U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#26-2020

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: August 21 to 27, 2020

Turbine Operation

Yes	No	Turbine Unit Status		
	X	All 14 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	

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

	OOS		RTS		
Unit(s)	**Date**	**Time**	**Date**	**Time**	**Outage Description**
2	8/17	0754	9/15	NA	New top plate pump installed.
10	8/17	0700	9/5	NA	Annual & other maintenance.
14	8/24	0700	8/27	1700	Annual maintenance.
1 & 5	8/25	1000	8/25	1100	ESBS camera inspections.

Comments: The above dates are subject to change. The hard one percent peak efficiency constraint continued. The sawtooth unit priority pattern for temperature abatement was maintained as current river flow volumes allowed.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on August 21, 23 and 25. Adult fish counting, and video review of nighttime lamprey passage continued.

Fish Ladder Exits:

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

Comments: Debris loads were very light to light near the Oregon exit and minimal near the Washington exit. Aquatic vegetation continued to be an issue. The general maintenance staff cleaned the picketed leads frequently, including the on weekend.

At the Oregon exit, one exit weir alarm came in and was reset on August 23.

At the Washington exit, there are no problems to report.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
X			North Oregon Entrance Head Differential	1.0' – 2.0'	
X			NFEW2 Weir Depth	≥ 8.0'	
X			NFEW3 Weir Depth	≥ 8.0'	
X			South Oregon Entrance Head Differential	1.0' – 2.0'	
X			SFEW1 Weir Depth	≥ 8.0'	
X			SFEW2 Weir Depth	≥ 8.0'	
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.8 fps.
X			Washington Entrance Head Differential	1.0' – 2.0'	
X			WFE2 Weir Depth	≥ 8.0'	
X			WFE3 Weir Depth	≥ 8.0'	

Comments: There are no problems to report.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
Yes			WA shore Wasco County PUD Turbine Unit
	Yes		WA shore Wasco PUD Bypass
		Yes	Oregon shore Fish Pump 1, OOS to November 19.
Yes			Oregon Ladder Fish Pump 2, Blade angle: 24°.
Yes			Oregon Ladder Fish Pump 3, Blade angle: 24 to 26°.
Yes			OR North Powerhouse Pool supply from juvenile fishway

Comments: Repairs to fish pump 1 continued.

Juvenile Fish Passage Facility

The sampling season, consisting of alternating days of primary and secondary bypass, continued. Sampling on August 9, 11, and 17 did not occur due to issues in the collection channel. Due to increased sample tank mortality (believed to be due to heat stress) as outlined in Table 2 below, sampling was reduced to eight hours a day per the FPP. Sample collection occurred on August 25 and 27, from 0000 to 0800 hours each day. This time frame was best suited to decrease fish stress. Also, the collection was done with much of the area lighting off. The sample rate was 25 percent. Each day's sampling was reduced by 16 hours.

Table 2. McNary Sample Tank Mortality Increase August 2020.

Date	Mortality Rate	Fish Number	Max. Tank Temp (F)	Comments
Aug 7	2.84	4	70.20	Highest rate to date.
Aug 9	No sampling.	NA	70.24	JCC Issues.
Aug 11	No sampling.	NA	71.96	JCC Issues.
Aug 13	3.45	2	68.70	First time over 3.0%.
Aug 15	0.00	0	69.64	20 kcfs spill started at 0001 hours.
Aug 17	No sampling.	NA	70.24	JCC Issues.
Aug 19	4.36	18	71.62	Start of concern.
Aug 21	6.06	8	71.19	2nd straight day over 3.0%.
Aug 23	7.94	5	71.62	3rd straight day over 3.0%.

There were no sample tank mortalities recovered on August 25 and 27. One subyearling Chinook mortality was removed from the sample recovery raceway on August 27. The last time mortalities were removed from the recovery raceway was on August 7, when six fish were removed.

Sample collection will return to 24 hours when the sample tank water temperature reaches 68.0 degrees F or less.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Very light to light.
X			Trash rack differentials measured?	Daily.
X			Trash rack differentials acceptable?	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: Debris loads were very light to light near the powerhouse and minimal to light beside the spillway. As described below in the River Conditions section, much of the spillway debris was passed on August 25. Incoming debris loads were minimal and consisted mostly of aquatic vegetation. The woody debris and aquatic vegetation continued to dissipate as it moved back and forth from the powerhouse to the Oregon shoreline with wind direction changes. Also, some the debris was probably going through the spillway.

No trash rack cleaning occurred.

There is nothing more 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: ESBS's remained deployed in all units. ESBS camera inspections in units 1, 5 and 14 (which was out of service) revealed no problems.

Daily VBS differential monitoring continued. No high differentials were measured. Two screens were cleaned on August 24. There were no mortalities 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			Were the dewaterer and cleaning systems operated satisfactory?	

Comments: Orifice operators and channel lighting were repaired as needed. Orifices were adjusted for VBS cleaning as required. Due continued concern for the two side dewatering valves, orifices cycling remained once a day except on August 25 to 27, when it occurred twice a day due to miscommunication.

The functionality of both side dewatering valves remained a concern and both valves were monitored closely. At times, the south valve was still running hot and the north valve was still slipping.

With no access to the control program and a limited supply of limit switches, the transition screen cleaning brush will remain out of service. Until issues with this brush can fully be resolved, attempting to run it risk more problems than the benefit. The air burst system's zone 5 keeps the transition screen clean.

Bypass Facility:

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

Comments: The sample gates were only operated on secondary bypass days. Due the sample tank mortality issues described in the opening of the Juvenile Fish Passage Facility section above, sampling was reduced eight hours August 25 and 27. Normally, the sampling would have begun on August 24 and 26 at 0700 hours. There was a total of 32 hours of sampling missed. Normal scheduled 24 hours sampling will resume when the sample tank water temperature is at or below 68.0 degrees F. The PIT-tag system remained out of service as there are no studies requiring its use.

This week, 72 juvenile lamprey and 2,190 smolts were bypassed during secondary bypass. Juvenile shad were the predominate species examined in the sample.

The back gate at the facility was repaired and an outside air line was added this week.

TSW Operations: The TSW's remained out of service. Standard gates remain in bays 19 and 20. However, the TSW will be installed in bay 20 on September 1 to 3. The TSW will be ready for the upcoming Pacific Northwest National Laboratory (PNNL) adult steelhead top spillway weir (TSW) passage efficiency study. Also, the TSW will be in place as required by the new Biological Opinion.

River Conditions

Table 3. 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
164.2	124.9	20.3	20.0	70.1	69.1	6.0	6.0

Comments: The above data was supplied by the smolt monitoring staff except water clarity, which came from the control room. The summer spill program continued. The spill volume will remain at 20 kcfs until September 1 at 0001 hours, when the spill season ends.

Spillbays 2 and 15 remained closed per discussions with the district hydrological engineer. Spillbay 20 remained closed for repairs to Crane 6. However, for the TSW study, a hoist will be installed in bay 20.

Large logs had accumulated in spillbay 19 over the season. Before the spill season closure on September 1 at 0001 hours, it was considered prudent to spill this debris so it would not migrate to the powerhouse after the spill closure. The debris was spilled to clear the bay on August 25, from 1016 to 1130 hours. With spillbay 19 operated in split leaf mode, it was opened to approximately 14 feet and passed approximately 23 kcfs during the operation.

While bay 19 was closed to convert to/from split leaf along with an electrical issue with the hoist being resolved immediately after the debris removal, bay 17 was opened to compensate for bay 19. With the electrical issue resolved, the bay 19 returned to service at 1308 hours. The gate's settings were verified visually. There should have been minimal affect on adult and juvenile fish passage.

All water temperature monitoring probes will remain in place until August 31 at about 0900 hours. Daily monitoring and reporting throughout the juvenile passage facility will continue until then. EAS staff will publish weekly results in a separate report. The weekly report will include any issues with the probes and new weather station. Also, an annual report will be prepared.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections will occur on December 1.

Avian Activity: Avian counts continued. These counts are reflected in Table 4 below.

Table 4. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican
August 21	Spill	76	5	0	0
	Powerhouse	0	0	0	0
	Outfall	11	19	0	0
August 22	Spill	72	1	0	0
	Powerhouse	0	0	0	0
	Outfall	11	22	0	0
August 23	Spill	31	0	0	0
	Powerhouse	8	0	0	0
	Outfall	26	29	0	0
August 24	Spill	133	0	0	0
	Powerhouse	125	1	0	0
	Outfall	31	29	0	0
August 25	Spill	60	0	0	0
	Powerhouse	63	0	0	0
	Outfall	6	18	0	0
August 26	Spill	26	0	0	0
	Powerhouse	3	0	0	0
	Outfall	25	21	0	0
August 27	Spill	36	0	0	0
	Powerhouse	8	0	0	0
	Outfall	22	25	0	0

No terns or pelicans were observed in the tailwater area.

Gulls and one cormorant were observed feeding in the powerhouse zone. A few of the gulls were roosting. The gull feeding activity occurred very quickly. Within 10 minutes, the birds would move to the spill to feed or roost. This was especially true on August 24 and 25.

In the spillway zone, gull numbers fluctuated. The gulls were roosting on the navigation lock wing wall along with feeding in the spill flow. Again, feeding activity was very short. A few cormorants were present. They were observed roosting and feeding.

At the juvenile bypass outfall, gulls and cormorants were noted attempting to feed. Most of the gulls and cormorants were roosting on the bypass pipe.

In the forebay zone, no grebes and zero to five gulls were observed. Also, a few pelicans, cormorants and gulls were noted on the roosting rocks along the Washington shoreline. Finally, a flock of gulls was observed outside the counting zone, at times.

No pelicans were observed inside the Oregon ladder exit and no grebes were observed in the gatewell slots or in the juvenile collection channel.

The lasers on the navigation lock wing wall and on the juvenile bypass outfall walkway remained on. When the new laser for the outfall location arrives, we may again attempt an evaluation study. The wing wall laser appeared to reduce feeding at the outfall and roosting along the lock wall. However, more deterrent may be required along the wing wall. Hopefully, the new laser will discourage roosting on the outfall pipe.

The bird distress calls deployed along on the navigation lock wing wall appeared to be somewhat successful, but roosting continued to increase. No decision has been made on where to install the second large distress call.

There is no active hazing program currently.

The LRAD test has been tentatively scheduled for September 8.

Invasive Species: The mussel station examinations revealed no problems on August 23. No Siberian prawns were observed in this week's samples. The yearly total is two prawns.

Fish Rescue/Salvage: None occurred this week.

Research: PNNL continued to prepare for the upcoming adult steelhead top spillway weir (TSW) passage efficiency study. They will examine their cameras in spillbay 20 on September 2.

Project: Ice Harbor
Biologist: Ken Fone; Maintenance Worker: AJ Chavez
Dates: August 21, 2020 –August 27, 2020

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	

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	8/10/20	0712	8/26/20	1107	Annual maintenance

Comments: None.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on August 24, 25, and 26.

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’	2.4, 2.1

Comments: The channel/tailwater head differential at the north shore entrance was above criteria on August 24 and August 26. Tailwater elevations and entrance weir gate depths were low (with the gates on sill) on these inspections, resulting in the high entrance head differentials. Two north shore auxiliary water supply pumps are normally operated to meet criteria, and the entrance head differential would most likely be below criteria if only one pump was operating.

NEW-1 weir gate was found to be raised almost all the way up at 0830 hours on August 21, closing off fish entry into the north ladder. A failure of the programmable logic controller for the automated control system for the fish

ladder was the cause of the weir gate problem. NEW-1 gate operation was restored and the ladder was returned to full operation at 1335 hours on August 21. See MFR 20 IHR 07 for more detailed information.

Auxiliary Water Supply System (AWS):

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
6 pumps	2 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 4 square yards
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0-4%
	X		Any oil seen in gatewells?	

Comments: None.

STSs/VBSs:

Yes	No	NA	Item
X			STSs deployed in all slots and in service for 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: None.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comments: The automated control system for the juvenile fish channel malfunctioned on August 22, causing the water regulating weirs in the dewatering structure to raise all the way up and the mechanical screen cleaner to stop working. Despite these problems, safe fish passage conditions were maintained through the juvenile fish bypass, with debris levels being very low. MFR 20 IHR 07 contains additional information about this event.

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

Fish Sampling: Fish sampling is done for the year at Ice Harbor Project.

Removable Spillway Weir (RSW): Voluntary spill for fish passage is occurring. Spill through the RSW is shut off due to low river flows.

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
30.7	22.8	8.1	7.9	70	69	9.0	8.0

*Unit 1 scroll case temperature.

Comments: None.

Other

Inline Cooling Water Strainers: Monthly strainer inspections for lamprey will resume in December.

Avian Activity: There were low numbers of piscivorous birds seen around the project. Most of the birds were observed in the vicinity of Eagle Island.

Invasive Species: No new exotic species have been discovered.

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: Chuck Barnes and Raymond Addis
Dates: August 21 - 27, 2020

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	

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

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
Unit 2	7/15/2019	0720	9/25/2020	ERTS	Annual, Draft Tube Liner
Unit 4	8/10/2020	0730	9/25/2020	ERTS	Annual, Blade Seals, Headcover Pump

Comments: None.

Adult Fish Passage Facility

The adult fishways were inspected by Corps and EAS/Anchor QEA biologists on August 21, 22, 23 and 26.

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’	
X			South Shore Entrance (SSE-2) Weir Depth	$\geq$ 6.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments:
North Shore Entrance (NSE-2) Weir depth was out of criteria on the August 22 inspection with a reading of 7.8 feet. Powerhouse operator was informed and the system was adjusted.
South Powerhouse Entrance (SPE-1) Weir was on sill during all inspections with readings of 6.8, 6.5, 6.4 and 6.7 feet respectively.
South Powerhouse Entrance (SPE-2) Weir was on sill during all inspections with readings of 6.8, 6.5, 6.4 and 6.7 feet respectively.
South Shore Entrance (SSE-1) Weir was on sill during all inspections with readings of 7.4, 7.3, 7.3 and 7.1 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)	24 yds^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 20%
	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 in cycle mode 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
	X		Dewaterer and cleaning systems operating satisfactory?	

Comments: None.

Collection Facility: The Juvenile collection facility was watered up at 10:00 on March 26.
Collection into raceways for transport ended at 1500 on June 21. The facility went into secondary bypass with daily condition sampling at that time.
A total of 860 fish were collected during this reporting period with total of 854 bypassed back to the river.

Transport Summary: Alternate day barge transport ended June 21.
Spillway Weir: RSW went into service at 0001 on April 3 and was closed at 1000 on August 10 due to inflow being less than 30kcfs for 3 consecutive days and trending downward, per the FPP.

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
26.9	19.9	7.1	6.9	70.0	69.5	6.5	3.7

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on August 10. No live fish or mortalities were recovered.

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

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
8/21/2020	1400	20	1	0	0	0
8/22/2020	0930	21	0	0	0	0
8/23/2020	1430	10	0	0	0	0
8/26/2020	0900	27	0	0	0	0

* Table shows tailrace observation conducted during Adult Fish Ladder inspections

Comments: Bird hazing efforts by USDA personnel ended June 2, 2020.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on August 2.

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

Date	Sample (euthanized)	Collection*
8/21/2020	131	131
8/22/2020	67	67
8/23/2020	110	110
8/24/2020	101	101
8/25/2020	92	92
8/26/2020	98	98
8/27/2020	95	190
Total	694	789

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

Fish Rescue/Salvage: No Fish Rescue/Salvage took place during this reporting period.

Research: No research is occurring currently.

Project: Little Goose
Biologists: Scott St. John and Richard Weis
Dates: August 21-27, 2020

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	

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	03/31/21	17:00	Spider and upper guide bearing repair.
4	08/10/20	03:00	09/17/20	17:00	Unit Annual and 6-year overhaul
6	08/06/20	17:32	09/04/20	17:00	T2 neutral bushing

Comments: T2 remains out of service after Doble testing, forcing Unit 6 out of service. A bad neutral bushing was found which will need replaced before returning T2 to service.

Adult Fish Passage Facility

Little Goose fish facility staff inspected the adult fishway on August 23, 24, 26 and 27.

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 Pump in Service		
X			Fish Ladder Exit Cooling Water Pumps Operating Satisfactorily		

Comments: Adult ladder cooling pump was started on June 22 at 1035. The cooling pump was out of service on July 27 and August 06 due to a line outage for Doble testing. The cooling pump is currently 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	1.2

Comments: The adult fishway continues to operate in manual mode. Project staff struggled to maintain entrance criteria at the NSE during Spring spill. The fish control system still has a faulty I/O module for the NSE weirs and

which is scheduled to be repaired after spill ends. Subsurface water velocity was measured on August 8 and averaged 2.5 feet per second. Surface velocity at SSE was found at 1.2 fps on the August 26th inspection.

Auxiliary Water Supply System:

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

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comment
X			Forebay debris load acceptable? (amount)	
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 approximately 5 square feet of floating woody debris currently inside the trash shear boom in the forebay. Drawdowns were performed on August 27 on Unit 1 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: VBS differentials were performed on August 27 on Unit 1 and were in criteria.

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 airline for the backflush system on orifice 1C1 was found broken and will need repaired once the juvenile channel is dewatered for winter maintenance (MFR 20 LGS 12). During prior ESBS/VBS inspections, an issue with the orifice liner in 6C2 was observed (MFR 20 LGS 14) and will need repaired during winter maintenance.

Collection Facility: Collection for condition sampling began on April 1. The facility continues to collect for daily sample and was placed in secondary bypass on June 21. Collection for every other day truck transport began on August 01 with the first truck leaving LGS on August 03.

Transport Summary: The JFF began collecting for truck transport on August 01. The collection and transportation facility operated within criteria this report period. A total of 7,981 fish were collected. Of the fish collected, 44 were sample or facility mortalities, 42 were by-passed and 9,138 were transported by truck to release site near Bonneville Dam. The total number of fish transported includes fish collected on August 20. Lower Granite transported fish from Little Goose on August 21 and 23. The descaling and mortality rates were 0.1% and 0.58%, respectively. There were 2 adult lamprey removed from the separator this report period and released approximately 1-mile upstream of the powerhouse.

Spillway Weir: Summer spill operations began on June 21. The ASW was closed for the season on August 07.

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
28.1	22.1	7.3	7.2	68.4	67.4	6.0+	5.2

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inline cooling strainers were inspected and results submitted to district operations every other week for FPOM distribution through mid-June per Fish Passage Plan (FPP) requirements.

Avian Activity: Daily piscivorous bird counts at Little Goose Dam began on April 1.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
8-21	0800	38	5	0	0
8-22	0800	46	8	0	0
8-23	0800	41	8	0	0
8-24	0820	56	4	0	0
8-25	0815	31	4	0	0
8-26	1100	25	17	0	0
8-27	0700	20	1	0	0

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

Siberian Prawn: 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*
8-21	465	930
8-22	86	172
8-23	311	1,244
8-24	1,146	1,146
8-25	1,016	1,016
8-26	487	487
8-27	487	487
Totals	3,998	5,482

Gas Bubble Trauma (GBT): GBT monitoring has finished for the season.

Fish Rescue/Salvage: A fish salvage was conducted in the draft tube of Unit 4 on August 26. No juvenile salmonids were observed, however there were 3 sturgeon and 7 catfish removed and released to the tailrace. Sturgeon ranged from 22" to 27" and catfish ranged from 17" to 22".

Research: The Nez Perce Tribe (NPT) ended steelhead kelt collection on June 25.

Project: Lower Granite
Biologists: Elizabeth Holdren and David Miller
Dates: August 21-27, 2020

Turbine Operation

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

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

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
4	Aug 24	0700			Annual Maintenance

Comments: None

Adult Fish Passage Facility

Lower Granite and EAS/Anchor QEA staff inspected the adult fishway August 21, 22, 24, and 26.

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: Adult fish ladder temperature control system remains in operation.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.9, 7.6, 7.8
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.6, 7.8
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’	
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	6.2, 6.5, 6.3
			North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	Closed
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
	X		Collection Channel Surface Velocity	1.5 – 4.0 fps	1.1, 1.1, 1.2

Comments: FOGs 1 and 10 are in operation. The issue with the control system reading being in sync with local readings requires the electrical crew investigation of programming.

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		OOS guide bearing	AWS Fish Pump 3

Comments: AWS pump 3 remains in standby until LWG mechanical is able to perform standard testing that requires all AWS pumps be removed from service for 4 hours while stoplogs are swapped.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Forebay debris has not created any fish passage issues this season. Some woody debris observed in the forebay this season is likely due to the failure in the upriver two sections of the forebay debris boom. Though this has not created a problem, repairs are recommended to prevent further damage to the boom and potential for additional debris in the powerhouse forebay and on unit trashracks.

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	
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?	5B

Comments: Gatewell differentials were measured on August 23. A slight oil sheen was confirmed in gatewell slot 5B. The project ECC confirmed the substance was petroleum based and was likely due to gantry crane operation in support of unit outages.

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: The ESBS is dogged off in gatewell slot 4A during the annual maintenance outage.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	18-24
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: Juvenile collection channel water level and flow is being adjusted using 10” orifices depending on forebay elevations. The 14” orifice in gatewell slot 4C was removed from service June 10 to prevent fish injury due to a damaged flange. The 10” orifice remains in operation and with no issues. A bulkhead was installed and the orifices were closed in slot 4A to facilitate the unit 4 annual maintenance. Additional 10” orifices in 6B and 6C are opened to maintain the required flow to the Primary Dewatering Structure. July 30 LWG electrical crew updated the orifice gallery control system to ensure program solenoid outputs don't exceed manufacturer’s maximum that was causing them to overheat and short. They also repaired the issue that was preventing valves from being controlled if a limit switch failed. All alarms remain the same and the program will prevent orifices from operating in HMI or Auto mode if a problem occurs.

Collection Facility: The sample rate is being adjusted daily based on fish passage numbers. Collection for truck transport began at 0700 hours August 1.

Transport Summary: Truck transport for the week of August 21-27 totaled 1,588 fish transported in four trips.

Spillway Weir: Summer spill continues.

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
26.9	21.8	6.9	6.9	65.5	63.0	5.0	5.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling strainer inspections were conducted on August 10.

Invasive Species: No zebra/quagga muscles were detected on the trap substrate. There were 34,389 Siberian prawns collected in the sample and euthanized for disposal. This was the highest number of Siberian prawns collected during a single report week at Lower Granite.

Avian Activity: Biologist daily piscivorous bird counts at Lower Granite Dam.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
Aug 21	1450	4	25	0	0
Aug 22	0940	0	7	0	0
Aug 23	0734	4	35	0	0
Aug 24	0740	5	21	0	0
Aug 25	1340	0	10	0	0
Aug 26	1259	3	17	0	0
Aug 27	0920	2	26	0	0

Adult Fish Trap Operations: Adult trap sample rate is set at 80% to accommodate adult chinook brood stock collection for the NPT and LFH. LWG Project Biologist are providing oversight and operating the adult facility with IDFG and WDFW handling the adult fish sample. NOAA personnel returned to resume operation of the adult trap on August 26. The total number Fall Chinook trapped and handled during this report week were 1,468 with a total of 831 transported (729 to LFH and 102 to NPT).

Fish Rescue/Salvage: The adult fish trap was not flushed this week due to reduced shad mortalities. Additional adult fish trap flushing operations with be conducted as needed.

A fish recue was conducted in the scrollcase for unit 4 on August 25. No salmonids were observed. One juvenile carp, 1 Siberian prawn and 32 crayfish were recovered and released through the juvenile fish facility adult fish bypass flume.

Research:

National Marine Fisheries Service (NMFS) Ancillary Adult Passage Monitoring:

Fish that were PIT as juveniles at LWG are monitored as returning adults through the river and LWG facility. For each returning adult the following is estimated; 1) passage time between sets of detection PIT tag coils, 2) whether the fish was handled at the adult trap, 3) duration the fish was held at the adult trap, 4) overall passage time from ladder entrance to exit, 5) whether the turnpool gate was open or closed during passage. This will be the last year of this evaluation.

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. All 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.