U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#13-2017

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: May 19 – 25 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 13 ran outside the constraint at 70 megawatts for 1.1 hours during testing on May 25.

Table 1. Unit Outages at McNary Project.

Units	Outage Dates	Outage Length	Reason
13	Oct 3 to May 25	8 months	Thrust bearing issue.
5 & 6	May 22	75 minutes total	URX relay replacement.
1, 5 & 6	May 23	1.5 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 19, 21 and 24. Visual fish counts continue.

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’): 0.6’ on May 21.

Comments: Debris loads at the Washington exit were variable. Debris loads along the shoreline were minimal to light. The trash rack and picketed leads were cleaned as needed, including weekends. Cleaning the picketed leads resolved the high count station differential on May 21. No solution has been found for the count station passive integrated transponder (PIT) system interference. Tilting weir 334 remains in manual mode. A low water alarm was reset on May 21.

At the Oregon exit, debris loads were minimal. Along the shoreline, debris loads were very light to light. The tilting weirs set point was adjusted on May 21. Scheduled maintenance occurred on the exit traveling screens on May 25.

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

Comments: Scheduled maintenance occurred on the Washington ladder entrances on May 23.

Auxiliary Water Supply System:

Yes	No	In Service?
☒	☐	Washington shore Wasco County PUD Turbine Unit.
☒	☐	Washington shore Wasco PUD Bypass.
☒	☐	Oregon Ladder Fish Pump 1: Blade angle was 27 degrees.
☐	☒	Oregon Ladder Fish Pump 2: Testing scheduled to begin May 31.
☒	☐	Oregon Ladder Fish Pump 3: Blade angle was 27 to 29 degrees.
☒	☐	Oregon North Powerhouse Pool supply from juvenile fishway.

Comments: The Wasco County PUD turbine unit tripped off line for 27 minutes on May 22. The bypass system functioned satisfactorily during the outage. Faulty test sensors, which need to be replaced, have delayed fish pump 2 testing for one week. The intake and discharge stoplogs will be removed on May 31 to begin testing.

Juvenile Fish Passage Facility

General Comments: The fish passage season consists of alternating days of primary and secondary bypass modes, with the switch occurring at 0700 hours each morning. No schedule deviations occurred. This week, 1,100 juvenile lamprey and 93,612 smolts were bypassed.

Forebay Debris/Gatewell Debris/Oil:

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

Comments: Forebay debris loads near the powerhouse were minimal to light. Debris loads at the spillway were light to heavy and located at the northern bays. An emergency debris spill occurred on May 25, which removed the majority of the debris at the spillway. 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: The brush cycles for the screens in 3B, 12B, 14A slots and in unit 11 remained in timer mode. The brush on the ESBS in 2A slot was found short cycling on May 19 after repeated alarms, and the brush cycle was switched to timer mode on May 20.

Units 5 and 6 URX relays appear to have failed on May 5. Unit 5 URX relay was working intermittently. With the relays not functioning properly, the brushes for the ESBSs in both units were cycled manually until the relays were replaced on May 22. Unit 6 ESBSs were in timer mode from May 22 to 23.

ESBS camera inspections at units 1, 5 and 6 occurred on May 23. No issues and no debris accumulations were found on the screens in units 5 and 6. The brush cycle for the screen in 1A slot was reversed with the brush parking at the top of the screen instead of the bottom. The electrical staff rewired the ESBS brush to return it to normal operations. The brush cycle for 1A was switched to timer mode on May 24.
VBS differential monitoring continued. No problems were found and no screens were cleaned due to debris blockage.

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 continued to operate the transition screen cleaning brush manually to insure it completes a full cleaning cycle. A new solenoid has been ordered.

Bypass Facility:

Yes	No	Item
☒	☐	Sample gates on? Yes, during secondary bypass only.
☐	☒	PIT tag system on? The Pit-tag 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 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 repaired the B side sample tank crowding device chain guard on May 22. Also, the electricians replaced the lights above the perforated plate with LED lighting. The new chiller has been functioning satisfactorily. Algae removal from the flumes and tanks continued.

River Conditions

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

Table 2. River Conditions at McNary Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature °F		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
415.7	387.4	267.9	230.2	54.9	52.1	2.7	2.2

Comments: Spill in excess of powerhouse capacity occurred all week. During the spring the targeted operation is for 40% of the river spilled for juvenile fish passage continues. This week, 59 to 64 percent of flow was spilled.

On May 25 from 1320 to 1619 hours an emergency debris spill occurred. The gate in spillbay 4 was split leaf from 1400 to 1540 hours, the gate in bay 5 was split leaf from 1350 to 1540 hours and the gate in bay 8 was split leaf from 1358 to 1520 hours.

Other

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

Invasive Species: The mussel station examinations on May 24 revealed no problems.

Avian Activity: Avian counts continued and tailwater numbers are recorded in Table 3 below. Observations were made every morning. Overall, bird numbers appear greatly reduced so far this season except for grebes.

In the forebay zone, 26 to 90 grebes were observed along with an occasional osprey, gull, cormorant, blue heron and tern. The grebes appear to be in two groups with the second group outside the zone at times. A fair numbers of pelicans along with a few gulls and cormorants were observed on the rocks by the Washington shore boat dock.

Eleven grebes entered the gatewell slots this week. Ten grebes and one Rudy duck were removed with eight grebes coming from units 7 and 8. The remaining grebe passed into the juvenile collection channel where it was removed.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican
May 19	Spill	0	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
May 20	Spill	3	0	0	1
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
May 21	Spill	0	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
May 22	Spill	0	0	0	0
	Powerhouse	0	0	0	0
	Outfall	4	1	0	0
May 23	Spill	0	1	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
May 24	Spill	3	0	0	0
	Powerhouse	0	0	0	0

	Outfall	3	0	0	0
May 25	Spill	2	0	0	0
	Powerhouse	0	0	0	0
	Outfall	1	0	0	0

United States Department of Agriculture – Animal and Plant Health Inspection Service – Wildlife Services (USDA–APHIS–WS) personnel continued working two shifts for shoreline hazing seven days a week and hazing from a boat three days a week. Due to low bird numbers in the tailwater area, the boat crew has been assisting with grebe hazing from the forebay deck since May 22. Wave action and a high tailwater elevation at the bypass outfall has not allowed for hazing from the outfall walkway.

Fish Salvage/Rescue**:** Station service unit 1 was dewatered this week. No fish rescue was required.

Research

Item: No onsite research is occurring at this time. Gas bubble trauma (GBT) monitoring was conducted twice a week and no GBT signs were observed for the 200 juvenile salmonids examined.

Project: Ice Harbor
Biologist: Ken Fone
Dates: May 19 – May 25, 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. Units 5 and 6 were out of service on May 24, from 1003 hours to 1411 hours and from 1443 hours to 1638 hours, respectively, to rake the trash racks. Unit 3 was operating slightly above the 1% peak operating efficiency range during the May 25 fishway inspection, 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 22, 23, and 25.

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 25, the NSE-1 weir gate depth was out of criteria at 7.3’. The operator was informed, and gate lowered to bring the depth into criteria. NSE-1 is being operated in manual mode to reduce wear on the gate machinery while adjusting to tailwater fluctuations from spill.

The south shore channel velocity was out of criteria on May 23, with a reading of 1.4 fps. This reading can most likely be attributed 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: North shore pump #3 was taken out of service on May 20 at 1845 hours when it tripped off due to a gearbox high temperature alarm. North shore pump #2 was operated until pump #3 returned to service on May 23 at 1015 hours.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	Item
☒	☐	Forebay debris load acceptable? An average of 100 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 24, unit 5 and 6 trash racks were raked, in case there was debris causing the fish descaling observed in the juvenile fish sample. There was no debris found on these trash racks. Trash rack differentials were not measured this week due to staffing constraints.

STSs/VBSs:

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

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

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

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

Comments: None.

Juvenile Fish Facility: The fish facility is operated in bypass 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 rate decreased from last week, and was 5.2% on May 22, and 0.6% on May 25.

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

May 22:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	49	0	0	1
UC-CH	18	0	0	0
C-CH-O	0	---	---	---
UC-CH-O	1	0	0	0
C-SH	54	4	0	2
UC-SH	36	5	0	0
C-SOCK	2	0	0	0
UC-SOCK	1	0	0	0
C-COHO	6	0	0	0
UC-COHO	7	0	0	0
TOTAL	174	9	0	3

May 25:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	21	0	0	0
UC-CH	12	0	0	0
C-CH-O	0	---	---	---
UC-CH-O	9	0	0	0
C-SH	72	0	0	5
UC-SH	56	1	0	4
C-SOCK	4	0	0	0
UC-SOCK	0	---	---	---
C-COHO	3	0	0	0
UC-COHO	4	0	0	0
TOTAL	181	1	0	9

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
156.6	114.3	101.2	60.5	54	52	2.2	1.8

*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.

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 during this reporting period (Table 3 below). Gull numbers dropped off significantly from last week. 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 has been effective at scaring birds out of zones further downstream of the dam. A few grebes in the forebay area adjacent to the powerhouse and up to 10 cormorants below the juvenile fish outfall pipe have been somewhat difficult to effectively haze.

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

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
May 19	3	17	0	0	12
May 20	0	13	0	0	26
May 21	0	23	0	0	26
May 22	1	11	0	3	13
May 23	1	9	0	3	2
May 24	0	21	0	3	14
May 25	0	11	0	0	18

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

Other: On May 22, from 0500 hours to 0730 hours, the project did not follow the spill pattern in Table IHR-11 of the Fish Passage Plan (FPP), due to an electrical problem associated with spill gate 4. During that period, spillbay 4 was closed and spillbays 8 and 9 were opened 5 stops each to maintain the spill volume. At 0730 hours on May 22, the project operations returned to the spill pattern in Table IHR-11 of the FPP with the repair of spillbay 4 gate.

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: May 19 - 25, 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 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 at 0947 on May 22 and returned to service at 1036 on May 25 due to a Kaplan oil leak.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and Anchor QEA biologists on May 19, 20, 21 and 24.

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 weir SPE-1 depth was out of criteria on the May 20 inspection with a reading of 7.7 feet. Entrance weirs SPE-1 and SPE-2 were at sill on the May 24 with readings of 7.5 feet each.

South Shore Entrance weir SSE-1 depth was out of criteria on the May 24 inspection with a reading of 6.5 feet. This was due to the automated system not working well with the high tailwater levels in combination with the wave action from the high volume of spill.

South Shore Channel/Tailwater differentials were out of criteria on the May 19, 20 and 21 inspections with readings of 0.7, 0.8 and 0.7 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 volume of 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 310 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: None

STSs/VBSs:

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

Comments: None

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

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

Collection Facility: Collection into raceways for transport began at 0700 on May 1.
A total of 283 smolts were injured/killed by a temporary blockage of the separator's B side exit hopper on May 24. A more detailed summary of the mortality event can be found in the document titled LMN 05 MFR available on the FPOM website.

Transport Summary: Every-day barging began on May 2. A total of 71,950 fish were collected, of which 71,584 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
157.0	110.3	88.1	53.1	55.2	53.1	2.2	1.0

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Turbine 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, cormorants and grebes 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
5/19/2017	1120	0	0	0	0	1
5/20/2017	1230	0	0	0	0	0
5/21/2017	1130	0	0	0	0	0
5/22/2017	1230	0	0	0	0	0
5/23/2017	1200	1	0	0	0	0
5/24/2017	1115	0	0	0	0	1
5/25/2017	1100	0	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 19 – May 25, 2017

Turbine Operation

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

Comments: All turbine units were available for service throughout this report period, except unit 5. Unit 5 remains Out of Service (OOS) due to excessive vibration. Hard constraints of 1% peak efficiency criteria took effect on April 01.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists and Anchor QEA staff on May 21, 23 and 25.

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: Monthly water velocity measurements were taken with the Rickly velocity meter near NPE on May 20. Average velocity from bottom, mid channel and top was 3.1 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 55,000 square feet of floating woody debris currently in the forebay. Trash raking was completed May 22. Trash raking is scheduled again for May 31. Trash rack differential was measured May 24 for units 1, 2, 3 and 6. All trash rack differential measurements were within criteria.

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

ESBS/VBS:

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

Comments: VBS differential measurements were conducted on May 24 for units 1, 2, 3 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 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 in collection mode for transportation.

Transport Summary: The collection and transportation facility operated within criteria this reporting period. A total of 134,957 fish were collected, of which 134,843 were transported. The descaling and mortality rates were 1.5% and 0.11% 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
138.8	109.7	62.8	33.9	56.5	53.1	2.6	2.1

*Ladder temperature.

Comment: None.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on May 19. Total strainer mortality included 1 salmon smolt.

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
05-19	12:10	0	0	0	0
05-20	11:15	1	0	0	0
05-21	14:00	1	1	0	0
05-22	07:30	0	0	0	0
05-23	14:00	0	0	0	0
05-24	13:30	1	3	0	0
05-25	13:00	0	4	0	0

Gas Bubble Trauma: GBT sampling was conducted on May 22. There were 3 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
Dates: May 19-25, 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. Units were rotated out of service May 21-23 for ESBS/VBS inspections. Unit 5 was taken out of service from 0958 hours May 21 through 1028 hours May 22 due to debris on ESBS flow vein in gatewell slot 5B.

Adult Fish Passage Facility

General comments: Adult fish facilities were inspected by Corps or Anchor QEA biologists May 19, 22, 21, and 24.

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 operate these pumps.

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. NSE 1 was out of criteria with a reading of 6.7 feet May 24 due to the inspection taking place during the debris spill. NPE 2 north operating cable was found broken April 17. During the May 19 inspection NPE1 right side cable rigging was found detached from the wier gate. NPEs are now both on sill. Cotter pins for all fish ladder weir gates are scheduled to be replace during the 2017-2018 winter adult fishway outage.

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

Auxiliary Water Supply System:

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

Comments: AWS 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 537.5 square yards this week. On May 22 a large log jammed between the corner of the forebay debris boom and the Removable Spillway Weir (RSW), and was observed to be blocking debris passage. Initial efforts to remove the log were unsuccessful. On May 24 from 1229-1332 hours an emergency debris spill was implemented for log and debris removal (see 17LWG08 MFR on the FPOM web site). Powerhouse debris increased directly in front of the powerhouse to about 800 square yards on May 25 due to high wind and increased river flow.

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: ESBSs were inspected May 21-23. Unit 5 gatewell slot 5B had woody debris between the flow vein and the ESBS. The screen was pulled and debris was removed.

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 hour. As of May 15 a bio tech intern is working with the night shift bio tech to manage facility debris and backflush orifices hourly. High winds overnight May 24 and the increase in river flows from 123.6 kcfs May 23 to 158.6 kcfs May 25 resulted in over 800 square yards of forebay debris accumulating directly in front of the turbine units. Orifice obstructions increased the morning of May 25 and continued until about 1100 hours. Power house maintenance began removing debris from in front of the powerhouse at about 1000 hours. A total of 134 juvenile salmonid mortalities were collected from the

raceways likely due to the increased debris loads and orifice blockages on the morning of May 25 (see 17LWG08 MFR on the FPOM web site).

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 other day transport is scheduled to begin May 27.

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
158.6	116.4	68.3	33.3	55.0	52.0	2.5	1.4

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Turbine unit cooling water strainers were inspected May 22. Mortalities included 25 juvenile lamprey.

Invasive Species: Zebra/quagga mussel substrate was 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 19	1224	0	0	0	0
May 20	-	-	-	-	-
May 21	1345	3	0	0	2
May 22	1325	1	0	0	3
May 23	1020	1	0	0	0
May 24	1215	5	0	0	6
May 25	1453	0	0	0	2

Spill: Debris increased in the forebay due to river flows. An emergency debris spill took place with the spill pattern operating out of criteria for debris spill from 1229-1332 hours May 24. The debris spill included closing the RSW, opening spillbay 2 fully, and incrementally reducing spill in spillbays 3 through 8 to maintain the same spill level (see 17LWG08 MFR on the FPOM web site).

GBT: Fish are being sampled from the separator for GBT Thursdays. No signs of GBT were 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.