U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#08-2017

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: April 14 – 20, 2017

Turbine Operation

General Comments: The hard 1% peak efficiency constraint began on April 1.

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 Apr 28	7 months	Thrust bearing issue.
2	Mar 21 to May 12	1.7 months	Thrust bearing issue.
7 & 8	Apr 6 to Apr 20	2 weeks	Station service upgrades.
1	Apr 14	9.3 hours	Extended-length submersible bar screens (ESBSs) replaced in all 3 slots.
1	Apr 15	1.1 hours	ESBS alarms for screen in 1A slot.
12	Apr 17	3.6 hours	Trash racks cleaned. ESBSs in slots 12B and 12C replaced.
9	Apr 18	6.8 hours	Trash racks cleaned. ESBS in slot 9C replaced.
11	Apr 19	5.1 hours	Trash racks cleaned. ESBS in slot 11C replaced.
9	Apr 19	3.3 hours	ESBS in slot 9B replaced.
1	Apr 20	4.7 hours	Trash racks cleaned. ESBS in slot 1A replaced.
3	Apr 20	4.3 hours	Trash racks cleaned. ESBS in slot 3B replaced.

Adult Fish Passage Facilities

General Comments: McNary fisheries biologists performed measured inspections of the adult fishways on April 14, 16 and 19. 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’)

Comments: Debris loads were variable at the Washington exit. Debris quantities varied along the Washington shoreline from very light to light. The trash rack and picketed leads were cleaned as needed. Pacific States Marine Fisheries Commission (PSMFC) and project personnel continue to examine the interference issue at the count station passive integrated transponder system (PIT). No solution has been found. One regulating weir alarm was reset on April 19.

At the Oregon exit and along the shoreline, debris loads were minimal to very light. The tilting weir set point was adjusted on April 16. The Oregon exit traveling screens debris trough was cleaned as needed.

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 2.0 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: Return to service date is June 15.
☒	☐	Oregon Ladder Fish Pump 3: Blade angle was 27 degrees.
☒	☐	Oregon North Powerhouse Pool supply from juvenile fishway.

Comments: None

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. This week, 830 juvenile lamprey and 38,591 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? Manmade and large woody materials were removed as needed.

Comments: Forebay debris loads near the powerhouse remained light. Some floating debris was removed during trash rack cleaning. Debris loads at the spillway were minimal. Most incoming debris is now along the Washington shoreline where debris loads were variable. The incoming debris loads were light. The operators are flushing the debris down the navigation lock as needed.

Trash racks were cleaned at units 1, 3, 9, 11 and 12 from April 17 to 20. There was 2.3 ten-yard truckloads of woody material, tumbleweeds and one log removed. No fish were observed in the debris.

ESBSs/Vertical barrier screen (VBSs):

Yes	No	Item
☒	☐	ESBSs deployed in all slots except unit 2 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: The screens stored in unit 2 were used as replacements. ESBSs with cleaning brush motor seal issues were replaced with rehabilitated screens. Screen needing repairs were staged at units 7 and 8.

The screen in slot 3B had been replaced on April 7. Repaired screens were installed in all three unit 13 slots on April 13. All three ESBSs were replaced in unit 1 on April 14. The screens in slots 1A (for a second time), 3B (for the second time), 8C, 9B, 9C, 11C, 12B and 12C were replaced from April 17 to 20. These 15 ESBSs were the ones with cleaning brush motor seal issues described in the weekly report number 7.

After the first replacement of the screen in unit 1A, the new screen was set to automatic mode. Due to overcurrent alarms on April 15, the cleaning brush motor upper amp limit was increased to 8.0 amps and the cleaning brush cycle was set to timer mode. The cleaning brush was found "short cycling" (i.e., cleaning brushes prematurely reverse direction prior to reaching the end of the screen) on April 18 and 19, which resulted in the cycle being recalibrated each time. After replacement on April 20 and multiple alarms, the cleaning brush cycle was set to timer mode and no further problems with the screen cleaning brush in slot 1A have occurred.

Before ESBS replacement in slot 12B, the screen cleaning brush was found "short cycling" on April 17. The cleaning brush cycle was switched to timer mode and the screen was replaced later that day. After replacement, the new screen's cleaning brush tripped multiple alarms and the cycle was switched to timer mode. No further problems with the screen cleaning brush in slot 12B have occurred.

ESBS controller wiring upgrades for units 7 and 8 were completed earlier in the week.

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.
☒	☐	Dewaterer and cleaning systems operating satisfactory? Except transition screen cleaning brush.

Comments: Minor orifice valve operation issues continue to be addressed. We suspect some of the air leaks may be due to cylinder seals that are beginning to fail. The first cylinder we are going to examine is for the north orifice in slot 8A. Orifices were adjusted as required during trash rack cleaning.

The transition screen cleaning brush cycle steps have slowly deteriorated requiring staff to be present when the cleaning brush is operated. With the ESBSs repairs completed, we will examine the transition cleaning brush next week.

Bypass Facility:

Yes	No	Item
☒	☐	Sample gates on? Yes, during secondary bypass only.
☐	☒	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 passage 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.

Sample water temperature will be monitored constantly and operations adjusted as needed until the sample chiller is replaced.

Lighting improvements continued during this reporting period.

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
385.6	331.1	260.3	211.5	47.8	46.4	3.1	2.6

Comments: Spill in excess of powerhouse capacity occurred all week. Routine spring spill in support of fish passage continues. Target spill amounts in the spring passage season is 40%. This week, 64% to 68% of flow was spilled.

On April 17, the control room received an expanded spill pattern table for operation of the top spillway weirs (TSWs) during higher discharge levels which was coordinated through the Fish Passage Operations and Maintenance (FPOM) coordination team.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on May 2.

Invasive Species: The next mussel station examination will occur on April 23.

Avian Activity: Avian counts resumed on April 1. In the spillway zone, the highest number of gulls observed was 16. One pelican and a couple of cormorants were occasionally observed. At the juvenile bypass outfall zone, occasionally a small number of gulls and one pelican were noted. No birds were observed in the powerhouse zone. In the forebay zone, the highest number of cormorants noted was nine. Cormorants feeding in the forebay near the powerhouse is a new occurrence.

Due to high tailwater elevation, repairs to the outfall water sprinklers and the bird distress calls on the outfall walkway are pending reduced flows and inspection of the walkway grating.

United States Department of Agriculture – Animal and Plant Health Inspection Service – Wildlife Services (USDA–APHIS–WS) personnel began bird hazing on April 16 with one day shift crew member hazing seven days a week.

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

Research

Item: No onsite research is occurring at this time. Pacific Northwest National Laboratory (PNNL) collected 20 juvenile lamprey at McNary for an offsite tagging study this week.

Gas bubble trauma (GBT) monitoring continues and will occur twice a week during the spill season.

Project: Ice Harbor
Biologist: Ken Fone
Dates: April 14 – April 20, 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. On April 18 and 19, units 6, 5, 3, and 1 were removed from service one at a time to inspect the STSs. Unit 3 was out of service on April 19, from 1513 hours to 1800 hours, and again on April 20, from 0708 hours to 1430 hours, to replaced failed head cover pumps and remove water from the turbine bearing.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on April 17, 19, and 20.

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 were clear of debris and 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: The south shore channel velocity was out of criteria on April 17, 19, and 20 with readings of 1.4, 1.2, and 1.3 fps. These readings can most likely be attributed to the high channel water backing up into the fish ladder.

Auxiliary Water Supply (AWS) System:

Yes	No	In Service and Operating Satisfactory?

☒ ☐ South Shore AWS Pumps. Seven of the eight south shore AWS pumps were in service.
☒ ☐ North Shore AWS Pumps. Two of the three north shore AWS pumps were in service.

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	Item
☒	☐	Forebay debris load acceptable? An average of 10 square yards of debris was observed.
☒	☐	Trash rack differentials measured this week? If so, were differentials acceptable? ☒ Yes ☐ No ☐N/A
☒	☐	Any debris seen in gatewells (i.e: over 10% coverage)? Surface coverage ranged from 0% to 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. Installed 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 1, 3, 5, and 6 STSs were inspected on April 18 and 19. There were no significant problems 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, 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.

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

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

April 17:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	41	2	0	2
UC-CH	46	0	0	0
C-CH-O	0	---	---	---
UC-CH-O	0	---	---	---
C-SH	28	0	0	0
UC-SH	4	1	0	1
C-SOCK	0	---	---	---
UC-SOCK	1	0	0	0
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
TOTAL	120	3	0	3

April 20:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	45	3	0	1
UC-CH	48	1	0	0
C-CH-O	0	---	---	---
UC-CH-O	0	---	---	---
C-SH	49	2	0	2
UC-SH	10	1	0	0
C-SOCK	0	---	---	---
UC-SOCK	1	0	0	0
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
TOTAL	153	7	0	3

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
135.7	120.4	91.5	77.0	48.0	48.0	2.4	2.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine unit cooling water strainer inspections occurred on April 18 and 19. A total of 9 juvenile salmon mortaliies, 3 juvenile steelhead mortalities, 7 juvenile lamprey mortalities, and 1 adult lamprey mortality were found. The juvenile salmon could not be identified to species due to the state of decomposition.

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

Avian Activity: There were moderate numbers of piscivorous birds counted around the project (see Table 3 below), except for a high number of gulls on April 18. Contracted land-based hazing of piscivorous birds is occurring for 16 hours per day. Boat-based hazing for 8 hours per day, three days per week, is occurring. Hazing has generally been

effective at keeping birds out of the zones immediately adjacent to the dam. Hazing was periodically necessary to keep a few cormorants out of the forebay area adjacent to the south fish ladder exit. Up to several hundred foraging pelicans have been seen in the evening and early morning hours, in the riverine area between the outfall pipe and the the second island downstream of the dam.

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

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
April 14	29	19	0	0	24
April 15	6	17	0	0	31
April 16	9	4	0	0	26
April 17	22	28	0	0	0
April 18	80	22	0	0	9
April 19	19	26	0	0	5
April 20	35	22	0	0	8

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

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: April 14 - 20, 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.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and Anchor QEA biologists on April 14, 15, 16 and 19.

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: None

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 550 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? Due to high debris quantities in the forebay, debris was removed from gatewells throughout the reporting period.
☐	☒	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 15 was observed with low flow on the April 15 inspection by Anchor QEA biologist. Powerhouse operator checked for blockage and blew out the orifice. Orifice 33 was found open with a burned out attractant light during the April 16 inspection. Orifice 33 was closed and orifice 34 opened until the electrical crew could change the light. Orifice 15 was found with a blockage on April 18 which caused approximately 280 juvenile salmonid mortalities, and required a piece of wood to be cut away to clear. This event was further coordinated with Fish Passage Operations and Maintenance (FPOM) coordination team and documented in LMN 04 MFR.

Collection Facility: Sampling for condition took place over 24 hour periods starting at 0700 on April 15, 17 and 19.

Transport Summary: Fish transport is not occurring at this time.

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
132.1	116.1	54.5	39.2	48.9	47.9	2.5	2.2

*Scrollcase temperatures.

Other

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

Invasive Species: The invasive species mussel sampling station was not inspected during this reporting period.

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
4/14/2017	1215	11	1	0	0	0
4/15/2017	1230	16	2	0	0	0
4/16/2017	1230	17	0	0	0	0
4/17/2017	1125	14	0	0	0	0
4/18/2017	1145	1	0	0	0	0
4/19/2017	1200	4	0	0	0	0
4/20/2017	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: April 14 – April 20, 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 for units 1, 2 and 5. Units 1 and 2 were Out of Service (OOS) on April 20 for trash rack raking. An ESBS brush was also not functioning properly in unit 2 and the ESBS brush remains OOS. Unit 5 was taken OOS on April 14 at 1611 hours due to vibration issues. 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 April 18, 19 and 20.

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 April 17. Average velocity 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: AWS pumps were taken OOS on April 17 to remove debris from the intake trash rack. Pumps were OOS from 0755-0835 and again from 1300-1400.

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 10,000 square feet of floating woody debris currently in the forebay. Trash raking was completed on units 1, 2 and 5 on April 20. Trash raking is scheduled again for May 01. Trash rack differential for 2A was unacceptable. Differentials will be measured again for next report period.

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: ESBSs and VBSs were inspected on April 03 and 04 for units 3 and 4, respectively. All VBSs were in satisfactory condition. Next camera inspection is scheduled for May 01. VBS differentials were conducted on April 17. Differentials on VBS 1A and 2A were out of criteria. Units 1 and 2 were OOS for trash raking on April 20. VBS differentials will be conducted again for the next report period.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comment: Due to large amounts of debris, orifices are being backflushed and rotated every two hours. The dewatering structure is being cleaned on the same schedule.

Collection Facility: Juvenile Fish Facility is currently operating. Collection began on April 01 and is taking place every other day. During non-collection days, the facility is operating in primary bypass.

Transport Summary: No fish transportation is currently taking place.

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* (ºF)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
130.7	115.0	52.6	35.0	50.0	48.9	2.4	1.8

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on April 19. Total strainer mortality included 1 juvenile lamprey and 2 salmon smolts.

Invasive Species: No invasive species have been observed on the mussel monitoring 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
04-14	1300	125	24	0	0
04-15	1200	108	24	0	0
04-16	1400	78	14	0	0
04-17	1300	75	10	0	0
04-18	1230	70	10	0	0
04-19	1215	106	13	0	0
04-20	1245	138	7	0	0

Gas Bubble Trauma: GBT sampling was conducted on April 17. 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 and Suzette Frazier
Dates: April 14- April 21, 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 July 14. Unit 1 return to service is delayed due to time needed to procure studs for replacement in the Kaplan. Unit 6 removed from service at 0701 hours April 17 for wicket gate repacking.

Adult Fish Passage Facility

General comments: Adult fish facilities were inspected by Corps or Anchor QEA biologists April 14, 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 Exit Cooling Water Pumps in Service.
☐	☒	Ladder Exit Cooling Water Pumps Operating Satisfactorily.

Comments: Emergency Ladder Exit Cooling Water Pumps are not in operation 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 however, NPE 2 is currently in sill position at 628.0 feet while Little Goose is operating at MOP. The Project plans on scheduling dive team to investigate and make repairs to the gate operating cables later in the season and will be coordinated with the Fish Passage Operations and Maintenance (FPOM) coordination team.

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: None

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: An average 167.5 square yards of debris was observed in the powerhouse forebay 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 the unit 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: Debris continues to be a problem pugging orifices. Orifices are being checks as often as hourly and continue to be cycled a minimum of every three hours for debris management.

Collection Facility: The collection facility is in secondary bypass mode with 24 hours collection for condition sampling occurring daily.

Transport Summary: A barge departed Lower Granite on April 20 with 24,206 smolts transported as part of NMFS Seasonal Effects of Transportation study. Barge transportation is currently taking place once per week in support of NMFS research. Routine smolt collection and transportation begins May 1.

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
138.2	119.9	55.3	31.7	49.0	48.0	2.6	1.5

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A

Invasive Species: N/A

Avian Activity: Comments. Daily hazing is occurring.

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

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
April 14	1230	5	0	0	6
April 15	1210	8	0	0	0
April 16	1410	8	0	0	0
April 17	1430	8	0	0	0
April 18	1330	0	0	0	0
April 19	1320	0	0	0	0
April 20	1300	2	0	0	0

GBT: N\A

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.

National Marine Fisheries Service (NMFS) Seasonal Effects of Transportation: NMFS staff is PIT-tagging Chinook salmon and steelhead smolts and transporting them by barge to compare smolt to adult returns of in-river migrating smolts to those of transported smolts. This study examines seasonal trends related to transportation of Snake River juvenile migrants to support adaptive management strategies.