U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#25-2016

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: August 12 - 18, 2016

Turbine Operation

McNary had available 11 to 13 units (out of 14 total units) for power generation. Turbine unit outages are recorded in Table 1 below. The hard 1 percent peak efficiency constraint criteria and the saw tooth unit priority for warm water temperature abatement continued.

Table 1. Unit Outages at McNary Project.

Units	Outage Dates	Outage Length	Reason
1	Jul 25 – Sep 23	About 2 months.	Nine year over haul.
5	Aug 15 – 18	3.4 days	Annual Maintenance.
13	Aug 16 – 17	35.5 hours.	Preparations to test environmental compliant oil.
2 thru 4 & 12	Aug 16	1.5 hours.	Extended-length submersible bar screen (ESBS) camera inspections.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on August 12, 14 and 17. Fisheries technicians monitored the ladders as shifts allowed. Adult salmonid fish counts, adult lamprey video monitoring and ladder water temperature monitoring continued.

Fish Ladder Exits: The head over weir criteria at both exits are to be within 1.0 to 1.3 feet. The differential criteria at the count stations are to be within 0.0 to 0.5 feet. The picketed leads were cleaned as required, including weekends.

At the Washington exit, debris loads were light. The count station differential measured 0.6 feet on August 17. The picketed leads were immediately cleaned. The regulating weir tripped two alarms and was reset on August 14. The tilting weirs set point was adjusted August 17.

At the Oregon exit, debris loads ranged from light to moderate. Debris loads along the shoreline were light to heavy. The count station differential measured 0.6 feet on August 14. The picketed leads were immediately cleaned. The tilting weirs set point was adjusted on August 17. The mechanics performed scheduled maintenance on the exit weirs on August 15. The biologist

cleaned the north and south exit traveling screens debris troughs on August 12 and 17, respectively.

Fishway Entrances and Collection Channel: Criteria for all entrances are pool differentials measuring between 1.0 and 2.0 feet, and weir depths measuring 8.0 feet or deeper.

At the Washington ladder, all inspection points were in criteria.

At the Oregon ladder, north powerhouse entrances, NFEW2 and NFEW3 measured 7.2 to 7.6 feet in depth all week. The mechanics performed scheduled maintenance on the north entrance weirs on August 15. South powerhouse entrances, SFEW1 and SFEW2 measured 7.7 to 7.8 feet in depth on August 17. A possible explanation is low tailwater elevation. The pool differentials remained in criteria.

The Oregon ladder collection channel surface velocities averaged 1.6 feet per second.

Auxiliary Water Supply System: The Wasco County Public Utility District (PUD) turbine unit in the Washington ladder remains out of service for runner replacement, which is scheduled for completion in October. The bypass continues to function satisfactorily.

Two of the three Oregon ladder fish pumps operated satisfactorily with no interruptions in service this week. Both pumps operated with blade angles of 24 degrees. Fish pump 2 is currently under contract for major overhaul with completion scheduled for mid-November.

The juvenile facility continued to supply 450 cubic feet per second (cfs) to the north powerhouse pool.

Juvenile Fish Passage Facility

The fish passage season consists of alternating days of primary and secondary bypass modes. The switch occurs every morning at 0700 hours. There were no deviations from this schedule. Secondary bypass occurred on August 12, 14, 16 and 18. This week, 12 juvenile lamprey and 96 smolts were bypassed. The juvenile shad out migration continues.

Forebay Debris/Gatewell Debris/Oil: Forebay debris loads ranged from minimal to moderate at the powerhouse and were minimal at the spillway. The debris predominately consisted of aquatic vegetation, which was driven to the Oregon shore by northeast winds.

No high trash rack differential measurements were recorded and no trash racks were cleaned.

No problems were observed in the gatewell slots.

ESBSs/Vertical barrier screen (VBSs): ESBSs are deployed in all units. ESBS camera inspections occurred in units 2 through 4 and in slot 12C. No problems were found. The ESBSs in slots 6B, 6C and 12C remained in timer mode.

VBS differential monitoring revealed no screens out of criteria. The VBSs in slots 2A, 2B and 2C were cleaned on August 18.

VBS rehabilitations continued with new mesh being installed on torn VBS sections.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: Forty-two orifices were in use. During VBS cleaning, orifices in the affected slots were closed, with makeup water coming from orifices in adjacent slots.

All dewatering and cleaning systems operated satisfactory when in automatic mode.

Bypass Facility: During the bypass season, primary and secondary bypass modes return all fish to the river. Passive integrated transponder (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.

All systems functioned well. The sample gates are turned on and off every other day so that they are in service only during secondary bypass. The PIT tag sample gates remained turned off. 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.

Algae removal and cleaning throughout the facility continued.

River Conditions

River condition data during the week was provided by the smolt monitoring staff and is outlined in Table 2 below. Water clarity was provided by the control room. The data period runs from 0700 to 0700 hours each day. Flows and spill are recorded in one-thousand cubic feet per second. Temperatures are recorded in degrees Fahrenheit (F).

Table 2. River Conditions at McNary Dam.

Daily Average River Flow		Daily Average Spill		Water Temperature		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
156.4	122.2	78.4	61.2	71.7	69.4	6.0	5.5

Routine spill in support of fish passage continued. During the summer spill season, fifty percent of river flow is slated for spill. The spill pattern was altered for navigation as required.

Temperature monitoring continued. The contractor, Anchor QEA, continues to document temperature data in a separate report. The temperature probe in slot 8B failed and replaced with the probe from slot 1B on August 15.

Other

Inline Cooling Water Strainers: Cooling water strainer examinations are slated to occur on September 6.

Invasive Species: The next mussel station examination will occur in late August.

Avian Activity: Avian counts are recorded in Table 3 below.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
Aug 12	Forebay	1	0	0	0	0
	Spill	17	0	0	5	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	4	0
Aug 13	Forebay	2	0	0	0	0
	Spill	22	0	0	9	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	3	0
Aug 14	Forebay	3	0	1	0	0
	Spill	36	6	1	4	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	1	0
Aug 15	Forebay	0	0	0	0	0
	Spill	71	9	3	5	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Aug 16	Forebay	3	0	0	0	0
	Spill	33	2	0	9	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Aug 17	Forebay	2	0	0	0	0
	Spill	50	2	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Aug 18	Forebay	0	0	0	0	0
	Spill	17	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0

Gull numbers fluctuated with most gulls roosting around the spill zone. Cormorant numbers decreased as they continued to feed in the spill zone. Both species appear to be feeding on juvenile shad. Caspian tern numbers remained low as they continued to feed in the forebay and spill zones. Pelican numbers remained fairly low as they were observed in the spill and outfall zones. Ospreys and great blue herons were noted at times. Pelicans, gulls and cormorants continued to roost on the rocks by the Washington shore boat dock, which is outside the forebay zone.

No grebes were observed on project.

The bypass outfall sprinklers have been functioning satisfactory. The sprinklers' supply pump intake is being cleaned twice a week.

Fish Salvage/Rescue**:** One juvenile sturgeon mortality was observed in the unit 1 north tailwater bulkhead slot this week. The unit's two bulkhead slots are being examined daily.

Research

GBT: Gas bubble trauma (GBT) monitoring did not occur this week due to low smolt numbers.

Project: Ice Harbor
Biologist: Ken Fone
Dates: August 12 - 18, 2016

Turbine Operation

Unit 5 was taken out of service on March 14 at 1117 hours, due to an oil leak from the blade packing. The packing is being replaced to fix the leak. Unit 2 was taken out of service on April 25 at 0606 hours for runner replacement. Unit 1 was removed from service on June 14 at 1211 hours when a protective relay tripped at the generator bus ground. The stator is being repaired to fix the problem. Annual maintenance of unit 1 is also in progress. Units 3, 4, and 6 were taken out of service one at a time for STS inspections on August 16 and 18. Unit 4 was forced out of service on August 18 at 1150 hours due to gas leaking from the output breaker.

Unit 6 was solely operated almost all week, and it was operated within the 1% peak efficiency range (hard constraint).

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on August 15, 17, and 18.

Fish Ladders: The north fish ladder inspection areas (head differentials at fishway exit and picketed leads, and depth over weirs) were in criteria on all inspections. The south fish ladder inspection areas (head differentials at fishway exit and picketed leads, and depth over weirs) were in criteria on all inspections. Criteria for head differentials at ladder exits and picketed leads, and depth over the weirs are 0.5 feet or less, 0.3 feet or less, and 1.0-1.3 feet, respectively. The water surface above the fish ladder exits were clear of debris and the bubblers were operating satisfactorily.

Fishway Entrances and Collection Channel: The south shore entrance (SFE-1) depth and channel/tailwater head differential were in criteria on all inspections. The north powerhouse entrance (NFE-2) depth and channel/tailwater head differential were in criteria on all inspections. The north shore entrance (NSE-1) depth and channel/tailwater head differential were in criteria on all inspections. Fishway entrance criteria are 8 feet depth or greater, or on sill. Channel/tailwater differential criteria are 1 – 2 feet.

The south shore channel velocity was in criteria. The channel velocity criterion is 1.5-4.0 feet per second.

Auxiliary Water Supply (AWS) System: Two of the three north shore AWS pumps were in operation during the week. Five of the eight south shore AWS pumps were in operation.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was no debris observed in the forebay. The surface debris coverage in each gatewell slot ranged from 0% to 10%. Slot 2C was un-watered on July 6 to facilitate the unit 2 head gate sill plate repair.

STSs/VBSs: The STSs are in cycle-run mode, as the average fork length of subyearling Chinook is over 120 mm at Lower Monumental Juvenile Fish Facility. The STS for slot 5B has not yet been installed to facilitate the work on unit 5. Unit 2 STSs are raised and stored in their gatewell slots, since unit 2 will not be operated for the rest of the year. Units 3, 4, and 6 STSs were inspected on August 16 and 18, with no problems found.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass operated with 19 to 23 opened orifices. Orifices were routinely cycled and back-flushed once per day.

Juvenile Fish Facility: The juvenile fish facility is operating in bypass mode.

Fish Sampling: Sampling is done for the season.

Removable Spillway Weir (RSW): Spill for fish passage began on April 3 at midnight. On July 29 at 0845 hours, the RSW was closed per the 2016 Fish Passage Plan, Chapter 6, subsection 2.3.3.7.v. The RSW remains closed and spill is being distributed in accordance with the spill patterns in Table IHR-9.

River Conditions

River conditions during the week are outlined in Table 1 below.

Table 1. River conditions at Ice Harbor Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
28.9	21.3	18.1	10.0	71.0	71.0	9.2	9.1

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine cooling water strainer inspections occurred on August 16 and 18. A total of 23 juvenile shad and 1 Siberian prawn (all mortalities) were found.

Invasive Species: No new exotic species have been found.

Avian Activity: There were a moderate number of piscivorous birds observed around the project. Many of the birds were roosting on Eagle Island and on the BRZ (Boating Restriction

Zone) buoys in the forebay. Pelicans were observed foraging downstream of the spillway, across from the coffer cells.

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

Project: Lower Monumental
Biologists: Bill Spurgeon and Raymond Addis
Dates: August 12 - 18, 2016

Turbine Operation

The units are being operated within the hard constraint 1% peak efficiency criteria. Unit 1 was removed from service on December 10, 2014 for unit rehabilitation with an estimated return to service date of January 12, 2017. Unit 4 was taken out of service at 0730 hours on August 8 for annual maintenance with an estimated return to service of September 6.

Adult Fish Passage Facility

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

Fish Ladders: Fishway exit head differentials and depths over the weirs were within criteria (≤ 0.5' and 1.0'-1.3', respectively) on all inspections. Picketed lead head differentials were in criteria (≤ 0.4' and ≤ 0.3' for north and south shore fishways, respectively) on all inspections.

Fishway Entrances and Collection Channel: NSE1 and NSE2 weir gates met depth criteria (criteria: ≥ 8' or on sill) on all inspections. North shore channel/tailwater head met criteria (1'-2') on all inspections.

SPE1 and SPE2 weir gates were in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, readings were 5.7, 5.5, 6.0 and 5.1 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections.

SSE1 weir gate was in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, readings were 6.0, 6.1, 6.2 and 5.9 feet.

SSE2 met criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections.

Auxiliary Water Supply System: AWS pumps 2 and 3 were operated throughout this period. Pump 1 was out of service throughout this period due to a bushing problem. This pump will be replaced with the spare pump as time permits.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 0 square yard of forebay debris observed during this period. Gatewell debris ranged from 0 - 10% surface coverage. No oil problems were observed in the gatewells.

STSs/VBSs: STSs were operated in cycle mode throughout the period. STS inspections were conducted August 9 and 10 with all screens found in good operating condition.

Orifices, Collection Channel, Dewatering Structure, and Flume: The collection channel was operated with 19 opened orifices.

Collection Facility: No problems occurred this period.

Transport Summary: Fish transport by barge ended with the last barge departure on August 15. Alternate day trucking began on August 15 with the first truck departing on August 17. Trucking is scheduled to continue through 0700 hours on September 30.

River Conditions

Summer spill operations were initiated at 0001 hours on June 21. River conditions during the week are outlined in Table 1 below.

Table 1. River conditions at Lower Monumental 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
26.4	18.9	13.4	6.8	69.0	68.6	5.0	4.2

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on August 2. There were no live fish recovered. Mortalities included 4 Siberian prawns and 6 American shad.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on August 1.

Avian Activity: Daily tailrace counts of feeding piscivorous birds are summarized in Table 2 below. Gulls were the dominant species observed during inspections this week. Conditions met the standard from the avian action plan through this time period. Hazing ended on June 2.

Table 2. Tailrace counts of foraging piscivorous birds at Lower Monumental Dam.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
August 12	1115	16	0	0	0	0
August 13	1100	2	0	0	0	0
August 14	1100	8	1	0	0	0
August 15	1100	9	0	0	0	0
August 16	1100	11	0	0	0	0
August 17	1100	9	0	0	0	0
August 18	1100	6	0	0	0	0

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

Project: Little Goose
Biologists: Scott St. John and Richard Weis
Dates: August 12 - 18, 2016

Turbine Operation

All turbine units were available for service until August 15 at 0515 hours, when Doble testing was initiated. At this time all units were taken out of service except unit 5, which was used to provide station service. At 1300 hours, units 1-3 were restored. These units were operational until August 18 at 0515. At that point, units 1-3 were shut down and unit 5 was used for station service (i.e.: in speed-no load mode). All units were available for service at 1745 hours on August 18 except for unit 4. Unit 4 was placed out of service for 6-year overhaul on August 15. Available units operated in accordance to FPP priority order and within the 1% peak turbine efficiency range except during Doble tests.

Adult Fish Passage Facility

The Fishway control system software was updated by RJS construction and returned to automatic operation on August 9. All weirs were manually adjusted and returned to automatic mode to determine functionality of the new software. System is operating sufficiently, but future calibration and maintenance still need to be performed.

Adult fishway inspections were performed on August 14, August 16 and August 18.

Fish Ladder: The ladder exit head differentials and water depth over weirs met criteria ($\leq$ 0.5 ft. and 1.0-1.3 ft., respectively) and picketed lead differentials held steady at 0.0 feet (criteria $\leq$ 0.3 ft.) on all inspections. The air bubbler used to prevent debris from collecting near the ladder exit operated satisfactorily. Emergency cooling water pumps were running all week in the adult ladder exit.

Fishway Entrances and Collection Channel: Channel to tailwater head differentials met criteria (1.0 to 2.0 ft.), except on August 14 and August 18, when the FSC board at NPE read 2.1 and 2.3 feet respectively, and also on August 18 when the FSC board at NSE read 2.2. SSE weir depths stayed in criteria ($\geq$ 8.0 ft) on all inspections, ranging between 8.1 and 8.4 feet. NPE weir depths ranged between 4.3 and 5.5 feet (criteria $\geq$7.0 ft.) and were on sill. NSE weir depths ranged between 3.6 to 4.6 feet (criteria $\geq$ 6.0 ft.) and were on sill. Collection channel surface water velocity measured at the north powerhouse ranged between 1.6 and 2.3 fps (criteria 1.5 to 4.0 fps).

Auxiliary Water Supply System: Fish pump 1 was returned to service on August 02. The fish ladder is now operating on three pumps. Average water velocity (bottom, middle, top) of the adult channel at NPE average 2.3 fps on July 13.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: The trash/shear boom is currently still on shore. Efforts are underway to have it repaired. Woody debris in the immediate forebay was estimated at 0 square feet.

Spillway Weir: The TSW was removed on July 11.

ESBS/VBS: Electrical ESBS brush tests was performed on July 13. Drawdowns were performed on unit 1 on August 13. All met criteria. ESBS brush tests will continued during the next report period.

Orifices, Collection Channel, Dewatering Structure, and Flume: The primary dewatering structure is functioning properly. The juvenile bypass system is presently running with 21 open orifices. Orifices are cycled every 24 hours.

Collection Facility: Sampling and collection is occurring daily and the JFF (Juvenile Fish Facility) is transporting fish by truck every other day. Barge transport ended with the last barge departure on August 15.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 1,507 fish were collected. The descaling and mortality rates were 1.5% and 0.9% respectively. This weekly report period saw 5 adult lamprey removed from the raceways or sample and released one mile above the dam at Little Goose Landing.

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
27.6	19.5	13.5	7.2	67.1	65.5	6.0	4.7

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers on all units were last inspected on July 13. No fish were seen. Strainers are scheduled to be checked in the next report period.

Invasive Species: The zebra mussel substrate monitor was inspection on July 02. No mussels were seen.

Avian Activity: USDA Bird hazing ended on June 25. See Table 2 below for USACE counts.

Table 2. Daily Avian Counts at Little Goose Dam, August 12 - 18, 2016.

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
August 12	0730	18	1	0	2
August 13	0945	17	5	0	0
August 14	0800	28	2	0	1
August 15	1215	31	13	0	0
August 16	0920	10	0	0	0
August 17	1015	23	1	0	0
August 18	1030	36	7	0	2

*Bird counts are taken from a single observation, Forebay and Tailrace.

Siberian Prawn: Siberian prawns continue to be collected at the Juvenile Fish Facility. Prawns are humanely euthanized by Oregon Department of Fish and Wildlife and Anchor QEA, frozen and properly disposed of in a landfill. There were 4,606 prawns collected in the sample and euthanized during this report period. Prawn numbers are outlined in Table 3 below.

Table 3. Daily Siberian Prawn Counts at Little Goose Dam, August 12 - 18, 2016.

Date	Sample	Collection*
August 12	215	430
August 13	291	582
August 14	172	344
August 15	178	356
August 16	415	415
August 17	871	871
August 18	2,464	2,464
Totals	4,606	5,462

*Collection numbers are estimated from sample rates and counts.

Gas Bubble Trauma: GBT inspections ended for the season with the July 19 report. No signs of GBT were seen.

Research: Fish Guidance Efficiency (FGE) emergency gate closure study is being performed on units 2 and 3 for 2016.

Project: Lower Granite
Biologists: Elizabeth Holdren and Robert Horal
Dates: August 12 - 18, 2016

Turbine Operation

Units are being operated within the hard constraint 1% peak efficiency criteria. Unit 1 will remain out of service through February 2017 for Kaplan blade linkage repair. Unit 6 remained OOS (Out of Service) for Environmentally Acceptable Lubricants (EAL) testing with a return to service date of August 26. Units 5, and 2 were rotated out of service for ESBS\VBS inspection on August 14.

Adult Fish Passage Facility

Automatic control system adjustments to trouble shoot internal functioning errors in the software program are ongoing. Observations of the fish ladder indicate the installation of a new control program has improved system performance. The fish ladder control system remained in automatic mode during the week. As of July 28 prolonged RF (Radio Frequency) noise events have been interfering with PIT tag detection in the upper section of the fish ladder. PSMFC and Corps personnel continue to track down the source of the RF noise. Adult fish facilities were inspected by Corps or Anchor QEA biologists August 12, 13, 14, and 17.

Fish Ladder: Fish ladder exit head differential and depth over the weirs were in criteria (≤0.5' and 1.0-1.3', respectively) on all inspections. Picketed lead head differential was in criteria (≤ 0.3'). No debris was observed near the fish ladder exit.

Fish Ladder Entrances and Collection Channel: SSE1 and SSE2 weir gates were in depth criteria (criteria ≥8' or on sill) on all inspections. South shore channel/tailwater head differential was in criteria (criteria 1'-2') on all inspections.

NPE1 and NPE2 weir gates were in sill criteria (criteria ≥8' or on sill) on all inspections. While on sill, the gate depth readings were 5.4', 5.2', 5.2', and 5.3 feet. The control system reading for NPE elevations fluctuated between 628.0 and 628.1 while the gates are actually on sill due to vibration of the sensor in the gate channel. North powerhouse channel/tailwater head differential was in criteria (criteria 1'-2') on all inspections.

NSE1 was in criteria (criteria ≥7' or on sill) on all inspections. 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 differentials. The North shore channel/tailwater head differential was in criteria (criteria 1'-2') on all inspections.

Collection Channel Velocity: Average collection channel average velocities met criteria (criteria 1.5-4.0 fps) during all inspections.

Auxiliary Water Supply System: The fish ladder is in two pump operation with AWS pumps 1 and 3 in service. Pump 2 is in standby mode.

Fish Ladder Temperature Control System: Fish ladder temperature control pumps remain in operation. The cooling water pumps were turned off from 1200 hours to 1203 hours on August 15 to test for RF noise interference with PIT tag detection in the upper section of the fish ladder.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: No debris was observed in the forebay this week.

ESBSs/VBSs: ESBS/VBS inspections were conducted August 14 on unit 6, 5, and unit 2. No reportable issues were observed.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: The collection channel is operating with 18-20 opened orifices. Orifices are being cycled every three hours.

Collection Facility: The facility is in collection for transport mode. The sample is being worked every other day on transport days.

Transport Summary: Every other day barge transport ended with the last barge leaving Lower Granite on August 15. Every other day truck transport started August 17 with trucks leaving Lower Granite on odd numbered days in August.

River Conditions

Summer spill in support of fish passage began at 0005 hours on June 21. Due to increasing water temperatures, a flat spill pattern with no RSW (Table LWG-9, Fish Passage Plan) was implemented at 1401 hours on June 29.

River conditions during the week are outlined in Table 1 below.

Table 1: River conditions at Lower Granite Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (F^o)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
29.5	22.6	16.1	10.8	64.0	63.0	5.0+	5.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainers are scheduled to be inspected in late August.

Invasive Species: The zebra/quagga mussel substrate was inspected August 5. No zebra/quagga mussel were found. Smolt monitoring biologist euthanized 1294 Siberian prawns from the collection sample this week.

Avian Activity: Piscivorous bird counts began March 26 with observations being taken from the top of the navigation lock. Avian hazing started April 1 and concluded June 30. Daily piscivorous bird counts are summarized in Table 2 below.

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

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
August 12	1250	0	1	0	0
August 13	1130	0	0	0	0
August 14	0851	1	13	0	0
August 15	1353	0	1	0	0
August 16	1325	0	0	0	0
August 17	1315	1	5	0	0
August 18	1115	0	2	0	0

GBT: Gas bubble trauma sampling has concluded for the season.

Adult Fish Trap Operations: The trap operated Monday through Thursday with a sample rate of 27%. Starting August 18 the trap is being operated seven day a week with a sample rate of 19%. Fall Chinook are being collected for broodstock for Lyons Ferry Hatchery and the Nez Perce Tribe.

Fish Rescue Operation: No fish rescues occurred this week.

Research

Anchor QEA "Sound and Vibration Effects on Adult Fish Passage through the Lower Granite Ladder": The second year of monitoring for adult fish passage delay through the ladder in response to sound and vibration from JFF construction will continue 1 March through September 2016. Weekly PIT tag detections from the ladder exit tunnel and entrance weir 648 are correlated with sound signals from hydrophones and water particle movement signals from three triangulated accelerometers at the entrance weir, weir downstream of Diffuser 14, and exit pool. Passage histories from fish previously PIT-tagged for other evaluations are used. The turn pool swing gate used to divert fish into the adult trap is moved to the non-trapping ladder passage position at about 1400 hours Friday to about 1400 hours Sunday March 1 through August 17 to allow for unobstructed passage rate PIT tag detections. Weekly progress reports are available for in-season review.

Anchor QEA "Lower Granite Ladder Temperature Reduction Structures Post-construction Evaluation of Adult Sockeye and Chinook Salmon Ladder Exit Success and Behavior": A Sonar

camera was installed 20 June below the Lower Granite adult ladder exit to record sockeye and Chinook salmon ladder exit success and behavior in response to cooler water at the forebay exit and Diffuser 14 intake chimney. Passage time is recorded through the PIT tag arrays in the ladder exit tunnel. Passage time will be correlated with temperatures recorded through existing temperature probe stations and a temperature depth string at the outside edge of spray bar. Three optical cameras above the water surface at the ladder exit will record behavioral response of fish to the spray plume trajectories. Remote control boat transects of the spray affected forebay area will map velocity magnitudes and trajectories measured by ADCP (Acoustic Doppler Current Profiler) early July and mid-August. Weekly progress reports are available for in-season review.