U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#31-2013

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: September 27 – October 3, 2013

Turbine Operation

McNary had 10 units available for power generation this week. On April 1, the hard constraint one percent criteria began and no units ran outside the criterion during this report period. From September 27 to 28, the project operated unit 1 at 42 MW due to the VBS differential at 1A slot measuring 1.5 feet. 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.
13	Sep 3 – Oct 2	One month.	Above water overhaul.
9 & 14	Oct 1	39 minutes total.	ESBS camera inspections.

Adult Fish Passage Facilities

On September 27, 29 and October 2, the McNary fisheries biologists performed measured inspections of the adult fishways. Visual fish counts continued. Project personnel continue to monitor and clean the picketed leads at both exits regularly, especially when the juvenile fish facility is operating in primary bypass mode. On October 2, the fisheries technician found the Washington count station window brush in the lowered position. Maintenance staff resolved the issue immediately.

On September 30 and October 2, respectively, video lamprey counting and temperature monitoring concluded. Also, on September 30, the nightly lowering of the Oregon ladder entrance weirs, SFEW1, SFEW2, NFEW2 and NFEW3, in support of adult lamprey passage concluded. On October 2, the technical staff disengaged the program. Weir monitoring did not reveal any problems.

Fish Ladder Exits: Project personnel cleaned the picketed leads at both exits regularly, including on the weekends. Eurasian milfoil continues to be a problem, though the quantity is decreasing.

During inspections, both ladder exits met all Fish Passage Plan criteria except on October 2, when the Washington ladder's head over weir differential measured 0.9 feet. On October 1, all

the exit weirs triggered alarms. Normal operation resumed after the operators reset them. This may explain the above inspection results. A set point adjustment may be required.

At the Oregon exit, due to encoder issues, weir 340 remains in manual mode. Our differential monitoring of the traveling screens revealed no problems even though the trash rack differential has been measuring approximately one foot.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria. Weir, W2, is operating well with the digital encoder. The LED remains unplugged. Weir, W3 is still occasionally experiencing calibration drifts.

At the Oregon ladder entrances, all inspection points met criteria. At north powerhouse entrance weir, NFEW2, we occasionally noted a slight amount of slack in the weir's south cable. Surface velocity readings taken in the Oregon collection channel averaged 1.3 feet per second.

Auxiliary Water Supply System: The Wasco county PUD in the Washington ladder had no interruptions in service. In the Oregon ladder, the fish pumps had one interruption in service. On October 2, pumps 1 and 3 were taken out of service for 38 minutes in support of bus switching activities. Otherwise, these pumps operated with blade angles set at 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

On September 30, at 0700 hours, the last day of secondary bypass operations concluded. This was immediately followed by the start of the fall primary bypass season. Prior to September 30, no deviations from the primary/secondary bypass schedule occurred. This week, we bypassed 132 smolts and no juvenile lamprey.

The facility will remain watered up during the fall season to avoid freeze breakage. Light maintenance will soon begin at the facility. The juvenile collection channel will be monitored 24 hours, 7 days a week by the fisheries staff.

Forebay Debris/Gatewell Debris/Oil: Forebay debris along the powerhouse was light this week, consisting of Eurasian milfoil and wood. Milfoil levels continue to drop. Storms and wind direction continued to affect debris distribution. Trash rack differential measurements revealed no problems and no racks were cleaned. We noted no problems in the gatewell slots. On September 27, project personnel removed the bulkheads in slots 13B and 13C.

ESBSs/VBSs: ESBSs are deployed in all turbine units except for those associated with unit 11. On October 1, the project reinstalled the fish screens in unit 13. The screens in slots 2A, 3A, 7B, 8C and 10C slots remain in timer mode. On October 1, camera inspections at units 9 and 14 revealed no problems.

VBS differential monitoring revealed 1 screen out of criteria. The project reduced the load at unit 1 and cleaned the VBS in slot 1A the next day. On September 28, October 1 and 2, project

personnel cleaned 5 other screens as a preventative measure. We noted no fish mortalities of interest during VBS cleaning activities.

The maintenance staff is taking advantage of the fact that turbine units 3 and 11 are out of service. Slot 3C remains without a VBS. This slot along with those associated with unit 11 is being used to cycle in rehabilitated VBSs. On October 3, project staff removed the VBS in slot 11A, cleaned it in slot 3C slot before removing the VBS to the yard for rehabilitation.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: For the week, we had 40 to 42 orifices open with no problems observed. On September 28, we opened the orifices at unit 13 and closed the spares at unit 12. On September 30, we went to 40 orifices by closing 2 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.

With around the clock coverage of the channel, orifice adjustments can be made as required at unit 4. The fisheries staff continued to monitor the channel during VBS cleaning and rehabilitation and during camera inspections, making brief orifice adjustments as required.

All systems operated well in automatic mode. There have been no further problems with the side screen cleaning device, which we will continue to monitor.

Transportation Facility: For the summer bypass season, no operational changes occurred. On September 30, the fall primary bypass season began. We shutdown all systems within the facility and evacuated all fish to the river. PIT tag detection now occurs only in the full flow pipe. Light maintenance will begin, as the facility will remain watered to avoid freeze breakage.

Transport Summary: Transport did not occur at McNary this year and is not likely to resume in the near future.

River Conditions

River conditions during the week are outlined in Table 2 as provided by COE data. The smolt monitoring staff, PSMFC, concluded data collection on September 30. The COE 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 (^{o}F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
116.9	84.5	0.0	0.0	67	62	6.0	6.0

Other

Inline Cooling Water Strainers: No species of interest were recovered during cooling water strainer examinations on October 1. Only juvenile shad were recovered.

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

Avian Activity: Routine bird counts concluded September 30. We counted birds in each zone once a day usually in the morning. In the forebay area, we observed an occasional gull, grebe or kingfisher. We noted cormorants and gulls on the rocks by the Washington boat dock. We observed no grebes elsewhere on project.

In tailwater locations, we had high counts of 142 gulls and 94 cormorants. Most of the feeding birds were in the powerhouse area with others roosting on the navigation lock wing wall. Bird numbers may be fluctuating with juvenile shad numbers. Birds may have begun their own outmigration.

We observed high counts of 17 gulls, 4 mergansers and 15 cormorants by the bypass outfall.

Formal routine bird observations concluded with the end of the facility juvenile fish sampling operations. Casual observations taken during other inspections will be reported.

The hazing sprinkler system remains out of service as a result of a water pump failure on September 9. A new system will be installed this fall. The 3 gull distress calls remain deployed.

Research: On September 30, the adult lamprey passage study concluded. In October, a researcher will begin preparations for the direct adult steelhead passage survival comparison study at a turbine intake and a TSW.

Project: Ice Harbor
Biologist: Mark Plummer
Biological Technician: Donald Dennis
Dates: September 27 – October 3, 2013

Turbine Operation

Main turbine units 1, 3, 4, and 5 were available for operation. Turbine unit 4 returned to service September 27 at 0555 hours. Turbine unit 3 returned to service October 2 at 1150 hours. Turbine units 2 and 6 remained out of service.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways September 30, October 1, and October 3.

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. 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: No problems to report. Fish ladder exits are clear of debris and the bubblers are operating satisfactorily.

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

Fish Sampling: Juvenile fish sampling concluded July 15.

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* (^{o}F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
36.2	19.6	0.0	0.0	66	65	7.3	7.0

*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: September 27 – October 3, 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. Units 5 and 6 were taken out of service from 0900-1505 hours on October 1 to facilitate Battelle's removal of cluster arrays.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and PSMFC/State biologists on September 27, 28, 29, and October 2.

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 NSE 2 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.

SPE 1 and SPE 2 weir gates were in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill the gate depth readings were 7.6', 6.9', 6.7', and 6.6 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections.

SSE1 weir gate was in depth or sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill the gate depth readings were 7.7' and 7.6 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 operations will continue until bearing repair and shaft alignment work is completed on pump 2, approximately October 17.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 0.5 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-15% surface coverage. No oil was observed in gatewells.

STSs/VBSs: STSs are operating in cycle run mode. STS inspections are scheduled for October 8-10.

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

Collection Facility: Daily collection for transport ended at 0700 hours on October 1. The facility was dewatered for winter maintenance on October 2.

Transport Summary: Alternate day midi-tank transport ended with the final load going out on October 1.

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
35.9	19.0	0.0	0.0	65.5	63.5	4.8	4.2

*Scrollcase temperatures.

Other

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

Inline Cooling Water Strainers: Cooling water strainers were inspected on September 11. One live lamprey was recovered. Mortalities included 5 juvenile lamprey, 1 juvenile salmon, 2 juvenile catfish, 16 Siberian prawns, and 1 unknown juvenile species.

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

Avian Activity: Bird hazing has ceased for the season.

Research: As mentioned above, 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
Biologist: George Melanson
Dates: September 27 – October 3, 2013

Turbine Operation

Turbine units 2, 3, 4 and 6 were available for all of this report period. Turbine unit 1 was removed from service for scheduled exciter replacement on October 1. Turbine unit 5 was returned to service on October 3 following annual maintenance. 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 September 29, October 1 and 3.

Fish Ladder: The ladder exit head differentials ranged between 0.0 and 0.1 feet (criteria ≤ 0.5 ft.). Water depths over the weirs ranged between 1.1 and 1.2 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 remained steady at 8.3 feet (criteria ≥8.0 ft). NPE weirs ranged between 7.0 and 7.3 feet (criteria ≥7.0 ft or on sill). NSE weirs are at fixed elevations of 532.0 feet and depths ranged between 6.8 and 7.4 feet (criteria ≥ 6.0 ft.). Collection channel surface water velocities ranged between 1.8 and 2.4 (criteria ≥1.5 fps). Collection channel subsurface water velocity was measured on September 10 using the Rickly Hydrologic Current Meter. Three measurements were conducted from near surface, mid depth and near bottom. The subsurface velocity average was 3.2 fps with 3 fish pumps operating and all weirs in open positions.

Auxiliary Water Supply System: All fish pumps operated within criteria ranging between 72 and 75 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 season ended on September 1.

ESBS/VBS: All ESBSs operated within criteria this report period. ESBSs were tested for proper operation on September 15. All brushes operated as designed.

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 during the week ranged between 5 and 238 and totaled 477. The descaling and mortality rate was 3.8% and 1.0% respectively. Fish with suspected Columnaris disease are decreasing with 0 juvenile Chinook being bypassed this report period with severe infection. No problems with the facility were encountered.

Transport Summary: Every other day trucking continues. Fish continued to be transported below Bonneville Dam to the Smolt Monitoring Facility and released to the river via the outfall flume. A total of 476 fish were transported this week. 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* (^{o}F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
33.8	17.0	0	0	65.4	63.9	6.0+	4.6

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers on all units were checked on October 2. 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: Maximum bird counted from single survey included 22 cormorants and 38 gulls.

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: September 27 – October 3, 2013

Turbine Operation

Lower Granite had turbine units #1, 2, 3, 4 and 5 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 now December 31.

Special unit operations to improve adult passage continued with the project directed on September 19 at 1700 hours to operate unit priority as follows: 1, 2, 3, and then 4 – 6 in any order thru October 2. The purpose of this operation is to operate turbine unit #1 as the priority continuously during all hours with minimal starts and stops - to provide improved ladder attraction flow.

Adult Fish Passage Facility

On September 27 – 29 COE fish biologists conducted inspections of the adult fishway system. The September 27 inspection was jointly conducted with the ODFW biologist from Little Goose Dam.

Fish Ladder: All criteria were met.

Fishway Entrances and Collection Channel: Head differential readings were within criteria at all adult fishway entrances during the weekly inspections.

Weir depths at the south shore fishway entrances 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 powerhouse fishway entrances also met criteria during all weekly inspections with depths ranging from 8.0 to 8.3 feet (criterion ≥ 8.0 feet). Weir depths at the north shore entrances ranged from 4.8 to 6.6 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 0.87 to 0.97 feet per second and averaged 0.91 feet per second.

Auxiliary Water Supply System: Fish pumps 1 and 3 were run during the week. A replacement coil and circuit board for fish pump #2's starter have been ordered. Fish pump 2 is out of service awaiting these parts.

Juvenile Fish Passage Facility

The sample rate remained at 100% during the report week.

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 late October.

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 decreased somewhat (mostly fine material) during the report week.

Facility personnel continue to be concerned with elevated descaling of smolts. The water has been lowered in the separator several times (for various purposes) enabling close inspection of the conditions under the bars – a few sticks were removed each time. The separator exits are monitored regularly, as are the gatewells and orifices. All operating units' associated trash racks have been raked within the last five weeks. Descaling was 6.8% for the week compared to 5.6% in 2012 and 3.9% for the 2007-2011 average. 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 again increased substantially during the week with an average daily collection of smolts of 247 (versus a daily average of 83 last week). Due to ever increasing 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 are docked for maintenance work and winter storage. Fish trucking operations began on August 18 using the pickup midi-tanker. On October 1 Lower Granite combined fish truck transport operations with Little Goose. Due to an increase in fish collection during the report week combined transport operations with Little Goose have been discontinued until fish numbers are once again low enough for "piggy-back" operations.

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 below.

Table 1: River conditions at Lower Granite 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
36.2	19.7	0.0	0.0	67.4	66.0	5.0+	4.1

*Scrollcase temperature.

Other

Video counts in the adult fish ladder counting room began on March 1 and concluded on March 31. Visual counting 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 September 6. No evidence of zebra mussels was found. The next inspection will take place in early October.

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 the sample rate increased from 12% to 15% on October 2. 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 four years.

The Nez Perce Tribe 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 two main goals of this study are: 1. Compare the relative performance of these three 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 resumed 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).