U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#21-2015

Project: McNary
Biologist: Bobby Johnson
Dates: July 17 - 23, 2015

Turbine Operation

McNary had 12 to 13 of 14 units available for power generation. The hard 1 percent constraint and the saw tooth unit priority continued. No turbine units ran outside the constraint. Turbine unit outages are recorded in Table 1 below.

Table 1. Unit Outages at McNary Project.

Units	Outage Dates	Outage Length	Reason
12	Feb 8 – Aug 1	About 6 months.	Rewind contract.
11	Jul 13 – 17	About 4 days.	Doble testing and unit maintenance.
7, 8 & 9	Jul 21	1.1 hours total.	Extended-length submersible bar screen (ESBS) camera inspections.

Adult Fish Passage Facilities

The McNary fisheries biologist performed measured inspections of the adult fishways on July 17, 19 and 23. Visual adult fish counts, review of video tape for adult lamprey counts and exit temperature monitoring continued.

The adult fish mortality rate appears to have declined. Adult fish recoveries at the juvenile facility separator this week included one adult sockeye mortality. All systems continued to be monitored.

The Oregon ladder fish pumps and the Wasco County Public Utility District (PUD) turbine unit in Washington ladder remained on raw river water for cooling.

The potable water reservoir continued to be filled by a City of Umatilla fire hydrant as needed. The reservoir supplies only basic water needs. The well pump contractor removed and examined well pump 2 on July 17. A contract for repairs or replacement should be awarded soon.

Operation of both fish pumps on raw water and the use of potable water for cooling and raw water strainer cleaning will continue until well pump 2 returns to service. The fish pump strainer was checked several times and cleaned two to three times per day. The maintenance staff cleaned the power house and fish facility raw water strainer on July 21.

Fish Ladder Exits: Both ladder exits met all criteria except the Washington exit on July 17, when the head over weir measured 1.6 feet and the count station differential measured 0.6 feet.

At the Washington ladder exit, as mentioned last week, the fisheries technician on duty noted that the two active exit weirs were operating excessively. After repeated attempts to resolve the issue, the operator switched the exit to manual mode on July 17 at 0237 hours. After the fishway inspection mentioned above, the operators returned the exit to automatic mode. Weirs 336 and 337 continued to run excessively, switching every 20 seconds. The exit was returned to manual mode at 1832 hours. During manual operation, the roving operator adjusted the exit set points when the forebay elevation changed. Two adjustments were required and recorded on July 18. Multiple exit alarms occurred from July 17 to 19, with two set points adjustments recorded. The exit remained in manual mode until July 20 at 0811 hours, when the technical staff examined the program and resolved the issue. The set points were adjusted on July 23. Debris was minimal to very light.

At the Oregon ladder exit, weir 340 remains in bypass mode due to a failed encoder. Ladder operation will not be adversely affected. The Oregon ladder also had weirs operating excessively at times from July 17 to 20. Thirteen exit alarms occurred on July 18 with the exit being in manual mode briefly. The operators were able to maintain the exit in automatic mode until the programming was adjusted on July 20. The regulating weir set point was adjusted on July 17. The tilting weirs set point was adjusted on July 19. Later, the operators adjusted the regulating weir set point on July 23. The electrical staff performed scheduled maintenance on the traveling screens on July 20. Debris was very light to light with aquatic vegetation predominating.

Fishway Entrances and Collection Channel: At the Washington entrance, all entrance inspection points met criteria except on July 19. The inspection happened to occur as the PUD staff attempted to return the turbine unit to service and the bypass system was closing. The pool differential, entrance weirs W2 and W3 measured 0.4, 7.2, and 7.3 feet, respectively.

At the Oregon ladder, the pool differentials remained in criteria at 1.0 to 2.0 feet. The north powerhouse entrance weirs, NFEW2 and NFEW3, measured 7.8 to 7.9 feet on July 17 and 23. The south powerhouse entrance weir, SFEW1 measured 7.9 feet on July 17 and 23. SFEW2 measured 7.8 feet on July 23. Low tailwater and set point settings could account for these readings.

Collection channel surface velocities averaged 1.2 feet per second.

Auxiliary Water Supply System: The PUD turbine unit in the Washington ladder had two interruptions in service this week. On July 19, from 1054 to 1802 hours, the unit was out of service due to an obstructed raw cooling water strainer. From July 22 at 0655 hours to July 25 at 1223 hours, the unit was out of service for scheduled maintenance. The bypass system functioned properly during the outages.

Two of the three Oregon ladder fish pumps operated satisfactorily with blade angles of 30 degrees. One interruption in service occurred this week. Briefly, on the afternoon of July 21, both pumps were taken out of service for annual backflow testing. On July 21, one of the two sump pumps associated with the Fish Pump 3 top plate (or head cover) was repaired on July 21. Fish Pump 2 is currently under contract for major overhaul. The repairs should be completed by September, 2015.

The juvenile facility continued to supply 450 cubic feet per second 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 in the schedule. Secondary bypass occurred on July 17, 19, 21 and 23. This week, 120 juvenile lamprey and 7,940 smolts were bypassed. The sample included increasing numbers of juvenile shad.

The B side sample tank water temperature continued to be monitored; with the temperature over 70 degrees all week. The fisheries staff monitored fish in all areas for signs of heat stress. Only two subyearling Chinook smolt mortalities were recorded at the facility during this report period. Warm water temperatures continue to be a grave concern.

The juvenile facility continued to have a limited potable water supply.

Forebay Debris/Gatewell Debris/Oil: The forebay debris load was minimal to very light and scattered across the powerhouse face except when northeast winds would temporarily move accumulations toward the Oregon shore. New incoming debris was very light and consisted of woody material and aquatic vegetation. On July 17, the surplus log bronc was delivered.

No high trash rack differentials were recorded and no racks were cleaned.

No problems were observed in the gatewell slots. No smolt mortalities were observed on the upper edge of the vertical barrier screens (VBSs).

ESBSs/VBSs: All operational turbine units have ESBSs installed. Screens will be installed in unit 12 next week. Rehabilitation of the two spare ESBSs was completed. The screens in slots 1A, 3B and 11C remained in timer mode. Camera inspections in units 7, 8 and 9 reveal no problems on July 21.

No high VBS differentials were recorded. The screens in slots 1B, 14A and 14B were cleaned on July 18. Three subyearling Chinook mortalities were observed. VBS rehabilitations continued. The VBS in slot 12A was removed on July 23. Rehabilitated VBSs will be installed in slots 12A, 12C and 13A on July 24 and 25. Unit 12 will be used as a staging area for the exchange of worn VBSs for rehabilitated screens.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: Forty two orifices were in use. During VBS cleaning and removal for exchange, orifices in the affected slots were closed, with makeup water coming from orifices in adjacent slots. Orifice attraction lights were replaced as required.

All systems functioned satisfactorily in automatic mode.

Bypass Facility: During the bypass season, primary and secondary bypass modes return all fish are 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.

The sample gates are turned on and off every other day so that they are in service only during secondary bypass. The gates and all operational systems functioned well. 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. Pacific State Marine Fish Commission (PSMFC) maintenance staff continued their weekly checks of the PIT tag detection system. The A and B side flume bypass gates remain off and open for secondary bypass.

As smolt numbers decreased, the sample rate increased from 2.00 to 10.00 percent. Algae removal from the system continued on every primary bypass day.

At the request of PSMFC personnel, on July 22 at 1330 hours, the air conditioning (AC) unit in the facility PIT tag room behind the dry lab was removed from service and the water line supplying the AC unit was removed from the PIT tag room. The doors to the PIT room were left open with a fan in the door ways to move air.

River Conditions

River conditions during the week are outlined in Table 2 below as provided by the smolt monitoring staff. The data period runs from 0700 to 0700 hours each day. Flows and spill are recorded in one-thousand cubic feet per second. Temperature is recorded in degrees Fahrenheit. The routine the summer spill program in support of fish passage continued with 50 percent of river flow being spilled. The spill pattern was altered for navigation as required.

The smolt monitoring staff continued recording water temperature data. The results are published in a separate report.

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
152.1	124.1	76.2	62.1	71.8	70.6	6.0	6.0

*Control room data.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on August 4.

Invasive Species: The next zebra mussel station examinations will occur on July 25.

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

United States Department of Agriculture – Animal and Plant Health Inspection Service – Wildlife Services (USDA–APHIS–WS) personnel continued bird hazing at the project.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
July 17	Forebay	1	0	0	0	0
	Spill	0	0	8	39	0
	Powerhouse	0	0	11	13	0
	Outfall	0	0	0	4	0
July 18	Forebay	2	0	0	3	14
	Spill	4	0	7	28	0
	Powerhouse	0	0	7	13	0
	Outfall	0	3	0	4	0
July 19	Forebay	10	0	0	0	8
	Spill	0	0	5	21	0
	Powerhouse	0	0	5	10	0
	Outfall	0	2	0	6	0
July 20	Forebay	33	0	1	0	10
	Spill	6	0	5	39	0
	Powerhouse	0	0	3	10	0
	Outfall	0	2	0	7	0
July 21	Forebay	1	0	0	2	12
	Spill	0	0	0	30	0
	Powerhouse	0	0	3	8	0
	Outfall	0	0	2	4	0
July 22	Forebay	4	0	0	0	14
	Spill	0	2	12	17	0
	Powerhouse	0	0	2	9	0
	Outfall	0	0	0	0	0
Ju1y 23	Forebay	5	0	0	0	15
	Spill	0	0	45	23	0
	Powerhouse	0	0	5	4	0
	Outfall	0	0	2	3	0

Bird hazing distress calls remain deployed around the project and continued to function satisfactorily. The fisheries mechanic and the general maintenance staff continued to clean the

bird hazing water cannon pump intake as needed. The fisheries mechanic continued to install bird wire on the downstream navigation lock wing wall handrail.

Juvenile gulls and a small grebe group were observed in the forebay along with an occasional, pelican, blue heron, tern and osprey. Small numbers of gulls, pelicans and cormorants were roosting on the rocks by the Washington shore boat dock, which is outside the forebay zone.

Terns along with occasional gulls and cormorants were observed in the tailwater area feeding in the spillway flow along with pelicans along the shorelines. Terns continued to feed in the powerhouse flow. Overall bird numbers appear to have declined.

Terns, cormorants and pelicans were noted feeding at the juvenile bypass outfall. Pelicans were also observed roosting on the rocks downstream in the wildlife park.

Research: Gas bubble trauma (GBT) examinations have been terminated for the rest of the season. The adult lamprey passage study continued.

Project: Ice Harbor
Biologists: Ken Fone
Dates: July 17 - 23, 2015

Turbine Operation

Units 6 and 5 were taken out of service for annual maintenance at 0716 hours and 0717 hours, respectively, on July 6. Units 1 and 2 were out of service from 0739 hours to 1605 hours on July 20 to accommodate BPA work on the line 1 115 kV disconnect. Units 3 and 4 were taken out of service one at a time for STS inspections on July 22.

Units were operated within the 1% peak efficiency range (hard constraint).

Adult Fish Passage Facility

Fish facility personnel inspected the adult fishways on July 21, 22, and 23.

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 surfaces 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) depth and channel/tailwater differential were in criteria on all inspections. The north powerhouse entrance (NFE) depth and channel/tailwater differential were in criteria on all inspections. The north shore entrance (NSE) depth and channel/tailwater differential were in criteria, except for differentials of 2.3 feet and 0.8 feet on July 22 and 23, respectively. These out of criteria differentials can most likely be attributed to the turbulent tailwater from spill making it difficult to get an accurate north shore tailwater level reading. 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 on all inspections. The channel velocity criterion is 1.5-4.0 feet/second.

Auxiliary Water Supply (AWS) System: Two of the three north shore AWS pumps were operated throughout the week. North shore pump 3 was taken out of service at 0846 hours on April 22 to replace the pre-lubrication pump. Six of the eight south shore AWS pumps were operated.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was no surface debris observed in the forebay. There was little to no surface debris coverage in the gatewells.

STSs/VBSs: The STSs are being operated in cycling mode. Inspection of each unit's STSs and unit 6 VBSs occurred on July 20 and 22. There were no screen problems observed.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The bypass is operating with 20 orifices open. Orifices were routinely cycled and back-flushed three times per day. Orifice light 6BS was found to be not working on July 10 due to a bad fixture. Orifice 6AS was opened and 6BS closed (with 6BN open) until the fixture can be replaced.

Juvenile Fish Facility: Fish are being routed through the bypass.

Fish Sampling: Fish sampling is done for the season.

Removable Spillway Weir (RSW): The RSW is in operation.

River Conditions

Routine spill in support of fish passage began on April 3. 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* (^{o}F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
35.4	27.4	25.3	17.4	70	70	8.3	7.0

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: The turbine cooling water strainers for units 5 and 6, units 1 and 2, and units 3 and 4 were inspected on July 6, 20, and 22, respectively. There were 11 Siberian prawns found (all mortalities).

Invasive Species: No new exotic species have been found.

Avian Activity: Daily bird numbers observed are shown in Table 2 below. Total bird numbers fluctuated up and down during the week. The majority of these birds were roosting on Eagle Island. Contracted hazing of piscivorous birds ended on June 30.

Table 2. Daily maximum piscivorous bird counts at Ice Harbor Dam

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
July 17	0	0	0	0	0
July 18	0	0	0	0	0
July 19	0	0	0	0	0
July 20	45	39	5	0	44
July 21	69	12	40	0	30
July 22	59	13	0	0	33
July 23	31	10	4	0	26

Research: Hydroaccoustic transducers mounted on the STS frame in gatewell slot 1B, and on 1B trash rack, are collecting data for the turbine intake fish distribution study.

Project: Lower Monumental
Biologists: Bill Spurgeon and Raymond Addis
Dates: July 17 - 23, 2015

Turbine Operation

The units are being operated within the hard constraint 1% operational 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 3 was out of service from 0720 to 1220 hours on July 20 for headgate cylinder removal. Unit 5 was out of service from 0810 to 1500 hours on July 23 for preventive maintenance.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and Blue Leaf Environmental biologists on July 17, 18, 19 and 22.

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 were in depth criteria (criteria: ≥ 8' or on sill) on all inspections. North shore channel/tailwater head was in 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, both gate depth readings ranged from 5.8 to 6.0 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, gate depth readings ranged from 6.1 to 6.2 feet. SSE2 was in 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 1, 2, and 3 were operated throughout this period.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 16 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-10% surface coverage. No problems were observed in the gatewells.

STSs/VBSs: STSs were operating in cycle mode until 0900 hours on July 21, at which time they were changed to continuous-run mode due to average sub-yearling Chinook length being less than 120 mm. STS inspections were conducted July 7 and 8 with all screens found in good operating condition.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel was operated with 18 orifices open.

Collection Facility: Operated in collection for transport mode. No facility problems were observed this report period.

Transport Summary: Alternate day barging began on May 22 and continued through this period.

River Conditions

Routine spill support of fish passage was initiated at 0001 hours on April 3. Spill was either halted or limited during barge docking and loading operations. 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
32.8	25.2	17.0	12.9	72	71	5.0	4.2

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on July 6. There were no live fish recovered. Mortalities included 3 juvenile lamprey, 1 salmon smolt, and 11 Siberian prawns.

Invasive Species: No zebra mussels were observed at the monitoring stations on July 3.

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. Hazing ended on June 2.

Table 2. Lower Monumental Tailrace Counts of Foraging Piscivorous Birds.

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
July 17	1100	39	0	0	**0**
July 18	1100	12	0	0	**0**
July 19	1125	3	0	0	**0**
July 20	1100	20	0	0	**0**
July 21	1100	4	0	0	**0**
July 22	1100	5	0	0	**0**
July 23	1100	3	0	0	**0**

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

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

Project: Little Goose
Biologist: Richard Weis
Dates: July 17 - 23, 2015

Turbine Operation

Most turbine units were available for service throughout this report period. Unit 2 has been out of service for Digital governor install since July 14. Unit 1 was forced out of service on July 22 and returned to service on July 23 at 1650 hours, as the governor oil accumulator relief valve had failed. Hard 1% peak efficiency constraint criteria are in effect. No violations were seen.

Adult Fish Passage Facility

Adult fishway inspections were performed on July 19 and 23.

Fish Ladder: The ladder exit head differentials ranged between 0.0 and 0.1 feet (criteria $\leq$ 0.5 ft.). Water depths over the ladder weirs ranged between 1.2 and 1.3 feet (criteria 1.0-1.3 ft.) and picketed lead head differentials held steady at 0.1 feet (criteria $\leq$ 0.3 ft.). The air bubbler used to prevent debris from collecting near the ladder exit operated satisfactorily.

Fishway Entrances and Collection Channel: The Adult Fishway system is in Automatic mode. We are still getting incorrect gate elevation readings when the gate is in the lower quarter of the fish channel at NSE. NSE 1 and 2 are in manual mode. Channel to tailwater head differentials ranged between 0.9 and 1.9 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 7.9 and 8.7 feet (criteria $\geq$ 8.0 ft). NPE weir depths ranged between 4.2 and 4.7 feet and were on sill (criteria $\geq$7.0 ft. or on sill). NSE weir depths ranged between 6.3 and 7.0 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured at the North powerhouse held steady at 2.0 fps (criteria 1.5 to 4.0 fps). The monthly water velocity measured at the north powerhouse using the Rickly velocity equipment measured 1 foot from bottom, mid depth and surface averaged 3.8 fps.

Auxiliary Water Supply System: Fish pumps 2 and 3 operated as designed. The fish pump 1 gear box has been rebuilt and is now waiting on parts that will allow placement of the gear box into position.

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 0 square feet for the week.

Spillway Weir: Spillway weir was removed for the season on June 18.

ESBS/VBS: ESBS screens are all deployed and gatewells are cleaned except gatewell 5A which has oil absorbent pads deployed and slight sheen of oil has been seen. All criteria were met. Drawdowns were done on units 3 and 4 on July 22. All was in criteria.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile bypass system is running with 21 open orifices.

Transportation Facility: The JFF continued transporting fish every other day. GBT (Gas Bubble Trauma) sampling was performed on July 20. No signs of GBT were seen.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 7,853 fish were collected for transport. The descaling and mortality rates were 0.7% and 2.9% respectively. This weekly report period saw 10 adult lamprey removed from the sample and released upstream at Little Goose Landing.

River Conditions

River conditions during the week are outlined in Table 1.

Table 1. River conditions at Little Goose 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
31.5	28.3	11.0	3.8	73.3	70.9	5.1	4.8

*Ladder temperature.

Other

Inline Cooling Water Strainers: All cooling water strainers were checked on July 15. No fish or invertebrates were seen.

Invasive Species: The zebra mussel substrate monitor was inspected on July 17. No zebra mussels were detected.

Avian Activity: Bird hazing ended on June 16. See below Table 2 below for daily counts.

Table 2. Daily maximum tailrace piscivorous bird counts at Little Goose Dam*.

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
July 17	1100	76	13	0	1
July 18	0930	32	7	0	0
July 19	0830	30	4	0	0
July 20	1020	31	2	0	0
July 21	1115	42	6	0	0
July 22	1115	51	6	0	0
July 23	0800	33	4	0	1

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

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

Project: Lower Granite
Biologists: Elizabeth Holdren
Dates: July 17 - 23, 2015

Turbine Operation

Units are operating in hard constraint of the 1% criteria. Unit 4 was removed for service at 0920 hours on 24 June for annual maintenance/six year overhaul. Unit 1 remains in service to improve tailrace conditions for adult fish ladder attraction.

Adult Fish Passage Facility

The adult fishway was inspected by Corps or Blue Leaf Environmental biologists on July 17, 18, 21, and 22.

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') on all inspections. Auxiliary pump 1 (supplies water to the ladder exit) and the three temporary ladder cooling pumps remain in 24 hour operation.

Fishway Entrances and Collection Channel: SSE1 and SSE2 weir gates were in depth criteria (criteria ≥8' or on sill) on all inspections with the exception of SSE2 having a depth reading of 7.9 feet July 21. 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 weir gate depth readings were 5.8', 6.3', 5.8', and 6.0 feet. North powerhouse channel/tailwater head differential was in criteria (criteria 1'-2') on all inspections.

NSE1 remains closed. NSE2 is set with a chain fall hoist at 626.0 feet. NSE2 was in depth criteria (criteria ≥7' or on sill) on all inspections. North shore channel/tailwater head differential was out of criteria (criteria 1'-2') on all inspections with head differential readings of 0.7', 0.7', 0.6'and 0.5 feet. Readings were taken from the FSC board.

The collection channel velocity was out of criteria (criteria 1.5-4.0 fps) on all inspections with readings ranging from 1.0 - 1.1 fps with a weekly average of 1.0 fps. Alternative methods of measuring collection channel velocity are being investigated.

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

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Forebay debris was minimal. Daily gatewell surfaces inspections continue. Floating debris is being removed daily to prevent orifice blockages. No oil was reported in gatewell slots.

RSW: To improve tailrace conditions for adult passage, the RSW was closed at 1210 hours on July 8 and spill operations were changed to follow Fish Passage Plan (FPP) TABLE LWG-9.

ESBSs/VBSs: Video inspections are scheduled for late July.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed every three hours.

Collection Facility: Collection for transport continues. The use of Lower Granite juvenile collection facility separator and kelt tanks to collect adult sockeye fallbacks as part of the emergency transport to Eagle Fish Hatcher (EFH) began July 15. A total of 3 adult sockeye have been collected and transported to EFH from the juvenile facility. Collection of adult sockeye from the separator for emergency transport will continue next week.

Transport Summary: Every other day barge transport is occurring with barges departing on odd numbered days this month.

River Conditions

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
32.4	29.3	13.8	10.5	68.0	67.1	5.0+	5.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections are scheduled for late July.

Invasive Species: No evidence of zebra/quagga mussel was observed July 3.

Avian Activity: Piscivorous bird observation counts are taken from the juvenile fish separator platform one hour after sunrise and one hour before sunset. Maximum piscivorous bird counts are summarized in Table 2 below.

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

Date	Time (hours)	Gulls	Cormorants	Terns	Pelicans
July 17	0600	0	1	0	0
July 18	0600	0	1	0	0
July 19	0600	1	0	0	0
July 20	0600	2	1	0	0
July 21	0600	1	0	0	0
July 22	0600	3	0	0	0
July 23	0600	0	0	0	0

Adult Fish Trap Operations: Adult ladder fish trap emergency trap operation of sockeye for transport to Eagle Fish Hatchery (EFH) continued between the hours of 0600 to 1200 Monday through Friday. There were 16 adult sockeye collected at the Lower Granite trap for emergency transport to EFH this report week. A total of 31 sockeye have been transported from Lower Granite to EFH since the operation began July 13. Emergency transport of sockeye operation will continue next week.

Fish Rescue Operation: Unit 4 fish screen slots were dipped July 17 and July 20. Fish recovered included 2 juvenile sub-yearling Chinook, one juvenile clipped steelhead, 2 juvenile carp, 1 juvenile crappie, 6 juvenile peamouth, and 1 sandroller.

Research

Onsite research has concluded for the season.