U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#05-2022

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: April 1-7, 2022

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 14 turbine units available for service? (See table & comments below for details.)

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

McNary Unit Outages (OOS) and Return to Service (RTS).

	OOS		RTS		
Unit(s)	**Date**	**Time**	**Date**	**Time**	**Outage Description**
7	10/4/21	0730	4/20/22	N/A	Blade seals
2	4/5	0633	4/5	1146	Semi-annual and ESBS's installed
3	4/5	1148	4/5	1618	Semi-annual and ESBS's installed
4	4/6	0633	4/6	1131	Semi-annual and ESBS's installed
5	4/6	1135	4/6	1638	Semi-annual and ESBS's installed
6	4/7	0632	4/7	1022	Semi-annual and ESBS's installed
8	4/7	1025	4/7	1529	Semi-annual and ESBS's installed

Comments: The one percent peak efficiency constraint and unit priority are being followed per the 2022 Fish Passage Plan (FPP). RTS dates are subject to change.

Adult Fish Passage Facilities

The McNary fisheries staff performed measured inspections of the adult fishways on April 1, 3, and 6. In person fish counting began 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 1.2'
X		Oregon Count Station Differential	0.0' to 0.5'	0.2'
X		Washington Exit	Head over weir 1.0' to 1.3'	1.0' to 1.1'
X		Washington Count Station Differential	0.0' to 0.5'	0.2' to 0.3'

Comments: Debris loads were minimal near both exits.

There are no problems to report.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
	X		North Oregon Entrance Head Differential	1.0' – 2.0'	1.9' to 2.1'
X			NFEW2 Weir Depth	≥ 8.0'	9.4' to 9.9'
	X		NFEW3 Weir Depth	≥ 8.0'	Raised
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.2' to 1.5'
	X		SFEW1 Weir Depth	≥ 8.0'	7.3' to 7.7'
	X		SFEW2 Weir Depth	≥ 8.0'	7.3' to 7.6'
	X		Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.0 fps.
X			Washington Entrance Head Differential	1.0' – 2.0'	1.3' to 1.4'
X			WFE2 Weir Depth	≥ 8.0'	9.9' to 10.4'
X			WFE3 Weir Depth	≥ 8.0'	9.9' to 10.5'

Comments: The above out of criteria points were due to the Oregon ladder operating with only one functional fish pump under the configuration as outlined in the FPP. NEFW3 was raised, SFEW1 and SFEW2 were out of criteria, and the velocity was low all week. The north Oregon entrance pool differential was out of criterion on April 1. SFEW2 was found with slack cables on April 3.

Floating orifice gate slot W26 is currently closed. However, the gate in that slot is damaged and will need to be replaced.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Fish Pump Blade Angle	Auxiliary Water Supply System (AWS)
Yes				WA shore Wasco County PUD Turbine Unit
	Yes			WA shore Wasco PUD Bypass
Yes			28°	Oregon Ladder Fish Pump 1
		Yes		Oregon Ladder Fish Pump 2
		Yes		Oregon Ladder Fish Pump 3, RTS date is October 29
Yes				OR North Powerhouse Pool supply from juvenile fishway

Comments: Fish pumps 2 and 3 remain out of service. Fish pump 3 will be repaired first. Return to service dates are subject to change. The blade angle for fish pump 1 was briefly reduced to zero degrees in order to remove the slack from the cables on SFEW2 on April 3.

Juvenile Fish Passage Facility

Every other day sample collection continued with no interruptions in the schedule.

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 and minimal beside the spillway. New debris loads were minimal to very light. Weather systems moved the debris to the Oregon shore and back.

No trash racks were cleaned this week. The next scheduled cleaning is the week of April 18. There is nothing more 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 1 and 12 through 14 for early start up. Screens were installed in units 2 through 6 and 8 this week. ESBS's will be installed in units 9 through 11 next week and unit 7 before the unit returns to service. After installation, the brush cycles for the screens in units 2, 3 and 5 had to be reset. Camera inspections will resume on April 26.

Daily VBS differential monitoring revealed no high differentials, and no screens were cleaned.

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: Moisture in the temporary supply line continued to be an issue, with the moisture being bleed off on every shift. With this main line, which is still rerouted for the headgate repair pit contractor, orifices were only cycled once a day. The south orifice in 8A slot remains closed, with the north orifice open. With an ESBS stored in the slot, we have yet to determine if the orifice has a blockage or not.

There are no problems to report.

Bypass Facility:

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

Comments: All bypass facility systems functioned well. The sample gates were only on during secondary bypass. The PIT-tag system gates remained off as there is no need for that system.

This week, 1,084 juvenile lamprey and 10,406 smolts, mostly yearling Chinook salmon and steelhead, were bypassed during secondary bypass. The smolt monitoring staff reports fish data in a separate report. Another 11 walleye adults were removed from the separator this week. We have never seen walleye numbers like this at McNary.

Top Spillway Weir (TSW) Operations: Bays 19 and 20 remained closed with the TSW's installed. Both TSW's will be ready for the spring spill season starting on April 10 at 0001 hours. Bays 19 and 20 have a crane and a hoist installed, respectively. The crane can no longer be operated remotely.

River Conditions

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
167.9	140.1	0.0	0.0	46.7	45.7	6.0	5.0

Comments: The above data is provided by the smolt monitoring staff except water clarity, which comes from the control room. The data day runs from 0700 to 0700 hours.

Cranes 6 and 7 are both back in service and will be ready for limited use during the spill program beginning on April 10. Load limit tests will be completed in May on both cranes. The hoist in bay 6 has a failed gearbox. The hoist's return to service date has yet to be fully finalized with parts on order. The spill pattern changes are in the current FPP.

Other

Inline Cooling Water Strainers: The cooling water strainer inspections revealed 69 juvenile lamprey and three steelhead smolt mortalities on April 5.

Avian Activity: Recording avian counts began on April 1. These counts are reflected in Table 3 below.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
April 1	Spill	0	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	4	54	0	0	0
	Forebay	0	0	0	0	0
April 2	Spill	0	0	0	0	0
	Powerhouse	3	0	0	0	0
	Outfall	3	74	0	0	0
	Forebay	0	0	0	0	0
April 3	Spill	3	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	7	77	0	0	0
	Forebay	0	0	0	0	0
April 4	Spill	0	0	0	0	0
	Powerhouse	9	0	0	1	0
	Outfall	5	50	0	0	0
	Forebay	0	0	0	0	0
April 5	Spill	0	0	0	0	0
	Powerhouse	25	0	0	0	0
	Outfall	3	60	0	0	0
	Forebay	9	0	0	0	0
April 6	Spill	0	0	0	0	0
	Powerhouse	10	0	0	1	0
	Outfall	3	56	0	0	0
	Forebay	0	0	0	0	0
April 7	Spill	0	0	0	0	0
	Powerhouse	4	1	0	2	0
	Outfall	4	69	0	0	0

	Forebay	0	0	0	0	0

Due to the beam hitting the navigation lock wingwall, the laser on the outfall pipe was removed from service for safety concerns on April 4. This laser needs a new mounting backet manufactured. The navigation lock wing wall laser, which is aimed at the outfall, remains in service along with the two large bird distress calls. Solar panels for the LRAD have been ordered. There is no other hazing at this time.

In the spillway zone, gulls were noted roosting once.

In the powerhouse zone, gulls, two pelicans and one cormorant were noted along the northern edge of the powerhouse flow. Most birds were feeding.

In the bypass outfall zone, gulls and cormorant were observed. Most birds were roosting, but several were noted feeding in the outfall. More hazing effort needs to be abled to the feeding birds. Cormorant numbers remained high. The cormorants appeared to have overwintered.

In the forebay zone, a small, roosting gull flock was noted once. Outside the zone, gulls, two osprey and two loons were observed. The gulls were staging and have been slowly increasing in number.

No grebes or terns were noted on project.

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

Siberian Prawn: No Siberian prawns were removed from the sample this week. None have been seen this year.

Fish Rescue/Salvage: For this week, there is nothing to report.

Research: For a CRITFC study, there were tissue samples removed from 68 juvenile lamprey collected at the facility this week. For the season, 224 juvenile lampreys have been sampled. All fish were returned to the river unharmed. Gas bubble trauma examinations will begin on April 12.

Project: Ice Harbor
Fisheries Biologist: Ken Fone

Turbine Operation

Yes	No	Turbine Unit Status
	x	All 6 turbine units available for service (see table & comments below for details).

*All available turbine units are operated in accordance with App. 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
4	2/28/22	0800	4/1/22	1123	Franklin Substation 115 kv line #2 relay replacement; unit 4 annual maintenance
1, 2	4/4/22	0758	---	---	Franklin Substation 115 kv line #1 bus upgrades

Comments: Units 1 and 2 are expected to be out of service until April 15 for the bus upgrades at the Franklin Substation.

Adult Fish Passage Facility

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

Fish Ladders:

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

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
x			South Shore Entrance (SFE-1) Weir Depth	≥ 8.0’ or on sill	
x			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
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’	
		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 north powerhouse entrance weir depth was slightly below criteria on April 6 when the weir was slightly off of sill. The weir is in manual control to reduce the wear and tear of the equipment operating automatically in response to fluctuating tailwater levels from spill. With the lower tailwater level towards the end of the week, the operator lowered the gate down to sill after the inspection on April 6.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply (AWS) System
6 pumps	1 pump	1 pump	Status of the 8 south shore AWS pumps
2 pumps	1 pump		Status of the 3 north shore AWS pumps

Comments: South shore AWS pump #1 is out of service for unwatering and investigation of a cavitation/vibration problem.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 6 square yards
x			Gatewell drawdown measured this week?	
x			Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-15%
	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/VBSs inspected this week?
		x	STS/VBS inspection results acceptable?
		x	VBS differentials checked this week?
		x	VBS differentials acceptable?

Comments: None.

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 was placed in local control shortly after watering up the channel due to a problem with the automatic control settings. The weirs will be operated at the actuator to adjust the water level as needed until electricians fix the problem.

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

Fish Sampling: Fish condition sampling began on April 4 and will occur on Mondays and Thursdays each week. See the tables below for a summary of the sampling results. The one salmonid mortality in the April 4 sample appeared to have already been dead for several days and was not an intact specimen, so it could not be identified to species. The fish was recorded as a clipped yearling chinook salmon for the purpose of documenting the fish in the sample spreadsheet.

Fish condition sampling results at Ice Harbor Dam:

Date: April 4

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	88	1	1	0
Chinook yearling unclipped	2	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	0	---	---	---
Steelhead unclipped	1	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	91	1	1	0

Date: April 7

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	37	0	0	0
Chinook yearling unclipped	2	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	1	0	0	0
Steelhead unclipped	2	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	42	0	0	0

Removable Spillway Weir (RSW): Spring spill for fish passage began at 0001 hours on April 3.

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
57.1	35.4	35.9	0	47	45	5.7	4.4

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Unit 1, 2, 4, 5, and 6 cooling water strainer inspections for fish occurred on April 6. A total of approximately 77 dead juvenile lamprey, 121 dead Siberian prawns, and two unidentifiable decomposing fish were found.

Avian Activity: There were low to moderate numbers of piscivorous birds observed around the project (see table below). The number of gulls, cormorants, and terns counted on April 2 exceeded the threshold number for initiating

incident response actions (see Section 7.4 of Appendix L in the Fish Passage Plan). By the time the Project Biologist analyzed the data, the bird counts on April 3 and the rest of the week 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	17	0	0	0
April 2	1	27	1	0	0
April 3	0	7	0	0	0
April 4	0	0	0	0	0
April 5	4	1	0	0	1
April 6	0	0	0	0	0
April 7	0	1	0	0	0

Invasive Species: No exotic species that are new to the area have been found.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by the fish sampling contractor, frozen and properly disposed of in a landfill. Daily and total Siberian prawn counts at Ice Harbor Dam for this reporting period are shown below.

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

Date	Sample (euthanized)	Collection*
April 4	8	8
April 7	0	0
Totals	8	8

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

Fish Rescue/Salvage: Unwatering activities that involved fish rescue did not occur this week.

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

Project: Lower Monumental
Biologists: Denise Griffith and Raymond Addis

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 6 turbine units available for service (see table & comments below for details).

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

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

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
Unit 1	4/7/2022	1020	4/7/2022	1210	STS Inspections
Unit 2	4/7/2022	0725	4/7/2022	0855	STS Inspections
Unit 3	4/6/2022	1000	4/6/2022	1140	STS Inspections
Unit 4	4/6/2022	1305	4/6/2022	1435	STS Inspections
Unit 6	4/5/2022	0736	4/5/2022	1135	STS Inspections
Unit 6	4/7/2022	1325	4/7/2022	1450	STS Inspections

Comments: See STSs/VBSs comments.

Adult Fish Passage Facility

The adult fishways were inspected by Corps biologists on April 2, 3 and 5.

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: North and South ladder exits were cleared of debris build up on April 7 by powerhouse personnel. Exit differentials remained in criteria during this period.

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	X	South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.1’, 5.9’

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 6.5, 6.2 and 6.0 feet respectively. South Powerhouse Entrance Weir SPE-2 was on sill during all inspections with 6.5, 6.2 and 6.0 feet respectively. South Shore Entrance Weir SSE-1 was out of criteria on the April 2 and 3 inspections with readings of 7.1 and 5.9 feet respectively. The powerhouse operator place SSE-1 at sill on April 3. SSE-1 was at sill during the April 5 inspection with a reading of 6.0 feet.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
Yes			AWS Fish Pump 1
Yes			AWS Fish Pump 2
Yes			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)	1354 yds^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 15%
	X		Any oil seen in gatewells?	

Comments: None.

STSs/VBSs:

Yes	No	NA	Item
X			STSs deployed and in service in operating and available units?
	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 inspections started on April 5 but equipment issues halted inspections until April 6 and 7. Because of the delay, unit 5’s STSs were not checked. However, they had been inspected prior to deployment on March 16. All inspected STSs were in good working order. The STSs are running in cycle-run mode until an average length of sub-yearling Chinook salmon and sockeye salmon can be determined.

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?	

Collection Facility: The Collection facility was watered up on March 29. Collection for condition sampling occurred from 0700 to 0700 on April 1 - 2, 4 – 5 and 7 - 8. A total of 7,775 fish were collected with 7,754 fish

being bypassed back to the river during the April 1 – 2 and April 4 – 5 sampling periods. Collection for transportation is schedule to begin on April 23.

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

Spillway Weir: Spring spill began at 0000 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
57.0	36.5	34.0	0	47.0	46.0	4.2	3.5

*Scrollcase temperatures.

Other

Cooling Water Strainers: Cooling water strainers were inspected on April 7. There were no live fish recovered. Mortalities included 100 juvenile lamprey and 2 juvenile salmon.

Avian Activity: Highest daily counts of piscivorous birds in all zones combined at Lower Monumental Dam are reported in the table below.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
1-Apr	1130	2	0	0	0	0
2-Apr	1600	0	0	0	0	0
3-Apr	1440	0	0	0	0	0
4-Apr	1130	10	1	0	2	0
5-Apr	1100	15	4	1	0	0
6-Apr	1300	0	1	0	0	0
7-Apr	0800	11	3	0	0	1

Comments: Piscivorous bird observations began on April 1. Bird hazing by USDA personnel began on April 3. The outfall bird cannon functioned efficiently this week.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on April 3.

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

Research: No research is occurring currently. GBT examinations will begin April 10.

Project: Little Goose
Biologists: Chuck Barnes and Deborah Snyder

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 6 turbine units available for service (see table & comments below for details).

*All available turbine units are operated in accordance with App. 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	04/14/17	14:11	12/31/2022	ERTS	Spider and upper guide bearing repair.
6	04/04/22	05:00	04/11/22	ERTS	Frequency excursion, running station service only
4	04/04/22	05:00	04/11/22	ERTS	Frequency excursion / ground fault
3	04/04/22	05:00	04/11/22	ERTS	Frequency excursion / ground fault
2	04/04/22	05:00	04/11/22	ERTS	Frequency excursion / ground fault
1	04/04/22	05:00	04/11/22	ERTS	Frequency excursion / ground fault

Comments: None.

Adult Fish Passage Facility

EAS Bio staff inspected the adult Fishway on April 1, 4 and 7. The Fish Ladder Depth over Weirs failed criteria on April 4 due to no reading; data unavailable.

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’	
		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’	7.7; 7.5; 7.65
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.7; 7.5; 7.53
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 7.0’ or on sill	Sill: 4/1,4/4,4/7
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 7.0’ or on sill	Sill: 4/1,4/4,4/7
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	5.8; 5.9; 5.7
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	5.8; 5.9; 5.8
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 returned to service on February 8 with AWS pumps returning to service on February 24. The NSE channel/tailwater differential and NSE weir depths were manually measured, adjusted, and monitored into criteria from February 24 through March 1. The fishway Fish System Control interface again failed

prior to the April 4 inspection. SSE-1, SSE-2, NSE-1, and NSE-2 weir differentials did not meet criteria during all inspections for this report period.

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 24.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comment
X			Forebay debris load acceptable? (amount)	High 20,300ft² - Low 1,290ft²
	X		Gatewell drawdown measured this week?	No running units available
		X	Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	Gatewells dipped 03/22; 03/23
	X		Any oil seen in gatewells?	

Comments: There ranged approximately 20,300 to 1,290 square feet of floating woody debris inside the trash shear boom in the forebay. The high of 20,300 square feet occurred during the inspection of April 1, and the low of 1,290 square feet occurred during the inspection of April 7. Fluctuations were due to scheduled trash raking activities and wind direction events timed with ASW spill actions.

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 ESBS's began March 21 with most units completed on March 22. Differentials on available units 1 through 4 were last completed March 31. All units were unavailable for this reporting period.

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 watered up March 23.

Collection Facility: The juvenile collection facility completed water up activities on March 29. Every other day collection for condition monitoring in conjunction with secondary bypass commenced on April 1 with the first sample being conducted on April 2. A total of 1,684 fish were collected, 1,673 were bypassed, and there were 11 sample or facility mortalities. The descaling and mortality rates were 0.93% and 0.56%, respectively. No adult

lamprey were removed from the separator during this report period. The collection and transport facility operated within criteria this report period.

Transport Summary: Fish transportation is scheduled to begin April 23.

Spillway Weir: Little Goose began operation of the adjustable spillway weir (ASW) on March 2 to facilitate passage of adult steelhead overshoots. Operation occurred three days each week on non-consecutive days for four hours in the morning and will continue to occur on Tuesday, Thursday and Sunday each week, through March 31. Spring spill operations began as scheduled on April 3 with the ASW in high crest.

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
54.3	36.8	30.0	0.0	48.2	47.7	4.0	2.9

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inline cooling strainer inspections commenced on December 9, 2021. 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 began April 1 with hazing beginning on March 29.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
4-1	14:00	0	0	0	0
4-2	8:00	0	0	0	0
4-3	10:00	14	3	0	0
4-4	8:10	0	2	0	0
4-5	15:50	3	1	0	0
4-6	8:27	12	2	0	2
4-7	8:30	8	5	0	0

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

Siberian Prawn: Juvenile fish collection began on April 1. Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by Oregon Department of Fish and Wildlife and Anchor, frozen and properly disposed of in a landfill. Daily and total Siberian prawn counts at Little Goose Dam for this reporting period are listed below.

Date	Sample	Collection*
4-1	0	0
4-2	2	50
4-3	0	0
4-4	0	0
4-5	0	0
4-6	0	0
4-7	0	0
Totals	2	50

Gas Bubble Trauma (GBT): GBT monitoring commenced April 7. Of the 31 fish examined, zero fish exhibited signs of GBT.

Fish Rescue/Salvage: No fish salvage operations occurred during this report period.

Research: The Nez Perce Tribe (NPT) began adult steelhead kelt collection efforts on April 1.

Project: Lower Granite
Biologists: Elizabeth Holdren and David Miller

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 6 turbine units available for service (see table & comments below for details).

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

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

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
2	3/15	0655			Annual Maintenance, DC low voltage switchgear

Comments: None.

Adult Fish Passage Facility

Lower Granite Biologists and Anchor QEA staff inspected the adult fishway on April 1, 2, 4, and 6.

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: None.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
		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	≥ 8.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	6.9’, 6.0’
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	6.9’, 6.2’
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.9’
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: Ladder collection channel operation and configuration are being evaluated 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 have not consistently meet channel/tailwater head differential criteria which seems to be related to the operations of all four FOGs.

Auxiliary Water Supply System:

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

Comments: AWS pump 1 remained out of service for maintenance.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	31.7 yds^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: Unit trash racks were raked February 21-24.

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: None.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

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

Comments: The juvenile bypass system is in secondary bypass from March 25 through April 23.

Collection Facility: Collection for condition sampling began at 0700 hours March 25 with the first condition sample processed on March 26. Collection for transport is scheduled to begin April 23.

Transport Summary: Research trips are scheduled for April 14 and 21. Regular season barging is scheduled to start April 24.

Spillway Weir: The RSW operated from 0500-0900 hours Sundays, Tuesdays, and Thursdays March 1 through March 30 to facilitate adult steelhead passage. Lower Granite shifted to Spring Spill operations with the RSW open 24 hours per day at 0001 hours April 3. There were 81 adult and 1814 juvenile PIT tagged steelhead and 2588 juvenile PIT tagged Chinook salmon detected over the RSW spillway since March 1. Since the juvenile bypass

system was watered up on March 14, PIT detection within the JBS has detected 1118 juvenile Chinook salmon, 1480 juvenile and 11 adult steelhead, and 1 adult Chinook salmon.

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
56.2	40.9	33.0	0.0	47.0	45.0	5.0	3.5

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling strainer inspections were conducted on March 24.

Invasive Species: No zebra/quagga muscles were detected on the trap substrate. There was 1 Siberian prawn in the condition sample that was euthanized and disposed of.

Avian Activity: Biologist daily piscivorous bird counts and hazing began April 1 at Lower Granite Dam.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
April 1	1255	23	16	0	0
April 2	1245	4	0	0	0
April 3	0842	11	8	0	0
April 4	1300	1	0	0	0
April 5	1050	2	4	0	0
April 6	1246	25	7	0	0
April 7	1806	46	0	0	0

Gas Bubble Trauma (GBT) Monitoring: GBT sampling occurred April 7 with 100 smolts sampled and no symptoms of GBT observed.

Adult Fish Trap Operations: The adult trap was watered up February 28 and started sampling at 1400 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 salmon and Adult Steelhead for ISEMP-Related Dispersal Monitoring:

The goal of this project is to PIT tag up to 4000 unclipped adult Chinook salmon 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 April 4 through December 15. The goal is to collect 5-20% of adult steelhead, spring/summer Chinook

salmon, and sockeye salmon ascending the ladder April 4-December 15. 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.

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.

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 lamprey will be collected, implanted with a juvenile Eel/Lamprey Acoustic Transmitter (ELAT), and released upstream of LWG. 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. Since March 24, 65 juvenile lamprey have been collected for the study, 61 were tagged and released Blyton Landing upstream of LWG.

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. Since the start of SMP condition sampling on March 24, 170 juvenile and 43 larval lamprey samples have been collected.

National Marine Fisheries Service (NMFS) In-River Survival:

NMFS PIT tags Chinook salmon and steelhead smolts for their survival study April through early June to compare smolt to adult returns of in-river migrating smolts to the smolt to adult returns of transported smolts. PIT-tagged fish are held for 24 hours before being bypassed to the LWG tailrace. Fish were collected April 4 and 5, tagged April 5 and 6, and released April 7. Collection will be similar next week and then will continue Monday-Friday until the middle of June.