U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#11-2017

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: May 5 – May 11, 2017

Turbine Operation

General Comments: The hard 1% peak efficiency constraint continues.

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
13	Oct 3 to May 19	7.5 months	Thrust bearing issue
2	Mar 21 to May 19	Two months	Thrust bearing issue

Adult Fish Passage Facilities

General Comments: McNary fisheries biologists performed measured inspections of the adult fishways on May 6, 9 and May 10. Visual fish counts continue. Temperature probe data was down loaded May 4.

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 minimal to light. The trash rack and picketed leads were cleaned as needed, including nights and weekends. No solution has been found for the count station passive integrated transponder (PIT) system interference. Tilting weir 334 remains in manual mode because the weir does not normally move at the standard forebay elevation range of 337.0 to 340.0 feet.

At the Oregon exit and along the shoreline, debris loads were minimal. The regulating weir set point was adjusted on May 9.

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’)
☒	☐	NFEW3 Weir Depth (Criteria – ≥ 8.0’)
☒	☐	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 1.7 fps.
☒	☐	Washington Entrance Head Differential (Criteria – 1.0’ to 2.0’)
☒	☐	WFE2 Weir Depth (Criteria – ≥ 8.0’)
☒	☐	WFE3 Weir Depth (Criteria – ≥ 8.0’)

Comments: None.

Auxiliary Water Supply System:

Yes	No	In Service?
☒	☐	Washington shore Wasco County PUD Turbine Unit.
☐	☒	Washington shore Wasco PUD Bypass. Service not required.
☒	☐	Oregon Ladder Fish Pump 1: Blade angle was 27 degrees.
☐	☒	Oregon Ladder Fish Pump 2: Testing scheduled to begin May 24.
☒	☐	Oregon Ladder Fish Pump 3: Blade angle was 27 degrees.
☒	☐	Oregon North Powerhouse Pool supply from juvenile fishway.

Comments: Fish pumps 1 and 3 were out of service on May 5, from 0956 to 1001 hours, while the pumps were switched to another bus. The contractor will turn over fish pump 2 to the project on May 15.

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, 600 juvenile lamprey and 191,211 smolts were bypassed. The number of fish sampled on May 5 was reduced due to the issues that occurred on May 4 associated with a wrench being dropped into the bypass line (see last weeks report for details).

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? Manmade and large woody materials were removed as needed.
☐	☒	Any oil seen in gatewells?

Comments: Forebay debris loads near the powerhouse were light to minimal. Debris loads at the spillway were minimal but increasing by bays 1 to 3. Most incoming debris is along the Washington shoreline and would be described as light. No trash racks were cleaned during this reporting period.

Extended-length submersible bar screens (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 next ESBS camera inspections are scheduled to begin May 16. The brush cycles for the screens in slots 3B and 12B remain in timer mode. The brush cycle for the screen in slot 14A was switched to timer mode on May 8 after multiple alarms were tripped. The turbine unit 10 ESBS controller was not comminuting with the screens on May and the controller was rebooted.

VBS differential monitoring continued and no problems were found. VBS inspections (which includes cleaning the screens) occurred at units 4 through 8 on May 9. No problems were found. All VBSs have been cleaned or inspected.

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 during VBS inspections. The rectangular screen cleaning brush was lubricated this week.

Though functional, the fisheries staff continued to operate the transition screen cleaning brush manually to insure it completes a full cleaning cycle. A new solenoid has been ordered. The electrical staff determined the brush has a sequential alarm in its programming but this alarm is at the end of the cycle not after each step.

Bypass Facility:

Yes	No	Item
☒	☐	Sample gates on? Yes, during secondary bypass only.
☐	☒	Passive integrated transponder (PIT) tag system on? The Pit-tag sort-by-code system remains off unless a study is occurring because 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 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.

The mechanics continue to evaluate the sample chiller issue. Sample water temperature is monitored constantly and operations are adjusted as needed until the sample chiller issues are resolved.

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
435.8	326.5	299.9	205.7	53.6	51.4	4.0	3.6

Comments: Spill in excess of powerhouse capacity occurred all week. Targeted routine spring spill in support of fish passage is 40% of the river flow and this week 63% to 70% of flow was spilled.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur June 6.

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

Avian Activity: Avian counts continued and tailwater numbers are recorded in Table 3 below. Observations were made every morning, which is standard procedure, though there appears to be more birds later in the day.

In the forebay zone, an occasional osprey, gull, pelican, cormorant, blue heron, loon and a small grebe flock were observed. Fair numbers of gull, cormorants and pelicans were observed on the rocks by the Washington shore boat dock.

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 and hazing from a boat three days a week. Boat hazing did not occur May 5 due to issues with the boat, rescheduled, and was conducted on May 9. High tailwater levels and wave action at the bypass outfall has not allowed for hazing from the outfall walkway.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican
May 5	Spill	5	0	0	2
	Powerhouse	0	0	0	0
	Outfall	2	0	0	0
May 6	Spill	30	0	0	0
	Powerhouse	0	0	0	0
	Outfall	3	0	0	0
May 7	Spill	10	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
May 8	Spill	10	0	0	0
	Powerhouse	0	0	0	0
	Outfall	3	0	0	0
May 9	Spill	0	0	0	0
	Powerhouse	0	0	0	0
	Outfall	3	0	0	0
May 10	Spill	0	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
May 11	Spill	2	0	0	0
	Powerhouse	0	0	0	0
	Outfall	6	0	0	0

Fish Salvage/Rescue**:** No fish rescue occurred this week.

Research

Item: No onsite research is occurring at this time. Pacific Northwest National Laboratory collected three juvenile lamprey at McNary for an offsite tagging study this week.

Gas bubble trauma (GBT) monitoring continues and occurs twice a week during the spill season. No GBT signs were observed during this week.

Project: Ice Harbor
Biologist: Ken Fone
Dates: May 5 – May 11, 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, 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 out of service from 2052 hours on May 11 to 0804 hours on May 12 to accommodate BPA line work. Unit 3 was routinely operated a little above the 1% peak operating efficiency range during the reporting period, due to the GDACS program needing to be updated with the narrower operating efficiency range since it became a fixed-blade unit.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on May 8, 9, and 10.

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: The water surface above the fish ladder exits was clear of debris. The bubblers were 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 May 8, the SFE-1 weir gate depth was out of criteria at 7.5’. The higher tailwater elevation may require that seven south shore AWS pumps operated instead of six to maintain the entrance gate 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, except during the period described in the comments below.
☒	☐	North Shore AWS Pumps. Two of the three north shore AWS pumps were in service.

Comments: On May 7, Bus #2 Feeder tripped off at 0638 hours, resulting in the loss of power to some of the south shore AWS pumps. Only 3 or 4 pumps were running until power was restored at 0920 hours.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	Item
☒	☐	Forebay debris load acceptable? An average of 238 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: The frequency of orifice backflushing was increased from three times per day to four times per day on May 11, to be proactive in response to the high descaling rates observed in the fish sample. The bird-deterrent hydrocannon was observed off on the May 8 inspection, possibly due to the power outage that occurred on May 7. It was restarted on May 8.

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 descaling rate continued to increase this week. Personnel continually monitor the juvenile fishways and carry out the required checks for debris obstructions that may be causing the descaling. On May 9, a video camera was inserted into the separator juvenile fish exit to check for any obstructions or rough surfaces which could be causing the descaling. No problems were found. Trash rack raking and STS inspections has been scheduled for next week.

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

May 8:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	60	6	0	2
UC-CH	26	4	0	1
C-CH-O	0	---	---	---
UC-CH-O	0	---	---	---
C-SH	51	3	0	2
UC-SH	16	2	0	0
C-SOCK	0	---	---	---
UC-SOCK	1	0	0	0
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
TOTAL	154	15	0	5

May 11:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	22	1	0	0
UC-CH	5	0	0	0
C-CH-O	0	---	---	---
UC-CH-O	1	0	0	0
C-SH	79	17	0	2
UC-SH	19	1	0	2
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
TOTAL	126	19	0	4

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* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
170.8	119.5	120.8	65.7	55	52	4.0	4.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine cooling water strainers were not inpected during this reporting period and were last inpected on April 18 and 19.

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

Avian Activity: Overall, there were moderate numbers of piscivorous birds counted around the project, but numbers varied from day to day (Table 3 below). Contracted land-based hazing of piscivorous birds occurred for 16 hours per day, except on May 5, 6, and 7, when 8 to 12 hours of hazing per day occurred due to personnel shortages. Boat-based hazing for 8 hours per day, five days per week, is occurring. Land-based hazing has generally been effective at keeping birds out of the zones immediately adjacent to the dam. Boat-based hazing was effective for birds in zones further downstream of the dam when boat-based hazing was occurring. Hazing was periodically necessary to keep a few cormorants out of the forebay area adjacent to the south fish ladder exit.

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

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
May 5	---	---	---	---	---
May 6	23	19	0	0	5
May 7	---	---	---	---	---
May 8	93	15	0	0	65
May 9	13	3	0	0	20
May 10	15	8	0	0	8
May 11	83	8	0	0	20

Research

No on-site research is occurring at this time.

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: May 5 - 11, 2017

Turbine Operation

Yes	No	Turbine Unit Status
☐	☒	All 6 turbine units available for service throughout the week (see comments below for outage details).
☒	☐	All 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 October 3, 2017. Unit 5 was removed from service on January 17, 2017 due to a turbine oil leak with an estimated return to service of July 30, 2017.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and Anchor QEA biologists on May 5, 6, 7 and 10.

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: South fish ladder depth over weirs read was out of criteria on the May 10 inspection with a reading of 0.9 feet. Operator was informed and water flow was increased through the diffuser.

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 depths were out of criteria on the May 5 inspection with readings of 6.6 and 6.2 feet respectively. The operator found those weirs in manual mode. The readings moved back into criteria after they were returned to automatic mode.

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 96 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? Woody debris is being removed as needed.
☐	☒	Any oil seen in gatewells?

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: Orifice 1 was observed having a low flow and orifice 15 was observed with an obstruction on the May 10 inspection. The operator was informed and both orifices were checked and obstructions cleared.

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

Transport Summary: Every-day barging began on May 2. A total of 780,700 fish were collected, of which 780, 096 were transported during this reporting period.

River Conditions

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
171.2	120.0	93.2	53.3	54.2	53.9	3.0	2.1

*Scrollcase temperatures.

Other

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

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on May 7.

Avian Activity: Gulls and cormorants 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
5/5/2017	1250	37	0	0	0	0
5/6/2017	1255	50	2	0	0	0
5/7/2017	1250	11	0	0	0	0
5/8/2017	1100	30	2	0	0	1
5/9/2017	1130	8	0	0	0	0
5/10/2017	1200	0	0	0	0	0
5/11/2017	1145	3	0	0	0	0

Research

No onsite research is in progress at this time.

Project: Little Goose
Biologists: Scott St. John & Richard Weis
Dates: May 5 – May 11, 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: Turbine units 4 and 6 were available for service throughout this report period. Unit 5 remains Out of Service (OOS) due to excessive vibration. Units 1 and 2 were taken OOS for trash raking on May 01 and remain out of service for VBS repairs. Unit 3 was taken OOS for trash raking on May 05 and remains OOS for VBS repairs. 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 May 7, 10 and 11.

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: Weir depths at NSE weirs measured 5.7 and 5.8 feet on May 11 and 5.9 feet on May 10. NSE weirs were raised slightly out of criteria on May 7 to avoid equipment damage from the fluctuating tailwater under our current spill conditions. Monthly water velocity measurements were last taken with the Rickly velocity meter near NPE on April 19. Average velocity from bottom, mid channel and top was 2.7 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: 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 100 square feet of floating woody debris currently in the forebay. Trash raking was completed on units 1 and 2 on May 01. Trash rack raking for unit 3 in the A and B intakes was conducted on May 5. Trash raking is scheduled again for May 15. Trash rack differential was measured May 11 on unit 6. All trash rack differential measurements were within criteria.

Spillway Weir: The spillway 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: VBS differential measurements were conducted on May 11 for unit 6 and were within criteria. VBS camera inspections were conducted on May 05 for unit 3. Damage was found on VBS screens in gatewells 3B. Units 1, 2 and 3 remains OOS for VBS repairs.

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 reporting period. A total of 198,785 fish were collected, of which 197,765 were transported. The descaling and mortality rates were 2.6% and 0.57% 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
168.1	119.1	134.6	78.5	54.9	52.7	3.0	1.7

*Ladder temperature.

Comment: Spill in excess of powerhouse capacity occurred throughout the entire reporting period.

Other

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

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

Avian Activity: USDA bird hazing began on April 03. See Table 2 for USACE counts.

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
05-05	1320	55	0	0	0
05-06	1300	8	0	0	0
05-07	0900	46	2	0	0
05-08	1130	36	2	0	0
05-09	1200	42	1	0	0
05-10	1245	20	4	0	1
05-11	1240	2	3	0	0

Gas Bubble Trauma: GBT sampling was conducted on May 08. There were 100 fish examined for GBT, no signs of GBT were seen.

Research

No research is currently being conducted at this time.

Project: Lower Granite
Biologists: Elizabeth Holdren
Dates: May 5-11, 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 1 return to service is delayed due to time needed to procure studs for replacement in the Kaplan. Unit 2 tripped off line from 0741-0750 hours May 6.

Adult Fish Passage Facility

General comments: Adult fish facilities were inspected by Corps or Anchor QEA biologists May 5, 6, 7, and 10.

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: Ladder cooling is not in service at this time due to river temperatures currently below 68°F.

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. NPE 2 north operating cable was found broken April 17 and with the operating cables repair schedule awaiting the river discharges to decrease. The scheduled repair will be coordinated with FPOM. NPE 2 is currently in sill position at 628.0 feet.

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 pumps 1 and 3 are operating.

Fish Ladder Temperature Control System: See above.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	Item
☒	☐	Forebay debris load acceptable? Debris was observed in the 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 31.3 square yards this week. Spillway debris increased from about 70 square yards May 5 to about 2700 square yards May 10.

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: Unit 1 ESBSs will be installed prior to returning to service.

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 are being checked and back flushed for debris every one to three hours.

Collection Facility: The facility is operating in collection mode. Fish are collected in the east raceways Sunday-Thursday for NOAA research.

Transport Summary: Every day transport continues. A total of 1,050,500 fish were collected, of which 1,041,253 were transported this week.

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
171.1	122.1	79.8	41.9	54.0	51.0	3.0	0.9

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A

Invasive Species: Zebra/quagga mussel substrate was inspected April 28. The inspection trap was found missing and a new was fabricated on was deployed the same day.

Avian Activity: Daily hazing is occurring.

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

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
May 5	1515	6	0	0	0
May 6	1330	16	0	0	0
May 7	1140	10	0	0	0
May 8	1446	10	0	0	4
May 9	1358	9	0	0	3
May 10	1306	2	1	0	0
May 11	1430	7	1	0	1

GBT: Fish are being sampled from the separator for GBT Thursdays. No signs of GBT we seen this week.

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 by NPT to Dworshak National Fish 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 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 2016 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 LGR tailrace.