U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#15-2020

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: June 5 to 11, 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**
5	5/23/19	0943	6/26/20	NA	Turbine blade packing.
7 & 8	6/2	1200	6/5	1400	Transformer 4 inspection and repair.
1	6/8	0630	6/11	1757	Annual maintenance.
9 to 12	6/8	0630	6/8	1630	Repairs to the transmission line protection circuits.
3 & 4	6/9	0630	6/9	1430	Repairs to the transmission line protection circuits.
6 to 8	6/10	0630	6/10	1630	Repairs to the transmission line protection circuits.
2	6/11	0800	6/11	1437	Repairs to the transmission line protection circuits.

Comments: The hard one percent peak efficiency constraint continued.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on June 5, 7 and 10. Adult fish counting continued. Video review of night time lamprey passage will begin on June 15.

Fish Ladder Exits:

Yes	No	Location	Criteria	Comments
	X	Oregon Exit	Head over weir 1.0’ to 1.3’	0.9’ on June 5.
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 minimal to very light near the Oregon exit and the exit traveling screens debris trough was cleaned as required. Debris loads were very light to moderate near the Washington exit. Tumbleweeds continued to be an issue. The general maintenance staff cleaned the picketed leads once or twice every day including after hours and the operators flushed the tumbleweeds down the navigation lock as much as possible.

At the Oregon exit, the out of criteria point mentioned above was resolved with a set point adjustment. Exit weir 335 tripped an alarm and was reset on June 10.

At the Washington exit, high picketed lead differential alarms came in on June 5 and 7. These alarms were reset after the leads were cleaned. Also, multiple exit weir alarms came in and were reset on June 10.

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 1.5 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 September 12.
Yes			Oregon Ladder Fish Pump 2, Blade angle: 23°.
Yes			Oregon Ladder Fish Pump 3, Blade angle: 26°.
Yes			OR North Powerhouse Pool supply from juvenile fishway

Comments: There are no problems to report.

Juvenile Fish Passage Facility

The sampling season, consisting of alternating days of primary and secondary bypass, continued. There were no interruptions in the schedule.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	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: Debris loads were minimal to very light along the powerhouse. Debris near the spillway would be described as light. Incoming debris loads were minimal to moderate. Much of the debris was passed through the navigation lock or it passed out through the spillway. Debris removal has not yet been required.

No trash racks were cleaned this week. The next trash rack cleaning is scheduled for the week of June 22.

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, except for unit 5, which is out of service. ESBS camera inspections in units 3, 4 and 7 revealed no problems. The inspections were done while the units were out of service for other reasons on June 9 and 10. The electrical staff resolved a communication issue between the ESBS controllers and the control room on June 10.

Daily VBS differential monitoring continued. No high differentials were measured. The screens in 13A and 13B slots were cleaned on June 11. 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 for VBS cleaning and orifice operators were repaired as required. The electrical staff resolved a communication issue between the collection channel control system and the control room on June 10. A reboot of the channel control system resulted in no issues.

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. The PIT-tag system remained out of service as there are no studies requiring its use.

This week, 24,500 juvenile lamprey and 106,601 smolts were bypassed during secondary bypass. Subyearling Chinook and juvenile lamprey have become the major species in the samples.

One juvenile lamprey mortality was removed from under the primary bypass gate on June 8. This issue will be examined during the next winter outage.

TSW Operations: The TSW's were installed and remained functional in bays 19 and 20 until they were closed on June 8 at approximately 0800 hours. After TSW removal, standard gate installation and limit adjustments on the crane and hoist in bays 19 and 20, respectively, both bays returned to serve on June 11 at 1329 hours. Fish Passage Plan spill patterns were followed.

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
376.1	300.7	263.6	193.6	57.5	56.5	5.0	4.0

Comments: The above data was supplied by the smolt monitoring staff except water clarity, which came from the control room. The spring flex spill season continued. Summer spill season will begin on June 16 at 0001 hours, with 57 percent of the flow being spilled.

All water temperature monitoring probes were deployed on June 9 except for gatewell slots 5B and 6B due to ESBSs being stored in those slots. Daily monitoring and reporting throughout the juvenile passage facility will begin on June 15. The biological service contractor will publish weekly results in a separate report, which will include any issues with the probes.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on July 7.

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

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican
June 5	Spill	17	0	5	3
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
June 6	Spill	21	0	1	2
	Powerhouse	0	0	0	0
	Outfall	5	0	0	0
June 7	Spill	19	0	2	0
	Powerhouse	0	0	0	0
	Outfall	1	0	0	0
June 8	Spill	5	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
June 9	Spill	2	0	2	3
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
June 10	Spill	3	0	5	6
	Powerhouse	0	0	0	1
	Outfall	0	0	0	0
June 11	Spill	5	0	1	7
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0

Only an occasional pelican was observed along the northern edge of the powerhouse zone.

In the spillway zone, gull numbers remained fairly low. These birds were feeding. Cormorants may be feeding but are difficult to observe. Pelicans and terns were noted feeding in gradually increasing numbers.

At the juvenile bypass outfall, gulls roosted, feed or passed by in low numbers. High flows and the gulls behavior may have more to do with these low counts than any hazing technique. No other bird species was observed.

In the forebay zone, 0 to 26 grebes were observed, along with an occasional gull, tern, night heron, great blue heron, cormorant or osprey. Also, gulls and pelicans in moderate numbers along with a few cormorants were noted roosting on the rocks along the Washington shoreline. Overall, pelican numbers appear to be increasing around the project.

Near the Oregon ladder exit, great blue herons, cormorants and pelicans have been observed at times.

The lasers on the navigation lock wing wall and on the juvenile bypass outfall walkway returned to service June 8. The previous weekly report in correctly reported that the lasers were turned on June 1 and 4, respectively when it should have said they were turned off. Due to low bird numbers and high flows, the lasers cannot be evaluated effectively. In addition, we suspect the outfall laser has operational issues. This laser was examined on June 11 at 2030 hours. The electricians found the laser to have too much play in its base and support to stay on target properly. These issues will be addressed in the near future.

The bird distress calls deployed along on the navigation lock wing wall appeared to be successful. No decision has been made on where to install the second large distress call. The forebay grebe distress call remained deployed and appeared somewhat effective, however, we feel more volume is required.

USDA Wildlife Services continued hazing with two shifts from shore. Boat hazing trips occurred Tuesday through Thursday. Almost all efforts were concentrated in the tailwater area. However, the grebes in the forebay zone were also hazed from shore.

Invasive Species: The next mussel station examinations will occur in late June. No Siberian prawns were observed in this week's samples. None have been observed so far this season.

Fish Rescue/Salvage: None occurred this week.

Research: The gas bubble trauma (GBT) examinations occurred on June 5 and 9. No smolts were observed with signs of GBT. Examinations will continue twice a week.

Project: Ice Harbor
Tim DeKoster (Fisheries Tech) & Ken Fone (Fisheries Biologist)
Dates: June 5, 2020 – June 11, 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

Comments: Units 4 and 6 were observed to be operating one or two megawatts above the 1% operating efficiency range on the June 9th inspection. Operations personnel are currently investigating why there have been infrequent occurrences of slightly elevated megawatt production outside the 1% operation efficiency range.

Adult Fish Passage Facility

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

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	0.7, 1.0 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’	

Comments: The south shore channel velocity was lower than the 1.5 fps (see chart above) on the June 9th and 10th inspections. Higher tailwater levels due to the increased river flow may have slowed down the opposing channel velocity of water flowing through the junction pool, where the velocity meter is located. On June 10, personnel tried to open three diffuser valves that are upstream of the velocity meter from 25% open to 100% open, to see if the velocity increased. The diffuser valves no longer function electronically, so they must be opened using the hand wheels. The hand wheels require a lot of torque to turn, and the valve stem was very slow to turn even when using power tools. Consequently, there was no significant progress made on opening the diffuser valves.

Auxiliary Water Supply (AWS) System:

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

Comments: None.

STSs/VBSs:

Yes	No	NA	Item
X			STSs deployed in all slots and in service 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: The STSs were switched to continuous-run mode on May 18th, due to the presence of subyearling Chinook in the Ice Harbor fish sample with an average fork length of less than 120 mm.

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 Juvenile Fish Facility is being operated in primary bypass mode, except when collecting fish for sampling.

Fish Sampling: Please see the tables below for a summary of the fish sampling results for June 8th and 11th. For Ice Harbor Dam fish sampling methodologies, please refer to 2020 Fish Passage Plan Chapter 6 (Ice Harbor Dam). Fish sampling is being conducted on Mondays and Thursdays each week this year from April 2 to July 13.

Fish condition sampling results at Ice Harbor Dam:

Date: June 8th

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	0	---	---	---
Chinook yearling unclipped	0	---	---	---
Chinook subyearling clipped	19	1	0	0
Chinook subyearling unclipped	19	0	0	0
Steelhead clipped	8	1	0	0
Steelhead unclipped	5	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	51	2	0	0

Date: June 11th

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	3	0	0	0
Chinook yearling unclipped	2	0	0	0
Chinook subyearling clipped	19	0	0	0
Chinook subyearling unclipped	14	0	0	0
Steelhead clipped	2	0	0	0
Steelhead unclipped	2	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	42	0	0	0

Removable Spillway Weir (RSW): Voluntary spill for fish passage is occurring.

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
122.9	89.3	95.6	62.0	58	57	4.5	4.5

*Unit 1 scroll case temperature.

Comments: None.

Other

Inline Cooling Water Strainers: Monthly turbine cooling water strainer inspections were conducted for turbine units 1, 2, 4, 5, 6 on June 9th. See the table below for a summary of results of the inline cooling water strainer inspections. The live lamprey was released to the river in good condition.

Turbine Unit	Live Lamprey Released	Lamprey Mortalities
1	1	1
2	---	2
3	Not Inpected - Out of Service	Not Inspected - Out of Service
4	---	18
5	---	15
6	---	10

Avian Activity: There were low to high numbers of piscivorous birds seen around the project (see table below). The higher number of birds on June 6th were counted before bird hazing started for the day. Land-based hazing of piscivorous birds for 16 hours per day changed to 8 hours per day starting June 7th. The bird hazing techniques currently being used are effective at reducing piscivorous bird numbers around the dam. On June 5th and 6th, the number of cormorants counted exceeded the double of the most recent 3-year average daily count of gulls, cormorants, and terns for the same week (see the Ice Harbor Incident Response Section 6.4 of Appendix L of the Fish Passage Plan). However, the 3-year average daily count for the reporting week was only 3.8 birds. The cormorants were not concentrated in one particular location and less than half of them were observed to be foraging, so the Project Fisheries Biologist was not overly concerned with their presence.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
June 5	0	26	0	0	31
June 6	0	24	0	0	118
June 7	1	6	0	0	4
June 8	0	2	0	0	21
June 9	0	6	0	0	5
June 10	0	0	0	0	13
June 11	0	1	0	0	18

Invasive Species: No new exotic species have been discovered.

Siberian Prawn: No Siberian prawns were collected in the sample at the Juvenile Fish Facility for this reporting period.

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

Research: No on-site research is occurring at this time.

If you have any questions please contact the Ice Harbor Fish Facility Biologist Ken Fone for more information and updates.

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: June 5 - 11, 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	7/17/2020	ERTS	Annual, Draft Tube Liner
Unit 4	6/10/2020	1700	6/11/2020	1020	Thrust Bearing Switch and Hub Tapping

Comments:

Adult Fish Passage Facility

The adult fishways were inspected by Corps and EAS/Anchor QEA biologists on June 5, 6, 7 and 10.

Fish Ladder:

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

Comments: An unclipped adult Chinook was found dead hanging in the North ladder’s anti-jump net, located just downstream of the picketed leads. This is the first mortality at this location since the netting was modified in 2016.

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-1) Weir depth was out of criteria on the June 5 and 10 inspections with readings of 7.8 and 7.0 feet respectively.
North Shore Entrance (NSE-2) Weir depth was out of criteria on the June 5 and 10 inspections with readings of 7.8 and 7.4 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)	48 yds^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 until 1515 on May 20 at which time they were changed to continuous-run mode due to average sub-yearling Chinook and sockeye lengths being less 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 began at 0700 on April 23.

Transport Summary: Every-day barge transport ended with the May 18 barge and alternate day transport began. A total of 14,437 fish were collected with 17,330 fish being transported and 140 being bypassed. The 140 fish bypassed back to the river were estimated based on fry collected during condition sampling per sample rate.

Spillway Weir: RSW went into service at 0001 on April 3.

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
114.6	82.4	89.0	57.0	57.0	55.4	2.7	1.8

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on June 9. No live fish were recovered. Mortalities included 4 Chinook salmon smolts and 238 juvenile lamprey.

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

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
6/5/2020	1100	0	0	0	0	0
6/6/2020	1200	0	0	0	0	0
6/7/2020	1100	1	0	0	0	0
6/8/2020	1200	1	1	0	0	1

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 June 7.

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*
6/05/2020	1	20
6/06/2020	0	0
6/07/2020	0	0
6/08/2020	1	5
6/09/2020	0	0
6/10/2020	0	0
6/11/2020	0	0
Total	2	25

*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 at this time.

Project: Little Goose
Biologists: Scott St. John and Richard Weis
Dates: June 4-11, 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		11RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
5	04/14/17	14:11	03/31/21	17:00	Spider and upper guide bearing repair.
6	06/08/20	07:15	06/08/20	11:20	Trash raking and ESBS/VBS inspections
4	06/08/20	11:26	06/08/20	15:00	Trash raking and ESBS/VBS inspections
3	06/08/20	14:00	06/08/20	16:35	Trash raking and ESBS/VBS inspections
2	06/09/20	07:35	06/09/20	10:15	Trash raking and ESBS/VBS inspections
1	06/09/20	10:26	06/09/20	14:10	Trash raking and ESBS/VBS inspections

Comments: None.

Adult Fish Passage Facility

Little Goose fish facility staff inspected the adult fishway on June 7, 10 and 11.

Fish Ladder:

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

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
	X		South Shore Entrance (SSE-1) Weir Depth	$\geq$ 8.0’	7.5
	X		South Shore Entrance (SSE-2) Weir Depth	$\geq$ 8.0’	7.6
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	$\geq$ 7.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	$\geq$ 7.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
X			North Shore Entrance (NSE-1) Weir Depth	$\geq$ 6.0’ or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	$\geq$ 6.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: The adult fishway continues to operate in manual mode. Project staff have struggled to maintain entrance criteria during spring spill. The SSE weir depths were found out of criteria during the inspection on June 7.

The fish control system still has a faulty I/O module for the NSE weirs and is currently being repaired. The NSE weirs are in criteria and rest about 6 feet below tailwater according to manual measurement. Subsurface water velocity was measured on June 6 and averaged 2.2 feet per second.

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 1,060 square feet of floating woody debris currently inside the trash shear boom in the forebay. Drawdowns were not performed during this report period due to inadequate flow conditions.

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 not performed during this report period due to inadequate flow conditions. ESBS/VBS inspections were conducted via underwater camera on units 1, 2, 3, 4 and 6 on June 8 and 9. No issues were seen.

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: None.

Collection Facility: Collection for condition sampling began on April 1. Every day sampling for transportation began on April 23.

Transport Summary: Everyday barge transport began on April 24 and ended on May 18. Every other day barging started with the first barge leaving on May 20. The collection and transportation facility operated within criteria this

report period. A total of 52,365 fish were collected. Of those collected, 65,033 were transported via barge, which includes fish collected on June 4, and 12 fish were by-passed. The descaling and mortality rates were 0.4% and 0.04%, respectively. There was 1 adult lamprey removed from the separator this report period and released upstream of the powerhouse.

Spillway Weir: Spring spill operations began on April 3 with the ASW set at high crest. The ASW was set in low crest on May 1 at 13:46. The ASW crest height has recently operating in accordance to the most recent Columbia Basin Teletype (CBT).

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
116.3	81.7	60.1	53.9	58.5	57.1	5.0	3.1

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inline cooling strainers are being inspected and results submitted to district operations every other week for FPOM distribution.

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
6-5	1100	0	0	0	0
6-6	0730	0	1	0	0
6-7	0730	0	0	0	0
6-8	1345	0	0	0	0
6-9	1130	0	0	0	0
6-10	0730	3	0	0	0
6-11	0730	0	3	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*
6-5	1	50
6-6	0	0
6-7	2	100
6-8	1	25
6-9	2	100
6-10	0	0
6-11	3	60
Totals	9	335

Gas Bubble Trauma (GBT): GBT monitoring was performed on June 14. Of the 100 fish examined, 1 showed signs of GBT.

Fish Rescue/Salvage: On June 10, a fish rescue was performed in Navigation lock fill valve area. A total of 5 juvenile salmon and steelhead were returned to the river.

Research: The Nez Perce Tribe (NPT) began kelt collection on May 13 for the kelt reconditioning program.

Project: Lower Granite
Biologists: Elizabeth Holdren and David Miller
Dates: June 5-11, 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	

Comments: No units were out of service (OOS) at Lower Granite during this reporting period.

Adult Fish Passage Facility

Lower Granite and EAS/Anchor QEA staff inspected the adult fishway on June 6, 8, and 10.

Fish Ladder:

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

Comments: None.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.1
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.1
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	
			North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	Closed
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	2.8, 2.4, 2.4
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: Depth over weir out of criteria reading are likely due to the gate not completed adjusting to tailwater elevation or related to flex spill operation. FOGs 1 and 10 are in operation. NSE channel tailwater differentials are due to spill volume creating a significant drawdown at the end of the north shore collection channel. North shore collection channel/tailrace continues to be out of criteria with differentials of over 2.0 feet during flex spill operation at the 125% gas cap. Similar to 2019, spring spill operations are impacting the fish ladder control systems resulting in differences between physical readings at gate and staff gauge locations and automatic control system digital readings resulting in out of criteria readings at the south shore.

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 return to operation is delayed until LWG mechanical crew is able to schedule standard testing that will require all AWS pumps be removed from service for about 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?	

Comments: Gatewell differentials were measured on June 9.

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: Gatewell differentials were measured on June 9.

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.

Collection Facility: The sample rate is being adjusted daily based on the previous day's fish passage numbers. The facility is in collection for transport mode. Total fish facility collection and transport for June 5-11 was 33,364 juvenile salmonids. Of these, 57 fry were bypassed directly back to the river and 501 subyearling chinook were collected for the USGS RSW spillway PIT tag detector test on June 11. All salmonids collected were sampled for condition. Collection for transport began at 0700 hours April 23.

Transport Summary: Everyday barge transport at LWG began April 24 and every other day barge transport at LWG began on May 20.

Spillway Weir: Spring spill and RSW operation began at 0001 hours April 3.

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
115.5	84.9	69.2	54.9	57.0	53.5	4.4	3.6

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling strainer inspections were conducted on June 1.

Invasive Species: No zebra/quagga muscles were detected on the trap substrate. There was 1 Siberian prawn collected in the sample and euthanized for disposal.

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
June 5	1425	0	1	0	3
June 6	1210	0	0	0	13
June 7	1505	0	1	1	0
June 8	0855	0	0	0	0
June 9	1035	0	0	0	4
June 10	1149	0	1	0	2
June 11	0845	0	0	0	4

Gas Bubble Trauma **(**GBT**)** Monitoring: No salmonids were sampled during GBT monitoring June 11 due to low fish counts.

Adult Fish Trap Operations: Adult trap operations are suspended until further notice due to COVID-19.

Fish Rescue/Salvage: N/A

Research:

Collection for research projects has been suspended until further notice as of March 24 due to COVID-19 with the exception of Kelt collection for NPT.

Nez Perce Tribe (NPT)/U. of Idaho (UI)/Columbia River Intertribal Fisheries Commission (CRITFC) – Kelt Study

This research investigates steelhead kelt physiology and endocrinology to evaluate the feasibility and success of rehabilitating strategies. Selected kelts collected at Granite are transported by NPT to Dworshak National Fish Hatchery for reconditioning and later release as part of this study. Corps biological technicians began collecting kelts off the juvenile fish separator for NPT at 1800 hours March 8 and continues collecting for transport.

USGS Lower Granite Spillway Detector Test, 2020: June 10 LWG bio techs collected an additional 520 subyearlng chinook salmon in the juvenile sample. USGS tagged 239 clipped and 262 unclipped subyearling Chinook with 8-mm PIT tags and released them in the forebay upstream of the RSW to test the detection efficiency of the PIT tag antennas in spillbay 1.