U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#05-2023

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: March 31-April 6, 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	4/4/23	1346	9-year overhaul
11 & 12	1/9	0630	7/28	NA	Control system upgrades
14	4/3	0700	4/3	1233	ESBS install & semiannual maintenance
2	4/3	1101	4/3	1627	ESBS install & semiannual maintenance
3	4/4	0632	4/4	1151	ESBS install & semiannual maintenance
4	4/4	1222	4/5	1010	ESBS install, maintenance & exciter speed sensor
5	4/5	0634	4/5	1125	ESBS install & semiannual maintenance
6	4/5	1127	4/5	1542	ESBS install & semiannual maintenance
7	4/6	0637	4/6	1100	ESBS install & semiannual maintenance
8	4/6	1104	4/6	1553	ESBS install & semiannual maintenance

Comments: At times, units ran outside the one percent criterion per BPA's request. The hard one percent criterion begins on April 10. RTS dates are subject to change.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on March 31, April 2 and 5. Visual adult fish counting resumed on April 1.

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'
X		Washington Exit	Head over weir 1.0' to 1.3'	1.1'
X		Washington Count Station Differential	0.0' to 0.5'	0.2'

Comments: Debris loads were minimal near both exits.

For the Oregon exit, a new temperature probe has been ordered.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.2' to 1.4'
	X		NFEW2 Weir Depth	≥ 8.0'	7.7' to 8.1'
	X		NFEW3 Weir Depth	≥ 8.0'	7.7' to 8.2'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.2' to 1.4'
	X		SFEW1 Weir Depth	≥ 8.0'	7.9' to 8.0'
	X		SFEW2 Weir Depth	≥ 8.0'	7.9' to 8.1'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.7 fps
X			Washington Entrance Head Differential	1.0' – 2.0'	1.5' to 1.6'
X			WFE2 Weir Depth	≥ 8.0'	9.1' to 9.3'
X			WFE3 Weir Depth	≥ 8.0'	9.1' to 9.2'

Comments: At the north Oregon entrance, NFEW2 and NFEW3 were out of criteria on April 5, possibly due to low tailwater elevations. At the south Oregon entrance, SFEW1 and SFEW2 were out of criteria on March 31, possibly due to calibration drifts.

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 W 41 remain closed. Nine of 12 slots are open.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Blade angle	Auxiliary Water Supply System (AWS)
Yes				WA shore Wasco County PUD Turbine Unit
	Yes			WA shore Wasco PUD Bypass
Yes*			22° to 25°	Oregon Ladder Fish Pump 1
		Yes*		Oregon Ladder Fish Pump 2 RTS date May 12, 2023
Yes*			21° to 26°	Oregon Ladder Fish Pump 3
Yes				OR North Powerhouse Pool supply from juvenile fishway

*Comments: Fish pump 2 remains out of service as stator repairs continue. However, fish pump 2 was tested on April 4. In order to accomplish this, fish pumps 1 and 3 had their blade angles reduce to zero degrees from 1240 to 1505 hours. The juvenile bypass system remains in service.

Juvenile Fish Passage Facility

The system remained in primary bypass until every other day sample collection began on April 2 at 0700 hours.

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?	Daily
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.

The next trash rack cleaning is scheduled for the week of April 17. Trash differentials were measured daily.

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 were installed in units 2 through 8 and 14 on April 3 to 6. Unit 14's screens were installed early due to miscommunication about the order of install per the FPP. The remaining ESBS's will be installed next week. Camera inspections will begin in early May.

Daily VBS differential monitoring resumed on April 3. There were no high differentials 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: Orifice operators, air line packing nuts, and area lighting were adjusted or repaired as required.

The screen cleaning brushes cycle sequence was set to every six hours on April 2. A replacement for the faulty latch pin sensor on the transition screen cleaning brush has been ordered. The brushes are cycling properly.

Bypass Facility:

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

Comments: The sample gates return to service on April 2 at 0700 hours and will be operated every other day for sample collection. The PIT sample tag system will not be used again this year.

This week, 19 juvenile lamprey and 962 smolts, mostly yearling Chinook, were bypassed during secondary bypass. The smolt monitoring staff reports fish data in a separate report. One walleye adult was removed from the separator this week.

TSW Operations:

Final adjustments for the TSW in bay 19 were made on April 4. Both TSW's are attached to a hoist. The TSW in bay 20 is being used as required by the Biological Opinion for adult fallbacks and is opened per the schedule released by RCC. Both TSW's will be opened on April 10 at 0001 hours when the spring spill season begins.

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
116.2	92.3	1.4	0.0	44.5	43.0	6.0	6.0

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 spill recorded is due to the TSW. The spring spill season will begin on April 10 at 0001 hours.

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.

Hoist and gate maintenance were completed this week. Currently, only the hoist for bay 6 is out of service. If ordered parts arrive, the hoist could return to service late June.

The weld cracks in the gate's dogging assembly in bay 16 will be repaired on project, with the repairs taking approximately one month. 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 and bay 16 will be closed. The manual/auto spill tables, which will begin this season, with be modified to reflect bay 16 being closed.

Other

Inline Cooling Water Strainers: The cooling water strainer inspections revealed one live juvenile lamprey, which was returned to the river unharmed. The mortalities observed included 17 juvenile lamprey, one clipped steelhead smolt and one unclipped yearling Chinook smolt on April 4.

Avian Activity: Avian counts resumed on April 1. The results are recorded in Table 3 below.

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

In the spillway zone, a few fly-by gulls were noted. No birds were observed feeding in the TSW flow.

At the bypass outfall zone, cormorants and gulls were noted roosting on the juvenile bypass pipe. A few cormorants and gulls were noted feeding in the outfall. The cormorants overwinter and start the season at a fairly high number. Gulls are just arriving on project.

One gull was observed passing by in the powerhouse zone this week.

In the forebay zone, no birds were observed. However, outside the zone, a few gulls, grebes, and osprey were noted along with one loon. Also, possibly, a bald eagle was observed on project.

The two large bird distress calls remain deployed and active on the navigation lock wing wall. The two lasers were aimed at the bypass outfall remained activated. The LRAD has been activated but its frequency of operation is under question and the unit maybe reprogrammed next week.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
April 1	Spill	2	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	1	20	0	0	0
	Forebay	0	0	0	0	0
April 2	Spill	0	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	12	0	0	0
	Forebay	0	0	0	0	0
April 3	Spill	1	0	0	0	0
	Powerhouse	1	0	0	0	0
	Outfall	1	25	0	0	0
	Forebay	0	0	0	0	0
April 4	Spill	0	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	14	0	0	0
	Forebay	0	0	0	0	0
April 5	Spill	0	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	13	0	0	0
	Forebay	0	0	0	0	0
April 6	Spill	4	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	5	18	0	0	0
	Forebay	0	0	0	0	0

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

Siberian Prawn: No prawns were observed in this week's samples.

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. For a CRITFC study, there were tissue samples removed from 19 juvenile lamprey collected at the facility this week. All fish were returned to the river unharmed. The one lamprey morality was not due to tissue sampling. Gas bubble trauma examinations will begin on April 10.

Project: Ice Harbor
Biologist: Ken Fone
Dates: March 31 – April 6, 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 April 2, 4, and 5.

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’
	x		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	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	7.8’
	x		North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	0.7’
x			North Shore Entrance (NEW-1) Weir Depth	≥ 8.0’ or on sill	
	x		North Shore Channel/Tailwater Differential	1.0’ – 2.0’	2.1’

Comments: The south shore entrance weir depth was below criteria and the channel/tailwater differential was above criteria on April 2. The north powerhouse entrance weir depth was below criteria on April 2. SFE-1 and NFE-2 weirs were off of sill during the inspection 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 and lowered the weirs to bring those inspection points back into criteria. 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 weir is in manual control to reduce the wear and tear on the hoist machinery of constantly adjusting in automatic control to the turbulent tailwater conditions caused by spill.

The north powerhouse entrance channel/tailwater differential was below criteria on April 4. This may have resulted from the difficulty in obtaining an accurate tailwater level reading with the turbulence caused by spill.

The north shore entrance channel/tailwater differential was slightly above criteria on the April 5 inspection. NSE-1 weir was down on sill, but the low tailwater caused the high differential.

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 11 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?	

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 were switched to continuous-run mode on April 5 because of the presence of subyearling chinook fry in the Lower Monumental juvenile fish sample.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

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

Orifice 5BN light was found to be out on April 4 due to a bad ballast. Orifice 5BS was opened in place of orifice 5BN. A new ballast is being ordered.

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

Fish Sampling: Juvenile fish sampling began on April 3 and will occur on Mondays and Thursdays each week. See the tables below for a summary of the sampling results. There were no fish in the April 3 sample.

Fish condition sampling results at Ice Harbor Dam:

Date: April 3

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

Date: April 6

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	3	0	0	0
Chinook yearling unclipped	3	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	0	---	---	---
Steelhead unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	6	0	0	0

Removable Spillway Weir (RSW): Voluntary spill through the RSW periodically occurred for the downstream passage of adult steelhead that may have strayed into the Snake River. The RSW was operated from 0500 hours to 0900 hours PST on Sundays, Wednesdays, and Fridays, from March 1 to April 2. Spring spill for fish began at 2345 hours on 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
42.5	33.3	24.8	0	44	43	6.8	5.8

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine unit 1, 2, 4, 5, and 6 cooling water strainers were inspected for fish on April 4. A total of 22 dead juvenile lamprey and 38 dead Siberian prawns were found.

Avian Activity: There were low numbers of piscivorous birds seen around the project (see table below). The number of gulls, cormorants, and terns counted on April 1 exceeded the threshold number for initiating incident response actions (see Section 7.4 of Appendix L in the Fish Passage Plan). The April 1 counts were conducted before bird hazing began for the day. The counts for the rest of the reporting period were under the threshold. Land-based hazing of piscivorous birds for 8 hours per day began on April 1.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
April 1	0	15	0	0	0
April 2	3	6	0	0	0
April 3	0	0	0	0	0
April 4	0	0	0	0	0
April 5	0	6	0	0	0
April 6	0	0	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.

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 31 – April 6, 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	X

Comments: All available turbine units are operated in accordance with App. C of the Fish Passage Plan. Hard restraint for operating within 1% efficiency started at 00:00:01 on April 3.

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

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
Unit 1	4/03/23	0720	4/04/23	1640	Repair Servo Gate leak/STS Inspections
Unit 2	4/05/23	1345	4/05/23	1535	STS Inspections
Unit 3	4/04/23	1100	4/04/23	1330	STS Inspections
Unit 4	4/06/23	0740	4/06/23	1005	STS Inspections
Unit 5	4/04/23	1400	4/04/23	1600	STS Inspections
Unit 5	4/05/23	0930	4/05/23	1020	STS Inspections
Unit 6	4/05/23	0945	4/05/23	1000	Repair of a RAS issue
Unit 6	4/05/23	1140	4/05/23	1250	STS Inspections

Comments: Unit 1 STS inspections took place while unit as out of service for the Servo Gate repair.

Adult Fish Passage Facility

Lower Monumental fish facility, EAS and WDFW staff inspected the adult fishways on March 31, April 1, 2 and 4.

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: The South Ladder depth over weir was out of criteria during the March 31 inspection with a reading of 0.8 feet. The water level at diffuser 7 picketed leads was low with a reading of 533.8. The powerhouse operator was informed and adjusted diffuser 7 valve to raise water level.

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 6.6, 6.3, 6.3 and 7.2 feet respectively. South Powerhouse Entrance Weir SPE-2 was on sill during all inspections with 6.6, 6.3, 6.3 and 7.2 feet respectively. South Shore Entrance Weir SSE-1 was on sill during all inspections with readings of 7.6, 7.3, 7.5 and 5.9 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)	50 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: STS inspections took place between April 4 and April 6. All STSs were found in good working condition. 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: PDS weirs were adjusted for water level on April 23. On April 5 the electrical staff and PIC contracting worked on the electrical systems at the PDS from 1000 to 1411. The PDS operation was not effected by the work.

Collection Facility: Collection for condition sample took place on April 1 and 4. A total of 138 fish were collected with 137 fish being bypassed during this reporting period.

Timing gate PLC stopped receiving connection on April 3 at 1741. Although the PLC could not receive signal, the gates opened and closed at the correct time. The biological technician working at the time tried to reset the connection and all efforts failed. PSMFC was contacted the morning of April 4. The computer program was reset, and the system returned to full operation.

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

Spillway Weir: Spring spill started at 00:00:01 on April 3.

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
41.8	30.7	21.0	0	43.1	42.3	4.6	4.2

*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 began on April 1.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
4/1/2023	1230	0	0	0	0	0
4/2/2023	1345	0	0	0	0	0
4/3/2023	1238	0	0	0	0	0
4/4/2023	1000	0	0	0	0	0
4/5/2023	1310	2	0	0	0	0
4/6/2023	1500	0	0	0	0	0

Bird hazing by USDA personnel is schedule to begin on April 9.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on April 2.

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. Daily and total Siberian prawn counts at Lower Monumental Dam for this reporting period are reported below.

Date	Sample (euthanized)	Collection*
April 1	0	0
April 4	1	2
Totals	1	2

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

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

Research: GBT examinations occurred on April 4. A total of 10 clipped yearly smolts were examined. Gas bubble trauma was detected in the fins of 1 clipped yearling Chinook.

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 31 – April 6, 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.
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 March 29, 2023 unit 6 event was a forced outage.

Adult Fish Passage Facility

EAS Bio and USACE staff inspected the adult Fishway on April 1, 5, 6, and 9.

Fish Ladder:

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

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	
X			South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 7.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 7.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
X	X		North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	3.7 4/5; 5.5 4/9
X	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	5.8 4/5
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. The North Shore fish entrance weirs are once again experiencing discrepancy readings between the Fish System Control board and physical weir height measurements. We will continue to monitor criteria with physical measurements at the North Shore location.

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 275 ft² - Low 0 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 April 1 at 275 ft². The overall total forebay debris high also occurred April 1 at 275 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 123 fish were collected, 123 were bypassed, and there were 0 sample or facility mortalities. The descaling and mortality rates were 0.0% and 0.0%, 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 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
41.0	29.3	17.7	0.0	45.9	44.6	5.5	3.8

*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
3-31	8:30	0	0	0	0
4-1	8:30	0	0	0	0
4-2	8:30	0	0	0	0
4-3	N/A	0	0	0	0
4-4	8:10	0	0	0	0
4-5	8:50	0	0	0	0
4-6	9:00	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*
3-31	0	0
4-1	13	13

4-2	0	0
4-3	15	15
4-4	0	0
4-5	3	3
4-6	0	0
Totals	31	31

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

Gas Bubble Trauma (GBT): Oregon Department of Fish and Wildlife performed GBT monitoring services with the start date of April 4, 2023. No fish were collected.

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: March 31-April 6, 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 April 1 and 5.

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’	6.7’
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	6.7’
	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	5.8’
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0’ or on sill	5.8’
	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	0.9’
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	6.6’
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	6.8’
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.5’
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. Spill and current low flow conditions result is a drawdown on the north side of the spillway and at both NSEs.

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 0708-0726 hours April 6 due to thrust bearing high temperature indication.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	264.3 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: An oil sheen reported in gatewell 4C April 5. An absorbent pad was deployed.

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: Research collection for in-river survival tagging was canceled this week due to low fish numbers. Collection for in river survival is scheduled to resume April 10. Collection for the transport study will begin April 17 with the research barge departing April 20. 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 59 adult steelhead and 2 juvenile steelhead and 1,935 juvenile Chinook salmon detected at the RSW since March 1. There have been 5 adult steelhead, 5 juvenile

steelhead, and 81 juvenile Chinook 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
38.0	31.4	22.1	0.0	44.0	42.0	4.5	3.5

*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 3 Siberian prawns collected in the sample and euthanatized.

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
April 1	1145	0	0	0	0
April 2	1515	0	0	0	0
April 3	1615	2	0	0	0
April 4	1230	0	0	0	0
April 5	1315	3	1	0	0
April 6	1415	0	2	0	0

Gas Bubble Trauma (GBT) Monitoring: N/A

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 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 38 kelts from the juvenile fish separator with 27 sampled and release,10 were handled and release, and one being transported to the hatchery 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. As of April 3, LWG collected 51 larval and 62 juvenile lamprey.

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 1000 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. LWG SMP collected genetic samples from 42 juvenile and 81 larval lamprey this season.