U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#20-2017

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: July 7 – 13, 2017

Turbine Operation

General Comments: The hard 1% peak efficiency constraint continues. The saw tooth unit priority for warm water temperature abatement began on July 8 at 0717 hours. (The water temperature was 67.8 degrees Fahrenheit (F) at 0700 hours in the B side sample tank.)

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
11	July 10 to 21	11 days	Annual maintenance.
1, 4 & 5	July 11	1.2 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 July 7, 9 and 12. Visual fish counts and video review of lamprey passage continue. Temperature data was collected on July 12.

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: The trash racks and picketed leads were cleaned as needed, including weekends, at both exits.

Debris loads at the Washington exit and along the shoreline were minimal. No solution has been found for the count station passive integrated transponder (PIT) system interference. The regulating and tilting weirs set points were adjusted July 9.

At the Oregon exit, debris loads were moderate to minimal. Along the Oregon shoreline, debris loads were heavy to light. The regulating weir set point was adjusted on July 7, 9 and 12. The tilting weirs set point was adjusted July 9.

The Oregon exit traveling screens tripped an alarm on July 7 and was reset.

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'): 7.8' on July 7 and 7.9' on July 12.
☒	☐	NFEW3 Weir Depth (Criteria – ≥ 8.0')
☒	☐	South Oregon Entrance Head Differential (Criteria – 1.0' to 2.0')
☐	☒	SFEW1 Weir Depth (Criteria – ≥ 8.0'): 7.5' to 7.9' all week.
☐	☒	SFEW2 Weir Depth (Criteria – ≥ 8.0'): 7.6' to 7.9" all week.
☒	☐	Oregon Collection Channel Velocities (Criteria –1.5 to 4.0 fps): Averaged 2.2 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 this week are probably due to all of fish pump 2 discharge logs having been removed and lower tailwater elevations creating unfavorable hydraulic gradients. With fish pump 2 returning to service, criteria will be maintained more reliably.

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 31 degrees.
☐	☒	Oregon Ladder Fish Pump 2: Returned to service July 12.
☒	☐	Oregon Ladder Fish Pump 3: Blade angle was 24 to 30 degrees.
☒	☐	Oregon North Powerhouse Pool supply from juvenile fishway.

Comments: On July 8, fish pump 2 blade governor oil filtration system was found obstructed. The pump was not operating at the time. On July 10, fish pump 2 was vibration tested. The pump commissioning was completed. The governor operated correctly and was switched to automatic mode. On July 11, an oil leak was found in the governor system, which was repaired. On July 12, the pump was tested and returned to service at 1520 hours. At higher blade angles, and over excitation occurred. Until this issue can be resolved, the pump is restricted to a blade angle of 10 degrees. Even with this operational restriction, ladder flow conditions have improved.

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. One schedule deviation occurred on July 7. From 0700 to 0900 hours, the system remained in primary bypass due to issues with the side dewatering screen cleaner, which is described below. During this time four samples were missed. This week, 400 juvenile lamprey and 139,200 smolts were bypassed.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	Item
☒	☐	Forebay debris load acceptable? Removal would be prudent.
☒	☐	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 were light to moderate. New incoming debris loads were light to minimal. Debris loads at the spillway were moderate to heavy. Variable winds moved the debris back and forth from the Oregon shore all the way to the spillway. No trash racks were cleaned.

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: As part of unit 11 annual maintenance, on July 10, the ESBS was removed from 11C slot, the floor of the gatewell slot was camera inspected and the emergency bulkhead was installed. Last winter, an ESBS brush bar was lost in 11C slot. The scrollcase was dewatered in order to remove the brush bar on July 12. The ESBS will be reinstalled before the unit returns to service.

The brush cycles for the screens in 1A, 3B, 7B, 8C, 12B, and 14A slots and in unit 11 remained in timer mode. ESBS camera inspections occurred in units 1, 4 and 5 on July 11. No problems were found. On July 11, we noted the brush on the ESBS in 9B slot was not fully completing a cycle. The self-calibration function in the program appears to have resolved the issue.

VBS differential monitoring continued. No high differential measurements were recorded. A total of nine VBSs were cleaned on July 7 and 13. No smolt or juvenile lamprey mortalities were observed.

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

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

Comments: Orifices were adjusted as required for VBS cleaning. On July 10, before 11C slot was dewatered, that orifice was closed and a makeup orifice was opened in 11B slot.

On July 7, at 0355 hours, the technician on duty found the side screen brush articulating electrical cord carrier broken in about six locations. The control room and biologists were notified. Also, the side brush was removed from service and the technician remained in the channel to monitor the system. A biologist and electrician arrived on duty at 0615 and 0715 hours, respectively. The electrician competed repairing the cord carrier by 0800 hours. He also requested the carrier tray, which the electrical cord travels in, be cleaned. He believed material in the tray worked into the articulating joints, which allowed the carrier to break. From 0800 to 0845 hours, the fisheries staff washed and brushed down the tray removing miscellaneous material. After checking the channel and juvenile facility, secondary bypass, which was scheduled to begin at 0700 hours, began at 0900 hours.

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 transition screen brush 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.

On July 10, as sampling began, the smolt monitoring staff, Pacific States Marine Fisheries Commission (PSMFC) noted the water temperature in the sample trough was 2° F higher than the river temperature. At about 0700 hours, PSMFC personnel notified the project biologist who told them to delay sampling until the project refrigeration specialist could examine the chiller. The specialist found the chiller supply line shut off valve open but obstructed with sediment. Opening and closing the valve flushed the sediment out. The biologist had the specialist show the PSMFC personnel which valve required the flushing. Sampling resumed by approximately 0730.

Algae removal from the flumes and tanks continued.

We noted this week that the separator observation building heat pump would need to be replaced.

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. Routine summer spill in support of fish passage continues. Fifty percent of river flow is spilled in the summer season.

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
228.5	192.0	114.4	96.2	69.2	67.4	6.0	4.7

Comments: On July 10, the electrical staff resolved the issues with the crane attached to the spillgate in bay 20 and returned the spillage to automatic operation. As mentioned in the last weekly report, the spillgate had been set at 2.1 feet since July 6.

On July 13, the Bonneville Power Administration (BPA) noticed that McNary inflows were off by about 8.6 kcfs since June 29. At 0830 hours, BPA notified the McNary control room. The operator found spillbay 2 on seal. Crane 7, which raises and lowers the spillgate in bay 2, had been used to remove the two top spillway weirs (TSWs) from bays 19 and 20 from June 26 to 29. Crane 6, which is used at bay 20, has a nonfunctional axillary hoist so crane 7 must be used.

After the TSW removal and the standard spillgates installed in bays 19 and 20, crane 7 was moved back to spillbay 2. The spillgate position indication for bay 2 in the control room showed the bay was open at 4.8 feet both at the SC board and on GDACS. However, operations staff verified spillbay 2 was in fact on seal/closed. The Chief of Operations directed an instrumentation alignment/calibration at the SC board for the spillgate. At 1105 hours July 13, the spillgate in bay 2 was returned to service in automatic mode and the spill pattern returned to compliance with the Fish Passage Plan (FPP).

The operation of spillbay 2 on sill resulted in a slight reduction in the overall amount and percent spill from June 29 through July 13 (see 17MCN15 MFR).

Anchor QEA continued daily temperature reports. The probe in the foerbay at unit 8 failed on July 12 and was replaced on July 13. Weekly data will be reported separately from the smolt monitoring report.

Other

Inline Cooling Water Strainers: On July 11, during the cooling water strainer examinations, six juvenile lamprey, two clipped subyearling Chinook and two non-clipped subyearling Chinook mortalities were removed. The lamprey

were removed from unit 10 and the subyearling Chinook were removed from unit 14. The next cooling water strainer examinations will occur on August 1.

Invasive Species: The next mussel station examinations will occur in late July. No Siberian prawns have been observed at McNary so far this season.

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 area.

In the spill zone, the pelicans were along the navigation lock wing wall. The terns, cormorants and gulls were feeding in the spill flow. In the powerhouse zone, the pelicans were feeding along the Oregon shoreline below the separator observation building. Pelicans and cormorants have been observed feeding in the outfall zone.

In the forebay zone, juvenile gulls, which were scavenging, along with an occasional grebe, osprey, pelican, and tern were observed. Fair numbers of pelicans along with a few terns, gulls and cormorants were observed on the rocks by the Washington shore boat dock.

This week, one cormorant and a couple of pelicans were noted outside the Oregon ladder exit. On July 11, a pelican was observed in the Oregon ladder exit by the count station. This bird apparently found its way out of the ladder. On July 12, a second pelican was found in the Oregon ladder by the count station and was removed by the fisheries biologist. We suspect the pelicans are coming into the exit by passing through the trash rack.

No grebes entered the gatewell slots this week.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican
July 7	Spill	4	0	0	11
	Powerhouse	0	0	0	5
	Outfall	0	0	0	3
July 8	Spill	0	0	0	16
	Powerhouse	0	0	0	8
	Outfall	0	1	0	1
July 9	Spill	1	1	0	14
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
July 10	Spill	0	0	11	19
	Powerhouse	0	0	0	0
	Outfall	0	0	0	9
July 11	Spill	0	1	10	23
	Powerhouse	0	0	0	2
	Outfall	0	0	0	7
July 12	Spill	0	0	5	17
	Powerhouse	0	0	0	5
	Outfall	0	1	0	8
July 13	Spill	0	0	8	7
	Powerhouse	0	0	0	4
	Outfall	0	0	0	2

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. Boat hazing and the second shift concluded on July 8. We escorted one of the hazers out on the outfall walkway on July 9.

Fish Salvage/Rescue**:** Before gatewell slot 11C was dewatered, fish were rescued from the slot on July 10. The slot was "dipped" twice with the gatewell basket trap. Seven subyearling Chinook were removed and placed in 12A

slot. No mortalities were noted. Between "dips", the trap sanctuary bag had to be replaced. On July 12, the biologist observed no fish in unit 11 scrollcase.

Gas bubble trauma (GBT) monitoring: GBT monitoring continues and will occur twice a week during the spill season. There were no fish exhibiting signs of GBT this week.

Research

Item: No onsite research is occurring at this time.

Project: Ice Harbor
Biologist: Ken Fone
Dates: July 7 – July 13, 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. Unit 3 was taken out of service at 0615 hours on July 10 for annual maintenance.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on July 10, 11, and 12.

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 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: The south shore entrance weir depth was out of criteria on the July 10 and 11 visual inspections, with readings of 7.3’ and 7.7’, respectively. The north shore entrance weir depth was out of criteria on July 10 and 11, with readings of 3.0’ and 7.7’, respectively. The north shore channel/tailwater differential was out of criteria on July 10, with a reading of 4.5’. The control room operator was notified. The automated control system readings in the control room did not show the north shore entrance to be out of criteria by that magnitude on July 10. The discrepancies were partly due to the difficulty in obtaining accurate tailwater elevation readings while spill is

occurring. The settings of the automated control system parameters for the north shore were adjusted to reduce the magnitude of the discrepancies. The north shore and south shore entrance weirs were lowered down in manual control to bring the entrances 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.

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	Item
☒	☐	Forebay debris load acceptable? An average of 10 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 20%.
☐	☒	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: Lights for orifice 1BN and 4AN were found to be burned out on July 5 and July 10, respectively. Orifice 1BS was opened in place of 1BN, and 4AS was opened in place of 4AN, until the lights were replaced on July 10.

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.

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

July 10:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	1	0	0	0
UC-CH	0	---	---	---
C-CH-O	3	0	0	0
UC-CH-O	23	0	0	0
C-SH	0	---	---	---
UC-SH	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
TOTAL	27	0	0	0

July 13:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	0	---	---	---
UC-CH	0	---	---	---
C-CH-O	22	0	0	0
UC-CH-O	98	0	0	0
C-SH	0	---	---	---
UC-SH	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
TOTAL	120	0	0	0

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
61.3	46.7	44.5	14.0	69	67	4.6	3.3

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine cooling water strainer inspections last occurred on June 20 and 21. A total of 1 juvenile lamprey mortality and 1 Siberian prawn mortality 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). Gull and Caspian tern numbers increased from last week, with most of them observed roosting on Eagle Island. There were a few pelicans observed foraging just downstream of the outfall of the juvenile fish bypass pipe.

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

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
July 7	---	---	---	---	---
July 8	---	---	---	---	---
July 9	---	---	---	---	---
July 10	2	6	7	0	42
July 11	0	2	5	0	16
July 12	43	10	14	0	48
July 13	1	1	1	0	19

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

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: July 7 - 13, 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. Hard constraint began at 0000 hour on April 1.

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. Unit 6 was removed from service at 0710 on July 5 for annual maintenance and to install a digital governor with an estimated return to service of August 19, 2017. Units 2, 3 and 4 were rotated out of service for STS inspections and trash rack cleaning on July 11 – 12.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and Anchor QEA biologists on July 7, 8, 9 and 12.

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: South Powerhouse Entrance weirs (SPE-1 and SPE-2) were on sill during all inspections. While on sill readings were 6.1, 6.8, 6.5 and 5.8 feet. South Shore Entrance weir (SSE-1) was out of criteria on the July 7 inspection with a reading of 5.8 feet. It had not been set on sill. Operator was informed and SSE-1 was set to

remain on sill during these decreased flows and was on sill for all other inspections. While on sill SSE-1 readings were 7.0, 7.0 and 6.1 feet.

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 102 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: Removal of debris from trash racks occurred July 11-12 due to differentials approaching levels that would be out of criteria.

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: The upstream area of each orifice was inspected with the camera during the STS inspection. No debris was found immediately upstream of the orifices.

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: Orifice checks for most of the reporting period were conducted every two hours. Due to a decrease in debris in the forebay, the orifice check intervals were changed to every four hours on July 12. Primary dewatering incline screen brush has been observed stopping during its return cycle. The system has to be reset or manually returned to the stored position. Trouble shooting by maintenance personnel found that the brush arm was not raising high enough. The brush has been turned off until the condition can be fixed. The air bubbler system interval has been decreased to every 10 minutes to make up for the broken brush.

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 29,000 fish were collected, of which 36,527 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
60.5	46.0	19.0	16.6	69.1	68.9	4.8	3.0

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on July 3. Live fish included 1 juvenile lamprey. Mortalities included 1 juvenile lamprey.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on July 1. During this reporting period, SMP personnel euthanized 40 Siberian prawns with a total weight of 79 grams.

Avian Activity: 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
7/7/2017	1230	2	0	0	0	3
7/8/2017	1300	3	1	0	0	4
7/9/2017	1300	9	0	0	0	6
7/10/2017	1100	9	0	0	0	8
7/11/2017	1100	25	2	0	0	12
7/12/2017	1130	25	0	0	0	13
7/13/2017	1130	95	0	0	0	9

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

Project: Little Goose
Biologists: Scott St. John & Richard Weis
Dates: July 07 – July 13, 2017

Turbine Operation

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

Table 1. Little Goose Unit Outages

Unit	OOS Date	OOS Time	RTS Date	RTS Time	Outage Description
6	10-Jul	7:32	28-Jul	17:00	Scheduled: Unit Annual
1	11-Jul	0:47	11-Jul	10:23	Forced: Oil Governor Pressure
1, 2, 3	12-Jul	7:11	12-Jul	12:25	Scheduled: Trash raking & VBS Inspection
1	13-Jul	11:15	13-Jul	23:09	Forced: Leaking pop off valve

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists and Anchor QEA staff on July 10, 12 and 13.

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: Emergency cooling pump permanent power is scheduled to be installed during the winter maintenance outage.

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: Rickly water velocity measurement averaged 3.9 fps and was completed on July 12.

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 200 square feet of floating woody debris currently in the forebay. Trash raking was completed on July 12 for unit 1, 2 and 3. Trash rack differentials were measured for units 1 and 2 on July 13 and were in criteria.

Spillway Weir: Temporary spillway weir crest height was adjusted from SW-Lo to SW-Hi position on June 29.

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: VBS differentials were measured on July 13 for units 1 and 2 and were in criteria.

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 33,808 fish were collected and 39,802 were transported, which included fish collected on July 06. Barge transportation occurred every other day. The descaling and mortality rates were 1.3% and 0.8% respectively.

River Conditions

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

Table 2. River conditions at Little Goose 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
60.2	46.8	18.0	13.9	70.2	69.7	4.0	3.4

*Ladder temperature.

Comment: None.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on July 02. One juvenile lamprey mortality was observed.

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

Avian Activity: USDA bird hazing ended on June 25. See table 3 for USACE counts.

Table 3. Daily Piscivorous bird counts at Little Goose Dam.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
07-07	08:30	10	4	2	0
07-08	11:00	4	3	0	0
07-09	07:30	9	4	0	0
07-10	13:00	8	0	2	0
07-11	12:00	25	4	0	0
07-12	13:30	0	12	0	0
07-13	12:00	13	1	0	0

Gas Bubble Trauma: GBT sampling was conducted on July 10. There were 100 fish examined, no signs of GBT were seen.

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

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by Oregon Department of Fish and Wildlife and Anchor, frozen and properly disposed of in a landfill. There were 102 prawns collected in the sample and euthanized during this report period. Prawn numbers are outlined in Table 4 below.

Table 4. Daily Siberian prawn sample.

Date	Sample	Collection
07-07	16	320
07-08	22	440
07-09	18	360
07-10	11	220
07-11	11	220
07-12	18	360
07-13	7	140
Total	103	2060

Project: Lower Granite
Biologists: Elizabeth Holdren and Stephen Hampton
Dates: July 7 – July 13, 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. Unit 5 was removed from service at 0715 hours July 3 for annual maintenance.

Adult Fish Passage Facility

General comments: Adult fish facilities were inspected by Corps or Anchor QEA biologists July 7, 8, 9, and 12.

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: The fish ladder temperature control system pumps were brought online at 1520 hours July 6.

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. An ROV inspection is needed to determine requirements for repairing the gates. Cotter pins on all gates are scheduled to be replaced during the 2017-2018 winter adult fishway outage.

Collection Channel Velocity: July 9 channel velocity was out of criteria with reading of 1.4 fps.

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 125 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.

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
63.32	51.0	18.73	18.1	68.5	68	4.1	3.4

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A.

Invasive Species: The Zebra mussel trap was inspected July 9. No signs of mussels were present.

Avian Activity: Avian hazing ended on June 30th.

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

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
July 7	15:25	0	0	0	0
July 8	10:15	2	0	0	0
July 9	13:25	4	0	0	0
July 10	11:20	8	0	0	0
July 11	14:55	9	0	0	0
July 12	12:55	4	2	0	0
July 13	11:00	8	2	0	0

Spill: The RSW was closed July 12 at 1313 hours due to increased forebay surface water temperature. Lower Granite is operating according to Fish Passage Plan Table LWG-9.

Gas Bubble Trauma (GBT) Monitoring: Fish collected from the separator continue to be sampled for GBT Thursdays. Of the fish examined this week no symptoms were observed.

Research

Idaho Fish and Game (IDFG) Genetic Stock Identification
IDFG collection concluded June 30. During the season IDFG sampled 1,817 unclipped untagged yearling Chinook and 1,502 unclipped untagged steelhead.

Nez Perce Tribe (NPT)/U. of Idaho (UI)/Columbia River Intertribal Fisheries Commission (CRITFC) – Kelt Study
NPT collection concluded June 30. Corps bio techs collected a total of 1120 ketls from the juvenile separator during the 2017 season. During the season 291 unclipped steelhead were transported to NPT hatchery, blood samples were taken from 463 clipped and 341 unclipped steelhead that were PIT tagged and returned to the river, 2 clipped steelhead were handled and returned to the river, and 23 were handled mortalities.

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.

National Marine Fisheries Service (NMFS)-Monitoring the Migrations of Wild Snake River Spring/Summer Chinook: During the season 567 PIT-tagged unclipped yearling Chinook were sampled. During sampling 138 incidental untagged and 123 PIT-tagged fish from other studies were handled and released.

National Marine Fisheries Service (NMFS)-Seasonal Effects of Transport: As part of this study 467,313 fish were handled and transported including 160,386 clipped yearling Chinook, 7,879 unclipped yearling Chinook, 57,709 clipped subyearling Chinook, 66,678 unclipped subyearling Chinook, 147,049 clipped steelhead, 689 unclipped steelhead, 4,087 clipped sockeye, 1,218 unclipped sockeye, and 21,618 Coho. Fish PIT tagged and transported included 10,895 unclipped yearling Chinook, 7,347 clipped steelhead, and 16,311 unclipped steelhead were PIT-tagged and transported. There were 89 mortalities associated with direct handling.

National Marine Fisheries Service (NMFS) In-River Survival: As part of this study 14,269 unclipped yearling Chinook, 21,479 clipped steelhead, and 19,022 unclipped steelhead were PIT-tagged and released to the river, 6,564 fish were handled and bypassed, and 48 mortalities occurred.