U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#35-2019

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: October 25 to 31, 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	01/09/20	NA	Turbine blade packing.
13	06/10	0610	12/12	NA	Turbine bearing.
14	08/19	1221	11/26	NA	Oil replacement and turbine bearing.
8	10/31	0924	11/04	NA	Control system issue.
4 & 6	10/29	1006	10/29	1033	ESBS camera inspections, rotated through units.
8 thru 12	10/30	1205	10/30	1655	Trash racks cleaned, rotated through units.
1 thru 4 & 6 thru 8	10/31	0759	10/31	1438	Trash racks cleaned, rotated through units.

Comments: All return to service dates are subject to change. The soft one percent peak efficiency constraint begins on November 1.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on October 25, 27 and 29. Adult fish counting concluded on October 31. The general maintenance staff will raise the picketed leads on November 1.

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’	0.8’ on Oct 29
X		Washington Count Station Differential	0.0’ to 0.5’	

Comments: Debris loads were light to moderate near the Oregon exit and minimal near the Washington exit. Picketed leads were cleaned as required. At the Oregon exit, the leads were cleaned after differential alarms came in on October 29. The traveling screens debris trough was cleaned as needed.

At the Washington shore exit, multiple weir alarms came in on October 29. The out of criterion point mentioned above was observed while the alarms were coming in. The ladder returned to criterion after the alarms were reset.

Also, the count station window brush jammed in the down position on October 30. The mechanical staff raised the brush immediately.

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 Oct 27.
X			NFEW3 Weir Depth	≥ 8.0'	
X			South Oregon Entrance Head Differential	1.0' – 2.0'	
X			SFEW1 Weir Depth	≥ 8.0'	
X			SFEW2 Weir Depth	≥ 8.0'	
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.9 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 criterion point listed above for October 27 was possibly due to calibration or set point drifts, control issues and/or low tailwater elevations.

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

Comments: There are no problems to report.

Juvenile Fish Passage Facility

The juvenile system remains in primary bypass for the fall season. Light maintenance and preparations for the winter outage continued at the facility. The full flow flume adult flush line valve was partially closed to reduce ice formation on October 28.

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: Debris was a mixture of aquatic vegetation and woody material. New incoming debris was minimal. The spillway debris load would be described as minimal. Much of the debris moved between the powerhouse and the Oregon shoreline, which is causing the debris to dissipate. All trash racks were cleaned in preparation for camera inspections. The debris was removed from October 29 to 31. A total of 15 yards of debris was removed. No fish were observed in the debris.

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. Camera inspections in units 4 and 6 revealed no problems on October 29.

Daily VBS differential monitoring continued. No high differentials were recorded. Four screens were cleaned on October 29. 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 and trash rack cleaning. High and low water alarms occurred during trash rack cleaning on October 29 and 30. Orifice cycling protocols were reviewed with the staff. Orifice valve operators were repaired as needed.

Bypass Facility:

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

Comments: During the fall primary bypass season, all systems remain out of service with light maintenance ongoing.

The separator remained dewatered for inspection. The paint will again be tested for lead and other elements. After which, the process needed to clean the separator will be determined and proceed. Next, measures of the wall and floor thickness will occur. Finally, a path forward for rehabilitation will be determined.

TSW Operations:

The TSW in spillbay 19 remained closed for the season. The TSW in bay 20 is being operated per the adult steelhead top spillway weir (TSW) passage efficiency study plan.

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
97.1	72.1	3.3	0.0	56.0	54.0	6.0	6.0

Comments: The above data is from the control room. The spill recorded was due to the TSW passage study.

Other

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

Avian Activity: Casual avian observations continued. Bird numbers appear to be fluctuating with their migration and the juvenile shad out migration.

Gull activity fluctuated in the powerhouse zone with birds feeding and roosting. At times, gulls were noted feeding in large numbers. A few cormorants were noted also.

In the spill zone, gull and cormorant numbers again fluctuated. No pelicans or terns were observed this week. All birds were feeding or roosting. Feeding was especially high when the TSW was open. A large percentage of gulls and cormorants roosted on the top of the navigation lock and Washington ladder walls. Adult and juvenile birds were observed.

In the bypass outfall zone, the gulls and cormorants were mostly roosting on the full flow pipe. However, at times, a fair numbers of these birds were noted feeding.

The laser for bypass outfall hazing remained in place. The laser was examined and programmed to haze the navigation lock wing wall on October 28. Laser did appear to be effective on the wing wall. The outfall programming could not be verified at the time. Thus, bird counts remained high near the outfall. At this point, further evaluation of laser technology will resume next spring.

In the forebay zone, an occasional gull flock, loon, grebe, kingfisher or cormorant was observed. Fluctuating gull numbers 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 November.

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

Research: The University of Idaho concluded the adult lamprey passage study and began removing equipment on October 28.

The adult steelhead top spillway weir (TSW) passage efficiency study continued. The TSW was opened 43 minutes late on October 26. The sensor cable on the trash rack in 1B slot was damaged during trash rack cleaning on October 31. A dive will be required to repair/replace the cable before the spring phase of the study.

Project: Ice Harbor
Biologist: Ken Fone
Dates: October 25 – October 31, 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
5	10/15/19	0741	---	---	Install new head gate cylinder in 5A
1	10/28/19	0841	10/28/19	1343	STS inspection
2	10/28/19	1405	10/28/19	1633	STS inspection
3	10/29/19	0844	10/29/19	1505	STS inspection and swap STS in 4A

Comments: None.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on October 29, 30, and 31.

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’	2.2’
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’	2.1’

Comments: The south shore and north shore channel/tailwater head differentials were above criteria on the October 29 inspection, when the tailwater was on the low side. Part of the cause for the high differentials may be related to

measurement error when using the measuring tape to get the channel and/or tailwater elevations. Subsequent inspections showed head differentials that were in criteria when the tailwater was higher.

During the night of October 28, the wind picked up and was blowing from the northeast. The water turbulence broke loose the south fish ladder exit debris boom, which then struck and broke the air piping for the bubbler at the ladder exit. Milfoil and sticks flowed into the exit and plugged up the picketed leads at the fish count station, causing the water level upstream of the leads to rise and overflow out of the ladder. There were no fish found on the ground. From 0300 hours to 0800 hours on October 29, the picketed leads were raised to reduce the water level and allow the debris to pass. See MFR 19 IHR 18 for more details. There were no further major debris issues at the picketed leads through the end of the fish count station on October 31.

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 20 square yards
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?	Head gate slot 5A and gatewell slot 5A

Comments: On October 16, less than a cup of hydraulic oil was spilled into head gate slot 5A from the head gate hoses. Oil absorbent socks were deployed and the appropriate state and federal agencies were notified.

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 1, 2, 4, and 5 STSs were inspected on October 28, 29, and 30. The STS in slot 4A had a separation several feet long at one of the seams. The damaged STS was immediately pulled and replaced with a spare STS. There were no fish observed trapped inside the damaged STS.

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 is ended for the year.

Removable Spillway Weir (RSW): Voluntary spill for fish passage is 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
26.4	17.7	0	0	57	56	9.2	9.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Monthly strainer inspections for lamprey ended in June and will start again in December. Unit 1, 2, 4, and/or 5 strainers were cleaned on October 28, 30, and 31, due to increasing water pressure differentials across the strainers. A total of approximately 3,454 juvenile shad and 7 Siberian prawn mortalities were found.

Avian Activity: There were moderate to high numbers of gulls observed around the project. The birds were observed to be foraging downstream of the powerhouse and at the navigation lock discharge in the tailrace.

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: None.

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: October 25 - 31, 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 4	10/09/2019	16:05	12/12/2019	ERTS	Governor Control
Unit 5	10/03/2019	15:50	12/05/2019	ERTS	Governor Control
Unit 6	8/05/2019	12:20	11/15/2019	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 USACE biologists on October 28, 29 and 30.

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 picketed leads were found out of criteria on 29 October with a differential of 0.8 feet. The leads were lifted immediately and the leaves were cleared by Biologist returning to the differential to 0.0 feet.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Shore Entrance (NSE-1) Weir Depth	≥ 8.0’ or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	≥ 8.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
		X	South Powerhouse Entrance (SPE-1) Weir Depth	≥ 8.0’ or on sill	
		X	South Powerhouse Entrance (SPE-2) Weir Depth	≥ 8.0’ or on sill	
X			South Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
		X	South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	
X			South Shore Entrance (SSE-2) Weir Depth	≥ 6.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: South Powerhouse Entrance weir (SPE-1) was on sill during all inspections with readings of 6.7, 6.9 and 7.1 feet respectively.
South Powerhouse Entrance weir (SPE-2) was on sill during all inspections with readings of 6.7, 6.9 and 7.1 respectively.
South Shore Entrance weir (SSE-1) was on sill during all inspections with readings of 7.8, 7.4 and 7.6 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 – 15 %
	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: The facility was dewatered at 1200 on October 3 for cleaning and winter maintenance.

Transport Summary: Transport season ended on September 30.

Spillway Weir: There was no spill during this reporting period.

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
21.8	16.2	0.0	0.0	57.0	54.0	5.0	5.0

*Scrollcase temperatures.

Other

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

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

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
10/28/2019	12:15	13	0	0	0	0
10/29/2019	15:05	0	0	0	0	0
10/30/2019	12:30	8	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 October 1.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by PSMFC and Anchor, frozen and properly disposed of in a landfill. Juvenile fish collection ended at 0700 on September 30.

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

Research: No Research took place during this reporting period.

Project: Little Goose
Biologists: Scott St. John and Richard Weis
Dates: October 25 – October 31, 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
2	10/07/19	07:15	11/01/19	17:00	Unit Annual, VBS/ESBS Inspection
1	10/29/19	06:44	10/29/19	14:55	Dive work for MOC 16 LGS 16

Comments: Part of the dive work outlined in MOC 16 LGS 16 was conducted on October 29, requiring Units 1 and 2 to be out of service.

Adult Fish Passage Facility

Little Goose fish facility, Anchor QEA and/or Oregon Department of Fish and Wildlife staff inspected the adult fishway on October 27 and 31.

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: Cooling water pump were shut off for the season on September 23.

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 SSE weirs were raised, closing the SSE on October 29 from 05:45 until 14:30 for the dive work outlined in MOC 16 LGS 16. The adult fishway continues to operate in manual mode. The equipment used to measure NSE weir depth was found out of service on the August 11 inspection. Subsurface water velocity was measured near NPE on October 27 using a Rickly velocity meter and averaged 2.7 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: Auxiliary Water Supply (AWS) pumps were out of service part of the day on October 29 to conduct dive work outlined in MOC 16 LGS 16. AWS pumps 1, 2 and 3 were out of service at 05:40, 05:40 and 12:13 and returned to service at 11:23, 15:12 and 15:12, respectively.

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 1 and 3 were measured on October 25 and were 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: ESBS/VBS underwater camera inspections were conducted on Unit 2 on October 10 and 11. The inspection found a VBS fastener bar in gatewell 2B partially dislodged. Powerhouse maintenance crews currently have gatewell 2A dewatered for fastener upgrades and will repair the fastener in gatewell 2B during the current annual maintenance outage. VBS differential for Units 1 and 3 were measured on October 25 and were in criteria.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comments: None.

Collection Facility: The juvenile fish facility experienced colder than normal temperatures during this report period. All fish collected at the juvenile fish facility on October 30 from 05:30 until 14:50 had to be routed through the "A" side separator exit due to a frozen water supply valve on the "B" side sample tank. 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 will conclude with the last truck leaving on November 01.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 134 fish were collected, of which 91 transported via truck. The descaling and mortality rates were 1.5% and 0.0%

respectively. 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

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
26.0	15.6	0.0	0.0	56.0	53.5	6.0	6.0

*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
10-25	1025	45	58	0	0
10-26	0730	41	32	0	0
10-27	1400	92	23	0	0
10-28	1315	0	33	0	0
10-29	1315	40	16	0	0
10-30	1110	123	25	0	0
10-31	1500	55	40	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*
10-25	78	78
10-26	58	58
10-27	37	37
10-28	34	34
10-29	56	56
10-30	92	92
10-31	247	247
Totals	602	602

*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: October 25-31, 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
1	10/27	1345	10/27	1518	ESBS inspection
2	10/27	1223	10/27	1338	ESBS inspection
3	10/27	1018	10/27	1216	ESBS inspection
5	10/27	0909	10/27	1012	ESBS inspection
6	10/27	0701	10/27	0903	ESBS inspection

Comments: None.

Adult Fish Passage Facility

Lower Granite Corps biologist's and Anchor Environmental biologist's inspected the adult fish ladder October 25, 26, 27, and 31.

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: None.

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'	0.9
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	1.1, 1.1, 1.4, 1.0

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. SSE gates are being repositioned in response to out of criteria readings.

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. Velocities have been reading below 1.5 fps at both north powerhouse and north shore sensors. Biologists, operators, and District engineers are working to resolve fish ladder velocity issues and control system 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: None.

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: None.

ESBSs/VBSs:

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

Comments: ESBSs were inspected October 27 and 28.

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 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
22.0	16.6	0	0	53.5	50.0	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 11 Siberian prawns collected in the sample this week. Of these, 3 were live collected and euthanized and 8 were mortalities when sampled. No signs of Zebra/Quagga mussels were found on submerged substrates.

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
10/25	1240	5	17	0	0
10/26	1212	8	18	0	0
10/27	1105	4	17	0	0
10/28	1045	6	14	0	0
10/29	1045	3	22	0	0
10/30	1414	3	21	0	0
10/31	1230	5	17	0	0

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

Adult Fish Trap Operations: Adult trap operation remains at 20% sample rate in 24 hours 7 day a week operation. Collection of B-run steelhead brood stock for IDFG continues.

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

Research:

USGS Juvenile Fall Chinook Salmon Growth and Origin

USGS began collection of previously tagged subyearling Chinook utilizing LWG juvenile collection facility SbyC system began October 1 and will continue through October 31. Previously PIT tagged fish are diverted to the SbyC tanks, weighed, measured, GSI sampled, scanned for PIT tag code, recovered from anesthetic, and released back to the river. The objective of this project is to estimate the growth of PIT-tagged subyearling Chinook salmon from the Clearwater River to Lower Granite Dam.

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.