U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#11-2023

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: May 12-18, 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
8 & 9	5/16	1000	5/16	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 12, 14 and 17. 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'	1.0' to 1.2'
X		Washington Count Station Differential	0.0' to 0.5'	0.2' to 0.3'

Comments: Debris loads were very light to light near both exits. The general maintenance staff is cleaning the picketed leads at both exits as needed including on Saturdays. Some of the debris coming in along the Washington shoreline is being flushed out through the navigation lock.

For the Oregon shore exit, a new temperature probe has been ordered. Also, a traveling screen alarm came in and was reset on May 12. At the Washington shore exit, a regulating weir alarm came in and was reset on May 12.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.1' to 1.7'
X			NFEW2 Weir Depth	≥ 8.0'	8.2' to 8.6'
X			NFEW3 Weir Depth	≥ 8.0'	8.2' to 8.5'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.1' to 1.4'
X			SFEW1 Weir Depth	≥ 8.0'	8.6' to 8.7'
X			SFEW2 Weir Depth	≥ 8.0'	8.6' to 8.7'
	X		Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.3 fps
X			Washington Entrance Head Differential	1.0' – 2.0'	1.3' to 1.4'
X			WFE2 Weir Depth	≥ 8.0'	8.9' to 9.5'
X			WFE3 Weir Depth	≥ 8.0'	8.9' to 9.5'

Comments: The Oregon ladder channel velocity was probably out of criterion due to higher tailwater elevations. Three floating orifice gates (FOG's) slots, W32, W37 and W41 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			20° to 25°	Oregon Ladder Fish Pump 1
Yes			22° to 26°	Oregon Ladder Fish Pump 2
Yes*		Yes*	OOS/20	Oregon Ladder Fish Pump 3
Yes				OR North Powerhouse Pool supply from juvenile fishway

*Comments: Fish pump 3 returned to service on May 17 at 0839 hours.

Juvenile Fish Passage Facility

Every other day sample collection continues with no significant interruptions in the schedule this week. For a WDFW tour, the system was switched into secondary bypass for 10 minutes with the sample gates off on May 17.

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 moderate
X			Gatewell drawdown measured this week?	Daily
X			Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: Debris loads were minimal to moderate near the powerhouse. Wind direction changes moved the debris across the forebay from the powerhouse to the Oregon shore and back. Also, much of the debris passed through the spillway. The debris loads beside the spillway were very light to moderate. New debris loads were light and arrived consistently especially along the northern shoreline. Most of the debris was fine material.

The next trash rack cleanings are scheduled for May 30. 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. Preparations are being made to install screens in those units. An electrical staff member did programming adjustments on unit 1's ESBS control PLC on May 16. There are issues to report. Camera inspections in units 8 and 9 revealed no problems on May 16. One smolt mortality was noted in unit 9.

Daily VBS differential monitoring continues, and no high differentials were recorded. However, a total of six screens were cleaned on May 16 and 18. There 88 juvenile lamprey and eight smolt mortalities noted on the VBS's.

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. There are no problems to report.

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, 170,000 juvenile lamprey and 81,602 smolts, mostly yearling Chinook, were bypassed during secondary bypass. The smolt monitoring staff reports fish data in a separate report.

The access hatch gasket on the secondary bypass line wye was found loose and was replaced on May 16.

TSW Operations: Both TSW's are attached to a hoist and are part of the spill pattern. The TSW's will be closed June 8 at 0001 hours. After the closure, switching bays 19 and 20 to standard spillgates 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
408.9	301.9	265.2	246.4	54.1	51.7	4.5	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.

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 mid-June. However, at that time, the hoist will be attached to the gate in bay 16, which remains closed.

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 12	Spill	3	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	1
May 13	Spill	5	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	1	0	0	0	1
May 14	Spill	3	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	0
May 15	Spill	1	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	0
May 16	Spill	3	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	0
May 17	Spill	6	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	0
May 18	Spill	7	0	0	1	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 were noted. Gull numbers were low. Wildlife Services hazing from a boat and high spill volumes may have contributed. About a dozen pelican were noted downstream of the zone during a ladder inspection.

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, no birds were noted during counting. However, there were a few times it appeared that gulls were feeding in the eddy between the powerhouse and spill zones.

In the forebay zone, an occasional gull or grebe was noted. Outside the zone, a few gulls, grebes, cormorants, loons, and osprey were noted along with staging pelicans with a high count of 15 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 returned to service on May 13. The laser on the walkway aimed at the bypass outfall remained activate. The LRAD on the outfall walkway also returned to service on May 13.

USDA Wildlife Services continues shore and boat hazing per schedule.

Invasive Species: The next mussel station examinations will occur on May 21.

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 60 juvenile lamprey collected at the facility this week for a total of 209 fish this season. All fish were returned to the river unharmed. Gas bubble trauma examinations occurred on May 12, 16 and 18. The data is reported the next day. No signs of trauma were observed.

Project: Ice Harbor
Biologist: Ken Fone
Dates: May 12 – May 18, 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
2	5/16/23	1122	5/17/23	1624	STS/VBS inspection and 2A VBS repair

Comments: Units 6, 5, 4, 2, and 1 were taken out of service one at a time for submersible traveling screen (STS) inspections on May 15, 16, and 18. Unit 2 was kept out of service for over a day to repair a hole found in the vertical barrier screen (VBS) in gatewell slot 2A.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on May 15, 16, and 17.

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	7.3’, 7.8’, 7.7’
	x		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	2.5’
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 entrance weir depth was below criteria on May 15, 16, and 17. The south shore channel/tailwater differential was above criteria on the May 16 inspection. The tailwater level went up after the May 15 and 16 inspections, bringing those inspection points into criteria. The entrance weirs are in manual control to reduce the wear and tear on the operating machinery from constantly adjusting to fluctuating tailwater levels caused by spill. The south shore entrance weir depth reading on the PLC was in criteria on the May 17 inspection. The disparity in the reading 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 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.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 18 square yards
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?	6C

Comments: A light oil sheen was observed in gatewell and headgate 6C slots on May 15. An estimated 1-2 ounces of hydraulic oil was presumed to have come off of the head gate cylinder shaft. Oil absorbent booms were deployed, and the appropriate state and federal agencies were notified.

Submersible Traveling Screens / Vertical Barrier Screens:

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. Unit 6, 5, 4, 2, and 1 STSs and unit 2 VBSs were inspected on May 15, 16, and 18. On May 16, the VBS in gatewell slot 2A was observed to have a hole that was approximately 3" long and 2" wide. The STS in slot 2A gatewell was removed, the maintenance bulkhead installed, and the slot was unwatered to repair the hole. The hole was located in the bottom panel of the VBS where there is a solid metal frame inside the VBS that would prevent any fish that swam through the hole to get into the head gate slot. The section of VBS mesh that had the hole was cut off and trimmed back to the frame. The slot was watered back up, the maintenance bulkhead removed, and the STS reinstalled on May 17.

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. Two yearling chinook and three subyearling chinook in the May 15 sample exhibited eye hemorrhaging. Four clipped steelhead in the May 15 sample had a folded or torn operculum.

Fish condition sampling results at Ice Harbor Dam:

Date: May 15

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	59	1	0	0
Chinook yearling unclipped	8	0	0	0
Chinook subyearling clipped	9	0	0	0
Chinook subyearling unclipped	18	0	0	0
Steelhead clipped	49	1	0	0
Steelhead unclipped	10	1	0	0
Sockeye clipped	2	0	0	0
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	1	0	0	0
Total	156	3	0	0

Date: May 18

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	61	0	0	0
Chinook yearling unclipped	7	0	0	0
Chinook subyearling clipped	6	0	0	0
Chinook subyearling unclipped	16	0	0	0
Steelhead clipped	17	0	0	0
Steelhead unclipped	7	0	0	0
Sockeye clipped	21	0	0	0
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	2	0	0	0
Total	137	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
157.6	108.5	109.7	89.5	55	52	4.0	2.7

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: The next monthly inspection of turbine unit cooling water strainers will occur in early June.

Avian Activity: There were moderate to high 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 zones close to the dam. 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 spillway tailrace further downstream of the dam.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
May 12	3	13	0	0	2
May 13	7	9	2	0	24
May 14	23	27	0	0	18
May 15	23	11	0	0	6
May 16	30	6	0	0	28
May 17	60	2	0	0	1
May 18	12	2	0	0	13

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 15	8	8
May 18	1	1
Totals	9	9

*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 12 - 18, 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**

Comments: None.

Adult Fish Passage Facility

Lower Monumental fish facility, EAS and WDFW staff inspected the adult fishways on May 12, 13, 14 and 18.

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’	6.4’
X			South Shore Entrance (SSE-2) Weir Depth	≥ 6.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: South Shore Entrance (SSE-1) Weir Depth was out of criteria on the May 18 inspection with a reading of 6.4 feet. Powerhouse operator was informed and corrected the weir elevation.

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)	443 yd²
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 40%
	X		Any oil seen in gatewells?	

Comments: Forebay wood debris amount increasing as forebay water levels and river flow increases.

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

Transport Summary: Every-other day barge transport continued this week. Approximately 483,500 fish were collected with 571,862 fish transported and 2,100 fish being bypassed. Bypass fish include fry and GBT sampled fish.

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
154.1	104.8	70.6	41.5	55.4	51.4	3.5	2.2

*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
5/12/2023	1200	89	2	0	0	3
5/13/2023	1200	148	0	0	0	2
5/14/2023	1234	116	0	0	0	0
5/15/2023	1152	62	14	0	0	0
5/16/2023	1650	84	0	0	0	29
5/17/2023	1000	120	0	0	0	29
5/18/2023	145	83	2	0	0	26

Bird hazing by USDA personnel is ongoing.

Invasive Species: Inspection for zebra or quagga mussels will occur in June.

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 17. A total of 51 clipped yearling Chinook, 15 unclipped yearly Chinook, 3 clipped subyearling Chinook, 3 Unclipped subyearling Chinook, 20 clipped steelhead and 8 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 26 unclipped steelhead kelts were placed in the collection tank.

Project: Little Goose Dam
Biologist: Deb Snyder, Brooke Gerard, Cole Reeves
Dates: May 12 – May 18, 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 were operated in accordance with Appendix C of the Fish Passage Plan throughout this reporting period except for May 18. At approximately 1953 hours transformer, T1 mega-watt output was decreased 50% due to reaching a dissolved gas analyzer threshold to be outlined in forthcoming 23 LGS 09 MFR, resulting in deviation from unit priority and spill in excess of gas cap.

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 12, May 15, and May 18.

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	X		South Shore Channel/Tailwater Differential	1.0' – 2.0'	0.7- 5/15
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	5.8- 5/12
X	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0' or on sill	5.7- 5/12 5.6- 5/15
X	X		North Shore Channel/Tailwater Differential	1.0'–2.0'	0.9- 5/15
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 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 140 ft² - Low 12 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 16 at 80 ft². The overall total forebay debris high occurred May 17 at 140 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
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 354,009 fish were collected, 2 were bypassed, and 424,497 were transported via barge. There were 1,040 sample or facility mortalities. The descaling and mortality rates were 3.0% and 0.3%, respectively. The collection and

transport facility operated within criteria and 0 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
151.1	103.5	69.0	35.0	56.5	51.6	3.4	2.8

*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
5-12	14:00	0	0	0	0
5-13	13:00	0	0	0	0
5-14	9:00	0	0	4	0
5-15	8:30	1	1	0	0
5-16	8:00	0	0	0	0
5-17	13:45	0	0	0	0
5-18	12:15	0	0	0	1

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*
5-12	0	0
5-13	1	100
5-14	0	0
5-15	0	0

5-16	0	0
5-17	0	0
5-18	0	0
Totals	1	100

*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 18. Of the 100 fish examined, 4 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 12-18, 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 12, 13, 17, and 18.

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'	6.9', 7.9'
	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	6.6'
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0' or on sill	6.6'
	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0'–2.0'	0.0'
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 7.0' or on sill	6.1', 6.9'
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0' or on sill	4.6', 6.9'
	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
No*			AWS Fish Pump 2
No	Yes		AWS Fish Pump 3

Comments: LWG mechanical crew have started a FOG rehab program with one FOG being rehabbed at a time. AWS pumps were taken offline from 1401 to 1426 hours May 15 to replace FOG 10 with a rebuilt spare FOG as part of this project. Worked was scheduled after 1400 hours to minimize impacts to adult fish passage.
*AWS pump 2 tripped offline 1722-1724 hours with an intermittent faulty resistance temperature detector. It was taken offline from 1752-1806 to replace the resistance temperature detector but that did not resolve the problem. AWS pump 2 will need to be taken out of service and AWS pump 3 brought online to prevent damage to the pump.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	42.3 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 436 adult and 51,430 juvenile steelhead, 12 adult and 60,514 juvenile Chinook salmon, 1981 juvenile Coho salmon, and 12,141 juvenile Sockeye salmon detected at the RSW since March 1. There have been 101 adult 24,435 juvenile steelhead, 1 adult and 34,834 juvenile Chinook salmon, 898 juvenile Coho salmon, and 1126 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
158.0	107.4	90.4	48.5	53.5	52.0	4.0	2.6

*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 12	1500	0	0	0	6
May 13	1015	0	1	0	0
May 14	1420	0	0	0	0
May 15	1700	0	0	0	3
May 16	1415	0	1	0	5
May 17	1333	0	0	0	0
May 18	1220	0	0	0	6

Gas Bubble Trauma (GBT) Monitoring: This week, SMP examined 107 salmonids. There was one hatchery steelhead with symptoms of GBT.

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 381 kelts from the juvenile fish separator with 258 sampled and released, 27 were handled and release, and 94 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 264 juvenile and 225 larval lamprey this season.