U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#19-2019

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: July 5 to 11, 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	TBD	NA	Turbine bearing.
11	07/08	0609	07/11	1119	Oil replacement.
4, 6 & 7	07/09	0954	07/09	1037	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 July 5, 7 and 9. Adult fish counting and video review of nighttime 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 very light to light near the Oregon exit and minimal to light near the Washington exit. Picketed leads were cleaned as required, including on Friday.

At the Washington exit, multiple tilting weir alarms came in and were reset on July 5.

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 July 9
X			NFEW3 Weir Depth	≥ 8.0'	
X			South Oregon Entrance Head Differential	1.0' – 2.0'	
	X		SFEW1 Weir Depth	≥ 8.0'	7.9' on July 7
	X		SFEW2 Weir Depth	≥ 8.0'	7.9' on July 7
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 2.2 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 on July 7 were resolved with set point adjustments. The out of criterion point on July 9 may have been due to calibration drifts and/or low tailwater.

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. The schedule for the whole week was interrupted. The issue with the north side dewatering valve in the juvenile collection channel was not resolved until July 10. The valve will be discussed below. No index sampling occurred on July 5, 7 and 9. Sampling did occur on July 11 with data being reported on July 12.

The full flow flume adult flush line valve did hesitate to open on July 11. However, operating the valve in local mode has increase the valve reliably. 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?	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 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 9. 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 4, 6 and 7 revealed no problems on July 9.

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. When the north side dewatering valve was out of service, the system was operated with 39 to 40 orifices. Orifices were opened/closed at unit 5, which is out of service. Cycling the orifices will remain once a day until the south side dewatering valve is examined, which will occur on July 15. Debris loads have been low enough to warrant this. Orifice operators were repaired as required.

The concern with the two side dewatering valves that control the channel elevation continued. Repairs to the north dewatering valve began on July 8. The creation of the sheath was completed on July 9. The valve was reassembled and the operator installed on July 10 by 1130 hours. The operator and valve limits were set from 1230 to 1400 hours. The north dewatering valve returned to automatic mode at 1405 hours and had its full functional range. All four water alarms (low, low/low, high and high/high) were tested and functioned properly. The juvenile collection channel was monitored overnight. With everything appearing to be similar to before the north valve failed, index sampling began on July 11 at 0700 hours.

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 or both. Possibly, the valves limits need to be reset. When the south valve opened to approximately 60 percent, the control program read the valve at 100 percent open, thus the need to examine this valve.

Index sampling was canceled and the technicians remained in the channel 24/7 until the north side dewatering valve was return to service. However, the channel system will continue to be monitored closely until the south valve is examined. Returning to sampling occurred cautiously and there may be need to have more interruptions in sampling for the south dewatering valve and to check the control programming future.

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, which only occurred on July 11. The PIT tag system will remain out of service as there are no studies requiring its use. The issues with the full flow flume adult flush line and the north side dewatering valve are mentioned above. With only one day of secondary bypass this week, the fish collected on July 11 will be reported on July 12.

The facility was cleaned before, during and after the switch to secondary bypass on July 11. 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
158.1	136.3	89.9	77.6	67.1	65.9	6.0	6.0

Comments: The above data is supplied by Anchor, QEA except water clarity, which is provided by the control room. The summer spill program continued with 57 percent of the flow being spilled.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur August 6, which should be the last inspections until December 3.

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

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

Date	Zone	Gull	Cormorant	Tern	Pelican
July 5	Spill	9	0	4	23
	Powerhouse	0	0	0	0
	Outfall	3	0	1	7
July 6	Spill	42	0	38	23
	Powerhouse	0	0	0	0
	Outfall	3	3	0	8
July 7	Spill	17	0	0	53
	Powerhouse	0	0	0	0
	Outfall	6	0	0	8
July 8	Spill	20	0	20	40
	Powerhouse	0	0	0	8
	Outfall	6	1	0	6
July 9	Spill	14	0	14	37
	Powerhouse	0	0	0	8
	Outfall	2	1	0	3
July 10	Spill	19	0	26	44
	Powerhouse	0	0	0	0
	Outfall	2	1	0	5
July 11	Spill	8	0	11	54
	Powerhouse	0	0	0	0
	Outfall	0	2	0	6

There was very little activity in the powerhouse zone. However, the pelicans that were observed were feeding just outside the Oregon ladder orifice floating gates. In the spill zone, gull and tern numbers fluctuated. Pelican

numbers remained fairly high as they work along the navigation lock wing wall and roost outside the counting zones. 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. At times, a small number of gulls and terns were attempting to feed. Also, a small number of cormorants and larger number of pelicans were noted feeding regularly 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 laser does seem to deter the gulls and terns, birds in flight. However, birds setting on the water, the pelicans and cormorants, are more difficult to haze with the laser. Therefore, we are considering a second laser from another angle. Also, we are looking into another form of noise deterrent. Unfortunately, the pelicans and gulls do attract other birds.

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 last week. Second shift bank hazing will concluded on July 13.

In the forebay zone, grebes numbering from 6 to 18 birds were observed along with one to three pelicans. Grebes have returned to the project. Hazing grebes was still affective. A grebe distress call was deployed on July 10. The results look promising but a call of higher volume is required. Occasionally, an osprey, a few juvenile gulls or a tern was observed. Also, small numbers of pelicans, cormorants, terns and gulls were noted roosting outside the zone along the Washington shore line. A couple of cormorants and/or pelicans along with a blue heron were observed just outside the Oregon ladder exit.

Unlike last week, no pelicans were observed inside the Oregon ladder exit. Also, 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 rescue occurred this week.

Research: The University of Idaho continued the adult lamprey passage study. Gas bubble trauma (GBT) examinations occurred on July 11, results will be reported July 12.

Project: Ice Harbor
Biologist: Ken Fone
Dates: July 5 – July 11, 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 July 8, 9, and 10.

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’	0.8’
	X		South Shore Channel Velocity	1.5 – 4.0 fps	1.3, 1.0 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’	5.6’

Comments: On July 8, the south shore channel/tailwater differential was below criteria. This may have resulted from the SFE-1 weir depth being on the high-side. On subsequent inspections, the tailwater elevation was lower and the differential was 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.

On July 8, the north shore channel/tailwater differential was way above criteria. The cause of this very high differential is uncertain, but turbulent tailwater conditions from spill can make it difficult to get accurate staff gauge readings. On subsequent inspections, the differential obtained from the staff gauge readings was in criteria.

The south shore channel velocity was below criteria on July 8 and 10. The velocity has been in criteria most of the time as the tailwater elevation has decreased to typical summer levels.

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)	20 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 were switched from continuous-run mode to cycle-run mode on July 8, because the average fork lengths of subyearling chinook in the Ice Harbor and Lower Monumental juvenile fish samples have been over 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: Orifice 6BN light was found to be burned out on July 8, and was replaced on July 9.

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 July 8 sample was attributed to birds.

Fish condition sampling results at Ice Harbor Dam:

Date: July 8

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	0	---	---	---
Chinook yearling unclipped	0	---	---	---
Chinook subyearling clipped	58	3	0	0
Chinook subyearling unclipped	36	1	0	0
Steelhead clipped	0	---	---	---
Steelhead unclipped	1	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	95	4	0	0

Date: July 11

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	0	---	---	---
Chinook yearling unclipped	0	---	---	---
Chinook subyearling clipped	39	2	0	0
Chinook subyearling unclipped	62	2	0	0
Steelhead clipped	2	0	0	0
Steelhead unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	1	0	0	0
Coho unclipped	0	---	---	---
Total	104	4	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
47.1	40.9	14.0	12.2	67	66	6.6	6.4

*Unit 1 scroll case temperature.

Other

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

Avian Activity: There were moderate numbers of piscivorous birds counted around the project (see the table below). The birds were observed roosting on Eagle Island and foraging in the tailrace.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
July 5	---	---	---	---	---
July 6	---	---	---	---	---
July 7	---	---	---	---	---
July 8	5	3	2	0	13
July 9	5	1	0	3	34
July 10	8	2	21	0	56
July 11	2	2	2	0	37

Invasive Species: No new exotic species have been found.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by Anchor, frozen and properly disposed of in a landfill. No Siberian prawns were collected in the sample 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: July 5 - 11, 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	7/10/2019	13:24	Digital Governor Installation
Unit 2	7/10/2019	12:44	7/10/2019	15:02	STS Inspection
Unit 3	7/09/2019	14:15	7/09/2019	16:10	STS Inspection
Unit 4	7/08/2019	07:20	8/03/2019	ERTS	Annual Maintenance
Unit 5	7/09/2019	09:29	7/09/2019	13:20	STS Inspection
Unit 6	7/09/2019	07:05	7/09/2019	09:27	STS Inspection

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 July 5, 6, 7 and 10.

Fish Ladder:

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

Comments: None.

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 Powerhouse Entrance weir (SPE-1) was on sill during all inspections with readings of 6.3, 6.4, 6.3 and 6.0 feet respectively.
South Powerhouse Entrance weir (SPE-2) was on sill during all inspections with readings of 6.3, 6.4, 6.3 and 6.0 feet respectively.
South Shore Entrance weir (SSE-1) was on sill during all inspections with readings of 6.7, 7.2, 7.4 and 6.7 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)	0 yd^2
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?
X	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 Continuous-Run mode until 1230 on July 11 when they were changed to Cycle mode due to average sub-yearling Chinook and sockeye lengths being greater than 120 mm.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	19
	X		Dewaterer and cleaning systems operating satisfactory?	

Comments: PDW mechanical screen brush failed to complete its cycle on June 29. This failure appears to show at approximately the same time every year and may be temperature related. Separator operators have been manually running the mechanical screen brush four times per day to ensure debris is not collecting on the screen.

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

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 9,098 fish were collected with 6,266 fish being transported during this reporting period.

Spillway Weir: Spring spill began and the RSW went into service at 00:01:00 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
44.6	38.9	17.1	16.5	66.9	64.9	5.5	3.4

*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
7/05/2019	1330	22	0	0	0	5
7/06/2019	1135	34	1	0	0	3
7/07/2019	1430	50	1	0	0	15
7/10/2019	1050	10	0	0	0	0

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

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on July 6.

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*
7/05/2019	9	18
7/06/2019	7	14
7/07/2019	3	12
7/08/2019	7	56
7/09/2019	6	48
7/10/2019	2	16
7/11/2019	0	0
Totals	34	164

*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: July 05-11, 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	07/08/19	8:10	07/08/19	9:45	VBS Inspections
2	07/08/19	9:45	07/08/19	10:50	VBS Inspections
3	07/08/19	11:45	07/08/19	16:00	VBS Inspections
4	07/09/19	7:55	07/09/19	10:15	VBS Inspections
6	07/08/19	8:40	08/02/16		Annual Maintenance, VBS/ESBS Inspections

Comments: None.

Adult Fish Passage Facility

Little Goose fish facility, Anchor QEA and/or Oregon Department of Fish and Wildlife staff inspected the adult fishway on July 07, 09 and 11.

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 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	≥ 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	≥ 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. Subsurface water velocity was measured near NPE on July 11 using a Rickly velocity meter and averaged 3.4 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 1, and 2 were measured on July 11 and were in criteria. There is approximately 1,000 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 1, and 2 were measured on July 11 and were in criteria. There were no issues observed during the VBS camera inspections conducted on July 8 and 9 on Units 1, 2, 3 and 4. Additionally, no issues were seen during the ESBS and VBS camera inspection on Unit 6 on July 9.

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 and is still in progress.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 14,868 fish were collected, of which 11,965 were transported via barge. The descaling and mortality rates were 1.4% and 0.24% respectively. There were no 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
43.4	40.1	13.6	12.0	68.0	64.8	4.6	4.1

*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
7-5	1100	0	8	0	0
7-6	1100	0	0	0	0
7-7	1300	10	4	0	0
7-8	1310	0	1	0	0
7-9	0730	5	3	0	0
7-10	1230	0	4	0	0
7-11	1200	13	3	0	1

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*
7-5	6	48
7-6	4	20
7-7	25	125
7-8	8	64
7-9	12	96
7-10	10	80
7-11	11	88
Totals	76	521

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

Gas Bubble Trauma (GBT): Gas bubble monitoring occurred on July 08. Personnel examined 40 fish, no signs of GBT were observed.

Fish Rescue/Salvage: None.

Research: N/A

Project: Lower Granite
Biologists: Elizabeth Holdren
Dates: July 5-11, 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
5	07/08	07:22	08/02		Annual Maintenance / OPTO22 upgrade

Comments: None.

Adult Fish Passage Facility

Lower Granite Corps biologist's and Anchor Environmental biologist's inspected the adult fish ladder July 5, 6, 10 and 11.

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: Fish ladder temperature control pumps remain in operation.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
X			South Shore Entrance (SSE-1) Weir Depth	≥ 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	6.0-6.6 ft
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0' or on sill	6.0-6.6 ft
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'	
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 measure and stopwatch and found to be in criteria. Surface velocities and/or NSE velocities will be used until the fish ladder control system NPE velocity issues are resolved.

Current spill and powerhouse operations result in variable tailwater elevations at fish ladder entrances. Tailwater conditions may be impacting the fish ladder control systems ability to maintain criteria 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 0.4 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?	Sheen, See comment

Comments: Small slight sheen/film reported to operation July 6,7, and 8 in gatewell 2C.

ESBSs/VBSs:

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

Comments: None.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

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

Comments: The collection channel is operating with sixteen of the 14" orifices and two 10" orifices open to maintain optimal flume flow as per current forebay levels. 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
45.0	40.2	18.9	18.8	66.0	64.0	5.0+	5.0

*Cooling water intake temperature.

Other

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

Invasive Species: There were 165 Siberian prawns collected in the sample this week. Of these, 123 were collected alive and euthanized and 42 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
5-Jul	1324	0	0	0	0
6-Jul	1100	15	9	0	0
7-Jul	0610	0	0	0	0
8-Jul	0610	4	0	0	0
9-Jul	1425	1	0	0	0
10-Jul	1247	0	4	0	0
11-Jul	1600	1	8	0	0

Gas Bubble Trauma (GBT) Monitoring: GBT monitoring 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 salvages were conducted during this reporting period.

Research:

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