U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#27-2021

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: August 27-September 2, 2021

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).

	OOS		RTS		
Unit(s)	**Date**	**Time**	**Date**	**Time**	**Outage Description**
4	8/2	1018	9/24	N/A	Nine-year overhaul
9 thru 12	8/23	0646	10/1	N/A	Line 5 outage for BPA relays
3, 5 & 8	8/31	1000	8/31	1130	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 concluded with the temperature monitoring program on August 31. RTS dates are subject to change.

Adult Fish Passage Facilities

The fisheries biologist and a technician performed a measured inspection of the adult fishways on August 27, 29 and September 1. 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’
X		Washington Count Station Differential	0.0’ to 0.5’	0.1’ to 0.2’

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

At the Washington shore exit, a regulating weir alarm came on and was reset on September 1.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.2' to 1.3'
	X		NFEW2 Weir Depth	≥ 8.0'	7.9' to 8.1'
X			NFEW3 Weir Depth	≥ 8.0'	8.0' to 8.1'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.3' to 1.4'
	X		SFEW1 Weir Depth	≥ 8.0'	7.9'
	X		SFEW2 Weir Depth	≥ 8.0'	7.9' to 8.0'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.5 fps
X			Washington Entrance Head Differential	1.0' – 2.0'	1.3' to 1.4'
X			WFE2 Weir Depth	≥ 8.0'	9.8' to 10.1'
X			WFE3 Weir Depth	≥ 8.0'	9.8' to 10.1'

Comments: Possibly due to calibration drifts, NFEW2 and SFEW2 were out of criteria on September 1 and SFEW1 was out of criterion all week.

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			25°	Oregon Ladder Fish Pump 1
Yes			23° to 24°	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 October 29.

Juvenile Fish Passage Facility

Normal sampling season, consisting of alternating days of primary and secondary bypass, continues. There appears to be very little heat stress occurring even with the B side sample tank water temperature being above 68 degrees Fahrenheit all week.

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 as the debris beside the spillway migrated to the powerhouse after the spill season concluded. Before the spill closure, debris loads were very light to light near the spillway. Incoming debris was minimal. Wind direction and project operations effected the debris distribution.

No trash racks were cleaned this week.

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. Camera inspections in units 3, 5 and 8 revealed no issues on August 31.

Daily VBS differential monitoring revealed one differential out of criterion. The reading occurred when the units were running at 80 megawatts on September 2. This screen and a total of 11 others were cleaned on August 30 and September 2. No fish 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: Orifices were adjusted for VBS cleaning as required. Orifice operators were repaired as required. With low debris loads and a temporary air supply line, orifice cycling remains at once a day.

The temporary air supply line from the north end of the powerhouse and the contractor who is reinforcing the intake deck crane's east rail will continue to be monitored.

Two "did not return to park" rectangular screen brush alarms and one "did not complete cycle" transition screen brush alarm came in on September 2 at 0517 hours. As has been the case previously this season, the rectangular brush "raise" limit failed and the brush did not park. After three attempts, the roving operator did get the brush parked and later that morning, the electrical staff repositioned the limit. The brush will continue to be monitored.

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. The PIT-tag system gates remained off as there is no need for that system.

This week, 44 juvenile lamprey and 200 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.

There are no problems to report.

Top Spillway Weir (TSW) Operations:

The TSW's remain out of service. Standard spill gates 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
135.1	86.4	23.8	0.0	69.7	68.5	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 concluded on August 31. The smolt monitoring staff's annual temperature will be completed in September.

The summer spill program concluded on September 1 at 0001 hours. The gate in bay 19 was closed by Crane 7.

The electrical staff continues repairs to Crane 6. The 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, the crane's load limit indicator continues to be an issue.

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.

The lasers on the outfall pipe and navigation lock wing remained off. Two large bird distress calls remain installed on the navigation lock wing wall. No other hazing is currently occurring.

Testing the LRAD continues Monday through Thursday. Due to the limits of the device, it is only being used once a day at this time. However, the unit does seem to disperse birds very well.

In the spillway zone, only gulls and cormorants were noted. The birds were mostly roosting around the basin with some feeding when spill was still occurring. Osprey and blue herons were also noted roosting in the area. Bird numbers fluctuated.

In the powerhouse zone, only gulls were observed. Feeding and roosting both occurred.

In the bypass outfall zone, gulls and cormorants were noted. Gull numbers fluctuated and cormorant numbers were stable. All the birds were roosting on the pipe with only one gull noted feeding.

In the forebay zone, only one pelican was observed. The bird was roosting on the water. Outside the zone, gulls, pelicans, ospreys, and cormorants were observed in low numbers.

No grebes or pelicans were noted elsewhere.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
August 27	Spill	2	1	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	7	11	0	0	0
	Forebay	0	0	0	0	0
August 28	Spill	13	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	7	17	0	0	0
	Forebay	0	0	0	0	0
August 29	Spill	8	0	0	0	0
	Powerhouse	2	0	0	0	0
	Outfall	2	12	0	0	0
	Forebay	0	0	0	0	0
August 30	Spill	92	8	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	1	6	0	0	0
	Forebay	0	0	0	0	0
August 31	Spill	3	0	0	0	0
	Powerhouse	1	0	0	0	0
	Outfall	3	1	0	0	0
	Forebay	0	0	0	0	0
Sept 1	Spill	10	1	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	1	1	0	0	0
	Forebay	0	0	0	0	0
Sept 2	Spill	17	0	0	0	0
	Powerhouse	31	0	0	0	0
	Outfall	15	13	0	0	0
	Forebay	0	0	0	1	0

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

Siberian Prawn: No Siberian prawn were removed from the sample and euthanized this week. The yearly total remains at nine prawns.

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

Research: There is nothing to report.

Project: Ice Harbor
Fisheries Biologist: Ken Fone
Dates: August 27 – September 2, 2021

Turbine Operation

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

* 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
4	8/16/21	0830	---	---	Annual maintenance and new oil

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on August 31, September 1, and 2.

Fish Ladders:

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

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
		x	South Shore Entrance (SFE-1) Weir Depth	≥ 8.0’ or on sill	
	x		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	2.4’, 2.6’
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’	2.3’
		x	North Shore Entrance (NEW-1) Weir Depth	≥ 8.0’ or on sill	
	x		North Shore Channel/Tailwater Differential	1.0’ – 2.0’	0.7’,0.4’

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 south shore entrance channel/tailwater head differential was above criteria on all three fishway inspections. Only four south shore auxiliary water supply (AWS) pumps have been operating since August 12 to decrease the head differential, but the low tailwater elevation is still causing the high readings. The pump speed is not adjustable to make small changes to the water supply to help meet head criteria at the entrances

The north shore entrance channel/tailwater head differential was below criteria on September 1. One north shore AWS pump was operating with the north shore channel diffusers opened to 100% during the fishway inspection. The low differential at the north shore prompted the powerhouse operator to turn on a second north shore AWS pump on September 1, at 1400 hrs. The north shore was checked again at 1500 hrs. and was found to be in criteria.

Auxiliary Water Supply 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: None.

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.

On August 31st at 0800 hrs. a slight oil sheen was seen in Gate well slot 6C. It was reported to operations, who then reported it to Ice Harbors environmental protection specialists. He filed an NRC report and determined that it was less than a teaspoon of oil, an oil boom was deployed into the gate well shortly after it was reported.

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 30th the screen cleaner brush lift cable frayed, it was removed from service and reported to operations. On September 1st it was fixed, tested, and returned to service.

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): Beginning on August 15, approximately 8.5 kcfs of spill, 24 hours per day, has been occurring. 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
29.9	18.6	8.0	0.0	70	68	8.0	6.5

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: None. Inspections will resume in December.

Avian Activity: There was a low level of piscivorous bird activity observed around the project. Most of the birds were observed foraging or resting around Eagle Island.

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 and Paul Bertschinger
Dates: August 27 – September 2, 2021

Turbine Operation

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

* 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 3	08/16/2021	0825	09/07/2021	ERTS	Annual
Unit 4	07/06/2021	0700	09/02/2021	1550	Annual, Scroll Case Repair

Comments: None

Adult Fish Passage Facility

The adult fishways were inspected by Corps and EAS biologists on August 27, 28, 29, and September 1.

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:

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	7.0’ - 7.3’
		X	South Powerhouse Entrance (SPE-2) Weir Depth	≥ 8.0’ or on sill	7.0’ - 7.3’
X			South Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
X		X	South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’ or on sill	7.8’ – 8.1’
X			South Shore Entrance (SSE-2) Weir Depth	≥ 6.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments:

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)	33 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 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 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?	17, 18
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 140 fish were collected with 140 fish bypassed back to the river during this reporting period.

Transport Summary: Transport at Lower Monumental ended June 20.

Spillway Weir: Summer Spill ended at 23:59:59 on August 31. 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
23.7	16.6	7.0	0.0	69.5	68.5	6.1	4.9

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected June 14. Inspections will continue 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
08/27/2021	0830	3	0	0	0	0
08/28/2021	1115	0	4	0	0	4
08/29/2021	0915	6	2	0	0	4
09/01/2021	1130	4	17	0	0	0

Comments: Bird hazing efforts by USDA personnel ended 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*
08/27/2021	---	---
08/28/2021	119	238
08/29/2021	---	---
08/30/2021	85	170
08/31/2021	---	---
09/01/2021	54	108
09/02/2021	---	---
Total	258	516

*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
Biologist: Chuck Barnes
Dates: August 27 – September 2, 2021

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	12/31/2022	17:00	Spider and upper guide bearing repair.
6	03/18/21	14:17	09/30/2021	17:00	T2 ground
3	07/26/21	07:20	09/08/2021	17:00	Unit annual and controls upgrade
4	08/31/21	14:18	09/02/2021	10:00	Ground came in on brushes, cleaned twice

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 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 28, August 30, and September 2. 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 ≤ 0.5’	8/30 – no reading
X			Fish Ladder Picketed Lead Differential	Head ≤ 0.3’	
X			Fish Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
X			Fish Ladder Cooling Water Pumps in Service		
X			Fish Ladder Exit Cooling Water Pumps Operating Satisfactorily		

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	
X			South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
X		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 7.0’ or on sill	
X		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 7.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
X			North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.8,0.9
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 the end of summer spill for repair. Due to the fish cooling

ladder spray bar effluent and wind conditions, the forebay staff gauge used in determination of the fish ladder exit differential could not be read during the August 30 inspection.

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)	500 ft^2 on 08/28
	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 26 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 for all units took place June 8-10, and August 26 on unit 3. Unit 5 ESBS are currently raised and stored within the slot position however are not in service as unit 5 is currently OOS undergoing substantiative repair.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	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 484 fish were collected, 737 were transported via truck, 0 were bypassed, and there were 10 sample or facility mortalities. The descaling and mortality rates were 1.9% and 2.42%, respectively. No 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
22.0	16.4	6.2	0.0	67.9	67.5	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 activities began on March 29 and ended June 19.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
8-27	0830	12	8	0	0
8-28	0645	15	0	0	0
8-29	0730	10	0	0	0
8-30	0850	30	1	0	0
8-31	0800	16	4	0	0
9-1	1015	4	0	0	0
9-2	1000	20	4	0	0

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*
8-27	132	264
8-28	74	74
8-29	83	83
8-30	108	108

8-31	99	99
9-1	82	82
9-2	74	74
Totals	652	784

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

Fish Rescue/Salvage: No fish rescue / salvage activities were performed this period.

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
Dates: August 27-September 2, 2021

Turbine Operation

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

* 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
1-3 & 5	08/29	0815	08/29	1358	ESBS/VBS Inspection

Comments:

Adult Fish Passage Facility

Lower Granite Biologists and Anchor QEA staff inspected the adult fishway August 27, 28, 30 and September 1 and 2.

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:

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.8’, 7.9’
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.8’, 7.9’
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 8.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0’ or on sill	
	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	0.9’, 0.9’
X			North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	6.4’
X			North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	6.5’
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.3’, 0.7’, 0.4’, 0.7’, 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:

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Weekly average 16.4 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:

ESBSs/VBSs:

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

Comments: The ESBS in gatewell slot 6C had some minor damage allowing a screen section to become loose. The Unit 6 outage was extended to repair it.

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 juvenile truck transport.

Transport Summary: A total of 515 smolts were transported this reporting period. There have been 117,876 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: A total of 250,440 PIT tagged smolts have been detected over the RSW this season compared to a total of 23,563 smolts detected in the juvenile system. A total of 697 adult PIT tagged steelhead, 42 Chinook, and 2 Sockeye have been detected at the RSW this season compared to 78 adult steelhead and 17 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
21.1	18.4	7.0	0.0	64.0	62.0	5.0	5.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A Inspections will resume in December.

Invasive Species: No zebra/quagga muscles were detected on the trap substrate. There were 106,496 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 27	0959	1	18	0	0
Aug 28	1030	4	6	0	0
Aug 29	0921	6	14	0	0
Aug 30	1045	3	23	0	0
Aug 31	1605	10	18	0	0
Sept 1	1305	2	12	0	0
Sept 2	1129	2	12	0	0

Gas Bubble Trauma (GBT) Monitoring: N/A

Adult Fish Trap Operations: Trapping 7 days per week at 70% and collection of fall Chinook broodstock for transport to NPT and WDFW hatcheries began August 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 4,000 unclipped adult Chinook and 4,000 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.