U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#42-2020

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: December 11 – 17, 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**
5	12/7	0643	01/14	N/A	Thrust bearing system maintenance/upgrades.
12	12/10	0600	12/16	1526	New top plate pump installation.
13 & 14	12/14	0631	12/14	1350	ESBS's raised.
11	12/14	1353	12/14	1655	ESBS's raised.
6	12/15	0633	12/15	1000	ESBS's raised.
10	12/15	0632	12/15	1309	ESBS's raised.
9	12/15	1003	12/15	1530	ESBS's raised.
8	12/16	0632	12/16	1106	ESBS's raised.
7	12/16	0632	12/16	1417	ESBS's raised.
4	12/16	1108	12/16	1620	ESBS's raised.
3	12/17	0635	12/17	1527	ESBS's raised.
2	12/17	0635	12/17	1217	ESBS's raised.
1	12/17	1220	12/17	1526	ESBS's raised.

Comments: The soft one percent peak efficiency constraint continues. At times, the units ran outside the constraint at BPA's request.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on December 11, 13 and 16.

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 minimal near the Oregon and Washington exits.

Fishway Entrances and Collection Channel

Yes	No	Sill	Location	Criteria	Comments
	X		North Oregon Entrance Head Differential	1.0' – 2.0'	0.8 on Dec 16.
	X		NFEW2 Weir Depth	≥ 8.0'	7.4' on Dec 11, 7.3' on Dec13.
	X		NFEW3 Weir Depth	≥ 8.0'	7.5' on Dec11, 7.4' on Dec 13.
X			South Oregon Entrance Head Differential	1.0' – 2.0'	
	X		SFEW1 Weir Depth	≥ 8.0'	7.6' on Dec 11, 7.4' on Dec13.
	X		SFEW2 Weir Depth	≥ 8.0'	Erroneous on Dec 11, 7.3' on Dec 13.
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: The out of criteria points listed above for the Oregon ladder entrance weirs NFEW2, NFEW3, SFEW1 and SFEW2 were possibly due to the juvenile system no longer supplying flow to the Oregon north powerhouse pool, hydraulic gradients and/or calibration drifts. The reading for SFEW1 on December 11 appeared to be in error when compared to other readings that week. The most logical explanation would be the weir was jammed and probably out of criterion. The out of criterion point for the north Oregon entrance head differential on December 16 was due to fish pump 1 electrical trouble shooting, as described below in the Auxiliary Water Supply System section.

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*		Yes	Oregon Ladder Fish Pump 1, OOS till Dec 15, Blade angle: 22°.
Yes			Oregon Ladder Fish Pump 2, Blade angle: 22°- 30°.
Yes			Oregon Ladder Fish Pump 3, Blade angle: 22°- 30°.
		Yes	OR North Powerhouse Pool supply from juvenile fishway

*Comments: Fish pump 1 returned to service on December 15 at 1400 hours and operated overnight. The pump was out of service for electrical tuning and troubleshooting on December 16, from 0821 to 1216 hours. The fish pumps' blade angles were adjusted as required. The juvenile system remains in emergency bypass.

Juvenile Fish Passage Facility

The juvenile system remains in emergency bypass mode, which will conclude on December 21, when full winter maintenance season will begin.

Forebay Debris/Gatewell Debris/Oil

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Minimal to light.
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 light near the powerhouse and minimal to very light beside the spillway. New debris loads were minimal to very light. The debris consisted mostly of aquatic vegetation and woody material.

While raising the ESBS from 13C slot, a seven foot by five-inch piece of woody material was removed from the back side of the screen.

No trash rack cleaning or forebay debris removal occurred.

There are no problems to report. Trash rack differentials and gatewell slots with continue to be checked during the winter maintenance season.

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: All ESBSs were raised between December 14 to 17, except for Units 5 and 12 which were raised last week. After the screens were raised, they were inspected as camera inspections will no longer be required. The ESBSs appeared clean and only a few juvenile shad were observed on them. Camera inspections will resume in March, 2021.

The brush cycles for the screens in 6A and 11C slots appeared to continue to "short cycle" until the screens were raised on December 14 and 15, respectively. ESBS maintenance will begin next week.

Daily VBS differential monitoring continued until the final ESBS was raised on December 17. One high differential was measured at 1.5 feet this week. However, the unit was at 79 megawatts and the ESBS was about to be raised. Therefore, there was no reason to clean this screen or any others during the week. VBS differential monitoring will resume when ESBS are installed for the TSW fallback study in February.

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: The system remains in emergency bypass mode, which is scheduled to end on December 21. There were 42 orifices in use. Orifice operators were repaired as needed.

Modifying the electrical conduit to the three screen cleaning brushes' limit switches and the control system program continued. After the orifices are closed next week, dewatering valve maintenance will begin.

Bypass Facility

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

Comments: All bypass facility systems remain out of service.

The separator and sample system rehabilitation continued along with gasket replacement on the full flow flume primary/secondary bypass gate. The metal for the separator rehabilitation arrived this week. Welding is scheduled to begin January 4, 2021.

New lighting was installed in the shop on December 15 and 16.

Top Spillway Weir (TSW) Operations: The TSW's in bays 19 and 20 remained out of service.

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
137.7	117.1	0.0	0.0	46.0	45.0	6.0	6.0

Comments: The above data comes from the control room. The data day is 0000 to 0000 hours. Repairs to crane 6 continue. The crane is scheduled to return to service in mid-January 2021. Crane 7 is also scheduled to receive a new gearbox. Spillgate inspections concluded this week.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections will occur on January 4.

Avian Activity: Casual avian observations continued. Currently, there are no hazing efforts occurring. No terns or pelicans were observed on project. Gull and cormorant feeding activity remained light with very few birds in the powerhouse zone.

In the spillway zone, gulls and cormorants were observed in fairly low numbers, with the birds roosting around the spill basin or on the water.

At the juvenile bypass outfall, gulls and cormorants were noted. Cormorant numbers fluctuated. Roosting on the bypass pipe was still the primary use of the area with feeding occurring occasionally.

In the forebay zone, fewer gulls were noted roosting on the water or flying by. In addition, an eagle and a few grebes were observed. Gull flocks and a few cormorants were also noted roosting outside the zone. Gull numbers also appear to be fluctuating.

Invasive Species: The next mussel station examinations will occur on December 20.

Fish Rescue/Salvage: There is nothing to report.

Research: There is nothing to report.

Project: Ice Harbor
Fisheries Technician: Timothy DeKoster
Dates: December 11, 2020 – December 17, 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	12/10/20	1210	Annual maintenance and overhaul
2	11/30/20	0702	---	---	Annual maintenance

Comments: None.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on December 14, 15, and 17.

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’	2.3 (12/17)
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: The South shore channel/tailwater differential was out of criteria when the inspection was conducted on December 17th. Operations was informed and the differential was corrected by the Operator to a differential of 1.7’.

Auxiliary Water Supply System (AWS):

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
5 pumps	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 25.5 square yards
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	Stored STSs obstruct full view into gatewells
	X		Any oil seen in gatewells?	

Comments: None.

Submersible Traveling Screens/Vertical Barrier Screens (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: STSs are removed for winter maintenance.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
		X	Orifices operating satisfactory?	0
		X	Dewaterer and cleaning systems operating satisfactory?	

Comments: The juvenile fish bypass is unwatered for winter maintenance.

Juvenile Fish Facility: The juvenile fish facility is unwatered for winter maintenance.

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

Removable Spillway Weir (RSW): Voluntary spill for fish is done 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
18.9	25.3	0	0	43	44	9.5	9.9

*Unit 1 scroll case temperature.

Comments: None.

Other

Inline Cooling Water Strainers: Seasonal inspections of strainers for lamprey started up again in December and will be completed later this month. Units 1, 2, 4, 5, and 6 were inspected on December 17th for debris and American Shad to prevent clogged strainers over the weekend. A total of 106 American Shad mortalities were found, which is significantly lower amount than what was reported in previous years.

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 downstream of the powerhouse or resting along the south shore and on Eagle Island. Several hundred gulls were observed foraging at the discharge of the navigation lock when the lock was being drained.

Invasive Species: No new exotic species have been observed.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by fisheries management personnel, frozen and properly disposed in a landfill. Sampling is over for the year.

Fish Rescue/Salvage: None.

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

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: December 11-17, 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	12/7/2020	0700	1/11/2021	ERTS	Annual Maintenance
Unit 2	7/15/2019	0720	4/01/2021	ERTS	Annual, Draft Tube Liner
Unit 3	12/16/2020	0701	12/16/2020	1030	STS Removal
Unit 4	12/16/2020	1035	12/16/2020	1400	STS Removal
Unit 5	12/16/2020	1320	12/16/2020	1630	STS Removal
Unit 6	12/17/2020	0705	12/17/2020	1040	STS Removal

Comments: None.

Adult Fish Passage Facility

The adult fishways were inspected by Corps biologists on December 14, 16 and 17.

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	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 6.5, 6.8 and 6.7 feet respectively.
South Powerhouse Entrance (SPE-2) Weir was on sill during all inspections with readings of 6.5, 6.8 and 6.7 feet respectively.
South Shore Entrance (SSE-1) Weir was on sill during all inspections with readings of 7.8, 7.8 and 8.0 feet respectively.

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)	70 yds^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 20%
	X		Any oil seen in gatewells?	

Comments: None.

STSs/VBSs:

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

Comments: STS's were operating in cycle mode due to average sub-yearling Chinook and sockeye lengths being greater than 120 mm.
STS's for Units 1 and 2 were pulled from their gatewells on December 7. Both units are out of service for the remainder of the juvenile fish passage season. STS's for Units 3-6 were removed for the season on December 16 and 17.

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: Orifices were closed and juvenile channel and primary bypass were dewatered for winter maintenance on December 16.

Collection Facility: The collection facility is dewatered for winter maintenance.

Transport Summary: The 2020 transport season has ended.

Spillway Weir: Summer spill ended on August 31 at 23:59:59 and off-season spill ended November 15..

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
24.7	19.8	0	0	44.2*	44.0	7.1	7.0

* Water temperature came from South Shore collection channel on all inspections, due to Scrollcase temperatures not being available.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on December 1. No live fish were recovered. Several juvenile American shad mortalities were present in strainers but could not be counted due to decomposition.

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 December 1.

Siberian Prawn: Sampling is finished for the year.
Fish Rescue/Salvage: N/A

Research: No research is occurring currently.

Project: Little Goose
Biologists: Scott St. John
Dates: December 11-17, 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.
2	10/26/20	03:08	12/17/20	15:32	Unit Annual
1	11/30/20	08:00	01/29/21	17:00	Unit Annual
6	12/16/20	07:07	12/16/20	10:43	ESBS Removal
4	12/16/20	09:39	12/16/20	13:39	ESBS Removal
3	12/16/20	13:03	12/16/20	16:17	ESBS Removal
2	12/17/20	07:15	12/17/20	10:50	ESBS Removal

Comments: None.

Adult Fish Passage Facility

Little Goose fish facility staff inspected the adult fishway on December 14, 16 and 17.

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’	
X			South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 7.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 7.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
X			North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: The adult fishway continues to operate in manual mode.

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 2,400 square feet of floating woody debris currently inside the trash shear boom in the forebay. Drawdowns were last performed on December 3 on Units 3, 4 and 6 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 were removed for winter maintenance on December 16 and 17. VBS differentials were last performed on December 3 on Units 3, 4 and 6 and were in criteria. ESBS/VBS camera inspections were last performed on Unit 1 on December 3 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: The collection facility was placed in primary bypass on November 1. The facility was dewatered for winter maintenance on November 4.

Transport Summary: Daily collection and transport ended on November 1 at 07:00.

Spillway Weir: Spill for adult steelhead overshoots ended on November 15.

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
23.2	18.9	0.0	0.0	42.5	41.6	6.0	6.0

*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. Strainer inspections will begin the middle of December.

Avian Activity: Daily piscivorous bird counts at Little Goose Dam began on April 1 and ended on October 31.

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, frozen and properly disposed of in a landfill. Daily collection ended on November 1; therefore, no prawns were collected and euthanized.

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

Fish Rescue/Salvage: None.

Research: None.

Project: Lower Granite
Biologists: Elizabeth Holdren and David Miller
Dates: Dec 11-17, 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**
1	Nov 30	0704	Dec 17	1542	Annual maintenance
3	Oct 19	0659			Annual maintenance

Comments: None.

Adult Fish Passage Facility

Lower Granite Biologist inspected the adult fishway December 14, 16, and 17.

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’	7.9
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’	0.8
	X		Collection Channel Surface Velocity	1.5 – 4.0 fps	1.2, 1.2, 1.1

Comments: FOGs 1 and 10 are in operation. The control system sensors continue to have issues recognizing and responding to tailwater elevation changes. The electrical crew continues to work on programming and calibration issues with the control system.

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: The failure in the upriver two sections of the forebay debris boom may be resulting in increased powerhouse debris. Repairs of the forebay debris boom are recommended to prevent further damage and limit 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: 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: December 16-17 ESBSs were removed from units 2, 4, 5, and 6 for winter maintenance.

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: All orifice gallery lights were turned off December 16 to encourage fish to exit the juvenile collection channel. Orifices for unit 2-6 were closed with the 14" orifices in unit 1 and the north makeup water valve open to provide flow to flush the primary bypass prior to dewatering December 21. The facility will remain in primary bypass until dewatered for winter maintenance.

Collection Facility: Dewatered for winter maintenance.

Transport Summary: No transport.

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
24.2	20.0	0.0	0.0	37.5	37.0	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.

Avian Activity: N/A

Adult Fish Trap Operations: N/A

Fish Rescue/Salvage: N/A

Research: N/A