U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#07-2017

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: April 7 – 13, 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 22	6.6 months	Thrust bearing issue.
2	Mar 21 to Apr 21	31 days	Thrust bearing issue.
7 & 8	Apr 6 to Apr 20	2 weeks	Station service upgrades.
3	Apr 7	5.2 hours	Extended-length submersible bar screen (ESBS) slot 3B repair.
4	Apr 7	6.5 hours	ESBSs deployed.
9	Apr 10	5.1 hours	ESBSs deployed.
10 & 11	Apr 11	10.0 hours	ESBSs deployed.
12 & 14	Apr 12	11.5 hours	ESBSs deployed.

Adult Fish Passage Facilities

General Comments: McNary fisheries biologists performed measured inspections of the adult fishways on April 7, 9 and 11. Visual fish counts began April 1. Water temperature probes were down loaded on April 7 and appear to be recording data properly. The electrical staff routed a new cable for the control room fisheries systems computer on April 12.

Fish Ladder Exits:

Yes	No	Location, Criteria and Measurements
☒	☐	Oregon Exit (Criteria – Head over weir 1.0’ to 1.3’)
☒	☐	Oregon Count Station Differential (Criteria – Differential 0.0’ to 0.5’)
☒	☐	Washington Exit (Criteria – Head over weir 1.0’ to 1.3’)
☒	☐	Washington Count Station Differential (Criteria – Differential 0.0’ to 0.5’)

Comments: Debris loads were variable at the Washington exit. Debris quantities varied along the Washington shoreline from minimal to moderate. The trash rack and picketed leads were cleaned as needed. Pacific States Marine Fisheries Commission (PSMFC) continued to examine the interference issue at the count station passive integrated transponder system (PIT). PSMFC staff with work with project electricians on April 18 to attempt to resolve the problem. Access lights to the count station which were tripping a breaker for approximately two weeks was resolved on April 13. The regulating weir set point was adjusted on April 11.

At the Oregon exit and along the shoreline, debris loads were minimal to very light. The regulating weir set point was adjusted on April 7. 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 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: The weir set points at the south powerhouse entrance (SFEW1 and SFEW2) were set at 9.2 feet. The weir set points at the north powerhouse entrance (NFEW2 and NFEW3) were set at 9.1 feet. The Oregon entrances have remained within criterion since the set points were adjusted.

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: For the Oregon ladder, the fish pumps blade angles were increased from approximately 24 to 27 degrees on April 6 after internal discussions related to pump performance.

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, 300 juvenile lamprey and 18,750 smolts were bypassed. Project air supply compressor issues on April 11 had no adverse effects on operation of the sample gate for fisheries operations.

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 were heavy near the powerhouse until April 7 when south winds moved the debris to the junction of the powerhouse and spillway. Spillbays 21 and 22 were closed to facilitate debris passage through

the top spillway weirs (TSWs) to the tailwater. Since the wind event on April 7, powerhouse debris loads have remained light. Debris loads at the spillway were minimal. Most incoming debris loads are light and are along the Washington shoreline. The operators are flushing debris through the navigation lock as needed.

ESBSs/Vertical barrier screen (VBSs):

Yes	No	Item
☒	☐	ESBSs deployed in all slots except unit 2 and in service? Deployment for in service units was completed on April 13.
☐	☒	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 deployed in units 4, 9, 10, 11, 12, and 14 this week. The screens stored in unit 2 are being used as spares until the unit returns to service. The brush cycle for the screen in slot 1A remains in timer mode due to multiple alarms. ESBS controller wiring for units 7 and 8 is being replaced as part of station service upgrades.

The screen in slot 3B tripped multiple alarms on April 7. The screen was raised and the brush motor was replaced due to water leaking into the motor. It appears the epoxy sealant used this winter at the base of the motor casings did not seal around the motor electrical cable installation. The electrical staff will monitor all ESBSs brush motors for possible replacement because fifteen motors may have similar problems. On April 11, the screen brush motors in slots 1B, 2B, 2C, 8B, 9A, 10B and 11C were tested and operating satisfactorily.

The screen brushes on the ESBSs in slots 12B and 12C were "short cycling" (i.e., cleaning brushes prematurely reverse direction prior to reaching the end of the screen) on April 12 because the brushes were drawing too much current. Circuit breakers were not always tripping an alarm. The motors upper amperage limits were increased to 8.0 amps. The new set points will allow the brushes to cycle until the motors can be replaced. This could be an indicator of water in the motors. The ESBS brush on the screen in slot 4B was short cycling on April 13. No overcurrent issue was found and the brush cycle was recalibrated.

VBS differential monitoring continued. The differential in slot 6B measured 1.7 feet on April 10 and the VBS was cleaned. On April 11 the VBS screen in slot 6A was cleaned and the screen in 4A slot was inspected. No fish mortalities were noted and no problems were found.

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

Yes	No	Item
☒	☐	Orifices operating satisfactory? Yes, with 42 opened.
☒	☐	Dewaterer and cleaning systems operating satisfactory in automatic mode? No issues to report.

Comments: Minor orifice valve actuator and attraction lighting issues continue to be addressed. Orifices were adjusted as required during VBS cleaning. The handrail jump netting was inspected and repaired.

Bypass Facility:

Yes	No	Item
☒	☐	Sample gates on? Yes, during secondary bypass only.
☐	☒	PIT tag system on? Pit-tag sort-by-code system remains off unless a study is occurring. The facility bypass lines provide a superior route for the fish over the PIT-tag sample release lines downstream of the PIT-tag sample gates.

Comments: During the bypass season, primary and secondary bypass modes return all fish are to the river. PIT tag detection occurs in the full flow pipe during primary bypass and throughout the facility during secondary bypass. Smolt monitoring occurs only on secondary bypass days.

On April 8, we noted the sample system timer had reset itself and the display panel view was difficult to switch from display mode. On April 12, from 1333 to 1416 hours, both sample gates were turned off so PSMFC personnel could examine the sampling system. A faulting relay switch was replaced, which resolved the reset issue and the panel view sleep mode was adjusted. At 1553 hours on April 12, an air leak was noted at the A side sample gate. The gate was turned off and remained out of service for the rest of the sample day. The air fitting and line were replaced the next day.

The sample chiller failed to keep lab water temperatures within 2 degrees Fahrenheit of the river water temperature throughout the week. The chiller problems could not be resolved and a replacement has been ordered. Sample water temperature will be monitored and operations adjusted as needed.

The thermometer in the B side sample tank failed this week. The new thermometer in the sample recovery raceway was moved to the B sample tank on April 12. A new raceway thermometer was ordered.

The new ice block freezer failed on April 8 and was repaired on April 12. The smolt monitoring program personnel allowed the Corps to use their freezer during the outage. The ice blocks are used to check the bypass line for debris blockages.

Structural painting and lighting improvements continued. On the night of April 10, there was no lighting at the count tanks and along a section of the walkway due to a clearance being in place. The technicians on duty used flashlights.

The new air conditioning unit for the wet lab was put into service this week.

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
396.0	369.4	272.1	250.5	46.5	45.5	3.1	2.5

Comments: Spill in excess of powerhouse capacity occurred all week. Routine spring spill in support of fish passage began on April 10 at 0001 hours. Target spill in the spring passage season is 40%. Since April 10, the spill percentages have ranged from 67% to 69%.

On April 7, spillbays 21 and 22 were closed from 1317 to 1330 hours to facilitate passage of debris over the TSWs.

Fish Passage Plan (FPP) page MCN-34 Table 7 footnote d states, "Maximum spill with TSWs installed is approximately 259 kcfs (assuming all turbine units and spillbays are in service). For higher spill volumes, close both TSWs and refer to Table MCN-9 for spill patterns with no TSWs." This week, spill volume over 259 kcfs occurred. The TSWs were closed on April 11 from 0700 to 1648 hours and from April 12 at 0624 hours to April 13 at 1346 hours. When the TSWs were closed, the control room used FPP Table MCN-9.

During the Fish Passage Operations & Maintenance Coordination Team (FPOM) meeting held at McNary on April 13, team members observed the spillway with TSWs closed and open. The consensus was the TSWs should remain open. At 1710 hours, the McNary control room received confirmation of this decision and footnote d was removed from the Fish Passage Plan (FPP).

Other

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

Invasive Species: Mussel stations will be examined in late April.

Avian Activity: Avian counts resumed on April 1. In the spillway zone, the highest number of gulls observed was 12. One pelican was occasionally observed. At the juvenile bypass outfall zone, occasionally a small number of gulls and one pelican were observed. No birds were observed in the powerhouse zone. In the forebay zone, the highest number of cormorants noted was three. An occasional osprey and loon were also observed.

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 will begin bird hazing on April 16 with one day shift crew member hazing seven days a week.

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

Research

Item: No onsite research is occurring at this time. Pacific Northwest National Laboratory personnel may begin to collect juvenile lamprey at McNary for a tagging study if their primary site trap effort does not produce study target numbers.

Gas bubble trauma (GBT) monitoring began on April 10. The monitoring will occur twice a week during the spill season.

Project: Ice Harbor
Biologist: Ken Fone
Dates: April 7 – April 13, 2017

Turbine Operation

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

Comments: Unit 2 was taken out of service on April 25, 2016, at 0606 hours for the runner replacement. Unit 4 was removed from service at 1218 hours on March 6, when it tripped a breaker 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 routinely operated a little above the 1% peak operating efficiency range during the reporting period, due to the Generic Data Acquisition Control System (GDACS) program needing updating 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 April 10, 11, and 12.

Fish Ladders:

Yes	No	Location, Criteria and Measurements
☒	☐	North Fish Ladder Exit Differential (Criteria – Head ≤ 0.5’)
☒	☐	North Fish Ladder Picketed Lead Differential (Criteria – Head ≤ 0.3’)
☒	☐	North Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0’ to 1.3’)
☒	☐	South Fish Ladder Exit Differential (Criteria – Head ≤ 0.5’)
☒	☐	South Fish Ladder Picketed Lead Differential (Criteria – Head ≤ 0.3’)
☒	☐	South Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0’ to 1.3’)

Comments: 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 11, with a reading of 1.4 fps. This reading 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: South shore pump 4 was out of service from April 5 to April 13 to fix a lubrication system problem.

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 30%,
☐	☒	Any oil seen in gatewells?

Comments: None.

STSs/VBSs:

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

Comments: Unit 2 STSs are not installed since the unit will not be returned to service this year. STSs have been in continuous run mode since April 4 due to the presence of subyearling Chinook and\or sockeye with average fork lengths of less than 120 mm in the Lower Monumental and/or Ice Harbor juvenile fish samples. STSs will be inspected during the week of April 17.

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. The unclipped sockeye mortality observed on April 13 had arrived in the separator already dead, with no injuries seen on the fish.

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 10:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	37	2	0	3
UC-CH	49	0	0	1
C-CH-O	0	---	---	---
UC-CH-O	0	---	---	---
C-SH	31	1	0	0
UC-SH	2	0	0	0
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
C-COHO	0	---	---	---
UC-COHO	1	0	0	0
TOTAL	120	3	0	4

April 13:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	50	0	0	2
UC-CH	40	0	0	0
C-CH-O	0	---	---	---
UC-CH-O	0	---	---	---
C-SH	24	0	0	1
UC-SH	4	0	0	0
C-SOCK	0	---	---	---
UC-SOCK	1	---	1	---
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
TOTAL	119	0	1	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* (^{o}F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
155.0	129.1	100.9	81.4	48	48	2.1	1.4

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine unit cooling water strainer inspections occurred on March 16. A total of 1 Chinook salmon fry mortality, 80 juvenile lamprey mortality, and 4 live juvenile lamprey (released to the river) were found. The next inspections are scheduled for the week of April 17.

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

Avian Activity: There were moderate numbers of piscivorous birds seen around the project (Table 3 below). Contracted land-based hazing of piscivorous birds began on April 1 for 8 hours per day, and increased to 16 hours per day starting on April 9. Boat-based hazing for 8 hours per day, three days per week, began on April 9. Hazing was generally effective at keeping birds out of the zones immediately adjacent to the dam. Hazing was repeatedly necessary to keep a small group of cormorants out of the forebay area adjacent to the south fish ladder exit.

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

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
April 7	4	11	0	0	12
April 8	10	6	0	0	21
April 9	14	10	0	0	6
April 10	28	14	0	0	0
April 11	23	25	0	0	16
April 12	4	28	0	0	4
April 13	38	11	0	0	0

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

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: April 7 - 13, 2017

Turbine Operation

Yes	No	Turbine Unit Status
☐	☒	All 6 turbine units available for service throughout the week (see comments below for outage details).
☒	☐	Available turbine units operated within 1% peak efficiency constraint. Constraint in effect: ☒ Hard ☐Soft. Hard constraint began at 0000 hour on April 1.

Comments: Unit 1 was removed from service on December 10, 2014 for unit rehabilitation with an estimated return to service date of 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. Units 2, 3, 4 and 6 were rotated out of service for STS inspection on April 11 and 12. Unit 3 was removed from service at 1545 on April 11 due to damaged STSs and returned to service at 1415 on April 13.

Adult Fish Passage Facility

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

Fish Ladders:

Yes	No	Location, Criteria and Measurements
☒	☐	North Fish Ladder Exit Differential (Criteria – Head ≤ 0.5’)
☒	☐	North Fish Ladder Picketed Lead Differential (Criteria – Head ≤ 0.4’)
☒	☐	North Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0’ to 1.3’)
☒	☐	South Fish Ladder Exit Differential (Criteria – Head ≤ 0.5’)
☒	☐	South Fish Ladder Picketed Lead Differential (Criteria – Head ≤ 0.3’)
☒	☐	South Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0’ to 1.3’)

Comments: None

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location, Criteria and Measurements
☐	☒	☐	North Shore Entrance (NSE-1) Weir Depth (Criteria: ≥ 8.0’ or on sill)
☒	☐	☐	North Shore Entrance (NSE-2) Weir Depth (Criteria: ≥ 8.0’ or on sill)
☒	☐		North Shore Channel/Tailwater Differential (Criteria: 1.0’ – 2.0’)
☐	☒	☐	South Powerhouse Entrance (SPE-1) Weir Depth (Criteria: ≥ 8.0’ or on sill)
☐	☒	☐	South Powerhouse Entrance (SPE-2) Weir Depth (Criteria: ≥ 8.0’ or on sill)
☒	☐		South Powerhouse Entrance Channel/Tailwater Differential (Criteria: 1.0’ – 2.0’)
☐	☒	☐	South Shore Entrance (SSE-1) Weir Depth (Criteria: ≥ 8.0’ or on sill)
☒	☐	☐	South Shore Entrance (SSE-2) Weir Depth (Criteria: ≥ 6.0’ or on sill)
☒	☐		South Shore Channel/Tailwater Differential (Criteria: 1.0’ – 2.0’)

Comments:
The North Shore Entrance (NSE-1) was out of criteria on the April 8 and 9 inspections with readings of 7.9 feet on both days. The digital weir elevation readings for both NSE-1 and 2 do not match the elevation readings at the entrances and likely need calibration.
The South powerhouse entrance weirs (SPE-1 & SPE-2) were out of criteria on the April 7 inspection. The weir controls had been set in manual mode. The powerhouse operator placed the system into automatic mode and the

weirs moved back into criteria. While out of criteria, the SPE-1 reading was 6.7 feet and the SPE-2 reading was 6.4 feet. The South Shore Entrance (SSE-1) was out of criteria on the April 7 inspection with a reading of 7.8 feet. The weir controls had been set in manual mode. The powerhouse operator placed the system into automatic mode and the weir moved back into criteria.

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 323 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? Oil sheen was seen in gatewell 3C during the April 12 inspection.

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)? STSs 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: STSs were inspected on April 11 and 12 due to high debris over the last month. STSs in gatewells 3B and 3C were observed with missing mesh clips on April 11. Re-inspection of the STS in gatewell 3A on April 13 also led to observation of missing mesh clips. Unit 3 STSs mesh clips were repaired and returned to service April 13.

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: None

Collection Facility: Sampling for condition took place over 24 hour periods starting at 0700 hours on April 9 and 12.

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
150.6	125.0	92.1	61.2	48.2	47.9	2.5	2.1

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on April 10. Live fish recoveries included 1 juvenile lamprey and 1 juvenile steelhead. Mortality recovered included 10 juvenile lamprey, 4 juvenile salmon, 6 juvenile steelhead and 8 unidentified fish.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on April 2.

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
4/7/2017	1230	4	0	0	0	0
4/8/2017	1235	27	0	0	0	0
4/9/2017	1100	22	0	0	0	0
4/10/2017	1245	8	0	0	0	0
4/11/2017	1100	19	1	0	0	0
4/12/2017	1115	10	0	0	0	0
4/13/2017	1145	20	2	0	0	0

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

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

Turbine Operation

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

Comments: All turbine units were available for service throughout this report period. The hard constraint of 1% peak efficiency criteria took effect on April 1.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists and Anchor QEA staff on April 9, 12 and 14.

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: No comments.

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: No comments.

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 28,000 square feet of floating woody debris currently in the forebay. Trash rack raking was last completed on February 13 and is scheduled again for May 1.

Spillway Weir: The spillway weir was opened in the low crest configuration 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 3 and 4 in units 3 and 4, respectively. All VBSs were in video inspected and in satisfactory condition. Next inspection is scheduled for May 1.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comment: No comments.

Collection Facility: The Juvenile Fish Facility (JFF) is currently operating. Collection began on April 01 and sampling is taking place every other day. During non-sample 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* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
145.0	133.6	50.1	37.0	48.4	48.2	2.1	2.3

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on March 30. Strainer mortalities included 99 juvenile lamprey and one salmonid.

Invasive Species: No invasive species have been observed at 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
04-07	1215	7	23	0	0
04-08	1230	78	16	0	0
04-09	1330	104	33	0	0
04-10	0830	57	28	0	0
04-11	1200	88	9	0	0
04-12	1350	120	10	0	0
04-13	1330	116	10	0	0

Gas Bubble Trauma: GBT sampling was conducted on April 07 and 09. There were 100 fish examined for GBT on both days. Five fish had signs of GBT on April 07, which comprised 1 Chinook and 4 Steelhead. No signs of GBT were seen during the April 09 sample.

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

Project: Lower Granite
Biologists: Elizabeth Holdren and Suzette Frazier
Dates: April 7- April 13, 2017

Turbine Operation

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

Comments: Unit 1 remains out of service for blade/runner repair with an expected return to service date of July 14. The unit 1 return to service date is delayed due to time needed to procure studs for replacement in the Kaplan. Unit 2 was returned to service at 1455 hours on April 13.

Adult Fish Passage Facility

General comments: Adult fish facilities were inspected by Corps or Anchor QEA biologists April 8, 9, 11, and 12.

Fish Ladder:

Yes	No	Location, Criteria, and Measurements
☒	☐	Fish Ladder Exit Differential (Criteria – Head ≤ 0.5')
☒	☐	Fish Ladder Picketed Lead Differential (Criteria – Head ≤ 0.3')
☒	☐	Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0' to 1.3')
☐	☒	Emergency Ladder Exit Cooling Water Pumps in Service
☐	☒	Emergency 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. North powerhouse and south shore channel tailwater/differentials were out of criteria April 11 with readings of 0.9' and 0.8 feet respectively. This is likely due to control system delayed response to tailrace conditions as the differentials were within criteria a few minutes later.

Collection Channel Velocity: The channel velocity was within 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 143.8 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 plugging orifices. Orifices are being checked 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 condition sampling occurring daily.

Transport Summary: A barge departed Lower Granite on April 13 with 17,606 smolts transported as part of NMFS In-River Survival 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
153.2	134.1	82.1	60.5	47.0	45.0	2.7	2.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A

Invasive Species: Comments. 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 7	0700	4	0	0	0
April 8	1230	1	0	0	0
April 9	0655	0	0	0	0
April 10	0655	0	0	0	0
April 11	0655	11	0	0	0
April 12	0655	0	0	0	0
April 13	1400	2	0	0	0

GBT: Gas Bubble Trauma (GBT) sampling occurred April 13 with 100 fish being sampled from the juvenile separator. No symptoms of GBT were reported.

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. 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 the Dworshak 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 is PIT-tagging Chinook and steelhead smolts for their in-river survival study from April through early June. Smolts are collected, PIT-tagged, and 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.