U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#01-2021

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: March 1-4, 2021

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	04/30	N/A	Thrust bearing upgrades/blade seals.

Comments: The soft one percent peak efficiency constraint continues. RTS dates are subject to change.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on March 1 and 3. Winter outages for the Washington and Oregon ladders occurred in January and February, respectively. Fish counting will resume on April 1.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
X		Oregon Exit	Head over weir 1.0’ to 1.3’	1.1’
X		Oregon Count Station Differential	0.0’ to 0.5’	0.0’
X		Washington Exit	Head over weir 1.0’ to 1.3’	1.1’ to 1.2’
X		Washington Count Station Differential	0.0’ to 0.5’	0.0’ to 0.1’

Comments: Debris loads were minimal the Oregon and Washington exits.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0’ – 2.0’	1.1’ to 1.2’
X			NFEW2 Weir Depth	≥ 8.0’	8.1’
X			NFEW3 Weir Depth	≥ 8.0’	8.0’ to 8.2’
X			South Oregon Entrance Head Differential	1.0’ – 2.0’	1.6’ to 1.8’
X			SFEW1 Weir Depth	≥ 8.0’	8.1’ to 8.2’
X			SFEW2 Weir Depth	≥ 8.0’	8.0’ to 8.3’
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.7 fps.
X			Washington Entrance Head Differential	1.0’ – 2.0’	1.3’ to 1.4’
X			WFE2 Weir Depth	≥ 8.0’	9.7’
X			WFE3 Weir Depth	≥ 8.0’	9.6’

Comments: There is nothing to report.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Fish Pump Blade Angle	Auxiliary Water Supply System (AWS)
Yes				WA shore Wasco County PUD Turbine Unit
	Yes			WA shore Wasco PUD Bypass
Yes			22° to 23°	Oregon Ladder Fish Pump 1
Yes			22° to 23°	Oregon Ladder Fish Pump 2
Yes			22° to 23°	Oregon Ladder Fish Pump 3
		Yes		OR North Powerhouse Pool supply from juvenile fishway

Comments: As described below, the juvenile system remains in emergency bypass, and does not supply flow to the Oregon ladder north powerhouse pool.

Juvenile Fish Passage Facility

For the top spillway weir overshoot study, the juvenile system was returned to emergency bypass on February 11. Primary bypass was scheduled to resume in preparation for early start up in late February. However, the rectangular screen brush in the channel requires a new drive clutch and the facility separator needed new floor screens. The parts have been purchased and arrived on project as of March 4.

Forebay Debris/Gatewell Debris/Oil:

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

Comments: Debris loads were moderate near the powerhouse and minimal beside the spillway. New debris loads were minimal to very light. The debris consisted mostly of woody material.

No trash rack cleaning or forebay debris removal occurred this week. The trash racks in units 1 and 10 were cleaned on January 14, removing 18 yards of debris. In addition, the trash racks in units 13 and 14 were cleaned on February 23, removing two yards. No fish were observed in the debris.

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 were installed in units 1 and 10 on February 16 and 17, respectively, for the TSW fallback study. Screens were installed in units 13 and 14 for early start up on February 24. ESBS maintenance continued this week. Camera inspections will resume in late March.

VBS differential monitoring resumed when ESBS were installed.

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

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

Comments: Orifices were opened for emergency bypass on February 11. Orifice operators were repaired as required. Area lighting was replaced as needed.

Due to the rectangular screen brush requiring a drive clutch replacement, the remaining channel systems continue to be out of service. Also, work on the control system program continues. Once these issues are resolved, the system could be switched to primary bypass.

One live and four juvenile lamprey mortalities were removed from the inclined rectangular floor screen on February 21. It is assumed the lamprey passed around the stop logs by way of leakage. Lamprey were not observed again until this week, with a total of eight live juvenile lampreys being removed from the screen.

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.

Separator rehabilitation will be completed when the floor screens arrive and are installed. Secondary bypass and sample collection cannot resume until this installation is completed. Currently an air burst system is being fitted under where the floor screen will be installed in the A side of the separator.

Top Spillway Weir (TSW) Operations: The TSW in bay 19 remains closed. The TSW in bay 20 was first opened on February 16. It is being used for the adult steelhead TSW passage efficiency study and is required by the 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
125.9	117.9	1.6	0.0	41.0	40.0	6.0	5.5

Comments: The above data comes from the control room. The data day is 0000 to 0000 hours. The spill recorded is due to the TSW study. Repairs to crane 6 are continuing.

Other

Inline Cooling Water Strainers: The cooling water strainer inspections occurred on March 2. One live and 38 juvenile lamprey mortalities were removed from the strainers. No other fish were observed.

Avian Activity: Casual avian observations continued. Avian counts will begin April 1.

Currently, there are no hazing efforts occurring. No terns or grebes were observed on project. Cormorants were noted roosting on the juvenile bypass outfall and occasionally feeding around the project. A small number of pelicans were noted feeding in the tailwater area. Finally, a small gull flock was noted occasionally in and around the forebay area.

Invasive Species: No invasive species were noted during the winter maintenance season. Mussel station examinations will resume in late March.

Siberian Prawn: Removing and euthanizing Siberian prawns will resume with sampling.

Fish Rescue/Salvage: For this week, there is nothing to report.

Research: The spring phase of the Pacific Northwest National Laboratory (PNNL) adult steelhead TSW passage efficiency study began on February 15.

Project: Ice Harbor
Biologist: Ken Fone
Dates: March 1 – March 4, 2021

Turbine Operation

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

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

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
3	5/3/19	0641	---	---	Turbine runner replacement and stator rewind

Comments: None.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on March 1, 3, and 4.

Fish Ladders:

Yes	No	Location	Criteria	Measurements
x		North Ladder Exit Differential	Head ≤ 0.3’	
x		North Ladder Picketed Lead Differential	Head ≤ 0.3’	
x		North Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
x		South Ladder Exit Differential	Head ≤ 0.3’	
x		South Ladder Picketed Lead Differential	Head ≤ 0.3’	
x		South Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
x			South Shore Entrance (SFE-1) Weir Depth	≥ 8.0’ or on sill	
x			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
x			South Shore Channel Velocity	1.5 – 4.0 fps	
x			North Powerhouse Entrance (NFE-2) Weir Depth	≥ 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: During the last 6 months, mechanics replaced damaged rollers on NEW-1 weir, and electricians installed new above-ground conduit and wiring at the north fish entrance deck for the weir control system. NEW-1 is now electronically operable as the backup fish entrance for the north ladder.

The broken air bubbler piping at the south fish ladder exit was replaced during the winter maintenance outage. The pipe broke in the fall of 2019 when strong winds and turbulence caused the ladder exit debris boom to become detached and hit the pipe. An air hose had been temporarily set up during the 2020 season to help keep debris away from the exit.

The deteriorated fish jump-netting near the south fish ladder upper diffuser was replaced with new netting during the winter maintenance period.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
5 pumps	2 pumps	1 pump	Status of the 8 south shore AWS pumps
2 pumps	1 pump		Status of the 3 north shore AWS pumps

Comments: South shore AWS pump #8 is out of service to replace worn seals in the lower gearbox.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 20 square yards
		x	Gatewell drawdown measured this week?	
		x	Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	STSs blocking view into slots
	x		Any oil seen in gatewells?	

Comments: None.

Submersible Traveling Screens (STSs) / Vertical Barrier Screens (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 removed for annual 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 channel is dewatered for annual maintenance. Five water-regulating weirs in the juvenile fish channel were replaced with newly fabricated weirs during the winter maintenance period. This completes the replacement of all the original weirs, which were deteriorated at the operating stem connection brackets from electrolysis.

Juvenile Fish Facility: The fish facility is dewatered for annual maintenance.

Fish Sampling: Sampling begins on April 1. A brighter light was recently installed over the sample holding tank anesthetizing chamber to improve visibility when crowding fish into the chamber.

Removable Spillway Weir (RSW): Voluntary spill through the RSW is periodically occurring for the downstream

passage of adult steelhead that may have strayed into the Snake River. The RSW will be operated from 0500 hours to 0900 hours on Sundays, Wednesdays, and Fridays, from March 1 to March 31.

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
39.6	33.4	1.6	0	39	39	8.0	7.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Unit 1, 2, 4, 5, and 6 turbine cooling water strainer inspections took place on March 4. A total of approximately 55 dead juvenile lamprey were recovered.

Avian Activity: There were very few piscivorous birds seen around the project.

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 will be humanely euthanized by the fish sampling contractor, frozen and properly disposed of in a landfill.

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: March 1 - 4, 2021

Turbine Operation

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

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

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
Unit 2	7/15/2019	0720	4/01/2021	ERTS	Annual, Draft Tube Liner

Comments:

Adult Fish Passage Facility

The adult fishways were inspected by Corps biologists on March 1, 2 and 3.

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:

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 7.4, 7.2 and 6.9 feet respectively. South Powerhouse Entrance (SPE-2) Weir was on sill during all inspections with readings of 7.4, 7.2 and 6.9 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: Fish pumps returned to service at 1200 hours on February 25 after winter maintenance was completed.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	277 yds^2
	X		Gatewell drawdown measured this week?	
		X	Gatewell drawdown acceptable	
		X	Any debris seen in gatewells (% coverage)	
		X	Any oil seen in gatewells?	

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 are not yet deployed for the 2021 season.

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: Orifices are closed and Primary Dewaterer is OOS for winter maintenance.

Collection Facility: Fish collection is scheduled to begin on April 1.

Transport Summary: No transport currently.

Spillway Weir: RSW scheduled to go into service at 0001 on April 3.

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
38.9	32.9	1.5	0.0	39.0	38.3	3.8	2.7

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers:

Avian Activity: Highest counts of foraging piscivorous birds in tailrace (SWT1+PH1+PH2) at Lower Monumental Dam.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans

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

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
Dates: March 1 – March 4, 2021

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	03/31/2021	17:00	Spider and upper guide bearing repair.
1	11/30/20	08:00			6-year overhaul

Comments: None.

Adult Fish Passage Facility

Little Goose fish facility staff inspected the adult Fishway on March 1, 3 and 4.

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

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	5.9
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	5.9
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.9, 0.9
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: The adult fishway was returned to service on February 10, with AWS pumps returning to service on February 23. The NSE channel/tailwater differential was found out of criteria on the first two inspections. The NSE weir depth was found out of criteria on the March 1 inspection. Corrections were made and the fishway met all criteria on the March 4 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: Fish pumps 1 and 2 were returned to service on February 23. Fish pump 3 remains out of service as staff await parts.

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 23,750 square feet of floating woody debris currently 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: ESBS's are scheduled to be installed the week of March 22.

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 is currently dewatered for winter maintenance.

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

Transport Summary: Fish transportation is scheduled to begin in April.

Spillway Weir: Little Goose began operation of the adjustable spillway weir (ASW) on March 2 to facilitate passage of adult steelhead overshoots. Operation is occurring three days each week on non-consecutive days for four hours in the morning and will continue to occur on Tuesday, Thursday and Sunday each week, through March 31. Spring spill

operations will begin on April 3. Little Goose experienced issues with the ASW encoder on the first day of spill and operation of the ASW occurred from 08:10 through 12:10.

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
37.7	31.3	1.4	0.0	39.6	38.9	6.0	5.1

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inline cooling strainer inspections commenced on January 13. Inspections will continue in accordance to the Fish Passage Plan (FPP) and results will be submitted to the District.

Avian Activity: Daily piscivorous bird counts at Little Goose Dam will begin on April 1 with hazing beginning on March 29.

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

Siberian Prawn: Juvenile fish collection begins on April 1. 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.

Gas Bubble Trauma (GBT): GBT monitoring is not being conducted at this time.

Fish Rescue/Salvage: No fish salvage operations occurred during this report period.

Research: No research activities occurred during this report period.

Project: Lower Granite
Biologists: Elizabeth Holdren and David Miller
Dates: March 1-4, 2021

Turbine Operation

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

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

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
6	03/01				DC and low voltage switchgear

Comments:

Adult Fish Passage Facility

The adult fishway was watered up with gravity flow January 21. AWS pumps 1 and 2 were returned to service at 1222 hours February 18. The ladder was set to fish passage criteria February 24 with adjustments made to diffuser 14 after the adult trap was watered up March 1. Operation of diffuser 14 will remain in manual for the season due to an issue with the elevation sensor. NSE weirs 1 & 2 were replaced during the winter outage and are in operation. The ladder was returned to historic operation with both NSEs open and all four FOGs (1, 4, 7, 10) in operation as a starting point to trouble shoot ongoing issues with channel velocity, channel/tailrace head differentials, and the control system. Lower Granite and Anchor QEA staff inspected the adult fishway on March 1, 2, 3, and 4.

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:

Fish Ladder Entrances and Collection Channel: NSE had been out of service and dogged off in the closed position since 2011. Both NSEs were replaced during the 2020-2021winter maintenance outage and are in operation.

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.8, 7.9
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.8
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	
X			North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.6, 0.6, 0.6, 0.5
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: Ladder collection channel operation and configuration are being evaluated to resolve ongoing issues. FOGs 1, 4, 7, and 10 are in operation.

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		OOS guide bearing	AWS Fish Pump 3

Comments: AWS pump 1 was switched to fast speed at 1515 hours March 1 to improve channel/tailwater head differentials. At 1922 hours March 1 AWS pump 1 was returned to slow speed #1 was returned to slow speed due to excessive temperature levels outside the normal operating range and high Amp reading. This is consistent with observations in previous years.

Juvenile Fish Passage Facility

The juvenile bypass system was watered up February 22 in primary bypass operation.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	
X			Trash rack differentials measured this week?	
X			Trash rack differentials acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: Unit trash racks were raked February 8-11.

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: ESBS were installed in units February 23-25. The VBS in gatewell slot 6C is being replaced during the DC low voltage switchgear upgrade.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	17-18
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: The plastic bevel on the 14” orifice in gatewell slot 4A was replaced with stainless steel during the winter outage due to the plastic failing at the seam. It is recommended that all plastic orifice bevels be replaced with stainless steel during the 2021-2022 outage to prevent additional failures and injury to fish. Orifices in gatewell slot 6A are closed to support VBS replacement.

Collection Facility: Collection facility was watered up for testing February 24 and 28. Collection for condition sampling in secondary bypass began at 0700 hours March 1 at a 50% sample rate. A total of 148 juvenile salmonids were collected March 1-4.

Transport Summary: No transport occurring.

Spillway Weir: The RSW is operating from 0500-0900 hours Sundays, Tuesdays, and Thursdays March 2 through March 30 to facilitate adult steelhead passage.

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
42.2	27.7	1.2	0.0	39.5	39	5+	3.1

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling strainer inspections were conducted on March 2.

Invasive Species: No zebra/quagga muscles were detected on the trap substrate. There were 5 Siberian prawns collected in the condition sample, all were euthanized.

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
March 1	1515	15	3	0	0
March 2	1520	0	2	0	0
March 3	0720	1	0	0	0
March 4	1055	0	1	0	0

Gas Bubble Trauma (GBT) Monitoring: N/A

Adult Fish Trap Operations: The adult trap was watered up at 1000 hours March 1 and started sampling at 1100 hours at a 25% (18% /week) sample rate. Collection for sampling will be conducted Monday through Friday until broodstock collection starts August 18.

Fish Rescue/Salvage: A fish salvage was conducted in the Unit 6 scrollcase on March 2. One unclipped juvenile steelhead and one unclipped juvenile chinook were recovered and released at Illia Landing.

Research:

Idaho Fish and Game (IDFG) Genetic Stock Identification

Fish collected as part of the Lower Granite juvenile condition sample are used to enumerate and characterize age composition and genetic stock profiles of naturally producing yearling chinook and juvenile steelhead. IDFG will sample Monday through Friday through mid-June with a goal of collecting 2,000-5,000 yearling chinook and juvenile steelhead genetic samples.

National Marine Fisheries Service (NMFS) PIT tagging of Adult Wild Chinook and Adult Steelhead for ISEMP-Related Dispersal Monitoring:

The goal of this project is to PIT tag up to 4000 unclipped adult Chinook and 4000 unclipped adult steelhead collected in the adult trap daily sample for dispersal monitoring.

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.