U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#25-2019

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: August 16 to 22, 2019

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
5	05/23	0943	10/31	NA	Turbine blade packing.
13	06/10	0610	09/09	NA	Turbine bearing.
11	08/19	0655	08/22	1611	Annual maintenance.
14	08/19	1221	08/27	NA	Oil replacement.
9, 10 & 12	08/20	1000	08/20	1100	ESBS camera inspections. Rotated through units.

Comments: There are no problems to report.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on August 16, 18 and 20. Adult fish counting and video review of night time 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 light near the Oregon exit and minimal to very light near the Washington exit. Picketed leads were cleaned as required, including on Saturday.

At the Oregon ladder exit, tilting weir 338 was found out of order on August 20, at 0039 hours. The weir was reset. On August 21, from 1230 to 1257 hours, in order to allow for electrical system upgrades, the exit weirs, count station and PIT tag system were without power. Due to a stable forebay elevation, no issues occurred.

At the Washington ladder exit, multiple exit alarms came in and were reset on August 18.

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'	7.8' on August 18
	X		SFEW2 Weir Depth	≥ 8.0'	7.7' & 7.9" on August 18 & 20
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 2.1 fps.
X			Washington Entrance Head Differential	1.0' – 2.0'	
	X		WFE2 Weir Depth	≥ 8.0'	7.8' on August 20
	X		WFE3 Weir Depth	≥ 8.0'	7.9' on August 20

Comments: The out of criteria points listed above for the week are possibly due to calibration drifts and/or low tailwater elevations. On August 18 and 20, the biologist found NFEW2 in manual mode and returned the weir automatic mode. On August 20, the electrical staff calibrated the Oregon south entrance pool elevation sensor.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
X			WA shore Wasco County PUD Turbine Unit
	X		WA shore Wasco PUD Bypass
		X	Oregon shore Fish Pump 1, OOS to December 31.
X			Oregon shore Fish Pump 2, Blade angle: 23 to 24°
X			Oregon shore Fish Pump 3, Blade angle: 25 to 26°
X			OR North Powerhouse Pool supply from juvenile fishway

Comments: On August 20, there were two very brief outages of transmission line 6. During each outage, the Wasco County PUD turbine unit was off line and the bypass system functioned satisfactorily. The return to service date for fish pump 1 has been moved to December 31.

Juvenile Fish Passage Facility

The sampling season consisting of alternating days of primary and secondary bypass continued. The schedule was not interrupted this week.

On August 16, the full flow flume adult flush line valve failed. On August 16 to 18, the valve was manually (by hand) operated. On August 18, the valve was opened while still in primary bypass. The full flow flume was examined and no serious issues were found. It was decided to leave the valve open 24/7. The bypass junction will be checked periodically to insure fish are not holding in the hydraulic jump. On August 21, the mechanical staff again examined the valve. The issue appears to be the linkage between the motor and valve, which will have to be addressed during the winter maintenance season.

Daily water temperature monitoring and reporting throughout the juvenile passage facility continued. The smolt monitoring staff, Anchor, QEA, published weekly results in a separate report, which includes any issues with the probes and weather station.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Powerhouse forebay debris load acceptable?	Minimal to very light.
X			Trash rack differentials measured this week?	Daily.
X			Trash rack differentials acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: New incoming debris was minimal. Aquatic vegetation has increased. The spillway debris load would be described as very light. Depending on weather, the debris moved back and forth from the powerhouse to the Oregon shore . There are no plans to clean trash racks.

On August 19, from approximately 1300 to 1600 hours, the emergency bulkhead was installed in slot 14A as part of the process of removing unit 14 from service. The fisheries staff was not informed so the slot was dewatered without removing fish from the slot with the gatewell trap. Fortunately, fish numbers were very low. The project reviewed the protocols for using the emergency bulkhead.

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: In order to install the emergency bulkhead in slot 14A, as mentioned above, the ESBS in the slot had to be removed on August 19. The brush cycles for the screens in units 6, 8, 10 and 13 remained in timer mode. The camera inspections in units 9, 10 and 12 revealed no problems. After the inspections, the brush cycles for the screens in unit 10 had to be reset to timer mode.

Daily VBS differential monitoring continued. No high differentials were recorded. On August 22, the screen in slot 12A was cleaned. No fish were observed.

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

Yes	No	NA	Item	Number of orifices in service
X			Orifices operating satisfactory?	42
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: Orifices were adjusted as required for VBS cleaning. Since the fisheries staff was not informed that the emergency bulkhead was installed in slot 14A, as mentioned above, the crew did not initially compensate for the flow loss due to a dewatered orifice. On August 19 by 1700 hours, we estimate the orifice was dewatered. That means 41 orifices were in use overnight. The technicians on duty did not discover this. Protocols were reviewed. On August 20, at approximately 0930 hours, the project biologist opened a makeup orifice in slot 13C after they had discovered the emergency bulkhead installed.

There are no other problems to report.

Bypass Facility:

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

Comments: The sample gates were operated only when in secondary bypass. The PIT tag system will remain out of service as there are no studies requiring its use. The issues with the full flow flume adult flush line is mentioned above in the opening of the Juvenile section.

This week, 80 juvenile lamprey and 360 smolts were bypassed during secondary bypass. Juvenile shad remained the predominant fish examined. Algae removal, flow adjustment and maintenance are ongoing.

TSW Operations: The two TSWs remained closed for the season.

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
148.1	108.2	84.5	52.2	71.5	70.9	6.0	6.0

Comments: The above data is supplied by Anchor, QEA except water clarity, which is provided by the control room. The summer spill program continued with 57 percent of the flow being spilled. However, due to low flows and the requirement to have 50 kcfs pass through the powerhouse, the spill volume went below 57 percent at times. Also, spill adjustments for navigation were done as required.

Other

Inline Cooling Water Strainers: The cooling water next strainer inspections will occur on December 3.

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

There was very little activity in the powerhouse zone. There were a few gulls and pelicans observed. In the spill zone, gull and cormorant numbers increased. Pelican and tern numbers declined. All birds were feeding with large numbers of gulls and cormorants roosting on the navigation lock wing wall. It could be assumed we were observing migrating birds. Also, juvenile shad have increased in size, which may be attracting more birds. Finally, many of the gulls were juveniles.

In the bypass outfall zone, the gulls and cormorants were mostly roosting on the full flow pipe. At times, a few pelicans were noted feeding.

The laser for bypass outfall hazing remained in place and functional. The laser does seem to deter the birds in flight. However, birds roosting are more difficult to haze with the laser. A second laser has been ordered.

The bird distress calls remained deployed along the navigation lock wing wall. Roosting on the wall has increased but this seems to correspond to the juvenile shad outmigration. A large bird distress call is also deployed at the end of the remaining outfall pipe walkway. Its effectiveness has also decreased. The calls are being monitored weekly.

In the forebay zone, an occasional osprey, cormorant or a small group of juvenile gulls was observed. The grebe distress remains deployed. No grebes were observed on project. A small numbers of pelicans, cormorants and gulls were noted roosting outside the zone along the Washington shore line. Increasingly larger gull flocks have been staging around the project. Finally, no pelicans were observed inside the ladders.

Table 3. McNary Project's Daily Tailwater Avian Counts.

Date	Zone	Gull	Cormorant	Tern	Pelican
August 16	Spill	50	0	0	12
	Powerhouse	0	0	0	0
	Outfall	18	0	0	3
August 17	Spill	105	0	0	10
	Powerhouse	0	0	0	0
	Outfall	23	6	0	0
August 18	Spill	23	0	0	19
	Powerhouse	0	0	0	3
	Outfall	32	4	0	0
August 19	Spill	36	0	0	18
	Powerhouse	0	0	0	0
	Outfall	23	3	0	2
August 20	Spill	28	0	0	9
	Powerhouse	0	0	0	0
	Outfall	35	4	0	1
August 21	Spill	293	14	0	7
	Powerhouse	2	0	0	0
	Outfall	8	2	0	2
August 22	Spill	320	12	1	4
	Powerhouse	0	0	0	0
	Outfall	16	5	0	2

Invasive Species: The next mussel station examinations will occur on August 25. This week, four Siberian prawns were removed from the sample and euthanized. This brings the total to eight prawns for the season.

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

Research: The University of Idaho continued the adult lamprey passage study.

Project: Ice Harbor
Biologist: Ken Fone
Dates: August 16 – August 22, 2019

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	8/14/19	0743	---	---	Annual maintenance and overhaul
5	8/17/19	0700	8/22/19	1734	B-1496 switch maintenance
4	8/17/19	0700	---	---	TWO transformer replacement

Comments: None.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on August 19, 21, and 22.

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-1) Weir Depth	≥ 8.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	
X			North Shore Entrance (NEW-2) Weir Depth	≥ 8.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: Daily cleaning of filamentous algae off of the south ladder picketed leads is needed to keep the differential in criteria.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
7 pumps	1 pump		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)	No debris observed
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0-2%
	X		Any oil seen in gatewells?	

Comments: None.

STSs/VBSs:

Yes	No	NA	Item
	X		STSs deployed 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: Unit 5 and 6 STSs were inspected on August 20.

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: None.

Juvenile Fish Facility: The fish facility is being operated in primary bypass.

Fish Sampling: Sampling has ended for the year.

Removable Spillway Weir (RSW): Voluntary spill for fish passage is occurring. The RSW was closed on August 11 at 2347 hours, because the daily average project outflow dropped below 30 kcfs and has remained below 30 kcfs almost every day.

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
30.4	23.6	9.1	7.0	71	70	9.7	9.5

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Monthly strainer inspections for lamprey ended in June and will start again in December.

Avian Activity: There were moderate to high numbers of gulls and pelicans observed around the project Most of the birds were seen roosting on Eagle Island and foraging in the tailrace. Occasionally the pelicans and gulls foraged up close to the spillway.

Invasive Species: No new exotic species have been found.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by Anchor, frozen and properly disposed of in a landfill. Sampling is done for the year.

Fish Rescue/Salvage: None.

Research: Blue Leaf is conducting research on the recently installed lamprey entrance structure at the south adult fish ladder (SFE2). They will monitor via camera for adult lamprey movement and adult salmonid fish interactions with the lamprey entrance.

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: August 16 - 22, 2019

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	07:20	1/10/2020	ERTS	Annual Maintenance/Draft Tube Liner Repair
Unit 4	7/08/2019	07:20	8/29/2019	ERTS	Annual Maintenance
Unit 6	8/05/2019	12:20	9/27/2019	ERTS	6 Year maintenance

Comments: Units went into Hard Restraint at 0001 on April 1.

Adult Fish Passage Facility

The adult fishways were inspected by Corps and Anchor QEA biologists on August 16, 17, 18 and 21.

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	
		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: South Powerhouse Entrance weir (SPE-1) was on sill during all inspections with readings of 6.3, 6.1, 6.1 and 6.3 feet, respectively.
South Powerhouse Entrance weir (SPE-2) was on sill during all inspections with readings of 6.3, 6.1, 6.1 and 6.3 feet, respectively.
South Shore Entrance weir (SSE-1) was on sill during all inspections with readings of 7.2, 7.3, 6.8 and 7.1 feet, respectively.

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	Comments
X			Forebay debris load acceptable? (amount)	0 yd^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 10 %
	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: PDW mechanical screen brush failed to complete its cycle on June 29. This failure appears to show at approximately the same time every year and may be temperature related. Separator operators have been manually running the mechanical screen brush four times per day to ensure debris is not collecting on the screen.

Collection Facility: Collection into raceways for transport began at 1500 on April 23. Loading fish into raceways for barge transport ended at 1500 on July 30. The facility went to 100% sample for truck transport at that time.

Transport Summary: Every-other day barging transport ended with the July 30 barge. Every-other day truck transport began with the August 1 truck. A total of 243 fish were collected with 213 fish being bypassed during this

reporting period. Per 2019 Fish Passage Plan, the Lower Monumental trucking schedule is contingent upon fish numbers. Saturday, August 3 was the third consecutive day with less than 50 smolts collected, therefore trucking was ceased after the second trip. Bypassed fish numbers reflect the end of truck transport.

Spillway Weir: RSW went into service at 00:01:00 on April 3. Summer Spill began at 00:00:00 on June 21. The RSW was removed from service at 0630 on August 8 due to 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
28.9	21.1	15.9	8.6	69.8	69.0	5.4	5.1

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on June 11. Live fish included 2 juvenile lamprey. Mortalities included 10 juvenile lamprey and 9 juvenile salmon.

Avian Activity: Gulls, cormorants and pelicans were the predominant piscivorous bird species observed during fish ladder inspections this week.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
8/16/2049	13:15	23	6	0	0	2
8/17/2019	08:45	27	1	0	0	3
8/18/2019	12:45	16	2	0	0	0
8/21/2019	09:25	25	0	0	0	0

Comments: Bird hazing efforts by USDA personnel ended at the end of the working day on June 2.
Daily bird hazing effectiveness tailrace observations ended with the June 30 observation.

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*
8/16/2019	21	21
8/17/2019	51	51
8/18/2019	47	47
8/19/2019	28	28
8/20/2019	30	30
8/21/2019	50	50
8/22/2019	6	6
Totals	233	233

*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 took place during this reporting period.

Project: Little Goose
Biologists: Scott St. John and Richard Weis
Dates: August 16 - 22, 2019

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	04/21/17	00:54	03/31/21	17:00	Spider and Upper Guide Bearing Repair
4	08/13/19	14:46	09/06/19	18:00	Unit Annual, VBS/ESBS Inspections

Comments: None.

Adult Fish Passage Facility

Little Goose fish facility, Anchor QEA and/or Oregon Department of Fish and Wildlife staff inspected the adult fishway on August 18, 19, 20 and 22.

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 Pump Operating Satisfactorily		

Comments: None.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurement
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	NA
	X		North Shore Entrance (NSE-2) Weir Depth	$\geq$ 6.0’ or on sill	NA
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.8
	X		Collection Channel Surface Velocity	1.5 – 4.0 fps	1.1

Comments: The adult fishway continues to operate in manual mode. Project staff have struggled to maintain entrance criteria during spill. The NSE channel/tailwater differential was found out of criteria during the August 19 inspection. The SSE surface velocity was found out of criteria during the August 19 inspection. The equipment used to measure NSE weir depth was found out of service on the August 11 inspection. Little Goose has the components in stock and will conduct the repair once spill ceases to reduce the risk of damaging electrical

components. Subsurface water velocity was measured near NPE on July 11 using a Rickly velocity meter and averaged 3.4 feet per second. Currently the Rickly velocity meter is out of service and USACE staff is awaiting parts.

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		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: Trash rack differential for Units 1 was measured on August 15 and was in criteria. There is approximately 300 square feet of floating woody debris inside the trash shear boom in the immediate forebay.

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?

Comments: VBS differential for Unit 1 was measured on August 15 and was in criteria.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	21
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: None.

Collection Facility: The juvenile bypass system is currently operating in criteria. Daily collection for condition sampling began on April 23 at 07:00. The last every other day barge departed on July 30 and every other day truck transport commenced on August 01.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 2,096 fish were collected, of which 1,797 transported via truck. The descaling and mortality rates were 1.1% and 3.45% respectively. There were 2 adult lamprey removed from the separator, raceways, and sample and released one mile above the Dam at Little Goose Landing.

Spillway Weir: The adjustable spillway weir (ASW) was closed on July 23 at 15:17 per the guidance outlined in the Columbia Basin Teletype (CBT). The ASW will remain closed for the season.

River Conditions

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
30.3	24.4	10.4	8.6	69.0	68.2	6.0	5.6

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were last inspected on July 3 with no lamprey being observed. Inspections will resume in December per the Fish Passage Plan.

Avian Activity: Daily Piscivorous bird counts at Little Goose Dam started on April 01.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
8-16	0800	10	0	0	0
8-17	1230	10	3	0	0
8-18	1115	28	0	0	0
8-19	0800	28	2	0	0
8-20	0800	27	1	0	0
8-21	0800	23	1	0	0
8-22	0800	22	2	0	0

Invasive Species: No zebra or Quagga mussels were observed.

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*
8-16	423	423
8-17	397	397
8-18	290	290
8-19	256	256
8-20	378	378
8-21	243	243
8-22	281	281
Totals	2268	2,268

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

Gas Bubble Trauma (GBT): The last gas bubble monitoring occurred on July 15.

Fish Rescue/Salvage: None.

Research: N/A

Project: Lower Granite
Biologists: Elizabeth Holdren
Dates: August 16-22, 2019

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

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
4	08/02	0700	08/22	1221	Annual Maintenance
1-3	08/12	0600	08/16	1828	Doble Testing
5-6	08/16	0559	08/16	1828	500 KV line outage
5	08/20	0600	08/22	1541	XJO2 Breaker upgrade

Comments: None.

Adult Fish Passage Facility

Lower Granite Corps biologist's and Anchor Environmental biologist's inspected the adult fish ladder August 16, 17, 18 and 21.

Fish Ladder:

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

Comments: Fish ladder temperature control pumps remain in operation.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
X			South Shore Entrance (SSE-1) Weir Depth	$\geq$ 8.0'	
X			South Shore Entrance (SSE-2) Weir Depth	$\geq$ 8.0'	
	X		South Shore Channel/Tailwater Differential	1.0' – 2.0'	0.9'
		X	North Powerhouse Entrance (NPE-1) Weir Depth	$\geq$ 8.0' or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	$\geq$ 8.0' or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0'–2.0'	
X			North Shore Entrance (NSE-1) Weir Depth	$\geq$ 7.0' or on sill	
			North Shore Entrance (NSE-2) Weir Depth	$\geq$ 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	

Comments: Since May 4 the fish ladder control system screen and local reading for the south shore channel/tailwater and depth over the SSEs have been inconsistent. SSE gates remain in local operation until Operation and District engineering can resolve the control system issues. SSE weir gate raised to 625.5 August 16 to increase channel exit head differential in response to the out of criteria reading of 0.9 feet.

NPE channel velocity sensor readings have consistently read below 1.5 fps for several weeks. Surface velocity is being verified using tape measure and stopwatch and found to be in criteria. Surface velocities and/or NSE velocities will be used until the fish ladder control system NPE velocity issues are resolved.

Current spill and powerhouse operations result in variable tailwater elevations at fish ladder entrances. Tailwater conditions may be impacting the fish ladder control systems ability to maintain criteria in addition to control system issues.

Auxiliary Water Supply System:

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

Comments: AWS pump 1 remains in slow speed.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

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?	

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: The collection channel is operating with sixteen of the 14" orifices and two 10" orifices open to maintain optimal flume flow at current forebay elevation. The north makeup water valve remains in local control due to an automatic control motor hardware failure. Intermittent issues with local and remote operation of orifices for back flushing continue to be observed. Problems are reported to operations when they are identified. Three of the PDW main valves that supply the juvenile collection facility closed unexpectedly at about 1800 hours August 16 following the Doble testing/500 KV line outage. Unexpected closure and opening of valves related to power outages has been noted in the past with the same three valves. The HMI auto control for the JFF main facility supply valve and the facility upwell 42" dewatering valve have also unexpectedly operated in response to prior power outages. No significant issues occurred with the collection facility due to the current limited water demand at the JFF. The valves were restored to normal operation 17 August at approximately 0715. This issue is being investigated by operations.

Hours Collection Facility: The facility is in collection mode. Facility began sampling at 100% at 0700 hours August 17.

Transport Summary: Every-other-day truck transport continues.

Spillway Weir: Summer spill operation continues. Spill is being distributed with no RSW according to Table LWG-8.

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
31.5	25.1	18.6	12.3	65.5	62.0	5+	5+

*Cooling water intake temperature.

Other

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

Invasive Species: There were 9,391 Siberian prawns collected in the sample this week. Of these, 7,979 were live collected and euthanized and 1,412 were mortalities when sampled. No signs of zebra/quagga mussels were found on submerged substrates.

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

Date	**Time**	**Gulls**	**Cormorants**	**Caspian Terns**	**Pelicans**
08/16	0830	3	12	0	0
08/17	1317	2	23	0	0
08/18	0820	2	13	0	0
08/19	1535	1	26	0	0
08/20	0815	2	17	0	0
08/21	1020	4	17	0	0
08/22	1535	0	21	0	0

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

Adult Fish Trap Operations: Adult operation was changed to 24 hours/day, 7 day a week operation began August 18 at 70% sample rate. Brood stock collection for transport to LFH and NPT hatcheries began August 7.

Fish Rescue/Salvage: No fish salvages were performed this reporting period.

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.

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 incidentally collected as part of the normal adult trap daily sample as well as the recaptured previously PIT tagged using adult SbyC system. 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.