passage Facility

Lower Granite biologists inspected the adult fishway on July 15, 16, 18, and 19.

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’	7.9’, 7.9’, 7.9’
X			South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.7’, 7.9’
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 8.0’ or on sill	5.4’, 6.0’,5.2’, 6.1’
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0’ or on sill	5.4’, 6.0’,5.2’, 6.1’
	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	0.8’, 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’, 0.8’, 0.7’, 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)	46.3 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.

Transport Summary: N/A

Spillway Weir: Summer spill started June 21. There have been 162 adult and 84,548 juvenile Chinook salmon, 620 adult and 54,964 juvenile steelhead, 2,981 juvenile Coho salmon, and 12,162 juvenile Sockeye salmon detected at the RSW since March 1. There have been 19 adult and 45,103 juvenile Chinook salmon, 139 adult 38,035 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
39.9	32.5	18.5	18.1	66.5	65.5	5.0+	5.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A

Invasive Species: No zebra/quagga muscles were detected on the trap substrate. There were 1001 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 14	1241	0	1	0	0
July 15	0757	0	0	0	0
July 16	1040	1	2	0	0
July 17	0855	1	1	0	0
July 18	0945	5	0	0	0
July 19	1337	1	2	0	0
July 20	0745	0	0	0	0

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 16.

Fish Rescue/Salvage: The adult fish trap was flushed on July 16 to clean debris and fish mortalities from the drain screens. Mortalities included 1 sucker, 1 peamouth, and about 200 shad mortalities. Live fish flushed to the tailrace included 2 small mouth bass, about 14 shad, and 1 peamouth. Mortalities included 1 unclipped adult Chinook, 1 decomposed unidentified salmonid, 1 adult lamprey, and about 26 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 665 larval lamprey this season.