U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#28-2019

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: September 6 to 12, 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	10/31	NA	Turbine blade packing.
13	06/10	0610	09/26	NA	Turbine bearing.
14	08/19	1221	09/30	NA	Oil replacement and turbine bearing.
12	08/26	0711	09/26	NA	Annual and oil leaks.
7 & 8	09/09	0639	09/13	1640	Transformer T4 maintenance and testing.
10	09/09	0803	09/09	1454	Study equipment installed on ESBS's in A & B slots.
1 & 2	09/09	0927	09/09	1828	Study equipment installed on trash rack in unit 1, A slot.
1	09/10	0638	09/10	2049	Study equipment installed on trash rack in unit 1, B slot. Headgate issues.
2	09/10	0645	09/10	1717	Study equipment installed on trash rack in unit 1, B slot.
9, 10 & 11	09/11	0642	09/11	1601	Study equipment installed on trash rack in unit 10, A slot.
1	09/11	0804	09/11	1510	Study equipment installed on ESBS's in A & B slots.
9, 10 & 11	09/12	0658	09/12	1629	Study equipment installed on trash rack in unit 10, B slot.

Comments: The trash rack equipment installation for the adult steelhead top spillway weir (TSW) passage efficiency study required a dive team, which resulted in the multiple unit outages. The dive at the TSW will occur on September 13. All return to service dates are subject to change.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on September 6, 8 and 10. Adult fish counting and video review of night time lamprey passage continued.

Cleaning the ladder exits elevation sensor still wells last week appeared to improve regulation of both ladder exits.

Fish Ladder Exits:

Yes	No	Location	Criteria	Comments
	X	Oregon Exit	Head over weir 1.0' to 1.3'	0.7' on Sep 8
	X	Oregon Count Station Differential	0.0' to 0.5'	0.8' on Sep 8
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 light to moderate near the Oregon exit and minimal to very light near the Washington exit. Picketed leads were cleaned as required, including Saturday, September 7. That day, the Oregon ladder count station differential was 0.6 feet. Later in the day, the differential increased again. The operators adjusted the exit set points. The out of criteria points mentioned above were due to the debris load on the picketed leads building up overnight. After set point adjustments and multiple exit alarms, the general maintenance staff was called in to clean the leads on September 8. Due to the exit being out of criteria, the flow down the ladder was sloshing from side to side. There were no other problems at the Oregon exit.

At the Washington ladder exit, multiple alarms came in and were reset on September 6.

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'	7.4' on Sep 6
	X		NFEW3 Weir Depth	≥ 8.0'	7.5' on Sep 6
X			South Oregon Entrance Head Differential	1.0' – 2.0'	
	X		SFEW1 Weir Depth	≥ 8.0'	7.9' on Sep 6
	X		SFEW2 Weir Depth	≥ 8.0'	7.9' on Sep 6
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 2.4 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 listed above were due to ladder control system issues on September 6.

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 December 31.
X			Oregon shore Fish Pump 2, Blade angle: 26°
X			Oregon shore Fish Pump 3, Blade angle: 28 to 29°
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 was not interrupted this week.

The full flow flume adult flush line valve remains open. The valve will be repaired during the winter maintenance season.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Powerhouse forebay debris load acceptable?	Minimal to moderate.
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. Aquatic vegetation continued to increase. The spillway debris load would be described as minimal. Much of the debris moves between the powerhouse and the Oregon shoreline. No trash racks were cleaned. A small amount of transformer fluid was removed from 8B slot on September 10. An algae bloom in 13B slot was also noted.

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 units 6, 8, 10 and 13 remained in timer mode. After each unit 10 outage, the brush cycle for the screen in 10C slot had to be returned to timer mode. Camera inspections did not occur due to the total number of units out of service this week. .

Daily VBS differential monitoring continued. No high differentials were recorded. A total of four screens were cleaned September 10 and 12. 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 operated as required for VBS cleaning. Orifice valve operators were repaired as required. On the night of September 12, at approximately 2100 hours, the orifice in 13A slot was inadvertently left closed. The orifice was reopened at 0350 hours. That is a closure of approximately seven hours. Orifice cycle protocols were again reviewed with the staff.

The transition brush remains out of service. With the air burst system zone 5, the transition screen will remain reasonably clean. With very little debris in the system, it is suspect the issue may be with a limit switch. The electrical staff will examine the problem in the near 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. The PIT tag system will remain out of service as there are no studies requiring its use.

This week, 52 juvenile lamprey and 120 smolts were bypassed during secondary bypass. Juvenile shad remained the predominant fish examined.

TSW Operations: The two TSWs remained closed for the season. However, from September 9 to 12, the TSW was installed, attached to the hoist on the stand and tested for the adult steelhead top spillway weir (TSW) passage efficiency study, which begins on September 15. The TSW testing resulted in minor spill on September 12. This spill will be record on the September 13 data day.

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
93.9	71.7	0.0	0.0	71.3	69.9	6.0	6.0

Comments: The above data is supplied by Anchor, QEA except water clarity, which is provided by the control room.

Other

Inline Cooling Water Strainers: The cooling water next strainer inspections will occur on December 3.

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

Gull activity fluctuated in the powerhouse zone with birds feeding and roosting. An occasional cormorant was also observed. In the spill zone, gull numbers again fluctuated and cormorant numbers remained fairly stable. No pelicans or terns were noted. Occasionally, an osprey or blue heron was observed. All birds were feeding with a large percentage of gulls and cormorants roosting on the navigation lock wing wall. Adult and juvenile birds were observed. Bird numbers appear to be fluctuating with the juvenile shad out migration.

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

Date	Zone	Gull	Cormorant	Tern	Pelican
Sep 6	Spill	32	0	0	0
	Powerhouse	10	0	0	0
	Outfall	10	25	0	0
Sep 7	Spill	15	0	0	0
	Powerhouse	0	0	0	0
	Outfall	9	1	0	0
Sep 8	Spill	75	8	0	0
	Powerhouse	14	0	0	0
	Outfall	11	24	0	0
Sep 9	Spill	272	40	0	0
	Powerhouse	0	0	0	0
	Outfall	25	3	0	0
Sep 10	Spill	177	14	0	0
	Powerhouse	54	0	0	0
	Outfall	5	25	0	0
Sep 11	Spill	70	11	0	0
	Powerhouse	130	5	0	0
	Outfall	7	22	0	0
Sep 12	Spill	63	9	0	0
	Powerhouse	29	0	0	0
	Outfall	33	17	0	0

In the bypass outfall zone, the gulls and cormorants were mostly roosting on the full flow pipe. At times, some for these gulls and cormorants were noted feeding.

The laser for bypass outfall hazing remained in place and functional. The laser does seem to deter the birds in flight. However, birds roosting are more difficult to haze with the laser. A second laser has been ordered.

The bird distress calls remained deployed along the navigation lock wing wall. Roosting on the wall has increased but this seems to correspond to the juvenile shad outmigration. A large bird distress call is also deployed at the end of the remaining outfall pipe walkway. Its effectiveness has also decreased. The calls are being monitored weekly.

In the forebay zone, an occasional gull was observed. The grebe distress remains deployed. No grebes were observed on project. A small numbers of cormorants and gulls were noted roosting outside the zone along the Washington shore line. Large gull flocks have been staging around the project.

Invasive Species: The next mussel station examinations will occur in late September. This week, no Siberian prawns were removed from the sample and euthanized. The season total remains at ten prawns.

Fish Rescue/Salvage**:** No fish rescue occurred this week.

Research: The University of Idaho continued the adult lamprey passage study. The adult steelhead top spillway weir (TSW) passage efficiency study will begin on September 15.

Project: Ice Harbor
Biologist: Ken Fone
Dates: September 6 – September 12, 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**
3	5/3/19	0641	---	---	Turbine runner replacement and stator rewind
6	8/14/19	0743	---	---	Annual maintenance and overhaul
4	8/17/19	0700	---	---	TWO transformer replacement
5	9/7/19	1741	9/9/19	1700	Investigate stator and thrust bearing high temperature alarms

Comments: None.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on September 9, 10, and 11.

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	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	
X			North Shore Entrance (NEW-2) Weir Depth	≥ 8.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: On September 5, netting was attached to the fence at the turning pool just upstream of the south shore fish count station to reduce the likelihood of fish jumping out of the ladder at that location (see MFR 19 IHR 16).

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)	52 square yards - average
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	
	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: None.

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.

Fish Sampling: Sampling has ended for the year.

Removable Spillway Weir (RSW): Voluntary spill for fish passage has ended for the year.

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
30.7	19.5	0.6	0	70	70	8.2	7.4

*Unit 1 scroll case temperature.

Other

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

Avian Activity: There were low numbers of gulls and pelicans observed around the project.

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. Sampling is done for the year.

Fish Rescue/Salvage: None.

Research: Blue Leaf is conducting research on the recently installed lamprey entrance structure at the south adult fish ladder (SFE2). Didson cameras are being used to observe adult lamprey movement and adult salmonid fish interactions with the lamprey entrance.

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: September 6 - 12, 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 2	7/15/2019	07:20	1/10/2020	ERTS	Annual Maintenance/Draft Tube Liner Repair
Unit 3	9/07/2019	14:19	9/09/2019	07:45	Smoke Alarm
Unit 3	9/12/2019	17:30	9/16/2019	ERTS	Smoke Alarm/Faulty
Unit 6	8/05/2019	12:20	11/01/2019	ERTS	6 Year maintenance

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 September 6, 7, 8 and 11.

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: North Ladder depth over weir was out of criteria on the September 7 inspection with a reading 1.4 feet. The orifice appeared to be partially plugged. The plugged orifice was cleaned, bringing the depth back into criteria.

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		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 6.9, 7.5, 6.8 and 7.1 feet, respectively.
South Powerhouse Entrance weir (SPE-2) was on sill during all inspections with readings of 6.9, 7.5, 6.8 and 7.1 feet, respectively.
South Shore Entrance weir (SSE-1) was on sill during all inspections with readings of 7.9, 7.9 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)	35 yd^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 10 %
	X		Any oil seen in gatewells?	

Comments: None.

STSs/VBSs:

Yes	No	NA	Item
X			STSs deployed in all slots and in service?
	X		STSs in continuous-run mode (Note: if not, then STSs are in cycle-run mode)?
	X		STSs inspected this week?
		X	STSs inspection results acceptable?
		X	VBSs differentials checked this week?
		X	VBSs differentials acceptable?

Comments: STS's were operating in Cycle mode due to average sub-yearling Chinook and sockeye lengths being greater than 120 mm.
STS's were inspected from September 3 to 5 and were found in good working order.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	17 - 18
	X		Dewaterer and cleaning systems operating satisfactory?	

Comments: None.

Collection Facility: Collection into raceways for transport began at 1500 on April 23. Loading fish into raceways for barge transport ended at 1500 on July 30. The facility went to 100% sample for truck transport at that time. The deck of the downstream coffer cell of barge dock was found collapsed on September 11. A void in the rock fill inside the coffer lead to the failure. The structure of the coffer dam will be inspected as soon as possible.

Transport Summary: Every-other day barging transport ended with the July 30 barge. Every-other day truck transport began with the August 1 truck. A total of 237 fish were collected with 284 fish being bypassed during this

reporting period. Per 2019 Fish Passage Plan, the Lower Monumental trucking schedule is contingent upon fish numbers. Saturday, August 3 was the third consecutive day with less than 50 smolts collected; therefore trucking was ceased after the second trip. Bypassed fish numbers reflect the end of truck transport.

Spillway Weir: RSW went into service at 00:01:00 on April 3. The RSW was removed from service at 0630 on August 8 due to low river flows. Summer Spill ended at 00:00:00 on September 1.

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
30.7	20.4	0	0.0	70.4	69.0	5.5	3.9

*Scrollcase temperatures.

Other

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

Avian Activity: Gulls and cormorants were the predominant piscivorous bird species observed during fish ladder inspections this week.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
9/06/2019	13:30	0	5	0	0	0
9/07/2019	11:30	0	0	0	0	0
9/08/2019	13:30	2	2	0	0	0
9/11/2019	10:30	12	3	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 September 7.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by PSMFC and Anchor, frozen and properly disposed of in a landfill. Daily and total Siberian prawn counts at Lower Monumental Dam for this reporting period are reported below.

Date	Sample (euthanized)	Collection*
9/06/2019	7	7
9/07/2019	6	6
9/08/2019	10	10
9/09/2019	9	9
9/10/2019	6	6
9/11/2019	9	9
9/12/2019	10	10
Totals	57	57

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

Fish Rescue/Salvage: No Fish Rescue/Salvage took place this reporting period.

Research: No Research took place during this reporting period.

Project: Little Goose
Biologists: Richard Weis
Dates: Sept. 06-12, 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
3	09/09/19	07:29	10/14/19	17:00	Unit Annual,

Comments: Unit 3 placed out of service on September 09 for unit annual.

Adult Fish Passage Facility

Little Goose fish facility, Anchor QEA and/or Oregon Department of Fish and Wildlife staff inspected the adult fishway on September 08, 10, and 11.

Fish Ladder:

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

Comments: None.

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’	1.2, 1.2, 0.9
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 spill. The equipment used to measure NSE weir depth was found out of service on the August 11 inspection. NSE weirs are at a depth greater than 7 foot. Subsurface water velocity was measured near NPE on August 27 using a Rickly velocity meter and averaged 3.2 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 differential for Units 1and 2 was measured on September 05 and was in criteria. There is approximately 2,000 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: VBS differential for Unit 1 and 2 was measured on September 05 and was in criteria.

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.

Collection Facility: The juvenile bypass system is currently operating in criteria. Daily collection for condition sampling began on April 23 at 07:00. The last every other day barge departed on July 30 and every other day truck transport commenced on August 01.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 961 fish were collected, of which 1,171 transported via truck. The descaling and mortality rates were 0.3% and 4.0% respectively. There were 2 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 (ASW) was closed on July 23 at 15:17 per the guidance outlined in the Columbia Basin Teletype (CBT). The ASW will remain closed for the season.

River Conditions

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
31.9	20.5	0	0	68.9	67.6	6.0	4.7

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were last inspected on July 3 with no lamprey being observed. Inspections will resume in December per the Fish Passage Plan.

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
9-06	1230	1	17	0	0
9-07	1430	3	17	0	0
9-08	1400	0	9	0	0
9-09	1200	1	1	0	0
9-10	1230	3	9	0	0
9-11	1245	1	11	0	0
9-12	1130	13	18	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*
9-06	238	238
9-07	116	116
9-08	187	187
9-09	218	218
9-10	404	404
9-11	287	287
9-12	261	261
Totals	1,711	1,711

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

Gas Bubble Trauma (GBT): The last gas bubble monitoring occurred on July 15.

Fish Rescue/Salvage: None.

Research: N/A

Project: Lower Granite
Biologists: Elizabeth Holdren and Steve Lee
Dates: September 6 to September 12, 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
6	09 Sept	0700			Annual Maintenance

Comments: None.

Adult Fish Passage Facility

Lower Granite Corps biologist's and Anchor Environmental biologist's inspected the adult fish ladder September 6, 7, 9, and 11.

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 remain in operation. Diffuser 14 supply was increased at 1630 hours September 9 in response to increased water temperatures at the adult trap.

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	6.9' on 06SEP
			North Shore Entrance (NSE-2) Weir Depth	$\geq$ 7.0' or on sill	Closed
	X		North Shore Channel/Tailwater Differential	1.0'–2.0'	0.7' and 0.9'
	X		Collection Channel Surface Velocity	1.5 – 4.0 fps	All inspections

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. LWG biologists are working with control operators to improve gate depth and channel differential at NSE.

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. Biologists and operators are working to resolve velocity issues.

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)	
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?	September 9

Comments: A light sheen was reported to operators in gatewell slots 4B and 4C September 9. Roadway deck runoff was determined to be the source of the sheen. Oil absorbent socks were immediately deployed to remove the sheen.

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 fifteen of the 14" orifices and three 10" orifices open to maintain optimal flume flow at current forebay elevation. The north makeup water valve remains in local control due to an automatic control motor hardware failure. 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.

Hours Collection Facility: The facility is in collection for transport mode at a 100% sample rate.

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

Spillway Weir: No spill

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
28.6	23.4	0	0	68.0	67.5	5.0	5.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Inline cooling water strainers were nopt inspected during this reporting period.

Invasive Species: There were 4,186 Siberian prawns collected in the sample this week. Of these, 3,490 were live collected and euthanized and 696 were mortalities when sampled. No signs of Zebra/Quagga mussels were found on submerged substrates.

Avian Activity: Bird wires were removed from the spillway tailrace area August 29 for crane barge access to spillway 1 for PIT tag detection array install. Biologist daily piscivorous bird counts at Lower Granite Dam are listed below.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
09/06	1210	0	19	0	0
09/07	0915	3	19	0	0
09/08	1345	3	21	0	0
09/09	1015	3	27	0	0
09/10	1200	2	32	0	0
09/11	1118	1	22	0	0
09/12	1011	5	23	0	0

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

Adult Fish Trap Operations: Adult trap 24 hours 7 day a week operation for LFH and NPT hatcheries brood stock collection for transport continues. The adult fish trap sampling did not occur from 0806 hours September 6 through 1600 hours September 12 due to NOAA personnel having concerns with adult trap water temperatures hovering at 70º F. Adult trap average daily water temperature strings ranged between 70.9ºF and 68.2ºF during this period. Refer to FPP Appendix G-10 for trapping protocols with water temperatures between 70ºF-72ºF. NOAA increased the adult trap sample rate from 70% to 100% at 1600 hours September 12.

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

Research:

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.