

**U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#39-2022**

Project: McNary

Biologist: Bobby Johnson and Paul Bertschinger

Dates: November 25-December 1, 2022

Turbine Operation

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

Table 1. 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	12/15	NA	New emergency bulkhead inspections
6	11/28	0808	11/28	1026	Relay issue
1, 4 & 5	11/29	1000	11/29	1130	ESBS camera inspections, rotated units

Comments: The one percent peak efficiency constraint and unit priority are being followed per the 2022 Fish Passage Plan (FPP). Units ran outside the one percent criterion per BPA's request on November 29. RTS dates are subject to change.

Adult Fish Passage Facilities

The McNary fisheries staff performed measured inspections of the adult fishways on November 25, 27 and 30. Video review of adult passage continues and will extend to February 28, 2023. Picketed leads will remain down through this time frame. To ensure installation of lamprey passage structures on the entrance weirs, the Washington ladder outage will begin on December 5.

The middle Washington ladder water temperature sensor was examined on November 28. No issues were found with the sensor. District personnel will next examine the data collection system to see why faulty temperatures are being recorded at this location.

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'	1.1'
X		Washington Count Station Differential	0.0' to 0.5'	0.2'

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

The out of criterion point for the Oregon ladder exit listed above occurred on November 25. Exit weir set point adjustments resolved the issue.

At the Washington exit, high picketed lead and low water alarms were resolved when the leads were cleaned, and weir set points were adjusted on November 25. This occurred before the ladder inspection.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.3' to 1.4'
X			NFEW2 Weir Depth	≥ 8.0'	8.3' 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 8.0'
	X		SFEW2 Weir Depth	≥ 8.0'	7.9' to 8.0'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 2.1 fps.
X			Washington Entrance Head Differential	1.0' – 2.0'	1.5' to 1.6'
X			WFE2 Weir Depth	≥ 8.0'	9.7' to 10.0'
X			WFE3 Weir Depth	≥ 8.0'	8.9' to 9.2'

Comments: The above out of criteria points in the Oregon ladder were possibly due to calibration drifts and overall condition of the ladder. SFEW1 was out of criterion on November 25 and 27. SFEW 2 was out of criterion on November 27. WFE3 still requires calibration, however, this will wait for the winter outage unless tailwater elevation drops and causes the weir to operate out of criteria. Currently, the weirs depth is being estimated and appears to be in criterion. Calibrating the weir would require it to be removed from service.

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° to 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.

Juvenile Fish Passage Facility

The fall primary bypass season and maintenance continues. The separator and facility remain dewatered.

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 was installed in 11A slot on November 30. The second bulkhead will arrive and be installed in 11B slot on December 2. Both will be tested on December 6.

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. The screens in that unit 9 were raised on November 28. After the ESBS's were raised, no fish were observed on the screens except juvenile shad.

ESBS camera inspections occurred in units 1, 4 and 5 on November 29. The screen in 5A slot was found traveling the wrong direction and was parking at the top of the screen instead of the bottom. The electrical staff immediately resolved the issue.

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

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 no moisture in the permanent air supply lines this week. The temporary airline was removed on November 28. With unit 9 out of service, those orifices remain closed in order ensure the facility remains dewatered for further winter maintenance. While waiting on emergency bulkhead arrival, orifices were adjusted in unit 11 from November 27 to December 1. Make up orifices were opened in units 10, 12 or 13 as needed. Air leaks in orifice operators were repaired as needed, with two handles being replaced.

*Side, rectangular and transition screen cleaning brush timing alarms, one each, came in on November 29 at 0200 hours. The roving operator reset the side brush, which was not fully parked and cleaner the alarms. We have not determined why the side brush did not park. However, it appears the program, when a side brush alarm occurs, still keeps the other two brushes from cycling.

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

Table 2. River Conditions at McNary Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
132.0	106.6	0.0	0.0	48.0	48.0	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 December 6.

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

For the outfall, the LRAD was removed for the winter on December 1. It appeared to have very little hazing effect. Parts for the laser have been ordered.

There are no other forms of hazing occurring at this time.

In the spillway zone, gulls and cormorants were roosting on structure or on the water. Gull numbers fluctuated with the juvenile shad outmigration, though cormorant numbers were fairly stable.

In the powerhouse zone, gull numbers fluctuated, with the birds roosting and/or feeding occasionally.

In the bypass outfall zone, gull numbers fluctuated, and cormorant numbers were stable at a fairly high number. Most of the birds were roosting but feeding at the outfall occurred occasionally.

In the forebay zone, a fluctuating number of grebes (50 was the highest count) were observed. Most of the birds were roosting. Outside the zone, a gull flock, a few cormorants, one loon, a few grebes and one great blue heron 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: No fish rescue occurred this week.

Research: There is currently no research taking place.

Project: Ice Harbor

Biologist: Ken Fone

Dates: November 25 - December 1, 2022

Turbine Operation

Yes	No	Turbine Unit Status
	x	All 6 turbine units available for service (see table & comments below for details).
x		All available turbine units are operated in accordance with Appendix C of the Fish Passage Plan

Ice Harbor Unit Outages (OOS) and Return to Service (RTS)

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
3	5/3/19	0641	---	---	Turbine runner replacement and stator rewind

Comments: None.

Adult Fish Passage Facility

Ice Harbor staff inspected the adult fishways on November 28, 30, and December 1.

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'	2.3'
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 November 30 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.

The north shore channel/tailwater differential was most likely slightly below criteria for about 15 hours from the evening of December 1 to the morning of December 2 when only one north shore AWS pump was running. See the next section for more information about what happened.

Auxiliary Water Supply System:

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

Comments: North shore AWS pump #2 tripped off at 1805 hours on December 1 due to a lubrication system failure alarm. The problem with the pump is still being investigated. North shore pump #3 was started in place of pump #2 at 0925 hours on December 2.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 20 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: None.

Submersible Traveling Screens (STSs) / Vertical Barrier Screens (VBSs):

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

Comments: 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 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
23.5	16.2	0	0	48	46	9.0	7.8

*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 November 28 and December 1. A total of approximately 940 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

Dates: November 25 – December 1, 2022

Turbine Operation

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

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

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

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
Unit 1	10/25/2022	0707	1/26/2023	TBD	Annual, packing replacement

Comments: None.

Adult Fish Passage Facility

The adult fishways were inspected by Army Corps biologists November 28, 29 and 30.

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 north ladder picketed leads were cleaned when the differential was noted at 0.5' during a quick check of the ladders on December 1. 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) was on sill during all inspections with readings of 7.2, 7.1 and 7.4 feet, respectively. 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 stopped functioning at 1300 on November 30. District staff was informed.

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)	40 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. Winter maintenance occurred on the STS van this week.

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
18.8	12.5	0.0	0.0	47.0	46.0	6.8	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 strainers inspections will occur again in December. Monitoring is performed from December to June.

Avian Activity: Only general observations occurred this week with ladder inspections. Approximately 150-200 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. Western Grebes were observed roosting and foraging in the tailwater areas on November 28, 29 and 30.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on November 15.

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

Research: No research is occurring currently.

Project: Little Goose Dam

Biologist: Deb Snyder

Dates: November 25 – December 1, 2022

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 6 turbine units available for service? (See table and comments below for details)

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

Little Goose Unit Outages (OOS) and Return to Service (RTS)

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 November 28, 29, and November 30.

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			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	On Nov 28
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: Collection Channel Surface Velocity is measured at NPE. All ladders were in criteria during inspections.

Auxiliary Water Supply System:

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

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comment
X			Forebay debris load acceptable? (amount)	Average 73 ft square
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: None.

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: ESBS winter maintenance removal tentatively scheduled to begin December 16.

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: Dewatering of the JCC will occur after the ESBSs have been raised tentatively to begin December 16.

Collection Facility: Collection ended for the season with the final sample of November 1. The juvenile fish facility was dewatered on November 2. Winter maintenance is occurring at the juvenile fish facility.

Transport Summary: Collection for truck transport concluded on November 1.

Spillway Weir: 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
23.1	12.5	0.0	0.0	46.6	45.7	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: Siberian prawn counts at Little Goose Dam concluded for the season with the November 1 counts.

Gas Bubble Trauma (GBT): GBT monitoring ended on August 24.

Fish Rescue/Salvage: No fish salvage occurred during the reporting period.

Research: No research is occurred during the reporting period.

Project: Lower Granite

Biologists: Elizabeth Holdren and David Miller

Dates: November 25-December 1, 2022

Turbine Operation

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

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	12/1	0603	12/1	1713	500 KV Line outage/Transformer Maintenance
4	11/21	0700			Thrust bearing repair and indication upgrades

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 November 28, 29, 30, and December 1.

Fish Ladder:

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

Comments: 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	\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			North Powerhouse Entrance (NPE-1) Weir Depth	\geq 8.0' or on sill	
X			North Powerhouse Entrance (NPE-2) Weir Depth	\geq 8.0' or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0'–2.0'	
X			North Shore Entrance (NSE-1) Weir Depth	\geq 7.0' or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	\geq 7.0' or on sill	
	X		North Shore Channel/Tailwater Differential	1.0'–2.0'	0.9', 0.8', 0.9'
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: 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:

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	22.3 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: There have been 39,738 juvenile and 55 adult Chinook Salmon, 28,754 juvenile and 184 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).

ESBSs/VBSs:

Yes	No	NA	Item
		X	ESBSs deployed in all slots and in service?
		X	ESBSs inspected this week?
		X	ESBSs inspection results acceptable?
	X		VBSs differentials checked this week?
		X	VBSs differentials acceptable?

Comments:

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

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

Comments:

Collection Facility: Dewatered for winter maintenance.

Transport Summary: No transport.

Spillway Weir: The RSW was closed November 18 at 1528 hours.

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
19.9	15.8	0.0	0.0	42.0	41.0	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