U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#24-2021

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: August 6 – August 12, 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.

Table 1. McNary Unit Outages (OOS) and Return to Service (RTS).

	OOS		RTS		
Unit(s)	Date	Time	Date	Time	Outage Description
5	12/7	0643	8/19	N/A	Blade seals and hub oil replacement
2	6/7	0732	8/20	N/A	Nine-year overhaul/Transmission line 1
1	7/12	0720	8/20	N/A	Line 1 outage for BPA relays
4	8/2	1018	9/24	N/A	Nine-year overhaul
6	8/9	0650	8/12	1257	Annual maintenance
13 & 14	8/10	1000	8/10	1100	ESBS camera inspections

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

Adult Fish Passage Facilities

McNary fisheries biologists performed a measured inspection of the adult fishways on August 7, 9 and 11. Fish counting, and video review of adult lamprey night passage continues.

No heat stressed adult fish mortalities were observed this week.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
X		Oregon Exit	Head over weir 1.0’ to 1.3’	1.0’ 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’ to 1.2’
X		Washington Count Station Differential	0.0’ to 0.5’	0.1’ to 0.2’

Comments: Debris loads near the Oregon exit were very light to light and minimal to very light near the Washington exit. Picketed leads at both exits were cleaned repeatedly, including the weekend.

At the Oregon shore exit, traveling screen alarms came in and were reset on August 9 and 11.

At the Washington exit, exit alarms came in and were reset by the operators on August 6. Also, a regulating weir and a high picketed leads differential alarm came in on August 9. Both alarms were reset after the leads were cleaned.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.2'
X			NFEW2 Weir Depth	≥ 8.0'	8.0' to 8.2'
X			NFEW3 Weir Depth	≥ 8.0'	8.0' to 8.2'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.4' to 1.5'
	X		SFEW1 Weir Depth	≥ 8.0'	7.9' to 8.2'
	X		SFEW2 Weir Depth	≥ 8.0'	7.9' to 8.2'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.7 fps
X			Washington Entrance Head Differential	1.0' – 2.0'	1.3'
X			WFE2 Weir Depth	≥ 8.0'	8.9' to 9.3'
X			WFE3 Weir Depth	≥ 8.0'	9.0' to 9.2'

Comments: Possibly due to calibration drifts, SFEW1 and SFEW2 were out of criteria on August 7.

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			24° to 26°	Oregon Ladder Fish Pump 1
Yes			24° to 25°	Oregon Ladder Fish Pump 2
		Yes		Oregon Ladder Fish Pump 3, RTS date is September 30
Yes				OR North Powerhouse Pool supply from juvenile fishway

Comments: Fish pump 3 remained out of service. Return to service dates are subject to change.

Juvenile Fish Passage Facility

Normal sampling season, consisting of alternating days of primary and secondary bypass, continues. There was one interruption in the schedule this week. The sample collection for August 11 was done on August 10, from 0700 to 1500 hours, thus an eight-hour sample. The sample collection for August 13 will be 15 hours. These 15-hour samples will continue until approximately August 21, when the next 24-hour sample should be completed. These shortened samples are due to Covid-19 and other personnel issues. Sample tank mortality has remained below 3.0 percent. There appears to be very little heat stress occurring, though the B side sample tank water temperature remained over 71 degrees Fahrenheit all week. The situation will be monitored.

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 very light to light beside the spillway. Incoming debris was minimal to light and consisted of aquatic vegetation. Wind direction and project operations effected the debris distribution. Much of the debris moved between the powerhouse and the Oregon shoreline.

No trash racks were cleaned this week.

The emergency bulkhead installed in 1C slot was removed on August 7.

There are no problems to report.

Extended-length submersible bar screen (ESBSs)/Vertical barrier screen (VBSs):

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

Comments: All screens are in place. The ESBS's for unit 5 and 1C slot were installed on August 9. Camera inspections in units 13 and 14 revealed no issues on August 10.

Daily VBS differential monitoring revealed no differentials out of criteria. Three screens were cleaned on August 11. No fish mortalities were observed.

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: The orifice in 1C slot remains closed and a makeup orifice is opened in 1B slot. The orifice will be reopened when unit 1 returns to service. Orifices were adjusted for VBS cleaning as required. With low debris loads and a temporary air supply line, orifice cycling remains at once a day.

Area lighting was repaired on August 9. The channel hoist system was serviced on August 11. The control system panel view was examined and tested during the week.

Road traffic damaged the temporary air supply line from the north end of the powerhouse on August 11. The mechanics immediately repaired and secured the line. The short interruption in air supply had no ill effect. The fisheries staff will continue to monitor the supply line.

Bypass Facility:

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

Comments: All bypass facility systems operated satisfactorily. The sample gates were only on during secondary bypass, which includes the eight-hour sample mentioned above. The PIT-tag system gates remained off as there is no need for that system.

This week, 32 juvenile lamprey and 356 smolts were bypassed during secondary bypass. The smolt monitoring staff reports fish data in a separate report. Since mid-July, juvenile shad have been the predominate species in the sample.

Early in the week, it was noted the facility's PIT tag room's air conditioning had failed. The system was repaired on August 9.

Top Spillway Weir (TSW) Operations:

The TSW's remain out of service. Standard spillgates are in bays 19 and 20.

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
155.4	112.0	88.7	56.6	71.8	71.2	6.0	6.0

Comments: The above data is provided by the smolt monitoring staff except water clarity, which comes from the control room. The data day runs from 0700 to 0700 hours. Water temperature monitoring throughout the juvenile system continues. The smolt monitoring staff will report temperature data and monitoring issues in a separate report.

The summer spill program, with 57 percent of flow being spilled, continues. However, spill volume will be reduced to 20 kcfs on August 15 at 0001 hours.

The motor starter for Crane 6 has a delivery date of August 16. The electrical work will begin as soon as possible. Cranes 6's load limit indicator continues to be an issue.

Crane 7 remains serviceable. However, work on the main hoist gearbox will begin as soon as Crane 6 RTS. The crane's motor starter still needs to be replaced. A contract will be required. The current target date for replacement will be in October or November. Also, Crane 7's load limit indicator continues to be an issue.

Bay 2 remains closed and the gate in bay 19 remains dogged open at four feet, with is required by the FPP, Table MCN-9 with current flow volumes.

Other

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

Avian Activity: Avian counts continued. These counts are reflected in Table 3 below.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
August 6	Spill	28	0	0	6	0
	Powerhouse	0	0	0	1	0
	Outfall	19	13	0	2	0
	Forebay	3	0	3	2	4
August 7	Spill	220	0	2	29	0
	Powerhouse	0	0	0	0	0
	Outfall	6	10	0	0	0
	Forebay	0	0	1	0	3
August 8	Spill	397	0	5	9	0
	Powerhouse	0	0	0	0	0

	Outfall	1	14	1	0	0
	Forebay	0	0	0	0	0
August 9	Spill	29	1	2	9	0
	Powerhouse	0	0	0	0	0
	Outfall	12	8	2	0	0
	Forebay	0	0	0	0	0
August 10	Spill	78	2	0	4	0
	Powerhouse	0	0	0	0	0
	Outfall	4	12	0	0	0
	Forebay	0	0	0	0	3
August 11	Spill	32	0	0	6	0
	Powerhouse	0	0	0	0	0
	Outfall	23	11	3	1	0
	Forebay	0	0	0	0	3
August 12	Spill	36	4	0	2	0
	Powerhouse	0	0	0	0	0
	Outfall	12	10	0	4	0
	Forebay	0	0	0	0	0

The lasers on the outfall pipe and navigation lock wing wall were turned off on August 9 as the evaluation study plan concluded on August 8.

Two large bird distress calls remain installed on the navigation lock wing wall.

Testing the LRAD on the outfall pipe will begin next week. No other hazing is currently occurring.

In the spillway zone, gulls, pelicans, cormorants, and terns were observed. Terns and pelicans were feeding in the spill flow with gulls and cormorants mostly roosting around the basin. Osprey were also noted roosting in the area. All species had fluctuating numbers. Gulls and terns can be hard to distinguish apart. Cormorants are difficult to observe in the water.
In the powerhouse zone, one pelican was observed.

In the bypass outfall zone, gull, cormorant, and tern numbers fluctuated. Mostly the birds were roosting on the pipe with light feeding at the outfall. Pelicans were noted on three occasions feeding near the outfall. An osprey was observed roosting on the navigation light. The overall lack of feeding may be due to bird activity and/or laser use.

In the forebay zone, gulls, terns, and pelicans were noted early in the week in low numbers. Grebes were noted on four days in low numbers. Most birds were either feeding or roosting on the water. Outside the zone, terns, gulls, pelicans, ospreys, and cormorants were observed in low numbers. Many of the gulls were juveniles.

No grebes or pelicans were noted elsewhere.

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

Siberian Prawn: One Siberian prawn was removed from the sample and euthanized this week. This brings the yearly total to eight prawns.

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

Research: There is nothing to report.

Project: Ice Harbor
Fisheries Tech: Tim DeKoster
Fisheries Biologist: Ken Fone

Turbine Operation

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

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

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

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
3	5/3/19	0641	---	---	Turbine runner replacement and stator rewind
6	7/19/21	0720	---	---	Annual maintenance and new oil

Comments: None.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on August 9, 10, and 12.

Fish Ladders:

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

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
		x	South Shore Entrance (SFE-1) Weir Depth	≥ 8.0’ or on sill	
x			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
x			South Shore Channel Velocity	1.5 – 4.0 fps	
		x	North Powerhouse Entrance (NFE-2) Weir Depth	≥ 8.0’ or on sill	
x			North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	
		x	North Shore Entrance (NEW-1) Weir Depth	≥ 8.0’ or on sill	
	x		North Shore Channel/Tailwater Differential	1.0’ – 2.0’	2.2’, 2.3’, 0.9’

Comments: The south fish ladder picketed leads at the count station are being cleaned of filamentous algae daily to keep the differential within criteria.

The north shore entrance channel/tailwater differential was out of criteria on all three fishway inspections. The frequent high channel/tailwater differential at the north shore prompted the Project Biologist to have the powerhouse operator turn off a second north shore auxiliary water supply (AWS) pump on August 12. On the fishway inspection conducted later that day, the differential at the north shore entrance was 0.9’. The operator expected the tailwater level to decrease that evening, which would most likely bring the differential into criteria. The operators were going to monitor the differential on the PLC over the weekend and start a second north shore pump if necessary.

On morning of August 10, the channel/tailwater differentials at the south fish ladder entrances were most likely below criteria during the partial AWS pump outages described in the next section. The channel/tailwater differential at the north shore entrance may have still been within criteria with one north shore pump running during the same event.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
4-5 pumps	3-4 **pumps**		Status of the 8 south shore AWS pumps
1-2 pumps	1-2 pump		Status of the 3 north shore AWS pumps

Comments: One of the breakers tripped at 0620 hours during station service maintenance on August 10, causing two of the five operating south shore AWS pumps and one of the two operating north shore pumps to shut down. The south shore pumps and north shore pumps were restarted on August 10 at 0637 hours and 0705 hours, respectively.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 1 square yard
x			Gatewell drawdown measured this week?	
x			Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-1%
	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.

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.

On August 11, the mechanical screen cleaner was observed to be parked at the upstream end of the primary dewatering structure with the brush part way in the water. The brush lift cable had come off of the lower pulley. The screen cleaner was shut off to prevent damage to the cable. Mechanics got the cable back on the pulley and the screen cleaner was returned to service later the same day.

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): Thirty percent spill for fish passage ended on August 14. Beginning on August 15, approximately 8.5 kcfs of spill, 24 hours per day, has been occurring. The RSW was closed on July 9 to reduce tailrace temperatures, as coordinated through the Technical Management Team. The RSW remains closed because of low river flows below 30 kcfs.

River Conditions

River conditions at Ice Harbor Dam.

Daily Average River Flow (kcfs)		**Daily Average Spill (kcfs)**		**Water Temperature* (°F)**		**Water Clarity (Secchi disk - feet)**	
High	Low	High	Low	High	Low	High	Low
24.4	22.3	7.2	6.5	70	70	9.0	9.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine cooling water strainer inspections for lamprey are done for the season.

Avian Activity: There was a low level of piscivorous bird activity observed around the project.

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 occurring at this time.

Project: Lower Monumental
Biologists: Raymond Addis

Turbine Operation

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

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

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

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
Unit 2	07/15/2019	0720	11/18/2021	ERTS	Annual, Draft Tube Liner
Unit 4	07/06/2021	0700	09/23/2021	ERTS	Annual, Scroll Case Repair

Comments: None.

Adult Fish Passage Facility

The adult fishways were inspected by Corps and EAS biologists on August 6, 7, 8, and 11.

Fish Ladder:

Yes	No	Location	Criteria	Measurements
X		North Ladder Exit Differential	Head ≤ 0.5’	
X		North Ladder Picketed Lead Differential	Head ≤ 0.4’	
X		North Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
X		South Ladder Exit Differential	Head ≤ 0.5’	
X		South Ladder Picketed Lead Differential	Head ≤ 0.3’	
X		South Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	

Comments: None.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Shore Entrance (NSE-1) Weir Depth	≥ 8.0’ or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	≥ 8.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
		X	South Powerhouse Entrance (SPE-1) Weir Depth	≥ 8.0’ or on sill	
		X	South Powerhouse Entrance (SPE-2) Weir Depth	≥ 8.0’ or on sill	
X			South Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
		X	South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	
X			South Shore Entrance (SSE-2) Weir Depth	≥ 6.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: The south powerhouse entrance weir (SPE-1) was on sill during all inspections with readings of 6.3, 6.1, 6.1 and 5.6 feet respectively. The south powerhouse entrance weir (SPE-2) was on sill during all inspections with readings of 6.3, 6.1, 6.1 and 5.6 feet respectively. The south shore entrance weir (SSE-1) was on sill during all inspections with readings of 6.8, 6.8, 7.2 and 6.2 feet respectively.

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)	29 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: STS's were operating on cycle mode during the reporting period due to average sub-yearling Chinook and sockeye 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?	18-19
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: None.

Collection Facility: Collection into the raceways for transport ended June 20 at 1500. Secondary Bypass began June 20 at 1500. Sampling for condition on alternating days began July 9. The facility was placed into Primary Bypass on non-sample days. A total of 430 fish were collected with 430 fish bypassed back to the river during this reporting period.

Transport Summary: Transport at Lower Monumental ended June 20.

Spillway Weir: Summer Spill began at 00:00:00 on June 21. The RSW went into service at 0001 on April 3 and was closed on July 9 due to high river temperatures with low river flows

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
24.5	22.1	12.4	10.0	71	70	6.4	5.0

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected June 14.

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

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
08/06/2021	1130	95	4	0	0	11
08/07/2021	0830	24	0	0	0	7
08/08/2021	0845	40	0	0	0	13
08/11/2021	0830	37	6	0	0	9

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

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on August 7.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by PSMFC and EAS, frozen and properly disposed of in a landfill. Total Siberian prawn counts at Lower Monumental Dam for this reporting period are reported in the table below.

Date	Sample (euthanized)	Collection*
08/06/2021	34	68
08/07/2021	---	---
08/08/2021	80	160
08/09/2021	---	---
08/10/2021	78	156
08/11/2021	---	---
08/12/2021	35	70
Total	227	454

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

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

Research: No research is occurring currently.

Project: Little Goose
Biologists: Chuck Barnes

Turbine Operation

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

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

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

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
5	04/14/17	14:11	03/31/2022	17:00	Spider and upper guide bearing repair.
6	03/18/21	14:17	03/31/2022	17:00	T2 ground
3	07/26/21	07:20	09/03/21	17:00	Unit annual and controls upgrade

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 August 7, August 9, and August 11. All inspections took place during emergency modified summer spill operations.

Fish Ladder:

Yes	No	NA	Location	Criteria	Measurements
X		X	Fish Ladder Exit Differential	Head $\leq$ 0.5’	No reading 8/09
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 hydroranger for the NSE1 weir and is currently awaiting parts.

Ladder exit cooling pumps were placed into service at 2052 hrs on 12 June when 0.5m forebay temperatures exceeded 64°F.

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)	$0ft^2$
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: There is currently minimal floating woody debris inside the trash shear boom. Gatewell drawdowns for Unit 1 were conducted on August 12 and were in criteria.

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. VBS differentials for Unit 1 were conducted on August 12 and were in criteria. ESBS/VBS camera inspections took place June 8-10.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	18-19
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. The collection and transport facility operated within criteria this report period. A total of 20,719 fish were collected, 20,424 were transported via truck, 0 were bypassed, and there were 131 sample or facility mortalities. The

descaling and mortality rates were 1.6% and 1.37%, respectively. Three adult lamprey were removed from the separator during this report period.

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.

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.

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
25.9	21.9	9.2	7.0	72.1	70.7	6.0	6.0

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inline cooling strainer inspections commenced on January 13. Inspections will continue in accordance to the Fish Passage Plan (FPP) and results will be submitted to the District.

Avian Activity: Daily piscivorous bird counts at Little Goose Dam began on April 1. USDA hazing actives began on March 29 and ended June 19.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
8-06	0745	32	5	0	0
8-07	0730	74	0	0	6
8-08	1045	0	0	0	0
8-09	1100	32	3	0	0
8-10	1000	38	7	0	1
8-11	0900	34	8	0	2
8-12	1045	22	7	0	1

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

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

Date	Sample	Collection*
8-06	145	1470
8-07	161	1650
8-08	151	1520
8-09	120	3000
8-10	133	3325
8-11	254	6350
8-12	478	9560

Totals	1442	26875

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

Fish Rescue/Salvage: Fish rescue / salvage activities were performed in Unit 3 scrollcase on August 9 with no fish present.

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)

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
6	07/26	0727			Six Year Overhaul
1-5	08/09	0600	08/12	1900	Daily outage for Doble testing

Comments: Units 1-4 were out of service daily from 0600-1900 hours with unit 5 at speed no load for station service power during Doble testing this week. T1 was restored with units 1-4 available for service and operated in FPP compliance from 1900-0600 nightly. Doble testing was completed August 12. T1 was restored at 1833 hours August 12 with units 1-4 remaining available for service. T2 transformer instrumentation upgrade and iso-bus rehab will continue as scheduled.

Adult Fish Passage Facility

Lower Granite Biologists and Anchor QEA staff inspected the adult fishway August 6, 7, 9, and 11.

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’	0.9’, 0.5’
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 8.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
X			North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	6.3’
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.9’, 0.6’
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
	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)	Weekly average 15.0 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?	18
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: Orifices on 6A are closed due to a bulkhead being installed for the 6-year overhaul.

Collection Facility: The facility is in collection mode for condition sample and emergency juvenile truck transport due to high regional temperatures and declining river conditions.

Transport Summary: A total of 18,300 smolts were transported this reporting period. There have been 108,179 smolts transported by truck since July 2. Prior to loading fish trucks biologist remove 2-3 five-gallon buckets of Siberian prawns from the raceway to prevent clogging of recirculating systems during transport and overflow systems while loading.

Spillway Weir: The RSW was reopened August 10 at 0538 hours and will be operated following FPP tables 7 & 8 until August 31. A total of 250,400 PIT tagged smolts have been detected over the RSW this season compared to a

total of 23,514 smolts detected in the juvenile system. A total of 665 adult PIT tagged steelhead, 41 Chinook, and 1 Sockeye have been detected at the RSW this season compared to 73 adult steelhead and 11 Chinook detected at the juvenile facility.

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
26.8	19.7	15.8	11.0	67.5	66.0	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. There were 12,159 Siberian prawns collected in sample and euthanized this week. There were 2-3 five-gallon buckets of Siberian prawns removed from raceways on transport days.

Avian Activity:

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
Aug 6	1030	1	11	0	0
Aug 7	1130	0	0	0	0
Aug 8	1045	3	13	0	0
Aug 9	1130	1	21	0	0
Aug 10	1230	1	17	0	0
Aug 11	1234	1	15	0	0
Aug 12	0849	4	12	0	0

Gas Bubble Trauma (GBT) Monitoring: N/A

Adult Fish Trap Operations: Collection of incidentally trapped fall Chinook for early transport to NPT hatcheries began July 26. Sampling was shut down at 0730 hours August 3 due to the fish a handling facility temperature of 70.5°F. Sampling resumed at 0552 hours August 9 with a temperature of 67.6°F in the fish handling area.

American shad mortalities have declined with the trap being flushed as needed.

Fish Rescue/Salvage: The adult trap was flushed August 8 to clear screens of debris and incidental species mortalities. Two adult Chinook mortalities were observed (1 unclipped and 1 unidentified).

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 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.