U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#14-2023

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: June 2-8, 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	1/9	0630	6/6	1155	Control system upgrades
12	1/9	0630	6/8	1657	Control system upgrades
7	6/5	0707	6/8	1541	Annual maintenance
5 & 6	5/22	0605	6/25	NA	Transformer gasket replacement
10	6/5	0758	7/28	NA	Nine-year overhaul

Comments: RTS dates are subject to change. Unit 12 run testing occurred on June 6 to 7. Per Appendix A, the testing occurred with no ESBS's installed. Other units were moved into and out of standby during the testing.

Adult Fish Passage Facilities

Measured inspections of the adult fishways occurred on June 2, 4 and 6. Visual adult fish counting continues. Video review of nighttime lamprey passage will begin on June 15.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
X		Oregon Exit	Head over weir 1.0' to 1.3'	1.1' to 1.2'
X		Oregon Count Station Differential	0.0' to 0.5'	0.2' to 0.3'
X		Washington Exit	Head over weir 1.0' to 1.3'	1.1'
X		Washington Count Station Differential	0.0' to 0.5'	0.2'

Comments: Debris loads were very light to light near the Oregon shore exit and minimal to light near the Washington exit. Along the Washington shore, new incoming debris loads were very light but constant. Some of the debris coming in along the Washington shoreline was flushed out down the navigation lock. The general maintenance staff has been cleaning the picketed leads at both exits as needed, including on Saturday.

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'	1.5' to 1.6'
	X		NFEW2 Weir Depth	≥ 8.0'	7.7'
	X		NFEW3 Weir Depth	≥ 8.0'	7.7' to 7.8'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.3' to 1.4'
	X		SFEW1 Weir Depth	≥ 8.0'	7.3' to 7.5'
	X		SFEW2 Weir Depth	≥ 8.0'	7.3' to 7.5'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.9 fps
X			Washington Entrance Head Differential	1.0' – 2.0'	1.4' to 1.6'
X			WFE2 Weir Depth	≥ 8.0'	8.3' to 8.4'
X			WFE3 Weir Depth	≥ 8.0'	8.3' to 8.4'

Comments: The Oregon ladder out of criteria points for the entrances list above that occurred all week were due to only two fish pumps being operational and overall age of the ladder system.

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			25° to 26°	Oregon Ladder Fish Pump 1
Yes			24° to 26°	Oregon Ladder Fish Pump 2
		Yes		Oregon Ladder Fish Pump 3/RTS date June 16
Yes				OR North Powerhouse Pool supply from juvenile fishway

Comments: Fish pump 3 remains out of service due to a possible oil leak into the water-cooling system. The returned to service date is subject to change.

Juvenile Fish Passage Facility

Every other day sample collection continues with no interruptions in the schedule this week. Installation of a new forebay (intake) deck crane continues. This will add some challenges to various task.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Minimal to very 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 very light near the powerhouse. Wind direction changes moved some of the debris across the forebay from the powerhouse to the Oregon shore and back. Also, some of the debris passed through the spillway. The debris loads beside the spillway were moderate to heavy. New debris loads were very light and arrived consistently along the northern shoreline and spillway. Most of the debris was fine and woody material.

The next trash rack cleaning will occur the week of June 26.

Extended-length submersible bar screen (ESBSs)/Vertical barrier screen (VBSs):

Yes	No	NA	Item
X			ESBSs deployed in all slots and in service?
	X		ESBSs inspected this week?
		X	ESBSs inspection results acceptable?
X			VBSs differentials checked this week?
X			VBSs differentials acceptable?

Comments: ESBS's are deployed in all units. Units 11 and 12's screens were installed on June 2 and 8, respectively before their 72-hour run test and return to service. The next camera inspections will occur on June 13.

Daily VBS differential monitoring continued, and no high differentials were recorded. However, there were six screens cleaned on June 7. One juvenile lamprey mortality was noted.

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

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

*Comments: Orifices were adjusted as required for VBS cleaning.

A transition screen brush timing alarm came in on June 2 at 0350 hours. These alarms appear to be failure-to-start-on-time alarms. No issues were found, and the brushes cycled properly. The mechanical staff has determined the rectangular screen brush's retracting springs need a tension adjustment, which should shorten the rectangular brush cycle time and eliminate the transition brush timing alarms.

Bypass Facility:

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

Comments: The sample gates continue to operate every other day for sample collection. The PIT sample tag system will not be used again this year.

This week, 8,080 juvenile lamprey and 11,600 smolts, mostly sub-yearling Chinook salmon, were bypassed during secondary bypass. The smolt monitoring staff reports fish data in a separate report.

Area lighting was repaired this week.

TSW Operations: Both TSW's are attached to a hoist and are part of the spill pattern. The TSW's were scheduled to closed June 8 at 0001 hours. However, after regional discussion, the closure was moved to June 20, at which time, removal will begin.

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
244.8	216.1	189.0	160.4	61.9	57.0	5.0	3.0

Comments: The above data is provided by the smolt monitoring staff except the water clarity, which is provide by the control room. The data day runs from 0700 to 0700 hours. The summer spill season, with 57 percent of the flow being spilled, will begin on June 16.

Water temperature monitoring for juvenile passage will begin on June 15. The smolt monitoring staff will deploy the equipment on June 13. Adult passage temperature monitoring is year-round.

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

Currently, only the hoist for bay 6 is out of service. Reassembly continues and the hoist should return to service in late June. However, at that time, the hoist will be attached to the gate in bay 16, which remains closed. A spill pattern for June with bay 16 closed has been established.

So, into the season, bay 2 is set at 4 feet and bay 6 is set at 6 feet along with bay 16 being closed.

Other

Inline Cooling Water Strainers: The cooling water strainer inspections revealed approximately 315 live juvenile lamprey (estimated 300 from unit 1) and 146 juvenile lamprey mortalities (mostly from units in standby or out of service) on June 6. Live fish were returned to the river unharmed.

Avian Activity: Avian counts continue. The results are recorded in Table 3 below.

For the report week, all species were counted.

In the spillway zone, a few feeding gulls, pelicans, and terns were noted. Pelican and tern numbers were slowly increasing. Wildlife Services hazing and lethal take of gulls and cormorants from a boat may have contributed to the low bird numbers.

At the bypass outfall zone, no birds were observed probably due hazing from the boat and generally low bird numbers in the area.

In the powerhouse zone, pelicans were noted to be feeding just outside the Oregon ladder floating orifice gates. No birds were observed inside the ladder yet.

In the forebay zone, a few grebes were noted feeding or roosting along with a great blue heron, a couple of fly-by cormorants and pelicans. Outside the zone, a few gulls, cormorants, great blue herons, pelicans, and osprey were noted. Other birds were noted staging on the water but could not be identified.

The two large bird distress calls remain deployed and active on the navigation lock wing wall. These calls are very effective at reducing roosting. The laser on the navigation lock wingwall remained activated along with the LRAD on the outfall walkway. However, the laser on the bypass pipe walkway was removed due to water damage in the system on June 8.

USDA Wildlife Services continues shore and boat hazing per schedule. As mentioned above, lethal take continued. PSMFC has been examining the stomach contents.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
June 2	Spill	0	0	1	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	1
June 3	Spill	0	0	2	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	1	1
June 4	Spill	0	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	3
June 5	Spill	2	0	4	2	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	6
June 6	Spill	1	0	1	3	0
	Powerhouse	0	0	0	1	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	11
June 7	Spill	0	0	2	1	0
	Powerhouse	0	0	0	2	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	4
June 8	Spill	0	2	6	1	0
	Powerhouse	0	0	0	2	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	6

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

Siberian Prawn: No prawns were observed in this week's samples or for the season to date.

Fish Rescue/Salvage**:** There were 14 live channel catfish and three catfish mortalities (all fish were 12 to 30 inches long) removed from unit 10's draft tube on June 6. There were no fish in the scroll case.

Research: USGS equipment for a juvenile passage study along the upstream edge of the powerhouse and spillway remains in place. For a CRITFC study, there were tissue samples removed from 80 juvenile lamprey collected at the facility this week for a total of 430 fish this season. All fish were returned to the river unharmed. Gas bubble trauma examinations occurred on June 5 and 7. The data is reported the next day. No signs of trauma were observed during the report week.

Project: Ice Harbor
Biologist: Ken Fone
Dates: June 2 – June 8, 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
3	5/3/19	0641	---	---	Turbine runner replacement and stator rewind

Comments: None.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on June 5, 6, and 7.

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’	2.4’, 2.6’, 2.8’
x			South Shore Channel Velocity	1.5 – 4.0 fps	
x			North Powerhouse Entrance (NFE-2) Weir Depth	≥ 8.0’ or on sill	
x			North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	
x			North Shore Entrance (NEW-1) Weir Depth	≥ 8.0’ or on sill	
x			North Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: The south shore channel/tailwater differential was above criteria on all three inspections. This was caused by SFE-1 weir gate not lowering because it was bound up in the guide slot (see Auxiliary Water Supply System below). With the operating cable spooling out but the weir gate not moving, the selsyn dial and PLC readout were lower than the actual gate elevation. The difficulty in obtaining accurate tailwater elevation readings with the turbulent conditions caused by spill may also have contributed to the high channel/tailwater differentials on June 6 and 7. SFE-1 weir gate depth may have actually been less than 8’ since the last week of May if the gate was stuck as the tailwater elevation was decreasing.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System
4-5 pumps	3-4 pumps		Status of the 8 south shore AWS pumps
2 pumps		1 pump	Status of the 3 north shore AWS pumps

Comments: North shore AWS pump #1 has been out of service since March 1 because of a hydraulic cylinder leak on the butterfly valve. The hydraulic cylinder needs to be rebuilt but is on hold until funding is available.

North shore AWS pump #3 had high amperage readings on June 7. This may have been caused by debris partially obstructing the pump intake trash rack. The operator turned off pump #3 from 1426 hours to 1446 hours on June 7 to allow debris to fall off of the trash rack. Afterwards the amperage reading was back down to normal. Only north shore pump #2 was running when pump #3 was turned off, so the north shore channel/tailwater differential was most likely below 1' during that period.

SFE-1 weir gate was found to be stuck in the guide slot and would not lower on June 9. The operator turned off all of the south shore AWS pumps from 1130 hours to 1149 hours on June 9 to reduce the water pressure against the gate to enable it to lower down. During this period there was very little fish-attraction flow coming out of the south fish ladder entrances.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 37 square yards
x			Gatewell drawdown measured this week?	
x			Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-12%
	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: STSs are in continuous-run mode because of the presence of small subyearling chinook in the Ice Harbor juvenile fish sample.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
x			Orifices operating satisfactory?	20
	x		Dewaterer and cleaning systems operating satisfactory?	

Comments: The actuator for the water regulating weirs in the collection channel is in local control due to a problem with the automatic control function. The weirs are being operated at the actuator to adjust the water level as needed until the problem can be fixed.

The lights for orifice 4CN and 5BN burned out over the weekend. Those orifices were closed and the adjacent orifice in each of those slots were opened until the lights were replaced on June 5.

Juvenile Fish Facility: The juvenile fish facility is operating in primary bypass except when collecting fish for sampling.

Fish Sampling: Juvenile fish sampling is scheduled to occur on Mondays and Thursdays each week. See the tables below for a summary of the sampling results. On June 8, an adult Pacific lamprey was netted out of the sample tank and transported up to the forebay, where it was released off of the boat ramp in good condition.

Fish condition sampling results at Ice Harbor Dam:

Date: June 5

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	2	0	0	0
Chinook yearling unclipped	1	0	0	0
Chinook subyearling clipped	8	0	0	0
Chinook subyearling unclipped	15	0	0	0
Steelhead clipped	3	0	0	0
Steelhead unclipped	1	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	30	0	0	0

Date: June 8

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	0	0	0	0
Chinook yearling unclipped	0	0	0	0
Chinook subyearling clipped	5	0	0	0
Chinook subyearling unclipped	5	0	0	0
Steelhead clipped	3	0	0	0
Steelhead unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	13	0	0	0

Removable Spillway Weir (RSW): Spring spill for fish passage is occurring.

River Conditions

River conditions at Ice Harbor Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
110.8	91.6	93.1	80.6	60	58	5.5	3.7

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine unit 1, 2, 4, 5, and 6 cooling water strainers were inspected for fish on June 6. A total of 1 adult lamprey, 32 juvenile lamprey, and approximately 108 Siberian prawns were found. All of the fish were dead, with the lamprey in various stages of decomposition. There were also three decomposing unidentifiable fish.

Avian Activity: There were low to moderate numbers of piscivorous birds seen around the project (see table below). Land-based hazing of piscivorous birds for 16 hours per day is taking place and has been effective at moving birds out of areas close to the dam. Boat-based hazing is occurring for 8 hours per day, 3 days per week, and has been particularly effective at reducing bird numbers in the spillway tailrace further downstream of the dam.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
June 2	---	---	---	---	---
June 3	8	4	0	0	32
June 4	5	0	1	0	8
June 5	4	6	1	0	12
June 6	2	3	0	0	11
June 7	0	1	1	0	6
June 8	1	4	2	0	18

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. Daily and total Siberian prawn counts at Ice Harbor Dam for this reporting period are shown below.

Number of Siberian prawns in the sample at Ice Harbor Dam.

Date	Sample (euthanized)	Collection*
May 29	1	1
June 1	1	1
Totals	2	2

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

Fish Rescue/Salvage: None.

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

Project: Lower Monumental
Biologists: Denise Griffith and Raymond Addis
Dates: June 2 - 8, 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	6/06/23	1315	6/06/23	1515	STS Inspections
Unit 2	6/07/23	0700	6/12/23	ERTS	Wicket Gate Repacking
Unit 3	6/07/23	0720	6/07/23	0935	STS Inspections
Unit 4	6/07/23	1300	6/07/23	1450	STS Inspections
Unit 5	6/06/23	1015	6/06/23	1225	STS Inspections
Unit 6	6/06/23	0720	6/06/23	1010	STS Inspections

Comments: None.

Adult Fish Passage Facility

Lower Monumental fish facility, EAS and WDFW staff inspected the adult fishways on June 3, 5 and 7.

Fish Ladder:

Yes	No	Location	Criteria	Measurements
X		North Ladder Exit Differential	Head ≤ 0.5’	
X		North Ladder Picketed Lead Differential	Head ≤ 0.4’	
X		North Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
X		South Ladder Exit Differential	Head ≤ 0.5’	
X		South Ladder Picketed Lead Differential	Head ≤ 0.3’	
X		South Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	

Comments: None.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Shore Entrance (NSE-1) Weir Depth	≥ 8.0’ or on sill	
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: None.

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)	2617 yd^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 25%
	X		Any oil seen in gatewells?	

Comments: Forebay wood debris amount increased as forebay water levels and river flow increased. A debris spill took place on June 7 to remove the large amount of debris that was in the forebay at the unit intake area (see 23 LMN MFR 07 Emergency Debris Spill).

STSs/VBSs:

Yes	No	NA	Item
X			STSs deployed in all slots and in service?
X			STSs in continuous-run mode (Note: if not, then STSs are in cycle-run mode)?
X			STSs inspected this week?
X			STSs inspection results acceptable?
		X	VBSs differentials checked this week?
		X	VBSs differentials acceptable?

Comments: The STSs were running in continuous-run mode due to average sub-yearling Chinook and sockeye lengths being less than 120 mm. STS's were inspected on June 6 and 7. A few screen clips were missing or loose, but the screen conditions were acceptable.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	18 - 22
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: None.

Collection Facility: Collection for transport began at 0700 on April 23. There was a blockage at the B side separator exit flume on June 2 and in the B side flume near the raceways on June 6 due to a heavy amount of woody debris coming into the facility, as documented in the MFR (23 LMN 06 Fish Loss from Debris Blockage). In addition, there were 2 minor plugs removed from the B side count tanks. No fish mortality was noted with these plugs. A high-water alarm came into the separator on June 7 at 1830. The weirs in the PDS were lowered to bring down the elevation of water coming into the separator. It was discovered by an operator on the weekend that extra orifices (22 in total) had been left open, adding more water to the JBS. Once discovered, the operator reduced the number of orifices down to 18 and the weirs in the PDS were adjusted.

Transport Summary: Every-other day barge transport continued this week. Approximately 37,496 fish were collected with 34,712 fish transported and 891 fish being bypassed. Bypass fish include fry and GBT sampled fish.

Spillway Weir: Spring spill continued. Spill was lowered on June 1 due to the potential of increased TDG, total dissolved gas level and returned to normal spring spill operation on June 7, 2023.

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
106.7	89.9	63.2	34.0	60.6	58.1	3.4	3.1

*Scrollcase temperatures.

Other

Cooling Water Strainers: The cooling water strainers will be inspected in June.

Avian Activity: Tailrace counts of foraging piscivorous birds at Lower Monumental Dam began on April 1.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
6/2/2023	1015	4	0	0	0	15
6/3/2023	715	0	2	0	4	19
6/4/2023	945	3	5	0	6	0
6/5/2023	1215	0	2	0	4	4
6/6/2023	1450	1	0	0	0	4
6/7/2023	1055	0	1	0	0	19
6/8/2023	730	0	1	0	0	2

Bird hazing by USDA personnel is ongoing.

Invasive Species: Inspection for zebra or quagga mussels occurred on May 7. None were found.

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

Date	Sample (euthanized)	Collection*
June 5	1	25
June 6	2	50
Totals	3	75

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

Fish Rescue/Salvage: No Fish Rescue/Salvage took place during this reporting period.

Research: GBT examinations occurred on June 7. A total of 2 clipped yearling Chinook, 3 unclipped yearly Chinook, 9 clipped subyearling Chinook, 28 unclipped subyearling Chinook, 43 clipped steelhead and 16 unclipped steelhead smolts were examined. No gas bubble trauma was detected.

A PNNL study on behavior and survival of juvenile Pacific lamprey at Lower Monumental Dam will start on April 1 and run to September 30.

The Nez Perce steelhead kelt study and rehabilitation collection tank setup was completed on March 26 with collection of kelts beginning on March 28. A total of 2 unclipped steelhead kelts were placed in the collection tank.

Project: Little Goose Dam
Biologist: Deb Snyder, Brooke Gerard, Cole Reeves
Dates: June 2 – June 8, 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		06/30/2023	ERTS	Spider and upper guide bearing repair.

Comments: Contractual obligations and performance issues realigned the Unit 5 ERTS date into 2023, load testing remains in progress, reference 23 LGS 07 MOC.

Adult Fish Passage Facility

EAS Bio and USACE staff inspected the adult Fishway on June 3, 4, 6, 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	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 7.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 7.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
X	X		North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	4.4- 6/6
X	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	5.2- 6/4 5.8- 6/6
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. Rickley channel velocity measurements were completed and met criteria on May 25. 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. Elevator access to the north shore channel and weirs was out of service for most of this reporting period, limiting the ability to gather physical staff gauge and weir height measurements. Criteria for activation of Fish Ladder Exit Cooling Pump was met, and the system was started at 2030 hours on June 7.

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 545 ft² - Low 65 ft²
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: The forebay maintained minimal floating debris inside the trash shear boom with the highest measurement occurring on June 7 at 65 ft². The overall total forebay debris high occurred June 3 at 545 ft².

ESBS/VBS:

Yes	No	NA	Item
X			ESBSs deployed in all slots and in service?
	X		ESBSs inspected this week?
		X	ESBSs inspection results acceptable?
X			VBSs differentials checked this week?
X			VBSs differentials acceptable?
	X		VBSs inspected this week?

Comments: Installation of Unit 4-6 ESBS's were completed on March 13 and installation of units 1-3 took place March 14.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	20
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: The juvenile bypass system was initially watered up March 6, was halted to fix pinhole leaks discovered in the 42" primary emergency fish bypass pipe, resumed and was fully commissioned on March 7.

Collection Facility: The juvenile collection facility watered up on March 21. Every other day collection for condition monitoring in conjunction with secondary bypass began March 25 with the first sample being conducted

on March 26. Everyday collection began April 23 coinciding with every other day barge transportation. A total of 114,624 fish were collected, 45 were bypassed, and 107,885 were transported via barge. There were 53 sample or facility mortalities. The descaling and mortality rates were 0.9% and 0.05%, respectively. The collection and transport facility operated within criteria and 5 adult lampreys were removed from the separator during this report period.

Transport Summary: Collection for fish transportation began April 23 with the first barge departure on April 24. Every other day barging is scheduled thereafter pending situational transition to everyday barging due to any unforeseen increase in fish numbers.

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. Summer spill operations are scheduled to begin on June 21.

River Conditions

River conditions at Little Goose Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
105.6	87.8	58.2	28.1	62.8	58.8	3.8	2.4

*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.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
6-2	8:30	0	0	0	0
6-3	14:30	0	0	0	0
6-4	8:30	0	0	0	0
6-5	8:30	0	0	0	0
6-6	11:00	0	0	0	0
6-7	12:00	0	0	0	0
6-8	8:30	0	0	0	0

Invasive Species: No invasive species have been observed on the mussel station.

Siberian Prawn: Juvenile fish collection began March 25. Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by Oregon Department of Fish and Wildlife and EAS Bio personnel, frozen and properly disposed of in a landfill

Date	Sample	Collection*
6-2	0	0
6-3	1	50
6-4	0	0
6-5	0	0
6-6	0	0
6-7	1	25
6-8	4	100
Totals	6	175

*Collection and sample numbers are equal when sample rates change to 100%

Gas Bubble Trauma (GBT): Oregon Department of Fish and Wildlife began GBT monitoring services starting on April 4, 2023. GBT monitoring occurred on June 8. Of the 99 fish examined, 2 fish exhibited signs of GBT.

Fish Rescue/Salvage: No fish rescue and salvage operations transpired during this reporting period.

Research: The Nez Perce Tribe (NPT) began adult steelhead kelt collection efforts on March 26 with an anticipated conclusion date of July 1.

Project: Lower Granite
Biologists: Elizabeth Holdren and David Miller
Dates: June 2-8, 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 June 2, 3, 5, and 7.

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: LWG fish ladder cooling system was brought online at 0913 hours June 5.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.9’
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	
	X		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	0.8’
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 8.0’ or on sill	5.9’, 7.4’, 5.6’, 6.9’
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0’ or on sill	5.9’, 7.4’, 5.6’, 6.9’
	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	0.6’, 0.8’, 0.4’
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.8’, 0.7’
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: Ladder collection channel operation and configuration will continue to be evaluated this season to resolve ongoing issues. FOGs 1, 4, 7, and 10 are in operation. North powerhouse continues to not meet

channel/tailwater head differential criteria. Electrical crew continues to calibrate the ladder when issues are reported. Spill and current flow conditions during gas cap spill appear to drawdown the north and south edges of spillway flows. Tailrace hydraulic conditions continue to impact ladder operational criteria.

Auxiliary Water Supply System:

Operating Satisfactorily	Standby	Out of Service	Auxiliary Water Supply (AWS)
Yes			AWS Fish Pump 1
No		Yes	AWS Fish Pump 2
Yes			AWS Fish Pump 3

Comments: AWS pumps 1 and 3 remain in service.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	148.0 yd^2
X			Trash rack differentials measured this week?	
X			Trash rack differentials acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments:

ESBSs/VBSs:

Yes	No	NA	Item
X			ESBSs deployed in all slots and in service?
	X		ESBSs inspected this week?
		X	ESBSs inspection results acceptable?
X			VBSs differentials checked this week?
X			VBSs differentials acceptable?

Comments:

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	20
X			Dewaterer and cleaning systems operating satisfactory?	

Comments:

Collection Facility: Collection for transport continues.

Transport Summary: Barge transport continues with barges departing every-other-day.

Spillway Weir: Spring spill began April 3. There have been 573 adult and 54,368 juvenile steelhead, 88 adult and 70,471 juvenile Chinook salmon, 2,754 juvenile Coho salmon, and 12,153 juvenile Sockeye salmon detected at the RSW since March 1. There have been 133 adult 27,728 juvenile steelhead, 4 adult and 40,211 juvenile Chinook

salmon, 1,205 juvenile Coho salmon, and 1,134 juvenile Sockeye salmon detected through the Juvenile Bypass System since it was opened on 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
109.5	91.6	62.2	58.9	59.5	58.0	4.0	1.3

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A

Invasive Species: No zebra/quagga muscles were detected on the trap substrate. There were two Siberian prawns collected in the sample.

Avian Activity: Biologist daily piscivorous bird counts and bird hazing began April 1.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
June 2	1345	0	0	0	23
June 3	1045	0	0	0	3
June 4	1940	0	0	0	43
June 5	1330	0	0	0	13
June 6	1220	0	2	0	25
June 7	1230	2	0	0	15
June 8	1635	2	0	3	15

Gas Bubble Trauma (GBT) Monitoring: SMP handled 28 and examined 7 smolts for signs of GBT symptoms. No GBT symptoms were observed.

Adult Fish Trap Operations: Fish will continue to be sampled Monday through Friday until broodstock collection starts August 18.

Fish Rescue/Salvage: N/A

Research:

National Marine Fisheries Service (NMFS) PIT tagging of Adult Wild Chinook and Adult Steelhead for ISEMP-Related Dispersal Monitoring:

The goal of this project is to PIT tag up to 4,000 unclipped adult Chinook and 4,000 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.

Nez Perce Tribe (NPT)/U. of Idaho (UI)/Columbia River Intertribal Fisheries Commission (CRITFC) – Kelt Study

This research investigates steelhead kelt physiology and endocrinology to evaluate the feasibility and success of rehabilitating strategies. The goal is to collect 450-700 kelts from LWG juvenile fish facility separator. Selected kelts are transported by NPT to Dworshak National Fish Hatchery for reconditioning and later release as part of this study. LWG Corps biological technicians collected 552 kelts from the juvenile fish separator with 362 sampled and released, 27 were handled and release, and 159 being transported to the hatchery and there were 4 kelt mortalities this season.

PNNL Juvenile Pacific Lamprey Passage Behavior and Survival at Lower Granite:

The goal of the study is to address questions regarding potential effects of dam operations and configurations on juvenile Pacific lamprey behavior and survival using The Juvenile Salmon Acoustic Telemetry System (JSATS). A target of 450 juvenile and 450 larval lamprey will be collected, implanted with a juvenile Eel/Lamprey Acoustic Transmitter (ELAT), and released upstream of LWG. An additional 1000 juvenile or larval lamprey will be implanted with PIT tags. Distribution and approach routes (including vertical, horizontal, and temporal), primary routes of passage (proportions) at LWG, project survival from forebay to tailrace, and reach survival and reservoir residence time will be evaluated using the telemetry system. In addition, 50 dead tagged juvenile lamprey will be released from LGR and 50 from LMN to estimate dam passage survival using the virtual release/dead-fish correction (ViRDCt) model. Detection of tagged individuals will be summarized to evaluate passage routing and estimate dam passage survival at LGR and LMN, estimate reach survival downstream of LWG and downstream of LMN, and evaluate travel time between detection arrays. There have been 140 larval and 1202 juvenile lamprey have been collected for PNNL this season. Of the total collection, 135 larval and 1,050 juvenile lamprey have been either PIT tagged or acoustic tagged at LWG and released at Blyton Landing, 5 larval and 136 juvenile were handled and released without being tagged, and there were 16 juvenile lamprey recovery mortalities.

Columbia River Inter-Tribal Fisheries Commission (CRITFC) Pacific Lamprey Genetic Study:

CRITFC has requested that the SMP collect non-lethal tissue samples from up to 2000 juvenile and 1000 larval Pacific lamprey, not to exceed 10 juvenile or larvae daily, during the routine smolt monitor condition sampling from March through September. The purpose of this study is to fill two objectives; 1) Determine relative proportion of translocation offspring among the total abundance of larval and juvenile lamprey passing the juvenile bypass systems at BON, JDA, MCN, and LWG. 2) Describe life history characteristics of larval and juvenile lamprey emigrating from the Columbia and Snake River basins. The genetic information collected will be used to evaluate the tribal Pacific lamprey programs efficacy and assist with guiding future management. LWG SMP collected genetic samples from 281 juvenile and 300 larval lamprey this season.