Out of Criteria – NWW Weekly Report #40 – December 1-7, 2023

1. McNary

Unit 11 OOS for overhaul until 12/21, Units 9&10 OOS for Control Upgrades until April 2024.

Collection Channels:

Yes	No	Sill	Location	Criteria	Measurements
	X		NFEW2 Weir Depth	≥ 8.0’	7.9’ to 8.2’
	X		NFEW3 Weir Depth	≥ 8.0’	7.9’ to 8.2’
	X		SFEW2 Weir Depth	≥ 8.0’	7.9’ to 8.3’

Comments: Oregon shore ladder entrances, NFEW2, NFEW3 and SFEW2, were out of criteria on December 3. These out of criteria points were due to the entrances’ set points needing adjustment, which occurred later that day.

The Wasco County PUD unit tripped offline from 1650 to 1747 hours on December 6. The bypass system functioned satisfactorily during the outage.

All hoists are functional, and like the cranes, are limited to maximum load. Project staff are taking steps to move gates and hoists to upstream slots and using split leaf gates for spill.

2. Ice Harbor

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

South shore channel/tailwater differential was above specification on December 4 and 5, most likely due to low tailwater level.

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 Spillgate 7 are out of service for gearbox replacement.

Unit 6 is OOS for T-2 repairs, ERTS 1/2/2024. Unit 1 OOS on 11/30/2023, ERTS 12/14/2024 for Annual Maintenance.

4. Little Goose

Unit 5 ERTS date to 12/31/2023, testing scheduled for winter maintenance period in December. Unit 2 RTS 12/01/2023.

The fishway cooling pump has been out of operation since June 29, repairs and replacement pump(s) are in progress.

5. Lower Granite Dam

Unit 1 OOS for annual maintenance. Unit 5&6 OOS thru 12/21 for T1 Rehab. Units 2, 3, 4 OOS for T1 Rehab.

Collection Channels:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	5.6′
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	5.6’
	X		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	0.8’
	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	0.9’
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.4’, 0.7’, 0.7’
	X		Collection Channel Surface Velocity	1.5 – 4.0 fps	1.4

AWS pumps 1 and 2 remain in service. AWS pump 2 continues to have issues with tripping offline due to bearing high temperature alarms believed to be caused by a faulty circuit board. Electrical crew continues to troubleshoot this issue.

U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#40-2023

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: December 1-7, 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**
11	10/10	0719	12/21	NA	9-year overhaul
9 & 10	11/27	0631	4/26/24	NA	Control system upgrades
13 & 14	12/5	0900	12/5	1000	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 December 1, 3 and 5.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
X		Oregon Exit	Head over weir 1.0’ to 1.3’	1.0’
X		Oregon Count Station Differential	0.0’ to 0.5’	0.0’
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’	0.0’ to 0.1’

Comments: Debris loads were minimal near both exits.

At the Washington shore exit, one low water alarm came in and was reset on December 5.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0’ – 2.0’	1.3’ to 1.7’
	X		NFEW2 Weir Depth	≥ 8.0’	7.9’ to 8.2’
	X		NFEW3 Weir Depth	≥ 8.0’	7.9’ to 8.2’
X			South Oregon Entrance Head Differential	1.0’ – 2.0’	1.7’ to 2.0’
X			SFEW1 Weir Depth	≥ 8.0’	8.0’ to 8.3’
	X		SFEW2 Weir Depth	≥ 8.0’	7.9’ to 8.3’
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		X	WFE2 Weir Depth	≥ 8.0’	9.5’ to 9.7’
X			WFE3 Weir Depth	≥ 8.0’	9.6’ to 10.8’

Comments: Oregon shore ladder entrances, NFEW2, NFEW3 and SFEW2, were out of criteria on December 3. These out of criteria points were due to the entrances' set points needing adjustment, which occurred later that day. Though in criterion, Washington shore entrance WFE2, was on sill on December 5.

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 23°	Oregon Ladder Fish Pump 1
Yes			21° to 22°	Oregon Ladder Fish Pump 2
Yes			23°	Oregon Ladder Fish Pump 3
Yes				OR North Powerhouse Pool supply from juvenile fishway

Comments: The Wasco County PUD unit tripped offline from 1650 to 1747 hours on December 6. The bypass system functioned satisfactorily during the outage.

Juvenile Fish Passage Facility

Fall primary bypass season continues with facility maintenance, cleaning, and repairs occurring. To enhance maintenance, the facility remains dewatered. ESBS removal will begin on December 11. The switch to emergency bypass is scheduled for December 12.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Minimal to moderate, mostly 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 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 woody material and aquatic vegetation.

No trash rack cleaning was scheduled.

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. The ESBS's in units 9, 10 and 11 were raised on December 4 and 5 as the units will be out of service past the fish season. ESBS removal from other units will begin on December 11. Camera inspections in units 13 and 14 revealed no issues on December 5. 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, and no screens were cleaned.

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 and will be switched to emergency bypass December 12. Orifice operators and oil reservoirs were repaired as needed.

The light fixture for 12B slot south orifice remains removed. The north orifice, with the attraction light on, has been in use.

Two high water elevation alarms came in on December 1, at 1102 and 1533 hours. One high water elevation alarm came in on December 2 and 5 at 0350 and 0848 hours, respectively. The alarms did clear quickly but were still coming in more frequently than normal, yet less often than in previous weeks. These fluctuations do not adversely affect the flow down the full flow flume and bypass pipe during primary bypass. However, the issue still needs more attention.

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 remains closed until the spring fallback season.

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	72.5	0.0	0.0	49.0	48.0	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. Scheduled maintenance on crane 7 continues.

All hoists are functional. Due to their overload issues, the hoists are now under restrictions like 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. Currently, project staff is taking steps to operate the spill with split leaf in the upstream slots of all bays. This will include all hoist and the two cranes. The downstream dogging mechanisms for bays 4 and 5 installed December 1.

Spillgate maintenance is also occurring.

Other

Inline Cooling Water Strainers: The cooling water strainer inspections revealed approximately 1600 juvenile shad mortalities on December 5. No other fish were observed.

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 in low numbers. Gull numbers continued to decrease, with approximately 20 birds in the tailwater area.

At the bypass outfall zone, a few gulls and a large number of overwintering cormorants were noted roosting. Cormorants numbered 75 birds in the tailwater area. On most days, the birds did not feed at the outfall. The juvenile shad out migration continues to decrease.

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

In the forebay zone, grebes (numbers were difficult to estimate) and some roosting or fly-by gulls were observed along with one great blue heron. Outside the zone, a few cormorants and gulls along with one kingfisher were noted.

No hazing is occurring currently.

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

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

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

Research: This week, PNNL made a site visit for next season's juvenile lamprey passage study.

Project: Ice Harbor
Biologist: Ken Fone
Biological Science Technician: Ben McArthur
Dates: December 1 – December 7, 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
3	12/01/23	0734	12/1/23	1540	Fish release pipe removal
3	12/4/23	1150	12/4/23	1643	Install Equipment for index testing

Comments: None.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on December 4, 5, 6.

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’	2.1’, 2.3’
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: South shore channel/tailwater differential was above specification on December 4 and 5, most likely due to low tailwater level.

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 20 square yards
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: Gatewell slot 1C was unwatered on December 7 and 8 in preparation for swapping 1C headgate to reduce water leakage that is interfering with the work in unit 1.

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: Unit 3 STSs were temporarily pulled out of the water to detach fish release pipes and hoses on December 1. The screens were inspected while they were out of the water, and they passed inspection.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
x			Orifices operating satisfactory?	21
	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): Seasonal spill for fish passage is done for the year.

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
26.5	13.4	0	0	51	50	10.2	8.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine unit cooling water strainers were last cleaned of juvenile shad on November 22. Pressure differentials across the strainers are being monitored as an indication of strainer clogging from the buildup of juvenile shad.

Avian Activity: There was moderate to high piscivorous bird activity observed around the project, particularly gulls in the tailrace when the navigation lock is draining and downstream of the powerhouse.

Invasive Species: None

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: Gatewell slot 1C was dipped with the basket to remove fish on December 7. Four adult steelhead (1 clipped; adipose not checked on the others) were removed and released into the forebay in good condition.

Research: None.

Project: Lower Monumental
Biologists: Denise Griffith and Raymond Addis
Dates: December 1 - 7, 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	11/30/23	0700	12/14/23	ERTS	Annual maintenance
Unit 6	08/03/23	22:00	12/5/23	1610	T-2 Repairs

Comments: Unit 6 returned to service after testing of T-2 after unit priority ended per FFP. T-2 will be fully validated at a later date.

Adult Fish Passage Facility

Lower Monumental fish facility staff inspected the adult fishways on December 4, 5 and 6.

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/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 6.4, 7.7 and 7.0 feet respectively. South Powerhouse Entrance SPE-2 weir was at sill during all inspections with readings 6.4, 7.7 and 7.0 feet respectively. South Shore Entrance SSE-1 weir was at sill during all inspections with readings of 7.4, 8.0 and 7.3 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)	1089 yd^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	0 – 22%
	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: There was no spill during this reporting period. 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
27.5	11.5	0.0	0.0	45.0	45.0	6.9	5.9

*Scrollcase temperatures.

Other

Cooling Water Strainers: The cooling water strainers were examined on December 6. No living fish were found. Mortalities included an estimated 465 juvenile American shad.

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 December 4, 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 has yet to remove the hydrophone in the primary dewaterer currently.

Project: Little Goose Dam
Biologist: Deb Snyder, Brooke Gerard, Cole Reeves
Dates: December 1 – December 7, 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	12/31/2023	ERTS	Spider and upper guide bearing repair.
2	10/11/2023	0500	12/01/2023	1310	Unit Annual, Cavitation Repair
1, 2, 3, 4, & 6	12/04/2023	0925	12/07/23	1742	Planned line outage to support BPA lockout relay replacement and LGS T1C RTD measurements.

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

Adult Fish Passage Facility

USACE staff inspected the adult Fishway on December 4, 5, and 6.

Fish Ladder:

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

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.1, 12/5
X	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.1, 12/5
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 50 ft^2 – Low 5 ft^2
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 December 5 at 5 ft^2. The overall total forebay debris high occurred on December 5 at 50 ft^2.

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
27.60	11.80	6.2	0	46.4	45.5	6.0	6.0

*Ladder temperature.

Other

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

Avian Activity: Daily piscivorous bird counts at Little Goose Dam are scheduled to begin April 1, while USDA-APHIS bird abatement contract services are in place. 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: No fish salvage operations transpired during this reporting period.

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 24-30, 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
1	11/20/23	0701			Annual Maintenance
1-6	11/30/23	0600	12/21/23	1800	Daily Line Outages for T1 Rehab

Comments:

Adult Fish Passage Facility

Lower Granite biologists inspected the adult fishway on November 27, 28, 29, and 30.

Fish Ladder:

Yes	No	NA	Location	Criteria	Comments
X			Fish Ladder Exit Differential	Head $\leq$ 0.5’	
X			Fish Ladder Picketed Lead Differential	Head $\leq$ 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	$\geq$ 8.0’	
X			South Shore Entrance (SSE-2) Weir Depth	$\geq$ 8.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
	X		North Powerhouse Entrance (NPE-1) Weir Depth	$\geq$ 8.0’ or on sill	7.9’
	X		North Powerhouse Entrance (NPE-2) Weir Depth	$\geq$ 8.0’ or on sill	7.9’
	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	0.9’, 0.9’, 0.9’
	X		North Shore Entrance (NSE-1) Weir Depth	$\geq$ 7.0’ or on sill	6.9’
	X		North Shore Entrance (NSE-2) Weir Depth	$\geq$ 7.0’ or on sill	6.9’
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.7’, 0.6’, 0.6’
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. SSE weir gates were placed into manual/local operation 11/20/2023 to reduce the frequency of OOC operations at this entrance.

Auxiliary Water Supply System:

Operating Satisfactorily	Standby	Out of Service	Auxiliary Water Supply (AWS)
No			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 continues to have issues with tripping offline due to bearing high temperature alarms believed to be caused by a faulty circuit board. All three AWS pumps were removed from service from 1209-1216 hours November 28 to test the DC ground in the control panel. Electrical crew continues to troubleshoot this issue.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	60.3 sq yd
	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: ESBS's were removed November 13-15.

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?	

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 84,774 juvenile Chinook salmon; 797 adult and 54,967 juvenile steelhead; 35 adult and 2,981 juvenile Coho salmon; and 12,162 juvenile Sockeye salmon detected at the RSW since March 1 (DART). Overshoot spill ended November 15.

Juvenile Bypass System PIT OBS: There have been 47 adult and 45,356 juvenile Chinook salmon; 227 adult 38,038 juvenile steelhead; 38 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
20.8	14.1	1.6	0.0	46.7	45.0	5.0	4.9

*Cooling water intake temperature.

Comments:

Other

Inline Cooling Water Strainers: N/A

Invasive Species: No zebra/quagga muscles were detected on the trap substrate.

Adult Fish Trap Operations: N/A

Fish Rescue/Salvage: Unit 1 Draft tube; November 28.