

**U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#33-2013**

Project: McNary

Biologists: Carl Dugger and Bobby Johnson

Dates: October 11 - 17, 2013

Turbine Operation

McNary had 9 to 11 units available for power generation this week. On April 1, the hard constraint one percent criteria began and no units ran outside the criterion this week. Unit outages are recorded in Table 1.

Table 1. Unit Outages at McNary Dam.

| Units | Outage Dates | Outage Length | Reason |
|-------|-----------------------|---------------------|-------------------------------------|
| 4 | Jun 24 – Jan 30, 2014 | About seven months. | Rewind contract. |
| 11 | Jun 28 – Jan 30, 2014 | About seven months. | Rewind contract. |
| 3 | Jun 4 – Feb 4, 2014 | About eight months. | Turbine bearing issue. |
| 5 & 6 | Oct 15 – Nov 5 | About 21 days. | Transformer 3 and unit maintenance. |
| 7 & 8 | Oct 15 | 56 minutes. | ESBS camera inspections. |

Adult Fish Passage Facilities

On October 11, 14 and 16, the McNary fisheries biologists performed measured inspections of the adult fishways. Visual fish counts continued. Since the juvenile facility is in primary bypass, the fisheries staff helped to monitor the picketed leads.

Fish Ladder Exits: During the inspections both ladder exits met all Fish Passage Plan. Though debris is decreasing, project personnel continued to the picketed leads at the exits regularly.

All week, the Washington count station window cleaning brush was not operating properly as the brush was not rotating. The biologist turned in 2 trouble reports to initiate repairs.

At the Oregon exit, due to encoder issues, weir 340 remains in manual mode. Our differential monitoring of the traveling screens revealed no problems.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria. W2 is operating well with the digital encoder. The LED remains unplugged. W3 is still occasionally experiencing calibration drifts. Also, on October 16, the weir appeared to be moving excessively. We will again examine W3 on October 18.

At the Oregon ladder entrances, all points were in criteria. At south powerhouse entrance, SFEW2 is occasionally experiencing calibration drifts. Oregon ladder collection channel surface velocities averaged 1.5 feet per second.

Auxiliary Water Supply System: The Wasco County PUD turbine unit in the Washington ladder had no interruptions in service. The Oregon ladder fish pumps also had no interruptions in service. Both pumps operated satisfactorily with blade angles of 30 degrees. Fish pump 2 remains out of service for major overhaul which will require a contract. The juvenile facility continues to supply the usual 450 cfs to the north powerhouse pool.

Juvenile Fish Passage Facility

The juvenile system remains in primary bypass for the fall season. The facility also remains “watered up” to avoid freeze breakage. Light maintenance and partial winterization continues. The fisheries staff is monitoring the juvenile channel around the clock.

Forebay Debris/Gatewell Debris/Oil: For the week, forebay debris along the powerhouse was light consisting of Eurasian milfoil and wood. Milfoil levels continue to decline. Changes in wind and project operations continue to redistribute the debris. Trash rack differential measurements revealed no problems and no racks were cleaned. We noted no problems in the gatewell slots.

ESBSs/VBSs: ESBSs are deployed in all units except in slots associated with unit 11. The screens stored at unit 11 will be used as spares. The ESBSs in slots 2A, 3A, 7B, 8C, 10C and 13A remain in timer mode. On October 15, camera inspections at units 6, 7 and 8 revealed no problems. Unit 6 was already out of service when the inspections took place.

VBS differential monitoring revealed no screens out of criteria. On October 17, as preventative measure, the project staff cleaned 12 screens. No salmonid or lamprey mortalities were observed during the VBS cleaning operations. Since units 3 and 11 are out of service, slot 3C and slots associated with unit 11 are being used to cycle in rehabilitated VBSs. The replacement of the VBS in slot 6B has been delayed to next week.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: For the week, we had 40 orifices open and observed no problems. On September 30, we went to 40 orifices (from 42) by closing 2 orifices at unit 4, which is out of service. This reduced the opening of the side dewatering valves, which in turn will reduce the likelihood of the side screen becoming obstructed with debris. Since technicians are monitoring the collection channel around the clock, orifice adjustments can be made as required at unit 4.

On October 13, the technician cycling the orifices inadvertently left the orifice at slot 5B closed. From 0358 to 0420 hours, a low water alarm occurred. At 1216 hours, the biologist on duty found the problem and reopened the orifice after notifying the control room. Fortunately, unit 5 was in standby and we noted no harm to fish.

All other systems operated well in automatic mode. Also, the fisheries staff monitored the channel during VBS cleanings.

Transportation Facility: Since we are in the fall primary bypass season, all systems have been removed from service. PIT tag detection will only occur in the full flow pipe. Light maintenance continues and the facility will remain watered to avoid freeze breakage.

Transport Summary: Transport did not occur at McNary this year. After regional discussion, transport will no longer occur at McNary in the future.

River Conditions

River conditions during the week are outlined in Table 2 as provide by the COE. Our data day runs from 0000 to 2400 hours.

Table 2. River conditions at McNary Dam.

| Daily Average River Flow (kcfs) | | Daily Average Spill (kcfs) | | Water Temperature (°F) | | Water Clarity (Secchi disk - feet) | |
|---------------------------------|------|----------------------------|-----|------------------------|-----|------------------------------------|-----|
| High | Low | High | Low | High | Low | High | Low |
| 113.2 | 84.0 | 0.0 | 0.0 | 61 | 59 | 6.0 | 6.0 |

Other

Inline Cooling Water Strainers: The next cooling water strainer examination will occur in early November.

Invasive Species: The next zebra mussel station examination will occur on October 20.

Avian Activity: On September 30, formal bird counts concluded. Casual observations continued, especially while conducting other inspections. In the forebay area, we observed an occasional group of gulls or grebes. Also, we noted gulls and cormorants. On the rocks by the Washington boat dock, we observed gulls. We noted no grebes elsewhere on project.

In the tailwater area, we noted gulls, cormorants and mergansers. Most of the feeding birds were in powerhouse area. Roosting birds were seen on the navigation lock wing wall. Bird numbers may be fluctuating with their seasonal movements and juvenile shad out migration.

We observed an occasional gull, merganser or cormorant by the bypass outfall.

The hazing sprinkler system remains out of service. A new system will be installed this fall. The three gull distress calls remain deployed.

Research: Preparations for the direct adult steelhead survival study at the turbine intake and TSW continue. However, the researcher is having difficulty finding adult steelhead for the study.

Project: Ice Harbor

Biologist: Mark Plummer

Dates: October 11 - 17, 2013

Turbine Operation

Main turbine units 1, 2, 3, 4, and 5 were available for operation. Turbine unit 4 went out of service October 15 at 0831 hours for governor installation and remained out of service. Turbine unit 6 remains out of service.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on October 15, 16, and 17.

Fish Ladders: The north and south shore adult fish ladder inspection areas (picketed leads, head differentials, fish way exits, and depth over weirs) were within criteria.

Fishway Entrances and Collection Channel: The center fish way weir 2 remains out of service. Currently, center fish way weir 1 is being operated. Fish way entrance criterion is 8 feet depth, greater than 8 feet depth, or on sill. All fish way entrances were within criteria, on sill, or greater than 8 feet of depth except on October 19. On this inspection, the north shore fish entrance was at 6.9 feet depth and not on sill. The north shore channel/tail water differential was at 1.1 feet. The entrance weir could not be lowered further without losing the required channel/tail water differential or velocity. All channel/tail water differentials were in criteria. Channel/tail water differential criteria are 1 – 2 feet.

Auxiliary Water Supply System: Two of the 3 north shore fish pumps were operated without problems. Six of 8 south fish pumps were operated without problems. All are available for operation.

Juvenile Fish Passage Facility

Fore bay Debris/Gate well Debris/Oil: Fish ladder exits are clear of debris and the bubblers are operating satisfactorily.

STSs/VBSs: STSs are in cycle run mode operation. The STS/VBS inspection were performed September 23 and 25. No problems to report. Turbine strainer inspections were done at this time, results are listed below. October inspections are scheduled for 21 and 23.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile bypass is watered up with 20 open orifices.

Juvenile Bypass Facility: No problems to report.

Fish Sampling: The first sample took place April 8 and the last sample was performed July 15.

Removable Spillway Weir: The RSW is not in operation. Spill for fish began April 3, 2013 and ended August 31 at 2359 hours.

River Conditions

River conditions during the week are outlined in Table 1.

Table 1. River conditions at Ice Harbor Dam.

| Daily Average River Flow (kcfs) | | Daily Average Spill (kcfs) | | Water Temperature* (°F) | | Water Clarity (Secchi disk - feet) | |
|---------------------------------|------|----------------------------|-----|-------------------------|-----|------------------------------------|-----|
| High | Low | High | Low | High | Low | High | Low |
| 29.8 | 18.2 | 0.0 | 0.0 | 61 | 60 | 7.4 | 7.4 |

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on September 23 (units 1, 2, 3 & 6) and September 25 (units 4 and 5). No lamprey were seen or recovered during these inspections.

Invasive Species: No new invasive species were detected this week.

Avian Activity: The fish facility is conducting bird observations when possible. Observable predation has decreased as juvenile fish numbers decline.

Research: No on site research is in progress at this time.

Project: Lower Monumental

Biologists: Bill Spurgeon and Elizabeth Holdren

Dates: October 11 - 17, 2013

Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria. Unit 2 was taken out of service for annual maintenance at 0800 hours on September 9 and remains out of service.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and PSMFC/State biologists on October 12, 15, 16, and October 17.

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

Fishway Entrances and Collection Channel: NSE1 and NSE 2 weir gates were in depth criteria (criteria: $\geq 8'$ or on sill) on all inspections. North shore channel/tailwater head was in criteria ($1'$ - $2'$) on all inspections.

SPE 1 and SPE 2 weir gates were in sill criteria (criteria: $\geq 8'$ or on sill) on all inspections. While on sill the gate depth readings were 7.2', 6.8', 7.4', and 7.0 feet. South powerhouse channel/tailwater head was in criteria ($1'$ - $2'$) on all inspections.

SSE1 weir gate was in depth or sill criteria (criteria: $\geq 8'$ or on sill) on all inspections. While on sill, the gate depth readings were 7.8 feet. SSE 2 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 and 3 were operated throughout this period. Two pump operation will continue until bearing repair and shaft alignment work is completed on pump 2, approximately November 15.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 92.5 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-35% surface coverage. No oil was observed in gatewells.

STSS/VBSs: STSSs are operating in cycle run mode.

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

Collection Facility: The facility is in winter maintenance mode.

Transport Summary: Fish transport is not in progress at this time.

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 (°F)* | | Water Clarity (Secchi disk - feet) | |
|---------------------------------|------|----------------------------|-----|-------------------------|------|------------------------------------|-----|
| High | Low | High | Low | High | Low | High | Low |
| 28.0 | 19.1 | 0.0 | 0.0 | 61.0 | 59.0 | 5.0 | 3.4 |

*Scrollcase temperatures.

Other

Spill for fish passage ended at 0000 hours on September 1.

Inline Cooling Water Strainers: Cooling water strainers were inspected on October 7. No live lamprey were recovered. Seven live Siberian prawns were recovered. Mortalities included 33 juvenile shad, 2 juvenile suckers, and 31 Siberian prawns.

Invasive Species: No zebra mussels were observed at the monitoring stations on October 7.

Avian Activity: Bird hazing has ceased for the season.

Research: Turbine units 5 and 6 were taken out of service from 0900 to 1505 hours on October 1 to facilitate Battelle's removal of cluster (antenna) arrays.

Project: Little Goose

Biologists: George Melanson and Richard Weis

Dates: October 11 - 17, 2013

Turbine Operation

Turbine units 2, 3, 5 and 6 were available for most of this report period. Turbine unit 1 is removed from service for scheduled exciter replacement. Turbine unit 4 is removed from service for annual inspection and maintenance. Turbine unit 3 was forced out of service on October 16 at 1345 hours due to an ESBS screen motor failure. Unit 3 was returned to service on October 17 at 1100 hours after installation of a replacement screen. Turbine unit 5 was forced out of service on October 14 at 0752 hours to October 15 at 1015 hours due to a faulty oil catching pump. Available turbine units were operated within the 1% criteria.

Adult Fish Passage Facility

USACE and ODFW fisheries biologists performed measured inspections of the adult fishway on October 13, 15 and 17.

Fish Ladder: The ladder exit head differentials ranged between 0 and 0.1 feet (criteria ≤ 0.5 ft.). Water depths over the weirs remained steady at 1.1 feet (criteria 1.0-1.3 ft.) and picketed lead head differentials remained steady at 0.0 feet (criteria ≤ 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 1.4 and 2.0 feet (criteria 1.3 to 2.0 ft.). SSE weir depths ranged between 8.3 and 8.4 feet (criteria ≥ 8.0 ft). NPE weirs ranged between 6.6 and 7.0 feet (criteria ≥ 7.0 ft or on sill). NSE weirs are at fixed elevations of 532.0 feet and depths ranged between 6.3 and 6.7 feet (criteria ≥ 6.0 ft.). Collection channel surface water velocities ranged between 1.7 and 2.1 (criteria ≥ 1.5 fps). Collection channel subsurface water velocity was measured on October 14 using the hydrologic current meter. Three measurements were conducted from near surface, mid depth and near bottom. The subsurface velocity average was 2.7 fps with 3 fish pumps operating and all weirs in open positions.

Auxiliary Water Supply System: All fish pumps operated within criteria, ranging between 71 and 74 rpm.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Woody debris was minimal. Gatewells for the most part, remained clear of debris.

Spillway Weir: The spillway weir was removed from service on August 1. Spill for the summer fish passage season ended on September 1.

ESBS/VBS: Most ESBSs operated within criteria this report period. ESBS screens were tested for proper operation on October 16. All ESBS operated as designed except for the screen in slot 3B. This ESBS was replaced and the associated unit returned to service.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile collection system was operated throughout this period with 20 open orifices.

Transportation Facility: The facility continued collection for transport. Daily fish collection for the week ranged between 65 and 208 and totaled 703. The descaling and mortality rate was 3.9% and 1.4% respectively. Twelve juvenile Chinook were bypassed with severe Columnaris infection. No problems with the facility were encountered.

Transport Summary: Every other day trucking continues. Fish continued to be transported below Bonneville Dam to Dalton Point and released to the river. A total of 1,043 fish were transported. All loading and transport operations were completed satisfactorily.

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* (°F) | | Water Clarity (Secchi disk - feet) | |
|---------------------------------|------|----------------------------|-----|-------------------------|------|------------------------------------|-----|
| High | Low | High | Low | High | Low | High | Low |
| 26.0 | 16.5 | 0 | 0 | 59.5 | 58.5 | 6.0+ | 5.0 |

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers on all units were checked on October 16. No fish were found.

Invasive Species: The zebra mussel substrate monitor was last inspected on September 23. No mussels were observed. The next inspection is scheduled for October 23.

Avian Activity: A maximum of 29 cormorants and 28 gulls were counted during bird surveys.

Research: UC Davis is performing underwater video monitoring of the new lamprey orifices in the adult fish ladder. University of Idaho is performing Adult Salmon Passage Studies using radio telemetry.

Project: Lower Granite

Biologists: Mike Halter and Ches Brooks

Dates: October 11 - 17, 2013

Turbine Operation

Lower Granite had turbine units 1, 2, 3, and 4 available for power generation at the beginning of the report period. Turbine unit 6 was removed from service on June 24 for cavitation repair, followed by annual maintenance. The expected return to service date is December 31. Turbine unit 5 was removed from service on October 7 for annual maintenance. The expected return to service date is November 1.

On October 9 at 1700 hours, the project ended special unit operations and resumed operating units in the priority order defined in the 2013 FPP table LWG-4, as follows: 2, 3, then 4-6 any order, and then 1.

Adult Fish Passage Facility

On October 11 – 13 COE fish biologists conducted inspections of the adult fishway system.

Fish Ladder: All criteria were met.

Fishway Entrances and Collection Channel: Head differential readings remained within criteria at the south shore and north powerhouse fishway entrances during the weekly inspections. The head differential reading at the north shore fishway entrances was out of criteria on the October 12 inspection with a reading of 0.9 feet (criterion 1.0' – 2.0').

Weir depths at the south shore fishway entrances met criteria during all weekly inspections with depths ranging from 8.0 to 8.2 feet (criterion ≥ 8.0 feet). Weir depths at the north powerhouse fishway entrances also met criteria during all weekly inspections with depths ranging from 8.0 to 8.1 feet (criterion ≥ 8.0 feet). Weir depths at the north shore entrances ranged from 4.7 to 6.5 feet (criterion ≥ 7.0 feet). Only north shore entrance 1 can adjust its' depth relative to the tailwater elevation. North shore entrance 2 is manually set at a compromise depth of 630.0 feet. Normally, weir depth readings at the north shore entrances are sacrificed in order to maintain the requisite 1.0 foot of head differential. Velocity readings in the adult fishway collection channel transition pool area ranged from 0.86 to 1.01 feet per second and averaged 0.93 feet per second.

Auxiliary Water Supply System: Fish pumps 1 and 3 were run during the week without any problems. Fish pump 2 is now in standby.

Juvenile Fish Passage Facility

The sample rate remained at 100% until 0700 hours on October 17 when it was reduced to 50% due to excessive fish in the sample.

Forebay Debris/Gatewell Debris/Oil: The amount of forebay debris varied during the week due to wind strength and direction; none was removed.

ESBSs/VBSs: VBS/ESBS video inspections last took place on August 23. No issues of note were reported. The next inspections are planned for October 25-26.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed every 3 hours around the clock in an attempt to keep them free of materials that might impact fish passage. Debris levels were light during the report week.

The percentage of smolts that were more than 20% descaled held steady during the report week. Descaling was 4.0% for the week compared to 4.2% last week and 2.5% in 2012 and 1.7% for the 2007-2011 average. The project continues to monitor all areas and structures associated with juvenile fish passage closely. Historically, descaling rates increase during September and October to their highest levels of the season.

Transportation Facility: The JFF operated smoothly during the week. There were no operational problems of any kind with fish collection, fish sampling, or fish transportation equipment. Fish collection numbers at Lower Granite increased considerably during the week with an average daily smolt collection of 662 (versus a daily average of 259 last week). Due to the high numbers of jack Chinook present in the juvenile bypass system, the facility has continued to employ a smaller gap series of separator bars to screen the jacks out of the sample. These bars have proven quite effective.

Transport Summary: Every other day fish barging operations concluded on August 16. All fish barges have been returned to Lower Granite and were docked for maintenance work and winter storage. This week, the two 4000 series barges were transported downstream for a much needed paint job. Fish trucking operations began on August 18 using the pickup midi-tanker. On October 11 fish numbers were within the capacity of the midi-tanker, but due to a substantial increase in smolt collection it was necessary to use the semi tractor-trailer for the remainder of the report week. Every other day truck transport is scheduled to continue thru October 31.

Removable Spillway Weir: The RSW was operated in support of general spill operations during the season. Mandatory spill operations in support of fish passage ended at 0001 hours on September 1.

River Conditions

River conditions during the week are outlined in Table 1.

Table 1: River conditions at Lower Granite Dam.

| Daily Average River Flow (kcfs) | | Daily Average Spill (kcfs) | | Water Temperature* (F°) | | Water Clarity (Secchi disk - feet) | |
|---------------------------------|------|----------------------------|-----|-------------------------|------|------------------------------------|-----|
| High | Low | High | Low | High | Low | High | Low |
| 27.9 | 17.9 | 0.1 | 0.0 | 59.3 | 58.3 | 5.0+ | 4.0 |

*Scrollcase temperature.

Other

Video counts in the adult fish ladder counting room began on March 1 and concluded on March 31. Visual counts between the hours of 0400 and 2000 began on April 1.

Inline Cooling Water Strainers: Cooling water strainers were last inspected for lamprey entrainment on September 24. A total of 0 lamprey were found in the strainers over a combined run time of 675.1 unit hours. The next cooling water strainer inspections are scheduled for late October.

Invasive Species: The zebra mussel substrate near the adult fishway exit was last examined for zebra mussels on October 4. No evidence of zebra mussels was found. The next inspection will take place in early November.

Avian Activity: Formal bird counts and hazing started on April 1. Avian hazing activities concluded for the season on June 30.

Adult Fish Trap Operations: Adult fish trap operations continued with a sample rate of 20%. Scale samples will be taken from one out of every 7 hatchery steelhead. All wild steelhead captured will be PIT-tagged and scale and genetic samples taken. Any previously PIT-tagged steelhead (either hatchery or wild) will have both scale and genetic samples taken for verification purposes.

IDFG is radio tagging adult 'B' run wild and hatchery steelhead to examine the difference in movement, staging and if the fish are straying from predicted/natural areas.

WDFW is radio tagging fall Chinook that were PIT-tagged as juveniles by Tiffani Marsh over the last 4 years.

The Nez Perce is conducting a study to monitor the effectiveness of adult 'B' run steelhead hatchery (supplementation) in the Clearwater sub-basin. Utilizing sort-by-code; fifty each of known South Fork Clearwater adults – comprised of: Clearwater natural, supplementation and conventional steelhead will be radio tagged. The 2 main goals of this study are: 1. Compare the relative performance of these 3 groups. 2. Determine spatial overlap in the spawning distribution of these groups.

Fall Chinook Transport: Collection of adult fall Chinook for transport to Lyons Ferry Hatchery and the Nez Perce Hatchery at Cherry Lane continued during the week. The Nez Perce are trucking fish on Sunday and Monday and Lyon's Ferry Hatchery is trucking fish Tuesday – Saturday. Trucking operations will continue into November (or until hatchery needs are met).