

**U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#42-2018**

Project: McNary

Biologist: Bobby Johnson and Denise Griffith

Dates: December 14 to 20, 2018

Turbine Operation

Yes	No	Turbine Unit Status	Hard	Soft
X		All 14 turbine units available for service. (See Table 1 & comments below).		
X		Available turbines operated within 1% peak efficiency? Constraint in effect.		X

Table 1. McNary Unit Outages (OOS) and Return to Service (RTS)

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
11	12/17	0626	12/17	1054	ESBS removal.
12	12/17	0634	12/17	1312	ESBS removal.
13	12/17	1053	12/17	1544	ESBS removal.
14	12/18	0630	12/18	1040	ESBS removal.
1	12/18	0931	12/18	1415	Black start test/ ESBS removal.
2	12/18	0931	12/18	1127	Black start test.

Comments: There are no problems to report.

Adult Fish Passage Facilities

McNary fisheries biologists performed adult fishways measured inspections on December 14, 16 and 17. The Washington ladder dewatering pumps were examined in preparation for the winter outage on December 18.

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 to light (woody material and aquatic vegetation) near the both ladder exits. Trash racks were cleaned by the general maintenance staff as needed.

On December 16, Oregon exit weir 338 tripped nonresponse alarm. On December 17, the electrical staff resolved the issue.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
X			North Oregon Entrance Head Differential	1.0' – 2.0'	
X	X		NFEW2 Weir Depth	≥ 8.0'	7.9' on Dec 17.
X	X		NFEW3 Weir Depth	≥ 8.0'	7.8' on Dec 17.
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 2.4 fps.
X			Washington Entrance Head Differential	1.0' – 2.0'	
X			WFE2 Weir Depth	≥ 8.0'	
X			WFE3 Weir Depth	≥ 8.0'	

Comments: On December 17, the Oregon north powerhouse entrances (NFEW2 and NFEW3) were out of criteria. There was no axillary water from the juvenile channel, the tailwater elevation was low and the electrical staff was examining the PLC at the time of the readings.

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		X	Oregon Ladder Fish Pump 1, Blade angle: 22.
X		X	Oregon Ladder Fish Pump 2, Blade angle: 20 to 21.
X			Oregon Ladder Fish Pump 3, Blade angle: 22.
		X	OR North Powerhouse Pool supply from juvenile fishway.

Comments: On December 17, from 0716 to 1031 hours, fish pump 1 was out of service during an asbestos examination. On December 18, from 0955 to 1215 hours, fish pump 2 was out of service after a bus switch related to the black start test mentioned above and for an electrical feed repair. The juvenile facility collection channel remained in emergency bypass until December 19 when the orifices were closed as described below. The juvenile channel will resume supplying flow to the Oregon north powerhouse pool in late March, 2019.

Juvenile Fish Passage Facility

On December 19, at 0800 hours, the juvenile fish collection channel orifices were closed for winter maintenance season as ESBSs had been raised. By 1430 hours, the fish had been evacuated from the upper and lower emergency bypass channels. Combining December 10 and December 19 fish approximations, we estimate 18 adult steelhead (not examined for clips), one steelhead smolt (not examined for clips), two adult sturgeon, two walleye, one pike minnow, three channel catfish, one sculpin, five adult shad (two mortalities), six small mouth bass and a couple of dozen juvenile shad (with some mortalities) were evacuated to the tailwater from the juvenile collection channel.

There was one clipped subyearling Chinook mortality recorded also.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Light to moderate near powerhouse.
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: The forebay debris loads near the powerhouse were light to moderate. The debris consisted of aquatic vegetation and woody material. New incoming debris loads were minimal. Debris accumulations along the spillway were minimal.

No trash racks were cleaned. Trash racks will be monitored throughout the winter maintenance season.

Extended-length submersible bar screen (ESBSs)/Vertical barrier screen (VBSs):

Yes	No	NA	Item
	X	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: On December 17 and 18, the remaining ESBSs were raised at units 1 and 11 through 14. ESBS maintenance will now begin.

ESBS camera inspection will resume next spring. After being raised, the screens at units 1 and 11 through 14 were found to be all clean with only juvenile shad noted on top of each brush.

The brush cycles for the screens in 1C and 13A slots remained in timer mode until the screens were removed.

VBS differential monitoring occurred daily until all ESBSs were raised. No high differentials were measured and no screens were cleaned. VBS monitoring will resume next spring when ESBSs are reinstalled.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe:

Yes	No	NA	Item	Number of orifices in service
X		X	Orifices operating satisfactory?	42
		X	Dewatering and cleaning systems operating satisfactory?	

Comments: On December 19, emergency bypass concluded as the channel orifices were closed for the winter maintenance season. Orifice valve operators were repaired as needed before this date.

All systems remained out of service with maintenance having begun on the screen cleaning brushes, channel dewatering valves and the stop log hoist.

The contractor who will rehabilitated and repaint the down well dewatering valve pit will begin their efforts on December 26.

Bypass Facility:

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

Comments: All systems remained out of service for winter maintenance, which continues. Minor improvements to the sampling system were completed this week. Rehabilitation of the separator upwell supply valves also continued.

TSW Operations: The TSWs 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
111.4	101.2	0.0	0.0	46.0	45.0	6.0	6.0

Comments: The above data is supplied by McNary control room. Minor repairs on spillbay hoist continued this week.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on January 8.

Avian Activity: Casual avian observations were made during other inspections. No pelicans or terns were noted on project. Gull and cormorant numbers appeared to fluctuate with the juvenile shad outmigration and their numbers appear to be decreasing. Both species were roosting on structures around the tailwater area. Both were feeding in the powerhouse flow. No birds were observed at emergency bypass outfall before it was shutdown.

A gull flock, gull, loon, grebe or cormorant was occasionally noted in the forebay area.

The gull flock and a few cormorants were noted roosting around the project outside the observation zones and areas near both boat docks were used.

Invasive Species: The mussel station examinations will occur on December 26.

Fish Rescue/Salvage: Please see the Juvenile Fish Passage Facility introduction above.

Research: None occurred.

Project: Ice Harbor

Biologist: Ken Fone

Dates: December 14 – December 20, 2018

Turbine Operation

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

Ice Harbor Unit Outages (OOS) and Return to Service (RTS).

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
2	4/25/16	0606	---	---	Runner replacement
4	9/20/18	1619	---	---	Investigate for possible oil leak
3	11/7/18	0753	12/19/18	1726	Runner replacement
6	12/3/18	0954	12/20/18	1707	Install Kaplan piping and investigate for possible oil leak
5	12/18/18	1155	12/18/18	1514	STS removal
3	12/19/18	1937	12/20/18	0832	Packing adjusted to stop excessive leakage
1	12/20/18	0909	12/20/18	1130	STS removal

Comments: The preparatory work on unit 3 for the runner replacement has been delayed until unit 2 is commissioned. The blades in unit 6 were blocked in place to fix the oil leak.

Adult Fish Passage Facility

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

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'	
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	≥ 8.0' or on sill	
X			North Shore Channel/Tailwater Differential	1.0' – 2.0'	

Comments: None.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
5 pumps	3 pumps		Status of the 8 South Shore AWS Pumps
1-2 pumps		1-2 pumps	Status of the 3 North Shore AWS Pumps

Comments: North shore AWS pump #1 has been out of service since November 28 at 1115 hours, due to a faulty relay for FSP-2 Bus #2. A new relay has been ordered. North shore AWS pump #3 tripped off at 1227 hours on December 17 because of a grease system failure. The grease system was restored and pump #3 was returned to service at 1306 hours on the same day. Only one north shore pump was operating during that 39 minute period, so the north shore channel/tailwater differential may have dropped a little below criteria during that time.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	53 square yards
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 to 7%
X			Any oil seen in gatewells?	3C gatewell and head gate slots

Comments: A light oil sheen was first observed in 3C gatewell and head gate slots on November 7. Project maintenance staff believe that the sheen is residual oil off of the intake gate hydraulic cylinder rod. The oil sheen was documented and reported to the proper authorities. Oil absorbing socks were deployed in the slot on November 19.

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: The STSs are in cycle-run mode. The remaining installed STSs (units 5 and 1) were pulled on December 18 and 20, respectively.

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: Unit 6 orifices were mistakenly left closed after STS removal on December 11, and were reopened on December 19. Orifice 1AS would only shut part way on December 13, so it was left open in place of orifice 1AN until it was fixed on December 19.

Juvenile Fish Facility: The fish facility is being operated in primary bypass.

Fish Sampling: Sampling is done for the year.

Removable Spillway Weir (RSW): Voluntary spill for fish passage 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
26.1	20.8	0	0	45	43	9.7	9.7

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Unit 1 and/or 5 strainers were cleaned on December 15 and 18, because of juvenile shad plugging up the strainers. A total of approximately 6,000 dead juvenile shad were removed.

Avian Activity: There were large numbers of gulls, pelicans, cormorants, mergansers, and grebes observed around the project. Most of the gulls, pelicans, cormorants, and mergansers were observed foraging downstream of the powerhouse and the grebes were observed foraging in the forebay.

Invasive Species: No exotic species that are new to the area have been found.

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

Fish Rescue/Salvage: Unit 3 stoplogs were removed from the water on December 17. One yellow perch, 1 sucker, 3 crayfish, and 3 Siberian prawns were rescued from the side-ribs of the stoplogs. The fish were released in the tailrace in good condition.

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

Project: Lower Monumental

Biologists: Chuck Barnes and Raymond Addis

Dates: December 14 - 20, 2018

Turbine Operation

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

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

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
Unit 1	12/10/2014		2/1/2019	ERTS	Rehabilitation Overhaul
Unit 4	9/19/2018	1600	01/11/19	ERTS	Inspection of Oil Governor System/Blade Seal Replacement
Unit 2	12/18/18	0700	12/18/18	1300	STS removal, hub tap
Unit 3	12/18/18	1315	12/18/18	1610	STS removal
Unit 5	12/17/18	1105	12/17/18	1550	STS removal, brush cleaning
Unit 6	12/17/18	0715	12/17/18	1045	STS removal

Comments: None.

Adult Fish Passage Facility

The adult fishways were inspected by Corps biologists on December 18, 19 and 20.

Fish Ladder:

Yes	No	Location	Criteria	Measurements
X		North Ladder Exit Differential	Head \leq 0.5'	
X		North Ladder Picketed Lead Differential	Head \leq 0.4'	
X		North Ladder Depth over Weirs	Head over weir 1.0' to 1.3'	
X		South Ladder Exit Differential	Head \leq 0.5'	
X		South Ladder Picketed Lead Differential	Head \leq 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	\geq 8.0' or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	\geq 8.0' or on sill	
X			North Shore Channel/Tailwater Differential	1.0'–2.0'	
		X	South Powerhouse Entrance (SPE-1) Weir Depth	\geq 8.0' or on sill	
		X	South Powerhouse Entrance (SPE-2) Weir Depth	\geq 8.0' or on sill	
X			South Powerhouse Entrance Channel/Tailwater Differential	1.0'–2.0'	
		X	South Shore Entrance (SSE-1) Weir Depth	\geq 8.0'	
X			South Shore Entrance (SSE-2) Weir Depth	\geq 6.0'	
X			South Shore Channel/Tailwater Differential	1.0' – 2.0'	

Comments:

South Powerhouse Entrance (SPE-1) was at sill during all inspections with readings of 6.4, 6.7 and 6.1 feet respectively.

South Powerhouse Entrance (SPE-2) was at sill during all inspections with readings of 6.4, 6.7 and 6.1 feet respectively.

South Shore Entrance (SSE-1) was at sill during all inspections with readings of 7.2, 7.6 and 7.0 feet respectively.

Auxiliary Water Supply System:

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

Comments: AWS Fish pump 1 is out of service for seized Wicket Gate Bushings. Current estimated RTS date is 7 February, 2019.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	158 sq yd average
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
		X	Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: STS's were removed December 17-18 and screens are dogged off in gatewells, blocking view of gatewell debris. Orifices were closed December 17.

STSs/VBSs:

Yes	No	NA	Item
X	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 removed for winter maintenance December 17-18. December 14-16, all STS's were deployed and in service.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comments: December 14-16, 18 orifices operating satisfactory and PDW mechanical cleaning brush was turned off on weekend days in case of faults. The run frequency of the bubbler debris removal system was increased to keep the screen clear of debris. All orifices were closed at 1000 on December 17 and juvenile channel, PDW and Primary Bypass Pipe were de-watered for winter maintenance. All fish were crowded with receding water and directed through Emergency Bypass pipe as stated in FPP, Appendix F.

Collection Facility: Collection for truck transport ended at 0700 on October 1 and the facility operation was changed to primary bypass. The facility was dewatered at 1230 on October 3 for cleaning and winter maintenance.

Transport Summary: Alternate day trucking ended at 0700 on October 1.

Spillway Weir: RSW went into service when Spring Spill began at 0001 on April 3. RSW was closed at 1245 on August 8 due to TMT decision. Summer Spill ended at 00:00:00 on September 1.

River Conditions

River conditions at Lower Monumental Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (°F)*		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
27.2	19.4	0	0	45	43	7.0	7.0

*Scroll case temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers are not inspected in December.

Avian Activity: N/A

Comments: Bird hazing efforts by USDA personnel ended at 2000 on June 2. Tailrace observations for bird hazing effectiveness ended with the June 30 observation. Observation of piscivorous birds during fish ladder inspections ended on October 1.

Outfall pipe bird water cannons were turned off on June 11, due to a damaged water cannon at pipe exit. The standby set of cannons have a missing water cannon and were already out of service.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on November 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 October 1.

Fish Rescue/Salvage: Juvenile Channel de-watered December 17. All fish were crowded by JFF personnel with receding water and directed through Emergency Bypass as stated in FPP, Appendix F. Due to large water volume exiting through Emergency Bypass, it is impossible to enumerate fish removed from channel but no mortality was observed and all fish were successfully returned to the tailrace.

Research: No onsite research is in progress at this time.

Project: Little Goose

Biologists: Scott St. John and Richard Weis

Dates: December 14-20, 2018

Turbine Operation

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

Little Goose Unit Outages (OOS) and Return to Service (RTS)

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
5	04/14/17	14:11	6/1/20	17:00	Spider and upper guide bearing repair.
1 & 2	12/18/18	06:30	N/A	N/A	Forced OOS due to bus ground fault

Comments: None.

Adult Fish Passage Facility

Little Goose fish facility staff inspected the adult fishway on December 17, 18 and 20.

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 Pumps in Service		
		X	Fish Ladder Exit Cooling Water Pumps Operating Satisfactorily		

Comments: None.

Fishway Entrances and Collection Channel

Yes	No	Sill	Location	Criteria	Measurements
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'	0.9'
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: Adult fishway control system is currently operating in manual mode. On December 17, the North Shore Channel/Tailwater differential was 0.9 feet. Adjustments were made and the fishway is currently operating within criteria.

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 currently 150 sq. ft. of floating woody debris inside the trash shear boom in the 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?
	X		VBSs inspected this week?

Comments: All units have ESBS screens removed and inspected for the season. The ESBS screen on Unit 3, slot B was found to have a faulty cleaning brush and approximately 150 juvenile shad, 7 juvenile Chinook salmon and 2 crappie mortalities were found on the screen.

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 bypass system was dewatered on December 19 for the winter maintenance period.

Collection Facility: Juvenile fish facility is dewatered for winter maintenance.

Transport Summary: Collection for transportation ended at 07:00 on November 01.

Spillway Weir: Adjustable spillway weir was closed for the season on August 03 at 15:30.

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
24.5	18.6	0.0	0.0	42.5	42.3	6+	6+

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inline cooling strainers are being inspected and results submitted every other week.

Avian Activity: Average daily piscivorous bird counts ended on October 31 per the Fish Passage Plan requirement at Little Goose Dam.

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

Siberian Prawn: Juvenile Fish Facility is currently in primary bypass and not sampling.

Gas Bubble Trauma (GBT): GBT monitoring ended for the year.

Fish Rescue/Salvage: None.

Research: None.

Project: Lower Granite

Biologists: Elizabeth Holdren and Stephen Hampton

Dates: December 14 – December 20, 2018

Turbine Operation

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

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

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
4	Nov 07	0700	Dec 20	1256	Annual maintenance and digital governor upgrade
3	Dec 17	0803	Dec 17	1000	Repair crack in piping

Comments: Unit are being operated in the soft constraint of 1% efficiency.

Adult Fish Passage Facility

Lower Granite staff inspected the adult fishway December 17, 19, and 20.

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 Pumps in Service		
		X	Fish Ladder Cooling Water Pumps Operating Satisfactorily		

Comments: None.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
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		X	North Powerhouse Entrance (NPE-1) Weir Depth	\geq 8.0' or on sill	7.7 on 12/20
X		X	North Powerhouse Entrance (NPE-2) Weir Depth	\geq 8.0' or on sill	7.7 on 12/20
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0'–2.0'	
X			North Shore Entrance (NSE-1) Weir Depth	\geq 7.0' or on sill	N/A
			North Shore Entrance (NSE-2) Weir Depth	\geq 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	

Comments: Diffuser-14 was placed in manual control to maintain depth over weir criteria December 10 due to a failed elevation sensor wire. NPE weirs on sill 12/20/2018.

Auxiliary Water Supply System:

Operating Satisfactorily	Standby	Out of Service	Auxiliary Water Supply (AWS)
X			AWS Fish Pump 1
X			AWS Fish Pump 2
	X		AWS Fish Pump 3

Comments: AWS pumps are operating with pump 1 in fast mode.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Average Coverage of 95 yd ²
	X		Gatewell drawdown measured this week?	
		X	Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: None.

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 are dogged off for winter maintenance.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

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

Comments: None.

Collection Facility: N/A.

Transport Summary: N/A

Spill/Spillway Weir: N/A.

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
24.8	17.5	0	0	40.6	39.3	5.0 ⁺	5.0 ⁺

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A.

Invasive Species: No mussels were present on the December 6 inspection.

Siberian Prawn: N/A.

Avian Activity: N/A.

Gas Bubble Trauma (GBT) Monitoring: N/A.

Adult Fish Trap Operations: N/A.

Fish Rescue/Salvage: N/A.

Research: N/A.