U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#41-2013

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: December 6 - 12, 2013

Turbine Operation

McNary had 11 units available for power generation this week. Unit 13 was available but in standby due to a BPA transmission line load restriction. On November 1, the soft one percent constraint began. Available units ran outside the criterion on every day except December 10. 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 thrust bearing issue.
13	Dec 2 – 12	About 10 days.	BPA line restriction.

Adult Fish Passage Facilities

On December 6, 8 and 11, the McNary fisheries staff performed measured inspections of the adult fishways. The project continues to prepare for the winter maintenance season.

Fish Ladder Exits: During the inspections, both ladder exits met all Fish Passage Plan criteria. The upper limit switches at the Washington exit weirs 334 and 335 remain out of service. On December 9, project maintenance staff replaced the upper limit switch on weir 336. At the Oregon exit, weir 340 remains in manual operation due to encoder issues. 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 temporary digital encoder. The LED remains unplugged. Although W3 had not calibration drifts this week, the biologist noted that W3 had not moved since November 10. The technical staff previous found that the encoder had failed although the weir remained in criteria. The installation of a new control system is in progress.

All week, at the Oregon ladder entrances, only the pool differentials were in criteria. Following the fish pump 1 outage (see below for details), NFEW 2 and NFEW3 depths measured 7.6 to 7.8 feet. SFEW1 and SFEW2 measured weir depths ranging from 6.8 to 7.3 feet. No calibration

drifts were observed this week and the computer system showed the weirs in criteria. We speculate that the pool and/or tailwater sensors are out of calibration even though we are not sure how a fish pump outage could have caused this. The electrical staff has been asked to look into the problem.

This week, in preparations for bulkhead installation at NFEW4, the project removed all above-water weir equipment. In addition, the electrical staff began upgrades on the NFEW1 controls. Collection channel surface velocity readings averaged 1.9 feet per second.

Auxiliary Water Supply System: On December 12, the Wasco county PUD in the Washington ladder had two interruptions in service, totaling 4.3 hours. No reason was recorded. The bypass system worked well during these outages. From December 5, at 1530 hours to December 6, at 0730 hours, pump 1 was out of service due to a grease pump failure. The pump cooling water strainer was found obstructed and cleaned during the outage. When operational, fish pumps 1 and 3 operated with blade angles of 30 degrees. Fish pump 2 remains out of service for major overhaul which will require a contract. Preparation for this work is in progress. Since the juvenile facility is in the emergency bypass configuration, it is no longer supplying the usual 450 cfs to the north powerhouse pool.

Juvenile Fish Passage Facility

As previously reported, the juvenile system remained in primary bypass until November 27 when the fisheries staff switched the system to emergency bypass mode due to issues with the side screen cleaning device. Maintenance and winterization continued. For most of the week, severe winter weather, with northeast winds and extreme cold temperatures, affected the work that could be preformed.

Forebay Debris/Gatewell Debris/Oil: For the week, forebay debris along the powerhouse was light to very light consisting mainly of woody material and milfoil. Changes in wind direction continued 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: At the start of this report period, ESBSs were deployed in all units except in slot 3C and in slots associated with unit 11. On December 11, the project mechanical crew raised the remaining screens in units 3 and 4. Removal of currently deployed screens will begin December 16, beginning with those associated with turbine unit 14 and ending with those associated with unit 1. No camera inspections took place this week due to the planned screen removals.

The ESBSs in slots 2A, 3A, 7B, 8C, 10C, 13A and 14B operated in timer mode. As mentioned last week, the ESBS in slot 10A failed on December 5. This screen was replaced with a screen taken from slot 3C. On December 6, at 1950 hours, operators found this screen in manual mode and switched it to automatic operation. On December 9, the screen in slot 7A was found “short cycling” (i.e.: reversing direction before the end of normal travel). Later, the screen triggered an alarm and the operators switched it to bypass (timer) mode. On December 10, the screen in slot 8A was found “short cycling”. This ESBS subsequently triggered an alarm and the operators switched it to bypass (timer) mode. On December 8, 10 and 12, the screen in slot 9C “short

cycled" and triggered alarms. Each time, the operators were able to recalibrate the screen's controls and return it back into service. On December 12, the screen in slot 6C also was found "short cycling", recalibrated and returned to service.

VBS differential monitoring revealed no screens out of criteria and none were cleaned. On December 6, project personnel replaced the VBS in slot 6B. There was no record of any species of interest lost during the removal. During the week, the project removed all damaged screens from units 3 and 11, replacing them with rehabilitated ones. The damaged screens were taken to the yard where they will be repaired.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The system continued to operate in emergency bypass mode with 42 orifices in service. Problems encountered this week included an obstruction being removed from an orifice in slot 5A on December 9 and water condensing in the orifice air supply line, freezing at two air line exhaust vents. This resulted in 2 damaged orifice actuator oil reservoirs which required replacement. Thirdly, unused orifices were found frozen in their closed positions. Because of these difficulties, actuator oil reservoirs are being monitored daily. Due to the severe weather, only light maintenance is in progress.

Transportation Facility: With the facility winterized, maintenance continues. However, severe winter weather limited our outside work this week. The northeast wind damaged several main flume covers. The HVAC system in the facility continues to be a major problem, especially, during the current severe weather.

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 Hours0000.

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
149.8	122.9	0.0	0.0	46	40	6.0	6.0

Other

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

Invasive Species: The next zebra mussel station examinations will occur in late December.

Avian Activity: On September 30, bird counts concluded. We performed casual bird observations during the course of other activities. In the forebay area, we observed a single gull or occasional group of gulls, a small group of grebes, a blue heron, a kingfisher or a cormorant. Gulls continued to be observed on the rocks by the Washington boat dock.

In the tailwater area, we noted gulls, mergansers and cormorants. Most of the feeding birds were in powerhouse area. The roosting birds were on the navigation lock wing wall or in the spill basin. Bird numbers maybe fluctuating with their seasonal movements and juvenile shad out migration.

We observed an occasional gull by the emergency bypass outfall.

Occasionally, bald eagles were noted on project.

The three gull distress calls remain deployed. The clean up contract for the new outfall pipe is at the 60 percent stage. This contract includes the new hazing sprinkler system.

Research: A dive to remove the transducers from the trash racks utilized during last season's study is being planned. The adult steelhead survival study may occur next spring.

Project: Ice Harbor
Biologist: Mark Plummer
Dates: December 6 - 12, 2013

Turbine Operation

Main turbine units 1, 2, 3, and 5 were available for operation. Turbine unit 4 remains out of service for governor installation. Turbine unit 6 remained out of service for cavitation repair.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fish ways December 9, 10, and 11.

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: Fish way entrance criterion is 8 feet depth, greater than 8 feet depth, or on sill. All fish way entrances were within criteria. All channel/tail water differentials were in criteria, except on December 10. On this inspection, the south channel/tailwater differential measured 2.2 feet. All south adult collection channel velocities 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

Forebay 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. STS/VBS inspections were performed November 18 and 19. No problems to report.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile bypass is watered up with 20 opened orifices. The tentative schedule for unwatering the bypass is December 23.

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* (^{o}F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
23.9	16.4	0.0	0.0	44	40	11.0	8.3

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers in units 1 – 5 were inspected on November 18. Unit 6 was not inspected as it remains out of service. 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 increased as juvenile shad are passing the dam.

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

Project: Lower Monumental
Biologists: Bill Spurgeon and Elizabeth Holdren
Dates: December 6 - 12, 2013

Turbine Operation

The units are being operated in soft constraint of the 1% operation criteria. Unit 5 was removed from service at 1300 hours on October 29 for annual maintenance.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on December 9, 10, 11, and 12.

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 with the exception two north shore exit readings of 2.0' and 1.2 feet on December 9 and 10, respectively. These reading were due to a combination of debris and ice creating a dam at the ladder exit. Powerhouse maintenance began removing the obstruction on December 9 and completed the work on December 10. Picketed lead head differentials were in criteria (≤ 0.4' and ≤ 0.3' for north and south shore fishways, respectively) on all inspections. North shore picketed leads were raised on November 14.

Fishway Entrances and Collection Channel: NSE1 and NSE2 weir gates were in depth criteria (criteria: ≥ 8' or on sill) on all inspections with the exception of NSE2. NSE2 had a 7.8 feet reading on December 9. On December 6 powerhouse electricians, in manual mode, raised NSE2 to the upper limit (447.0 feet). It was determined that the transducer for NSE2 was out of calibration. The problem was resolved and the gate was lowered back into position. The gate was returned to depth criteria but was not returned to remote control. The out of criteria reading on December 9 was due to the gate not operating automatically due to being in local control. 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 6.7', 7.5', 7.8', and 6.8 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. 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 in December.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 112.5 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: STSs 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 occurring 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 (^{o}F)*		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
24.0	19.2	0.0	0.0	41.0	40.0	5.0	5.0

*Scrollcase temperatures.

Other

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

Inline Cooling Water Strainers: Cooling water strainers were inspected on December 9. No live lamprey was recovered. Recovered mortalities included about 165 juvenile shad and 4 Siberian prawns.

Invasive Species: No zebra mussels were observed at the monitoring stations on December 2.

Avian Activity: Gulls are the dominant piscivorous bird species at the project ranging between 111 to 311 individuals observed during fish ladder inspections this week. Cormorant abundance ranged from 1 to 106 birds.

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

Project: Little Goose
Biologist: Richard Weis
Dates: December 6 - 12, 2013

Turbine Operation

Turbine units 3 through 6 were available for most of this report period. Turbine unit 1 was removed from service for scheduled annual maintenance on December 2. Turbine unit 2 was removed from service for scheduled exciter replacement on November 25. Unit 6 was removed from service on December 10 and 11 in support of diving operations at spillway 1. Turbine units were operated within the 1% criteria.

Adult Fish Passage Facility

Adult fishway inspections were performed on December 10, 11 and 12.

Fish Ladder: The ladder exit head differentials held relatively steady at 0.1 to 0.2 feet (criteria $\leq$ 0.5 ft.). Water depths over the weirs measured 1.1 feet (criteria 1.0-1.3 ft.) and picketed lead head differentials remained steady at 0.0 feet (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 1.5 and 1.9 feet (criteria 1.0 to 2.0 ft.). SSE weir depths held steady at 8.3 feet (criteria $\geq$8.0 ft). NPE weirs ranged between 6.9 and 7.3 feet (criteria $\geq$7.0 ft or on sill). NSE weirs are at fixed elevations of 532.0 feet and depths ranged between 6.5 and 7.0 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocities measured near the junction pool ranged between 1.8 and 2.0 (criteria $\geq$1.5 fps). Collection channel subsurface water velocity was measured on November 13, using the hydrologic current meter. Channel velocities averaged 2.8 fps with 3 fish pumps operating and all weirs in open positions.

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

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: An estimated 100 square feet of woody surface debris was observed inside the trash-shear boom. On December 9, spillway 1 was opened and spill was initiated to remove debris in support of upcoming diving operations. Gatewells for the most part, remained clear of debris.

Spillway Weir: The spillway weir was removed from service on August 1. Spill for summer fish season ended on September 1. Divers were used to cleaned bulkhead slots on spillway 1 on December 10 and 11.

ESBS/VBS: All ESBS operated within criteria this report period. ESBS screens were tested for proper operation on November 18. All ESBS operated as designed. ESBS screens associated with unit 1 and 2 were pulled on December 11. These units are respectively out of service for yearly maintenance and exciter replacement.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile collection system was operated throughout this period with 18 open orifices.

Transportation Facility: The facility was switched to primary by-pass on October 31 at 0700 hours. All fish are now being routed to the tailrace mid-channel area. Seasonal maintenance work at the facility is in progress.

Transport Summary: Fish transport ended on October 31.

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
23.2	16.5	0	0	40.8	39.0	6.0+	6.0+

*Ladder temperature.

Other

Inline Cooling Water Water Strainers: Cooling water strainers on all units were checked on December 2. No fish were found.

Invasive Species: The zebra mussel substrate monitor was last inspected on November 21; no mussels were observed. The next inspection is scheduled for December 20.

Avian Activity: A maximum of 96 gulls and 18 cormorants were counted during bird surveys.

Research: No research is in progress at this time.

Project: Lower Granite
Biologists: Mike Halter and Ches Brooks
Dates: December 6 - 12, 2013

Turbine Operation

Lower Granite had turbine units 1, 3, 4 and 5 available for power generation at the beginning of the report period. Turbine unit 6 remained out of service for cavitation repair, followed by annual maintenance. The expected return to service date is January 5, 2014. Turbine unit 2 remained out of service for a six year overhaul. The planned return to service date is December 16, 2013. Turbine unit 1 was taken out of service at 1015 hours on December 9 in support of vibration inspection and testing. This unit returned to service at 1155 hours on December 12.

Adult Fish Passage Facility

On December 6 – 8, 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. Head differential readings at the north shore entrances were within criteria on the December 7 and 8 inspections, but was slightly below criteria during the December 9 inspection with a reading of 0.9 feet (criterion 1.0 – 2.0 feet).

Weir depths at the south shore fishway entrances were in criteria on the December 6 inspection but SSE 2 was out of criteria on the following two inspections with depths of 7.6 and 7.2 feet respectively, due to a burnt out weir gate starter coil (see below). The north powerhouse fishway entrances were on sill during all inspections this week with depths ranging from 7.1 to 7.5 feet due to tailwater elevations below 636.0 feet (these gates bottom out at elevations below 636.0 feet). Weir depths at the north shore entrances ranged from 3.7 to 5.5 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 attempt to maintain the requisite 1.0 foot of head differential.

Loss of Auto or Manual SSE2 Gate Control at Lower Granite on December 7: During a 1030 hours fishway inspection the Lower Granite biologist on duty noted that the South Shore Entrance 2 weir gate was four tenths of a foot out of criteria with a reading of 7.6 feet (criterion ≥ 8.0 feet), while South Shore Entrance #1 was in criteria – these gates are invariably within a tenth of each other in depth. The biologist informed the Powerhouse Operator that he would attempt to lower the gate in manual mode and then return the gate to automatic control. The biologist subsequently found that the gate would not operate in manual or automatic mode. A closer inspection revealed that the circuit breaker for this gate had not been tripped.

After reviewing the Fish Passage Plan section 3.2.2.3. (Fishway Entrances) and in consultation with the District Adult Passage Coordinator the decision was made to manually lower the South Shore Entrance 1 gate onto sill and maintain this configuration until the morning of December 9. This maintained a channel to tailwater differential of approximately 1.5 feet. A trouble report was generated. After project electricians replaced a motor starter and at 1530 hours on December 9, SSE 2 was repaired and both south shore entrances resumed normal (in criteria) operation.

Velocity readings in the adult fishway collection channel transition pool area ranged from 0.96 to 1.14 feet per second and averaged 1.05 feet per second.

Auxiliary Water Supply System: Fish pumps 1 and 3 were run during the week. On October 31, fish pump one's speed was changed from slow to fast which helped head differential readings at the fishway entrances. Fish pump 2 is in standby.

Juvenile Fish Passage Facility

Juvenile fish collection and transportation operations ended at 0700 hours on October 31. The system was switched to secondary bypass (all juvenile fish routed out the pipe to mid-river release) this provides continued PIT-tag interrogation. Due to very cold weather conditions, the powerhouse mechanical crew began pulling fish screens on December 4 and completed pulling all screens the next afternoon. The juvenile fish collection gallery and collection/transportation facility were dewatered for the winter season on December 5 and 6.

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: ESBS/VBS inspections have concluded for the year. Due to very cold weather conditions, removal of the ESBSs began on December 4 and concluded the next day.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: The collection channel has been dewatered for the year.

Transportation Facility: On December 5 and 6, the juvenile fish collection gallery and collection/transportation facility were dewatered for the winter season. Winter maintenance has begun in earnest.

Transport Summary: Nothing to report. Fish trucking operations concluded on October 31 and the semi tractor has been returned to the McNary Project.

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 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^o)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
22.6	18.0	0.0	0.0	42.2	41.9	5.0	5.0

*Scrollcase temperature.

Other

Visual counts in the adult fish ladder counting room between the hours of 0400 and 2000 began on April 1 and concluded on October 31. Video counts during the same hours began on November 1 and will continue through December 31.

Inline Cooling Water Strainers: Cooling water strainers were last inspected for lamprey on November 25. No lamprey were found in the strainers over a combined run time of 1,075.9 unit hours. The next cooling water strainer inspections are scheduled for late December.

Invasive Species: The zebra mussel substrate near the adult fishway exit was examined for zebra mussels during the December 6 inspection. No evidence of zebra mussels was found.

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: The adult fish trap was completely dewatered at 0800 hours on November 25 and all related trap operations and research are over for the season.