U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#09-2021
April 12-29, 2021

Project: McNary
Biologist: Bobby Johnson and Denise Griffith

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	5/30	N/A	Thrust bearing upgrades/Blade seals

Comments: The hard one percent peak efficiency constraint and unit priority are being flowed per the 2021 Fish Passage Plan (FPP). RTS dates are subject to change.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on April 25, 28 and 29. Fish counting continues.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
X		Oregon Exit	Head over weir 1.0’ to 1.3’	1.0’ to 1.2’
X		Oregon Count Station Differential	0.0’ to 0.5’	0.2’ to 0.3’
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’	0.2’ to 0.3’

Comments: Debris loads near the Oregon shore exit were very light to minimal.

Debris loads were minimal near the Washington exit. During the week, the electrical staff installed a new alarm system in the exit control panel.

There are no problems to report.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0’ – 2.0’	1.5’ to 1.6’
X			NFEW2 Weir Depth	≥ 8.0’	8.0’ to 8.1’
X			NFEW3 Weir Depth	≥ 8.0’	8.1’
X			South Oregon Entrance Head Differential	1.0’ – 2.0’	1.6’ to 1.7’
X			SFEW1 Weir Depth	≥ 8.0’	8.2’
	X		SFEW2 Weir Depth	≥ 8.0’	Slack, 8.1’
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.9 fps
X			Washington Entrance Head Differential	1.0’ – 2.0’	1.2’ to 1.4’

X			WFE2 Weir Depth	≥ 8.0’	9.2’ to 9.8’
X			WFE3 Weir Depth	≥ 8.0’	9.1’ to 9.8’

Comments: The Oregon ladder entrance out of criterion point for weir SFEW2 noted above was due to the weir’s cables being slack on April 29. The weir had jammed shallow and was reset by the roving operator.

Next week, gear box seals will be replaced in NFEW1, NFEW2 and NFEW3. Also, fabrication of the six remaining floating orifice gates will begin. Six gates have been rehabilitated to this point. The remaining gates will be replaced.

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			21°	Oregon Ladder Fish Pump 1
Yes			21°	Oregon Ladder Fish Pump 2
Yes			21°	Oregon Ladder Fish Pump 3
Yes				OR North Powerhouse Pool supply from juvenile fishway

Comments: To adjust SFEW2 as mentioned above, the operator had to briefly reduce all three fish pumps’ blade angles to zero degrees on April 29.

Juvenile Fish Passage Facility

Normal sampling season, consisting of alternating days of primary and secondary bypass, continued. There were no interruptions in the sampling schedule this week.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Minimal
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: Current and incoming debris loads were minimal near the powerhouse and beside the spillway.

Trash rack cleaning in units 1, 10, 13 and 14 removed 20 yards of debris on April 26. No fish were observed in the debris. The next trash rack cleaning is scheduled for late May.

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 screens are in place except unit 5, which is OOS. No camera inspections occurred this week. The next inspections will occur in units 11 and 12 on May 11.

Unit 3's ESBS's currently cannot be controlled or communicated with from the control room. Parts have been ordered. For the most part, the unit has been in standby. ESBS brush operation will continue to be monitored when the unit does come online.

Daily VBS differential monitoring revealed no issues and no screens were cleaned.

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 adjusted as required for trash rack cleaning.

All systems operated satisfactorily.

Bypass Facility:

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

Comments: All bypass facility systems operated satisfactorily. The sample gates were only on during secondary bypass. The PIT-tag system gates remained off as there is no need for that system.

This week, 230 juvenile lamprey and 44,212 smolts were bypassed during secondary bypass. The smolt monitoring staff reports fish data in a separate report.

Top Spillway Weir (TSW) Operations: The TSW in bays 19 and 20 remained open. Crane 7 is attached to the TSW in bay 19. The TSW in bay 20 is attached to a hoist.

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
180.4	165.6	111.1	99.5	52.0	50.0	6.0	6.0

Comments: The above data is provided by the smolt monitoring staff except water clarity, which comes from the control room. The data day runs from 0700 to 0700 hours. The spring spill program continues. Repairs to crane 6 are scheduled to be completed in late May or early June. Next week, the crane's main hoist south drum will be repaired.

Issues with the load limit indicator on crane 7 continue to be examined. The TSW in bay 19 was dogged open on April 26 at 1115 hours. Crane 7 was moved to bay 15 where a spillgate leaf was being stored. The leaf was used to load test the crane's indicator. Spillbays 14 through 16 were closed from 1240 to 1550 hours for safety during the testing. Flow was distributed to other bays. The crane was back in bay 19 and functional by 1617 hours.

With crane 7 attached to the TSW in bay 19 and with crane 6 still OOS, the gate in bay 2 remained dogged open at four feet.

Annual maintenance of the spillway system occurs in the fall. It appears the two halves of the spillgate in bay 6 where not pinned together the fall of 2020. This gate had not been operational until April 10, with the start of spill

season. Unfortunately, the flow pattern through this gate was not noticed until April 20, when David Trachtenbarg flew over the project on his way to observe the Blalock Island complex. David contacted the project biologist by email on April 23. However, the project biologist was not available to read the email until April 25. Originally, it was thought the flow David noted may have been related to GDACs adjustments required for the gates in bays 5 and 7 to function properly. However, after further examination, the project biologist contacted general maintenance and operations to inspect the issue on April 26 at approximately 0800 hours. Bay 6 was closed from 0836 to 0854 hours so the two spillgate sections could be pinned together. Flow through bay 6 now matches the other bays without TSWs.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections are scheduled for May 4.

Avian Activity: Avian counts continued. These counts are reflected in Table 3 below.

The laser on the outfall pipe returned to service as part of the study plan on April 23. However, the laser did not appear to be functioning properly. Gulls were noted roosting on the solar panels. The bird dung was cleaned from and bird spikes installed on the solar panels on April 26. The laser's operation did appear to improve. However, the bird roosting behavior may indicate the laser's program may need adjustment, which will occur next week. The laser was removed from service as part of the study plan on April 27.

The navigation lock wing wall laser still concerns the project biologist. Replacement bulbs are on order. The fisheries staff will continue to monitor this laser, which was in service from April 23 to 27 per the study plan.

Evaluation of the lasers will continue.

Two large bird distress calls remain installed on the navigation lock wing wall.

USDA Wildlife Services began daily shore hazing on April 25. Boat hazing three days a week will begin the week of May 2.

In the spillway zone, gulls, cormorants, and pelicans were observed. The birds were mostly feeding in the spill flow. Gull numbers have gradually increased with the other bird numbers remaining relatively low.

In the powerhouse zone, no birds were observed.

In the bypass outfall zone, gull numbers have increased. They were mostly roosting on the pipe and on the water, however feeding did occur at times. The Gulls would also pass by while feeding in the spill flow. Cormorants were noted roosting on the juvenile bypass outfall pipe though their numbers remained decrease somewhat. The cormorants continued to feed in low numbers at the outfall. One pelican was noted near the outfall. Spill flow does appear to reduce feeding and the lasers may have contributed.
In the forebay zone, gulls, one pelican and one grebe were observed. However, outside the zone, gulls, pelicans, loons, ospreys, and cormorants noted. The pelicans and gulls appeared to be staging in slowly increasing numbers.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
April 23	Spill	35	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	44	28	0	1	0
	Forebay	0	0	0	0	0
April 24	Spill	65	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	59	28	0	0	0
	Forebay	8	0	0	0	0
April 25	Spill	50	2	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	45	21	0	0	0
	Forebay	1	0	0	0	1
April 26	Spill	25	0	0	3	0
	Powerhouse	0	0	0	0	0
	Outfall	34	25	0	0	0
	Forebay	0	0	0	1	0
April 27	Spill	70	1	0	5	0
	Powerhouse	0	0	0	0	0
	Outfall	16	17	0	0	0
	Forebay	0	0	0	0	0
April 28	Spill	44	1	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	39	0	0	0	0
	Forebay	0	0	0	0	0
April 29	Spill	24	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	81	10	0	0	0
	Forebay	2	0	0	0	0

Invasive Species: The mussel station examinations revealed no problems on April 25.

Siberian Prawn: No Siberian prawns were removed or euthanized this week.

Fish Rescue/Salvage: There is nothing to report.

Research: The two examinations for gas bubble trauma (GBT) for the week occurred on April 22 and 26. One fish was observed with signs of trauma.

Project: Ice Harbor
Fisheries Tech: Tim DeKoster
Fisheries Biologist: Ken Fone

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
1	4/26/21	0740	4/29/21	0905	1A vertical barrier screen repair

Comments: Unit 2 was noted to be operating a few MW below the 1% operating efficiency range on the April 27 fishway inspection. The reason for some of the units to be occasionally operating slightly above or below the operating efficiency range is being investigated.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on April 26, 27, and 28.

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: None.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
6 pumps	1 pump	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 #7 was taken out of service on April 7 at 1505 hours to replace the lower gearbox shaft seal.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 3 square yards
x			Gatewell drawdown measured this week?	
x			Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-5%
	x		Any oil seen in gatewells?	

Comments: None.

Submersible Traveling Screens (STSs) / Vertical Barrier Screens (VBSs):

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

Comments: Unit 1 VBSs were inspected with an underwater video camera on April 21. A hole measuring approximately 1.5" x 2.5" was observed on the VBS in slot 1A. Gatewell 1A slot was drained on April 26 to access the VBS using a man basket. Personnel patched that hole and six smaller holes that were found at another area of the screen.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
x			Orifices operating satisfactory?	19-20
	x		Dewaterer and cleaning systems operating satisfactory?	

Comments: Orifices are being backflushed three times per day. There were no debris obstructions observed at the orifices, as indicated by reduced flow through the orifices. There was no significant debris that came into the separator when the orifices were being backflushed.

The recently installed actuator for the water regulating weirs could not be operated automatically because it did not have an analog controller input. An analog controller input was added to the actuator during the reporting period, but it still must be programmed to function properly. In the meantime, the water level in the collection channel is being visually monitored three times per day and the actuator is operated electronically in "local" control to adjust the weirs as needed.

Juvenile Fish Facility: The Juvenile Fish Facility is operating in primary bypass mode except when collecting sample fish.

Fish Sampling: Fish condition sampling is occurring on Mondays and Thursdays each week. See the table below for a summary of the sampling results. The cause of the descaling observed on one of the fish in the April 26 sample was attributed to birds.

Fish condition sampling results at Ice Harbor Dam:

Date: April 26

Species, Run, Rear type	Sampled	#Descaled	Mort's	Avian Marks
Chinook yearling clipped	32	1	0	0
Chinook yearling unclipped	18	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	74	1	0	3
Steelhead unclipped	20	1	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	144	3	0	3

Date: April 29

Species, Run, Rear type	Sampled	#Descaled	Mort's	Avian Marks
Chinook yearling clipped	19	0	0	0
Chinook yearling unclipped	15	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	90	0	0	0
Steelhead unclipped	11	1	0	1
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	135	1	0	1

Removable Spillway Weir (RSW): Voluntary spring spill for fish passage is occurring.

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
51.5	47.5	32.5	27.5	53	51	6.3	6.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: The next turbine cooling water strainer inspections will occur in May.

Avian Activity: There were variable numbers of piscivorous birds observed around the project (see table below). A bird observation count was not accomplished on April 24 due to an oversight. The high number of pelicans observed on April 23 were counted early in the morning before bird hazing began for the day (pelicans are not actively hazed, but the noise from the hazing of other birds will sometimes cause them to leave). Land-based hazing of piscivorous birds for 16 hours per day is occurring. Boat-based hazing is occurring for 8 hours per day, 5 days per week. Bird hazing has been effective at dispersing birds away from the dam.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
April 23	0	6	1	0	140
April 24	---	---	---	---	---
April 25	12	18	9	0	0
April 26	4	2	0	0	0
April 27	9	0	0	0	0
April 28	1	0	0	0	0
April 29	0	0	0	0	0

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 the fish sampling contractor, frozen and properly disposed of in a landfill. Daily and total Siberian prawn counts at Ice Harbor Dam for this reporting period are shown below.

Number of Siberian prawns in the sample at Ice Harbor Dam.

Date	Sample (euthanized)	Collection*
April 26	0	0
April 29	0	0
Totals	0	0

*Collection and sample numbers are the same as the facility when sampling at 100%

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

Research: No on-site research is occurring currently.

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis

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	

Comment:

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	9/02/2021	ERTS	Annual, Draft Tube Liner

Comments:

Adult Fish Passage Facility

The adult fishways were inspected by Corps and EAS/Anchor QEA biologists on April 23, 24, 25 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:

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 5.8, 5.7, 6.2 and 6.2 feet respectively.
South Powerhouse Entrance (SPE-2) Weir was on sill during all inspections with readings of 5.8, 5.7, 6.2 and 6.2 feet respectively.
South Shore Entrance (SSE-1) Weir was on sill during all inspections with readings of 5.8, 6.1, 6.3 and 6.3 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:

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	20 yds^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0-5%
	X		Any oil seen in gatewells?	

Comments:

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 STS's are running in Cycle-run 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?	18
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: Dewaterer mechanical screen cleaning brush returned to service April 27.

Collection Facility: Collection into the raceways for transport began at 0700 on April 23.

Transport Summary: Every-day barge transport began on April 24. A total of 34,980 fish were collected with 34,968 fish being transported and 0 fish bypassed back to the river during this reporting period.
Spillway Weir: RSW went into service at 0001 on April 3 with the start of spring spill.

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
50.7	46.2	34.1	32.2	51.0	49.8	5.4	4.1

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on April 8. No living fish were found. Mortalities included 6 juvenile lamprey, 1 Chinook salmon smolt and 1 steelhead smolt.

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

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
4/23/2020	1250	2	0	0	0	0
4/24/2020	1215	4	0	0	0	1
4/25/2020	1245	5	0	0	0	1
4/26/2020	1250	0	0	0	0	0
4/27/2020	1200	5	0	0	0	0
4/28/2020	1230	0	0	0	0	0
4/29/2020	1200	2	0	0	0	0

Comments: Bird hazing efforts by USDA personnel began on April 1.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on April 9. 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. Daily and total Siberian prawn counts at Lower Monumental Dam for this reporting period are reported below.

Date	Sample (euthanized)	Collection*
4/23-4/29/2021	0	0

*Collection and sample numbers are the same as the facility when sampling at 100%

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

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	03/31/2022	17:00	Spider and upper guide bearing repair.
6	03/18/21	14:17	03/31/2022	17:00	T2 ground
2	04/29/21	03:53	04/29/21	14:15	86GT brakes did not fully disengage on startup

Comments: Little Goose experienced a T2 transformer ground on March 18 at 14:17. T2 transformer and Units 5 and 6 will be out of service until repairs/replacement can be conducted.

Adult Fish Passage Facility

Little Goose fish facility, Environmental Assessment Services (EAS) and Oregon Department of Fish and Wildlife (ODFW) staff inspected the adult fishway on April 25, 28 and 29.

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		

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’	0.8
		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	5.7, 2.4
	X		North Shore Entrance (NSE-2) Weir Depth	$\geq$ 6.0’ or on sill	5.7, 2.4
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
	X		Collection Channel Surface Velocity	1.5 – 4.0 fps	1.3

Comments: The adult fishway continues to operate in manual mode. Project staff have struggled to maintain entrance criteria during gas cap spill. The fish control system still has a faulty hydroranger for the NSE1 weir and is currently awaiting parts. The SSE channel to tailwater differential was found out of criteria on April 25 and NSE weir depths were found out of criteria April 25 and April 29. The surface velocity near the SSE was found out of criteria on the April 25 inspection. Subsurface water velocity was measured on April 11 at NPE and averaged 3.1 fps.

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 returned to service April 7.

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 was approximately 100 square feet of floating woody debris inside the trash shear boom. Oil was observed leaking from the ESBS screen cleaning gearbox into gatewell 5B on April 6. The orifices were closed, and cleanup and reporting efforts initiated immediately. Gatewell drawdowns for Unit 1 were conducted on April 29 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: ESBS's were installed in Units 2, 3 and 4 on March 22 and 23. VBS differentials for Unit 1 were conducted on April 29 and were in criteria.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comments: The juvenile bypass system was watered up on March 22 and began daily collection for transportation on April 23.

Collection Facility: Collection for condition monitoring in conjunction with secondary bypass commenced on April 1 with the first sample being conducted on April 2. Every other day collection and sampling occurred through April 22. Daily collection for transportation began on April 23 with the first daily barge departing on April 24. The collection and transport facility operated within criteria this report period. A total of 22,750 fish were collected, of which 22,729 were transported via barge. The descaling and mortality rates were 1.7% and 0.08%, respectively. No adult lamprey were removed from the separator this report period.

Transport Summary: Daily fish transportation via barge began on April 24.

Spillway Weir: Spring spill operations began on April 3 with the ASW in high crest.

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
44.1	40.9	26.2	23.3	53.3	52.1	6.0	4.4

*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 began on April 1. USDA hazing actives began on March 29.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
4-23	13:00	2	0	0	0
4-24	9:00	2	0	0	0
4-25	12:30	1	0	0	0
4-26	12:00	0	2	0	0
4-27	11:15	3	0	0	0
4-28	10:45	0	0	0	0
4-29	8:30	8	0	0	0

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

Siberian Prawn: Juvenile fish collection began 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.

Date	Sample	Collection*
4-23	N/A	N/A
4-24	2	40
4-25	0	0
4-26	0	0
4-27	1	20
4-28	0	0
4-29	1	10
Totals	4	70

Gas Bubble Trauma (GBT): GBT monitoring was performed on April 25. Of the 100 fish examined, 1 fish had signs of GBT.

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

Research: No research activities occurred during this report period.

Project: Lower Granite
Biologists: Elizabeth Holdren and David Miller

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
1-6	4/25		4/26		ESBS/VBS Inspections
5	04/12	0700			DC low voltage switchgear/Replace ESBS/VBS
1-6	04/30	1605	04/30	1654	Offline due to capacity trip while testing

Comments: Units were rotated out of service April 25 and 26 for ESBS/VBS inspections. All units were out of service due to a capacity trip while electrical crew was performing testing.

Adult Fish Passage Facility

Lower Granite Biologists and Anchor QEA staff inspected the adult fishway April 23, 24, 26, 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: Operation of diffuser 14 will remain in manual for the season due to an issue with the elevation sensor.

Fish Ladder Entrances and Collection Channel:

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’, 7.9’
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 8.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0’ or on sill	
	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	0.6’, 0.6’, 0.8’
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’	
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. North shore and north powerhouse channel/tailrace head differentials ability to maintain criteria range is dependent of tailrace conditions. The Project is working with engineers to find a

permanent solution to the ongoing channel/tailwater criteria discrepancies along with control system programing issues.

Auxiliary Water Supply System:

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

Comments: AWS pump 2 tripped offline from 1519-1714 hours April 23 due to a malfunction with the cooling fan resulting in overheating. AWS pump 1 thrust bearing repairs were completed April 20 and returned to operation April 26. Lower guide bearing rehab will be completed on AWS pump 3 as was scheduled prior to AWS pump 1 failing. All AWS pumps were offline April 30 from 1605-1654 hours due to the powerhouse capacity trip while testing.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Weekly average 16.1 yds^2
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:

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:

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

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

Comments:

Collection Facility: Collection for transport is scheduled to begin April 23.

Transport Summary: The first every day barge is scheduled to depart LWG April 24.

Spillway Weir: Spring flex spill continues. The RSW was closed at 0658 hours on April 28 to facilitate the removal of a potentially hazardous log that was snagged on the debris boom near the entrance of the weir. The log was

successfully removed and the RSW was returned to service at 0720 hours. A total of 67,634 PIT tagged smolts have been detected over the RSW this season (27,641 Chinook, 465 Coho and 39,528 steelhead) compared to a total of 4,708 smolts detected in the juvenile system. A total of 232 adult PIT tagged steelhead have been detected at the RSW this season compared to 47 PIT tagged adult steelhead detected at the juvenile facility.

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
49.1	46.1	31.1	29.1	50.5	50.0	5.0	4.4

*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 no Siberian prawns collected in the condition sample.

Avian Activity: Biologist began daily piscivorous bird counts at Lower Granite Dam March 1. Bird hazing began April 1. American White Pelicans are present in the tailrace and there were 67 counted loafing on the island downstream of the dam April 22.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
April 23	1303	0	0	0	0
April 24	1100	0	0	0	0
April 25	1246	0	0	0	0
April 26	1120	0	0	0	3
April 27	1015	0	0	0	1
April 28	1232	0	0	0	1
April 29	1324	0	0	0	0

Gas Bubble Trauma (GBT) Monitoring: GBT sampling occurred April 29 with 71 smolts sampled and no symptoms of GBT observed.

Adult Fish Trap Operations: The adult trap is in operation Monday through Friday at a 25% (18% /week) sample rate.

Fish Rescue/Salvage: N/A

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 Sort by Code 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.

National Marine Fisheries Service (NMFS) In-River Survival:

NMFS PIT-tag Chinook and steelhead smolts for their Survival Study April through early June to compare smolt to adult returns of in-river migrating smolts to the smolt to adult returns of transported smolts. PIT-tagged fish are held for 24 hours before being bypassed to the LWG tailrace. Collection for this study began April 21 and will continue Monday-Friday until the middle of June. Tagged fish were released to the river the following day.

National Marine Fisheries Service (NMFS) Seasonal Effects of Transporting Fish from the Snake River to Optimize Transportation Strategy:

This study aims to build on the current database of information on the seasonality of smolt-to-adult return rates (SARs). LWG biological staff began collection for the early non-transport season Monday April 1. Fish are being collected Monday and Tuesday for tagging on Tuesday and Wednesday with the barge departing LWG on Thursdays. Collection will occur Sunday-Thursday with fish being tagged Monday-Friday once general everyday fish transport begins. Collection for this study began April 21.