U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#14-2020

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: May 29 to June 4, 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.
8 & 9	6/2	1000	6/2	1045	ESBS camera inspections. Rotated through units.
7 & 8	6/2	1200	6/5	1400	Transformer 4 inspection and repair.

Comments: The hard one percent peak efficiency constraint continued.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on May 29, 31 and June 3.

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 minimal to light near the Oregon exit and the exit traveling screens debris trough was cleaned as required. Debris loads were minimal to light 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 exit tilting weirs were found out of sequence in the early morning on May 30 and June 3. Each time the operators resolved the issue.

At the Washington exit, there was a brief power outage due to a bus switch on June 3 at 0809 hours.

Both exits tripped multiple alarms during a severe thunderstorm on the evening of May 30. Both exits were reset.

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 1.6 fps.
X			Washington Entrance Head Differential	1.0' – 2.0'	
X			WFE2 Weir Depth	≥ 8.0'	
X			WFE3 Weir Depth	≥ 8.0'	

Comments: During high tailwater elevations, a small water volume flows over NFEW1, which is not in service. The panel view at the Oregon south powerhouse entrance had erroneous readings, which the operator immediately resolved, on May 31. The entrance inspection points were in criteria.

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 was one interruption in the schedule. Due to a severe thunderstorm and high debris loads, the system was in primary bypass on May 30, from 1820 to 0000 hours. Descaling has declined.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Minimal to heavy.
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 heavy near the powerhouse. Debris near the spillway would be described as minimal to light. Incoming debris loads were light but constant early in the week. Fortunately, most of the powerhouse debris appeared to have rotated to and passed out the spillway by the end of the week. Debris removal has not yet been required.

No trash racks were cleaned this week.

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 8 and 9 revealed no problems on June 2.

Daily VBS differential monitoring continued. No high differentials were measured. The screens in 1A, 12A and 12B slots were cleaned on May 30. Three smolt mortalities were observed. The screen in 10A slot was cleaned on June 4. No fish were observed.

The VBS removed for 10B slot and stored in 5C slot last week was reexamined on June 3. No damage was found. Since 5C slot was missing a VBS, this screen was installed in that slot immediately after examination.

There is nothing more to report.

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 as required. The closed orifice in 5C slot was inadvertently opened and the spare orifice in 5B slot closed on June 2. This was approximately 24 hours before the VBS in the slot was moved from storage to installation. Fortunately, unit 5 was out of service. The resulting flow would have been closer to 41 orifices.

The swing shift technician found both orifices in 11C slot open, the north orifice open instead of the south orifice in 12A slot and both orifices closed in 12B slot on June 4 at 2000 hours. The technician immediately restored the orifices to the proper order. It is believed the day shift technician left the orifices in 12B slot closed after VBS cleaning in 12A slot had been canceled earlier in the day. The closure was for approximately 10 hours. No harm to fish was noted.

Proper orifices procedures will be reviewed with every staff member as soon as they come on shift.

The transition screen cleaning brush tripped a timing alarm on May 30 at approximately 0814 hours. When the biologist on duty arrived, the brush was found on the D beam. The biologist manually parked the brush, moving it from the D beam to the A beam with the buttons on the control panel, reset the alarms and tested the brush cycle. No future issues occurred. It is suspected a limit switch or the hoist that moves the brush laterally is causing the problem. So far, the electrical staff has not found the cause of the stalling out on the D beam.

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. However, they were left on during the 5.7 hours of primary bypass on May 30. The PIT-tag system remained out of service as there are no studies requiring its use.

This week, 56,300 juvenile lamprey and 140,554 smolts were bypassed during secondary bypass. Subyearling Chinook and juvenile lamprey have become the major species in the samples.

A total of five juvenile lamprey mortalities were removed from under the primary bypass gate on May 31, June 2 and 4. This issue will be examined during the next winter outage.

TSW Operations: The TSW's are installed and remain operational in bays 19 and 20. Their closure and removal are scheduled for June 8.

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
398.2	348.6	272.3	238.7	57.2	55.4	4.9	2.8

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. There are no problems to report.

Daily water temperature monitoring and reporting throughout the juvenile passage facility will begin on June 15. The smolt monitoring staff will publish weekly results in a separate report, which will include any issues with the probes.

Other

Inline Cooling Water Strainers: The cooling water strainer examinations occurred on June 2. There were 32 live juvenile lamprey (20 from unit 1), 326 juvenile lamprey mortalities (150 from unit 1), one live subyearling Chinook (from unit 1) and 18 subyearling Chinook mortalities (15 from unit 1) removed. Also, many of the juvenile lamprey mortalities came from units which were in standby for long periods of time.

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

Only a few pelicans were along the northern edge of the powerhouse zone.

In the spillway zone, gull numbers remained fairly low with one high day. Mostly, these birds were feeding though some roosted on the water. Cormorants may be feeding but are difficult to observe. Occasionally, pelicans and terns were noted. Also, osprey were noted roosting along the north edge of the spillway zone.

At the juvenile bypass outfall, gulls roosted, feed or passed by in fairly 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, zero to 50 grebes were observed, along with an occasional gull cormorant, tern or osprey. Also, gulls and pelicans in moderate numbers along with a few cormorants were noted on the roosting rocks along the Washington shoreline.

The lasers on the navigation lock wing wall and on the juvenile bypass outfall walkway returned to service on June 1 and 4, respectively. The outfall laser was turned on late due to high tailwater elevations, which resulted in severe splashing on the walkway. Due to low bird numbers and high flows, the lasers cannot be evaluated effectively.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican
May 29	Spill	1	0	0	2
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
May 30	Spill	26	0	0	4
	Powerhouse	0	0	0	0
	Outfall	2	0	0	0
May 31	Spill	118	0	0	0
	Powerhouse	0	0	0	0
	Outfall	2	0	0	0
June 1	Spill	37	0	0	1
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
June 2	Spill	1	0	0	0
	Powerhouse	0	0	0	0
	Outfall	1	0	0	0
June 3	Spill	4	0	0	3
	Powerhouse	0	0	0	0
	Outfall	1	0	0	0
June 4	Spill	6	0	2	1
	Powerhouse	0	0	0	2
	Outfall	0	0	0	0

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. Also, 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 1 and 3. 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: May 29, 2020 – June 4, 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
5	6/02/20	1350	6/02/20	1640	Excitation issues reported, and a faulty control power breaker was replaced.
5	6/03/20	1205	6/03/20	1452	Excitation issues, and a faulty control power breaker was replaced.

Comments: Units 4 and 6 were observed to be operating one or two megawatts above the 1% operating efficiency range on the June 1 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 1st, 2nd, and 3rd.

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	1.2, 0.8, 0.9 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 all three 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. Three diffuser valves that are upstream of the velocity meter are currently set at 25% open and will be opened and set to 100%, as needed, to see if the velocity increases.

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: The cover for orifice 1CN is has been repaired.

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

Fish Sampling: Fish sampling is being conducted on Mondays and Thursdays each week. Please see the tables below for a summary of the fish sampling results for June 1st and 4th. For Ice Harbor Dam fish sampling methodologies, please refer to 2020 Fish Passage Plan Chapter 6 (Ice Harbor Dam).

Fish condition sampling results at Ice Harbor Dam:

Date: June 1st

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	9	1	0	0
Chinook yearling unclipped	8	0	0	0
Chinook subyearling clipped	30	0	0	0
Chinook subyearling unclipped	46	0	0	0
Steelhead clipped	43	6	0	0
Steelhead unclipped	6	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	142	7	0	0

Date: June 4th

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	1	0	0	0
Chinook yearling unclipped	1	0	0	0
Chinook subyearling clipped	16	0	0	0
Chinook subyearling unclipped	30	0	0	0
Steelhead clipped	33	2	0	0
Steelhead unclipped	12	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	93	2	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
163.7	104.1	111.7	84.9	59	53	4.5	2.8

*Unit 1 scroll case temperature.

Comments: None.

Other

Inline Cooling Water Strainers: The next monthly turbine cooling water strainer inspections will occur in June.

Avian Activity: There were low to high numbers of piscivorous birds seen around the project (see table below). The higher number of birds on May 31st were counted before bird hazing started for the day. Land-based hazing of piscivorous birds for 16 hours per day is occurring. Boat-based hazing is occurring for eight hours per day, three days per week. The hazing has been effective at reducing bird numbers around the dam.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
May 29	6	26	0	0	20
May 30	0	12	0	0	51
May 31	4	21	0	0	124
June 1	0	9	0	0	51
June 2	0	16	0	0	29
June 3	1	17	0	0	37
June 4	6	18	0	0	17

Invasive Species: No new exotic species have been discovered.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by fisheries management personnel, frozen and properly disposed in a landfill. Daily and total Siberian prawn counts at Ice Harbor Dam for this reporting period are shown below.

Number of Siberian prawns in the sample at Ice Harbor Dam.

Date	Sample (euthanized)	Collection*
June 1, 2020	1	1
June 4, 2020	0	0
Totals	1	1

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

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: May 29 – June 4, 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 1	6/02/2020	0705	6/02/2020	1010	STS Inspections
Unit 2	7/15/2019	0720	7/17/2020	ERTS	Annual, Draft Tube Liner
Unit 3	6/02/2020	1016	6/02/2020	1412	STS Inspections
Unit 4	6/03/2020	0602	6/03/2020	0700	STS Inspections
Unit 5	6/04/2020	0720	6/04/2020	1030	STS Inspections and Hub Tapping
Unit 6	6/02/2020	1402	6/02/2020	1640	STS Inspections

Comments: None.

Adult Fish Passage Facility

The adult fishways were inspected by Corps and EAS/Anchor QEA biologists on May 29, 30, 31 and June 3.

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:

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:
South Shore Channel/Tailwater differential was out of criteria on the May 31 inspection with a reading of 0.5 feet. Powerhouse operator found SSE-1 controls in the manual position.

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)	15 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. STS inspections were conducted from June 2 to June 4. All STS's were in serviceable condition.

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: Primary Dewatering Structure mechanical brush failure on May 28 (see 20LMN03 MFR).
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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 42,515 fish were collected with 39,314 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
159.4	111.7	116.0	78.0	57.0	53.4	3.6	1.9

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on May 13. Live fish included 2 juvenile lamprey. Mortalities included 11 Chinook salmon smolts and 12 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
5/29/2020	1100	1	0	0	0	0
5/30/2020	1115	1	0	0	0	0
5/31/2020	1300	0	0	0	0	0
6/1/2020	1230	0	0	0	0	0
6/2/2020	1145	0	0	0	0	0
6/3/2020	1300	5	0	0	0	2
6/4/2020	1200	0	0	0	0	0

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 May 1.

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*
5/29/2020	0	0
5/30/2020	0	0
5/31/2020	0	0
6/01/2020	0	0
6/02/2020	1	25
6/03/2020	1	25
6/04/2020	1	25
Total	3	75

*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: May 29-June 4, 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.

Comments: None.

Adult Fish Passage Facility

Little Goose fish facility staff inspected the adult fishway on May 31 and June 2 and 4.

Fish Ladder:

Yes	No	NA	Location	Criteria	Measurements
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 Exit Cooling Water Pumps Operating Satisfactorily		

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.8
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.8
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 7.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 7.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
X			North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
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 4. 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 May 10 and averaged 3.5 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 1,310 square feet of floating woody debris currently inside the trash shear boom in the forebay. Drawdowns were performed June 4 on Units 1, 2, 3, 4 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 conducted June 4 on Units 1, 2, 3, 4 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: 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 107,187 fish were collected. Of those collected, 94,450 were transported via barge and 7 fish was by-passed. The descaling and mortality rates were 0.7% and 0.04%, respectively. No adult lamprey were removed from the separator this reporting period.

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.

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
161.7	109.9	84.3	59.3	57.6	57.2	3.5	2.7

*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
5-29	1155	0	0	0	0
5-30	0730	3	0	0	0
5-31	0730	0	0	0	0
6-1	0800	0	0	0	0
6-2	0800	0	0	0	0
6-3	0745	0	0	0	0
6-4	0730	0	0	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*
5-29	0	0
5-30	1	25
5-31	4	100
6-1	1	25
6-2	0	0
6-3	0	0
6-4	0	0
Totals	6	150

Gas Bubble Trauma (GBT): GBT monitoring was performed on June 7. Of the 66 fish examined, 4 showed signs of GBT with 1 fish showing severe signs.

Fish Rescue/Salvage: None

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: May 29-June 4, 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**
3	06/04	1234	06/04	1458	Repair sheared bolts on governor system

Comments: None.

Adult Fish Passage Facility

Lower Granite and EAS/Anchor QEA staff inspected the adult fishway on May 29, 30, June 1, 2, and 4.

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’	6.8, 7.3, 7.3, 7.0, 7.7
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	6.8, 7.3, 7.2, 7.0, 7.7
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 8.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0’ or on sill	
	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	0.9
		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’	3.1, 3.1, 2.3, 2.3
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 service is delayed until mechanic report back to LWG and 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 May 31.

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 May 31.

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 May 29-June 4 was 105,975 juvenile salmonids. Of these, 86 fry were bypassed directly back to the river. 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
166.1	117.2	75.7	58.1	55.5	54.0	4.5	1.7

*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 2 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
May 29	1330	0	1	0	8
May 30	1150	0	0	0	1
May 31	1235	0	1	0	14
June 1	1038	9	0	0	7
June 2	1035	0	2	0	2
June 3	1214	0	1	0	3
June 4	1933	0	0	0	37

Gas Bubble Trauma (GBT) Monitoring: GBT monitoring June 4 showed no signs of GBT in the 23 juvenile salmonids sampled.

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.