U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#04-2023

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: March 23-30, 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**
9	10/11/22	1008	4/3/23	NA	9-year overhaul
11 & 12	1/9	0630	7/28	NA	Control system upgrades
7 to 14	3/27	0725	3/27	1624	Rotated through units for trash rack cleaning
1 to 6	3/28	0713	3/28	1612	Rotated through units for trash rack cleaning
1	3/29	0749	3/29	0850	Trash rack cleaning

Comments: At times, units ran outside the one percent criterion per BPA's request. RTS dates are subject to change.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on March 24, 26 and 28. Picketed leads were lowered on March 30. Visual adult fish counting will resume on April 1.

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'	0.0' to 0.1'
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'	0.1'

Comments: Debris loads were minimal near both exits.
A new temperature probe has been ordered for the Oregon exit. After a sensor was replaced and the program verified, the traveling screens returned to automatic operation on March 28.
There are no problems to report for the Washington exit.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.3'
	X		NFEW2 Weir Depth	≥ 8.0'	6.8' to 6.9'
	X		NFEW3 Weir Depth	≥ 8.0'	6.8' to 7.0'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.3' to 1.4'
X			SFEW1 Weir Depth	≥ 8.0'	8.0' to 8.1'
X			SFEW2 Weir Depth	≥ 8.0'	8.0' to 8.1'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.5 fps
X			Washington Entrance Head Differential	1.0' – 2.0'	1.5' to 1.6'
X			WFE2 Weir Depth	≥ 8.0'	9.2' to 9.6'
X			WFE3 Weir Depth	≥ 8.0'	9.2' to 9.5'

Comments: The above out of criteria points (NFEW2 and NFEW3) were due to the juvenile fish facility (JFF) being out of service part of the week, the weir depth being programmed in relation to the pool elevation instead of the tailwater elevation and the weir depth set points being at 6.9 feet instead of 8.0+ feet. The programming issues were probably there from the start of the season and the return of the JFF flow helped to reveal them. These issues were resolved immediately. However, NFEW2 and NFEW3 were out of criteria during all inspections.
At the Washington ladder entrance, the elevation of WFE3 continues to be monitored until a calibration check can be made. 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*			22° to 23°	Oregon Ladder Fish Pump 1
		Yes		Oregon Ladder Fish Pump 2 RTS date ~May 12, 2023
Yes*			21° to 23°	Oregon Ladder Fish Pump 3
Yes*		Yes*		OR North Powerhouse Pool supply from juvenile fishway

*Comments: Fish pump 2 remains out of service as stator repairs continue. The return to service date has been moved to May 12, 2023. Pump 2's intake and discharge stop logs were removed on March 27. In order to accomplish this, fish pumps 1 and 3 had their blade angles reduce to zero degrees twice for a total of 64 minutes from 1250 to 1413 hours. The juvenile bypass system returned to service on March 27 from 1200 to 1400 hours.

Juvenile Fish Passage Facility

The system was watered up from 1200 to 1400 hours and primary bypass began on March 27. The first sample will be collected April 2.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Moderate to heavy
X			Gatewell drawdown measured this week?	3 times
X			Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: Debris loads were moderate to heavy near the powerhouse. Wind direction changes moved the residual debris across the forebay from the powerhouse to the Oregon shore and back. New debris and the debris load beside the spillway were minimal. Most of the debris was woody material. Trash racks were cleaned in all units from

March 27 to 29. There were 173 yards of debris removed. No fish were observed. The next cleaning is scheduled for late April. Trash differentials were measured three times this week. Daily measurements will resume next week. 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: All ESBS's remained raised and winter maintenance was completed. No camera inspections are required. ESBS installation will begin on April 3.

Daily VBS differential monitoring will resume when ESBS's are reinstalled.

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

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

*Comments: The collection channel was watered up with 42 orifices being opened on March 27 from 1200 to 1400 hours. Orifice lighting and operators were repaired as required. Orifices were adjusted for trash rack cleaning as needed. All systems were switched to automatic mode as primary bypass begun. The screen cleaning brushes cycle sequence was set for every four hours. The only issue found was a faulty latch pin sensor on the transition screen cleaning brush. The sensor has probably been out of service for quite some time. Fortunately, the sensor has no effect on the brushes cycle sequence. A new sensor has been ordered.

Bypass Facility:

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

Comments: The juvenile facility was rewatered on March 27. The sample gates will return to service on April 2 at 0700 hours. The PIT sample tag system will not be used again this year. After water up, residual debris in the system's water lines had to be flushed and two jammed flush valves had to be repaired.

TSW Operations:

The TSW was installed in spillbay 19 from March 28 to 30. The TSW in bay 20 is being used as required by the Biological Opinion for adult fallback spill and is opened per the schedule released by RCC.

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
119.2	91.4	1.7	0.0	43.0	42.0	6.0	6.0

Comments: The above data is provided by the control room. The data day runs from 0000 to 0000 hours. The spill recorded is due to the TSW overshoot spill. Repairs to cranes 6 and 7 have been completed. However, due to their age and the importance of these cranes, they will only be used to adjust spillgates without hoist as outlined in the 2023 Fish Passage Plan. More hoist and gate maintenance has been scheduled. Currently, only the hoist for bay 6 is out of service. If ordered parts arrive, the hoist could return to service late June. Inspections of the weld cracks in the gate's dogging assembly in bay 16 were delayed to next week. Other maintenance was occurring. Repairs to the assembly could take two to three months. Since it is the dogging assembly that is damaged, the gate cannot be raised, and the bay will have to remain closed until the repairs are complete. So, to start the season, bays 2 and 6 will require a crane for adjustment. Bay 16 will be closed.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections will occur on April 4.

Avian Activity: Casual avian observations continued. Avian counts will begin on April 1.

For the report week, no terns, pelicans, or grebes, were observed on project. Cormorants were noted roosting on the juvenile bypass outfall. A few gulls were noted in the forebay and tailwater areas.

The two large bird distress calls remain deployed and active on the navigation lock wing wall. The LRAD has been activated but its frequency of operation is under question. The two lasers were programmed and activated on March 30.

Invasive Species: The mussel station examinations revealed no issues on March 26.

Siberian Prawn: No sampling is currently occurring.

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 on remains in place. ODFW personnel removed their equipment from the area around the TSW in bay 20 on March 30.

Project: Ice Harbor
Biologist: Ken Fone
Dates: March 24 – March 30, 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	3/28/23	1700	3/28/23	2055	Governor master station GDACS communication problem

Comments: Units 4, 5, 6, 2, and 1 were taken out of service one at a time to install submersible traveling screens on March 27, 28, and 29.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on March 27, 29, and 30.

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’, 7.4’, 6.4’
	x		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	2.2’, 2.4’, 2.4’
x			South Shore Channel Velocity	1.5 – 4.0 fps	
	x		North Powerhouse Entrance (NFE-2) Weir Depth	≥ 8.0’ or on sill	7.9’, 6.8’
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 south shore entrance weir depth was below criteria and the channel/tailwater differential was above criteria on March 27, 29, and 30. The north powerhouse entrance weir depth was below criteria on March 29 and 30. SFE-1 and NFE-2 weirs were off of sill during the inspections and the tailwater elevation had decreased. This resulted in the high channel/tailwater differentials. Part of the problem is that the south shore tailwater transducer needs calibration and this was reported to electricians. The powerhouse operator noticed that the tailwater level decreased during the March 29 inspection and lowered the weirs to correct the problem. SFE-1 weir is in manual

control because of concern of the brake coil failing in automatic control. Electricians are investigating the problem. NFE-2 is in manual control to reduce the wear and tear on the hoist machinery of operating in automatic control.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System
6 pumps	2 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 40 square yards
x			Gatewell drawdown measured this week?	Baseline readings
		x	Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-15%
	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: Unit 4, 5, 6, 2, and 1 STSs were installed on March 27, 28, and 29.

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 fish channel was watered up and orifices were opened on March 23. 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.

False readings from the new water level transducers in the juvenile fish channel triggered alarms for high channel/overflow section differentials, and caused unit 2 through unit 6 gatewell orifices to automatically close on two occasions. The operator and fish facility personnel were present when this happened and promptly re-opened

the orifices. The automatic orifice closure was disabled until electricians recalibrated the transducers later in the week.

Orifice 6BN light was found to be burned out on March 23 and was replaced on March 29. Orifice 6BS was already open, as both orifices in that gatewell are normally open.

Juvenile Fish Facility: The raw water supply pipes at the fish facility were watered up on March 23.

Fish Sampling: Sampling begins on April 3.

Removable Spillway Weir (RSW): Voluntary spill through the RSW is periodically occurring for the downstream passage of adult steelhead that may have strayed into the Snake River. The RSW will be operated from 0500 hours to 0900 hours PST on Sundays, Wednesdays, and Fridays, from March 1 to April 2.

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
40.5	30.0	1.7	0	43	41	8.6	5.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: The next monthly inspections of turbine unit cooling water strainers will occur in April.

Avian Activity: There were very few piscivorous birds seen around the project.

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 will be humanely euthanized by the fish sampling contractor, frozen and properly disposed of in a landfill.

Fish Rescue/Salvage: None.

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

Project: Lower Monumental
Biologists: Denise Griffith and Raymond Addis
Dates: March 24 - 30, 2023

Turbine Operation

Yes	No	Turbine Unit Status		
X		All 6 turbine units available for service (see table & comments below for details).	Hard	Soft
X		Available turbines operated within 1% peak efficiency? Constraint in effect.		X

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 March 24, 25, 26 and 29.

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: South Powerhouse Entrance Weir SPE-1 was on sill during all inspections with readings of 8.0, 7.2, 7.0, and 7.0 feet respectively. South Powerhouse Entrance Weir SPE-2 was on sill during all inspections with 8.0, 7.2, 7.0, and 7.0 feet respectively.

Auxiliary Water Supply System:

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

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	47 yd²
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 30%
	X		Any oil seen in gatewells?	

Comments: None.

STSs/VBSs:

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

Comments: The STSs are running in cycle-run mode due to average sub-yearling Chinook and sockeye lengths being greater 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 condition sample took place on March 26 and 29. A total of 40 fish were collected with 40 fish being bypassed during this reporting period.

Transport Summary: Daily barge transport is scheduled to begin on April 24.

Spillway Weir: Spring spill for steelhead started at 00:00:01 on March 1.

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
39.0	28.4	1.6	0	42.2	41.0	4.9	3.9

*Scrollcase temperatures.

Other

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

Avian Activity: Tailrace counts of foraging piscivorous birds at Lower Monumental Dam are scheduled to begin on April 1. Bird hazing by USDA personnel is schedule to begin on April 3.

Invasive Species: Zebra or quagga mussels' examinations will occur again in April.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by PSMFC and Anchor, frozen and properly disposed of in a landfill. Daily and total Siberian prawn counts at Lower Monumental Dam for this reporting period are reported below. No Siberian prawns were seen in the samples during this reporting period.

Date	Sample (euthanized)	Collection*
Totals	0	0

*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: 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.

Project: Little Goose Dam
Biologist: Deb Snyder
Dates: March 24 – March 30, 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	14:11	06/30/2023	ERTS	Spider and upper guide bearing repair.
1	3/29/2023	06:20	03/29/2023	12:55	BPA line to ground fault, 500 kV line loss
2	3/29/2023	06:20	03/29/2023	12:55	BPA line to ground fault, 500 kV line loss
3	3/29/2023	06:20	03/29/2023	12:55	BPA line to ground fault, 500 kV line loss
4	3/29/2023	06:20	03/29/2023	12:55	BPA line to ground fault, 500 kV line loss
6	3/29/2023	06:20	03/29/2023	12:55	BPA line to ground fault, 500 kV line loss
6	3/29/2023	13:20	03/31/2023	16:40	Wicket gate packing failure, flooded bearing

Comments: Contractual obligations and performance issues realigned the Unit 5 ERTS date into 2023. The morning through early afternoon outages of March 29, 2023, are covered in 23 LGS 02 MFR 500 kV Line Loss. The subsequent March 29, 2023 unit 6 event was a forced outage.

Adult Fish Passage Facility

EAS Bio and USACE staff inspected the adult Fishway on March 26, and 30.

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’	.8 on 3/30/2023
	X		Fish Ladder Cooling Water Pumps in Service		
		X	Fish Ladder Exit Cooling Water Pumps Operating Satisfactorily		

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.2 3/30
X	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.2 3/30
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	3.2 3/30
X	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	5.6 3/30
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 March 16. Transponder readings documenting the Fish Ladder Depth over Weirs began displaying data inconsistent with physical staff gauge measurements beginning March 30. Maintenance personnel were assigned to troubleshoot the system.

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 3,800 ft² - Low 30 ft²
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	1%: 2C 3/26; 4A 3/28
	X		Any oil seen in gatewells?	

Comments: The forebay maintained minimal floating debris inside the trash shear boom with the highest measurement occurring on March 30 at 300 ft². The overall total forebay debris high occurred March 30 at 3,800 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. A total of 124 fish were collected, 123 were bypassed, and there was 1 sample or facility mortalities. The descaling and mortality rates were 5.3% and 0.81%, respectively. The collection and transport facility operated within criteria and no adult lamprey were removed from the separator during this report period. Everyday collection is scheduled to begin April 23 coinciding with every other day barge transportation.

Transport Summary: Collection for fish transportation is scheduled to begin 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 are scheduled to being 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
38.2	26.3	6.8	0.0	44.7	43.4	5.0	3.5

*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
3-24	N/A	0	0	0	0
3-25	7:30	0	0	0	0
3-26	13:00	1	1	0	0
3-27	N/A	0	0	0	0
3-28	N/A	0	0	0	0
3-29	N/A	0	0	0	0
3-30	8:00	2	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*
3-24	0	0
3-25	0	0
3-26	1	1
3-27	0	0
3-28	7	7
3-29	0	0
3-30	20	20
Totals	28	28

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

Gas Bubble Trauma (GBT): Oregon Department of Fish and Wildlife will perform GBT monitoring services with the scheduled start date of April 4, 2023.

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

Research: The Nez Perce Tribe (NPT) will begin 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: March 24-30, 2023

Turbine Operation

Yes	No	Turbine Unit Status		
	X	All 6 turbine units available for service (see table & comments below for details).	Hard	Soft
X		Available turbines operated within 1% peak efficiency? Constraint in effect.		X

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

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
3	3/26	1002	3/27	1555	Forced outage due to headgate down in slot 3B

Comments: Units 1 and 3-6 were rolled out of service to install the ESBS March 20-23. ESBSs were installed in unit 2 from 0845-1002 hours March 27. Gatewell slot 3B was discovered during gatewell drawdown baseline reading.

Adult Fish Passage Facility

Lower Granite staff inspected the adult fishway on March 24, 25, 28, and 29.

Fish Ladder:

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

Comments:

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	$\geq$ 8.0'	7.3', 6.7'
	X		South Shore Entrance (SSE-2) Weir Depth	$\geq$ 8.0'	7.3'
X			South Shore Channel/Tailwater Differential	1.0' – 2.0'	
	X		North Powerhouse Entrance (NPE-1) Weir Depth	$\geq$ 8.0' or on sill	7.4', 6.7'
	X		North Powerhouse Entrance (NPE-2) Weir Depth	$\geq$ 8.0' or on sill	7.4', 6.7'
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0'–2.0'	0.9', 0.7'
X			North Shore Entrance (NSE-1) Weir Depth	$\geq$ 7.0' or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	$\geq$ 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. Although there is no spill and both entrance gates are

operating, north shore did not meet channel/tailwater head differential criteria. Efforts of the electrical crew were able to bring the ladder into criteria with the exception of the north shore channel/tailrace differential.

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: AWS pump 3 remained out of service for maintenance. Fish pump 1 tripped offline from 1045-1215 hours March 28.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	131 yd²
	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: Condition sampling started at 0700 March 25 with the first sample worked up March 26. Research collection for in-river survival tagging will be take place the weeks of April 3 and April 10, collection for the transport study will begin the week of April 20, and collection for transport is scheduled to begin April 23.

Transport Summary: The first research trip is scheduled for April 20.

Spillway Weir: The RSW will continue to be operated for steelhead overshoot passage Sundays, Tuesdays, and Thursdays until spring spill begins April 3. There have been 50 adult steelhead and 1 juvenile steelhead and 12

juvenile Chinook salmon detected at the RSW since March 1. There have been 3 adult steelhead and 45 juvenile Chinook 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
37.6	26.4	1.7	0.0	43.0	41.5	4.6	3.6

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling strainer inspections were conducted on March 30.

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

Avian Activity: Biologist daily piscivorous bird counts at Lower Granite Dam will begin April 1. Some gulls and cormorants are present in the tailrace.

Gas Bubble Trauma (GBT) Monitoring: N/A

Adult Fish Trap Operations: The adult trap was watered up February 28. Collection for sampling started at 0730 hours on March 1 at a 25% (18%/week) sample rate. Collection for sampling will be conducted 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 will be PIT tagged 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 23 kelts from the juvenile fish separator with 16 being PIT tagged and released, 6 being handled and released without tagging, and one being transported to the hatchery.

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 1,000 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 collected 148 larval and 306 juvenile lamprey this week.

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 1,000 juvenile and 500 larval Pacific lamprey, not to exceed 20 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. Since the start of SMP condition sampling on March 24, 188 juvenile and 67 larval lamprey samples have been collected.