U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#23-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: August 1 - 7, 2014

Turbine Operation

McNary had 11 to 12 units available for power generation this week. The hard constraint one percent criterion continues. No units ran outside the criterion. Also, the summer unit priority sequence, known as the "saw tooth" pattern with units being alternately on or off, continues. Turbine unit outages are recorded in Table 1 below.

Table 1. Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Main Reason for Outage
11	Sep 18, 2013 to Nov 15, 2014	About one year and two months.	Turbine bearing issue continues.
4	Mar 27 to Nov 15	About 7.5 months.	Turbine bearing issue continues.
7 & 9	Aug 1	3.5 hours total.	Allow debris to slough off VBS.
10	Aug 4 to 7	About 3 days.	Annual maintenance.
1 & 2	Aug 5	8.6 hours.	BPA: transmission line 1.
5 & 9	Aug 5	4.0 hours total.	RAS testing.
3	Aug 6	9.2 hours.	BPA: transmission line 2.
6	Aug 6	6 hours.	Tap the hub.
7, 8 & 12 to 14	Aug 6	9.3 hours total.	RAS testing.

Adult Fish Passage Facilities

On August 1, 3 and 5, the McNary fisheries biologist performed measured inspections of the adult fishways. The fisheries staff is checking the exits on all shifts when the juvenile system is in primary bypass. Visual adult fish and lamprey counting along with exit temperature monitoring continue. On August 6, the project raised the lamprey passage researcher's camera frame at SFEW2 for inspection. Late, on July 31, we had strong northerly winds. On August 2, we experienced severe thunderstorms. Debris issues mentioned in the remainder of the report were due to these two storms.

Fish Ladder Exits: During measured inspections both ladder exits met all Fish Passage Plan criteria except as described below.

On August 1 and 3, the Washington ladder exit count station differential measured 1.3 and 0.7 feet, respectively. The picketed leads were immediately cleaned. The general maintenance staff also cleaned the leads on August 2 and as required later in the week. The amount of milfoil in the area is fairly light. The Washington ladder also experienced multiple exit weir alarms, which the operator reset without incident. Weir 339 had the most alarms. On August 4, project personnel conducted scheduled maintenance on the exit weirs.

On August 1 and 3, the Oregon exit count station differential measured 0.6 and 1.4 feet, respectively. This was due to debris on the picketed leads and/or set point issues. Also, on August 3, the head over weir differential measured 0.9 feet. On August 2 and 3, the leads were cleaned. Additional cleanings were performed as required later in the week. The set points were adjusted on August 2, 3 and 6.

The operators reset two false traveling screen differential alarms this week. Differential monitoring results at Oregon exit traveling screens indicated no problems with the screens themselves. Debris loads in the area of the exit have fluctuated depending on wind direction, as much of the debris is spread along the Oregon shore.

On August 3, traveling screen trash rack differentials measured 3.1 and 3.0 feet. We immediately cleaned woody material and Eurasian milfoil from the screens' debris trough. In the debris, we noted three fresh unclipped Chinook smolt mortalities. The screens operated satisfactorily for the remainder of the week. There were no other difficulties encountered in this location other than one of the debris trough access doors undergoing repairs on August 4.

On August 6, the intake valve to the gravity fed 1000 cfs supply conduit was closed from 1300 to 1615 hours in support of trash rack cleaning. This operation became necessary due to concern for reduced flows to the ladder's upper diffusers (the screens are upstream of the intake for the 1000 cfs conduit) and reduced water supply to the park and the irrigation district. Trash racks were cleaned with the same device used to clean the PUD turbine intake at the Washington ladder. It takes about 1.5 hours to reopen the intake valve in order to avoid blowing out the diffuser gratings. This operation was successful as the differential was reduced to 1.0 foot (measured on August 6 and 7).

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria. In the near future, project personnel will replace the LEDs (Light Emitting Diodes) for W2 and W3 with a panel view, which will integrate into the new control system better. The panel view has been ordered.

At the Oregon ladder entrances, all inspection points were in criteria except on August 5, when the north and south powerhouse pool differentials measured, 0.5 and 0.1 feet, respectively. This was due to a fish pump outage. At the south entrance, SFEW1 and SFEW2 continue to drift in and out of calibration. We hope to complete the upgrades of the Oregon entrances in the near future. Collection channel surface velocities averaged 1.6 feet per second.

Auxiliary Water Supply System: The PUD turbine unit in the Washington ladder had no interruptions in service. When in operation, fish pumps 1 and 3 ran with blade angles of 30

degrees. Interruptions, any of which obviously effect criteria, are recorded in Table 2 below. Pump 2 remains out of service for major overhaul which will require a contract for the winter of 2014–2015. As mentioned above, on August 6, the 1000 cfs supply conduit was closed for trash rack raking, which would have affected fishway performance. The juvenile facility continues to supply the usual 450 cfs to the north powerhouse pool without any service interruptions to report.

Table 2. Fish Pump Outages.

Date	Pump	Length Outage	Reason
Aug 4	1 & 3	15 minutes together.	Bus switch.
Aug 4	1 & 3	13 minutes together.	Bus switch.
Aug 5	3	7 minutes.	Low cooling water flow.
Aug 5	1 & 3	17 minutes.	Backflow preventer check.
Aug 5	1 & 3	20 minutes.	Bus switch.

Juvenile Fish Passage Facility

The bypass season continues with alternating days of secondary and primary bypass with the switch occurring every morning at 0700 hours. There were no deviations from this schedule. Secondary bypass occurred on August 2, 4 and 6. We bypassed 123,874 smolts and 700 juvenile lamprey this week.

On August 5, the facility had two power outages totaling 58 minutes in support of the transmission line 1 outage. Sampling activity was not affected during the first power outage as the sample gates were already off. The morning outage (or second outage) resulted in one sample being missed. The sample rate was set at 1.0 percent at the time.

For the week, sample tank mortality rates ranged from 1.7 to 3.2 percent. On August 5, with sample tank water temperature nearing 70 degrees F, GBT sampling was halted until further notice and the facility sample rate collection rate was reduced to 100 fish per day.

Forebay Debris/Gatewell Debris/Oil: The quantity of floating forebay debris (which consisted mostly of woody material and milfoil) was very light to minimal. Incoming debris quantities were also minimal. As mentioned above, storms moved the debris from the powerhouse to the Oregon shore. There is no debris at the spillway. Trash rack differential readings were satisfactory, and no racks were cleaned this week. We observed no problems in the gatewell slots.

ESBSs/VBSs: ESBSs are deployed in all operational units. Only units 4 and 11 are without ESBSs. The screens in slots 1A, 7A, 8C and 13C remain in timer mode. August 5th camera inspections in units 1 and 2 revealed no problems. The inspection was delayed due to failure of our electrical cord. No ESA listed fish or lamprey mortalities were observed during the camera inspections.

VBS differential monitoring efforts revealed 4 screens out of criteria this week. On August 1, we found three screens out of criteria. The operator removed the units from service briefly, which

allowed the debris to slough off. When the units returned to service, the 3 differentials were back in criteria. On August 2, the project cleaned these 3 screens and five others. Forty one smolt mortalities were noted in units 7 and 9. No mortalities were seen when the other units were cleaned. On August 4 and 6, we cleaned the remaining high differential screen and four other screens. All 17 smolt mortalities seen on those date were noted only at unit 7. We observed sponge growing on the back of the VBSs and are cleaning the backsides also, as time allows.

VBS rehabilitation continues with unit 11 as the staging area. On August 4, the VBS in slot 7B was replaced with a new screen from unit 11. On August 7, a rehabilitated screen was brought up from the yard and installed in slot 11A.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Forty two orifices were open all week. During VBS cleaning and removal, we closed the orifices at the slots where the work was being done and opened spare orifices at adjacent slots.

There are no technical issues to report as all systems functioned well in automatic mode. On August 7, an indicator light for the side screen cleaning device on the control panel was replaced. The transition screen cleaning device will remain out of service until winter.

Bypass Facility: During the bypass season, both 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.

Sample gates are in operation only during secondary bypass operations (i.e.: in service every-other-day). The gates functioned well. The primary PIT tag system remains off, as the bypass lines provide a better route for the fish than the PIT tag return lines. The secondary PIT/bypass gates remain off and open. PSMFC personnel continue to perform weekly examinations of the PIT tag detection system. During the week, the separator building door handles were modified to improve functionality.

River Conditions

River conditions during the week are outlined in Table 3 as provided by the smolt monitoring staff, whose data day runs from 0700 to 0700 hours daily. Water temperature monitoring continues. PSMFC reports the water temperature monitoring results in a separate report.

The summer spill program, which calls for 50 percent of flow to be spilled, continues. The project has maintained the 50 percent level of spill.

Table 3. River conditions at McNary Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temp. (^{o}F)		Water Clarity* (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
194.5	157.5	97.4	79.0	71.2	69.1	6.0	6.0

*Control Room Data.

Other

Inline Cooling Water Strainers: On August 5, cooling water strainer examinations took place. Recoveries included three juvenile lamprey mortalities from units 2, 5 and 10 and 23 smolt mortalities from units 1 and 14. Twenty of these smolts were recovered from unit 1.

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

Predatory Bird Observations: On August 2, USDA hazing concluded for the season.

Bird counts continue with each zone being counted by the fisheries staff once a day and usually in the morning. Counts are reflected in Table 4 below. Bird numbers appear to be decreasing with the reduction in out migrating smolts.

Table 4. Daily Avian Counts at McNary Dam.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
August 1	Forebay	0	0	0	0	0
	Spill	0	5	4	4	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	7	0
August 2	Forebay	1	0	0	1	0
	Spill	0	4	9	6	0
	Powerhouse	0	0	0	1	0
	Outfall	0	7	0	10	0
August 3	Forebay	2	0	0	0	0
	Spill	5	4	11	1	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	12	0
August 4	Forebay	1	0	0	0	0
	Spill	0	31	9	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	2	3	7	0
August 5	Forebay	0	0	0	0	0
	Spill	2	24	19	1	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	1	8	0
August 6	Forebay	0	0	0	0	0
	Spill	14	3	3	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	4	5	14	0
August 7	Forebay	3	0	0	0	0
	Spill	0	4	8	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	5	0	11	0

The bird distress calls deployed along the navigation lock wing wall and around the project appear to have discouraged roosting. The fisheries staff monitors and adjusts all hazing equipment as needed. All hazing techniques appear to be working well in the tailwater area with gulls, cormorants and terns concentrated at the spill. Also, cormorants and gulls are roosting on the navigation lock wing wall along with pelicans working the Washington shoreline. Finally, mostly cormorants and pelicans along with terns were observed at the bypass outfall.

We continue to examine, monitor temperature and add oil to the outfall water cannon supply pump. We also continue to check and clean the pump intake. Pump repairs are being arranged.

Juvenile gulls were observed in the forebay area. Grebes were seen nowhere on project. We observed gulls, cormorants and pelicans on the rock by the Washington boat dock. We also noted ospreys and blue herons on project.

Research: On August 4, the researcher began removing the juvenile salmonid survival study equipment. On August 5, GBT monitoring was put on hold until water temperatures lower or the spill program concludes. The adult lamprey passage study continues.

Project: Ice Harbor
Biologist: Ken Fone
Dates: August 1 - 7, 2014

Turbine Operation

Turbine unit 2 tripped a protective relay action at 1142 hours on May 18 and remaind out of service due to a problem associated with the turbine shaft bearing. Unit 2 returned to service after undergoing annual maintenance from June 9 to August 1. Unit 3 was taken out of service on July 7 at 1346 hours to investigate a generator electrical grounding problem. Annual maintenance of unit 3 is also taking place. Unit 6 was out of service from 1800 hours on July 31 to 0929 hours on August 6 to replace the pressure relief valve associated with the governor. Unit 4 was taken out of service on August 4 at 0830 hours for annual maintenance. All available turbine units were operated within 1% of peak turbine efficiency as specified in the Fish Passage Plan.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on August 4, 5, and 7.

Fish Ladders: The north fish ladder inspection areas (head differentials at picketed leads and fishway exit, and depth over weirs) were in criteria on all inspections. The south fish ladder inspection areas (head differentials at picketed leads and fishway exit, and depth over weirs) were in criteria on all inspections. Both the north and the south shore picketed leads are down in their deployed positions.

Fishway Entrances and Collection Channel (inspection date order): The south shore entrance (SFE) depth and channel/tailwater differential were in criteria, except for a 2.1' differential on August 5. The north powerhouse entrance (NFE) depth and channel/tailwater differential were in criteria on all inspections. The north shore entrance (NSE) depth was in criteria, but the channel/tailwater differential was out of criteria with readings of 2.5 feet, 2.3 feet, and 2.5 feet on August 4, 5, and 7, respectively. The high differentials may be due to the low tailwater levels and difficulty in getting accurate readings of the tailwater elevation because of turbulence from project spill. Fishway entrance criteria are 8 feet depth or greater, or on sill. Channel/tailwater differential criteria are 1 – 2 feet.

Auxiliary Water Supply System: Two of the 3 north shore fish pumps were operated throughout the week. Six of the 8 south fish pumps were operated.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Fish ladder exits were clear of debris and the bubblers were operating satisfactorily. There was little to no debris observed in the forebay and gatewells.

Oil sheens were observed in intake slot 3C and gatewell slot 3C beginning on July 10. Oil absorbent pads that are in the gatewell slot have eliminated the sheen.

STSs/VBSs: STSs are in position for juvenile fish guidance and have been in cycle-run mode since July 21. Units 1, 3, 4, 5, and 6 STS inspections and unit 4 VBS inspections were performed on July 21 and 23. No problems were found.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass was placed in operation on March 17. Twenty orifices are open.

Juvenile Bypass Facility: The bypass is in operation.

Fish Sampling: Sampling operations began on April 2 and ended on July 15.

Removable Spillway Weir: The RSW is in operation position. Spill in support of fish passage began on April 3, 2014.

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* (^{o}F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
33.6	26.0	23.7	16.3	70	70	7.9	6.4

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Monthly turbine cooling water strainer inspections of units 1, 3, 4, and 5 took place on July 21 and 23. A total of 2 juvenile lamprey and 6 Siberian prawns were found, all of which were mortalities.

Invasive Species: No new exotic species have been found.

Avian Activity: Contracted hazing of piscivorous birds for 16 hours per day began on April 1 and ended on June 30. The piscivorous bird count program at the project began on April 1 and ended on July 15. Relatively low numbers of cormorants and pelicans, and very few gulls and terns, have been seen around the project.

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

Project: Lower Monumental
Biologists: Bill Spurgeon and K.C. Deife
Dates: August 1 - 7, 2014

Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria. Unit 3 was removed from service on August 4 at 0725 hours for annual maintenance. Unit 4 was out of service on August 4 from 0725 to 0950 hours for operating gate cylinder removal. Units were rotated out of service for STS inspections on August 5 and 6.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and PSMFC/State biologists on August 1, 2, 3, and 6.

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 or sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, the gate depth readings were 7.9 feet. 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, the gate depth readings were 5.2', 4.9', 5.4', and 5.2 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, the gate depth readings were 5.6', 5.4', 5.3', and 5.5 feet. SSE2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections with the exception of a 0.8 feet reading on August 1.

The collection channel velocity remained in criteria (1.5 - 4.0 ft/sec) this week.

Any criteria violations at the fishway entrances are related to the failure of the PLC (Programmable Logic Circuits) for automated control. Without automated control, the FCRG (fishway control regulating gate) drifts closed causing the fishway entrance head to go out of criteria at the south shore entrances. Operators are manually controlling the FCRG and fish pumps to maintain head and depth criteria at fishway entrances. The loss of the fishway PLC also caused all weir gates to be placed in local control. This results in criteria violations if monitoring and adjustment does not occur as tailwater level fluctuates. To minimize this, SPE1 and SPE2 are placed on sill.

The replacement PLC for automated control of the fishway has been received. It is currently undergoing programming. The automated system is estimated to return to service in August. The operators have been instructed to conduct a physical inspection on night shift to replace the FPP inspection via data screen conducted normally on that shift.

Auxiliary Water Supply System: All AWS pumps were in service and operating throughout this period.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 0.0 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-2% surface coverage. No oil was observed in gatewells.

STSs/VBSs: STSs are operating in cycle-run mode. STSs were inspected August 5, and 6. All screens passed inspection. The STS in gatewell 3A was found leaking oil and was removed from service on August 5.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel is operating with 20 orifices open.

Collection Facility: No problem with the facility during this period.

Transport Summary: Every-other-day barging is occurring.

River Conditions

Summer spill began at 0001 hours on June 21 with the initiation of the bulk spill pattern. 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
32.9	26.5	17.0	14.3	70.5	68.5	5.0+	5.0

*Scrollcase temperatures.

Other

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

Project: Little Goose
Biologist: James Brandon
Dates: August 1 - 7, 2014

Turbine Operation

Turbine units 2, 4, 5 and 6 were available for service this report period. Unit 3 was placed out of service on July 7 at 0700 for a planned six year overhaul. Unit 3 is scheduled to be out of service till August 28. Unit 1 was forced out of service on July 25. Testing on unit 1 found a problem with the exciter that is under warranty. The contractor has been working to fix the problem during this report period. All available turbine units were operated within 1% peak efficiency range.

Adult Fish Passage Facility

Adult fishway inspections were performed on August 2, 5 and 7.

Fish Ladder: The ladder exit head differential ranged between 0.0 and 0.1 feet (criteria $\leq$ 0.5 ft.). Water depths over the weirs held steady at 1.2 feet (criteria 1.0-1.3 ft.). No differential was observed at the picketed leads (criteria $\leq$ 0.3 ft.). No debris was observed at the picketed leads or at the ladder exit. The air bubbler used to prevent debris from collecting near the ladder exit operated satisfactorily.

Fishway Entrances and Collection Channel: Channel to tailwater head differentials ranged between 1.2 and 1.9 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 7.5 feet (sill) and 8.2 feet (criteria $\geq$ 8.0 ft). NPE weirs rested on sill and ranged between 4.9 and 5.5 feet (criteria $\geq$7.0 ft). NSE weirs are in manual mode and depths ranged between 5.2 and 5.3 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocities near the junction pool area held steady at 1.4 fps. Surface water velocities ranged between 1.8 to 1.9 fps near the north shore entrance (criteria 1.5 to 4.0 fps).

Auxiliary Water Supply System: All fish pumps operated within criteria.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Estimated amounts of woody debris in the immediate forebay ranged between 150 and 200 sq ft.

Spillway Weir: The spillway weir was removed from service on August 4 at 0825 hours.

ESBS/VBS: All ESBSs operated within criteria this report period. All brushes operated as designed.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile system operated with 22 open orifices.

Transportation Facility: The collection and transportation facility operated within criteria this report period. Daily fish collection for the week ranged between 776 and 2,611 and totaled 11,709. The descaling and mortality rates were 0.6% and 0.9% respectively. This weekly report period saw 4 adult lamprey removed from sample and released above the dam at Little Goose Landing.

Transport Summary: Every other day barging continued during this report period with no problems encountered.

River Conditions

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
31.6	26.6	10.1	8.8	73.7	69.1	6.0+	6.0

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were checked on August 1. There was nothing found.

Invasive Species: No zebra mussels were observed on the substrate monitor on July 13. The next inspection is scheduled for August 13.

Avian Activity: USDA-APHIS bird hazing ended on June 20.

Table 2. Maximum Daily Bird Counts (single observation) at Little Goose Dam.

Date	Gulls	Cormorants	Caspian Terns	Pelicans
August 1	30	7	0	0
August 2	18	16	0	0
August 3	39	22	0	2
August 4	36	12	0	0
August 5	25	13	0	0
August 6	47	13	0	1
August 7	29	14	0	1

Research: The University of Idaho continued their adult Salmon and adult lamprey passage study.

Gas Bubble Disease: WDFW Gas Bubble Trauma monitoring concluded July 28.

Project: Lower Granite
Biologists: Elizabeth Holdren and Ches Brooks
Dates: August 1 - 7, 2014

Turbine Operation

Lower Granite had five turbine units available for power generation at the beginning of the report period. Turbine Unit 6 was taken out of service at 0719 hours on May 12 for blade repair and annual maintenance. Turbine Unit 4 was taken out of service at 0716 hours on August 4 for annual maintenance. The expected return to service date for this unit is August 29. On August 5, from 0600 hours until 1911 hours, turbine units 1, 2 and 3 were out of service in support of a line outage to allow for work on replacement of the T2 neutral bushing. Turbine unit 5 was run at speed no load to maintain station service. On August 6 at from 0555 hours until 2152 hours, turbine units 1, 2 and 3 were out of service in support of a line outage to allow for work on replacement of the T2 neutral bushing, Turbine unit 5 was run at speed no-load for station keeping. On August 7 at from 0554 until 1628 hours turbine units 1, 2 and 3 were out of service in support of a line outage to allow for continued work on the replacement of the T2 neutral bushing, and again, turbine unit 5 was run at speed no-load for station service. Otherwise, all available turbine units are being operated in hard constraint of the 1% operation criteria.

Adult Fish Passage Facility

On August 1, 2 and 3 COE fish biologists conducted inspections of the adult fishway system.

Fish Ladder: All criteria were met.

Fishway Entrances and Collection Channel: Head differential readings at the south shore and north powerhouse fishway entrances remained within criteria during the weekly inspections. Head differential readings at the north shore fishway entrances met criteria on the August 3 inspection but were below criteria on the August 1 and 2 inspections with readings of 0.9 feet on both dates (criterion $\geq$ 1.0 feet).

Weir depths at the south shore fishway entrances met criteria on all inspections this week. Weir depths at the north powerhouse fishway entrances remained on sill this week due to tailrace levels below 636.0 feet (at which level the gates bottom out). Weir depths at both north powerhouse entrances ranged from 5.5 to 5.6 feet. The weir depths at the north shore entrances were out of criteria all week. Weir depths at north shore entrance 1 were 4.7 feet on all inspections (criterion $\geq$ 7.0 feet). Weir depths at north shore entrance 2 were 3.5 feet on each inspection (criterion $\geq$ 7.0 feet). North shore entrance 2 remains damaged, and cannot adjust for weir depths automatically; this gate has been manually set at a compromise depth of 630.0 feet. Due to a lack of water at the north shore entrances, weir depth readings are being sacrificed in attempt to maintain the requisite 1.0 foot of head differential.

Velocity readings in the adult fishway collection channel transition pool area ranged from 1.03 to 1.17 feet per second and averaged 1.11 feet per second.

Auxiliary Water Supply System: Fish pumps 1 and 3 were run during the week with fish pump 2 held in standby mode.

Juvenile Fish Passage Facility

The sample rate remained at 50% for the duration of the report week.

Forebay Debris/Gatewell Debris/Oil: The amount of forebay debris varied during the week due to wind strength and direction. No debris spills took place during the week. JFF staff have been monitoring gatewells daily and removing floating debris with a hand basket in attempt to circumvent orifice blockages.

ESBSs/VBSs: ESBSs are deployed in all units and have been operating without issue. The brush cleaning cycle is set for once every 2 hours. ESBS/VBS monthly inspections were last conducted on June 27 and 28. The next inspections are scheduled for late August.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed every 3 hours around the clock. Debris levels remained light during the week.

Transportation Facility: Operations proceeded smoothly at the facility during the week. Descaling for all species combined was 0.68% for the week and is 0.81% for the season compared to 2.10% in 2013 and 1.46% for the 2008-2012 average. The cumulative descaling rate through August 7 of 0.81% is the lowest since at least 1985. Lamprey friendly tailscreens (larger screen mesh) remain installed in all raceways.

Transport Summary: The facility switched to every other day fish barging operations on June 1 (May 31 was the first day without a barge departure from Lower Granite). Fish barges depart Lower Granite on the even days of the month during August. All barges other than the two involved in every other day transport have been returned back to Lower Granite for storage and maintenance work. Due to lower numbers of fish being transported, and the consequent need to run only one fish engine on the barges for aerator water, the policy made to allow the towboat contractors to fuel fish barges on an every other trip basis continued.

Removable Spillway Weir: The project began FOP (Fish Operations Plan) summer spill operations of 18 kcfs 24 hours a day at 0001 hours on June 21; the RSW is operated as a normal part of summer spill activities which are scheduled to last through the end of August.

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
31.2	26.2	18.4	16.6	64.8	64.4	5.0+	5.0+

*Cooling water intake temperature.

Other

Lower Granite fish facility and powerhouse personnel conducted a fish rescue operation in the scrollcase of turbine unit 4 on August 6 in support of unit annual maintenance. Dewatering occurred rapidly due to a problem with the scrollcase drain valve gauge indicator. Drain valve gauge repairs are ongoing. Two salmonids were recovered during the dewatering, one unclipped adult steelhead mortality and a live unclipped subyearling Chinook holdover. Two suckers and one juvenile sturgeon (~18") were also recovered alive. All live fish were released directly into the tailrace.

Three emergency submersible pumps along with an associated generator were installed in the forebay near the adult ladder exit on August 1. After some initial problems with a clogged generator fuel filter (which delayed testing and scheduled operational deployment) these pumps began operation in earnest on August 7 and will operate from 0500 until 1500 hours each day, with auxiliary Pump 1 on, auxiliary Pump 2 held in standby and diffuser 14 operating in auto mode. At 1500 hours each day auxiliary pumps 1 and 2 will begin operation with diffuser 14 in auto mode.

The adult fish counters began visual counts at the counting window on April 1. The counting hours are from 0400 to 2000 hours PST and are scheduled to continue through October 31.

Inline Cooling Water Strainers: Unit cooling water strainers were last inspected on July 24. A total of 6 lamprey mortalities were found. The combined unit run time was 1,473.0 hours. The next cooling water strainer inspections are scheduled for late August.

Invasive Species: The zebra mussel substrate near the adult fishway exit was examined for zebra mussels during the August 2 inspection. No evidence of zebra mussels was found. The next inspection will take place in early September.

Avian Activity: Formal bird counts and hazing activities began on April 1. Sixteen hour per day hazing began on April 21 and concluded on June 1. Eight hour per day hazing began on June 2 and concluded on June 30. Tailrace piscivorous bird counts are taken daily one hour after sunrise and one hour before sunset from the juvenile fish wet separator platform (See Table 2 below).

Table 2: Maximum Tailrace Counts of Piscivorous Birds at Lower Granite Dam.

Date	Time (hours)	Gulls	Cormorants	Terns	Pelicans
August 1	1930	1	0	0	0
August 2	1930	0	2	0	0
August 3	1930	3	0	0	0
August 4	1930	2	0	0	0
August 5	1930	0	0	0	0
August 6	1930	1	0	0	0
August 7	1930	0	0	0	0

Adult Fish Trap Operations: The Lower Granite adult trap facility returned to service on August 7 at 0700 hours and will sample at 100% from 0700 to 1100 hours Monday through Friday. Genetic/scale samples will be taken from one out of every five clipped steelhead and one of every six clipped Chinook. All unclipped steelhead captured will be PIT-tagged (if no tag is present) and scale and genetic samples taken. Eighteen sort by code Lemhi origin Chinook have been radio-tagged and scale and genetic samples taken - this project has concluded for the year.

Research

All onsite research (except at the adult trap) has concluded for the season.