**U.S. ARMY CORPS OF ENGINEERS**
**WALLA WALLA DISTRICT**
**FISH FACILITIES WEEKLY REPORT**
**#24-2014**

**Project: McNary**
Biologists: Carl Dugger and Bobby Johnson
Dates: August 8 - 14, 2014

## Turbine Operation

McNary had 10 to 12 units available for power generation this week. The hard constraint one percent criterion continues. No units ran outside the criterion. The summer unit priority sequence, known as the "saw tooth" pattern (units being alternately on or off) continued. 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. |
| 9 | Aug 11 to Mar 25, 2015 | About 7.5 months. | Maintenance then rewind contract. |
| 8 | Aug 11 to 14 | Three days. | Annual maintenance. |

## Adult Fish Passage Facilities

On August 8, 10 and 13, the McNary fisheries biologist performed measured inspections of the adult fishways. The fisheries staff is checking the exits on all shifts whenever the juvenile system is in primary bypass mode. Visual adult fish and lamprey counts and ladder exit temperature monitoring continued. On August 11, the Oregon count station air conditioner was repaired. On August 12, both count stations received new chairs. On August 12, 13 and 14, we experienced severe thunderstorms. Debris issues mentioned in the remainder of the report below were due to these two storms. The lamprey passage research camera frame at SFEW2 is scheduled to be inspected on August 20.

Fish Ladder Exits: During measured inspections, both ladder exits met all Fish Passage Plan criteria. Project personnel continue to clean the picketed leads as required and on weekends.

Multiple exit weir alarms occurred this week at the Washington exit, which the operator reset without incident. Weir 339 incurred the most alarms. One low water alarm was also reset. On August 13, the operators adjusted the set points. On the night of August 11, the technician on duty reported a high count station differential; project personnel cleaned the picketed leads the next morning. The amount of milfoil in the area is fairly light.

At the Oregon exit, in the early morning of August 14, the night shift technician reported a high count station differential. The roving operator adjusted the set points and the project cleaned the picketed leads the next morning. Following the cleaning, the operator reset the set points. Debris loads in the area of the exit have fluctuated depending on wind direction, as much of the debris is along the Oregon shore.

Operators also reset one false traveling screen differential alarm at the Oregon exit. The screen differential remains low. After the storm on August 12, our trash rack differential rose from 1.0 to 1.4 feet. We will continue to monitor both differentials.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria. In the near future, the project 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. During heavy spill along the Washington shore line, W3 appears to be moving more frequently. We will monitor the situation.

At the Oregon ladder entrances, all inspection points were in criteria except on August 8, when NFEW3 measured 6.1 feet. This was due to the weir being configured for one fish pump operation as fish pump 3 was out of service (see below). From 1010 to 1051 hours, the weir was raised per the FPP. From August 12 at 1600 hours to August 13 at 0846 hours, the weir was again raised due to single fish pump operations (fish pump 3 was out of service a second time). Occasionally, a slight amount of slick was noted in NFEW2's south cable.

At the south entrances, SFEW2 continues to drift in and out of calibration. We hope to complete the upgrades of the Oregon entrances in the near future. Surface collection channel velocities averaged 1.5 feet per second.

Auxiliary Water Supply System: For the report week, the PUD turbine unit at the Washington ladder had no interruptions in service. Fish pumps 1 and 3 operated with blade angles of 30 degrees when available. Fish pump outages, 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. The juvenile facility continued to supply the usual 450 cfs to the north powerhouse pool with no interruptions in service to report.

Table 2. Fish Pump Outages.

| Date | Pump | Length Outage | Reason |
|---|---|---|---|
| Aug 8 | 3 | Three outage totaling 2.2 hours. | Governor oil pump failed and repaired. |
| Aug 12 to 13 | 3 | 1458 to 0846, almost 18 hours. | Hot bearing oil trip and bearing system checked. |
| Aug 14 | 3 | Four minutes. | Ground check. |

## 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 8, 10, 12 and 14. We bypassed 44,809 smolts and 300 juvenile lamprey this week. We are beginning to see juvenile shad.

For the week, sample tank mortality rates ranged from 0.0 to 1.6 percent. Sample tank temperatures ranged from 69 to 70 degrees F. Since sample tank water temperatures are around 70 degrees F, GBT monitoring remains halted until further notice and the sample rates remain reduced to a maximum collection of 100 fish per day.

Forebay Debris/Gatewell Debris/Oil: Floating forebay debris, which was milfoil along with woody material was very light to minimal. Incoming debris was minimal. As mentioned above, storms moved the debris from the powerhouse to the Oregon shore and back. There is no debris at the spillway.

Our trash rack differential readings revealed no problems and no racks were cleaned this week. We observed no problems in the gatewell slots.

ESBSs/VBSs: ESBSs are installed at all operational units. Only units 4 and 11 are without ESBS's. The screens at 1A, 7A and 13C slots remain in timer mode. On August 13, we found the screen at 1A slot short cycling and the operators reset it. On August 14, after alarming, the screen in 8C slot, which had been in timer mode, was returned to normal automatic operation.

On August 11, the ESBS in slot 9C triggered an alarm and the operators reset it without incident. On August 12, during a fish salvage in the unit 9 scroll case, we found a cleaning brush bar on the floor at slot 9C. During our next camera inspection, we will examine 9C's ESBS to see if the bar is in place or not. This week, we did not perform camera inspections due to the fish salvage in unit 9.

VBS differential monitoring revealed no screens out of criteria. On August 9, the project cleaned two screens as a preventative measure. Two smolt mortalities were noted.

VBS rehabilitation continues with unit 11 as the staging area. On August 12, the VBS in slot 11B (which came from slot 7B slot last week) was cleaned and removed for rehabilitation.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Forty two orifices were open all week. During VBS cleaning and removals, we closed the orifices at the slots the work was being done and opened spare orifices in adjacent slots. On August 10, we found the orifice at slot 14A closed. The log indicated that the orifice had been closed for a minimum of 7.5 hours. After opening the orifice, examination of the gatewell slot, channel and separator reveal no fish mortalities. We reviewed cycling procedures and replaced attraction lights as needed. There are no technical issues to report as all systems functioned well in automatic mode. 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, one to three hours after switching to primary bypass mode and just before releasing the sample raceway, we noted smolts swimming up the return to river line toward the barge dryer. These fish must be lying in the wye just downstream of the dryer.

We continue to have issues with the facility's air conditioning system.

## River Conditions

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

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

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 |
| 183.0 | 164.0 | 91.5 | 82.0 | 71.6 | 70.3 | 6.0 | 6.0 |

*Control Room Data

## Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur in early September.

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

Avian Activity: On August 2, USDA bird hazing concluded. We continue to examine, monitor temperature and add oil to the outfall sprinkler's supply pump. We also continue to check and clean the pump intake. Repairs to the pump are being arranged. On August 10, we found the pump had tripped off line and immediately reset it. The next day, the fisheries staff, removed algae from the pump intake to resolve the issue. Bird counts continued with each zone being

counted by the fisheries staff once a day, usually in the morning. Counts are reflected in Table 4 below. Bird numbers appear to be decreasing with the reduction in out migrating smolts. However, as juvenile shad numbers rise, we expect bird numbers to also increase. 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 adjust 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. Mostly cormorants and pelicans along with terns were observed at the bypass outfall. Many of the cormorants observed are juveniles.

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

Table 4. Daily Avian Counts at McNary Dam.

| Date | Zone | Gull | Cormorant | Tern | Pelican | Grebe |
|---|---|---|---|---|---|---|
| Aug 8 | Forebay | 3 | 0 | 0 | 0 | 9 |
| | Spill | 0 | 2 | 12 | 0 | 0 |
| | Powerhouse | 0 | 2 | 0 | 0 | 0 |
| | Outfall | 0 | 0 | 0 | 14 | 0 |
| Aug 9 | Forebay | 1 | 0 | 0 | 0 | 10 |
| | Spill | 8 | 9 | 1 | 5 | 0 |
| | Powerhouse | 0 | 0 | 0 | 0 | 0 |
| | Outfall | 0 | 10 | 0 | 3 | 0 |
| Aug 10 | Forebay | 6 | 1 | 0 | 0 | 12 |
| | Spill | 0 | 16 | 4 | 4 | 0 |
| | Powerhouse | 0 | 0 | 0 | 0 | 0 |
| | Outfall | 0 | 0 | 1 | 4 | 0 |
| Aug 11 | Forebay | 2 | 0 | 0 | 0 | 10 |
| | Spill | 11 | 56 | 4 | 0 | 0 |
| | Powerhouse | 0 | 0 | 0 | 0 | 0 |
| | Outfall | 0 | 1 | 1 | 3 | 0 |
| Aug 12 | Forebay | 3 | 0 | 0 | 0 | 0 |
| | Spill | 7 | 17 | 3 | 2 | 0 |
| | Powerhouse | 0 | 0 | 0 | 0 | 0 |
| | Outfall | 0 | 1 | 1 | 5 | 0 |
| Aug 13 | Forebay | 3 | 0 | 0 | 1 | 11 |
| | Spill | 16 | 7 | 7 | 0 | 0 |
| | Powerhouse | 0 | 0 | 0 | 0 | 0 |
| | Outfall | 0 | 1 | 1 | 1 | 0 |
| Aug 14 | Forebay | 0 | 0 | 0 | 1 | 2 |
| | Spill | 0 | 8 | 5 | 5 | 0 |
| | Powerhouse | 0 | 3 | 0 | 0 | 0 |
| | Outfall | 0 | 3 | 0 | 5 | 0 |

Research: Juvenile salmonid survival study researchers continued to remove their equipment. GBT monitoring remains on hold until water temperatures lower or the spill program concludes. The adult lamprey passage study continues.

Fish Salvage: On August 12, we removed one unclipped subyearling Chinook mortality from the unit 9 scroll case. We observed no other fish. As mentioned above, we found an ESBS brush bar at the C slot. On August 13, we removed two sturgeon and one channel catfish from the unit's draft tube. All fish were healthy. The longest sturgeon was about 3.5 feet in length.

**Project: Ice Harbor**
Biologist: Ken Fone
Dates: August 8 - 14, 2014

## Turbine Operation

Turbine unit 2 was out of service from 1142 hours on May 18 to 0945 hours on August 12, for annual maintenance and to re-center the turbine shaft. 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 4 was taken out of service on August 4 at 0830 hours for annual maintenance. All available 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 11, 12, 13, and 14.

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. Fish ladder exits were clear of debris and the bubblers were operating satisfactorily. 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 14. 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 2.4 feet, 2.2 feet, 2.2 feet, and 2.8 feet on August 11, 12, 13, and 14, respectively. The high differentials may be due to the low tailwater levels and/or 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 8 south fish pumps were operated.

## Juvenile Fish Passage Facility

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

STSs/VBSs: STSs are in position for juvenile fish guidance and have been in cycle 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. The next STS inspections are scheduled for the week of August 18.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass was placed in operation on March 17. Twenty orifices are open. The light for the north orifice in gatewell slot 6A was found to be burnt out during the weekend of this reporting period. The operating orifice in 6A was immediately swapped, until the light was replaced the morning of August 11.

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 |
| 31.7 | 28.0 | 22.0 | 18.1 | 70 | 70 | 7.9 | 7.6 |

*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. The next inspections of the cooling water strainers are scheduled for the week of August 18.

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 Ray Addis
Dates: August 8 - 14, 2014

## Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria. All units were taken out of service on August 11 at 0629 hours for work on Transformer 1. Unit 5 was run at speed-no-load on August 11 from 0630 – 1700 hours. Units 5 and 6 returned to service on August 11 at 1700 hours.

## Adult Fish Passage Facility

The adult fishway was inspected by Corps and PSMFC/State biologists on August 8, 9, 11, 12, and 13.

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 the gate depth readings were 5.2', 5.1', 4.6', 5.3'and 5.4 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 5.5', 5.7', 5.4', 6.0' and 5.8 feet. SSE2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections.

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 Circuit) 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 4.0 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-6% surface coverage. Oil absorbent pads were placed in 4 gatewells due to a sheen that was likely caused by grain dust.

STSs/VBSs: STS are operating in cycle 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 with the final barge trip scheduled for August 16. Alternate day trucking begins with the midi-tanker on August 18.

## River Conditions

River conditions during the week are outlined in Table 1.

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 |
| 30.1 | 27.6 | 17.7 | 13.6 | 70.0 | 68.0 | 5.0+ | 5.0+ |

*Scrollcase temperatures.

## Other

Spill: Summer spill began at 0001 hours on June 21 with the initiation of the bulk spill pattern. The spill season is scheduled to end at the end of August.

Inline Cooling Water Strainers: Cooling water strainers were inspected on August 4. No live fish were recovered. Mortalities included 1 juvenile bullhead.

Invasive Species: No zebra mussels were observed at the monitoring stations on August 1.

Avian Activity: Daily tailrace counts of feeding piscivorous birds are summarized in Table 2. Gulls were the dominant species observed during inspections this week. Hazing for the season ended on June 2. No additional action trigger points were met from the avian action plan through this time period.

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

| Date | Time (hours) | Gulls | Cormorants | Terns |
|---|---|---|---|---|
| August 8 | 1115 | 8 | 0 | 8 |
| August 9 | 1100 | 0 | 0 | 0 |
| August 10 | 1100 | 0 | 0 | 0 |
| August 11 | 1100 | 4 | 0 | 0 |
| August 12 | 1100 | 5 | 0 | 0 |
| August 13 | 1100 | 3 | 0 | 0 |
| August 14 | 1105 | 6 | 0 | 0 |

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

**Project: Little Goose**
Biologist: Rick Weis
Dates: August 8 - 14, 2014

## Turbine Operation

Turbine units 2, 4, 5 and 6 were available for most of this report period. Unit 3 was placed out of service on July 7 at 0700 hours for a planned six year overhaul. 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 repaired faulty circuit board and unit 1 was returned to service on August 9 at 1433. Unit 6 was placed out of service on August 11 for annual maintenance. All available turbine units were operated within the 1% peak efficiency range.

## Adult Fish Passage Facility

Adult fishway inspections were performed on August 11, 12, and 14.

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 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 1.3 and 2.3 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 7.4 (sill) and 8.6 feet (criteria $\geq$ 8.0 ft). NPE weirs rested on sill and ranged between 4.7 and 5.8 feet (criteria $\geq$7.0 ft). NSE weirs are in manual and depths ranged between 4.8 and 5.6 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity near the junction pool area ranged between 1.5 and 1.7 fps. Surface water velocity ranged between 1.9 to 2.3 fps near the north shore entrance (criteria 1.5 to 4.0 fps).

Auxiliary Water Supply System: All fish pumps operated within criteria when in use. All fish pumps were removed from service on August 12 for capacitor testing. Pumps were off for 1 hour. Fish pump 2 was found off and restarted following capacitor testing on August 12.

## Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Estimated amounts of woody debris in the immediate forebay ranged between 25 and 50 sq ft.

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

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 632 and 3,335 and totaled 14,861. The descaling and mortality rates were 0.9% and 1.5% respectively. This weekly report period saw 5 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 |
| 29.9 | 26.9 | 15.7 | 8.7 | 73.3 | 70.7 | 6.0+ | 6.0 |

*Ladder temperature.

## Other

Inline Cooling Water Strainers: Cooling water strainers were checked on August 9. No fish were found.

Invasive Species: No zebra mussels were observed on the substrate monitor on August 14. The next inspection is scheduled for September 13.

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

Table 2. Maximum Daily Counts of Tailrace Foraging Piscivorous Birds at Little Goose Dam.

| Date | Gulls | Cormorants | Caspian Terns | Pelicans |
|---|---|---|---|---|
| August 8 | 46 | 26 | 0 | 2 |
| August 9 | 46 | 21 | 0 | 1 |
| August 10 | 37 | 21 | 0 | 0 |
| August 11 | 36 | 19 | 0 | 7 |
| August 12 | 38 | 37 | 0 | 0 |
| August 13 | 31 | 10 | 0 | 0 |
| August 14 | 41 | 18 | 0 | 1 |

Research: University of Idaho researchers 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 8 - 14, 2014

## Turbine Operation

Lower Granite had four turbine units available for power generation at the beginning of the report period. Turbine unit 6 returned to service at 1305 hours on August 8 after the completion of 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. Work to replace three neutral bushings on T1 began on August 11 and is expected to be completed on August 17. The outage schedule is T1 turbine units 1 through 4 will be out of service from approximately 0600 hours on August 11 through 1700 hours on August 17, during the work period; turbine unit 5 will be run at speed no-load (5 kcfs) for station service. T2 turbine units 5 and 6 will return to service every other day for 24 hours. Turbine units are being operated within the hard constraint of the 1% operation criteria.

## Adult Fish Passage Facility

On August 8, 9 and 11 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, north powerhouse and north shore fishway entrances remained within criteria during the weekly inspections (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 5.2 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 entrances ranged from 3.9 to 4.5 feet. (criterion $\geq$ 7.0 feet). Weir depths at north shore entrance 2 entrances ranged from 2.9 to 3.5 feet (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 1.05 to 1.22 feet per second and averaged 1.14 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. The sample rate will be increased from 50% to 100% at 0700 hours on August 16 in order to facilitate the start of trucking operations.

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 two 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 three 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 0.37% for the week and is 0.80% for the season compared to 2.10% in 2013 and 1.46% for the 2008-2012 average. 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 departed Lower Granite on the even numbered 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. The last transport barge is scheduled to depart Lower Granite on August 16. Every other day trucking operations are scheduled to begin on August 18.

Removable Spillway Weir: The project began FOP (Fish Operations Plan) with summer spill 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 |
| 29.3 | 26.3 | 21.0 | 13.5 | 65.1 | 64.8 | 5.0+ | 4.2 |

*Cooling water intake temperature.

## Other

Three rented ladder cooling pumps along with an associated generator were installed in the forebay near the adult ladder exit on August 1. These pumps operated from 0500 until 1500 hours each day this week, 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 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 last examined for zebra mussels on 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 (Table 2).

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

| Date | Time (hours) | Gulls | Cormorants | Terns |
|---|---|---|---|---|
| August 8 | 1930 | 1 | 0 | 0 |
| August 9 | 1930 | 0 | 0 | 0 |
| August 10 | 1930 | 0 | 0 | 0 |
| August 11 | 1930 | 0 | 2 | 0 |
| August 12 | 1930 | 1 | 0 | 0 |
| August 13 | 1930 | 0 | 0 | 0 |
| August 14 | 1930 | 0 | 0 | 0 |

Adult Fish Trap Operations: The Lower Granite adult trap facility operated during the week except for an early shut down at 1030 hours on August 11 and no operation on August 12; due to water temperatures at the trap exceeding 70°F. The trap is operating from 0700 hours and will sample at 100% from 0700 until 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 research has concluded for the year.