U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#17-2019

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: June 21 to 27, 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.
12	06/17	0701	06/25	1723	Oil replacement.
14	06/24	0941	06/24	0958	Trash rack cleaning.
9	06/24	0640	06/26	1700	Oil replacement.
1	06/24	0836	06/27	1324	Annual maintenance.
11	06/25	1109	06/25	1724	Support unit 12 outage.

Comments: There are no other problems to report.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on June 21, 23 and 26. 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’	0.9’ on June 21.
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 and Washington exits. Picketed leads were cleaned as required, including on Saturday.

At the Oregon exit, the set points were adjusted to resolve the out of criterion point mentioned above. There were brief power outages due to electrical system testing at the Oregon exit on June 22. The fish counting contractor and PSMFC were both notified. No problems were reported. The count station window brush was removed from service from June 20 to 24 to insure no issues occurred.

There are no other 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'	7.9' on June 21 and 26
	X		NFEW3 Weir Depth	≥ 8.0'	7.9' on June 21 and 26
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: The out of criteria points mentioned above could have been due to low tailwater elevations or set point calibration drifts. There are no other 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: Fish pump 2 was out of service due to bus switching from 1111 to 1117 hours and 1747 to 1749 hours on June 25. There are no other 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 this week. However, 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.

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?	Very light 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. The trash racks in 1A, 9A, 13A and 14A were cleaned on June 24. There were 0.3 yards of debris removed. No fish were observed. 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 unit 9 revealed no problems on June 25.

Daily VBS differential monitoring continued. No high differentials were recorded. Two VBSs were cleaned on June 22. No fish were observed.

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

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

Comments: Orifices were adjusted as required for VBS and trash rack cleaning.

The concern with the two side dewatering valves that control the channel elevation continued. Their percentages open appears to be drifting apart. This raises questions about how these valves are programmed. The side dewatering valve issue will continue to be monitored. There are no other problems to report.

Bypass Facility:

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

Comments: The sample gates were operated only when in secondary bypass. The PIT tag system will remain out of service as there are no studies requiring its use. The issue with the full flow flume adult flush line are mentioned above. This week, 550 juvenile lamprey and 61,800 smolts were bypassed during secondary bypass.

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
222.4	163.5	127.0	93.3	64.1	62.4	6.0	5.0

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.

Spillbay 11 was closed on June 25, from 1005 to 1030 hours, for a seal inspection. There are no other problems to report.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on July 2.

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 numbers fluctuated and tern numbers increased slightly. Pelican numbers remained fairly high as they work along the navigation lock wing wall. All birds appeared to be feeding.

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

Date	Zone	Gull	Cormorant	Tern	Pelican
June 21	Spill	86	0	4	9
	Powerhouse	0	0	0	12
	Outfall	29	0	0	0
June 22	Spill	40	0	0	17
	Powerhouse	0	0	0	8
	Outfall	30	1	0	0
June 23	Spill	37	0	4	31
	Powerhouse	0	0	0	0
	Outfall	24	1	0	8
June 24	Spill	12	0	4	37
	Powerhouse	0	0	0	4
	Outfall	0	2	0	5
June 25	Spill	12	0	0	29
	Powerhouse	0	0	0	0
	Outfall	2	1	0	5
June 26	Spill	7	0	5	17
	Powerhouse	0	0	0	6
	Outfall	0	0	0	0
June 27	Spill	20	0	11	26
	Powerhouse	0	0	0	0
	Outfall	7	4	0	7

In the bypass outfall zone, the gulls along with an occasional osprey were roosting on the full flow pipe. A small number of 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 continued. Results of the study will be presented to FPOM by a district biologist in the future. Due to the number of pelicans at the outfall, which does attract other birds, the laser was check on June 25 and appeared to be fully functional. 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 continued working two shifts and boat hazing four days a week. When high wind velocity does not allow for boat hazing, the boat crew assist the bank hazer.

In the forebay zone, grebes numbering from zero to 12 birds were observed. Their numbers were decreasing, though hazing still may affect the observations. Occasionally, an osprey, pelican, gull, 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.

This week, no grebes observed elsewhere on project.

Invasive Species: The mussel station examinations on June 23 revealed no problems. So far this season, one Siberian prawn was removed from the sample and euthanized.

Fish Rescue/Salvage**:** Navigation lock tainter valve number 3 was dewatered on June 26. One adult channel catfish and four Chinook smolts were removed alive. Six adult shad and 11 Chinook smolts were removed as mortalities. The chinook were a mix of yearlings and subyearlings.

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 21 – June 27, 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

Comments: None.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on June 24, 26, and 27.

Fish Ladders:

Yes	No	Location	Criteria	Measurements
X		North Ladder Exit Differential	Head ≤ 0.3’	
X		North Ladder Picketed Lead Differential	Head ≤ 0.3’	
X		North Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
X		South Ladder Exit Differential	Head ≤ 0.3’	
X		South Ladder Picketed Lead Differential	Head ≤ 0.3’	
X		South Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			South Shore Entrance (SFE-1) Weir Depth	≥ 8.0’ or on sill	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
X			South Shore Channel Velocity	1.5 – 4.0 fps	
	X		North Powerhouse Entrance (NFE-1) Weir Depth	≥ 8.0’ or on sill	6.7’, 7.8’
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’	0.8’

Comments: On June 24 and 26, the north powerhouse entrance weir depth was out of criteria. The operator was informed and he lowered the NFE-1 weir to bring the depth into criteria while keeping the NFE-1 channel/tailwater differential in criteria. On June 24, the north shore channel/tailwater differential was below criteria. By the June 26 inspection, the north shore tailwater elevation was lower and the differential was back in criteria. The NFE-1 and NEW-1 weirs are being operated in manual mode, instead of automatic mode, to reduce the wear and tear on the operating machinery from the weir constantly trying to adjust to the fluctuating tailwater level 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)	5 square yards
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: The STSs are being operated in continuous-run mode, because the average fork length of subyearling chinook in the Ice Harbor 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. The cause of the descaling observed on one fish in the June 24 sample and two fish in the June 27 sample was attributed to birds and lamprey.

Fish condition sampling results at Ice Harbor Dam:

Date: June 24

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	0	---	---	---
Chinook yearling unclipped	0	---	---	---
Chinook subyearling clipped	43	3	0	0
Chinook subyearling unclipped	66	1	0	0
Steelhead clipped	0	---	---	---
Steelhead unclipped	1	1	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	110	5	0	0

Date: June 27

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	0	---	---	---
Chinook yearling unclipped	0	---	---	---
Chinook subyearling clipped	44	1	0	0
Chinook subyearling unclipped	51	3	2	0
Steelhead clipped	0	---	---	---
Steelhead unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	95	4	2	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
71.4	52.2	21.4	15.6	64	62	6.0	5.2

*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.

Avian Activity: There were low to moderate numbers of piscivorous birds counted around the project (see the table below). Most of the pelicans were observed foraging in the spillway and powerhouse tailrace zones. Contracted land-based hazing of piscivorous birds for 8 hours per day is occurring. There were very few hazable birds at the project.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
June 21	2	2	0	0	24
June 22	0	0	0	0	13
June 23	0	2	0	0	30
June 24	0	1	0	0	6
June 25	9	3	0	0	23
June 26	0	1	0	0	11
June 27	2	3	0	0	10

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 in the sample during 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 21 - 27, 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	6/21/2019	07:01	6/21/2019	10:56	Fish guidance efficiency study head gate change
Unit 3	6/21/2019	06:58	6/21/2019	10:58	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 21, 22, 23 and 26.

Fish Ladder:

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

Comments:

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Shore Entrance (NSE-1) Weir Depth	≥ 8.0’ or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	≥ 8.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
X		X	South Powerhouse Entrance (SPE-1) Weir Depth	≥ 8.0’ or on sill	
X		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		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 7.4, 7.8, 7.5 and 6.9 feet respectively.
South Powerhouse Entrance weir (SPE-2) was on sill during all inspections with readings of 7.4, 7.8, 7.5 and 6.9 feet respectively.
South Shore Entrance weir (SSE-1) was on sill during the June 21, 23 and 26 inspections with readings of 7.9, 8.0 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)	750 yd^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 25%
	X		Any oil seen in gatewells?	

Comments: Gatewells have been being dipped for debris removal on Fridays.

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: Orifice 4B21 was found with no attraction light on the June 26 inspection. The orifice was closed and 4B22 was opened until the light at 4B21 could be changed out.
PDW mechanical screen brush failed to complete its cycle on June 24 and 26. The brush was manually moved and the brush completed those cycles. 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.
Due to a lock outage at Ice Harbor Dam, the facility was placed in secondary bypass from 1500 on June 24 and went back into collection at 1500 on June 26.

Transport Summary: Due to low fish numbers, every-day barge transport ended with the May 15 barge and alternate day barging began. Due to a lock outage at Ice Harbor Dam, fish transport barge on June 26 was cancelled. A total of 11,218 fish were collected with 8,188 fish being transported and 1,610 fish bypassed back to the river during this reporting period. Bypassed fish numbers for this reporting period were from the cancelled barge transport on June 26.

Spillway Weir: Spring spill began and the 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
66.9	49.5	17.1	16.6	65.0	63.9	4.5	3.6

*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
6/21/2019	1100	20	0	0	0	3
6/22/2019	1230	6	1	0	0	2
6/23/2019	1100	32	2	0	0	6
6/24/2019	1255	6	0	0	0	2
6/25/2019	1100	12	0	0	0	1
6/26/2019	1130	10	0	0	0	2
6/27/2019	1200	12	0	0	0	3

Comments: Bird hazing efforts by USDA personnel ended at the end of the working day on June 2.

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*
6/21/2019	0	0
6/22/2019	0	0
6/23/2019	0	0
6/24/2019	2	20
6/25/2019	0	0
6/26/2019	0	0
6/27/2019	0	0
Totals	2	20

*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.

Project: Little Goose
Biologists: Scott St. John and Richard Weis
Dates: June 21 – June 27, 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			Header air valve broken (ERTS-July 01)

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 23, 25 and 27.

Fish Ladder:

Yes	No	NA	Location	Criteria	Measurements
X			Fish Ladder Exit Differential	Head $\leq$ 0.5’	
X			Fish Ladder Picketed Lead Differential	Head $\leq$ 0.3’	
X			Fish Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
X			Fish Ladder Cooling Water Pump in Service		
X			Fish Ladder Exit Cooling Water 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 June 27. There is approximately 300 square feet of floating woody debris inside the trash shear boom in the immediate forebay.

ESBS/VBS:

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

Comments: 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 June 27.

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, however fish were bypassed during the Ice Harbor navigation lock outage. Details are outline in MFR 19 JFT 01. A total of 26,147 fish were collected, of which 9,718 were bypass and 14,775 were transported via barge which includes fish collected on June 13. The descaling and mortality rates were 1.3% and 0.12% respectively. There were 3 adult

lamprey removed from the separator, raceways, and sample and released one mile above the Dam at Little Goose Landing.

Spillway Weir: The adjustable spillway weir 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
67.3	51.8	20.2	15.4	64.5	62.3	4.0	2.9

*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
6-21	1100	0	0	0	0
6-22	1130	0	0	0	0
6-23	800	1	1	0	0
6-24	1210	0	4	0	0
6-25	1245	0	3	0	1
6-26	1120	0	0	0	1
6-27	0730	2	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*
6-21	6	60
6-22	2	10
6-23	1	10
6-24	3	30
6-25	1	10
6-26	1	20
6-27	12	20
Totals	16	160

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

Gas Bubble Trauma (GBT): Gas bubble monitoring occurred on June 24. Personnel examined 100 fish of which there were no signs of GBT.

Fish Rescue/Salvage: Unit 1 scroll case was dewatered for contractual work related to the installation of the new dewatering pumps (MOC 16 LGS 16).

Research: N/A

Project: Lower Granite
Biologists: Elizabeth Holdren
Dates: June 21-27, 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: No units were out of service this reporting period.

Adult Fish Passage Facility

Lower Granite Corps biologist's and Anchor Environmental biologist's inspected the adult fish ladder June 22, 24, 26, and 27.

Fish Ladder:

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

Comments: Fish ladder temperature control pumps were brought on line June 14.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
X			South Shore Entrance (SSE-1) Weir Depth	$\geq$ 8.0'	
	X		South Shore Entrance (SSE-2) Weir Depth	$\geq$ 8.0'	
X			South Shore Channel/Tailwater Differential	1.0' – 2.0'	
X			North Powerhouse Entrance (NPE-1) Weir Depth	$\geq$ 8.0' or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	$\geq$ 8.0' or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0'–2.0'	
X			North Shore Entrance (NSE-1) Weir Depth	$\geq$ 7.0' or on sill	
			North Shore Entrance (NSE-2) Weir Depth	$\geq$ 7.0' or on sill	Closed
	X		North Shore Channel/Tailwater Differential	1.0'–2.0'	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 has consistently read below 1.5 fps this week. Surface velocity was verified to be in criteria using tape measurer and stopwatch. Surface 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. The out of criteria channel/tailwater differential reading was taken from the control system screen due to NSE elevator being out of service.

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 ~ 2.5 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: None.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

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

Comments: The collection channel is operating with 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 identifies.

Collection Facility: The facility was changed to secondary bypass mode from 0700 hours June 24 to 0700 hours June 26 due to a navigation lock outage at Ice Harbor.

Transport Summary: Barge transport did not occur June 26 due to the navigation lock outage at Ice Harbor. Every-other-day barge transport resumed June 28.

Spillway Weir: Spring flex spill operation was switched to summer spill operation at 0002 hours June 21.

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
68.5	51.3	18.6	18.3	62.0	60.0	5.0+	4.3

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were not inspected during this reporting period.

Invasive Species: There were 48 Siberian prawns collected in the sample this week. Of these, 39 were live collected and euthanized and 9 were mortalities.

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

Date	**Time**	**Gulls**	**Cormorants**	**Caspian Terns**	**Pelicans**
21-Jun	1518	0	0	0	7
22-Jun	1113	0	0	0	5
23-Jun	0820	1	0	0	5
24-Jun	1845	0	1	0	12
25-Jun	1018	0	0	0	0
26-Jun	1330	0	2	0	1
27-Jun	1230	0	1	0	3

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

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

Fish Rescue/Salvage: No fish salvage operations occurred during 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 is scheduled to end 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 is scheduled to end at 0700 hours June 29.

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.

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.