U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#18-2019

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: June 28 to July 4, 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	08/15	NA	Turbine blade packing.
13	06/10	0610	Unknown	NA	After oil replacement, high bearing temperature.
8, 10 & 11	07/02	1000	07/02	1111	ESBS camera inspections. Rotated through units.

Comments: There are no other problems to report.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on June 28, 30 and July 2. 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 minimal to light near the Oregon exit and minimal to very light near the Washington exit. Picketed leads were cleaned as required, including on Saturday.

There are no problems to report.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
X			North Oregon Entrance Head Differential	1.0' – 2.0'	
X			NFEW2 Weir Depth	≥ 8.0'	
X			NFEW3 Weir Depth	≥ 8.0'	
X			South Oregon Entrance Head Differential	1.0' – 2.0'	
X			SFEW1 Weir Depth	≥ 8.0'	
X			SFEW2 Weir Depth	≥ 8.0'	
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 2.1 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)
X			WA shore Wasco County PUD Turbine Unit
	X		WA shore Wasco PUD Bypass
		X	Oregon shore Fish Pump 1, OOS to October 31.
X			Oregon shore Fish Pump 2, Blade angle: 22°
X			Oregon shore Fish Pump 3, Blade angle: 24°
X			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 this week, which will extend into next week. The north side dewatering valve in the juvenile collection channel failed on July 2. The valve will be discussed below. No 24-hour sampling occurred on July 3.

The full flow flume adult flush line continues to have issues when the actuator attempts to open or close the supply valve in automatic mode. At times, the fisheries staff had to manually operate the valve instead. This issue will continue to be monitored and examined. It appears the valve may be operated successfully in local mode.

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.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Powerhouse forebay debris load acceptable?	Minimal to 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. The spillway debris load would be described as very light to light. Depending on weather, the debris moved back and forth from the spillway to the Oregon shore line. A few sticks were removed from the gatewell slots on July 2. There are no problems to report.

Extended-length submersible bar screen (ESBSs)/Vertical barrier screen (VBSs):

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

Comments: The brush cycles for the screens in 6A slot, along with units 8, 10 and 13 remained in timer mode. The camera inspections in units 8, 10 and 11 revealed no problems on July 2. The brush cycles for the screens in units 8 and 10 had to be returned to timer mode after the inspections. There may be a braking issue with the camera system cable drum. The issue will be monitored.

Daily VBS differential monitoring continued. No high differentials were recorded and no screens were cleaned this week.

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

Yes	No	NA	Item	Number of orifices in service
X			Orifices operating satisfactory?	39 to 42
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: Normally, there are 42 orifices in use. After the north side dewatering valve failed on July 2, the system was operated with 39 to 40 orifices. Orifices were closed at unit 5, which is out of service. Also, cycling the orifices went from once or twice a shift when in primary bypass to once a day on July 4, which should reduce the operation of the south dewatering valve. Debris loads have been low enough to warrant this.

The concern with the two side dewatering valves that control the channel elevation continued. The biologist on duty reported the north side dewater valve "popping" on June 29. This is an issue that has been observed over the last couple of years.

The two side dewatering valves developed into a serious problem on July 2. Sometime in the early morning, the north side dewater valve slipped from approximately 80 to 50 percent open. The south dewatering valve was able to compensate to a point. When the south valve opened to approximately 60 percent, the control program read the valve at 100 percent open. Again, this raises questions about how these valves are programmed. At 0613 hours, the south valve was at maximum open, the north valve was no longer functional and the forebay elevation increased, which resulted in a high water alarm (0.15 above 327.6 feet). After about one hour, the high water alarm cleared as the forebay elevation decreased. There was no severe high water alarm (0.4 above 327.6 feet).

At about 0830 hours, the biologist was able to examine the situation, test the valves and determine a course of action. With the north valve at about 50 percent open and the south valve only able to open to 60 percent, it was determined orifices at unit 5 would have to be closed and reopened as needed to allow the south valve to regulate the channel elevation with forebay elevation changes. Also, every other day 24-hour sampling would have to be canceled and the technicians would have to remain in the channel 24/7. (During the channel monitoring, some concern over the functionality of the low water alarm has developed.)

Later in the day, the general maintenance staff secured the shaft of the north dewatering valve so it would not slip any lower. The mechanics disassembled the valve actuator and found a brass sheath that connects the operator to the shaft had failed. Thus, the motor would operate but the shaft would not move. The mechanics also believe they have found a replacement sheath on project. Repairs to the valve operator will begin on July 8. However, there is

some concern about the sheath in the south dewatering valve. What was thought to be a program issue may be a sheath problem. Spare parts and a spare actuator will be ordered in the near future.

Returning to service and sampling will be done cautiously. There may need to be future interruptions in sampling in order to repair the south dewater valve or to check the control programming.

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 issue with the full flow flume adult flush line are mentioned above. This week, 800 juvenile lamprey and 42,901 smolts were bypassed during secondary bypass.

The system has been in primary bypass due to the north side dewatering valve as mentioned above since July 2 at 0700 hours. There are no other problems to report.

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
182.0	145.2	104.7	82.6	65.3	64.0	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.

Other

Inline Cooling Water Strainers: The cooling water strainer examinations revealed four live juvenile lamprey and 19 mortalities on July 2. Most of the lamprey were at units 1 through 7. Also, there were 18 unclipped subyearling Chinook mortalities. Most of these were from unit 1.

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

There was very little activity in the powerhouse zone. A few pelicans were noted along the Oregon shoreline or the north edge of the powerhouse flow. In the spill zone, gull and tern numbers fluctuated with an occasional cormorant noted. Pelican numbers remained fairly high as they work along the navigation lock wing wall. All birds appeared to be feeding.

In the bypass outfall zone, the gulls along with an occasional osprey were roosting on the full flow pipe. A small number of gulls, cormorants and pelicans were noted feeding at the outfall. However, when present, USDA Wildlife Services boat hazing greatly reduced the number of birds in the area.

The laser for bypass outfall hazing remained in place and functional. The block study for evaluating the laser concluded on July 3. The laser will remain on. Results of the study will be presented to FPOM by a district biologist in the future. The number of pelicans at the outfall does attract other birds. The laser does appear to displace the birds when it is operational. However, pelicans appear to be very adaptable.

The bird distress calls remained deployed along the navigation lock wing wall. Roosting on the wall has been very limited. A large bird distress call is also deployed at the end of the remaining outfall pipe walkway. Due to its late installation, it appears to be less effective. USDA Wildlife Services concluded boat hazing this week. Second shift bank hazing will conclude on July 13.

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

Date	Zone	Gull	Cormorant	Tern	Pelican
June 28	Spill	20	0	0	25
	Powerhouse	0	0	0	0
	Outfall	10	0	0	2
June 29	Spill	0	0	0	17
	Powerhouse	0	0	0	0
	Outfall	0	0	0	5
June 30	Spill	29	0	0	31
	Powerhouse	0	0	0	0
	Outfall	6	0	0	2
July 1	Spill	6	1	2	32
	Powerhouse	0	0	0	0
	Outfall	0	1	0	4
July 2	Spill	11	0	0	45
	Powerhouse	0	0	0	3
	Outfall	0	0	0	3
July 3	Spill	13	0	11	44
	Powerhouse	0	0	0	4
	Outfall	2	2	0	4
July 4	Spill	17	0	12	25
	Powerhouse	0	0	0	2
	Outfall	1	0	0	3

In the forebay zone, grebes numbering from zero to 18 birds were observed. Their numbers have decreased, though hazing still may affect the observations. Occasionally, an osprey, pelican, blue heron or tern was observed. Also, pelicans, cormorants and gulls were noted roosting outside the zone along the Washington shore line. One to two cormorants and/or pelicans were observed just outside the Oregon ladder exit.

Two pelicans were inside the Oregon ladder feeding from the count station picketed leads walkway on July 2. When they saw the biologist, the birds drifted downstream.

This week, no grebes observed elsewhere on project.

Invasive Species: The next mussel station examinations will occur in late July. So far this season, one Siberian prawn was removed from the sample and euthanized.

Fish Rescue/Salvage**:** No fish were observed in the scrollcase at unit 13 on July 2. Three small adult channel catfish and one 18 inch sturgeon were removed from the draft tube later in the day.

Research: The University of Idaho continued the adult lamprey passage study. Gas bubble trauma (GBT) examinations occurred twice. No smolts were observed with signs of GBT.

Project: Ice Harbor
Biologist: Ken Fone
Dates: June 28 – July 4, 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**
4	9/20/18	1619	---	---	Replace blade packing to fix oil leak
3	5/3/19	0641	---	---	Turbine runner replacement and stator rewind
2	6/28/19	0733	6/28/19	0751	Lubricate head gate valve

Comments: None.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on July 1, 2, and 4.

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’	0.5’
X		South Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
		X	South Shore Entrance (SFE-1) Weir Depth	≥ 8.0’ or on sill	
	X		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	2.1’
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-1) Weir Depth	≥ 8.0’ or on sill	
	X		North Shore Channel/Tailwater Differential	1.0’ – 2.0’	2.1’

Comments: The differential at the south shore picked leads was out of criteria on the July 1 inspection, due to the buildup of filamentous algae at the leads. The leads were cleaned right after they were inspected, and will require cleaning every other day.

On July 1, the north shore channel/tailwater differential was slightly above criteria. On July 2, the south shore channel/tailwater differential was slightly above criteria. On subsequent inspections, the north shore and south shore

tailwater elevations were a little bit higher and the differentials were back in criteria. The entrance weirs are being operated in manual mode, instead of automatic mode, to reduce the wear and tear on the operating machinery from the weirs constantly trying to adjust to the fluctuating tailwater levels from spill.

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)	23 square yards
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0-1%
	X		Any oil seen in gatewells?	

Comments: None.

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: The STSs are being operated in continuous-run mode, because the average fork length of subyearling chinook in the Lower Monumental juvenile fish sample has been under 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 fish facility is being operated in primary bypass, except when collecting fish for sampling.

Fish Sampling: Sampling is occurring on Mondays and Thursdays each week. See the tables below for a summary of the sampling results.

Fish condition sampling results at Ice Harbor Dam:

Date: July 1

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	0	---	---	---
Chinook yearling unclipped	0	---	---	---
Chinook subyearling clipped	56	3	0	0
Chinook subyearling unclipped	41	1	0	0
Steelhead clipped	0	---	---	---
Steelhead unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	97	4	0	0

Date: July 4

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	0	---	---	---
Chinook yearling unclipped	0	---	---	---
Chinook subyearling clipped	51	4	0	0
Chinook subyearling unclipped	43	1	0	0
Steelhead clipped	0	---	---	---
Steelhead unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	1	0	0	0
Total	95	5	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
46.9	37.9	21.4	15.6	66	64	6.6	5.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine cooling water strainer inspections for juvenile lamprey occurred on June 20. A total of 3 juvenile lamprey and 15 Siberian prawns (all mortalities) were recovered. Monthly strainer inspections for lamprey ended in June and will start up again in December.

Avian Activity: There were moderate to high numbers of piscivorous birds counted around the project (see the table below). Most of the birds were observed roosting on Eagle Island. Contracted land-based hazing of piscivorous birds for 8 hours per day ended on June 30.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
June 28	0	0	0	0	29
June 29	0	1	0	0	58
June 30	0	5	0	0	73
July 1	3	1	0	0	29
July 2	11	4	2	0	74
July 3	7	3	4	0	83
July 4	7	0	0	0	42

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 PSMFC and Anchor, frozen and properly disposed of in a landfill. No Siberian prawns were collected at Ice Harbor Dam for this reporting period.

Fish Rescue/Salvage: None.

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

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: June 28 – July 4, 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 1	5/28/2019	06:58	7/12/2019	ERTS	Digital Governor Installation
Unit 2	6/28/2019	07:08	6/28/2019	11:05	Fish guidance efficiency study head gate change
Unit 2	7/03/2019	07:05	7/03/2019	12:15	Fish guidance efficiency study head gate change
Unit 3	6/28/2019	07:08	6/28/2019	11:05	Fish guidance efficiency study head gate change
Unit 3	7/03/2019	07:05	7/03/2019	12:15	Fish guidance efficiency study head gate change

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 June 28, 29, 30 and July 03.

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: None.

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, 6.0, 6.2 and 5.9 feet respectively.
South Powerhouse Entrance weir (SPE-2) was on sill during all inspections with readings of 6.3, 6.0, 6.2 and 5.9 feet respectively.
South Shore Entrance weir (SSE-1) was on sill during all inspections with readings of 6.9, 6.8, 6.8 and 7.7 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)	1 yd^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 12%
	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 1500 on May 16 when 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?	19
	X		Dewaterer and cleaning systems operating satisfactory?	

Comments: PDW mechanical screen brush failed to complete its cycle on June 29. After moving and recycling the brush, it failed at the same point of its cycle again. The brush was taken out of service at approximately 1500 and the frequency of the air bubbler was increased to 10 minutes. This failure appears to show at approximately the same time every year and may be temperature related.

Collection Facility: Collection into raceways for transport began at 1500 on April 23.

Transport Summary: Due to low fish numbers, every-day barge transport ended with the May 15 barge and alternate day barging began. A total of 3,162 fish were collected with 4,558 fish being transported during this reporting period.

Spillway Weir: Spring spill began and the RSW went into service at 0001 on April 3. Spring Spill ended and Summer Spill began at 00:00:00 on June 21.

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
46.0	37.0	17.0	16.5	64.9	63.6	5.2	4.0

*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 and pelicans were the predominant piscivorous bird species observed during fish ladder inspections this week.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
6/28/2019	1105	10	0	0	0	2
6/29/2019	1100	9	0	0	0	2
6/30/2019	1210	3	1	0	0	4
7/3/2019	1015	23	0	0	0	7

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 June 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*
6/28/2019	5	20
6/29/2019	12	60
6/30/2019	0	0
7/01/2019	0	0
7/02/2019	0	0
7/03/2019	2	100
7/04/2019	6	300
Totals	25	480

*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: PNNL is continuing to collect data from units 2 and 3 for the Fish Guidance Efficiency study.

Project: Little Goose
Biologists: Scott St. John and Richard Weis
Dates: June 28 – July 04, 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
1	06/17/19	15:20	07/01/19	15:45	Header air valve broken

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 June 30 and July 02 and 04.

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: The adult ladder cooling pump began operating on June 12 at 07:22.

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	
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. Subsurface water velocity was measured near NPE on June 03 using a Rickly velocity meter and averaged 4.2 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		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 differentials for Units 2, 3 and 4 were measured on June 20 and were in criteria. Due to the current outflow, operators were unable to accommodate differential measurements on July 04. There is approximately 500 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: ESBS's were manually operated on June 11 and operated satisfactorily. VBS differentials for Units 2, 3 and 4 were measured on June 20 and were in criteria. Due to the current outflow, operators were unable to accommodate differential measurements on July 04.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	22
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. Every day barge transport ended on May 15 and the first every other day barge departed on May 17.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 13,027 fish were collected, of which 14,626 were transported via barge which includes fish collected on June 27. The descaling and mortality rates were 1.4% and 0.22% respectively. There were no adult lamprey removed from the separator, raceways, or sample and released one mile above the Dam at Little Goose Landing.

Spillway Weir: The adjustable spillway weir was operated in accordance to the most recent Columbia Basin Teletype (CBT) for adult passage during this report period. Summer spill operation commenced on June 21.

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
47.8	37.1	14.3	11.1	65.1	62.7	4.7	3.9

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers are currently being inspected every other week and results are sent to district for FPOM distribution.

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
6-28	1145	0	3	0	0
6-29	1100	2	0	0	0
6-30	1400	2	6	0	0
7-1	1200	0	1	0	0
7-2	1200	0	1	0	0
7-3	1100	0	1	0	0
7-4	1100	0	0	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*
6-28	4	40
6-29	0	0
6-30	3	30
7-1	4	40
7-2	12	120
7-3	0	0
7-4	10	80
Totals	33	310

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

Gas Bubble Trauma (GBT): Gas bubble monitoring occurred on July 01. Personnel examined 42 fish, no signs of GBT were observed.

Fish Rescue/Salvage: None.

Research: N/A

Project: Lower Granite
Biologists: Elizabeth Holdren
Dates: June 28-July 4, 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

Comments: Units were rotated out of service for ESBS inspections June 23 and 24.

Adult Fish Passage Facility

Lower Granite Corps biologist's and Anchor Environmental biologist's inspected the adult fish ladder June 29 and 30 and July 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'	1.4'
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. Depth over the weir at diffuser 14 was out of criteria on one inspection due to the gate not automatically adjusting to increased forebay elevation. There was also an increase in depth at the picketed leads due to diffuser 14 not responding correctly to forebay elevation changes. Operations set diffuser 14 to meet depth over weir criteria and bring the picketed lead elevation down about 0.6' into normal operating range.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
X			South Shore Entrance (SSE-1) Weir Depth	≥ 8.0'	
X			South Shore Entrance (SSE-2) Weir Depth	≥ 8.0'	
X			South Shore Channel/Tailwater Differential	1.0' – 2.0'	
		X	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'	2.3'
	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.

NPE channel velocity sensor readings have consistently read below 1.5 fps for several weeks. Surface velocity is being verified using tape measurer 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 particularly at the NSE channel/tailwater head differentials. There has only been one out of criteria head differential reading at NSE following summer spill operation.

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)	Average of ~ 1.3 yds^2
X			Trash rack differentials measured this week?	
X			Trash rack differentials acceptable	
X			Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: 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: ESBSs were inspected June 23 and 24. No issues were found.

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 all 14" orifices open. Additional 10" orifices are used to maintain optimal flume flow. The north makeup water valve remains in local control due to an automatic control motor hardware failure. North makeup water valve remains closed due to increased forebay elevation. 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.

Collection Facility: The facility is in collection mode.

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

Spillway Weir: Summer spill operation continues.

River Conditions

River conditions at Lower Granite Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
47.9	38.4	19.0	18.8	65.0	61.0	5.0+	5.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainers were inspected July 1. There were 2 live lamprey and 15 lamprey mortalities recovered.

Invasive Species: There were 100 Siberian prawns collected in the sample this week. Of these, 78 were live collected and euthanized and 22 were mortalities when sampled.

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
28-Jun	0609	0	0	0	0
29-Jun	1147	0	0	0	2
30-Jun	1045	1	0	0	7
1-Jul	1630	0	1	0	3
2-Jul	1520	0	0	0	2
3-Jul	1240	4	1	0	0
4-Jul	1025	0	0	0	0

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

Adult Fish Trap Operations: The adult trap is operating Monday-Friday at a 28% sample rate.

Fish Rescue/Salvage: No fish salvage occurred this reporting period.

Research:

Idaho Fish and Game (IDFG) Genetic Stock Identification

Fish collected as part of the Lower Granite juvenile condition sample are used to enumerate and characterize age composition and genetic stock profiles of naturally producing yearling chinook and juvenile steelhead. IDFG will

sample Monday through Friday through mid-June with a goal of collecting 2,000-5,000 yearling chinook and juvenile steelhead genetic samples. Collection for IDFG genetic stock identification ended at 0700 hours June 28.

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. Collection of kelts for NPT ended at 0700 hours June 29.

USGS Parentage Based Tagging of Subyearling Chinook:

The goal of this project is to determine the abundance of unmarked, untagged natural-and hatchery-origin subyearling Chinook salmon in Lower Granite sample collection. Fin clips will be taken from 30 unclipped, untagged subyearling Chinook each day from June 1-15 and for another two weeks in July depending in fish passage numbers.

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 collected as part of the normal adult trap daily sample and using the adult SbyC system to recapture previously PIT tagged fish. Untagged bull trout will be PIT tagged, fin clipped for genetic analysis, and have morphometric data collected including weight and length etc. Fin clips will be sent to USFWS to determine the fish's origin. Previously PIT tagged bull trout will only have morphometric data collected. All fish will be released back into the adult fish ladder.