U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#29-2019

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: September 13 to 19, 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	10/18	NA	Turbine bearing.
12	08/26	0711	10/18	NA	Annual and oil leaks.
14	08/19	1221	01/01/20	NA	Oil replacement and turbine bearing.
7 & 8	09/09	0639	09/13	1640	Transformer T4 maintenance and testing.
9 & 10	09/16	0636	09/19	1737	Transformer T5 maintenance and testing.
1, 4 & 6	09/17	1001	09/17	1106	ESBS camera inspections, rotated through units.

Comments: 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 13, 15 and 18. 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 Sep 13
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 moderate near the Oregon exit and minimal to very light near the Washington exit. Picketed leads were cleaned as required, including the weekend.

At the Oregon ladder exit, the out of criterion point mentioned above was resolved with a set point adjustment.

There are no problems to report at the Washington ladder exit.

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'	7.8' on Sep 15 & 18
	X		NFEW3 Weir Depth	≥ 8.0'	7.9' on Sep 15
X			South Oregon Entrance Head Differential	1.0' – 2.0'	
	X		SFEW1 Weir Depth	≥ 8.0'	7.9' on Sep 15
	X		SFEW2 Weir Depth	≥ 8.0'	Slack cables on Sep 15
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.8 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 possibly due to calibration or set point drifts, control issues and/or low tailwater elevations. The entrance weirs set points were adjusted on September 15. The slack cables on SFEW2 were resolved when fish pump 2 was removed from service as described below.

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: 24 to 26°
X			Oregon shore Fish Pump 3, Blade angle: 26 to 28°
X			OR North Powerhouse Pool supply from juvenile fishway

Comments: Due to bus switching, fish pump 2 was out of service on September 15, from 1454 to 1502 hours.

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. The spillway debris load would be described as minimal. Much of the debris moves between the powerhouse and the Oregon shoreline. The debris is a mix of aquatic vegetation and woody material. No trash racks were cleaned.

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 units 6, 8, 10 and 13 remained in timer mode. After the unit 8 outage, the brush cycles for the screens were returned to timer mode on September 13. The brush cycles for the screens in unit 7 were found in manual mode and returned to automatic mode on September 16. Camera inspections at units 1, 4 and 6 revealed no problems on September 17.

Daily VBS differential monitoring continued. No high differentials were recorded. Five screens were clean on September 16. 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.

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 on September 23. Both side dewatering valves appear to be operating warmer than normal and will be monitored.

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, 50 juvenile lamprey and 83 smolts were bypassed during secondary bypass. Juvenile shad remained the predominant fish examined.

There was possibly a blockage in the B side secondary bypass line on September 18. However, during inspection, no blockage was found.

TSW Operations: The TSW in spillbay 19 remained closed for the season. The dive at bay 20 to install study equipment for the adult steelhead top spillway weir (TSW) passage efficiency study occurred on September 13. The TSW in bay 20 became operational per the study plan on September 15. That day, there was difficulty in fully opening and closing the TSW. The electrical staff resolved the issue and tested the hoist the next 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
102.3	76.9	5.0	0.0	69.8	68.2	6.0	6.0

Comments: The above data is supplied by Anchor, QEA except water clarity, which is provided by the control room. The spill recorded as due to the TSW passage study except for some of the spill on September 17, which was due to flow in excess of powerhouse capacity.

Other

Inline Cooling Water Strainers: The next cooling water 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 and cormorant numbers again fluctuated. An occasional pelican was observed. No terns were noted. All birds were feeding, especially when the TSW was open, 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 their migration and the juvenile shad out migration.

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

Date	Zone	Gull	Cormorant	Tern	Pelican
Sep 13	Spill	119	33	0	0
	Powerhouse	42	0	0	0
	Outfall	33	21	0	0
Sep 14	Spill	20	15	0	0
	Powerhouse	22	1	0	0
	Outfall	24	19	0	0
Sep 15	Spill	414	14	0	0
	Powerhouse	1	0	0	0
	Outfall	13	25	0	0
Sep 16	Spill	66	1	0	0
	Powerhouse	37	0	0	0
	Outfall	14	49	0	0
Sep 17	Spill	419	14	0	2
	Powerhouse	4	0	0	0
	Outfall	28	31	0	0
Sep 18	Spill	191	7	0	0
	Powerhouse	20	0	0	0
	Outfall	20	30	0	0
Sep 19	Spill	83	5	0	0
	Powerhouse	55	0	0	0
	Outfall	22	23	0	0

In the bypass outfall zone, the gulls and cormorants were mostly roosting on the full flow pipe. At times, a fair number of these birds 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 is on project and will be installed after the start of the new fiscal year. Outfall bird counts will continue into October to examine effectiveness of one and two lasers.

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 on September 22. This week, no Siberian prawns was 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 began on September 15.

Project: Ice Harbor
Biologist: Ken Fone
Dates: September 13 – September 19, 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	9/19/19	1734	TWO transformer replacement
5	9/16/19	0745	9/16/19	1516	STS inspection

Comments: None.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on September 17, 18, and 19.

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: None.

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)	Average of 12 square yards
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: Unit 5 STSs and VBSs were inspected on September 16. There were no problems found.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	20
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: The overflow weirs at the primary dewaterer were operated in manual mode for several days during the reporting period due to the automated system needing to be re-set after a temporary loss of power.

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
28.7	22.8	0	0	70	68	7.6	6.4

*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: Unit 6 draft tube was unwatered on September 18. Eight channel catfish, 1 sucker, and 1 juvenile white sturgeon were recovered and released into the tailrace in good condition.

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 13 - 19, 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	9/12/2019	17:30	9/17/2019	12:05	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 13, 14, 15 and 18.

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 14 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 7.2, 7.6, 7.1 and 7.2 feet, respectively.
South Powerhouse Entrance weir (SPE-2) was on sill during all inspections with readings of 7.2, 7.6, 7.1 and 7.2 feet, respectively.
South Shore Entrance weir (SSE-1) was on sill during the September 13 inspection with a reading of 7.9 feet.

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)	25 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		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.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	17
	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. Inspection of coffer cell by ROV on September 14 found a noticeable gap between the coffer wall and the river bed where the rock fill is coming out.

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 162 fish were collected with 151 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
28.2	21.6	0.0	0.0	68.1	67.9	5.0	3.8

*Scrollcase temperatures.

Other

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

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

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
9/13/2019	12:30	0	6	0	0	0
9/14/2019	10:30	1	8	0	0	0
9/15/2019	13:30	0	9	0	0	0
9/18/2019	10:00	1	2	0	0	0

* Table shows tailrace observation conducted during Adult Fish Ladder inspections

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*
9/13/2019	7	7
9/14/2019	21	21
9/15/2019	0	0
9/16/2019	7	7
9/17/2019	2	2
9/18/2019	11	11
9/19/2019	1	1
Totals	49	49

*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. 13-19, 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 15, 17, and 19.

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’	
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 19 and was in criteria. There is approximately 3,000 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 19 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 559 fish were collected, of which 448 transported via truck. The descaling and mortality rates were 0.7% and 11.2% respectively. Many of the mortalities showed signs of columnaris disease. There were 0 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 (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

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
27.0	22.2	0	0	68.7	68.3	6.0	5.6

*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 will started on April 01.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
9-13	1500	11	14	0	0
9-14	0755	22	11	0	0
9-15	0830	18	2	0	0
9-16	0830	20	7	0	0
9-17	0730	22	5	0	0
9-18	0800	12	5	0	0
9-19	1200	7	10	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*
9-13	231	231
9-14	206	206
9-15	178	178
9-16	486	486
9-17	111	111
9-18	317	317
9-19	160	160
Totals	2,164	2,164

*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 13 to September 19, 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	Sep 9	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 13, 14, 15, and 19.

Fish Ladder:

Yes	No	NA	Location	Criteria	Comments
X			Fish Ladder Exit Differential	Head ≤ 0.5'	
X			Fish Ladder Picketed Lead Differential	Head ≤ 0.3'	
	X		Fish Ladder Depth over Weirs	Head over weir 1.0' to 1.3'	1.4' and 1.4'
X			Fish Ladder Cooling Water Pumps in Service		
X			Fish Ladder Cooling Water Pumps Operating Satisfactorily		

Comments: Fish ladder temperature control pumps remain in operation. Depth over weirs out of criteria reading were due diffuser 14 not responding to increases in forebay elevations. Diffuser 14 supply was reduced September 20 in response to the out of criteria reading.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
X			South Shore Entrance (SSE-1) Weir Depth	≥ 8.0'	
X			South Shore Entrance (SSE-2) Weir Depth	≥ 8.0'	
X			South Shore Channel/Tailwater Differential	1.0' – 2.0'	
X			North Powerhouse Entrance (NPE-1) Weir Depth	≥ 8.0' or on sill	
X			North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0' or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0'–2.0'	
X			North Shore Entrance (NSE-1) Weir Depth	≥ 7.0' or on sill	
			North Shore Entrance (NSE-2) Weir Depth	≥ 7.0' or on sill	Closed
	X		North Shore Channel/Tailwater Differential	1.0'–2.0'	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. Velocities have been reading below 1.5 fps at both north powerhouse and north shore sensors. 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?	

Comments: A film was observed in gatewell 6A September 14, 16, and 17. Oil absorbent pads were deployed to slot 6A to remove the film.

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.

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 is occurring at this time.

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
28.2	23.2	0	0	68.0	66.0	5.0	5.0

*Cooling water intake temperature.

Other

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

Invasive Species: There were 2,990 Siberian prawns collected in the sample this week. Of these, 2,490 were live collected and euthanized and 500 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
09/13	1205	4	40	0	0
09/14	1455	11	35	0	0
09/15	0810	13	38	0	0
09/16	1232	15	31	0	0
09/17	0731	8	10	0	0
09/18	1144	16	45	0	0
09/19	1635	27	46	0	0

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

Adult Fish Trap Operations: Adult operation was changed to 24 hours 7 day a week operation for brood stock collection for transport to LFH and NPT hatcheries continues. The sample rate was reduced from 100% to 20% at 1500 hours September 15.

Fish Rescue/Salvage: No fish salvages or rescues were performed 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.