Out of Criteria – NWW Weekly Report #18 – June 28- July 4, 2024

1. McNary

Yes	No	Sill	Location	Criteria	Measurements
	X		WFE3 Weir Depth	≥ 8.0’	7.2’ to 7.8’

Comments: WFE3 was out of criterion all week. This could possibly be calibration issues related to the spill season. However, adjustments are very difficult during the spill season.

Fish pump 1 remained out of service for a scheduled 5-year overhaul. Return to service dates are subject to change.

2. Ice Harbor

Yes	No	Sill	Location	Criteria	Measurements
	x		North fish entrance (NFE-1) weir depth	≥ 8.0’ or on sill	6.4’, 6.1’
	x		North fish entrance channel/tailwater differential	1.0’ – 2.0’	2.2’

The north fish entrance (NFE-1) weir depth was below criteria on July 2 and 3. North fish entrance channel/tailwater differential was above criteria on July 3. The channel and tailwater elevation readings on the PLC have been significantly higher than the physical readings obtained on the inspections. The discrepancies were partly due to turbulent water from spill making accurate measurement of the tailwater difficult. The channel and tailwater elevation transducers may also have drifted out of calibration. A request was made for electricians to recalibrate the transducers.

South shore AWS pump #6 has been out of service since March 1, 2024, due to high vibration readings coming from the motor and gearbox. The gearbox is being replaced with a refurbished one.

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

The replacement actuator for the water regulating weirs in the collection channel is in local control due to a problem with the actuator being undersized for this application. The actuator will be rebuilt to enable it to work in automatic mode. The weirs are being operated at the actuator to adjust the water level as needed until the problem can be fixed.

3. Lower Monumental

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

4. Little Goose

Yes	No	Sill	Location	Criteria	Measurements
X	X		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	7/1 – 0.5
X	X		North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	6/29 – 6.2
X	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	6/29 – 6.3

5. Lower Granite Dam

Yes	No	Sill	Location	Criteria	Comments
	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0'–2.0'	0.9'
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 7.0' or on sill	6.7'
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0' or on sill	6.7'
	X		North Shore Channel/Tailwater Differential	1.0'–2.0'	0.9'
	X		Collection Channel Surface Velocity	1.5 – 4.0 fps	1.2, 1.3, 1.1, 1.0

Fish ladder control system operation and configuration is an ongoing issue that began when the system was installed in 2016. LWG is moving forward with inhouse design and install of fish ladder control system based of the system used at LMN. Efforts of the electrical crew continue to bring the ladder back into criteria however the control system drifts out of calibration shortly after. There is a swell at the north powerhouse where the back eddy collides with powerhouse and spillway flow that may be impacting channel/tailwater differentials. North shore tailrace elevations ranged from 631.5' to 632.3'. The fish ladder was designed to operate at the minimum operating elevation of 633.0'.

AWS Pump 1 remains in slow mode due to the inability to operate in fast mode while operating at MOP elevation. AWS pump 2 remains out of service for maintenance.

U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#18-2024

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: June 28-July 4, 2024

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	Date	Time	Date	Time	Outage Description
14	5/13	1232	11/18	NA	Isophase replacement and headgate work
13	5/21	0955	11/18	NA	Isophase replacement and headgate work
3	5/29	0634	11/15	NA	Control system upgrades
4	5/29	0634	11/15	NA	Control system upgrades
1 & 8	7/2	1000	7/2	1100	ESBS camera inspections, rotated through units

Comments: RTS dates are subject to change. The hard one percent criteria remained in place. The sawtooth unit priority pattern for temperature abatement began on July 3 at 0600 hours. Sample tank mortality was 3.96 and 5.52 percent on June 28 and July 2, respectively. After GBT monitoring, the mortality was 15.0 and 3.7 percent on July 1 and 3, respectively.

Adult Fish Passage Facilities

McNary fisheries staff performed measured inspections of the adult fishways on June 28, 30 and July 3. Adult fish counting, and video review of nighttime lamprey passage continued.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
X		Oregon Exit	Head over weir 1.0’ to 1.3’	1.0’ to 1.1’
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’	1.0’ to 1.2’
X		Washington Count Station Differential	0.0’ to 0.5’	0.1’ to 0.3’

Comments: Debris loads were light (mostly woody material) near the Oregon exit and minimal (mostly aquatic vegetation) near the Washington exit.

At the Washington exit, multiple regulating and 339 weir alarms came in and were reset on July 3. Also, that day, it was noted that the count station and visitor center window brushes were not functioning. One of the visitor window brushes was in the down position. There was no harm to fish passage and the mechanical staff immediately resolved the problem.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.2' to 1.3'
X			NFEW2 Weir Depth	≥ 8.0'	8.2' to 8.3'
X			NFEW3 Weir Depth	≥ 8.0'	8.2' to 8.4'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.4' to 1.5'
X			SFEW1 Weir Depth	≥ 8.0'	8.1' to 8.2'
X			SFEW2 Weir Depth	≥ 8.0'	8.1'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	2.1 fps
X			Washington Entrance Head Differential	1.0' – 2.0'	1.6' to 1.7'
X			WFE2 Weir Depth	≥ 8.0'	8.4' to 9.0'
	X		WFE3 Weir Depth	≥ 8.0'	7.2' to 7.8'

Comments: WFE3 was out of criterion all week. This could possibly be calibration issues related to the spill season. However, adjustments are very difficult during the spill season.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Blade angle	Auxiliary Water Supply System (AWS)
X				WA shore Wasco County PUD Turbine Unit
	X			WA shore Wasco PUD Bypass
		X	NA	Oregon Ladder Fish Pump 1, return to service August 8
X			23° to 24°	Oregon Ladder Fish Pump 2
X			25° to 27°	Oregon Ladder Fish Pump 3
X				OR North Powerhouse Pool from juvenile fishway

Comments: Fish pump 1 remained out of service for a scheduled 5-year overhaul. Return to service dates are subject to change.

Juvenile Fish Passage Facility

The juvenile system alternated between primary and secondary bypass every 24 hours at 0700 hours. There were no interrupts in this schedule. Due to the mortality mentioned above in the Turbine Operations section above, the sawtooth unit pattern began on July 3.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Minimal to light near the powerhouse
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: The powerhouse debris was minimal to light. Debris (woody material and aquatic vegetation) did move from the Oregon shore and back. Spillway debris remained minimal due to much of it being spilled. New debris loads (mostly aquatic vegetation) were minimal.

No trash rack cleaning is scheduled.

There are no problems to report. The emergency bulkhead remained in 14A slot. In order to improve deck access for contractors and project staff, the slots in unit 7, 11C slot, 12A and 12B slots remined covered.

A small amount of woody material was removed from the gatewell slots on June 30.

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 are installed in all units except 14A slot. With the emergency bulkhead in 14A slot, the ESBS remained uninstalled. The control program for the fish screens in unit 10 is not currently communicating with the panel view on the 8th floor. When the unit is in service, the brush cycle sequences will be monitored in the control room until repairs can occur in the future. With units 3, 13, and 14 being out of service, the ESBS's remained in manual mode so the brush cycle sequence would not occur. Camera inspections in units 1 and 8 revealed no issues on July 2. Examination of ESBS screen brush programming continued with the screens in unit 4.

Daily VBS monitoring continued, and no high differentials were recorded. A total of seven screens were cleaned in units 1 and 8 to 10 on July 1. Three juvenile lamprey mortalities were observed.

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

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	42
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: Orifices were adjusted for VBS cleaning as required. With 14A slot dewatered, the north orifice in 14B slot remained open.

There are no problems to report. However, since the power outage of May 28, we have been monitoring the channel elevation more closely.

Bypass Facility:

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

Comments: The sample system is being used on secondary bypass days. The sample gates will be used every other day. The PIT tag system will not be in use again this season, which is similar to past years.

There were 2,600 juvenile lamprey and 21,532 smolts bypassed this week. The primary species/races were subyearling Chinook.

Sample and GBT recovery raceway mortality rates are discussed in the Turbine Operation section above. There are no other problems to report.

TSW Operations: The TSW's in bays 19 and 20 remained open. Both TSW's are attached to a hoist. New this year, both TSW's will remain open through the spill season. No switch to standard gates will occur.

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
186.6	148.3	100.0	84.9	64.9	63.5	6.0	6.0

Comments: The above data is from the smolt monitoring staff, with the data day starting at 0700 hours. Water clarity comes from the control room.

The smolt monitoring staff continues to monitor water temperature throughout the juvenile system. Their results are stated daily and weekly in separate reports. Adult ladder water temperatures are reported by an automated system year-round.

The summer spill season continued, with 57 percent of flow being spilled. Adjustments are made once a day just after midnight. Bays 6 and 9 were not adjusted this week. If adjustments are required in bays 6 and 9, they will occur on Monday and Thursday mornings unless it is a holiday then another day will be chosen.

The downstream wall dogs from bay 22 will be reinstalled at a later date. Rehabilitation has begun on the downstream dogs from bay 21.

Other

Inline Cooling Water Strainers: The cooling water strainer inspections occurred on July 2. There were 38 live juvenile lamprey (26 from unit 1) removed and returned to the river. Eight juvenile lamprey mortalities were also removed (mostly from units in standby).

Avian Activity: Bird counting continued, and the results are reflected in Table 3 below.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
June 28	Spill	0	0	2	81	0
	Powerhouse	0	0	0	52	0
	Outfall	0	0	0	0	0
	Forebay	13	0	0	0	44
June 29	Spill	8	0	2	30	0
	Powerhouse	0	0	0	24	0
	Outfall	0	0	0	0	0
	Forebay	0	6	0	2	60
June 30	Spill	23	0	3	56	0
	Powerhouse	0	0	0	54	0
	Outfall	29	11	2	0	0
	Forebay	4	0	2	1	56
July 1	Spill	55	1	4	38	0
	Powerhouse	0	0	0	39	0
	Outfall	10	5	1	0	0
	Forebay	0	1	0	3	60
July 2	Spill	14	4	1	65	0
	Powerhouse	0	0	0	19	0
	Outfall	9	2	0	0	0
	Forebay	0	0	0	1	70
July 3	Spill	0	0	0	65	0
	Powerhouse	0	0	0	35	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	7
July 4	Spill	0	0	0	28	0
	Powerhouse	0	0	0	19	0
	Outfall	0	0	0	0	0
	Forebay	3	0	0	2	42

In the spill zone, gulls in fluctuating numbers along with a few cormorants and terns were noted. Overall, pelican numbers were stable. Most birds were feeding or flying by. One osprey was noted roosting. Three and two pelicans were noted inside the Washington ladder on June 30 and July 4, respectively. Four, one and four pelicans were noted roosting on the Washington ladder wall on June 30, July 3 and 4, respectively. Four pelicans were noted just outside the Washington ladder entrance on June 30.

In the powerhouse zone, stable numbers of pelicans were noted roosting on the water or feeding at the Oregon ladder floating orifice gates. None were seen inside the Oregon ladder.

In the outfall zone, gulls, cormorants, and terns in low and fluctuating numbers were noted roosting on the outfall pipe. No feeding was observed. An osprey pair has nested on the outfall pipe where the walkway ends. This and the boat hazing has resulted the fluctuating bird counts observed.

For the forebay zone, grebes were observed in stable numbers along with a few pelicans, terns, cormorants, or juvenile gulls. Birds were roosting and feeding. More grebes and gulls maybe outside the zone along with a few pelicans, cormorants, and ospreys. One bald eagle was noted on July 3.

The LRAD remains out of service until the osprey are done nesting.

The laser on the navigation lock wing wall opposite the outfall is in storage waiting shipment to the manufacture for a repair evaluation.

The two distress calls on the navigation lock wing wall remained in service and have been functioning well.

USDA Wildlife Services continued shore and boat hazing. When wind speed has been too high or there have been issues with the boat, the boat crew hazes on the next day or from the shore. The osprey nest is not an issue. PSMFC continues the stomach content examinations of the birds that were lethally taken with the boat.

A tori line remains installed outside the Oregon ladder south entrance. This line so far appears to be effective. The second line installed by floating orifice gate number 4 was not as effective due to flows in the area and was removed on June 28. The deployment of this line may lead to other ideas.

Invasive Species: The next mussel station examinations will occur in late July.

Siberian Prawn: No prawns were observed in the sample this week. None have been observed this season.

Fish Rescue/Salvage**:** None occurred this week.

Research: As tag life expires on the smolts and juvenile lampreys, PNNL will begin removal of study equipment over the next several months and prepare for future studies.

For a CRITFC study, there were tissue samples removed from 47 juvenile lamprey collected at the facility this week. The yearly total is 431 fish, which were returned to the river unharmed.

Gas bubble trauma examinations occur twice a week. Fish were collected on July 1 and 3, with the data being reported the next day. For the report week, no smolts showed signs of trauma. Also, there were 19 mortalities removed from the recovery raceway. The high mortality mentioned above in the Turbine Operations section may lead to once-a-week sampling.

Project: Ice Harbor
Biologist: Ken Fone
Biological Science Technician: Ben McArthur
Dates: June 28 – July 4, 2024

Turbine Operation

Yes	No	Turbine Unit Status
	x	All 6 turbine units available for service (see table & comments below for details).
x		All available turbine units are operated in accordance with Appendix C of the Fish Passage Plan

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

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
1	6/27/23	0708	---	---	Turbine runner replacement and stator rewind

Comments: None.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on July 1, 2, 3.

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 fish entrance (SFE-1) weir depth	≥ 8.0’ or on sill	
x			South fish entrance channel/tailwater differential	1.0’ – 2.0’	
x			South shore channel velocity	1.5 – 4.0 fps	
x			Central fish entrance (CFE-2) weir depth	≥ 8.0’ or on sill	
x			Central fish entrance channel/tailwater differential	1.0’ – 2.0’	
	x		North fish entrance (NFE-1) weir depth	≥ 8.0’ or on sill	6.4’, 6.1’
	x		North fish entrance channel/tailwater differential	1.0’ – 2.0’	2.2’

Comments: The south fish ladder picketed leads are being cleaned of filamentous algae daily to keep the differential in criteria.

The lamprey entrance structure at south fish entrance #2 was opened for the adult lamprey passage season at 0001 hours on July 1.

The north fish entrance (NFE-1) weir depth was below criteria on July 2 and 3. North fish entrance channel/tailwater differential was above criteria on July 3. The channel and tailwater elevation readings on the PLC have been significantly higher than the physical readings obtained on the inspections. The discrepancies were partly due to turbulent water from spill making accurate measurement of the tailwater difficult. The channel and tailwater

elevation transducers may also have drifted out of calibration. A request was made for electricians to recalibrate the transducers.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System
6 pumps	1 pump	1 pump	Status of the 8 south shore AWS pumps
2 pumps	0-1 pump	0-1 pump	Status of the 3 north shore AWS pumps

Comments: South shore AWS pump #6 has been out of service since March 1, 2024, due to high vibration readings coming from the motor and gearbox. The gearbox is being replaced with a refurbished one.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 2 square yards
x			Gatewell drawdown measured this week?	
x			Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-3% coverage
	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 inspected this week?
		x	STSs inspection results acceptable?
		x	VBSs differentials checked this week?
		x	VBSs differentials acceptable?

Comments: None.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
x			Orifices operating satisfactory?	18-20
	x		Dewaterer and cleaning systems operating satisfactory?	

Comments: The replacement actuator for the water regulating weirs in the collection channel is in local control due to a problem with the actuator being undersized for this application. The actuator will be rebuilt to enable it to work in automatic mode. The weirs are being operated at the actuator to adjust the water level as needed until the problem can be fixed.

Juvenile Fish Facility: The fish facility is in primary bypass mode except during fish sampling.

Fish Sampling: Juvenile fish sampling is scheduled to occur on Mondays and Thursdays each week. See the tables below for a summary of the sampling results. Five subyearling Chinook in the July 1 sample and seven subyearling Chinook in the July 4 sample exhibited hemorrhaging of the caudal and/or ventral fins. There were no fin injuries associated with the hemorrhaging. The cause of the descaling observed on the unclipped steelhead in the July 1 sample was attributed to a predation attempt by another fish. The dead subyearling chinook in the July 4 sample was found in the sample tank and was observed to be descaled.

Fish condition sampling results at Ice Harbor Dam:

Date: July 1

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	0	---	---	---
Chinook yearling unclipped	0	---	---	---
Chinook subyearling clipped	34	1	0	0
Chinook subyearling unclipped	60	2	0	0
Steelhead clipped	0	---	---	---
Steelhead unclipped	1	1	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	95	4	0	0

Date: July 4

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	0	---	---	---
Chinook yearling unclipped	0	---	---	---
Chinook subyearling clipped	21	0	0	0
Chinook subyearling unclipped	76	1	1	0
Steelhead clipped	0	---	---	---
Steelhead unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	97	1	1	0

Removable Spillway Weir (RSW): Summer 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
40.0	31.6	12.0	9.4	65	64	8.1	6.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine unit cooling water strainers were inspected on July 2. A total of seven juvenile lamprey, 16 juvenile shad, and 30 Siberian prawns were removed from the strainers. All were mortalities.

Avian Activity: There were low to moderate numbers of piscivorous birds seen around the project (see table below). Most of the terns and pelicans were roosting on the upstream tip of Eagle Island. Roosting birds were not usually hazed off the island, as they were prone to forage closer to the dam if disturbed. Land-based hazing of piscivorous birds occurred for 8 hours each day, except there was no hazing done on June 29 and reduced hours on June 30

because of illness of the Wildlife Specialist. Bird observation counts did not occur on those days for the same reason.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
June 28	16	3	1	0	7
June 29	---	---	---	---	---
June 30	---	---	---	---	---
July 1	1	5	10	0	18
July 2	0	0	31	0	14
July 3	1	2	12	0	3
July 4	0	4	8	0	12

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*
July 1	0	0
July 4	0	0
Totals	0	0

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

Fish Rescue/Salvage: None.

Research: No on-site research is occurring.

Project: Lower Monumental
Biologists: Denise Griffith and Raymond Addis
Dates: June 28 – July 4, 2024

Turbine Operation

Yes	No	Turbine Unit Status
	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.

Comments: See Unit Outages and Return to Service comments below.

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

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
Unit 5	5/01/24	0624	8/31/24	ERTS	T2/Rooftop bus out of service due to BPA Line outage
Unit 6	5/01/24	0624	8/31/24	ERTS	T2/Rooftop bus out of service due to BPA Line outage

Comments: BPA line tripped at 0624 hours on May 1. Units 5 and 6 remain out of service until T2 line is repaired. Estimated return to service date is August 31.

Adult Fish Passage Facility

Lower Monumental fish facility and EAS staff inspected the adult fishways on June 28, 29, 30 and July 2.

Fish Ladder Exit:

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: The temperature probe for the south ladder exit and south ladder diffuser 7 were checked on July 2, due to a question on temperature differentials. The probes were found to be in good working order.

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 at sill during all inspections with readings 5.9, 5.0, 5.6, and 5.8 feet respectively. South Powerhouse Entrance SPE-2 weir was at sill during all inspections with 5.9, 5.0,

5.6, and 5.8 feet respectively. South Shore Entrance SSE-1 weir was at sill during all inspections with readings of 7.0, 5.9, 6.4, and 6.6 feet respectively.

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	Comments
X			Forebay debris load acceptable? (amount)	7 yrd²
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	1 – 5%
		X	Any oil seen in gatewells?	

Comments: None

STSs/VBSs:

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

Comments: STSs were in continuous-run mode this reporting period due to the average sub-yearling Chinook and sockeye lengths being less 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: The mechanics adjusted the limit switches for the dewatering screen cleaner on June 28.

Collection Facility: The facility has been running in primary bypass for one day and secondary bypass for condition sampling the next day for the entire reporting period. The flush water pipe for the truck transport recovery tank was removed during a repair and the truck tank cannot be used until this is addressed. A total of 3,471 fish were collected with 3,462 were bypassed. Due to the issues with the lamprey overshoot system, raceways 2 through 4 were drained to take the pressure off the system. An engineer from the powerhouse said the lamprey overshoot pipe adds so much water to the main flume piping that it creates a pressurized system.

A capacitor for the HVAC system was replaced on July 3 at 0730 hours. There is no air for the second floor of the JFF building, as the second motor for the HVAC is no longer functioning.

Transport Summary: Transport at Lower Monumental ended with the June 17 barge.

Spillway Weir: Summer (17kcfs) spill began at 00:00:00 on June 21.

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
38.7	30.6	17.3	16.7	64.0	63.0	7.2	5.4

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers inspections are done until December.

Avian Activity: Tailrace counts of foraging piscivorous birds at Lower Monumental Dam began on April 1.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
6/28/2024	1400	6	3	0	0	0
6/29/2024	1400	7	4	0	0	1
6/30/2024	1445	1	5	1	0	5
7/1/2024	1830	0	6	0	0	3
7/2/2024	910	0	0	0	0	8
7/3/2024	1258	2	0	0	0	9
7/4/2024	1030	17	0	0	0	0

Comments: Bird hazing by USDA personnel ended on June 30.

Invasive Species: Zebra or quagga mussel traps will be examined in July.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by EAS personnel, 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*
6/28/2024	2	10
6/29/2024	---	---
6/30/2024	5	20
7/1/2024	---	---
7/2/2024	2	8
7/3/2024	---	---
7/4/2024	9	45
Total	18	83

*Collection refers to extrapolated values based on sampling percent.

Fish Rescue/Salvage: No fish rescue was performed this week for Lower Monumental Dam.

Research: The collection of lamprey for the PNNL study of the behavior and survival of Pacific lamprey has ended.

GBT examinations occurred on July 1. A total of 25 clipped subyearling Chinook and 75 unclipped subyearling Chinook smolts were examined. Gas bubble trauma was detected in 1 fish: the anal fin of an unclipped subyearling Chinook.

The Nez Perce steelhead kelt study and rehabilitation collection ended on June 30, 0 steelhead kelts was placed in the collection tank for this reporting period. The equipment for the study was removed fully on July 1.

Project: Little Goose Dam
Biologist: Deb Snyder, Brooke Gerard
Dates: June 28 – July 4, 2024

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 6 turbine units available for service? (See table and comments below for details)

*All available turbine units are operated in accordance with Appendix C of the Fish Passage Plan

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

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
5	4/14/2017	14:11	11/30/2024	ERTS	Spider and upper guide bearing repair.

Comments: Contractual obligations, performance issues, and projected flow data once again realigned the Unit 5 ERTS date into late fall 2024

Adult Fish Passage Facility

EAS Bio staff inspected the adult Fishway on June 29, July 1, and July 3.

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	X		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	7/1 – 0.5
		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	X		North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	6/29 – 6.2
X	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	6/29 – 6.3
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: The adult fishway was returned to service on February 15. The AWS pumps returned to service on February 22. The Collection Channel Surface Velocity is measured at NPE. The fish system control program is proving unreliable and inadequate to balance the adult fishway in “automated” mode. Biologist personnel are manually adjusting and balancing the adult fishway with increasing frequency. EAS Bio personnel report the FSC board reflects weir and channel height readings with notable discrepancies compared to actual physical hand measurements taken during inspection periods. FSC board readings of SSE Channel elevation continues to report discrepancies an average of 8.2 feet below physical staff gauge measurements documenting the same channel elevation. All channel staff gauge and NPE and NSE FSC board channel heights reflect similar and corresponding readings. On May 29, the new fish ladder cooling pump installation was completed. The newly installed pump unit

was commissioned for seasonal use June 9 at 1420 hours upon reaching criteria per FPP 2.4.2.14.i the prior evening of June 8 at 1900 hours.

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 3 were returned to service February 22. Fish pump 2 was returned to service on February 28.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comment
X			Forebay debris load acceptable? (amount)	High 45 ft² - Low 0 ft²
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X	X		Any debris seen in gatewells (% coverage)	6/28-1C:2%; 6/29-1C:5%
	X		Any oil seen in gatewells?	

Comments: The forebay had minimal floating debris inside the trash shear boom with the highest measurement occurring on July 1, and July 3 at 15 ft². The overall total forebay debris high occurred June 29 at 45 ft^2. Drawdowns were completed on June 28 and July 4.

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: Installation of ESBS's were fully functional and deployed the week of March 18. The second round of gatewell camera inspections were completed June 10, 11, 12, and 13, with the next round scheduled for July 8 through July 11.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comments: The juvenile bypass system was watered up on March 7 without incident.

Collection Facility: The juvenile collection facility was successfully watered up on March 20. Every other day collection for condition monitoring in conjunction with secondary bypass commenced March 25 with the first sample being conducted on March 26. Every day collection began April 23 coinciding with barge transportation operations. During this reporting period a total of 28,070 fish were collected, 0 were barged, 28,061 were bypassed, and there were 9 sample or facility mortalities. The descaling and mortality rates were 1.3% and 0.03%,

respectively. The collection and transport facility operated within criteria; no adult lamprey were removed from the sample or separator during this report period.

Transport Summary: Collection for fish transportation began April 23 with the first barge departure on April 24. Every day barging continued through May 16 upon transition to every other day barge operations. The last barge for the season departed on June 19.

Spillway Weir: Little Goose began operation of the adjustable spillway weir (ASW) on March 1 to facilitate passage of adult steelhead overshoots. On March 21, the ASW transitioned to 625 ft. crest height spilling 24 hours 7 days per week per CBR LGS R 022724 1735. Spring spill operations began on April 3 spilling 24/7 up to the 125% gas cap. On April 16, we hit the 50 adult Chinook threshold at Ice Harbor and began spilling at performance spill (30% of outflow) from 0400 to 1200 to facilitate adult fish passage. On May 14, the ASW was positioned to Low Crest. On June 13, the ASW position changed to High Crest. Summer spill operations began as scheduled on June 21.

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
39.2	32.7	11.8	9.8	66.0	64.2	6.0	5.0

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inline cooling strainer inspections commenced on December 1, 2023. Inspections will continue in accordance with the Fish Passage Plan (FPP) and results will be submitted to the District.

Avian Activity: Daily piscivorous bird counts at Little Goose Dam are scheduled to begin April 1, while USDA-APHIS bird abatement contract services are in place.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
6-28	1330	0	0	0	1
6-29	1015	1	0	0	1
6-30	1015	0	0	0	1
7-1	1920	0	0	1	1
7-2	0830	0	0	0	2
7-3	1030	1	0	0	0
7-4	0800	0	0	0	3

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

Siberian Prawn: Juvenile fish collection will begin March 25. Siberian prawns collected in the sample at the Juvenile Fish Facility will be humanely euthanized by Oregon Department of Fish and Wildlife and EAS Bio personnel, frozen and properly disposed of in a landfill.

Date	Sample	Collection*
6-28	1	20
6-29	1	20
6-30	2	40

7-1	0	0
7-2	0	0
7-3	2	40
7-4	1	20
Totals	7	140

*Collection and sample numbers are equal when sample rates change to 100%

Gas Bubble Trauma (GBT): Oregon Department of Fish and Wildlife performed GBT monitoring on July 2. Of the 103 fish examined, 1 fish exhibited gas bubble trauma symptoms.

Fish Rescue/Salvage: Fish rescue activities due to every-other-day collection and return to primary bypass operations took place April 19 and April 21. Results were reported and submitted to District.

Research: The Nez Perce Tribe (NPT) commenced adult steelhead kelt collection efforts on March 27 and concluded July 1.

Project: Lower Granite
Biologists: Elizabeth Holdren and Steve Lee
Dates: June 28- July 4, 2024

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**

Comments:

Adult Fish Passage Facility

Lower Granite Biologists and EAS staff inspected the adult fishway June 28, 29, July 1 and 2.

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:

Yes	No	Sill	Location	Criteria	Comments
X			South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	
X			South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 8.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0’ or on sill	
	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	0.9’
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	6.7’
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	6.7’
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.9’
	X		Collection Channel Surface Velocity	1.5 – 4.0 fps	1.2, 1.3, 1.1, 1.0

Comments: Fish ladder control system operation and configuration is an ongoing issue that began when the system was installed in 2016. LWG is moving forward with inhouse design and install of fish ladder control system based of the system used at LMN. Efforts of the electrical crew continue to bring the ladder back into criteria however the control system drifts out of calibration shortly after. There is a swell at the north powerhouse where the back eddy

collides with powerhouse and spillway flow that may be impacting channel/tailwater differentials. North shore tailrace elevations ranged from 631.5' to 632.3'. the fish ladder was designed to operate at the minimum operating elevation of 633.0'.

Auxiliary Water Supply System:

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

Comments: AWS Pump 1 remains in slow mode due to the inability to operate in fast mode while operating at MOP elevation. AWS pump 2 remains out of service for maintenance.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	33 yd^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 minimum
X			Dewaterer and cleaning systems operating satisfactory?	

Comments:

Collection Facility: The juvenile facility is operating in secondary bypass for condition sampling.

Transport Summary: Every-other-day barging ended June 19.

Spillway Weir: Summer spill began at 0001 hours June 21.

PIT tag interrogations: RSW detections included 63,263 juvenile and 85 adult Chinook salmon, 48,052 juvenile and 580 adult steelhead, 8,860 juvenile and 1 adult sockeye, and 2,591 juvenile coho salmon. Juvenile bypass system detections included 9,554 juvenile and 4 adult Chinook salmon, 14,551 juvenile and 43 adult steelhead, 220 juvenile sockeye, and 240 juvenile coho salmon through July 4 (DART).

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
39.6	39.4	18.2	18.0	65.5	63.5	5.0	5.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A

Introduced Species: No zebra/quagga muscles were detected on the trap substrate. Siberian prawns collected in the sample included 837 live and 126 mortalities this report week. All live Siberian prawns are euthanized.

Avian Activity: Biologist daily piscivorous bird counts began April 1. Bird hazing concluded June 30.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
June 28	1305	0	0	0	0
June 29	1200	0	0	0	0
June 30	0725	0	0	0	0
July 1	0815	4	0	0	0
July 2	0829	0	0	0	0
July 3	1048	0	0	0	1
July 4	1430	0	0	0	0

Gas Bubble Trauma (GBT) Monitoring: N/A

Adult Fish Trap Operations: Collection for sampling continues with fish being collected 24-hours per day Sunday-Thursday and sampled Monday- Friday 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: The adult trap was flushed June 3 to remove accumulated American shad and debris that collect on screens and reduce trap operational flows.

Research:

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 4,000 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 March 1 through November 30. The goal is to collect 5-20% of adult steelhead, spring/summer Chinook salmon, and sockeye salmon ascending the ladder March 1-November 30. 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.

Sampling and PIT tagging of Walleye by the Idaho Department of Fish and Game (IDFG) and NOAA Fisheries.

Walleye collected in the adult fish trap will be PIT tagged to investigate movement and ascension rate of walleye that successfully exit the fish ladder into the upstream reservoir. PIT tag data collected will be used to gain an understanding of the potential expansion and threat of walleye upstream of LWG to ESA-listed salmonids and guide future management actions of walleye in the Snake River Basin.

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.

Nez Perce Tribe (NPT)/U. of Idaho (UI)/Columbia River Intertribal Fisheries Commission (CRITFC) – Kelt Study

This research investigates steelhead kelt physiology and endocrinology to evaluate the feasibility and success of rehabilitating strategies. The goal is to collect kelts from LWG and LGO juvenile fish facility separators. Up to 500 selected kelts are transported by NPT to Dworshak National Fish Hatchery for reconditioning and later release as part of this study. Kelt collection at Lower Granite concluded June 30.

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.

United States Geological Survey (USGS) Wild Juvenile Fall Chinook Salmon Genetics Sampling:

The goal of this study is to determine the origin of unmarked subyearling Chinook salmon in LWG sample. The USGS has developed an approach to estimate the daily abundance of natural-origin subyearling Chinook salmon passing LWG each year. The goal is to collect fin clips from 15 unmarked subyealing on Monday's, Wednesday's, and Friday's May 15 to August 31. Genetic samples will be used to determine origin of unclipped subyearling Chinook salmon thus validating estimates of origin and model abundance.

PNNL Juvenile Pacific Lamprey Passage Behavior and Survival study:

Juvenile lamprey (macropthalmia) were collected from LWG sample, as needed, to meet PNNL downriver study objectives. LWG collected a total of 1,502 juvenile lamprey this season to support this study.

Columbia River Inter-Tribal Fisheries Commission (CRITFC) Pacific Lamprey Genetic Study:

CRITFC has requested that the SMP collect non-lethal tissue samples from up to 2000 juvenile and 1250 larval Pacific lamprey, not to exceed 10 juvenile and 5 larvae daily during the routine smolt monitor condition sampling from March through September. The purpose of this study is to fill two objectives; 1) Determine relative proportion of translocation offspring among the total abundance of larval and juvenile lamprey passing the juvenile bypass systems at BON, JDA, MCN, and LWG. 2) Describe life history characteristics of larval and juvenile lamprey emigrating from the Columbia and Snake River basins. The genetic information collected will be used to evaluate

the tribal Pacific lamprey program's efficacy and assist with guiding future management. LWG SMP have collected genetic samples from 630 juvenile and 396 larval lamprey this season.

Idaho Power Hells Canyon Sturgeon Recruitment:

LWG Corps bio techs continue collecting passage and estimated lengths and of White Sturgeon prior to removing them from the separator in support of Idaho Power Sturgeon program.