U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#10-2023

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: May 5-11, 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 & 12	1/9	0630	7/28	NA	Control system upgrades
13 & 14	5/9	1000	5/9	1100	Rotated through units for ESBS camera inspections

Comments: RTS dates are subject to change.

Adult Fish Passage Facilities

Measured inspections of the adult fishways occurred on May 5, 7 and 10. Visual adult fish counting continues.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
X		Oregon Exit	Head over weir 1.0’ to 1.3’	1.0’ to 1.1’
X		Oregon Count Station Differential	0.0’ to 0.5’	0.2’ to 0.3’
X		Washington Exit	Head over weir 1.0’ to 1.3’	1.1’ to 1.2’
X		Washington Count Station Differential	0.0’ to 0.5’	0.2’ to 0.4’

Comments: Debris loads were very light to light near both exits. For the Oregon shore exit, a new temperature probe has been ordered. Also, several traveling screen alarms came in and were reset on May 5 and 7.

At the Washington shore exit, multiple high picketed lead differentials alarms came in on May 5 and 8. The alarms were reset after the picketed leads were cleaned. The general maintenance staff was called in on May 5 and were scheduled to come in on May 6 due to increased debris along the Washington shoreline. Also, two large pieces of wood material were removed from the ladder just downstream of the count station on May 7.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0’ – 2.0’	1.2’
X			NFEW2 Weir Depth	≥ 8.0’	8.4’ to 8.8’
X			NFEW3 Weir Depth	≥ 8.0’	8.4’ to 8.7’
X			South Oregon Entrance Head Differential	1.0’ – 2.0’	1.1’ to 1.3’

X			SFEW1 Weir Depth	≥ 8.0’	8.5’ to 8.6’
X			SFEW2 Weir Depth	≥ 8.0’	8.5’ to 8.6’
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.6 fps
X			Washington Entrance Head Differential	1.0’ – 2.0’	1.3’ to 1.5’
X			WFE2 Weir Depth	≥ 8.0’	9.1’ to 9.2’
X			WFE3 Weir Depth	≥ 8.0’	9.1’ to 9.2’

Comments: There are no problems to report. At the Oregon ladder’s north entrance, NFEW1, which is in standby, was raised to the weir’s upper limit to decrease the amount of water flowing over the weir on May 7. At the Washington ladder entrance, the elevation of WFE3 continues to be monitored.

Three floating orifice gates (FOG’s) slots, W32, W37 and W 41 remain closed. Nine of 12 slots are open. To ensure water would not flow into the ladder from the tailwater, an additional stop log was installed in W32 slot on May 11.

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			24° to 25°	Oregon Ladder Fish Pump 1
Yes			24° to 26°	Oregon Ladder Fish Pump 2
		Yes	NA	Oregon Ladder Fish Pump 3/RTS date May 17
Yes				OR North Powerhouse Pool supply from juvenile fishway

Comments: Fish pump 3 remains out of service for bus repair and brush rigging maintenance. The blade angles on pumps 1 and 2 remain increased.

Juvenile Fish Passage Facility

Every other day sample collection continues with no significant interruptions in the schedule this week. In order to examine the transport flume behind the separator for a future PNNL juvenile lamprey study, the system was in primary bypass for less than one minute on May 10. No sampling was missed. After, the separator adult release flush line had to be reset.

Installation of a new forebay (intake) deck crane continues. This will add some challenges to trash rack and VBS cleaning along with ESBS work.

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?	Daily
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. Wind direction changes moved 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 and new debris loads were minimal to very light. Most of the debris was fine material and came in along the Washington shoreline.

The next trash rack cleanings are scheduled for May 30.

Several pieces of woody material were removed from the gatewell slots on May 9. There are no problems to report.

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 except in units 11 and 12, which are out of service. There are no problems to report. Camera inspections in units 13 and 14 revealed no problems on May 9. Two smolt mortalities were noted in unit 13.

Daily VBS differential monitoring continues, and no high differentials were recorded.

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: A transition screen brush timing alarm came in at 0610 hours on May 5. No issues were found and no reason for the alarm was determined. This time, the alarm was also received in the control room. We will continue to monitor the issue.

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, 67,150 juvenile lamprey and 62,100 smolts, mostly yearling Chinook, were bypassed during secondary bypass. The smolt monitoring staff reports fish data in a separate report.

There are no problems to report.

TSW Operations: Both TSW's are attached to a hoist and are part of the spill pattern.

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
346.5	307.8	267.8	249.6	52.6	51.9	4.0	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 spring spill season continues.

As stated last week, 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. Parts arrived on project on May 17. The hoist could return to service in June. However, at that time, the hoist will be attached to the gate in bay 16.

In order to complete work on bay 16's dogging mechanism and anchor points, the two adjacent bays, 15 and 17, were closed as part of the safety protocol. Since bay 17 is an auto bay for the May spill pattern, bay 18 was switched to automatic mode when bay 17 was closed. The remaining spill volume was evenly distributed through the remaining open bays during the work. Bays 15 and 17 were closed on May 8, from 0711 to 1411 hours, on May 9, from 0644 to 1700 hours and on May 10, from 0638 to 1557 hours. As stated before, with the repairs completed, bay 16 will remain closed until the hoist is repaired, assembled, reinstalled, and system checks are completed.

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 next cooling water strainer inspections will occur on June 6.

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

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
May 5	Spill	8	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	2
May 6	Spill	41	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	5	0	0	4	30
May 7	Spill	67	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	0
May 8	Spill	27	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	0
May 9	Spill	70	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	5	0	0	0	0
May 10	Spill	31	0	0	1	0
	Powerhouse	2	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	0
May 11	Spill	4	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	0

For the report week, no terns or cormorants were counted on project.

In the spillway zone, feeding gulls and an occasional pelican or osprey were noted. Gull numbers fluctuated. However, Wildlife Services hazing from a boat may have contributed.

At the bypass outfall zone, no birds were observed due to high flows washing over the pipe and hazing from the boat. Birds near the outfall were in the spill zone.

In the powerhouse zone, two gulls were noted roosting on the water near the spill edge.

In the forebay zone, occasional gulls, pelicans, and grebes were noted. Most birds were passing by or roosting on the water, but some feeding was observed. Outside the zone, a few gulls, grebes, cormorants, loons, and osprey were noted along with staging pelicans with a high count of 75 birds.

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 will return to service on May 13. The laser on the walkway aimed at the bypass outfall remained activate. After reprogramming, the LRAD on the outfall walkway will return to service on May 13.

USDA Wildlife Services continues shore and boat hazing per schedule.

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

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

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

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 82 juvenile lamprey collected at the facility this week for a total of 149 fish this season. All fish were returned to the river unharmed. Gas bubble trauma examinations occurred on May 10. The examinations scheduled for May 8 was moved to May 12. The data is reported the next day. No signs of trauma were observed.

Project: Ice Harbor
Biologist: Ken Fone
Dates: May 5 – May 11, 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 May 8, 9, and 11.

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	7.5’, 7.6’
	x		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	2.1’
	x		South Shore Channel Velocity	1.5 – 4.0 fps	1.2 fps
	x		North Powerhouse Entrance (NFE-2) Weir Depth	≥ 8.0’ or on sill	7.8’
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 water velocity meter was displaying the same reading since April 25 and was not updating on the meter. An electrician checked the meter on May 9 and rebooted it to get it to function correctly. The south shore channel velocity was below criteria later on May 9. The high tailwater and channel levels causes the junction pool water to back up into the fish ladder and slow the water velocity.

The south shore entrance weir depth was below criteria on May 8 and 11. The south shore channel/tailwater differential was slightly above criteria and the north powerhouse entrance weir depth was below criteria on the May 8 inspection. These readings on the PLC were in criteria. The disparity in the readings is probably due to the tailwater transducers needing to be recalibrated. Electricians already checked the calibration twice and did not find

a discrepancy. However, the turbulent tailrace conditions caused by spill make it difficult to do an accurate calibration.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System
5-6 pumps	2-3 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.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 6 square yards
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: 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 inspected this week?
		x	STSs 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 Lower Monumental and Ice Harbor juvenile fish samples.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

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

Juvenile Fish Facility: The juvenile fish facility is operating in primary bypass 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. The dead fish in the May 8 sample came into the separator that way and appeared to have already been dead for at least a day. The cause of the descaling on the clipped steelhead in the May 11 sample was attributed to birds.

Fish condition sampling results at Ice Harbor Dam:

Date: May 8

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	64	0	1	0
Chinook yearling unclipped	10	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	47	0	0	2
Steelhead unclipped	12	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	133	0	1	2

Date: May 11

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	72	1	0	1
Chinook yearling unclipped	16	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	1	0	0	0
Steelhead clipped	29	1	0	1
Steelhead unclipped	9	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	127	2	0	2

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
154.4	105.3	109.8	90.0	53	52	3.9	2.9

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Unit 1, 2, 4, 5, and 6 cooling water strainers were checked for fish on May 2. A total of 128 juvenile lamprey, 3 adult lamprey, and 157 Siberian prawns (all mortalities) were found.

Avian Activity: There were moderate to high numbers of piscivorous birds seen around the project (see table below). The number of gulls and cormorants counted on May 5, 7, and 11 exceeded the threshold number for initiating incident response actions (see Section 7.4 of Appendix L in the Fish Passage Plan). Some of these birds were in the forebay, so the Wildlife Services District Supervisor will make sure the land-based hazers are regularly patrolling that area. Also, the counts on May 7 and 11 occurred when boat-based hazing in the tailrace was not occurring. Land-based hazing of piscivorous birds for 16 hours per day is taking place. Boat-based hazing for 8 hours per day and 5 days per week is occurring, which has been particularly effective at reducing bird numbers in the tailrace areas of the dam.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
May 5	12	13	0	0	10
May 6	19	13	0	0	28
May 7	77	27	0	0	5
May 8	30	9	0	0	0
May 9	17	0	0	0	9
May 10	22	12	0	0	1
May 11	2	42	0	0	0

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 8	0	0
May 11	0	0
Totals	0	0

*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: May 5 - 11, 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	5/8/2023	0709	5/8/2023	1219	Trash Rack Raking
Unit 2	5/8/2023	0900	5/8/2023	1320	Trash Rack Raking
Unit 3	5/8/2023	1232	5/8/2023	1501	Trash Rack Raking
Unit 4	5/8/2023	1336	5/8/2023	1505	Trash Rack Raking
Unit 5	5/8/2023	1522	5/8/2023	1600	Trash Rack Raking
Unit 6	5/8/2023	1525	5/8/2023	1616	Trash Rack Raking

Comments: None.

Adult Fish Passage Facility

Lower Monumental fish facility, EAS and WDFW staff inspected the adult fishways on May 6, 7 8 and 10.

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: Power was out of the Visitor Center/adult fish counting room on May 8 from 0730 to 1413 to perform electrical wiring on new mini split HVAC systems being installed in the 5th floor offices.

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: The fish pumps were shut down from 0915 to 0940 on May 11 to backflush the penstock and clean debris off the trash rack.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	21 yd^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 20%
	X		Any oil seen in gatewells?	

Comments: Unit trash racks were raked to remove debris buildup on May 8. A total of 16 yd^3 of debris was removed, most being tumble weeds.

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.

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: Collection for transport began at 0700 on April 23. There were a total of 325 raceway mortalities found during hourly checks on the May 4 – 5 sampling period of which 253 were clipped yearling Chinook and 61 unclipped yearling Chinook. There were also 101 raceways mortalities found during hourly checks on the May 8 – 9 sampling period, of which 75 were clipping yearling Chinook. Many of these fish showed signs of disease, such as bulging of the eyes and necrotic caudal area. Fish collected in the raceways for transport were released back to the river on May 5 and 6. This was due to a lack of space in the holds of the transport barges.

Transport Summary: Every-other day barge transport continued this week. Approximately 859,302 fish were collected with 376,197 fish transported and 391,734 fish being bypassed. Bypass fish include fry, GBT sampled fish and those bypassed on May 5 and 6.

Spillway Weir: Spring spill continued.

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
150.3	101.3	79.2	42.9	52.5	51.2	4.5	2.3

*Scrollcase temperatures.

Other

Cooling Water Strainers: The cooling water strainers were inspected on May 11. Live fish recovered was 3 juvenile lamprey. Mortalities included 381 juvenile lamprey and 29 salmon smolts.

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

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
5/5/2023	745	66	2	0	0	6
5/6/2023	1545	117	2	0	0	5
5/7/2023	1117	116	0	0	0	0
5/8/2023	1450	103	0	0	0	0
5/9/2023	1430	157	0	0	0	0
5/10/2023	930	77	0	0	0	11
5/11/2023	1245	136	2	0	0	5

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. There were no Siberian prawns in the sample this reporting period.

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

Research: GBT examinations occurred on May 10. A total of 82 clipped yearling Chinook, 15 unclipped yearly Chinook 1 clipped steelhead and 4 unclipped steelhead smolts were examined. Gas bubble trauma was detected in 3 clipped yearling Chinook (3 anal fin, 1 eye).

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 13 unclipped steelhead kelts were placed in the collection tank.

Project: Little Goose Dam
Biologist: Deb Snyder, Brooke Gerard, Cole Reeves
Dates: May 5 – May 11, 2023

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 6 turbine units available for service? (See table and comments below for details)

*All available turbine units are operated in accordance with Appendix C of the Fish Passage Plan

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.

Adult Fish Passage Facility

EAS Bio and USACE staff inspected the adult Fishway on May 6, May 8, and May 10.

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	X*		Fish Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	0.9- 5/8
	X		Fish Ladder Cooling Water Pumps in Service		
		X	Fish Ladder Exit Cooling Water Pumps Operating Satisfactorily		

*One of three inspections was out of criteria

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	
X			South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
X		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 7.0’ or on sill	
X		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 7.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
X			North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: The adult fishway was initially returned to service on February 14, dewatered February 16 due to discovery of a second fish viewing window leak, then subsequently watered back up and commissioned for the season on February 23. The AWS pumps returned to service on February 23. The Fish Ladder Exit Cooling Water Pump was pulled, inspected, and readied for modest repairs on February 21. The Collection Channel Surface Velocity is measured at NPE. Rickley channel velocity measurements were completed and met criteria on April 21. 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 an FSC board discrepancies are detected.

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 77 ft² - Low 6 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 May 7 at 6 ft². The overall total forebay debris high occurred May 8 at 77 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?	19-23
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 1,124,543 fish were collected, 742,022 were bypassed, and 310,129 were transported via barge. There were 862 sample or facility mortalities. The descaling and mortality rates were 2.2% and 0.08%, respectively. The collection and transport facility operated within criteria and 2 adult lamprey 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
149.4	100.7	65.2	36.7	52.2	51.6	3.0	2.2

*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
5-5	8:30	0	0	0	0
5-6	8:45	0	0	0	0
5-7	12:00	31	0	0	0
5-8	12:00	2	0	0	0
5-9	8:00	1	0	0	0
5-10	13:15	23	0	0	0
5-11	10:00	0	0	0	0

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

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

Date	Sample	Collection*
5-5	0	0
5-6	0	0
5-7	2	800
5-8	0	0
5-9	0	0
5-10	0	0
5-11	0	0
Totals	2	800

*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 May 11. Of the 100 fish examined, 1 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: May 5-11, 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 staff inspected the adult fishway on May 6, 8, and 10.

Fish Ladder:

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

Comments:

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.9’
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	6.8’, 7.8’
	X		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 8.0’ or on sill	6.1’, 7.2’
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0’ or on sill	6.1’, 7.2’
	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	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’	
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
Yes			AWS Fish Pump 2
No	Yes		AWS Fish Pump 3

Comments: Pump 1 trips offline when operated in fast at MOP elevation and is currently operating in slow. AWS pump 3 in standby.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	62.7 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?	18
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 on even numbered days.

Spillway Weir: Spring spill began April 3. There have been 336 adult steelhead and 46,472 juvenile steelhead, 7 adult and 45,982 juvenile Chinook salmon, 172 juvenile Coho salmon, and 398 juvenile Sockeye salmon detected at the RSW since March 1. There have been 62 adult steelhead, 20,395 juvenile steelhead, 25,695 juvenile Chinook salmon, 77 juvenile Coho salmon, and 175 juvenile Sockeye salmon detected through the Juvenile Bypass System since it was opened on March 15.

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
152	106	87.4	57.7	50.0	48.5	3.1	2.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A

Invasive Species: No zebra/quagga muscles were detected on the trap substrate. There were no 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
May 5	1055	0	0	0	0
May 6	1150	0	0	0	1
May 7	1454	0	0	0	0
May 8	1318	0	0	0	1
May 9	1345	0	0	0	0
May 10	0622	0	0	0	6
May 11	1911	0	0	0	6

Gas Bubble Trauma (GBT) Monitoring: April 27, SMP examined 100 salmonids with no signs of GBT symptoms. There was one hatchery steelhead handling mortality.

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 4000 unclipped adult Chinook and 4000 unclipped adult steelhead collected in the adult trap daily sample for dispersal monitoring.

Sampling of Steelhead, Chinook salmon, and Sockeye salmon by the Idaho Department of Fish and Game (IDFG) and NOAA Fisheries for Biological data collection.

Upriver migrating steelhead, spring/summer Chinook salmon, and sockeye salmon are collected from the adult trap beginning March 1 through November 30. The goal is to collect 5-20% of adult steelhead, spring/summer Chinook salmon, and sockeye salmon ascending the ladder March 1-November 30. Data collection includes fish scales, genetics tissue, sex and length, wild/hatchery composition, and non-adipose clipped hatchery fish assessment. All natural origin adult steelhead and spring/summer Chinook salmon trapped will be PIT tagged to estimate headwater tributary escapement. Sockeye salmon may be PIT tagged in the future to estimate metrics regarding conversion rates. Some steelhead and spring/summer Chinook salmon may be radio-tagged or spaghetti-tagged. This

information on adult fish forms the basis for status information used in several forums including BiOp-RPA identified needs.

Sampling and PIT tagging of Walleye by the Idaho Department of Fish and Game (IDFG) and NOAA Fisheries.

Walleye collected in the adult fish trap are PIT tagged and released back into the ladder to investigate movement and ascension rate of walleye that successfully exit the fish ladder into the upstream reservoir. PIT tag data collected will be used to gain an understanding of the potential expansion and threat of walleye upstream of LWG to ESA-listed salmonids and guide future management actions of walleye in the Snake River Basin.

PIT Tagging and Genetic Sample Collection from Bull Trout for USFWS:

Bull trout will be collected as part of the normal adult trap daily sample and using the adult SbyC system to recapture previously PIT tagged fish. Untagged bull trout will be PIT tagged, fin clipped for genetic analysis, and have morphometric data collected including weight and length etc. Fin clips will be sent to USFWS to determine the fish's origin. Previously PIT tagged bull trout will only have morphometric data collected. All fish will be released back into the adult fish ladder.

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 231 kelts from the juvenile fish separator with 151 sampled and release, 26 were handled and release, and 52 being transported to the hatchery and there were 2 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 LGR and downstream of LMN, and evaluate travel time between detection arrays. LWG has collected 84 larval and 168 juvenile lamprey for PNNL this season.

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 261 juvenile and 213 larval lamprey this season.