

**U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#40-2022**

Project: McNary

Biologist: Bobby Johnson and Paul Bertschinger

Dates: December 2 – December 8, 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).

Unit(s)	OOS		RTS		Outage Description
	Date	Time	Date	Time	
9	10/11	1008	2/3/23	NA	9-year overhaul
11	11/21	1019	12/12	NA	New emergency bulkhead inspections
13	12/6	1020	12/6	1252	Crane 4 tailwater stoplog test

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 2, 4 and 6. 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 was switched to orifice flow on December 4 at 0000 hours. Exit stoplogs were installed on December 5 at about 1430 hours, which began the winter outage, which includes installation of lamprey passage structures on the two of three entrance weirs. During the week, debris was removed, and fish were salvaged from the exit to diffuser 8.

Entrance weirs, WFE2 and WFE3 were removed on December 8. The top sections will be picked up by the contractor on December 12 so they can begin the lamprey passage improvements offsite. The bottom sections of both weirs will be 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'	1.0'
X		Oregon Count Station Differential	0.0' to 0.5'	0.2' to 0.3'
X		Washington Exit	Head over weir 1.0' to 1.3'	1.0'
X		Washington Count Station Differential	0.0' to 0.5'	0.2'

Comments: Debris loads were light to moderate near the Oregon and minimal near the Washington exits. The general maintenance staff cleaned both exits' picketed leads as needed, including the weekend.

The Washington ladder exit was only inspected once before the winter outage began.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.3'
X			NFEW2 Weir Depth	≥ 8.0'	8.2' to 8.4'
X			NFEW3 Weir Depth	≥ 8.0'	8.3' to 8.4'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.3' to 1.4'
	X		SFEW1 Weir Depth	≥ 8.0'	7.9' to 8.1'
	X		SFEW2 Weir Depth	≥ 8.0'	7.9' to 8.1'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.8 fps.
X			Washington Entrance Head Differential	1.0' – 2.0'	1.5'
X			WFE2 Weir Depth	≥ 8.0'	9.7'
X			WFE3 Weir Depth	≥ 8.0'	8.9'

Comments: The above out of criteria points in the Oregon ladder were possibly due to calibration drifts and overall condition of the ladder. SFEW1 and SFEW 2 were out of criteria on December 4 and 6. The Washington ladder entrance was only inspected once this week. WFE3 will be calibrated during the winter outage. The weir depth was being estimated and appeared to be in criterion.

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		Yes		WA shore Wasco County PUD Turbine Unit
Yes	Yes	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			24°	Oregon Ladder Fish Pump 3
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.

The Wasco PUD was removed from service on December 4 at 1215 hours. The bypass was then in use until December 5 at about 0930 hours, when that system was removed from service and the auxiliary water conduit stoplogs were installed.

The juvenile bypass system will be switched to emergency bypass on December 12, when ESBS removal begins. At that time, the Oregon north powerhouse pool will be without that water supply.

Juvenile Fish Passage Facility

The fall primary bypass season and maintenance continues. The separator and facility remain dewatered. The system will be switched to emergency bypass when ESBS removal begins on December 12.

Forebay Debris/Gatewell Debris/Oil:

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

Comments: Debris loads were minimal to moderate near the powerhouse. Wind direction changes moved the 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 emergency bulkhead remained in 11A slot. The second bulkhead arrived and was installed in 11B slot on December 2. Both bulkheads were tested on December 6, when unit 11's scrollcase was dewatered. The third bulkhead arrived on December 6 and was later installed in 11C slot. The fourth bulkhead will arrive on December 9 and be installed in 11B slot after the first two bulkheads are moved to the yard. Testing the last two bulkheads will occur on December 10.

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 all units except units 9 and 11, which are out of service. ESBS removal will begin on December 12. With removal beginning next week, ESBS camera inspections in units 13 and 14 were cancelled.

Daily VBS differential monitoring revealed no high differentials, and one screen was cleaned on December 3. No fish were observed.

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

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

Comments: There was no moisture in the permanent air supply lines this week. With unit 9 out of service, those orifices remain closed in order ensure the facility remains dewatered for further winter maintenance. For the week, due to emergency bulkhead testing, orifices in unit 11 were closed with makeup orifices opened in unit 13. Orifices were adjusted for VBS cleaning as required.

Side, rectangular, and transition screen cleaning brush timing alarms came in, one each, on December 2 at 0424 hours. Also, the side and transition brush timing alarms came in twice along with one rectangular brush alarm at 2300 hours. Later, the side and transition brushes had cycle timing alarms came in on December 3 at 0530 and 1745 hours. Each time, the roving operator reset the side brush, which was not fully parked and cleared the alarms. A mechanic examined the side brush and adjusted the drive clutch on December 5. Also, the control program was examined with no issue found but the biologist still has concerns about the program.

During the week, a platform was installed over the transition brush, which will improve access to two of the four beams and the upstream limit switches installed on these beams.

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
123.7	110.5	0.0	0.0	47.0	44.0	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 cooling water strainer inspections revealed one clipped and one unclipped subyearling Chinook salmon mortality on December 6. There were also a large number of juvenile shad mortalities. The next 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, gulls and cormorants were roosting on structure. Gull numbers have been slowly decreasing. Cormorant numbers remained fairly stable.

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

In the bypass outfall zone, gull numbers were low and cormorant numbers were stable at a fairly high number. Most of the birds were roosting.

In the forebay zone, a fluctuating number of roosting grebes were observed. Outside the zone, a few cormorants, and gulls along with one loon were noted.

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

Siberian Prawn: No Siberian prawns were observed this year.

Fish Rescue/Salvage: At the Washington ladder, one live residual steelhead smolt and 15 live adult shad were rescued. Also, one juvenile sucker and 15 adult shad mortalities were removed this week.

In unit 11's scrollcase, during the bulkhead testing, approximately 200 juvenile shad were noted with half of them being mortalities.

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)

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
3	5/3/19	0641	---	---	Turbine runner replacement and stator rewind
5	12/5/22	0700	---	---	Inspect 5B headgate cylinder for oil leak

Comments: None.

Adult Fish Passage Facility

Ice Harbor staff inspected the adult fishways on December 5, 7, and 8.

Fish Ladders:

Yes	No	Location	Criteria	Measurements
x		North Ladder Exit Differential	Head \leq 0.3'	
x		North Ladder Picketed Lead Differential	Head \leq 0.3'	
x		North Ladder Depth over Weirs	Head over weir 1.0' to 1.3'	
x		South Ladder Exit Differential	Head \leq 0.3'	
x		South Ladder Picketed Lead Differential	Head \leq 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	\geq 8.0' or on sill	
	x		South Shore Channel/Tailwater Differential	1.0' – 2.0'	2.1', 2.2'
x			South Shore Channel Velocity	1.5 – 4.0 fps	
		x	North Powerhouse Entrance (NFE-2) Weir Depth	\geq 8.0' or on sill	
x			North Powerhouse Entrance Channel/Tailwater Differential	1.0' – 2.0'	
		x	North Shore Entrance (NEW-1) Weir Depth	\geq 8.0' or on sill	
x			North Shore Channel/Tailwater Differential	1.0' – 2.0'	

Comments: The south shore entrance channel/tailwater differential was above criteria on December 5 and 7 because of lower tailwater levels. Five south shore auxiliary water supply (AWS) pumps have been 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 pumps	3 pumps		Status of the 8 south shore AWS pumps
2 pumps	0-1 pump	0-1	Status of the 3 north shore AWS pumps

Comments: North shore AWS pump #2 was out of service from 1257 hours to 1448 hours on December 7 to investigate a lubrication system failure alarm problem. It was found that water leaking into the Farval was causing the problem. The Farval was covered with waterproof material to protect it from the rain.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 15 square yards
x			Gatewell drawdown measured this week?	
x			Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-15% coverage
	x		Any oil seen in gatewells?	

Comments: The maintenance bulkhead was installed in gatewell slot 5B and the slot was unwatered on December 5 to facilitate inspecting the head gate cylinder for signs of an oil leak. A slow oil leak was confirmed and is contained, and a plan for a permanent fix is being developed. Gatewell 5B was watered back up and the bulkhead removed on December 8.

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: Gatewell 5B STS was removed for the season on December 5. Gatewell 5A and 5C STSs were removed on December 8. Unit 5 is scheduled to be out of service until December 12.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

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

Juvenile Fish Facility: The fish facility is operating in primary bypass mode.

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
18.9	14.2	0	0	46	43	9.9	9.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Unit 1, 2, 4, 5, and/or 6 cooling water strainers were cleaned of juvenile shad on December 6 and 8. A total of approximately 4,139 dead shad 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: None.

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)

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
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 5, 6 and 7.

Fish Ladder:

Yes	No	Location	Criteria	Measurements
X		North Ladder Exit Differential	Head \leq 0.5'	
X		North Ladder Picketed Lead Differential	Head \leq 0.4'	
X		North Ladder Depth over Weirs	Head over weir 1.0' to 1.3'	
X		South Ladder Exit Differential	Head \leq 0.5'	
X		South Ladder Picketed Lead Differential	Head \leq 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	\geq 8.0' or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	\geq 8.0' or on sill	
X			North Shore Channel/Tailwater Differential	1.0'–2.0'	
		X	South Powerhouse Entrance (SPE-1) Weir Depth	\geq 8.0' or on sill	
		X	South Powerhouse Entrance (SPE-2) Weir Depth	\geq 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	\geq 8.0'	
		X	South Shore Entrance (SSE-2) Weir Depth	\geq 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 7.3, 7.5 and 6.4 feet, respectively. The south shore entrance weir (SSE-1) was on sill December 7. The project has received the new staff gauges and will be installing them in January and February of 2023.

The temperature probe in the south entrance was replaced on December 8 and is now functioning properly.

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)	77 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 throughout this reporting period.

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 brush at the PDS is no longer in automatic mode to limit the excessive use on the brush. The brush is now run one time manually on Monday and Thursday in the afternoon.

Collection Facility: The collection season ended on October 1. Winter maintenance of the facility continues. Compressor number 2 was serviced on December 6 and compressor number 1 was serviced on December 7. In addition, the HVAC filters were replaced on December 6.

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
18.5	13.4	0.0	0.0	44.0	43.5	7.1	5.9

* 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: Cooling water strainer inspections occurred on December 8. During the inspections only units 2, 3 and 4 were inspected. Units 5 and 6 were unable to be inspected because of mechanical issues with the units. The inspections on these two units should be completed next week. Unit 1 is currently OOS for an annual inspection. Approximately 700 shad mortalities were found during the inspections, recovered mostly from units 2 and 3.

Avian Activity: Only general observations occurred this week with ladder inspections. Approximately 200-500 gulls were observed foraging and roosting around the tailrace during all three of the ladder inspections this week. Gulls and cormorants were observed roosting around the forebay and on the navigation lock guidewall. Approximately 150 mergansers were observed in the tailwater on December 7. Western grebes were observed in the tailwater in lower numbers this week. Due to the large number of gulls observed in the tailwater on December 5, some light hazing took place.

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

Fish Rescue/Salvage: No fish rescue occurred this week.

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)

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
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 5, 6, and December 7.

Fish Ladder:

Yes	No	NA	Location	Criteria	Measurements
X			Fish Ladder Exit Differential	Head \leq 0.5'	
X			Fish Ladder Picketed Lead Differential	Head \leq 0.3'	
X			Fish Ladder Depth over Weirs	Head over weir 1.0' to 1.3'	
	X		Fish Ladder Cooling Water Pumps in Service		
		X	Fish Ladder 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	\geq 8.0'	
X			South Shore Entrance (SSE-2) Weir Depth	\geq 8.0'	
X			South Shore Channel/Tailwater Differential	1.0' – 2.0'	
X		X	North Powerhouse Entrance (NPE-1) Weir Depth	\geq 7.0' or on sill	
X		X	North Powerhouse Entrance (NPE-2) Weir Depth	\geq 7.0' or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0'–2.0'	
X			North Shore Entrance (NSE-1) Weir Depth	\geq 6.0' or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	\geq 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 115 ft ² - Low 0 ft ²
	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 had minimal floating debris inside the trash shear boom with the highest measurement occurring on December 5. The next Draw down differential measurements are scheduled for December 15.

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 tentatively scheduled to begin December 12.

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 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
18.3	13.0	0.1	0.0	43.6	42.9	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)

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
1-4	12/1	0603			500 KV Line outage/Transformer Maintenance
5 & 6	12/2	0558	12/8	1532	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 and Anchor QEA staff inspected the adult fishway on December 5, 6, 7, and 8.

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'	7.7', 7.8', 5.1'
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0'	7.7', 7.8', 4.0
	X		South Shore Channel/Tailwater Differential	1.0' – 2.0'	2.1
		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'
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0' or on sill	6.9'
	X		North Shore Channel/Tailwater Differential	1.0'–2.0'	0.9', 0.9'
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: The fishway system controls failed causing the system to stop automatically adjusting the entrance weir elevations at all three entrances. The processor card was identified as the cause of the failure and was replaced on December 8. 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)	114.5 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: 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?	
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: None.

Collection Facility: Dewatered for winter maintenance. There have been 39,770 juvenile and 55 adult Chinook salmon, 28,754 juvenile and 188 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
18.8	15.0	1.7	0.0	39.0	38.5	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