

**U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#37-2021**

Project: McNary

Biologist: Bobby Johnson and Denise Griffith

Dates: November 5-11, 2021

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	
4	8/2	1018	2/ 28/22	N/A	Blade seals
5, 6 & 8	10/4	0730	11/9	1324	Lines 3 & 4 outages for BPA relays
7	10/4	0730	12/2	N/A	Nine-year overhaul
9 & 10	11/9	1000	11/9	1100	ESBS camera inspections
13 & 14	10/26	1000	10/26	1100	ESBS camera inspections

Comments: The one percent peak efficiency constraint and unit priority are being followed per the 2021 Fish Passage Plan (FPP). RTS dates are subject to change.

Adult Fish Passage Facilities

The fisheries biologist and technician performed a measured inspection of the adult fishways on November 5, 6, 7 and 10.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
	X	Oregon Exit	Head over weir 1.0' to 1.3'	1.0' to 1.4'
X		Oregon Count Station Differential	0.0' to 0.5'	0.0' to 0.1'
X		Washington Exit	Head over weir 1.0' to 1.3'	1.1' to 1.2'
X		Washington Count Station Differential	0.0' to 0.5'	0.0' to 0.1'

Comments: Debris loads near the Oregon shore exit were minimal to very light. Debris loads near the Washington shore exit were minimal.

The out of criterion point at the Oregon exit listed above occurred on November 5. A set point adjustment resolved the issue. One exit alarm came in and was reset on November 6.

At the Washington shore exit, weir 338 failed on November 6. The weir remained out of service all week. The exit control program was able to keep the exit points in criteria.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.2' to 1.5'
	X		NFEW2 Weir Depth	≥ 8.0'	7.9' to 8.2'
	X		NFEW3 Weir Depth	≥ 8.0'	7.9' to 8.2'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.3' to 1.5'
X			SFEW1 Weir Depth	≥ 8.0'	8.0' to 8.3'
X			SFEW2 Weir Depth	≥ 8.0'	8.0' to 8.2'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.6 fps
X			Washington Entrance Head Differential	1.0' – 2.0'	1.4' to 1.5'
X			WFE2 Weir Depth	≥ 8.0'	9.7' to 10.0'
X			WFE3 Weir Depth	≥ 8.0'	9.7' to 10.1'

Comments: NFEW2 was out of criterion on November 5 and 6. NFEW3 was out of criterion on November 6. These out of criteria points could be due to sensor calibration drifts, set point adjustments, hydraulics and/or the general condition of the Oregon shore ladder system. The chief operator found WFE1 in automatic mode on November 7. It was estimated the weir had been in automatic for one to two hours. Returning the weir to manual and raising it brought the Washington shore entrance back into criteria. This occurred after the ladder inspection.

Fabrication of the six remaining FOG's is on hold until fish pump 3 repairs are completed.

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			26°	Oregon Ladder Fish Pump 1
Yes			23°	Oregon Ladder Fish Pump 2
		Yes		Oregon Ladder Fish Pump 3, RTS date is October 29
Yes				OR North Powerhouse Pool supply from juvenile fishway

Comments: Fish pump 3 remained out of service. The estimated return to service date is subject to change. There are no other problems to report.

Juvenile Fish Passage Facility

Fall primary bypass season continues along with light maintenance and partial winterization at the juvenile facility.

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: Current debris loads were minimal to moderate near the powerhouse and minimal beside the spillway. Incoming debris was minimal. Most of the debris appeared to be moving back and forth from the powerhouse to the Oregon shoreline.

No trash racks were cleaned this week.

There are no problems to report. A few pieces of woody and man-made material were removed from the slots this week.

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: All ESBS's are in place. Camera inspections in units 9 and 10 revealed no issues on November 9. After unit 6 returned to service, the ESBS's disconnect for the screen in 6C slot had to be reset.

Daily VBS differential monitoring revealed no differentials out of criterion. A total of 12 screens were cleaned on November 8 and 10. Only juvenile shad mortalities were observed during cleaning.

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

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

Comments: With low debris loads and a temporary air supply line, orifice cycling remains at once a day. Water in the air line continues to be an issue. This problem and the temporary air supply line from the north end of the powerhouse will continue to be monitored. Orifices were adjusted for VBS cleaning are required.

The contractor who is reinforcing the intake deck crane's east rail will also continue to be monitored.

There are no problems to report.

Bypass Facility:

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

Comments: All bypass facility systems are down for above water winter maintenance and partial winterization.

There are no problems to report.

Top Spillway Weir (TSW) Operations:

A standard spill gate is spill bay 19. The TSW, which is attached to a hoist, in bay 20 is operational for the fall adult fallback season per the FPP and openings are occurring per the schedule released by RCC. The final day of TSW use will be November 15.

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
132.5	93.0	1.6	0.0	55.0	54.0	6.0	6.0

Comments: The above data is provided by the control room. The data day runs from 0000 to 0000 hours. The records spill was over the TSW.

Crane 6 is in service. Crane 7 is out of service. The crane 7's motor starter still needs to be replaced. A contract will be required. The current target date for replacement will be in mid-December. Both cranes' load limit indicators continue to be an issue.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections will occur on December 7.

Avian Activity: During fall primary bypass season, only casual avian observations are made.

In the spillway zone, gulls and cormorants were observed. The birds were mostly roosting around the basin or on the water. Cormorant numbers were moderate and stable. Gull numbers appeared to fluctuate greatly with the out migration of juvenile shad. When the TSW was open, gulls feed but in lower numbers.

In the powerhouse zone, some gulls were occasionally observed feeding.

In the bypass outfall zone, gull numbers fluctuated with 10 to 20 birds feeding occasionally. Cormorant numbers remained high with the birds roosting on the pipe and occasionally feeding at the outfall.

In the forebay zone, grebe numbers fluctuated. They were feeding and roosting on the water. Gulls, gull flocks and some cormorants were also noted roosting on the water or flying by. Outside the zone, a few cormorant, and three pelicans were observed along with gull flocks that roosted along the shorelines or on the water.

No hazing is occurring.

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

Siberian Prawn: There is nothing to report.

Fish Rescue/Salvage: There is nothing to report.

Research: There is nothing to report.

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
2	11/1/21	0630	---	---	Annual maintenance

Comments: None.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on November 8, 9, and 10.

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'	
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: None.

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	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 5 square yards
x			Gatewell drawdown measured this week?	
x			Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-9%
	x		Any oil seen in gatewells?	

Comments: None.

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

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

Comments: None.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comments: Orifices are being backflushed once per day. There were no debris obstructions observed at the orifices, as indicated by reduced flow through the orifices. Orifice 1BN light was found to be burned out on November 6. Orifice 1BS was opened in place of orifice 1BN until the light was replaced on November 8.

The replacement actuator for the water regulating weirs in the collection channel is being operated in manual control. An analog controller input was added to the actuator and needs to be programmed to function automatically. Currently, the water level in the collection channel is being visually monitored once per day. The actuator is operated electronically in "local" control to manually adjust the weirs as needed.

The mechanical screen cleaner was found on November 9 with the bracket for the drive cable sheaves broken off once again. The bracket was bolted back onto the screen cleaner the same day. The screen cleaner will be operated in "manual mode" four times per day, while being observed to make sure it functions properly, for the remainder of the season.

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

Fish Sampling: Sampling at Ice Harbor Dam has concluded for the season.

Removable Spillway Weir (RSW): The RSW is periodically opened for downstream passage of adult steelhead that may have strayed into the Snake River. The RSW is scheduled to be operated from 0500 hours to 0900 hours on Sundays, Wednesdays, and Fridays, from October 1 to November 15.

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
25.1	13.7	1.7	0.0	56	54	8.9	8.7

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Unit 1, 4, and 6 turbine cooling water strainers were cleaned of a total of approximately 3,750 juvenile shad on November 8 and 10.

Avian Activity: There were high numbers of mergansers, gulls, and pelicans that were resting or foraging at Eagle Island and along the south shore downstream of the dam. Gulls were also observed foraging in the tailrace closer to the dam.

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

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by the fish sampling contractor, frozen and properly disposed of in a landfill.

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

Research: No on-site research is currently going on.

Project: Lower Monumental

Biologists: Raymond Addis and Paul Bertschinger

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 2	07/15/2019	0720	12/16/2021	ERTS	Annual, Draft Tube Liner

Comments: None

Adult Fish Passage Facility

The adult fishways were inspected by Corps biologists on November 8, 9 and 10.

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: None.

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	South Shore Entrance (SSE-1) Weir Depth	\geq 8.0' or on sill	
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) was on sill during all inspections with readings of 6.8, 6.5 and 6.7 feet respectively. The south powerhouse entrance weir (SPE-2) was on sill during all inspections with readings of 6.8, 6.5 and 6.7 feet respectively. The south shore entrance weir (SSE-1) was on sill during all inspections with readings of 7.6, 7.4 and 7.3 feet respectively. South powerhouse channel velocity meter not working during November 9 and 10 inspections. Powerhouse operator 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)	0 yds ²
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 - 2%
	X		Any oil seen in gatewells?	

Comments: None

STSs/VBSs:

Yes	No	NA	Item
X			STSs deployed and in service in operating and available units?
	X		STSs in continuous-run mode (Note: if not, then STSs are in cycle-run mode)?
X			STSs inspected this week?
X			STSs inspection results acceptable?
	X		VBSs differentials checked this week?
		X	VBSs differentials acceptable?

Comments: STS's were operating on cycle mode during the reporting period due to average sub-yearling Chinook salmon and sockeye salmon lengths being greater than 120 mm.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	18
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: None

Collection Facility: The fish collection facility out of service for winter maintenance.

Transport Summary: Transport at Lower Monumental ended June 20.

Spillway Weir: Fall spill began at 0001 on October 1.

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
23.2	14.9	1.4	0.0	54.8	54.2	6.4	5.9

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainer inspections will resume in December.

Avian Activity: Highest counts of foraging piscivorous birds in tailrace (SWT1+PH1+PH2) at Lower Monumental Dam are reported in the table below.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
11/8/2021	1300	6	0	0	12	0
11/9/2021	1300	0	0	0	6	0
11/10/2021	1400	4	4	0	6	6

Comments: Bird hazing efforts by USDA personnel ended June 2.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on November 8.

Siberian Prawn: Siberian prawn collection ended on October 1.

Fish Rescue/Salvage: No fish rescue or salvage occurred.

Research: No research is occurring currently.

Project: Little Goose

Biologists: Chuck Barnes and Deborah Snyder

Turbine Operation

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

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

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

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
5	04/14/17	14:11	12/31/2022	17:00	Spider and upper guide bearing repair.
6	03/18/21	14:17	N/A	17:00	T2 C phase ground fault
2	10/18/21	07:00	11/10/2021	1320	Annual Maintenance

Comments: Little Goose experienced a T2 transformer ground on March 18 at 14:17. T2 transformer and Units 5 and 6 will be out of service until repairs/replacement can be performed.

Adult Fish Passage Facility

Little Goose fish facility, Environmental Assessment Services (EAS) and Oregon Department of Fish and Wildlife (ODFW) staff inspected the adult fishway on November 8, November 9, and November 10.

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	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 continues to operate in manual mode. The fish control system still has a faulty hydranger for the NSE1 weir and is currently awaiting repair. Subsequent faulty NSE fish control system channel and tailwater readings were encountered and remedied with physical staff gauge and water level depth indicator measurements.

Ladder exit cooling pumps were placed into service at 2052 hrs on 12 June when 0.5m forebay temperatures exceeded 64°F. At 16:00 on September 19 the 0.5m forebay temperature met the qualifying criteria to shut down the ladder exit cooling pump for the season.

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 and 2 were returned to service on February 23. Fish pump 3 returned to service April 7.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comment
X			Forebay debris load acceptable? (amount)	10ft ² on 11/8; 20ft ² 11/9, 20ft 11/10
	X		Gatewell drawdown measured this week?	
		X	Gatewell drawdown acceptable	
		X	Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: There is currently fluctuating minimal to moderate floating woody debris inside the trash shear boom. Gatewell drawdowns were performed November 4 on unit 1.

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's were installed in Units 2, 3 and 4 on March 22 and 23. ESBS/VBS camera inspections for all units took place June 8-10. No camera inspections took place during this report period. Unit 6 has 1 remaining ESBS currently raised and stored within the Unit 5-B slot position. Unit 6 bulkheads are in place; both Units 5 and 6 are out of service.

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 on March 22 and began daily collection for transportation on April 23.

Collection Facility: Collection for condition monitoring in conjunction with secondary bypass commenced on April 1 with the first sample being conducted on April 2. Every other day collection and sampling occurred through April 22. Daily collection for transportation began on April 23 with the first daily barge departing on April 24. Collection ceased on November 1 and the collection facility was dewatered for cleaning and winter maintenance.

Transport Summary: Daily fish transportation via barge began on April 24. Every other day barge transportation began May 18 and ended June 21. Collection for transport resumed at 0700 hrs July 5 and every other day truck transportation began July 6. Collection ceased November 1 at 0700 with conversion to primary bypass mode and final truck departure to end the season.

Spillway Weir: Spring spill operations began on April 3 with the ASW in high crest. ASW day surface spill emergency procedure began July 3 at 0900 hours and ceased July 9 at 1600 hours. Off-season surface spill for adult steelhead downstream passage as outlined in the 2020 NOAA Fisheries CRS Biological Opinion took place between 0500 and 0900 hours on November 7, November 9, and November 11.

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
20.2	14.4	1.2	0.0	54.8	55.8	5.5	5.0

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inspections will resume in December.

Avian Activity: Daily piscivorous bird counts at Little Goose Dam began on April 1. USDA hazing activities began on March 29 and ended June 19. Daily bird counts ended for the season with the October 31 count.

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

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

Gas Bubble Trauma (GBT): GBT monitoring for the 2021 season concluded July 26.

Fish Rescue/Salvage: The nav-lock floating bulkhead dry dock area was dewatered for cleaning and maintenance purposes on October 25. Initial fish rescue efforts on October 25 recovered and returned one adult Coho salmon and nine adult Chinook salmon to the river. A subsequent fish rescue of October 26 recovered and released to river one jack Chinook salmon.

Research: The Nez Perce Tribe (NPT) began adult steelhead kelt collection on May 3 and ended June 30.

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	
2	11/01	0717			Annual Maintenance
3	11/09	0657	11/09	0850	Wicket Gate Packing Leakage

Comments: None.

Adult Fish Passage Facility

Lower Granite Biologists and Anchor QEA staff inspected the adult fishway November 6, 8, and 10.

Fish Ladder:

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

Comments: None.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0'	7.9'
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	7.6'
	X		North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0' or on sill	7.6'
	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0'–2.0'	0.8'
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'	0.8'
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: Ladder collection channel operation and configuration are being evaluated to resolve ongoing issues. FOGs 1, 4, 7, and 10 are in operation. North shore and north powerhouse channel/tailrace head differential's ability to maintain criteria range is dependent of tailrace conditions. Lower Granite electrical crew continue to work on the ladder control system issues.

Auxiliary Water Supply System:

Operating Satisfactorily	Standby	Out of Service	Auxiliary Water Supply (AWS)
		Yes	AWS Fish Pump 1
Yes			AWS Fish Pump 2
No		11/8 0711-1510	AWS Fish Pump 3

Comments: AWS fish pump 3 was forced out of service November 8 at 0711 hours due to low cooling water flow to the bearings. Multiple issues were identified and corrected allowing AWS fish pump 3 to be returned to service at 1510 hours the same day.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Weekly average 21.9 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		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: Lower Granite's juvenile bypass system was set to primary bypass at 0700 hours November 1. The juvenile collection facility has been dewatered and winterized.

Transport Summary: The final truck transport trip was November 1.

Spillway Weir: A total of 250,449 PIT tagged smolts have been detected over the RSW this season compared to a total of 23,606 smolts detected in the juvenile system. A total of 728 adult PIT tagged steelhead, 97 Chinook salmon, and 2 Sockeye salmon have been detected at the RSW this season compared to 104 adult steelhead and 58

Chinook salmon detected at the juvenile bypass system. Since October 1, 28 of the 45 PIT tagged fallback steelhead have been tagged at the Lower Granite Adult Trap.

The RSW is being opened from 0500-0700 hours and 0900-1100 Tuesday, Thursday, and Sunday thru November 14. November 11, the RSW remained open during the 0500-0700 hour block until 0830 due to an oversight by the shift operator.

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
19.4	16.1	1.5	0.0	54.0	52.0	5.0	5.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A

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: Trapping 7 days per week at 18%.

Fish Rescue/Salvage: N/A

Research:

National Marine Fisheries Service (NMFS) PIT tagging of Adult Wild Chinook and Adult Steelhead for ISEMP-Related Dispersal Monitoring:

The goal of this project is to PIT tag up to 4000 unclipped adult Chinook salmon and 4000 unclipped adult steelhead collected in the adult trap daily sample for dispersal monitoring.

Sampling of Steelhead, Chinook salmon, and Sockeye salmon by the Idaho Department of Fish and Game (IDFG) and NOAA Fisheries for Biological data collection.

Upriver migrating steelhead, spring/summer Chinook salmon, and sockeye salmon are collected from the adult trap beginning April 4 through December 15. The goal is to collect 5-20% of adult steelhead, spring/summer Chinook salmon, and sockeye salmon ascending the ladder April 4-December 15. Data collection includes fish scales, genetics tissue, sex and length, wild/hatchery composition, and non-adipose clipped hatchery fish assessment. Natural origin adult steelhead and spring/summer Chinook salmon trapped will be PIT tagged to estimate headwater tributary escapement. Sockeye salmon may be PIT tagged in the future to estimate metrics regarding conversion rates. Some steelhead and spring/summer Chinook salmon may be radio-tagged or spaghetti-tagged. This information on adult fish forms the basis for status information used in several forums including BiOp-RPA identified needs.

PIT Tagging and Genetic Sample Collection from Bull Trout for USFWS:

Bull trout will be collected as part of the normal adult trap daily sample and using the adult SbyC system to recapture previously PIT tagged fish. Untagged bull trout will be PIT tagged, fin clipped for genetic analysis, and have morphometric data collected including weight and length etc. Fin clips will be sent to USFWS to determine the fish's origin. Previously PIT tagged bull trout will only have morphometric data collected. All fish will be released back into the adult fish ladder.