U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#34-2020

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: October 23- 29, 2020

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
3	10/26	0700	11/12	N/A	Thrust bearing system maintenance/upgrades.
6	10/26	0700	10/28	1613	New top plate pump installation.
7	10/29	0700	11/4	N/A	New top plate pump installation.
4	10/27	1000	10/27	1100	ESBS camera inspections.

Comments: The hard one percent peak efficiency constraint continued. The soft one percent peak efficiency constraint begins November 1 at 0001 hours.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on October 23, 25 and 27. The inspection on October 25 occurred when fish pump 3 was out of service, which will be discussed below. Adult fish counting continued and will conclude on October 31. The general maintenance staff will raise the picketed leads on November 2.

Fish Ladder Exits

Yes	No	Location	Criteria	Comments
X		Oregon Exit	Head over weir 1.0’ to 1.3’	
X		Oregon Count Station Differential	0.0’ to 0.5’	
X		Washington Exit	Head over weir 1.0’ to 1.3’	
X		Washington Count Station Differential	0.0’ to 0.5’	

Comments: Debris loads were light near the Oregon exit and minimal near the Washington exit. Aquatic vegetation continued to be an issue. The general maintenance staff cleaned the picketed leads frequently, including the on Saturday.

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'	
	X		NFEW3 Weir Depth	≥ 8.0'	Raised above water on Oct 25.
X			South Oregon Entrance Head Differential	1.0' – 2.0'	
	X		SFEW1 Weir Depth	≥ 8.0'	Raised, 5.3' on Oct 25.
	X		SFEW2 Weir Depth	≥ 8.0'	Raised, 5.4' on Oct 25.
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.7 fps.
X			Washington Entrance Head Differential	1.0' – 2.0'	
X			WFE2 Weir Depth	≥ 8.0'	
X			WFE3 Weir Depth	≥ 8.0'	

Comments: NFEW3, SFEW1 and SFEW2 were out of criteria on October 25 due to fish pump 3 being out of service, which will be discussed below. NFEW3 was raised above the water line along with SFEW1 and SFEW2 being raised to maintain entrance pool differentials in criteria on October 24 between 1559-1650 hours as required by the Fish Passage Plan when two fish pumps are out of service. All three weirs remained in manual mode and were adjusted as required until they returned to service on October 26 at 1034 hours with fish pump 3.

Auxiliary Water Supply System

Operating Satisfactory	Standby	Out of Service (OOS)	Auxiliary Water Supply System (AWS)
Yes			WA shore Wasco County PUD Turbine Unit
	Yes		WA shore Wasco PUD Bypass
		Yes	Oregon shore Fish Pump 1, OOS to Feb 1, 2021.
Yes			Oregon Ladder Fish Pump 2, Blade angle: 25-26°.
Yes*		Yes*	Oregon Ladder Fish Pump 3, Blade angle: 25-26° or OOS.
Yes			OR North Powerhouse Pool supply from juvenile fishway

*Comments: Repairs to fish pump 1 continued. The return to service date has been moved out to February 1, 2021.

Fish pump 3's alarm system failed on October 24. The pump was operating satisfactorily. However, without an alarm system, it was determined the proper course of action was to remove the pump from service, which occurred at 1559 hours. To meet FPP requirements for two fish pumps out of service, the entrance weirs were raised as described above. As a reminder, fish pump 1 is still down for major overhaul.

After working on the power supply to the alarm system, the electrical staff was able to return the alarms to service on October 26, the next working day. Fish pump 3 was returned to service with all entrance weirs reset to automatic mode by 1034 hours.

Juvenile Fish Passage Facility

The juvenile system remains in primary bypass for the fall season. Cleaning, light maintenance and preparations for winter continued at the facility. Staffing remained on day shift only.

The separator was dewatered on October 27 at approximately 0800 hours. The upwell screens were removed, and the separator was cleaned in preparations for rehabilitation of the separator floor and upwell screens side supports.

Forebay Debris/Gatewell Debris/Oil

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Minimal to moderate.
X			Were trash rack differentials measured?	Daily.
X			Trash rack differentials acceptable?	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: Debris loads were minimal to moderate near the powerhouse and minimal beside the spillway. Incoming debris loads were minimal. The woody debris and aquatic vegetation continued to move back and forth from the powerhouse to the Oregon shoreline.

No trash rack cleaning or forebay debris removal occurred.

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: ESBS's remained deployed in all units. ESBS camera inspections in units 3 and 4 reveal no problems on October 27. Unit 3 was already out of service. The biologist found an over current alarm at the PLC for the screen in slot 6B on October 25. A trouble report was turned into the control room and the cycle counts were reset. The electrical staff examined the issue while the unit was out of service.

Daily VBS differential monitoring continued. No high differentials were measured. Five VBS's were cleaned on October 24 and four VBS were inspected, which include cleaning, on October 28. No fish were observed on either occasion.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe

Yes	No	NA	Item	Number of orifices in service
X			Did orifices operate satisfactory?	42
	X		Were the dewaterer and cleaning systems operated satisfactory?	

Comments: Due to continued concern for the two side dewatering valves, orifices cycling remained once a day. Orifices were adjusted for VBS cleaning and inspection as required.

The transition screen cleaning brush remained out of service. The air burst system's zone 5 kept the transition screen clean.

The rectangular screen cleaning brush was found stalled at the south end of its cycle and an alarm was noted on the PLC on October 23 at 0745 hours. The PLC recorded the alarm coming in at 0315 hours. The biologist ran the brush by hand using the switches on the control panel to park the brush upstream. They then cleared the alarm and placed the brush back into automatic mode after determining it to be functional. At 0924 hours, the control room notified the biologist the rectangular brush triggered another alarm. The brush was examined by the biologist and was found again stalled in the downstream position with the brush raised. Two members of the electrical staff were called in to repair the brush and arrived at 1135 hours. They determined the alarm was due to the upstream park limit switch being loose and remaining on, which can confuse the program as to the location of the brush. This is part of the same issue we have had continuously with limit switches and the system control programming this

season. After the limit switch was adjusted and the brush tested, it was returned to automatic mode by 1230 hours. The brush has continued to run satisfactorily.

The fisheries staff continued to monitor the north and south side dewatering valves' motor temperatures. The temperatures appeared to have to be dropped and there is no need to report them at this time. Future access to the control program is our next step. The north valve still appeared to hang up at times, which causes a "popping" noise with the valve shaking occasionally. This remains as a concern.

Bypass Facility

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

Comments: During fall primary bypass season, all systems remain out of service. Light maintenance continues.

Repair work to the facilities' restrooms was completed. As mention above in the Juvenile Facility opening, the separator was dewatered for rehabilitation to begin on October 27.

Top Spillway Weir (TSW) Operations: The TSW in bay 19 remained out of service. The TSW in bay 20 is being used for the adult steelhead TSW passage efficiency study and as required by the new Biological Opinion. The TSW will be opened per the 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
131.6	98.0	1.6	0.0	59.0	52.0	6.0	6.0

Comments: The above data comes from the control room. The data day is 0000 to 0000 hours. Spillgate hoist maintenance was completed this week. The spill recorded above was for the TSW study and hoist testing.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections will occur on December 1.

Avian Activity: Casual avian observations continued.

No terns or pelicans were observed on project.

A bald eagle and a loon were observed flying over and setting on the tailwater, respectively.

At times, gull activity was heavy in the powerhouse zone were the birds were noted feeding in large numbers. Occasionally, a cormorant was noted.

In the spillway zone, gulls and cormorants were observed. Again, in large numbers at times. The birds were roosting around the spill basin and feeding during TSW use.

At the juvenile bypass outfall, gulls and cormorants were noted. Roosting on the bypass pipe was still the primary use of the area. However, the birds were observed feeding at the outfall, especially on windy days.

In the forebay zone, occasionally gulls were observed flying by or large numbers of gulls would be noted roosting on the water. Several grebes were observed foraging. Occasionally, great blue herons were noted roosting on the

floating debris. At times, gull flocks were observed outside the counting zones, generally near the Oregon boat launch, the project helicopter pad or roosting on the water. Also, gull flocks and few cormorants were noted on the roosting rocks along the Washington shoreline. Finally, eagles were observed flying around the forebay.

The lasers and the bird distress calls will remain out of service until next season.

A future LRAD test has not yet been scheduled.

Hazing effort strategies for the spring of 2021 will now be developed.

Invasive Species: The mussel stations examination on October 25 revealed no problems.

Fish Rescue/Salvage: None occurred this week.

Research: Pacific Northwest National Laboratory (PNNL) continued with the adult steelhead TSW passage efficiency study.

Project: Ice Harbor
Biologist: Ken Fone
Dates: October 23, 2020 – October 29, 2020

Turbine Operation

Yes	No	Turbine Unit Status		
	X	All 6 turbine units available for service (see table 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
5	9/21/20	0900	---	---	Annual maintenance and overhaul

Comments: Units 1, 2, 4, and 6 were taken out of service one at a time for STS inspections on October 27 and 28.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on October 26, 27, and 28.

Fish Ladders:

Yes	No	Location	Criteria	Measurements
X		North Ladder Exit Differential	Head $\leq$ 0.3’	
X		North Ladder Picketed Lead Differential	Head $\leq$ 0.3’	
X		North Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
X		South Ladder Exit Differential	Head $\leq$ 0.3’	
X		South Ladder Picketed Lead Differential	Head $\leq$ 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	$\geq$ 8.0’ or on sill	
	X		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	2.2’, 2.3’
X			South Shore Channel Velocity	1.5 – 4.0 fps	
		X	North Powerhouse Entrance (NFE-2) Weir Depth	$\geq$ 8.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Shore Entrance (NEW-1) Weir Depth	$\geq$ 8.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: On the October 27th and 28th inspections, the south shore channel/tailwater differential was above criteria. One of the south shore auxiliary water supply pumps was turned off on October 29 to bring the channel/tailwater differential into criteria.

Auxiliary Water Supply System (AWS):

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
5-6 pumps	2-3 pumps		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 15 square yards
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0-9%
	X		Any oil seen in gatewells?	

Comments: None.

STSs/VBSs:

Yes	No	NA	Item
X			STSs deployed in all slots and in service for available units?
	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 6 STSs were inspected on October 27 and 28. On October 27, the STS in slot 2A was observed to have a seam that was separated all the way across, creating two 10' x 6" gaps in the mesh. The damaged STS was immediately pulled and replaced with a spare STS. Fortunately, there were no fish found 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 Juvenile Fish Facility is operating in primary bypass mode.

Fish Sampling: Fish sampling is done for the year at Ice Harbor Project.

Removable Spillway Weir (RSW): The RSW is periodically opened for downstream passage of adult steelhead that may have strayed into the Snake River. For the benefit of steelhead, the RSW is scheduled to be operated from 0500 hours to 0900 hours on Sundays, Wednesdays, and Fridays, from October 1 to November 15.

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
22.5	16.6	1.5	0	58	56	7.6	6.4

*Unit 1 scroll case temperature.
Comments: None.

Other

Inline Cooling Water Strainers: Monthly strainer inspections for lamprey will resume in December.

Avian Activity: There were high numbers of piscivorous birds seen around the project, including gulls, mergansers, and pelicans. Many of the birds were observed foraging or resting along the shore, downstream of the powerhouse.

Invasive Species: No new exotic species have been observed.

Siberian Prawn: Sampling is done for the year.

Fish Rescue/Salvage: Unwatering activities that involved fish rescue did not occur this week.

Research: No on-site research is occurring at this time.

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: October 23 - 29, 2020

Turbine Operation

Yes	No	Turbine Unit Status		
	X	All 6 turbine units available for service (see table & comments below for details).	**Hard**	**Soft**
X		Available turbines operated within 1% peak efficiency? Constraint in effect.	X	

Lower Monumental Unit Outages (OOS) and Return to Service (RTS)

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
Unit 1	10/29/2020	0702	10/29/2020	0953	Governor Control Issues
Unit 2	7/15/2019	0720	4/01/2021	ERTS	Annual, Draft Tube Liner
Unit 5	10/19/2020	0707	11/13/2020	ERTS	Annual Maintenance

Comments: None.

Adult Fish Passage Facility

The adult fishways were inspected by Corps biologists on October 26, 27, and 28.

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: None.

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 (SPE-1) Weir was on sill during all inspections with readings of 7.0, 6.9 and 7.5 feet respectively.
South Powerhouse Entrance (SPE-2) Weir was on sill during all inspections with readings of 7.0, 6.9 and 7.5 feet respectively.
South Shore Entrance (SSE-1) Weir was on sill during the October 27 inspection with a reading of 7.3 feet.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
Yes			AWS Fish Pump 1
Yes			AWS Fish Pump 2
Yes			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 yds^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 17%
	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 Juvenile collection facility was watered up at 10:00 on March 26.
Everyday collection for sample condition ended at 0700 on October 1 and the facility was placed into primary bypass at that time. The collection facility was dewatered at 1230 on October 5.

Transport Summary: Alternate day barge transport ended June 21.

Spillway Weir: Summer spill ended on August 31 at 23:59:59. Off season spill to facilitate downstream passage for overshoot steelhead began October 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
22.9	16.1	1.4	0	56.8	56.0	5.0	4.7

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on August 10. No live fish or mortalities were recovered.

Avian Activity: Bird hazing efforts by USDA personnel ended June 2, 2020.
Tailrace bird observations conducted during fish ladder inspections ended for the season September 30, 2020.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on October 19.

Siberian Prawn: Sampling has ended for the season.
Fish Rescue/Salvage: No Fish Rescue/Salvage took place during this reporting period.

Research: No research is occurring currently.

Project: Little Goose
Biologists: Scott St. John and Richard Weis
Dates: October 23-29, 2020

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	04/14/17	14:11	03/31/21	17:00	Spider and upper guide bearing repair.
3	09/21/20	03:20	10/30/20	17:00	Unit Annual
2	10/26/20	03:08	11/30/20	17:00	Unit Annual
6	10/27/20	06:45	10/27/20	09:45	XJ 6 Output breaker opening without valid input.

Comments: None.

Adult Fish Passage Facility

Little Goose fish facility staff inspected the adult fishway on October 25, 27 and 29.

Fish Ladder:

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

Comments: Adult ladder cooling pump was shut down for the season on September 16.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.6
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.6
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
	X		North Powerhouse Entrance (NPE-1) Weir Depth	≥ 7.0’ or on sill	
	X		North Powerhouse Entrance (NPE-2) Weir Depth	≥ 7.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	5.6
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	5.6
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 struggled to maintain entrance criteria at the NSE during Spring spill. The fish control system for the NSE weirs was replaced and is functioning satisfactorily. Sub surface channel velocity was performed on October 04 and averaged 2.5 fps. Weir depth at NSE-1, NSE-2, SSE-1 and SSE-2 were found out of criteria during the October 25 inspection.

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		Gatewell drawdown measured this week?	
		X	Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: There is approximately 200 square feet of floating woody debris currently inside the trash shear boom in the forebay. Drawdowns were performed on October 22 on Units 1 and 2 and were in criteria.

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?
	X		VBSs inspected this week?

Comments: All ESBS screens are in slots and deployed for all available and in-service Units. VBS differentials were performed on October 22 on Units 1 and 2 and were in criteria. ESBS/VBS camera inspections were performed on Unit 3 on September 24 and screens were in satisfactory condition.

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: The airline for the backflush system on orifice 1C1 was found broken and will need repaired once the juvenile channel is dewatered for winter maintenance (MFR 20 LGS 12). During prior ESBS/VBS inspections, an issue with the orifice liner in 6C2 was observed (MFR 20 LGS 14) and will need repaired during winter maintenance. The limitorque motor that operates the weirs for water elevation at the primary dewatering structure is out of service. Weirs are currently being adjust manually until repairs are made.

Collection Facility: Collection for condition sampling began on April 1. The facility continues to collect for daily sample and was placed in secondary bypass on June 21. Collection for every other day truck transport began on August 01 with the first truck leaving LGS on August 03.

Transport Summary: The JFF began collecting for truck transport on August 01. The collection and transportation facility operated within criteria this report period. A total of 2,479 fish were collected. Of the fish collected, 75 were sample or facility mortalities, 0 were by-passed and 2,210 were transported by truck to release site near Bonneville Dam. The descaling and mortality rates were 3.3% and 4.3%, respectively. There were 0 adult lamprey removed from the separator this report period and released approximately 1-mile upstream of the powerhouse.

Spillway Weir: Summer spill operations began on June 21. The ASW was closed for the season on August 07. Spill for adult steelhead overshoots commenced on October 01. ASW spill operations will continue to be conducted in accordance to the most recent Columbia Basin Teletype.

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
21.4	14.9	1.3	0.0	58.6	56.4	6.0	5.4

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inline cooling strainers were inspected and results submitted to district operations every other week for FPOM distribution through mid-June per Fish Passage Plan (FPP) requirements.

Avian Activity: Daily piscivorous bird counts at Little Goose Dam began on April 1.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
10-23	1315	10	38	0	0
10-24	0800	81	33	0	0
10-25	1435	276	33	0	0
10-26	1340	194	28	0	0
10-27	1315	157	36	0	0
10-28	0830	113	28	0	0
10-29	1300	112	11	0	0

Invasive Species: No invasive species have been observed on the mussel station.

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*
10-23	97	97
10-24	57	57
10-25	147	147
10-26	78	78
10-27	186	186
10-28	131	131
10-29	112	112
Totals	808	808

Gas Bubble Trauma (GBT): GBT monitoring has finished for the season.

Fish Rescue/Salvage: A fish salvage in the scrollcase of Unit 2 was conducted on October 28 for annual maintenance. Fish collected and released to the tailrace include 1 unclipped adult steelhead, 1 white sturgeon, 5 juvenile carp and 8 juvenile crappie.

Research: Pacific Northwest National Laboratory (PNNL) collected 1,264 juvenile American shad at Little Goose JFF on October 29. PNNL is developing a revolutionary acoustic transmitter that can be used to study the behavior and survival of sensitive species such as juvenile American shad to inform hydropower mitigation and species management. The ability to implant acoustic transmitters and track the movements of species and life stages of fish that have never been studied before at this level of detail would greatly advance our understanding of fish migration timing and behaviors, habitat use, fishway use and performance, and survival rates at hydropower facilities – resulting in more informed management decisions regarding new and existing hydroelectric facilities and better designs of new hydropower systems that minimize or avoid environmental impacts. In the long term this acoustic transmitter for shad may also lead to reduced cost and time of hydropower permitting and fewer environmental impacts.

Project: Lower Granite
Biologists: Elizabeth Holdren and David Miller
Dates: October 23-29, 2020

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**
3	Oct 19	0659			Annual maintenance

Comments: Units were rolled out of service for ESBS inspections October 25.

Adult Fish Passage Facility

Lower Granite and EAS/Anchor QEA staff inspected the adult fishway October 23, 24, 27, and 28.

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’	
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	5.8, 6.9, 6.0
			North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	Closed
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
	X		Collection Channel Surface Velocity	1.5 – 4.0 fps	1.2, 1.2, 1.2, 1.2

Comments: FOGs 1 and 10 are in operation. The control system sensor for NSE-1 continues to have issues recognizing and responding to tailwater elevation changes. This issue was worked on and was thought to be resolved during the last report week. Operations is looking into the issue.

Auxiliary Water Supply System:

Operating Satisfactorily	Standby	Out of Service	Auxiliary Water Supply (AWS)
Yes			AWS Fish Pump 1
Yes			AWS Fish Pump 2
No			AWS Fish Pump 3

Comments: AWS pump 3 is operational in standby mode with lower guide bearing work delayed until the winter outage due to COVID.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Debris load has picked up this week and is being manages with additional facility rounds. Some woody debris observed in the forebay this season is likely due to the failure in the upriver two sections of the forebay debris boom. Repairs are recommended to prevent further damage to the boom and potential for additional debris in the powerhouse forebay and on unit trashracks.

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)	Ranged from 1-3%
	X		Any oil seen in gatewells?	

Comments: Gatewell differentials were measured October 19. Debris is removed from gatewells with a hand dip basket.

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?	18-24
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: Juvenile collection channel water level and flow is being adjusted using 10" orifices depending on forebay elevations.

Collection Facility: Debris load has increased resulting in obstructions in the sample collection system while at 100%. Obstructions within the sample bypass line continue to be an issue. Bio techs continue to monitor and clear these obstructions as soon as they are observed.

Transport Summary: Truck transport for the week of October 23-29 totaled 2,266 fish transported in three trips.

Spillway Weir: The RSW is operating to facilitate adult steelhead passage from 0500-0900 hours Sundays, Tuesdays, and Thursdays October 1 through November 15.

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
22.5	17.4	1.2	0.0	56.5	52.5	5.0	5.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A

Invasive Species: No zebra/quagga muscles were detected on the trap substrate. There were 134 Siberian prawns collected in the sample and euthanized for disposal.

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
Oct 23	1255	7	32	0	0
Oct 24	1200	9	18	0	0
Oct 25	0819	9	9	0	0
Oct 26	1640	1	11	0	0
Oct 27	1245	14	16	0	0
Oct 28	1528	2	14	0	0
Oct 29	1015	12	17	0	0

Adult Fish Trap Operations: The adult fish trap continues to be operated at a 18% sample rate.

Fish Rescue/Salvage: Lower Granite biologists supported a fish rescue at Dworshak Dam October 26 and October 29 for unit 3 annual maintenance. October 26 ten adult steelhead were recovered and released. As the water receded in the draft tube there were over 100 adults observed near the stoplogs resulting in the rescue being canceled. Unit 3 was re-spun and dewatered again October 29 with a total of 14 adult steelhead recovered. A total of 24 adult steelhead were released at the Asahka boat ramp. Due to the DWO elevator being out of service buckets were used to carry the fish from the 1st to 4th floor for release October 26. No fish mortalities were observed during either of the fish rescue efforts.

Research:

USGS Juvenile Fall Chinook Salmon Growth and Origin

USGS collection of previously tagged subyearling Chinook utilizing LWG juvenile collection facility SbyC system began September 8 and was scheduled to 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. Collection and sampling for this study concluded October 30.

National Marine Fisheries Service (NMFS) Ancillary Adult Passage Monitoring:

Fish that were PIT as juveniles at LWG are monitored as returning adults through the river and LWG facility. For each returning adult the following is estimated; 1) passage time between sets of detection PIT tag coils, 2) whether the fish was handled at the adult trap, 3) duration the fish was held at the adult trap, 4) overall passage time from ladder entrance to exit, 5) whether the turnpool gate was open or closed during passage. This will be the last year of this evaluation.

Sampling of Steelhead, Chinook salmon, and Sockeye salmon by the Idaho Department of Fish and Game (IDFG) and NOAA Fisheries for Biological data collection.

Upriver migrating steelhead, spring/summer Chinook salmon, and sockeye salmon are collected from the adult trap beginning April 4 through December 15. The goal is to collect 5-20% of adult steelhead, spring/summer Chinook salmon, and sockeye salmon ascending the ladder April 4-December 15. Data collection includes fish scales, genetics tissue, sex and length, wild/hatchery composition, and non-adipose clipped hatchery fish assessment. All natural origin adult steelhead and spring/summer Chinook salmon trapped will be PIT tagged to estimate headwater tributary escapement. Sockeye salmon may be PIT tagged in the future to estimate metrics regarding conversion rates. Some steelhead and spring/summer Chinook salmon may be radio-tagged or spaghetti-tagged. This information on adult fish forms the basis for status information used in several forums including BiOp-RPA identified needs.

PIT Tagging and Genetic Sample Collection from Bull Trout for USFWS:

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