U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#08-2019

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: April 19 to 25, 2019

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	04/22	0637	04/24	1722	Hub tapped and inspected.

Comments: There are no problems to report.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on April 19, 21 and 23. Adult fish counting continued by video review. The fish count data is being faxed to the Fisheries Field Unit.

Fish Ladder Exits:

Yes	No	Location	Criteria	Comments
X		Oregon Exit	Head over weir 1.0' to 1.3'	
X		Oregon Count Station Differential	0.0' to 0.5'	
X		Washington Exit	Head over weir 1.0' to 1.3'	
X		Washington Count Station Differential	0.0' to 0.5'	

Comments: Debris loads were very light near the Oregon and Washington exits. At the Oregon exit, one alarm came in and was reset on April 21.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
X			North Oregon Entrance Head Differential	1.0' – 2.0'	
X			NFEW2 Weir Depth	$\geq$ 8.0'	
X			NFEW3 Weir Depth	$\geq$ 8.0'	
X			South Oregon Entrance Head Differential	1.0' – 2.0'	
X			SFEW1 Weir Depth	$\geq$ 8.0'	
X			SFEW2 Weir Depth	$\geq$ 8.0'	
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.9 fps.
X			Washington Entrance Head Differential	1.0' – 2.0'	
X			WFE2 Weir Depth	$\geq$ 8.0'	
X			WFE3 Weir Depth	$\geq$ 8.0'	

Comments: The control system panel view by the south powerhouse entrances was activated this week.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
X			WA shore Wasco County PUD Turbine Unit
	X		WA shore Wasco PUD Bypass
		X	Oregon shore Fish Pump 1, OOS.
X			Oregon shore Fish Pump 2, Blade angle: 22 to 23°
X			Oregon shore Fish Pump 3, Blade angle: 24°
X			OR North Powerhouse Pool supply from juvenile fishway

Comments: There are no problems to report.

Juvenile Fish Passage Facility

The sampling season consisting of alternating days of primary and secondary bypass continued. There was one interruption in the schedule. On April 22, from 0700 to 1317 hours, the system remained in primary bypass while the rectangular screen cleaning brush in the channel was repaired. At a 1% sample rate, nineteen samples were missed in the 6.3 hours the system remained in primary bypass. The brush failure and system operations will be discussed below.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Powerhouse forebay debris load acceptable?	Minimal to very light.
X			Trash rack differentials measured this week?	Daily.
X			Trash rack differentials acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: New incoming debris was minimal. There was minimal debris at the spillway. No trash racks were cleaned this week.

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: ESBSs are installed in all units. The brush cycle for the screen in 13A slot remains in timer mode. On April 21, 22 and 23, respectively, the brush cycles for the screens in 8C, 8A and 6A slots were reset multiple times and the cycles were switched to timer mode. The brush cycle for the screen in 7A slot was reset on April 23. Camera inspections will begin on May 7.

Daily VBS differential monitoring continued. No high differentials were recorded. On April 24, six VBSs (6A, 6B, 11A, 11B, 13A and 13B slots) were cleaned and no fish mortalities were noted.

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

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

*Comments: Orifice valve operator rehabilaiton continued. Orifices were adjusted as required for VBS cleaning. Area and orifice attraction lighting was repaired as needed.

During the early morning of April 20, the technician on duty noted a kink in the rectangular screen cleaning brush's electrical cord. However, due to miscommunication, this kink was not verified until April 21 at 0940 hours. It was very fortunate this delay did not lead to further issues. After operating the device, at 1120 hours, the biologist removed the rectangular brush from service as the electrical cord was under stress where it connects to the mechanism. The technicians on duty were instructed to monitor the juvenile collection channel and manually operate the rectangular screen air burst system hourly. Also, they were instructed not to switch to scheduled secondary bypass on April 22 at 0700 hours in order to facilitate repairs (see 19MCN04 MFR). When there are issues with the channel, it is always best to use caution. On April 22, the electrical staff immediately began to work on the issue by removing the walkway grating and repair the articulating electrical cord carrier. During the repairs, as a precaution, the transition screen brush was also removed from service. After the repairs, the brush was tested, the raise/low limits were reset and all three brushes were returned to service in automatic mode at 1300 hours on April 22.

There are no other problems to report. During the week, the powerhouse mechanics installed an access point to the east lowering/retracting cable spool on the rectangular screen cleaning brush.

Bypass Facility:

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

Comments: As mentioned above, the system was in primary bypass for 6.3 hours on April 22. The sample gates were operated only when in secondary bypass. The PIT tag system will remain out of service as there are no studies requiring its use. The electrical staff completed resolving the lighting issues.

This week, 93,000 juvenile lamprey and 81,001 smolts were bypassed during secondary bypass.

TSW Operations: The two TSWs remained part of the spill pattern.

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
311.7	201.2	175.5	129.1	51.6	49.2	2.0	1.0

Comments: The above data is supplied by Anchor, QEA except water clarity, which is provided by the control room. The spring flex spill program continued.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on May 7.

Avian Activity: Avian observations continued. The counts are reflected in Table 3 below.
There was very little activity in the powerhouse zone except for roosting gulls for only one day. In the spill zone, gull numbers were fluctuating and only an occasional pelican was observed. The gulls did appear to be feeding.

In the bypass outfall zone, most of the gulls were roosting on the full flow pipe, though some were feeding. No other birds were observed. Due to the roosting, which was previously discouraged by bird wire, the outfall numbers will appear inflated compared to previous years.

The laser being used to "haze" the outfall was on during all outfall observations. The laser patterns are programmed on at 0500 to 0800, 1030 to 1330 and 1500 to 2000 hours. Though observations are limited, the laser does appear to displace the birds that are within its range. Most of the gulls noted roosting on the outfall pipe were outside the laser's range and in the section with no bird wire. When comparing the laser effectiveness using past bird counts, feeding birds will have to be considered.

The bird distress calls remained deployed along the navigation lock wing wall. Roosting on the wall has been very limited.

USDA Wildlife Services began the first hazing shift on April 21. The second shift will begin on April 28. The first of four boat hazing trips during the week will occur on April 29.

In the forebay zone, an occasional osprey or long along with small groups of grebes or cormorants were observed. Fairly large numbers of pelicans, cormorants and gulls were noted roosting outside the zone along the Washington shore line. Most birds appear to be staging at this time.

Table 3. McNary Project's Daily Tailwater Avian Counts.

Date	Zone	Gull	Cormorant	Tern	Pelican
April 19	Spill	10	0	0	0
	Powerhouse	0	0	0	0
	Outfall	25	0	0	0
April 20	Spill	57	0	0	0
	Powerhouse	52	0	0	0
	Outfall	44	0	0	0
April 21	Spill	3	0	0	0
	Powerhouse	0	0	0	0
	Outfall	10	0	0	0
April 22	Spill	14	0	0	0
	Powerhouse	0	0	0	0
	Outfall	33	0	0	0
April 23	Spill	14	0	0	0
	Powerhouse	0	0	0	0
	Outfall	59	0	0	0
April 24	Spill	3	0	0	2
	Powerhouse	0	0	0	0
	Outfall	31	0	0	0
April 25	Spill	10	0	0	0
	Powerhouse	0	0	0	0
	Outfall	33	0	0	0

Invasive Species: The next mussel station examinations will occur on April 28. So far this season, one Siberian prawn was removed from the sample and euthanized.

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

Research: None is occurring at this time. On April 29, the Yakima Nation will remove a group of juvenile lamprey from the sample for an offsite passage study. Gas bubble trauma (GBT) examinations occurred on April 20 and 24 (the last examination was originally scheduled for April 22). No signs of GBT were observed this week.

Project: Ice Harbor
Biologist: Ken Fone
Dates: April 19 – April 25, 2019

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**
2	4/25/16	0606	---	---	Runner replacement
4	9/20/18	1619	---	---	Investigate for possible oil leak

Comments: Unit 3 was noted to be operating a few megawatts above the 1% peak operating efficiency range on the April 24 fishway inspection. This was due to the GDACS program needing to be updated with the narrower operating efficiency range of unit 3 since it became a fixed-blade unit.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on April 22, 23, and 24.

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	0.7, 0.9, 0.8 fps
X			North Powerhouse Entrance (NFE-1) 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: The depth over the weirs in the upper south fish ladder was discovered to be well below criteria on April 14. The upper diffuser valve #12 would not operate to provide more water. In order to access diffuser valve #12, the upper ladder was unwatered on April 16. The operating stem was found to have become detached from the valve. Repairs were made and the south fish ladder was returned to full operation on April 19 at 1530 hours. See the document MFR 19 IHR 06 for more details about the event.

The south shore channel velocity was below criteria on all three inspections. The higher tailwater and channel levels slowed the velocity of water entering the junction pool from the upper ladder, resulting in the lower velocity readings at the meter.

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 #8 has been out of service since March 1, due to the pump needing an oil change and heater installation.

All of the south shore AWS pumps were shut off on April 14 at 0655 hours in preparation for unwatering the upper south fish ladder for the diffuser valve #12 repair. On April 19, at 1530 hours, the pumps were turned on to return the ladder to normal operation.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	5 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.

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: STSs are operating in continuous-run mode, because of the presence of subyearling chinook fry in the Ice Harbor and/or Lower Monumental juvenile fish samples.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comments: None.

Juvenile Fish Facility: The fish facility is being operated in primary bypass, except when collecting fish for sampling.

Fish Sampling: Sampling is occurring on Mondays and Thursdays each week. See the tables below for a summary of the sampling results. The descaling observed on three of the fish in the April 25 sample was attributed to birds and lamprey.

Fish condition sampling results at Ice Harbor Dam:

Date: April 22

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	28	0	0	0
Chinook yearling unclipped	7	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	137	5	0	0
Steelhead unclipped	26	1	0	0
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Total	198	6	0	0

Date: April 25

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	49	1	0	0
Chinook yearling unclipped	19	1	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	78	4	0	0
Steelhead unclipped	16	1	0	0
Coho clipped	1	0	0	0
Coho unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Total	163	7	0	0

Removable Spillway Weir (RSW): Voluntary 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
167.0	111.4	113.2	79.8	52	48	2.8	1.2

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine cooling water strainer inspections for lamprey occurred on April 25. A total of 123 juvenile lamprey, 1 juvenile chinook, 2 juvenile steelhead, and 79 Siberian prawns were found, all of which were mortalities except for two of the lamprey. The two live lamprey were released to the river in good condition.

Avian Activity: There were low to moderate numbers of piscivorous birds counted around the project (see the table below). Land-based hazing of piscivorous birds for 16 hours per day is occurring. Boat-based hazing changed from 8 hours per day, 3 days per week, to 5 days per week starting on April 21. Hazing has been effective in disrupting and dispersing gulls and cormorants that are foraging in the water on the north side of the navigation lock downstream guide wall and coffer cells.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
April 19	8	18	0	2	29
April 20	5	11	0	0	3
April 21	44	33	0	0	22
April 22	6	9	0	0	0
April 23	11	14	0	0	1
April 24	1	6	0	0	0
April 25	2	7	0	0	7

Invasive Species: No new exotic species have been found.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by PSMFC and Anchor, frozen and properly disposed of in a landfill. Daily and total Siberian prawn counts at Ice Harbor Dam for this reporting period are shown below.

Date	Sample (euthanized)	Collection*
April 22	2	2
April 25	0	0
Totals	2	2

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

Fish Rescue/Salvage: There were no fish found in the ribbing of the tailrace stoplogs that were removed from unit 2 on April 24.

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

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: April 19 - 25, 2019

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 3	4/19/2019	07:00	4/19/2019	14:50	Fish guidance efficiency study head gate change

Comments: Units went into Hard Restraint at 0001 on April 1.

Adult Fish Passage Facility

The adult fishways were inspected by Corps and Anchor QEA biologists on April 19, 20, 21 and 24.

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 Shore Entrance weir (SSE-1) was out of criteria during the April 19 and 24 inspections with readings of 6.6 and 7.4 feet respectively. The operator was informed and adjusted the system.

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: AWS Fish pump 1 was out of service for seized Wicket Gate Bushings. The pump returned to service at 1630 on April 9.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	2513 yd^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 35%
	X		Any oil seen in gatewells?	

Comments: None.

STSs/VBSs:

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

Comments: None.

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: None.

Collection Facility: Every other day fish condition sampling ended at 0700 on April 23. Collection into raceways for transport began at 1500 on April 23. Due to high fish numbers greater than available space on the transport barge, "B" side was placed into secondary bypass from 0515 to 0800 on April 24. Collected fish in raceways 3 and 4 were bypassed back to the river at approximately 0630 and collection in raceways resumed at 0800. Due a lack of available space on the transport barge, "A" side fish in raceways 1 and 2 were bypassed back to the river during barge loading during the early morning of April 25. Please see 19LMN05 MFR for more details.

Transport Summary: Every-day barge transport began on April 24. A total of 721,000 fish were collected with 216,699 fish being transported and 504,296 fish bypassed back to the river during this reporting period.

Spillway Weir: Spring spill began and the RSW went 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
156.3	105.8	49.6	39.9	51.2	49.6	2.0	1.3

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on April 18. Live fish included 14 juvenile lamprey and 1 juvenile steelhead. Mortalities included 234 juvenile lamprey, 10 juvenile salmon and 3 juvenile steelhead.

Avian Activity: Tailrace counts of foraging piscivorous birds at Lower Monumental Dam.

Gulls were the predominant piscivorous bird species observed during fish ladder inspections this week.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
4/19/2019	1230	1	0	0	0	0
4/20/2019	1105	1	0	0	0	0
4/21/2019	1245	1	0	0	0	1
4/22/2019	1115	2	0	0	0	0
4/23/2019	1200	2	0	0	0	0
4/24/2019	1100	1	0	0	0	0
4/25/2019	1200	3	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 5.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by PSMFC and Anchor, frozen and properly disposed of in a landfill. No Siberian prawns were collected in the sample at Lower Monumental Dam for this reporting period.

Fish Rescue/Salvage: No Fish Rescue/Salvage took place during this reporting period.

Research: PNNL started collecting data for their Fish Guidance Efficiency study 20 April.

Project: Little Goose
Biologists: Scott St. John and Richard Weis
Dates: March April 19-25, 2019

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	04/21/17	00:54	03/31/21	17:00	Spider and Upper Guide Bearing Repair

Comments: None.

Adult Fish Passage Facility

Little Goose fish facility and Anchor QEA staff inspected the adult fishway on April 21, 23 and 25.

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		

Comments: None.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurement
X			South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	
X			South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 7.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 7.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
X			North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
	X		Collection Channel Surface Velocity	1.5 – 4.0 fps	1.4

Comments: The adult fishway continues to operate in manual mode. Project staff have struggled to maintain entrance criteria during spring spill. The April 23 inspection found SSE surface velocity measurements at 1.4 fps. Adjustments were made and the fishway is in criteria. Subsurface water velocity was measured near NPE on March 19 using a Rickly velocity meter and averaged 2.8 feet per second.

Auxiliary Water Supply System:

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

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comment
X			Forebay debris load acceptable? (amount)	
X			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: Trash rack differentials were measured on April 26 and were in criteria. There is approximately 3,500 square feet of floating woody debris inside the trash shear boom in the immediate 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?

Comments: VBS differentials were measured on April 26 and were in criteria.

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: None.

Collection Facility: The juvenile bypass system is currently operating. Daily collection for condition sampling and transport began on April 23 at 07:00 with the first barge departing on April 24.

Transport Summary: The collection and transportation facility operated within criteria this report period except for during bypass on April 24 (MFR 19 LGS 04). A total of 791,465 fish were collected, of which 419,903 were transported via barge. The descaling and mortality rates were 0.9% and 0.02% respectively. There were no adult lamprey removed from the separator or this report period.

Spillway Weir: Spring spill commenced on April 03 with the ASW in the high crest position. The ASW was adjusted to the low crest elevation on April 09.

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
163.1	106.5	73.7	48.5	52.3	51.1	2.0	1.1

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers are currently being inspected every other week and results are sent to district for FPOM distribution.

Avian Activity: Daily piscivorous bird counts at Little Goose Dam will started on April 01.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
4-19	1120	1	8	0	0
4-20	1000	2	5	0	0
4-21	1000	2	5	0	0
4-22	1000	0	7	0	0
4-23	1115	0	4	0	0
4-24	1400	1	0	0	0
4-25	1245	6	5	0	0

Invasive Species: No zebra or Quagga mussels were observed.

Siberian Prawn: No Siberian prawns were collected in the sample during this reporting period.
Gas Bubble Trauma (GBT): Gas bubble monitoring began on April 15. Personnel examined 100 fish of which only 3 had signs of GBT.

Fish Rescue/Salvage: N/A

Research: N/A

Project: Lower Granite
Biologists: Elizabeth Holdren
Dates: April 19-25, 2019

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	17-Apr	0659	25-Apr	1653	Head cover issues

Comments: None.

Adult Fish Passage Facility

Lower Granite Corps biologist's and Anchor Environmental biologist's inspected the adult fishways April 19, 20, 23, and 24.

Fish Ladder:

Yes	No	NA	Location	Criteria	Comments
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'	Diff. 14 issues
	X		Fish Ladder Cooling Water Pumps in Service		
		X	Fish Ladder Cooling Water Pumps Operating Satisfactorily		

Comments: None.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
X			South Shore Entrance (SSE-1) Weir Depth	$\geq$ 8.0'	
X			South Shore Entrance (SSE-2) Weir Depth	$\geq$ 8.0'	
X			South Shore Channel/Tailwater Differential	1.0' – 2.0'	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	$\geq$ 8.0' or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	$\geq$ 8.0' or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0'–2.0'	
X			North Shore Entrance (NSE-1) Weir Depth	$\geq$ 7.0' or on sill	
			North Shore Entrance (NSE-2) Weir Depth	$\geq$ 7.0' or on sill	Closed
X			North Shore Channel/Tailwater Differential	1.0'–2.0'	
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: None.

Auxiliary Water Supply System:

Operating Satisfactorily	Standby	Out of Service	Auxiliary Water Supply (AWS)
		Lower guide repair	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)	Average of ~ 60.7 yds^2
X			Trash rack differentials measured this week?	
X			Trash rack differentials acceptable	
X			Any debris seen in gatewells (% coverage)	≤ 1%
	X		Any oil seen in gatewells?	

Comments: None.

ESBSs/VBSs:

Yes	No	NA	Item
X			ESBSs deployed in all slots and in service?
	X		ESBSs inspected this week?
		X	ESBSs inspection results acceptable?
X			VBSs differentials checked this week?
X			VBSs differentials acceptable?

Comments: None.

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: The collection channel is operating with all 14" orifices open and an additional three 10" orifices open in unit 6 gatewells. The north makeup water valve is in local control due to an automatic control motor hardware failure.

Collection Facility: Collection for transport began at 0700 hours April 23.

Transport Summary: The first daily transport barge departed Lower Granite April 24.

Spillway Weir: Spring flex spill operation continues.

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
162.9	108.0	70.9	41.6	52.0	49.5	2.9	0.8

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were not inspected during this reporting period.

Invasive Species: No Siberian prawns were collected in the sample or euthanized during this reporting period.

Avian Activity: Biologist daily piscivorous bird counts at Lower Granite Dam will begin April 1.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
19-Apr	0945	0	3	0	0
20-Apr	1045	0	0	0	0
21-Apr	1343	0	0	0	0
22-Apr	1500	10	0	0	0
23-Apr	1250	0	0	0	2
24-Apr	1035	0	0	0	0
25-Apr	1400	0	0	0	0

Gas Bubble Trauma (GBT) Monitoring: First GBT sample was collected from the fish entering the separator April 25 with no signs of GBT observed.

Adult Fish Trap Operations: The adult trap is operating Monday-Friday at a 28% sample rate.

Fish Rescue/Salvage: No fish rescue/salvation occurred during this reporting period

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.

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. Selected kelts collected at Granite are transported by NPT to Dworshak National Fish Hatchery for reconditioning and later release as part of this study.

National Marine Fisheries Service (NMFS)-Monitoring the Migrations of Wild Snake River Spring/Summer Chinook:

This study is monitoring the migration behavior and survival of wild spring/summer Chinook salmon. The goals are to characterize migration timing and estimate parr-to-smolt survival to LGR of wild Chinook populations as they

migrate from their natal rearing areas and determine migration patterns and what environmental factors influence those patterns. Fish were PIT-tagged during the summer of 2018 in natal streams and are diverted to the Sort-By-Code tanks at LGR.

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.

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 every day fish transport begins.

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.

National Marine Fisheries Service (NMFS) Ancillary Adult Passage Monitoring:

Fish that were PIT as juveniles at LWG are monitored as returning adults through the river and LWG facility. For each returning adult the following is estimated; 1) passage time between sets of detection PIT tag coils, 2) whether the fish was handled at the adult trap, 3) duration the fish was held at the adult trap, 4) overall passage time from ladder entrance to exit, 5) whether the turnpool gate was open or closed during passage. This will be the last year of this evaluation.

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.