U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#12-2017

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: May 12 – 18, 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. Unit 2 ran outside the constraint at 70 megawatts for 18 minutes during testing on May 18.

Table 1. Unit Outages at McNary Project.

Units	Outage Dates	Outage Length	Reason
13	Oct 3 to Jun 9	8.2 months	Thrust bearing issue.
2	Mar 21 to May 18	1.9 months	Thrust bearing issue.
6	May 15	6.8 hours	Hub tapped.
1 & 4	May 16	1.4 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 May 12, 14 and 17. National Oceanic & Atmospheric Administration (NOAA) fisheries personnel performed their monthly inspection on May 15. Visual fish counts continue. Temperature probe data was down loaded May 17.

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 were variable and debris loads along the shoreline were light. 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. Tilting weir 334 remains in manual mode. The regulating weir set point was adjusted on May 17.

At the Oregon exit and along the shoreline, debris loads were minimal.

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

Comments: No problems to report.

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 pump 3 tripped off line for one minute on May 18. An oil leak between the pump and motor was repaired at fish pump 2 this week. The intake stop log removal planned for May 15 was moved to May 22.

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, 9,200 juvenile lamprey and 131,003 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? Manmade and large woody materials were removed as needed.
☐	☒	Any oil seen in gatewells?

Comments: Forebay debris loads near the powerhouse were minimal to very light. Debris loads at the spillway were minimal to light and generally located at the northern bays. Most incoming debris is along the Washington shoreline and would be described as light. Operators continue to flush debris down the navigation lock as needed. No trash racks were cleaned during this reporting period.

(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: ESBS camera inspections at units 1 and 3 occurred on May 16. Water clarity was very low. The camera's pan and tilt operation was only functioned partially. The ESBS brush bar on the screen in slot 1A could not be found, however, the screen was clean. The operators checked the brush cycle calibration and observed no problems. Due to the cleanliness of the screen, we do not believe there is problem, however, we will look for the brush again next week.

The brush cycles for the screens in slots 3B, 12B and 14A remained in timer mode. The brush cycles for the screens in unit 11 were all switched to timer mode on May 16 after multiple alarms were tripped.

VBS differential monitoring continued. No problems were found and no screens were cleaned.

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: The fisheries staff continue to operate the transition screen cleaning brush manually to insure it completes a full cleaning cycle. A new solenoid has been ordered.

The forebay elevation indicator was rehabilitated this week.

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 sampling 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.

The mechanics replaced the sample chiller with a new chiller on May 17. The B side sample tank crowding device was adjusted and lubricated this week. Slight airs leaks at the A side sample and primary bypass gates were repaired. Hand rails were installed near the B side secondary bypass line access hatches.

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
437.4	424.3	291.3	278.8	53.1	51.8	3.6	2.0

Comments: Spill in excess of powerhouse capacity occurred all week. Targeted routine spring spill in support of fish passage is 40% during the spring season. This week, 66% to 67% of the flow was spilled. Spillbay 2 was briefly closed in order to recalibrate the gate opening indicator on May 18.

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. In the forebay zone, 24 to 78 grebes were observed along with an occasional osprey, gull, cormorant, blue heron and tern. Fair numbers of pelicans along with a few gulls and cormorants 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 land based hazing with two shifts seven days a week and hazing from a boat three days a week. 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 12	Spill	4	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
May 13	Spill	19	0	0	0
	Powerhouse	0	0	0	0
	Outfall	2	0	0	0
May 14	Spill	11	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
May 15	Spill	4	0	0	0
	Powerhouse	0	0	0	0
	Outfall	3	0	0	1
May 16	Spill	15	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
May 17	Spill	11	0	0	0
	Powerhouse	0	0	0	0
	Outfall	5	0	0	0
May 18	Spill	0	0	0	0
	Powerhouse	0	0	0	0
	Outfall	1	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 10 juvenile lamprey at McNary for an offsite tagging study this week. Their last pick up for the season was May 17.

Gas bubble trauma (GBT) monitoring continues and will occur twice a week during the spill season. Of the 200 fish examined this week 2 fish exhibited signs of GBT.

Project: Ice Harbor
Biologist: Ken Fone
Dates: May 12 – May 18, 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. Units were taken out of service one at a time on May 16 and 17 for STS inspections. 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 of unit 3 since it became a fixed-blade unit.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on May 15, 16, and 18.

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 18, the NSE-1 weir gate depth and channel/tailwater differential were out of criteria at 5.7’ and 3.1’, respectively. The operator was informed, and he lowered the gate to bring both parameters into criteria. NSE-1 is being operated in manual mode due to fluctuating tailwater from spill.

The south shore channel velocity was out of criteria on May 16, with a reading of 1.1 fps and was likely due to the high tailwater backing up into the fish ladder.

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 12 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: On May 17, debris was raked from unit 1 and 3 trash racks, due to higher than normal fish descaling estimates from the juvenile fish sample. Approximately 2 cubic yards of debris was removed from unit 1 trash racks. There was no debris found on unit 3 trash racks.

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. Unit 6, 5, 3, and 1 STSs were inspected on May 16 and 17, and the VBSs in slot 5C and 5B were inspected on May 17. No problems were found.

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 mode, 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 rates have been decreasing slowly over the past 2 weeks. Descaling was 7.9% on May 15, and 6.9% on May 18 following unit 1 and 3 trash rack raking. Personnel will continue to monitor the juvenile fishways and carry out the required checks for any debris obstructions that may be contributing to the descaling. The one mortality in the May 18 sample was observed to be almost dead when it first arrived in the separator, but it did not have any external injuries or descaling.

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

May 15:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	67	5	0	3
UC-CH	14	1	0	0
C-CH-O	0	---	---	---
UC-CH-O	4	0	0	0
C-SH	25	3	0	0
UC-SH	8	0	0	0
C-SOCK	2	0	0	0
UC-SOCK	0	---	---	---
C-COHO	4	1	0	0
UC-COHO	2	0	0	0
TOTAL	126	10	0	3

May 18:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	64	5	1	1
UC-CH	16	0	0	0
C-CH-O	0	---	---	---
UC-CH-O	3	0	0	0
C-SH	23	1	0	1
UC-SH	33	3	0	2
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
C-COHO	3	1	0	1
UC-COHO	3	0	0	0
TOTAL	145	10	1	5

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
182.8	127.4	127.8	79.9	55	52	4.0	1.4

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine cooling water strainer inspections occurred on May 16 and 17. A total of 2 juvenile salmon (1 was identifiable as clipped), 2 juvenile steelhead, 12 juvenile lamprey, and 1 Siberian Prawn mortalities were found . No live fish were recovered from the cooling water strainer inspections on May 16 and 17.

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 is occurring for 16 hours per day. 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 in zones further downstream of the dam. Hazing was periodically necessary to keep a few cormorants out of the forebay area adjacent to the south fish ladder exit, and out of the water below the juvenile fish outfall pipe. Most of the pelicans this week were observed foraging near the first island (Eagle Island) below the dam.

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

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
May 12	31	33	0	0	12
May 13	6	16	0	0	11
May 14	50	63	0	0	49
May 15	34	20	0	0	21
May 16	18	9	0	0	26
May 17	31	41	0	0	26
May 18	40	5	0	0	12

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

Other: An emergency debris spill occurred on May 15, from 1230 hours to 1328 hours, to remove approximately 350 square yards of debris that was packed against spill gates 3 and 5 (see MFR 17 IHR 06).

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: May 12 - 18, 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 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. Unit 2 was removed from service from 0715 to 1615 on May 16 for trash rack raking. Unit 3 was removed from service from 1225 to 1615 on May 16 and again from 0710 to 1435 on May 17 for trash rack raking. Unit 4 was removed from service from 0710 to 1535 on May 17 for trach rack raking. Unit 6 was removed from service from 0715 to 1225 on May 18 for trash rack raking.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and Anchor QEA biologists on May 12, 13, 14 and 17.

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: The South Shore Entrance weir SSE-2 depth was out of criteria on the May 13 inspection with a reading of 2.7 feet. The operator found the weir had been moved from its set elevation and reset SSE-2 to an elevation of 437 feet. South Shore Channel/Tailwater differentials were out of criteria on the May 13, 14 and 17

inspections with readings of 0.5, 0.7 and 0.8 feet respectively. This was due to the automated system not working well with the high tailwater levels in combination with the wave action from the high spill.

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 483 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: Gatewells 3B and 3C had drawdown differentials out of criteria with readings of 2.2 and 2.1feet respectively on the May 14. All trash racks were raked between May 16 and 18. Gatewells 3C and 4A had woody debris coverage above criteria on the May 17 inspection with 72% and 55% coverage, respectively. These gatewells were dipped to remove the debris on May 17.

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 to 20.
☒	☐	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. A partial debris blockage of orifice #17 on 14 May caused a smolt mortality event. The operator performing the two hour check found the problem. Orifice 17 was closed and orifice 18 opened while the blockage was cleared. An estimated 50 smolts were injuries or mortalities resulted from the temporary blockage.

Collection Facility: Collection for transportation is ongoing and has been occurring daily since 0700 on May 1.

Transport Summary: Every-day barging began on May 2. A total of 523,700 smolts were collected, of which 523,370 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
184.0	126.7	106.3	58.7	54.5	51.9	1.3	0.9

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on May 17. No live fish were recovered. Mortalities included 10 juvenile lamprey, 8 juvenile salmon and 2 juvenile steelhead.

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
5/12/2017	1135	5	0	0	0	0
5/13/2017	1250	8	0	0	0	0
5/14/2017	1230	15	0	0	0	0
5/15/2017	1300	3	0	0	0	1
5/16/2017	1130	1	0	0	0	0
5/17/2017	1118	0	0	0	0	1
5/18/2017	1100	5	4	0	0	0

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

Project: Little Goose
Biologists: Scott St. John & Richard Weis
Dates: May 12 – May 18, 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 OOS due to excessive vibration. Units 1, 2, 3 were returned to service on May 12, 17 and 13, respectively. 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 14, 17 and 18.

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 SSE weirs measured 7.3 and 7.8 feet on May 17 and 18, respectively. Adjustments have been made and adult fishway is currently operating in criteria.

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 50 square feet of floating woody debris currently in the forebay. Trash rack raking was completed May 16 and 17. Trash rack raking is scheduled every two weeks due to high debris levels and is scheduled next for the week of June 05. Trash rack differential was measured May 18 for units 1, 2 and 6. All trash rack differential measurements were within criteria.

Spillway Weir: The spillway weir is operating in the low crest position since opening 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 18 for units 1, 2 and 6 and were within criteria.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comment: Due to the 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 in collection mode for transportation.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 205,851 fish were collected, of which 205,243 were transported. The descaling and mortality rates were 1.8% and 0.38% respectively during this reporting period.

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
181.0	137.2	133.8	64.4	54.7	52.2	1.5	1.2

*Ladder temperature.

Comment: None.

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 below for USACE counts.

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
05-12	1300	3	0	0	0
05-13	1230	18	2	0	0
05-14	1325	0	0	0	0
05-15	1130	0	0	0	1
05-16	1245	0	6	0	0
05-17	1345	0	4	0	0
05-18	1115	0	1	0	0

Gas Bubble Trauma (GBT): GBT sampling was conducted on May 15. There were 5 out of the 100 fish examined that showed signs of GBT.

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

Project: Lower Granite
Biologists: Elizabeth Holdren and Robert Horal
Dates: May 12-18, 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.

Adult Fish Passage Facility

General comments: Adult fish facilities were inspected by Corps or Anchor QEA biologists May 12, 13, 15, 17 and 18.

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 pumps are not in service at this time due to river temperatures currently below the 68° F threshold to turn these on.

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. NPE 2 is currently on sill position at 628.0 feet. NPE 1 weir depth was out of criteria May 15, 16, and 17 with readings of 7.8, 7.1, and 6.6 feet. NPE 1 has been unable to auto adjust with the fish ladder control system due to tailwater elevation during spill operation. NSE 1 has also been reading 3 tenths higher than the actual gate elevation. A trouble report was submitted to calibrate and troubleshoot NPE 1. NPE Channel/Tailwater differentials were out of

criteria with readings of 0.8 feet May 12, and 13. This is likely due to NPEs inability to adjust to tailwater elevations.

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. AWS pump 2 is in standby mode.

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 311 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: 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 depending on debris load. As of May 15 an intern is working with the bio tech to maintain facility debris and backflush orifices during the night shift.

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

Transport Summary: Every day transport continues.

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
179.0	130.4	91.20	41.5	53.5	51.0	1.6	1.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A

Invasive Species: Zebra/quagga mussel substrate was last inspected April 28.

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 12	1320	6	0	0	0
May 13	1445	6	0	0	0
May 14	1339	2	0	0	4
May 15	1042	0	0	0	10
May 16	1242	0	0	0	0
May 17	1223	2	0	0	0
May 18	1636	0	0	0	3

Spill: Spillway debris increased from about 2700 square yards May 10 to about 5000 square yards May 15. An emergency debris spill took place with the spillways operating out of spill criteria from 1043-1206 hours May 15. On May 17 the RSW was taken out of service from 1001-1215 hours to remove a free floating dock that broke loose up river. The dock was successfully removed from in front of the spillways and returned to the owner.

Gas Bubble Trauma (GBT): Fish are being sampled from the separator for GBT on Thursdays. Three fish out of 100 fish sampled showed minor signs of GBT 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.