U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#17-2017

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: June 16 – 22, 2017

Turbine Operation

General Comments: The hard 1% peak efficiency constraint continues. This week, the unit priority changed to 1, 2 and then 14 to 3 in descending order as approved in FPOM (see 17MCN08 MFR) .

Yes	No	Turbine Unit Status
☐	☒	All 14 turbine units available for service throughout the week (see Table 1 for outage details below).
☒	☐	All turbine units operated within 1% peak efficiency constraint. Constraint in effect: ☒ Hard ☐Soft.

Table 1. Unit Outages at McNary Project.

Units	Outage Dates	Outage Length	Reason
5 & 6	June 15 to 29	Two weeks	Station service upgrades.
8, 9 & 10	June 20	1.3 hours total	Extended-length submersible bar screens (ESBSs) camera inspections.

Adult Fish Passage Facilities

General Comments: McNary fisheries biologists performed measured inspections of the adult fishways on June 16, 18 and 21. Visual fish counts and video review of lamprey passage continue. Ladder water temperature data was downloaded on June 21.

Fish Ladder Exits:

Yes	No	Location, Criteria and Measurements
☒	☐	Oregon Exit (Criteria – Head over weir 1.0’ to 1.3’)
☒	☐	Oregon Count Station Differential (Criteria – Differential 0.0’ to 0.5’)
☒	☐	Washington Exit (Criteria – Head over weir 1.0’ to 1.3’)
☒	☐	Washington Count Station Differential (Criteria – Differential 0.0’ to 0.5’)

Comments: Debris loads at the Washington exit and along the shoreline were light to minimal. The trash rack and picketed leads were cleaned as needed, including weekends. No solution has been found for the count station passive integrated transponder (PIT) system interference. The regulating weir tripped an alarm and was reset on June 18 and 20. The regulating weir set point was adjusted June 18.

At the Oregon exit and along the shoreline, debris loads were very light to minimal. The regulating weir set point was adjusted on June 21.

Fishway Entrances and Collection Channel:

Criteria Met?

Yes	No	Location, Criteria and Measurements
☒	☐	North Oregon Entrance Head Differential (Criteria – 1.0’ to 2.0’)
☐	☒	NFEW2 Weir Depth (Criteria – ≥ 8.0’): 7.9’ on June 21.
☐	☒	NFEW3 Weir Depth (Criteria – ≥ 8.0’): 7.9’ on June 21.
☒	☐	South Oregon Entrance Head Differential (Criteria – 1.0’ to 2.0’)
☒	☐	SFEW1 Weir Depth (Criteria – ≥ 8.0’)
☒	☐	SFEW2 Weir Depth (Criteria – ≥ 8.0’)
☒	☐	Oregon Collection Channel Velocities (Criteria –1.5 to 4.0 fps): Averaged 1.9 fps.
☒	☐	Washington Entrance Head Differential (Criteria – 1.0’ to 2.0’)
☒	☐	WFE2 Weir Depth (Criteria – ≥ 8.0’)
☒	☐	WFE3 Weir Depth (Criteria – ≥ 8.0’)

Comments: The Oregon ladder was out of criteria on June 21 possibly due to one of eight discharge logs having been removed from fish pump 2, high tailwater elevations creating unfavorable hydraulic gradients or slack forming in the cables of entrance weirs NFEW2 and NFEW3. Due to this cable slack, NEFW2 and NFEW3 might have been slightly more out of criteria (shallower) than measured on June 21 by approximately one to two tenths.

On June 16, the operators and general maintenance staff made adjustments to NFEW3, which had the greatest amount of slack of the two weirs. Since then, the cable slack has been minor. We will continue to monitor both weirs.

Auxiliary Water Supply System:

Yes	No	In Service?
☒	☐	Washington shore Wasco County PUD Turbine Unit.
☐	☒	Washington shore Wasco PUD Bypass. Service was not required.
☒	☐	Oregon Ladder Fish Pump 1: Blade angle was 26 to 29 degrees.
☐	☒	Oregon Ladder Fish Pump 2: Testing occurred on June 20 and 21 with the blades flat. Vibration testing has been delayed.
☒	☐	Oregon Ladder Fish Pump 3: Blade angle was 26 to 31 degrees.
☒	☐	Oregon North Powerhouse Pool supply from juvenile fishway.

Comments: On June 16, at 1557 hours, fish pumps 1 and 3 blade angles were reduced to zero degrees for six minutes to allow for adjustments on entrance weir NFEW3. Fish pump 2 vibration testing has been delayed due continued work on the blade governor. The oil head packing was replaced on June 21. The seven remaining discharge logs are tentatively scheduled for removal on June 29.

Juvenile Fish Passage Facility

General Comments: The fish passage season consists of alternating days of primary and secondary bypass modes, with the switch occurring at 0700 hours each morning. No schedule deviations occurred. This week, 1,500 juvenile lamprey and 119,902 smolts were bypassed.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	Item
☒	☐	Forebay debris load acceptable?
☒	☐	Trash rack differentials measured? If so, were differentials acceptable? ☒ Yes ☐ No ☐ N/A.
☐	☒	Any debris seen in gatewells?
☐	☒	Any oil seen in gatewells?

Comments: Forebay debris loads near the powerhouse and spillway increased from minimal to heavy throughout the reporting period. Operators continue to flush debris down the navigation lock as needed. No trash racks were cleaned this week.

ESBSs/Vertical barrier screen (VBSs):

Yes	No	Item
☒	☐	ESBSs deployed in all slots?
☒	☐	ESBSs inspected this week? If so, were results acceptable? ☒ Yes ☐ No ☐ N/A
☒	☐	VBSs differentials checked this week? If so, were results acceptable? ☐ Yes ☒ No ☐ N/A

Comments: The brush cycles for the screens in 1A, 3B, 7B, 12B, 14A slots and in unit 11 remained in timer mode. ESBS camera inspections in units 8 through 10 revealed no problems.

VBS differential monitoring continued. One high differential measurement of 1.6 feet was recorded in slot 1A. This screen and eight others were cleaned on June 16, 21 and 22. During the VBS cleaning, 11 smolt mortalities were observed. A VBS inspection was completed on the screen in slot 6C. No problems were found.

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

Yes	No	Item
☒	☐	Orifices operating satisfactory? 42 orifices were open.
☒	☐	Dewatering and cleaning systems operating satisfactory? Except transition screen brush.

Comments: Orifices were adjusted as required for VBS cleaning and inspection. On June 19, the orifice in slot 13A was inadvertently left closed for five hours after a grebe was removed for the gatwell slot.

We continued to operate the transition screen cleaning brush manually to insure it completes a full cleaning cycle. No issues have occurred recently. The new solenoid has not yet arrived.

Bypass Facility:

Yes	No	Item
☒	☐	Sample gates on? Yes, during secondary bypass only.
☐	☒	PIT tag system on? The system remains off unless a study is occurring. The facility bypass lines provide a superior route for the fish over the PIT-tag sample release lines downstream of the PIT-tag sample gates.

Comments: During the bypass season, primary and secondary bypass modes return all fish are to the river. PIT-tag detection occurs in the full flow pipe during primary bypass and throughout the facility during secondary bypass. Smolt monitoring occurs only on secondary bypass days.

Algae removal from the flumes and tanks continued.

River Conditions

General Comments: River conditions were provided by the biological services contractor, Anchor QEA and are outlined in Table 2 below. Water clarity was provided by the McNary control room. The data period runs from 0700 to 0700 hours each day.

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
380.0	319.8	235.1	172.9	60.8	58.2	3.2	2.6

Comments: Routine summer spill in support of fish passage continues. Fifty percent of river flow is spilled in the summer season. Spill in excess of powerhouse capacity occurred all week. This week, 62 to 54 percent of flow was spilled. The two top spillway weirs (TSWs) in bays 19 and 20 will be closed on June 26, at which time, the exchange to standard spillgates will begin.

Anchor QEA has all temperature probes deployed except at the bypass outfall due to high river flows. On June 19, the data probe in the B side sample holding tank failed. The probe was replaced the next day. Daily data reports continue. Weekly data will be reported separately from the smolt monitoring report.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on July 11.

Invasive Species: The next mussel station examinations will occur on June 25.

Avian Activity: Overall, bird numbers appear greatly reduced so far this season. Avian counts continued and tailwater numbers are recorded in Table 3 below. Observations were made every morning. Currently, pelicans and terns are the predominant species in the tailwater zone.
In the spill zone, the pelicans were along the navigation lock wing wall. The terns and gulls were feeding in the spill flow. In the powerhouse zone, the birds were feeding along the Oregon shoreline below the separator observation building. Birds were only occasionally seen in the outfall zone.

In the forebay zone, zero to 22 grebes were observed along with an occasional osprey, cormorant, pelican and tern. The grebes appear to be in two groups with the second group outside the zone at times. Grebe numbers have recently declined. Fair numbers of pelicans along with a few terns, gulls and cormorants were observed on the rocks by the Washington shore boat dock. One cormorant and one pelican were observed feeding just outside the Oregon ladder exit on two occasions.

One grebe entered the gatewell slots and was removed this week.

United States Department of Agriculture – Animal and Plant Health Inspection Service – Wildlife Services (USDA–APHIS–WS) personnel continued working two shifts seven days a week. Hazing from a boat was scheduled to occur four days a week this season. Due to low bird numbers in the tailwater area, the boat crew has been assisting with hazing grebes from the forebay deck. Wave action at the bypass outfall has not allowed for hazing from the outfall walkway, which has not been needed due to low bird numbers.

The hazing sprinkler flow appeared reduced all week. On June 22, tailwater elevations decreased to allow examination of the sprinkler system. We found grating clips missing from the last 40 feet of the access walkway, two sprinkler supply line clamps were missing and the supply line had a one foot longitudinal crack in it. We removed the sprinkler from service at 0933 hours on June 22. The supply line crack will be repaired on June 26.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican
June 16	Spill	4	0	1	2
	Powerhouse	0	0	0	1
	Outfall	0	0	0	0
June 17	Spill	2	0	0	6
	Powerhouse	0	0	0	1
	Outfall	0	0	0	0
June 18	Spill	13	0	18	17
	Powerhouse	0	0	0	1
	Outfall	2	5	0	0
June 19	Spill	0	0	15	16
	Powerhouse	0	0	0	2
	Outfall	0	0	0	1
June 20	Spill	0	0	15	27
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
June 21	Spill	2	0	2	32
	Powerhouse	0	1	0	1
	Outfall	0	1	1	1
June 22	Spill	2	0	8	26
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0

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

Research

Item: No onsite research is occurring at this time. Gas bubble trauma (GBT) monitoring continues and will occur twice a week during the spill season. No fish examined for GBT exhibited signs this reporting period.

Project: Ice Harbor
Biologist: Ken Fone
Dates: June 16 – June 22, 2017

Turbine Operation

Yes	No	Turbine Unit Status
☐	☒	All 6 turbine units available for service throughout the week (see comments below for outage details).
☐	☒	Available turbine units operated within 1% peak efficiency constraint. Constraint in effect: ☒ Hard ☐Soft.

Comments: Unit 2 was taken out of service on April 25, 2016, at 0606 hours for the runner replacement. Unit 4 was removed from service at 1218 hours on March 6, 2017, when it tripped off due to a problem in the 115 kv section 2 bus. That problem was fixed, but personnel are also investigating the source of a possible oil leak from unit 4. Units 6, 5, 3, and 1 were taken out of service one at a time for STS inspections on June 20 and 21. Unit 3 was noted to be operating slightly above the 1% peak operating efficiency range during the June 21 and 22 fishway inspections, 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 Facilities

Fish facility personnel inspected the adult fishways on June 19, 21, and 22.

Fish Ladders:

Yes	No	Location, Criteria and Measurements
☒	☐	North Fish Ladder Exit Differential (Criteria – Head ≤ 0.5’)
☒	☐	North Fish Ladder Picketed Lead Differential (Criteria – Head ≤ 0.3’)
☒	☐	North Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0’ to 1.3’)
☒	☐	South Fish Ladder Exit Differential (Criteria – Head ≤ 0.5’)
☒	☐	South Fish Ladder Picketed Lead Differential (Criteria – Head ≤ 0.3’)
☒	☐	South Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0’ to 1.3’)

Comments: A few sticks are visible at the water surface above the north fish ladder exit, against the bulkhead. The debris may extend down into the ladder exit trash rack, as it could not be pulled free by hand. Repairs are currently being made to the lifting beam so that the bulkheads and trash rack can be removed for cleaning. The bubblers are operating satisfactorily.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location, Criteria and Measurements
☐	☒	☐	South Shore Entrance (SFE-1) Weir Depth (Criteria: ≥ 8.0’ or on sill)
☒	☐		South Shore Channel/Tailwater Differential (Criteria: 1.0’ – 2.0’)
☒	☐		South Shore Channel Velocity (Criteria: 1.5 – 4.0 fps)
☒	☐	☐	North Powerhouse Entrance (NFE-2) Weir Depth (Criteria: ≥ 8.0’ or on sill)
☒	☐		North Powerhouse Entrance Channel/Tailwater Differential (Criteria: 1.0’ – 2.0’)
☒	☐	☐	North Shore Entrance (NSE-1) Weir Depth (Criteria: ≥ 8.0’ or on sill)
☒	☐		North Shore Channel/Tailwater Differential (Criteria: 1.0’ – 2.0’)

Comments: On the June 19 inspection, the SFE-1 weir gate depth was out of criteria at 7.7’. The operator was informed. The gate is in manual control, and was lowered down to bring the depth into criteria.

Auxiliary Water Supply (AWS) System:

Yes	No	In Service and Operating Satisfactory?
☒	☐	South Shore AWS Pumps. Six of the eight south shore AWS pumps were in service.
☒	☐	North Shore AWS Pumps. Two of the three north shore AWS pumps were in service, except during the period described below.

Comments: North shore AWS pump #1 tripped off at 0930 hours on June 16, due to a farval lubrication problem, and could not be re-started. North shore pump #3 was started in place of pump #1 at 1000 hours on June 16.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	Item
☒	☐	Forebay debris load acceptable? An average of 263 square yards of debris was observed.
☒	☐	Trash rack differentials measured this week? If so, were differentials acceptable? ☒ Yes ☐ No ☐N/A
☒	☐	Any debris seen in gatewells (i.e: over 10% coverage)? Surface coverage ranged from 0% to 25%.
☐	☒	Any oil seen in gatewells?

Comments: None.

STSs/VBSs:

Yes	No	Item
☐	☒	STSs deployed in all slots and in service?
☒	☐	STSs in continuous-run mode (If not, then STSs are in cycle-run mode)?
☒	☐	STSs inspected this week? If so, were results acceptable? ☒ Yes ☐ No ☐ N/A
☐	☒	VBSs differentials checked this week? If so, were results acceptable? ☐ Yes ☐ No ☒ N/A

Comments: Unit 2 STSs are not installed since the unit will not be returned to service this year. STSs have been in continuous run mode since April 4 due to the presence of subyearling Chinook and\or sockeye with average fork lengths of less than 120 mm in the Lower Monumental and/or Ice Harbor juvenile fish samples.

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

Yes	No	Item
☒	☐	Orifices operating satisfactory? How many are open and in service? 20.
☒	☐	Dewaterer and cleaning systems operating satisfactory?

Comments: None.

Juvenile Fish Facility: The fish facility is operated in bypass, except when fish sampling operations are occurring.

Fish Sampling: Sampling operations occur on Monday and Thursday each week. See Table 1 below for a summary of the sampling results. The one mortality in the June 22 sample was a fry in the recovery tank that appeared to have been regurgitated by another fish in the tank.

Table 1. Fish condition sampling results at Ice Harbor Dam.

June 19:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	0	---	---	---
UC-CH	0	---	---	---
C-CH-O	53	0	0	0
UC-CH-O	55	0	0	0
C-SH	0	---	---	---
UC-SH	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	1	0	0	0
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
TOTAL	109	0	0	0

June 22:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	0	---	---	---
UC-CH	2	0	0	0
C-CH-O	18	0	0	0
UC-CH-O	39	1	1	0
C-SH	4	0	0	0
UC-SH	2	0	0	1
C-SOCK	0	---	---	---
UC-SOCK	1	0	0	0
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
TOTAL	66	1	1	1

Removable Spillway Weir (RSW): Voluntary spill for fish passage is occurring, including spill through the RSW.

River Conditions

River conditions during the week are outlined in Table 2 below.

Table 2. River conditions at Ice Harbor Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (ºF)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
123.6	117.1	82.7	69.1	59	58	2.2	2.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine cooling water strainer inspections occurred on June 20 and 21. A total of 1 juvenile lamprey and 1 Siberian prawn mortalities were found.

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

Avian Activity: There were moderate to low numbers of piscivorous birds counted around the project (Table 3 below). There were no gulls observed, and cormorant numbers remained low this week. Most of the pelicans were observed foraging around Eagle Island. Contracted land-based hazing of piscivorous birds (but not pelicans)

occurred for 16 hours per day, changing to 8 hours per day beginning on June 18. Boat-based hazing for 8 hours per day, three days per week ended on June 17.

Table 3. Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
June 16	0	4	0	0	10
June 17	0	5	0	0	23
June 18	0	11	0	0	24
June 19	0	2	0	0	48
June 20	0	1	0	0	20
June 21	0	1	0	0	31
June 22	0	1	0	0	26

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

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: June 16 - 22, 2017

Turbine Operation

Yes	No	Turbine Unit Status
☐	☒	All 6 turbine units available for service throughout the week (see comments below for outage details).
☒	☐	Available turbine units operated within 1% peak efficiency constraint. Constraint in effect: ☒ Hard ☐Soft.

Comments: Unit 1 was removed from service on December 10, 2014 for Unit Rehabilitation with an estimated return to service date of February 28, 2018. Unit 5 was removed from service on January 17, 2017 due to a turbine oil leak with an estimated return to service of March 31, 2018.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and Anchor QEA biologists on June 16, 17, 18 and 21.

Fish Ladders:

Yes	No	Location, Criteria and Measurements
☒	☐	North Fish Ladder Exit Differential (Criteria – Head ≤ 0.5')
☒	☐	North Fish Ladder Picketed Lead Differential (Criteria – Head ≤ 0.4')
☒	☐	North Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0' to 1.3')
☒	☐	South Fish Ladder Exit Differential (Criteria – Head ≤ 0.5')
☒	☐	South Fish Ladder Picketed Lead Differential (Criteria – Head ≤ 0.3')
☒	☐	South Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0' to 1.3')

Comments: None

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location, Criteria and Measurements
☐	☒	☐	North Shore Entrance (NSE-1) Weir Depth (Criteria: ≥ 8.0' or on sill)
☒	☐	☐	North Shore Entrance (NSE-2) Weir Depth (Criteria: ≥ 8.0' or on sill)
☒	☐		North Shore Channel/Tailwater Differential (Criteria: 1.0' – 2.0')
☐	☒	☐	South Powerhouse Entrance (SPE-1) Weir Depth (Criteria: ≥ 8.0' or on sill)
☒	☐	☐	South Powerhouse Entrance (SPE-2) Weir Depth (Criteria: ≥ 8.0' or on sill)
☒	☐		South Powerhouse Entrance Channel/Tailwater Differential (Criteria: 1.0' – 2.0')
☒	☐	☐	South Shore Entrance (SSE-1) Weir Depth (Criteria: ≥ 8.0' or on sill)
☒	☐	☐	South Shore Entrance (SSE-2) Weir Depth (Criteria: ≥ 6.0' or on sill)
☐	☒		South Shore Channel/Tailwater Differential (Criteria: 1.0' – 2.0')

Comments: North Shore Entrance (NSE-1) readings were out of criteria on the June 16, 17 and 18 inspections with a reading of 7.8, 7.9 and 7.9 feet respectively. The gauge on the weir and the digital reading had a difference of 0.2 feet. Powerhouse electricians recalibrated all the weir gauges on June 19. South Powerhouse Entrance (SPE-1) reading was out of criteria on the June 18 inspection with a reading of 7.1 feet. Powerhouse operator was informed. South Shore Channel/Tailwater differential was out of criteria during the June 17, 18 and 21 inspections with

readings of 0.7, 0.5 and 0.4 feet respectively. Out of criteria readings were due to the automated system not working well with the high tailwater levels and high spill levels.

Auxiliary Water Supply System:

Yes	No	In Service and Operating Satisfactory?
☐	☒	AWS Fish Pump 1.
☒	☐	AWS Fish Pump 2.
☒	☐	AWS Fish Pump 3.

Comments: Pump 1 will be out of service throughout this season unless an emergency occurs.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	Item
☒	☐	Forebay debris load acceptable? An average of 881 square yards of debris observed in forebay.
☒	☐	Trash rack differentials measured this week?
		If so, were differentials acceptable? ☒ Yes ☐ No ☐ N/A.
☒	☐	Any debris seen in gatewells?
☐	☒	Any oil seen in gatewells?

Comments: Gatewell woody debris was removed on June 21.

STSs/VBSs:

Yes	No	Item
☒	☐	STSs deployed in all slots and in service?
☒	☐	STSs in continuous-run mode (Note: if not, then STSs are in cycle-run mode)? STS's were placed in continuous-run mode on March 30 due to heavy debris loads.
☐	☒	STSs inspected this week? If so, were results acceptable? ☐ Yes ☐ No ☒ N/A
☐	☒	VBSs differentials checked this week? If so, were results acceptable? ☐ Yes ☐ No ☒ N/A

Comments: None.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	Item
☐	☒	Orifices operating satisfactory? How many are open and in service? 19.
☒	☐	Dewaterer and cleaning systems operating satisfactory?

Comments: Due to high debris in the forebay, the orifices were checked every two hours during this reporting period.

Collection Facility: Collection into raceways for transport began at 0700 on May 1.

Transport Summary: Every-day barging changed to alternate day barging on May 26. A total of 29,155 fish were collected, of which 26,347 were transported during this reporting period.

River Conditions

General Comments.

Table 1. 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
119.2	113.0	50.1	39.4	59.9	58.0	2.5	1.6

*Scrollcase temperatures.

Other

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

Invasive Species: No zebra or quagga mussels monitoring station was not inspected during this reporting period.

Avian Activity: Cormorants, gulls and pelicans were the predominant piscivorous bird species observed during fish ladder inspections this week.

Table 2. Tailrace counts of foraging piscivorous birds at Lower Monumental Dam.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
6/16/2017	1130	0	1	0	0	0
6/17/2017	1310	0	1	0	0	2
6/18/2017	1140	0	4	0	0	0
6/19/2017	1100	0	0	0	0	1
6/20/2017	1130	0	0	0	0	0
6/21/2017	1145	0	0	0	0	1
6/22/2017	1255	0	0	0	0	1

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

Project: Little Goose
Biologists: Scott St. John & Richard Weis
Dates: June 16 – June 22, 2017

Turbine Operation

Yes	No	Turbine Unit Status
☐	☒	All 6 turbine units available for service throughout the week (see comments below for outage details).
☒	☐	Available turbine units operated within 1% peak efficiency constraint. Constraint in effect: ☒ Hard ☐Soft.

Comments: All turbine units were available for service throughout this report period, except units 1, 2, 5 and 6. Units 1 and 2 were Out of Service (OOS) for trash rack raking on June 19. Unit 6 was forced OOS on June 20 due to a flooded headcover and Returned to Service (RTS) on June 21. Unit 5 remains OOS due to excessive vibration. Hard constraints of 1% peak efficiency criteria took effect on April 01.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists and Anchor QEA staff on June 16, 18 and 22.

Fish Ladder:

Yes	No	Location, Criteria and Measurements
☒	☐	Fish Ladder Exit Differential (Criteria – Head ≤ 0.5')
☒	☐	Fish Ladder Picketed Lead Differential (Criteria – Head ≤ 0.3')
☒	☐	Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0' to 1.3')
☐	☒	Emergency Ladder Exit Cooling Water Pumps in Service
☐	☒	Emergency Ladder Exit Cooling Water Pumps Operating Satisfactorily.

Comments: No comments.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location, Criteria and Measurements
☒	☐	☐	South Shore Entrance (SSE-1) Weir Depth (Criteria: ≥ 8.0')
☒	☐	☐	South Shore Entrance (SSE-2) Weir Depth (Criteria: ≥ 8.0')
☒	☐		South Shore Channel/Tailwater Differential (Criteria: 1.0' – 2.0')
☐	☐	☒	North Powerhouse Entrance (NPE-1) Weir Depth (Criteria: ≥ 7.0' or on sill)
☐	☐	☒	North Powerhouse Entrance (NPE-2) Weir Depth (Criteria: ≥ 7.0' or on sill)
☒	☐		North Powerhouse Entrance Channel/Tailwater Differential (Criteria: 1.0' – 2.0')
☒	☐	☐	North Shore Entrance (NSE-1) Weir Depth (Criteria: ≥ 6.0' or on sill)
☒	☐	☐	North Shore Entrance (NSE-2) Weir Depth (Criteria: ≥ 6.0' or on sill)
☒	☐		North Shore Channel/Tailwater Differential (Criteria: 1.0' – 2.0')
☒	☐		Collection Channel Surface Velocity (Criteria: 1.5 – 4.0 fps)

Comments: None.

Auxiliary Water Supply System:

Yes	No	In Service and Operating Satisfactory?
☒	☐	AWS Fish Pump 1 (operating).
☒	☐	AWS Fish Pump 2 (operating).
☒	☐	AWS Fish Pump 3 (operating).

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	Item
☒	☐	Forebay debris load acceptable.
☐	☒	Trash rack differentials measured this week? If so, were differentials acceptable? ☐ Yes ☐ No ☒N/A
☐	☒	Any debris seen in gatewells (i.e: over 10% coverage)?
☐	☒	Any oil seen in gatewells?

Comments: There is an estimated 18,000 square feet of floating woody debris currently in the forebay. Trash raking was completed on June 19 for units 1 and 2. Trash raking is scheduled again for June 27 on units 1 and 2.

Spillway Weir: Weir was opened in the low crest position on March 22.

ESBS/VBS:

Yes	No	Item
☒	☐	ESBSs deployed in all slots and in service?
☐	☒	ESBSs inspected this week? If so, were results acceptable? ☐ Yes ☐ No ☒ N/A
☐	☒	VBSs differentials checked this week? If so, were results acceptable? ☐ Yes ☐ No ☒ N/A

Comments: None.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	Item
☒	☐	Orifices operating satisfactory? How many are open and in service? 20 open.
☒	☐	Dewaterer and cleaning systems operating satisfactory? N/A

Comment: Due to large amounts of debris, orifices have been backflushed and/or rotated every two hours, 24 hours a day. The dewatering structure is being cleaned every two hours during daytime operating hours.

Collection Facility: Juvenile Fish Facility is currently operating.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 51,336 fish were collected and 47,099 were transported. Barge transportation occurs every other day. The descaling and mortality rates were 1.5% and 0.3% respectively.

River Conditions

River conditions during the week are outlined in Table 1 below.

Table 1. 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
120.7	113.7	41.5	34.0	62.1	58.3	2.5	1.9

*Ladder temperature.

Comment: None.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on June 18. One lamprey mortality was documented.

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

Avian Activity: USDA bird hazing began on April 03. See table below for USACE counts.

Table 2. Daily Piscivorous bird counts at Little Goose Dam.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
06-16	13:00	0	1	0	0
06-17	12:30	0	0	0	0
06-18	08:00	0	0	0	0
06-19	12:15	0	0	0	0
06-20	13:30	0	0	0	0
06-21	12:00	0	0	0	0
06-22	13:00	0	0	0	0

Gas Bubble Trauma (GBT): GBT sampling was conducted on June 19. There were 100 fish examined, 1 of which showed signs of GBT.

Research: No research is currently being conducted at this time.

Project: Lower Granite
Biologists: Elizabeth Holdren
Dates: June 16 - 22, 2017

Turbine Operation

Yes	No	Turbine Unit Status
☐	☒	All 6 turbine units available for service throughout the week (see comments below for outage details).
☒	☐	Available turbine units operated within 1% peak efficiency constraint. Constraint in effect: ☒ Hard ☐Soft.

Comments: Unit 1 remains out of service for blade/runner repair with an expected return to service date of August 18. Unit was taken out of service on June 20th at 09:57 for Index Testing. Unit 2 was returned to service (RTS) on June 20th at 16:00. At 16:30 on June 21st, Units 2,3,4,5, and 6 tripped offline. Investigation revealed a R.A.S. trip for each unit. Per BPA direction, Unit 2 RTS at 1641, Unit 3 RTS at 16:47, Unit 4 RTS at 16:50, Unit 5 RTS at 16:54, and Unit 6 RTS at 16:57.

Adult Fish Passage Facility

General comments: Adult fish facilities were inspected by Corps or Anchor QEA biologists June 16, 17, 19, and 21. On June 22nd at 07:35, an adult Chinook jumped out of attraction pool onto walkway of adult trap. Fish was immediately returned to the water by NOAA biologist. On June 22nd at 09:00, a NOAA biologist noticed two adult Chinook swimming in the recirculation chamber below the supply manifold for the adult trap. NOAA notified USACE biologists and a rescue was coordinated for Friday June 23rd, once weekly trapping was concluded for the week.

Fish Ladder:

Yes	No	Location, Criteria, and Measurements
☒	☐	Fish Ladder Exit Differential (Criteria – Head ≤ 0.5')
☒	☐	Fish Ladder Picketed Lead Differential (Criteria – Head ≤ 0.3')
☒	☐	Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0' to 1.3')
☐	☒	Ladder Temperature Pumps in Service.
☐	☒	Ladder Temperature Pumps Operating Satisfactorily.

Comments: None.

Fish Ladder Temperature Control System: The fish ladder temperature control system auxiliary pumps are in standby mode.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location, Criteria and Measurements
☒	☐	☐	South Shore Entrance (SSE-1) Weir Depth (Criteria: ≥ 8.0' or on sill)
☒	☐	☐	South Shore Entrance (SSE-2) Weir Depth (Criteria: ≥ 8.0' or on sill)
☒	☐		South Shore Channel/Tailwater Differential (Criteria: 1.0' – 2.0')
☒	☐	☒	North Powerhouse Entrance (NPE-1) Weir Depth (Criteria: ≥ 8.0' or on sill)
☒	☐	☒	North Powerhouse Entrance (NPE-2) Weir Depth (Criteria: ≥ 8.0' or on sill)
☒	☐		North Powerhouse Entrance Channel/Tailwater Differential (Criteria: 1.0' – 2.0')
☒	☐	☐	North Shore Entrance (NSE-1) Weir Depth (Criteria: ≥ 7.0' or on sill)
☐	☐	☐	North Shore Entrance (NSE-2) Weir Depth (Criteria: ≥ 7.0' or on sill)
☒	☐		North Shore Channel/Tailwater Differential (Criteria: 1.0' – 2.0')
☒	☐		Collection Channel Velocity (Criteria: 1.5 – 4.0 fps)

Comments: NSE2 has been out of service since 2011 and remains set with a chain fall hoist in the closed position to improve channel/tailwater head differential. NPE1 and NPE 2 remain out of service in the sill position until in water work repairs are coordinated. Cotter pins on all gates are scheduled to be replaced during the 2017-2018 winter adult fishway outage.

Collection Channel Velocity: Channel velocity was in criteria this week.

Auxiliary Water Supply System:

Yes	No	In Service and Operating Satisfactory?
☒	☐	AWS Fish Pump 1 (operating).
☐	☒	AWS Fish Pump 2 (operating).
☒	☐	AWS Fish Pump 3 (operating).

Comments: AWS pump 2 is in standby mode.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	Item
☐	☒	Forebay debris load acceptable? Debris was observed in the powerhouse forebay this week.
☒	☐	Trash rack differentials measured this week? If so, were differentials acceptable? ☒ Yes ☐ No ☐ N/A.
☐	☒	Debris in gatewells (i.e: over 10% coverage)?
☐	☒	Oil in gatewells?

Comments: Forebay debris in front of the powerhouse averaged about 146.8 square yards this week.

ESBSs/VBSs:

Yes	No	Item
☒	☐	ESBSs deployed in all slots and in service?
☐	☒	ESBSs inspected this week? If so, were results acceptable? ☐ Yes ☐ No ☒ N/A
☒	☐	VBSs differentials checked this week? If so, were results acceptable? ☒ Yes ☐ No ☐ N/A

Comments: N/A

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

Yes	No	Item
☒	☐	Orifices operating satisfactory? There are 18 orifices operating.
☒	☐	Dewaterer and cleaning systems operating satisfactory?

Comments: Orifices continue to be checked and back flushed for debris every one to three hours depending on debris load.

Collection Facility: The facility is in collection for transport mode. Fish collection for NOAA concluded on June 16th at 07:00.

Transport Summary: Every other day transport is occurring with barges departing on odd days.

River Conditions

General Comments.

Table 1: 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
124.70	119.3	37.7	30.3	60.5	55.5	3.0	1.6

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A

Invasive Species: The Zebra mussel trap was inspected June 18th. No signs of mussels were present.

Avian Activity: Daily hazing is occurring.

Table 2. Daily piscivorous bird counts at Lower Granite Dam.

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
June 16	12:20	0	0	0	12
June 17	12:45	1	0	0	8
June 18	16:06	0	0	0	3
June 19	14:30	0	0	0	4
June 20	14:59	1	0	0	14
June 21	15:00	1	0	0	18
June 22	15:31	1	0	0	13

Spill: Debris in the forebay continues to accumulate in front of the spillway and powerhouse. Large logs wedged between the RSW and debris boom resulting in mats of debris is a reoccurring problem. On June 19 the RSW was opened and closed several times from 1455-1605 hours to dislodge the logs (see 17LWG12 MFR). Multiple logs wedged across the RSW in this way has not been seen at Lower Granite in the past. On June 22nd a mat of debris behind a wedged log covered about 1/3 of the area in front of the RSW restricting surface flow. From 13:00 – 14:15 hours June 22nd the Project closed the RSW and opened spillway 3 to remove the wedged log and debris (see 17LWG13 MFR). The Project will continue to implement emergency debris spills when debris accumulates in front of the RSW as described in FPP (LWG-31 5.2. Emergency Debris Spills) to prevent obstructions to fish passage.

Gas Bubble Trauma (GBT): Fish are being sampled from the separator for GBT Thursdays. During this week's sample of 100 smolts no GBT symptoms were observed.

Research

Idaho Fish and Game (IDFG) Genetic Stock Identification
IDFG continue working up fish collected as part of Lower Granite condition sample. This study aims to enumerate and characterize natural production of yearling Chinook and juvenile steelhead above LWG with regards to age composition and genetic stock profiles. IDFG will sample Monday through Friday through mid-June with a goal of collecting 2,000-5,000 genetic samples from yearling Chinook and juvenile steelhead.

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

Collection of steelhead from Lower Granite juvenile separator for NPT began March 26 with the first sample being worked up March 27. This research project investigates steelhead kelt physiology and endocrinology to evaluate the feasibility and success of rehabilitating strategies. Selected kelts collected at Granite are transported to Nez Perce Tribal Hatchery for reconditioning 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 LWG 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 2016 in natal streams and are diverted to the Sort-By-Code tanks at LWG.

National Marine Fisheries Service (NMFS)-Seasonal Effects of Transport
About 3,000-6,000 unclipped spring/summer Chinook salmon, unclipped steelhead and clipped steelhead at PIT tagged each week during the outmigration. Corps biologist load the PIT tagged fish with the other raceways at Lower Granite onto the juvenile transport barges. Fish are transported through the FCRPS and released below Bonneville Dam. SAR rates of barged and in-river fish (collected and tagged at Granite) are used to determine juvenile transport strategies for the various salmonid populations

National Marine Fisheries Service (NMFS) In-River Survival: NMFS PIT tags about 20,000 each of unclipped spring/summer Chinook salmon, unclipped steelhead, and clipped steelhead smolts April through June. Fish are collected into raceways, PIT-tagged, and then held for 24 hours before being bypassed to the LWG tailrace. Fish travel times between dams and through the FCRPS are monitored. Fish are recaptured at Bonneville to understand FCRPS passage effects. These fish also serve as in-river controls for Seasonal Effects of Transport Research above.

USGS Describing PIT-tag Efficiency and Stable Isotopes of Migrating Juvenile Fall Chinook Salmon: To estimate 8-mm PIT detection efficiency at LWG bypass system a target of 322 subyearling fall Chinook were collected from facility sample June 12. USGS PIT tagged 319 subyearling Chinook June 13 and released 310 into the upwell area to volitionally pass through LWG PIT-tag detection system June 14. There were 3 mortalities prior to tagging and 6 mortalities after tagging. Subsequent detection data will be queried from PTAGIS. A target of 50 subyearling mortalities per week will be collected May 22 through August 1 from Lower Granite raceways and holding tanks, placed in plastic bags, labeled, and frozen for later analysis. Stable isotope signatures from mortalities will be used to explore the possibility of using stable isotopes to distinguish hatchery from natural-origin subyearlings.