U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#41-2022

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: December 9 – December 15, 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**
9	10/11	1008	2/3/23	NA	9-year overhaul
11	11/21	1019	12/12	1403	New emergency bulkhead inspections
14	12/9	1220	12/9	1549	ESBS failed on C slot
14	12/12	0746	12/12	1251	ESBS removal
13	12/12	0746	12/12	1507	ESBS removal
12	12/12	1320	12/12	1647	ESBS removal
10	12/13	0635	12/13	1257	ESBS removal
8	12/13	0637	12/13	1539	ESBS removal
1	12/14	0657	12/14	1032	ESBS removal
2	12/14	0636	12/14	1152	ESBS removal
3	12/14	1034	12/14	1700	ESBS removal
4	12/14	1240	12/14	1700	ESBS removal
5	12/15	0611	12/15	1403	ESBS removal
6	12/15	0621	12/15	1052	ESBS removal
7	12/15	1131	12/15	1548	ESBS removal

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 December 11, 12 and 13. Video review of adult passage continues and will extend to February 28, 2023. Picketed leads will remain down through this time frame when the ladders are in service.

The Washington ladder remained out of service. Winter maintenance and installation of lamprey passage structures on the two of three entrance weirs continued. Debris was removed, and fish were salvaged from diffusers 7 to 1 on December 9 and 10. All diffuser grating was in good condition.

The top sections of entrance weirs, WFE2 and WFE3 were picked up by the contractor on December 12 so they can begin the lamprey passage improvements offsite. The bottom sections of both weirs are being rehabilitated on site by project staff.

District personnel continue to examine the data collection system to determine why faulty water temperatures are being recorded for the middle Washington ladder water temperature sensor.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
	X	Oregon Exit	Head over weir 1.0' to 1.3'	0.9' to 1.1'
X		Oregon Count Station Differential	0.0' to 0.5'	0.2' to 0.3'
	X	Washington Exit	Head over weir 1.0' to 1.3'	OOS
	X	Washington Count Station Differential	0.0' to 0.5'	OOS

Comments: Debris loads were very light near the Oregon exit. The general maintenance staff cleaned the exits' picketed leads as needed, including the weekend. The out of criterion point above was resolved with a set point adjustment on December 11.

The Washington ladder exit remained out of service.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
	X		North Oregon Entrance Head Differential	1.0' – 2.0'	0.9' to 1.3'
X			NFEW2 Weir Depth	$\geq$ 8.0'	8.3' to 8.5'
X			NFEW3 Weir Depth	$\geq$ 8.0'	8.4'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.3' to1.4'
	X		SFEW1 Weir Depth	$\geq$ 8.0'	7.8' to 8.1'
	X		SFEW2 Weir Depth	$\geq$ 8.0'	7.7' to 8.0'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 2.0 fps.
	X		Washington Entrance Head Differential	1.0' – 2.0'	OOS
	X		WFE2 Weir Depth	$\geq$ 8.0'	OOS
	X		WFE3 Weir Depth	$\geq$ 8.0'	OOS

Comments: The above out of criteria points in the Oregon ladder were possibly due to calibration drifts, the juvenile collection system being switched to emergency bypass, and/or overall condition of the ladder. SFEW1 and SFEW 2 were out of criteria on December12 and 13. The north Oregon pool differential was out of criterion on December 13. The Washington ladder entrance remained out of service. WFE3 will be calibrated during the winter outage.

There are four floating orifice gate (FOG) slots that still require future gate replacement. Slots W37 and W 41 remain closed. Ten of 12 slots are open. Eight gates are new or rehabilitated. Two gates are old.

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			23°	Oregon Ladder Fish Pump 1
		Yes		Oregon Ladder Fish Pump 2 RTS date is Jan. 31, 2023
Yes			23°	Oregon Ladder Fish Pump 3
Yes		Yes		OR North Powerhouse Pool supply from juvenile fishway

Comments: Fish pump 2 remains out of service and stator repairs continued. The current return to service date is January 31, 2023. Fish pump 3 was out of service for inspection on December 13, from 1233 to 1311 hours.

The Wasco PUD and bypass remained out of service.

With the beginning of ESBS removal, the juvenile bypass system will be switched to emergency bypass on December 12, from 1300 to 1630 hours. At that time, the Oregon north powerhouse pool no longer received water from the juvenile system. The ladder inspection that day was done before the juvenile system switch.

Juvenile Fish Passage Facility

The fall primary bypass season and maintenance continued. The facility remained dewatered. The system was switched to emergency bypass, from 1300 to 1630 hours, when ESBS removal began on December 12.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Light to moderate
X			Gatewell drawdown measured this week?	Daily
X			Gatewell drawdown acceptable?	
	X		Any debris seen in gatewells? (% coverage)	
	X		Any oil seen in gatewells?	

Comments: Debris loads were light to moderate near the powerhouse. Wind direction changes moved the residual debris across the forebay from the powerhouse to the Oregon shore and back. Debris loads beside the spillway and new debris loads were minimal. Much of the debris was woody material.

No trash racks were cleaned and there are no problems to report.

The first and second emergency bulkheads in 11A and 11B slots were removed on December 9. The third bulkhead remained installed in 11C slot. The fourth bulkhead arrived on December 9 and was installed in 11B slot. Both bulkheads were tested on December 10, when Unit 11's scrollcase was dewatered. After testing, these two bulkheads were also moved to storage.

During testing, water drained out of the gatewell slots above the bulkheads.

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 previously raised in units 9 and 11, which were out of service. ESBS removal occurred in all remaining units from December 12 to 15. With removal, camera inspections were not required. It was noted the brush cycle for the screen in 5A slot had not been corrected as previously recorded. Also, after removal, only juvenile shad mortalities were noted on the screens. Ice on the crane 5's power supply lines did slow ESBS removal.

The screen brush failure for the ESBS in 14C slot was due to the electrical cord inadvertently being unplugged during snow removal on December 9.

Daily VBS differential monitoring revealed no high differentials, and no screens were cleaned. With the ESBS's removed, VBS differential monitoring will resume next spring.

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

Yes	No	NA	Item	Number of orifices in service
X			Did orifices operate satisfactory?	39 or 42
	X		Dewatering and cleaning systems operating satisfactory?	

Comments: There was no moisture in the permanent air supply lines this week. After emergency bulkhead testing, orifices in Unit 11 were reopened on December 11. The orifice count was returned to 42 after the switch to emergency bypass as the orifices in Unit 9 were reopened on December 12.

A side screen cleaning brush timing alarm came in on December 9, at 2225 hours. The roving operator parked the brush and reset the system. The side and transition screen cleaning brushes tripped at least eight timing alarms each along with an occasion rectangular screen brush timing alarm on December 10 and 11. Again, the roving operator reset the side brush, which was not fully parked and cleared the alarms.

The project biologist examined the side screen brush on December 11 at 0852 hours. The brush would not park properly. This also caused the transition brush to have timing alarms. The biologist removed both brushes from service and ran them manually twice during the day. The rectangular screen brush was left in automatic mode but was also operated manually by the biologist and the roving operator overnight. The timing of the brushes seemed to not be working properly, which again raises questions about the control program. Fortunately, the dewatering system was removed from service on December 12, from 1300 to 1630 hours. A mechanic examined the side brush and found a damaged pin in the drive system on December 13. Debris is a possible cause for the pin failure and there was considerable debris along the side screen. All of the above issues were due to failure of the side brush.

The channel hoist, which installs the emergency stoplogs, was found damaged on December 13 and will require electrical repairs.

Winter maintenance can begin in the channel dewatering area.

During the switch to emergency bypass, approximately four adult carp, three adult channel catfish, 12 juvenile walleye, two adult bass, one adult Chinook salmon, one adult coho salmon, two adult steelhead and one four-foot sturgeon along with several juvenile and adult shad were observed.

Bypass Facility:

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

Comments: Winter maintenance continues. The facility is fully dewatered.

Top Spillway Weir (TSW) Operations: Spillbay 19 currently has a standard spillgate installed. The TSW is installed in bay 20, which will remain closed, until the spring adult fallback season, which begins March 1.

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
144.5	97.1	0.0	0.0	44.0	43.0	6.0	6.0

Comments: The above data is provided by the control room. The data day runs from 0000 to 0000 hours.

Crane 7 remains in service. Electrical work on crane 6 continues. With limited crane use and hoist issues, a crane is required in order to move the gates in bays 2, 6, 16 and 21. The hoist for bay 6 is still out of service until February 2023 at the earliest. Only portion of the parts have arrived on project. The hoist with the broken coupler is scheduled to be repaired by January 3, 2023.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections will occur on January 3.

Avian Activity: Casual avian observations while doing other work continue.

There are no forms of hazing occurring at this time. For the outfall, parts for the laser have been ordered.

In the spillway zone, a small number of cormorants were roosting on structure. Occasionally, gulls were noted.

In the powerhouse zone, gull numbers were low, with the birds feeding occasionally.

In the bypass outfall zone, gull numbers were very low and cormorant numbers were stable at a fairly high number. Most of the birds were roosting. After the switch to emergency bypass, no birds were noted at that outfall.

In the forebay zone, a fluctuating number of roosting grebes were observed with a high of 35. Outside the zone, a few cormorants, grebes, mergansers, and gulls were noted.

Invasive Species: The next mussel station examinations will occur on December 18.

Siberian Prawn: No Siberian prawns were observed this year.

Fish Rescue/Salvage: At the Washington ladder, 40 live adult shad and 50 adult shad mortalities were noted. One live juvenile lamprey was also rescued.

In Unit 11's scrollcase, during the second bulkhead test, approximately 40 live juvenile shad were noted.

Research: There is currently no research taking place.

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
5	12/5/22	0700	12/12/22	1658	Inspect 5B headgate cylinder for oil leak

Comments: Units 1, 2, 4, and 6 were taken out of service one at a time for submersible traveling screen removal on December 12 and 13.

Adult Fish Passage Facility

Ice Harbor staff inspected the adult fishways on December 12, 13, and 15.

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’	2.1’
x			South Shore Channel Velocity	1.5 – 4.0 fps	
x			North Powerhouse Entrance (NFE-2) Weir Depth	≥ 8.0’ or on sill	
x			North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	
x			North Shore Entrance (NEW-1) Weir Depth	≥ 8.0’ or on sill	
x			North Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: The south shore entrance channel/tailwater differential was slightly above criteria on December 12 because of lower tailwater levels. Five south shore auxiliary water supply (AWS) pumps were operating, which are the minimum number of pumps needed to maintain at least 1.0’ of channel/tailwater differential at the north powerhouse entrance as well as maintain at least 1.0’ of depth over the stationary weirs that are just above tailwater level.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply (AWS) System
5-6 pumps	2-3 pumps		Status of the 8 south shore AWS pumps
2 pumps	1 pump		Status of the 3 north shore AWS pumps

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 45 square yards
		x	Gatewell drawdown measured this week?	
		x	Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-20% coverage
	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: Unit 1, 2, 4, and 6 STSs were pulled out of the water for winter maintenance on December 12 and 13.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
x			Orifices operating satisfactory?	18-20
	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 1AN light was found to be burned out on December 12. Orifice 1AS was opened in place of orifice 1AN until the light was replaced the next day. Orifice 1BN light was found to be burned out on December 13. Orifice 1BS was opened in place of orifice 1BN until all the orifices were closed for the season on December 14.

The juvenile fish channel was unwatered for winter maintenance on December 14.

Juvenile Fish Facility: The fish facility is unwatered for winter maintenance.

Fish Sampling: Juvenile fish sampling is done for the season.

Removable Spillway Weir (RSW): Voluntary spill for fish passage is done for the year.

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
24.9	15.3	0	0	43	42	12.0	9.9

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Unit 1, 2, 4, 5, and 6 cooling water strainers were cleaned of juvenile shad on December 12 and 15. A total of approximately 1,523 dead shad one dead Siberian prawn were removed.

Avian Activity: There were high numbers of mergansers, gulls, cormorants, and pelicans observed around the project. Most of the birds were observed foraging along the south shore downstream of the powerhouse, near the upstream tip of Eagle Island, and in the tailrace adjacent to the navigation lock when the lock was being drained.

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

Fish Rescue/Salvage: The species composition and number of fish removed from the juvenile fish channel on December 14 were 32 clipped adult steelhead, 13 unclipped adult steelhead, 59 adult Pacific lamprey, two channel catfish, and one yellow perch that was already dead. The live fish were released off of the Levey Park boat ramp in good condition.

Research: None.

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	10/25/2022	0707	1/26/2023	TBD	Annual

Comments: None.

Adult Fish Passage Facility

The adult fishways were inspected by Army Corps biologists December 12, 13 and 14.

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 counting stations backdrops will be returned once they are repainted.

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

Comments: The south powerhouse entrance weir (SPE-1) and (SPE-2) were on sill during all inspections with readings of 6.7, 7.0 and 7.8 feet, respectively. SSE-1 was on sill during the inspections on December 12 and 14. The project has received the new staff gauges and will be installing them in January and February of 2023.

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)	83 yds^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 5%
	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: Installed STSs were running in Cycle-Run mode until the final STS was pulled on December 15.

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: The orifices were closed at 1055 on December 15 in order to dewater the JCC. The brush timer on the brush at the PDS was modified by powerhouse electricians on December 13 to allow the brush to be set to either a 1, 3, 6 or 12 hour run time option. This will decrease the over-usage on the brush. On December 15 the brush was turned off and tagged out for the winter maintenance season once the JCC was dewatered.

Collection Facility: Winter maintenance of the facility continues. The JCC was dewatered on December 15.

Transport Summary: No transport is occurring currently due to winter maintenance.

Spillway: No spill occurred this week.

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
23.9	14.3	0.0	0.0	43.5	41.0	7.1	2.5

* Scrollcase temperatures are used for water temperatures. Due to Unit 1 being OOS, temperatures are currently being read from Unit 2.

Other

Cooling Water Strainers: Units 5 and 6 were unable to be inspected because of mechanical issues with the units on December 8. A trouble report has been placed on the issue. The cause is being investigated and they will be inspected as soon as the problem is found.

Avian Activity: Only general observations occurred this week with ladder inspections. Approximately 50 cormorants were observed foraging and roosting around the tailrace during one day of ladder inspections this week. Approximately 50 mergansers were observed in the tailwater on December 12.

Invasive Species: Zebra or quagga mussel observations will take place later in December.

Fish Rescue/Salvage: The juvenile collection channel was dewatered on December 15. The orifices were closed at 1055 hours and the channel dewatering was completed by 1230 hours. Thirty-four adult clipped steelhead, twenty-three adult unclipped steelhead, one adult unclipped Chinook salmon, eight juvenile lamprey, five juvenile sculpin, and one adult catfish were returned to the river live and unharmed. In addition, the mortalities included twenty-five juvenile shad, one adult walleye and two adult shad were also placed into the tailrace. In the channel end of the PDS, a stick blockage was discovered once the JCC was dewatered. In the stick blockage is where the mortalities were discovered.

Research: No research is occurring currently.

Project: Little Goose
Biologists: 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
1	10/17/2022	1530	12/29/2022	ERTS	Turbine oil leak, unit annual
5	4/14/2017	14:11	12/31/2022	ERTS	Spider and upper guide bearing repair.
6	4/18/2022	5:10	12/31/2022	ERTS	Rooftop/BUS work replacement; 6-year overhaul

Comments: Previously reported Unit 6 RTS date of 4/21/2022 pertained to station service only, the anticipated RTS for regular service is 12/31/2022. Unit 1 was forced out of service for a turbine oil leak. Repairs will be combined with the unit annual maintenance.

Adult Fish Passage Facility

USACE staff inspected the adult Fishway on December 12, 13, and December 14.

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		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 7.0’ or on sill	Sill on 12/14
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
X			North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: The adult fishway was 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 (FSC) was recommissioned on May 5 with NSE weir reading anomalies. NSE weirs 1 and 2 are being monitored with manual measurements as both weir targets enabling the FSC system to accurately read and automatically adjust weir heights were compromised during emergency flood control measures in June, repairs are pending. The Fish Ladder Exit

Cooling Water Pump was replaced, installed, and readied for service on April 23. Criteria requiring the activation of the Fish Ladder Exit Cooling Pump was met during the night hours of June 26, and the system was started at 0800 hours on June 27. The Fish Ladder Exit Cooling Pump met criteria and was turned off at 1700 hours on September 30. The Collection Channel Surface Velocity is measured at NPE.

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 9400 ft² - Low 78 ft²
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	2% 2B & 2C 12/14
	X		Any oil seen in gatewells?	

Comments: The forebay had minimal floating debris inside the trash shear boom with the highest measurement occurring on December 14 at 38 ft². The overall total forebay debris high occurred December 13. Draw down differential measurements took place December 15. Gatewell debris of December 14 was removed upon inspection.

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. Units 6 and 1 ESBS and VBS undergoing work during scheduled maintenance periods. ESBS winter maintenance removal occurred on December 12 and December 13 for units 1, 5, and 6 in preparation for the juvenile channel dewatering activity scheduled for December 20.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	18, 17 on 12/13
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. Everyday collection began April 23 coinciding with every other day barge transportation. Collection ended for the season with the final sample of November 1.

Transport Summary: Collection for fish transportation began April 23 with the first barge departure on April 24. Every other day barging transitioned to everyday barging on May 16 due to an increase in fish numbers. Every other day barging resumed on May 24. Barge transportation for the season ended with the final barge departure of June 19. Collection for truck transport operations began on August 1 with the first truck departure on August 3 and concluded with the final truck departure of November 1.

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 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. The ASW was positioned in low crest on May 28. Summer spill operations began as scheduled on June 21, and the ASW was repositioned into high crest on June 28. The ASW was closed for the spill season at 10:00 on August 1. Summer spill concluded for the season at 2357 hours on August 31. Surface spill to facilitate downstream passage of pre-spawn adult steelhead as natal stream overshoots commenced at 0500 hours on September 1. The ASW was positioned at an elevation of 639 feet and is scheduled to spill from 0500 hours through 0900 hours every Tuesday, Thursday, and Sunday through the month of October, with an anticipated slight schedule change to occur early November. Final ASW steelhead natal stream overshoot spill ended at 0900 on November 15.

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
24.4	15.4	0.0	0.0	41.7	40.9	6.0	6.0

*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 and ended June 18. Daily bird counts ended for the season with the November 1 count as reported in the previous reporting period.

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 were humanely euthanized by Oregon Department of Fish and Wildlife and EAS Bio personnel, frozen and properly disposed of in a landfill. Daily and total Siberian prawn counts at Little Goose Dam concluded for the season with the November 1 counts.

Gas Bubble Trauma (GBT): The last GBT monitoring event occurred August 24.

Fish Rescue/Salvage: Neither fish rescue nor salvage activities took place during this report period.

Research: The Nez Perce Tribe (NPT) began adult steelhead kelt collection efforts on April 1 and concluded June 29.

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
1-4	12/1	0603			500 KV Line outage/Transformer Maintenance
4	11/21	0700			Thrust bearing repair and indication upgrades
1	12/1	0603			Annual Maintenance

Comments: Units 5 is operating at station service power daily. Units 5 and 6 are returned to service with the 500 kV line restored nightly.

Adult Fish Passage Facility

Lower Granite Biologists inspected the adult fishway on December 12, 13, and 15.

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: Temperature data can be found at https://www.nwd-wc.usace.army.mil/dd/common/dataquery/www/.

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	
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.9’, 0.9’, 0.9’
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: The fishway system controls failed again this week causing the system to stop automatically adjusting the entrance weir elevations at all three entrances. Weirs are being operated in local mode while electricians trouble shoot the control system. The fish ladder control system continues to be evaluated to resolve ongoing issues. FOGs

1, 4, 7, and 10 are in operation. Although both NSEs and all four FOGs are in operation, the north shore has not consistently met channel/tailwater head differential criteria this season.

Auxiliary Water Supply System:

Operating Satisfactorily	Standby	Out of Service	Auxiliary Water Supply (AWS)
	X		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)	112.7 yds²
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: None.

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?	18+
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: None.

Collection Facility: Dewatered for winter maintenance. There have been 39,788 juvenile and 55 adult Chinook salmon, 28,754 juvenile and 191 adult steelhead, 2,124 juvenile and 1 adult sockeye salmon, and 951 juvenile and 4 adult coho salmon detected at the JBS full flow PIT tag detection array since March 14 (DART).

Transport Summary: No transport.

Spillway Weir: N/A

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
23.7	16.7	4.3	0.0	38.0	37.0	5.0	5.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: NA

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

Avian Activity: N/A

Gas Bubble Trauma (GBT) Monitoring: N/A

Adult Fish Trap Operations: N/A

Fish Rescue/Salvage: N/A

Research: N/A