Out of Criteria – NWW Weekly Report #42 – December 15-21, 2023

1. McNary

Unit 11 OOS for overhaul until 1/18/2024, Units 9&10 OOS for Control Upgrades until April 2024.

NFEW2 and NFEW3 were out of criteria on December 20. This was probably due to the juvenile system no longer providing flow to the north powerhouse entrance pool.

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.

The north powerhouse channel/tailwater differential was below criteria on the December 18 fishway inspection, but the electronic reading on the PLC was observed to be in criteria afterwards. Further comparisons of channel and tailwater transducer readings with visual field readings will be performed during calibration checks.

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.

4. Little Goose

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

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. 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’	9′
	X		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	0.9’
	X		North Powerhouse Entrance (NPE-1) Weir Depth	≥ 8.0’ or on sill	7.8’, 7.9’
	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	0.9’, 0.8’, 0.9’, 0.9’
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	6.9’
	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’	0.7’, 0.7’, 0.6’, 0.6’
	X		Collection Channel Surface Velocity	1.5 – 4.0 fps	1.4 fps

U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#41-2023

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: December 15-21, 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	1/18/24	NA	9-year overhaul
9 & 10	11/27	0631	4/26/24	NA	Control system upgrades

Comments: RTS dates are subject to change. Units ran outside the soft one percent criteria as requested by BPA during the week.

Adult Fish Passage Facilities

Measured inspections of the adult fishways occurred on December 15, 17 and 20. Winter maintenance of the Oregon and Washington shore ladders will occur in January and February, respectively. In order to improve drainage, concrete cutting and jack hammering occurred intermittently near the Oregon shore south entrance gates on December 20.

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 light near the Oregon shore exit and minimal near the Washington shore exit. There are no problems to report.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0’ – 2.0’	1.0’ to 1.3’
	X		NFEW2 Weir Depth	≥ 8.0’	7.9’ to 8.4’
	X		NFEW3 Weir Depth	≥ 8.0’	7.8’ to 8.5’
X			South Oregon Entrance Head Differential	1.0’ – 2.0’	1.6’ to 1.7’
X			SFEW1 Weir Depth	≥ 8.0’	8.4’ to 8.5’
X			SFEW2 Weir Depth	≥ 8.0’	8.4’ to 8.5’
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.9 fps

X			Washington Entrance Head Differential	1.0’ – 2.0’	1.6’ to 1.7’
X			WFE2 Weir Depth	≥ 8.0’	8.4’ to 8.5’
X			WFE3 Weir Depth	≥ 8.0’	8.4’ to 8.5’

Comments: NFEW2 and NFEW3 were out of criteria on December 20. This was probably due to the juvenile system no longer providing flow to the north powerhouse entrance pool.

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°	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 returned to service on December 17 at 1103 hours. The bypass system functioned satisfactorily during the outage. With the juvenile system in emergency bypass and then removed from service as described below, auxiliary flow from the juvenile system is no longer occurring at the Oregon ladder’s north powerhouse entrance pool.

Juvenile Fish Passage Facility

Emergency bypass concluded on December 19, when the juvenile collection channel orifices were closed. The closure is described in the Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe section below. Facility and channel maintenance, cleaning, and repairs continued.

Forebay Debris/Gatewell Debris/Oil:

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

Comments: Debris loads were minimal to light near the powerhouse. 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. A test removal of trash rack debris is scheduled for January 10.

No problems were observed.

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: All ESBS's remain raised and winter maintenance has begun on the screens. A new ESBS control system will be installed before next season.

Daily VBS differential monitoring will resume next spring with ESBS installation.

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

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

*Comments: When in emergency bypass, there were 42 orifices in use. Orifice operators and oil reservoirs were repaired as needed. The orifices were closed on December 19, at 0835 hours. Fish were evacuated from the upper emergency bypass channel by 1200 hours. After lunch, fish were evacuated from the lower emergency bypass channel from 1400 to 1500 hours.

The light fixture for 12B slot south orifice will be replaced before next spring.

They only fish observed during the fish evacuation were three steelhead smolts and 15 steelhead adults along with one coho adult, one walleye, two smallmouth bass, one adult shad and one juvenile shad.

Bypass Facility:

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

Comments: All system are out of service and dewatered for winter maintenance, which is occurring. Full flow flume gasket repairs continued.

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
120.4	104.4	0.0	0.0	47.0	46.0	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 continued.

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.

Spillgate maintenance is also occurring.

Other

Inline Cooling Water Strainers: Emergency cleaning of the cooling water strainers occurred after unit 5 was noted overheating on December 20. The mechanics reported only seeing large numbers of juvenile shad mortalities. The next scheduled cooling water strainer inspections will occur on January 2.

Avian Activity: Casual bird observations will conclude at the end of December.

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

In the spillway zone, gulls and cormorants were noted roosting in low numbers. Approximately 30 gulls were noted on project.

At the emergency bypass outfall, no birds were seen. Though out of service, a few gulls and about 75 cormorants were noted roosting on the outfall pipe.

In the powerhouse zone, a few gulls were infrequently noted roosting and feeding. Gulls moved freely throughout the project.

In the forebay zone, grebes (approximately 100 at times) were noted mainly roosting. Outside the zone, a few cormorants and some gulls were noted.

No hazing is occurring currently.

Invasive Species: The mussel station examinations revealed no issues on December 17 and 20.

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

Fish Rescue/Salvage**:** No fish rescue occurred this week. Fish were only observed when evacuating the juvenile emergency bypass system, as described in the Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe section above.

Research: PNNL continues to work with project staff to prepare for next season's juvenile lamprey passage study

Project: Ice Harbor
Biologist: Ken Fone
Biological Science Technician: Ben McArthur
Dates: December 15 – December 21, 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 December 18,19, and 20.

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

Comments: The north powerhouse channel/tailwater differential was below criteria on the December 18 fishway inspection, but the electronic reading on the PLC was observed to be in criteria afterwards. Further comparisons of channel and tailwater transducer readings with visual field readings will be performed during calibration checks.

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 40 square yards
		x	Gatewell drawdown measured this week?	
		x	Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	View into the slots is partially obstructed by stored submersible traveling screens
	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: All STSs are removed for winter maintenance.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
		x	Orifices operating satisfactory?	0
		x	Dewaterer and cleaning systems operating satisfactory?	

Comments: The juvenile fish collection channel is dewatered for winter maintenance.

Juvenile Fish Facility: The juvenile fish facility is dewatered for winter maintenance.

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
24.7	16.2	0	0	46	46	10.0	8.8

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: 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: No exotic species that are new to the area have been found.

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

Fish Rescue/Salvage: None.

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

Project: Lower Monumental
Biologists: Denise Griffith and Raymond Addis
Dates: December 15 - 21, 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: The turbine units were operational and ran at 1% peak efficiency.

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

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
Unit 1	12/18/23	7:50	12/18/23	11:25	STS Removal
Unit 2	12/18/23	11:35	12/18/23	15:45	STS Removal
Unit 3	12/19/23	07:05	12/19/23	11:25	STS Removal
Unit 4	12/19/23	11:25	12/19/23	16:20	STS Removal
Unit 5	12/20/23	07:05	12/20/23	10:10	STS Removal
Unit 6	12/20/23	10:20	12/20/23	13:40	STS Removal

Comments: STS removal in preparation for dewatering of collection channel.

Adult Fish Passage Facility

Lower Monumental fish facility staff inspected the adult fishways on December 18, 19 and 20.

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 6.6, 6.8 and 7.2 feet respectively. South Powerhouse Entrance SPE-2 weir was at sill during all inspections with readings 6.6, 6.8 and 7.2 feet respectively. South Shore Entrance SSE-1 weir was at sill during all inspections with readings of 7.2, 7.2 and 7.6 feet respectively.

Auxiliary Water Supply System:

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

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	494 yd²
	X		Gatewell drawdown measured this week?	
		X	Gatewell drawdown acceptable	
		X	Any debris seen in gatewells (% coverage)	
		X	Any oil seen in gatewells?	

Comments: STS were pulled up in preparation for dewatering the channel, therefore, visual estimation of debris was not possible for much of the week.

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: STSs were visually inspected on deck by the biologist on 12/19/23 and 12/21/23. STSs were pulled in preparation for dewatering of the collection channel for Units 1 and 2 on 12/18/23. Units 2 and 3 STSs were pulled on 12/19/23 and Units 4 and 5 STSs were pulled on 12/20/23.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
		X	Orifices operating satisfactory?	0
		X	Dewaterer and cleaning systems operating satisfactory?	

Comments: The collection channel was dewatered on 12/ 21/23. The operation began at 1000 hours and ended at 1110 hours.

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
19.8	16.6	0.0	0.0	43.5	44.0	5.8	7.2

*Scrollcase temperatures.

Other

Cooling Water Strainers: The cooling water strainers will be examined again in January.

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 again in January.

Siberian Prawn: Siberian prawn collection ended for the season.

Fish Rescue/Salvage: Present for the dewatering of the collection channel were Jefferey Schafer, Shawna Hone, Victor Meier, Rick Blevins, Mary Crane, Sam Schlacter, Garret Bicklehapt, and biologist Denise Griffith. All salmonids were found alive and released in good condition back to the river at the north ladder. The group consisted of 6 clipped adult steelhead, 6 unclipped steelhead, and 1 juvenile clipped steelhead. Twenty-three juvenile macrophthalmia lamprey and juvenile sculpin were also found alive and released to the river at the north ladder. One mortality was found. This was a juvenile sculpin.

Research: A PNNL study on behavior and survival of juvenile Pacific lamprey at Lower Monumental Dam has ended for the season. 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 15 – December 21, 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	2/1/2024	ERTS	Spider and upper guide bearing 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

USACE staff inspected the adult Fishway on December 18, 20, and 21.

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	X		North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	5.6 – 12/21
X	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	5.6 – 12/21
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 866 ft^2 – Low 230 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 18 and 20 at 50 ft^2. The overall total forebay debris high occurred on December 21 at 866 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. ESBS winter maintenance removal occurred December 11, except for 2A-C which were pulled on December 12, in preparation for the juvenile channel dewatering. The Juvenile Collection System was dewatered for the winter maintenance period on December 19.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	18, 0 after 12/19
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, and the Juvenile Collection System was dewatered for winter maintenance on December 19.

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
25.90	15.40	0	0	43.8	42.2	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: Fish rescue operations for Juvenile Channel dewatering occurred on December 19 and 20. Fish rescue operations occurred without incident, and 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: December 15-22, 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	0701			Annual Maintenance
2-4	11/30	0600			T1 Rehab
5 & 6	12/15-12/16	0600	12/15-12/16	1800	Daily Line Outages for T1 Rehab

Comments:

Adult Fish Passage Facility

Lower Granite biologists inspected the adult fishway on December 18, 19, 20 and 21.

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’	7.9’
X			South Shore Entrance (SSE-2) Weir Depth	$\geq$ 8.0’	
	X		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	0.9’
	X		North Powerhouse Entrance (NPE-1) Weir Depth	$\geq$ 8.0’ or on sill	7.8’, 7.9’
X		X	North Powerhouse Entrance (NPE-2) Weir Depth	$\geq$ 8.0’ or on sill	
	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	0.9’, 0.8’, 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', 0.7', 0.6', 0.6'
	X		Collection Channel Surface Velocity	1.5 – 4.0 fps	1.4 fps

Comments: Ladder collection channel operation and configuration will continue to be evaluated. 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. AWS pump 1 on "slow". Neither pump 1 nor 2 tripped offline this week. The electrical crew continues to troubleshoot tripping issues.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	238 sq yd
	X		Trash rack differentials measured this week?	
		X	Trash rack differentials acceptable	
	X		Any debris seen in gatewells (% coverage)	ESBS's remain raised.
	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: none

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

Yes	No	NA	Item	Number open and in service
		X	Orifices operating satisfactory?	Orifices closed 12/14/23
		X	Dewatering and cleaning systems operating satisfactory?	

Comments: Orifices in juvenile collection channel were closed and JBS placed into Emergency Bypass 12/14/2023 to facilitate voluntary egress of fish holding in the collection gallery. The collection channel was fully dewatered 12/19/23 for JBS winter maintenance.

Collection Facility: The juvenile bypass system was dewatered 12/19/23.

Transport Summary: N/A

Spillway Weir PIT OBS: N/A

Juvenile Bypass System PIT OBS: There have been 47 adult and 45,376 juvenile Chinook salmon; 231 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
23.6	16.5	1.7	0.0	42.2	42.1	5.0	5.0

*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: The Juvenile Bypass System was dewatered for winter maintenance 12/19. Salmonids remaining in the collection channel were crowded through the emergency bypass. No fish were handled or netted.