Out of Criteria – Weekly Report #33-2023

1. McNary

Units 13&14 OOS until 12/21 for Control Upgrades. Unit 11 OOS for overhaul until 12/21.

The dogging mechanisms for bays 2 (downstream) and 21 (upstream/south side) will be reinstalled on October 20. The downstream dogging mechanisms for bay 9 will be reinstalled sometime next week. Downstream dogging mechanism are scheduled to be removed from bays 4 and 5 next. See MOC 23MCN10.

2. Ice Harbor

Unit 1 OOS for turbine runner replacement and stator rewind. Unit 4 OOS for 6 year overhaul/

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. North shore AWS pump #2 tripped off at 0200 hours on October 18 and was turned back on at 0737 hours. The cause of the trip is under investigation. See MFR 23 IHR 10 for more details.

3. Lower Monumental

Spillgate 5 and 7 are out of service for gearbox replacement.

Unit 2 OOS until 11/08/23 for Annual Service ERTS 11/08/2023. Unit 6 OOS for T2 repair ERTS 1/2/24.

4. Little Goose

Contractual obligations and performance issues realigned the Unit 5 ERTS date into 2023, testing scheduled for winter maintenance period in December. Unit 2 OOS for Unit Annual until December 1.

The fishway cooling pump has been out of operation since June 29.

5. Lower Granite Dam

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	$\geq$ 8.0’	7.4’, 7.7’,7.9’,7.9’
	X		South Shore Entrance (SSE-2) Weir Depth	$\geq$ 8.0’	7.5’,7.8’,7.8’
	X		North Shore Entrance (NSE-2) Weir Depth	$\geq$ 7.0’ or on sill	6.9’

Pump 3 was removed from service to address a gearbox oil leak and to replace the input shaft. AWS pumps 1 and 2 remain in service. See MFR 23LWG10.

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: October 13-19, 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**
13 & 14	6/12	0636	11/17	NA	Control system upgrades
11	10/10	0719	12/21	NA	9-year overhaul
1 & 8	10/17	1000	10/17	1100	ESBS camera inspections, rotated through units

Comments: RTS dates are subject to change.

Adult Fish Passage Facilities

Measured inspections of the adult fishways occurred on October 13, 16 and 18. Visual adult fish counting will conclude on October 31.

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' 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 light to moderate (woody material) near the Oregon shore exit along the shoreline and minimal (aquatic material) near the Washington shore exit. The general maintenance staff has been cleaning the picketed leads at both exits as needed.

At the Washington shore exit, a low water alarm came in and was reset on October 16.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.2' to 1.3'
X			NFEW2 Weir Depth	$\geq$ 8.0'	8.8' to 9.1'
X			NFEW3 Weir Depth	$\geq$ 8.0'	8.8' to 9.0'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.7' to 1.8'
X			SFEW1 Weir Depth	$\geq$ 8.0'	8.3' to 8.6'
X			SFEW2 Weir Depth	$\geq$ 8.0'	8.4' to 8.5'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.7 fps
X			Washington Entrance Head Differential	1.0' – 2.0'	1.5'
X			WFE2 Weir Depth	$\geq$ 8.0'	9.2' to 9.4'
X			WFE3 Weir Depth	$\geq$ 8.0'	9.1' to 9.5'

Comments: There are no problems to report.

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			21° to 23°	Oregon Ladder Fish Pump 1
Yes			21° to 22°	Oregon Ladder Fish Pump 2
Yes			21° to 23°	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

Fall primary bypass season continues with facility maintenance, cleaning, and repairs occurring. To enhance maintenance, the facility was dewatered by closing the facility water supply lines and making adjustments in the juvenile channel, which will be discussed below, on October 15.

Station service unit 01 was rewatered in late August. The unit has been out of service since March 2017. The significance of this unit being rewatered is emergency and flush water are now again available to the juvenile system along with water that can be used to refill the channel.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Very light to moderate
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 very light to moderate near the powerhouse. Residual debris loads beside the spillway and new incoming debris loads were minimal. Weather changes move the debris from the powerhouse to the Oregon shore and back. Most of the debris was fine or woody material and aquatic vegetation.

No trash rack cleaning was scheduled.

For the new intake deck crane, unit 14's gatewell slots remained covered over. Testing the crane with an emergency bulkhead in this area will occur on October 20.

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 in units 1 and 8 revealed no issues on October 17. A new ESBS control system is planned for installation in the near future.

Daily VBS differential monitoring continued. No high differentials were recorded. Five screens were cleaned on October 16. 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?	42/39
X*			Dewatering and cleaning systems operating satisfactory?	

*Comments: Orifices were adjusted for VBS cleaning as required. Orifice operator oil and air leaks were repaired as needed.

In order to dewater the facility, so the supply lines could be closed, the orifices in unit 11, which is out of service were closed, reducing the orifice count to 39. Also, the three floor dewatering valves were opened 0.5 to 2.0 inches each. These adjustments left the two side dewatering valves that control the channel elevation near the same settings as before the adjustments. After preparations, this process occurred from 1015 to 1126 on October 15. The system is still in primary bypass.

A high-water elevation alarm came in on October 13, at 0533 hours. Three water elevation alarms (one low and two high) came on October 14, from 1210 to 1215. Eight water elevation alarms (a mix of high and low) came in on October 15, from 1033 to 2103 hours. Thirteen water elevation alarms (a mix of high and low) came in on October 16, from 0139 to 2107 hours. Forty-nine water elevation alarms (a mix of high and low) came in on October 17, from 0642 to 1502 hours. Five water elevation alarms (a mix of high and low) came in on October 18 from 0034 to 2129 hours. Finally, four water elevation alarms (a mix of high and low) came in on October 19 from 0559 to 0606 hours.

Mostly of the time, the alarm quickly cleared. However, at other times, the two side dewatering valves that control the channel water elevation appeared to be chasing the elevation, which created a rhythm to the cycling of the water elevations from high to low and back. The water elevation set point is 327.60 feet. The fluctuations ran between 327.3 to 327.9 feet. The low/high water elevation alarms are set to go off at 0.2 feet plus/minus. Fortunately, sample collection is not occurring, and these fluctuations do not adversely affect the flow down the full flow flume and bypass pipe during primary bypass. However, the issue needs to be resolved before the fluctuations get worse.

The electrical staff looked at the two side dewatering valves and the control program from October 17 to 19. They adjusted the north side dewatering valve to match the south side dewatering valve's percentage open. This has helped reduce the number of alarms. However, the north valve does appear to be binding and not adjusting as quickly as it should, especially when traveling closed. We will continue to monitor the issue over the weekend.

Bypass Facility:

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

Comments: All system are out of service for winter maintenance, which is occurring. The facility was dewatered on October 15. Winterization was completed.

TSW Operations: The TSW in bay 19 remains out of service with a standard gate in place. The TSW in bay 20, per RCC schedule, was being opened as required.

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
83.4	72.9	1.8	0.0	64.0	63.0	6.0	6.0

Comments: The above data is provided by the control room. The data day runs from 0000 to 0000 hours.

Cranes 6 and 7 can perform their next overloaded lift on April 18, 2024. Spillway hoist scheduled maintenance was completed this week. New hoist control plugs will be installed in the near future.

The dogging mechanisms for bays 2 (downstream) and 21 (upstream/south side) will be reinstalled on October 20. The downstream dogging mechanisms for bay 9 will be reinstalled sometime next week. Downstream dogging mechanism are scheduled to be removed from bays 4 and 5 next.

Spillgate linkage has also become a priority.

All hoists are functional. However, due to their overload issues, the hoists are now under restrictions similar to the cranes. There are 20 spillway hoists, and all are overloaded. In the full gate (double leaf) configuration, 13 of the gates are loaded more than 125 percent of rated capacity, which is prohibited per EM 385-1-1. The remaining seven hoists are loaded between 100 and 125 percent of rated capacity, which is classified as an Engineered Lift. Only two Engineered Lifts are allowed for each of these hoists in a consecutive 12-month period. As a result, the spillway hoists are limited to split leaf operations, with limited full gate operations with the seven hoists within the 100 to 125 percent of capacity until capacity issues are resolved.

As part of the effort to find alternatives to the current spill pattern until hoist issues are resolved, a test was conducted with split leaf configurations on October 19. First, the TSW was opened from 1005 to 1101 hours. The flow over the TSW will be used as a baseline. Next, bay 8 was opened split leaf in the downstream slot from 1147 to 1242 hours. Lastly, bay 9 was opened split leaf in the upstream slot from 1318 to 1422 hours. The TSW and bay 8 were opened with hoists. Bay 9 was opened with a crane. Bays 8 and 9 were opened to nine feet. Water quality monitoring, drone footage and staff observations occurred during the testing. Results will be available at a later date. The fisheries staff watched the gull activity during this time and saw no difference in the birds' behavior during the three phases of the test. Due to the testing, the average spill flow was 1.3 kcfs on October 19.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections will occur on December 5.

Avian Activity: With fall primary bypass season, casual bird observations continue.

For the report week, no terns, or pelicans were observed.

In the spillway zone, gulls and cormorants were noted roosting. Gull numbers fluctuated greatly. The gulls did feed in the TSW flow when open. Overall gull numbers were the highest on TSW flow days.

At the bypass outfall zone, some gulls and a large number of overwintering cormorants were noted roosting. Occasionally, the birds would feed, especially during a west wind.

In the powerhouse zone, gulls in fluctuating numbers were noted occasionally roosting and feeding. Gulls moved freely between the three tailwater zones.

In the forebay zone, an occasional grebe or gull was noted. Outside the zone, a few cormorants were observed along with small groups of gulls. One great blue heron was noted.

The laser and LRAD deployed on the outfall walkway were removed for the winter on October 18. The two large bird distress calls deployed on the navigation lock wing wall were removed on October 19.

Invasive Species: The next mussel station examinations will occur on October 22.

Siberian Prawn: With sample season concluded, prawns have not been observed.

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

Research: USGS personnel will return to the project to remove their spillway equipment in November. There is nothing more to report.

Project: Ice Harbor
Biologist: Ken Fone
Biological Science Technician: Ben McArthur
Dates: October 13 – October 19, 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	10/02/23	0930	---	---	6-year overhaul
6	10/16/23	0755	10/16/23	1620	Hub tap / submersible traveling screen (STS) inspection and replacement
5	10/17/23	0725	10/17/23	1230	Hub tap / STS and vertical barrier screen (VBS) inspection
2	10/18/23	0751	10/18/23	0959	STS inspection

Comments: None.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on October 13, 14, and 15.

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: The digital display for forebay elevation at SG28 was noted as being out of service on October 14. The control room operator was informed. The north shore entrance channel/tailwater differential was below criteria when only one AWS pump was in operation in the early morning of October 18 (see next section).

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
1-2 pumps		1-2 pumps	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 repairs are on hold until funding is available.

North shore AWS pump #2 tripped off at 0200 hours on October 18 and was turned back on at 0737 hours. The cause of the trip is under investigation. See MFR 23 IHR 10 for more details.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 32 square yards
x			Gatewell drawdown measured this week?	
x			Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-8%
	x		Any oil seen in gatewells?	

Comments: None.

Submersible Traveling Screens / Vertical Barrier Screens:

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: On October 16, the STS in gatewell slot 6B was found to have a seam on the north screen that was separated almost the whole way across. The damaged STS was replaced with a spare STS on the same day. Fortunately, there were no fish found inside the damaged STS.

Unit 3 STSs were not inspected because of the risk of getting the camera and tether tangled in the fish-release pipes and hoses that are installed on the STSs for bio-testing of the unit.

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: Juvenile fish sampling is done for the season.

Removable Spillway Weir (RSW): Spill is occurring through the RSW three times per week on non-consecutive days for 4 hours in the morning.

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
18.3	16.2	1.6	0	64	64	9.0	8.7

*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 is a high level of gull activity observed in the tailrace when RSW spill is occurring.

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: Bio-testing of unit 3 with live fish and sensor fish is scheduled to resume on November 2 when water temperatures are cooler to reduce temperature-related stress on the live fish.

Project: Lower Monumental
Biologists: Denise Griffith and Raymond Addis
Dates: October 13 - 19, 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 2	10/16/23	0700	11/08/23	ERTS	Annual
Unit 6	08/03/23	22:00	01/02/24	ERTS	T-2 Repairs

Comments: Unit 6 is out of service awaiting total load testing of T-2 which will take place after the end Fish Passage Plan of unit priority.

Adult Fish Passage Facility

Lower Monumental fish facility staff inspected the adult fishways on October 16, 18 and 19.

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			North Shore Entrance (NSE-1) Weir Depth	≥ 8.0' or on sill	
X			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: South Powerhouse Entrance SPE-1 weir was at sill during all inspections with readings 6.9, 7.0 and 6.8 feet respectively. South Powerhouse Entrance SPE-2 weir was at sill during all inspections with readings 6.9, 7.0 and 6.8 feet respectively. South Shore Entrance SSE-1 weir was at sill during all inspections with readings of 7.9, 7.7 and 7.7 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)	153 yd²
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 5%
	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: None.

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 fish facility is dewatered for winter maintenance.

Transport Summary: Collection for transport ended for the season.

Spillway Weir: RSW spill for fall steelhead continues. Spillgate 5 is out of service for gearbox replacement, estimated return to service on September 30, 2024. Spillgate 7 is out of service for gearbox replacement, estimated return to service on September 30, 2024.

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
18.2	15.7	1.4	0	62.9	62.7	5.5	5.2

*Scrollcase temperatures.

Other

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

Avian Activity: Bird counts of foraging piscivorous birds at Lower Monumental Dam ended on September 30. Bird hazing by USDA personnel is over for the season.

Invasive Species: Mussel traps will be inspected for zebra or quagga mussels in November.

Siberian Prawn: Siberian prawn collection ended for the season.

Fish Rescue/Salvage: No fish salvage took place this week.

Research: A PNNL study on behavior and survival of juvenile Pacific lamprey at Lower Monumental Dam started on April 1. PNNL removed most of the monitoring equipment from the raceways on June 22 and plans to remove remaining equipment during the first 2 weeks of December.

Project: Little Goose Dam
Biologist: Deb Snyder, Brooke Gerard, Cole Reeves
Dates: October 13 – October 19, 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	1411	12/01/2023	ERTS	Spider and upper guide bearing repair.
2	10/11/23	0500	12/01/2023	1700	Unit Annual, Cavitation Repair

Comments: Contractual obligations and performance issues realigned the Unit 5 ERTS date into 2023, testing scheduled for winter maintenance period.

Adult Fish Passage Facility

EAS Bio, USACE, and ODFW staff inspected the adult Fishway on October 14, 17, and on the 19.

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			South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
X		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 7.0’ or on sill	
X		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			North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	
X	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	6.9 10/17 & 10/18
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

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 500 ft² - Low 12 ft²
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X	X		Any debris seen in gatewells (% coverage)	2B – 5% on 10/13 2B – 5% on 10/14
	X		Any oil seen in gatewells?	

Comments: The forebay maintained minimal floating debris inside the trash shear boom with the highest measurement occurring on October 19 at 100 ft². The overall total forebay debris high occurred on October 14 at 500 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 were refurbished with nylon replacements.

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: 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. Every day collection resumed at 0700 on August 1st corresponding with the start of every other day trucking operations as per the FPP. A total of 96 fish were collected and 98 were trucked. There were 0 sample or facility mortalities. The descaling and mortality rates were 2.4% and 0%, respectively. The collection and transport facility operated within criteria. Two 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. Collection for truck transport operations began 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. On August 1 at 14:02 hours the ASW was closed per RCC teletype in conjunction with FPP Chapter 8 section 2.3.2.7.e, diminished outflows below the 35 kcfs threshold.

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
18.40	15.30	1.4	0	64.0	63.0	6.0	5.0

*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. In addition, on October 14 and 15 12 grebes were observed, on October 16 a Great Blue Heron was observed, on October 18 19 Grebes 2 Great Blue Herons and a duck were observed, and on October 19 6 grebes were observed.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
10-13	0800	4	4	0	0
10-14	1000	12	14	0	0
10-15	1500	51	6	0	0
10-16	1005	9	12	0	0
10-17	1030	87	1	0	0
10-18	0800	68	25	0	0
10-19	0830	53	10	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*
10-13	149	149
10-14	107	107
10-15	378	378
10-16	106	106
10-17	33	33
10-18	64	64
10-19	123	123
Totals	960	960

*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. Final season GBT monitoring occurred on July 26 and 27th. Of the 46 fish examined, 0 fish exhibited signs of GBT.

Fish Rescue/Salvage: Fish rescue in the Unit 2 draft tube occurred on October 14. All results 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: David Miller/Steve Lee
Dates: October 13 - October 19, 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**
3	02 Oct	0700	18 Oct	1235	Scheduled Maintenance and VBS Replacement

Comments:

Adult Fish Passage Facility

Lower Granite biologists inspected the adult fishway on October 13, 14, 16 and 18.

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 Cooling Pump 2 was turned off at 1200 on September 30. Both cooling water pumps are in standby.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.4’, 7.7’, 7.9’, 7.9’
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.5’ 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’	
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	6.9’
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
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. 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
Yes			AWS Fish Pump 2
	Yes		AWS Fish Pump 3

Comments: AWS pumps 1 and 2 remain in service.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	22.0 yds
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: Unit 3 ESBS were removed to facilitate the replacement of the VBS in all three gatewells; all ESBS were re-installed prior to bringing the unit back into service on October 18.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

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

Comments:

Collection Facility: The collection facility is general collection mode for transport and collecting for condition sampling and USGS research. Lamprey genetic sampling for CRITFC continues. Collection for truck transport started at 0700 hours August 1.

Transport Summary: Transport resumed with the first truck departing LWG August 3. A total of 1,031 fish were transported by truck during the current report week. For the season, 18,477 fish have been transported by truck and 3,041,835 were transported by barge from Lower Granite.

Spillway Weir PIT OBS: Late summer spill started August 15. There have been 243 adult and 84,656 juvenile Chinook salmon; 744 adult and 54,966 juvenile steelhead; 26 adult and 2,981 juvenile Coho salmon; and 12,162

juvenile Sockeye salmon detected at the RSW since March 1 (DART).

Juvenile Bypass System PIT OBS: There have been 42 adult and 45,269 juvenile Chinook salmon; 209 adult 38,032 juvenile steelhead; 22 adult and 1,209 juvenile Coho salmon; and 1,141 juvenile Sockeye salmon detected through the JBS 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
18.2	15.6	1.6	0.0	61.5	61.0	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 155 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
Oct 13	0910	6	18	0	0
Oct 14	1035	0	14	0	0
Oct 15	0945	17	10	0	0
Oct 16	0850	8	15	0	0
Oct 17	0825	4	7	0	0
Oct 18	1252	1	11	0	0
Oct 19	1320	26	16	0	0

Gas Bubble Trauma (GBT) Monitoring: N/A

Adult Fish Trap Operations: Broodstock collection for WDFW and NPT concluded on October 6. Sample rate is 18% and the trap is being operated 7 days per week.

Fish Rescue/Salvage: N/A

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. Of the total collection, 655 larval and 1116 juvenile lamprey have been either PIT tagged or acoustic tagged at LWG and released at Blyton Landing, 110 larval and 200 juveniles were handled and released without being tagged, and there were 26 larval and 17 juvenile lamprey recovery mortalities.

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 1250 larval Pacific lamprey, not to exceed 10 juvenile and 5 larvae daily (***Samples limits for larval season total were increased to 1250 and larval daily collection limits were decreased to 5 daily on September 13***), 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 443 juvenile and 1061 larval lamprey this season.