Out of Criteria – Weekly Report #36-2023

1. McNary

Units 13&14 OOS until 11/17 for Control Upgrades. Unit 11 OOS for overhaul until 12/21.

The downstream dogging mechanisms for bays 4 and 5 remain out for rehabilitation. The downstream dogging mechanisms for bay 9 were reinstalled on November 3. 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. Repair is planned for the winter maintenance period.

3. Lower Monumental

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

Unit 3 OOS, ERTS 11/22/2023 for Unit Annual. Unit 6 OOS for T2 repair, ERTS 1/2/24 after fish passage unit priority ends.

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, repairs and replacement pump(s) are in progress.

5. Lower Granite Dam

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	$\geq$ 8.0’	7.8’
	X		South Shore Entrance (SSE-2) Weir Depth	$\geq$ 8.0’	7.8’
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.9’, 0.9’

AWS Pump 3 is on standby. AWS pumps 1 and 2 remain in service. Pump 2 tripped offline on November 4 and 5 and restored to service in 5-to-7-minute durations.

U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#36-2023

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: November 3-9, 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

Comments: RTS dates are subject to change. Units 13 and 14 were briefly tested on November 9.

Adult Fish Passage Facilities

Measured inspections of the adult fishways occurred on November 3, 5 and 8. It was recently noted that data was not being recorded for the Oregon ladder south entrance temperature probe. The probe will be examined on November 13.

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’	0.0’ to 0.1’
X		Washington Exit	Head over weir 1.0’ to 1.3’	1.0’ to 1.1’
X		Washington Count Station Differential	0.0’ to 0.5’	0.0’ to 0.1’

Comments: Debris loads were minimal to very light (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.

The Oregon shore visitors’ center window brush number 4 was found stuck down on November 5. The issue was immediately resolved.

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	$\geq$ 8.0’	8.1’ to 8.9’
X			NFEW3 Weir Depth	$\geq$ 8.0’	8.0’ to 9.0’
X			South Oregon Entrance Head Differential	1.0’ – 2.0’	1.2’ to 1.8’

X			SFEW1 Weir Depth	≥ 8.0’	8.4’ to 8.7’
X			SFEW2 Weir Depth	≥ 8.0’	8.3’ to 8.6’
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 2.0 fps
X			Washington Entrance Head Differential	1.0’ – 2.0’	1.4’ to 1.7’
X			WFE2 Weir Depth	≥ 8.0’	8.2’ to 9.6’
X			WFE3 Weir Depth	≥ 8.0’	8.1’ to 9.6’

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			22° to 27°	Oregon Ladder Fish Pump 1
Yes*	Yes*		21°/Standby	Oregon Ladder Fish Pump 2
Yes			21° to 29°	Oregon Ladder Fish Pump 3
Yes				OR North Powerhouse Pool supply from juvenile fishway

*Comments: The Wasco County PUD unit was offline for maintenance from November 6, at 0958 hours to November 9, at 1015 hours. The bypass system functioned properly. An oil sheen was noted along the south tailwater shore on November 7, at 0858 hours. Fish pump 2 was briefly removed from service for examination at 0921 hours. The blade angles on the other two pumps were increased. The oil was not from the fish pump. The fish pump’s status was changed to standby, where it remains. The cause of the oil sheen will be recorded in a different report.

Juvenile Fish Passage Facility

Fall primary bypass season continues with facility maintenance, cleaning, and repairs occurring. To enhance maintenance, the facility remains dewatered.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	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 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.

The gatewell slots in unit 1 remained covered for disassembly of the old intake deck crane. There are gaps between the covers which will allow for continued VBS differential monitoring. Also, the disassembly will make access to the intake deck and across the deck more difficult.

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 were deployed in all units except the screens in units 13 and 14 remained raised. The ESBS's need to be raised for brief load rejection testing as the units' control system upgrades are near completion. The screens will be reinstalled before the units return to service. No camera inspections occurred this week. A new ESBS control system is currently being tested and will be installed before next season.

Daily VBS differential monitoring continued. No high differentials were recorded. A total of seven VBS's were cleaned on November 3 and 8. 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?	39
X*			Dewatering and cleaning systems operating satisfactory?	

*Comments: The system remains in primary bypass. Orifices were adjusted for VBS cleaning as required. Orifice lighting was repaired as needed.

Three high water elevation alarms came in on November 5, from 1234 to 1248 hours. Seven water elevation alarms (a mix of high and low) came in on November 7, from 0153 to 1647 hours. One high and one low water elevation alarm came in on November 8, at 1537 and 2359 hours, respectively. The alarms did clear quickly but were still coming in more frequently than normal.

These fluctuations do not adversely affect the flow down the full flow flume and bypass pipe during primary bypass. However, the issue still needed more attention. The system was examined again on November 8.

The rectangular screen cleaning brush did not trip any more alarms this week. A mechanic adjusted the limit switches, which seemed to resolve the issue, on November 3, at 0630 hours.

Transition screen cleaning brush tripped one timing alarm on November 3, at 2153 hours. The transition brush was found upstream on the B beam with the brush raised. The brush was reset. A mechanic cleaned the limit switches on November 6, which appears to have resolved the issue.

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 remains dewatered.

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. The schedule concludes on November 15.

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
115.4	89.5	1.7	0.0	55.0	55.0	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.

All hoists are functional. However, due to their overload issues, the hoists are now under restrictions similar to the cranes. 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. Options for future spill are currently being considered. Split leaf operation in the upstream bay slot was tested in bay 9 on November 6, from 1025 to 1032 hours. New hoist control plugs were installed this week.

The downstream dogging mechanisms for bays 4 and 5 remain out for rehabilitation. The downstream dogging mechanisms for bay 9 were reinstalled on November 3.

Spillgate maintenance is also occurring.

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 remained fairly high all week, with 100 to 300 birds in the tailwater area. The gulls did feed in the TSW flow when open.

At the bypass outfall zone, a few gulls and a large number of overwintering cormorants were noted roosting. Cormorants numbered 50 to 100 birds in the tailwater area. On most days, the birds would feed, with 10 to 20 gulls noted. The juvenile shad out migration remains strong.

In the powerhouse zone, gulls in fluctuating numbers were noted roosting and feeding. When not feeding in the TSW flow or at the outfall, gulls would frequently feed in the powerhouse zone. Gulls moved freely between the three tailwater zones.

In the forebay zone, grebes (maybe as many as 150), loons (high of 6) and several fly-by gulls were noted. Outside the zone, a few cormorants were observed along with small groups of gulls. Great blue herons were also noted.

No hazing is occurring currently.

Invasive Species: The next mussel station examinations will occur in late November.

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 on November 19. There is nothing more to report.

Project: Ice Harbor
Biologist: Ken Fone
Biological Science Technician: Ben McArthur
Dates: November 3 – November 9, 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

Comments: None.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on November 3, 4, 5.

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 repair is planned for the winter maintenance period.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 14 square yards
x			Gatewell drawdown measured this week?	
x			Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-4%
	x		Any oil seen in gatewells?	

Comments: None.

Submersible Traveling Screens (STSs) / 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: The STS in slot 5B was found to be unplugged from its power receptacle on November 8. The circumstances of how it became unplugged is not known, but it would have been unplugged for up to a day at the most, as the STSs are test-operated every day. Unit 5 was not operated during the reporting period.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
x			Orifices operating satisfactory?	21-22
	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 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
27.3	18.7	1.5	0	58	57	11.6	9.0

*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 was moderate piscivorous bird activity observed around the project.

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 runner with live fish and sensor fish resumed on November 2.

Project: Lower Monumental
Biologists: Denise Griffith and Raymond Addis
Dates: November 3 - 9, 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	11/08/23	0926	11/08/23	1500	STS Inspection
Unit 2	11/08/23	0700	11/08/23	0919	STS Inspection
Unit 3	11/07/23	0700	11/22/23	ERTS	Annual/OPTO Upgrade
Unit 4	11/07/23	0730	11/07/23	1040	STS Inspection
Unit 5	11/07/23	1105	11/07/23	1350	STS Inspection
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 November 6, 7 and 8.

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/Exits 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 7.2, 6.8 and 7.1 feet respectively. South Powerhouse Entrance SPE-2 weir was at sill during all inspections with readings 7.2, 6.8 and 7.1 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)	73 yd^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 50%
	X		Any oil seen in gatewells?	

Comments: Gatewell 1B was at 50% debris coverage during the November 8 inspection. Powerhouse personnel removed debris from that gatewell the same day.

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: Tears were found in the screen of the STS in gatewell 1C during its inspection on November 8. The STS was removed, the tears repaired, and the STS was redeployed the same day.

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 and Spillgate 7 are 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
27.0	19.3	1.4	0	56.0	55.0	5.6	5.4

*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 were inspected for zebra or quagga mussels on November 7; none were found.

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 their hydrophones and associated wiring harnesses of their study on November 8. Their study trailers are to be removed this coming reporting period. The hydrophone in the primary dewaterer will be removed at a later date.

Project: Little Goose Dam
Biologist: Deb Snyder, Brooke Gerard, Cole Reeves
Dates: November 3 – November 9, 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 November 2 and November 8.

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			North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	
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 November 2. 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 70 ft^2 – Low 20 ft^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X	X		Any debris seen in gatewells (% coverage)	11/4: 2% 2B; 11/7: 2% 2B, 5% 5B, 2% 5C
	X		Any oil seen in gatewells?	

Comments: The forebay maintained minimal floating debris inside the trash shear boom with the highest measurement occurring on November 3 at 70 ft^2. The overall total forebay debris high occurred on November 3 at 70 ft^2. Debris rake was attempted on November 6, but delayed to November 7 due to a crane malfunction. Debris rake was successful on November 7. Debris load was light and on Unit 1 only.

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. Collection ended for the season with the final sample on November 1.

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, and the last truck departed on November 1.

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
26.50	19.00	1.7	0	58.1	55.4	5.6	5.4

*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. Daily bird counts ended for the season on November 1.

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. Daily and total Siberian prawn counts at Little Goose Dam concluded for the season with the November 1 counts.

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: On November 7 fishes were removed from secondary dewater structure as part of annual fish facility initial dewatering. Fishes were rescued without incident. 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: David Miller/Steve Lee
Dates: November 3-9, 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**

Comments:

Adult Fish Passage Facility

Lower Granite biologists inspected the adult fishway on November 4, 6, 7, and 8.

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’
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	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	
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.9’, 0.9’
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
No			AWS Fish Pump 2
	Yes		AWS Fish Pump 3

Comments: AWS pumps 1 and 2 remain in service. AWS Pump 2 tripped offline twice on November 4 from 1031-1035 hours and from 1429-1434 hours and again on November 5 from 2304-2312.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	28.9 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:

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 juvenile bypass system is in Primary Bypass.

Transport Summary: Transport concluded November 1. For the season, 20,083 fish were 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 250 adult and 84,699 juvenile Chinook salmon; 786 adult and 54,966 juvenile steelhead; 35 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 46 adult and 45,301 juvenile Chinook salmon; 222 adult 38,032 juvenile steelhead; 34 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
27.8	18.5	1.8	0.0	54.0	51.0	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.

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. The final day of trapping has been set for November 15.

Fish Rescue/Salvage:

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.