U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#39-2013

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: November 22 - 28, 2013

Turbine Operation

McNary had 8 to 11 units available for power generation this week. On November 1, the soft one percent constraint began. Units ran outside the criterion on November 22 to 23 and from November 25 to 27. 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.
10	Oct 30 – Nov 27	About 28 days.	Turbine guide bearing issue.
13	Nov 19 – 22	About three days.	Bus outage for maintenance.
14	Nov 12 – 22, Nov 23	About ten days. Four hours.	Annual maintenance. Motor repair.
1	Nov 25	2.2 hours.	Replace guide bearing oil.
14	Nov 25	3.2 hours.	Electrical repair.
5, 6 & 7	Nov 26	68 minutes.	ESBS camera inspections.

Adult Fish Passage Facilities

On November 22, 24 and 26, the McNary fisheries staff performed measured inspections of the adult fishways. Next week, the project will begin to prepare passage facility bulkheads for the winter maintenance season.

Fish Ladder Exits: During the inspections, both ladder exits met all Fish Passage Plan criteria except as listed here.

At the Washington exit, on November 22 and 24, the head over weir measured 0.9 feet. On November 26, the operators determined the exit weirs were out of synchronization. They adjusted the weirs and the set points. Also, this week, the operators reset one regulating weir alarm without incident.

At the Oregon exit on November 24, the head over weir measured 1.4 feet. On November 26, the operators adjusted the set points. Due to encoder issues, weir 340 remains in manual

operating mode. Our differential monitoring of the traveling screens revealed no problems. Three traveling screen alarm occurred this week, which the operators reset without incident. The operators also set the screens to run 12 times a day to help avoid freeze up due to the cold weather.

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. At the Oregon ladder entrances, all points were in criteria. Collection channel surface velocity readings averaged 1.3 feet per second.

Auxiliary Water Supply System: As mentioned last week, the Wasco county PUD in the Washington ladder had one interruption in service. From November 19 at 0700 hours to November 22 at 0900 hours, the system was in bypass mode in support of PUD electrical bus maintenance.

For the Oregon ladder, available fish pumps had no interruptions in service and ran 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.

The juvenile facility continued to supply the usual 450 cfs to the north powerhouse pool until November 27, when the system was switched to emergency bypass operations.

Juvenile Fish Passage Facility

The juvenile system remained in primary bypass until November 27 when the fisheries staff switched to emergency bypass operations due to issues with the side screen cleaning device. Details are discussed in the channel section of this report below. Light maintenance and winterization continued.

Forebay Debris/Gatewell Debris/Oil: For the week, forebay debris along the powerhouse was light, consisting mainly of woody material. Changes in wind, weather 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 at 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 November 26, camera inspections at units 5 to 7 revealed no problems.

VBS differential monitoring efforts revealed 1 screen out of criteria. This reading was taken with the unit running at 80 megawatts. On November 22, project personnel cleaned this screen and 11 others as a precautionary measure. We saw no ESA listed species or lamprey during the cleanings. 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.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: For the week, we had 42 orifices opened with no problems to report. Again this winter, water is condensing in the orifice air supply line. The fisheries staff is bleeding the water off daily.

All systems operated well in automatic mode until November 26. At 0315 hours, the technician on duty found the electrical code carrier for the side dewatering screen had broken, stalling the device. However, he still was able to park the device. Water from the road drains had entered the mechanism's cable trough and had frozen the carrier to the trough resulting in the break. By 0955 hours, the ice had thawed and electricians spliced the carrier back together. The biologist instructed the technicians to run the device manually and to keep it ice free.

A new carrier was ordered November 26, with arrival expected in about two to three weeks. Project personnel last replaced the carrier in 2008. After some deliberation, mechanics decided to plug the drains. This work was completed on November 27, at 1600 hours.

On November 27, at 0200 hours, the cable carrier again broke while the technician was running the device. For a second time, he was able to park the mechanism. Despite our best efforts, the cord carrier had frozen once more. After thawing and drying out the cable trough, the carrier was again spliced but this time the splices did not hold. By about 1200 hours, due to the importance of the side screen cleaning device to channel operations and the delay in getting a replacement carrier, facility personnel decided to switch the system to emergency bypass as allowed by the Fish Passage Plan for mechanical failures.

The switch from primary to emergency bypass operations took place from 1400 to 1746 hours. It took some time to assemble a crew because of the approaching holiday weekend. The switch involved two hazardous energy clearances. In addition, the west floor dewatering valve required an electrician to replace a fuse. The collection channel and the juvenile facility were winterized following the switch to emergency bypass operations.

Transportation Facility: Late on November 27, after the switch to emergency bypass, the fisheries staff winterized the facility. PIT tag detection is no longer taking place. The fisheries staff will continue to expand maintenance.

Due to freezing temperatures at night, the staff had several minor frozen areas to resolve this week. Also, in the winter drain for the A side water add in (i.e.: flush water), we found clam shells. We suspect the clams entered this line as larvae. We reported this to the district office.

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 (^{o}F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
132.2	98.9	0.0	0.0	50	47	6.0	6.0

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on December 3.

Invasive Species: The zebra mussel station examination on November 25 revealed no problems.

Avian Activity: On September 30, bird counts concluded. While doing other inspections, we conducted casual bird observations. In the forebay area, we observed a small group of grebes or gulls along with an occasional pelican, merganser or cormorant. We observed gulls on the rocks by the Washington boat dock.

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

We observed an occasional gull or cormorant by the bypass outfall until November 27, when primary bypass concluded.

The 3 gull distress calls remain deployed.

Research: The adult steelhead survival study may occur next spring.

Project: Ice Harbor
Biologist: Mark Plummer
Dates: November 22 - 28, 2013

Turbine Operation

Main turbine units 1, 2, 3, and 5 were available for operation. Turbine unit 1 returned to service from annual maintenance November 20 at 1350 hours. Turbine unit 4 remains out of service for governor installation. Turbine unit 6 remained out of service for blade repair.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fish ways November 25, 26, and 27.

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.

Adult Fishway Performance: 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 when the fish entrances were on sill November 27. Channel/tailwater differential exceeded 2 feet on the south side and center due to lower tailwater elevations, however the channel velocity remained in criteria of 1.5 – 4.0 fps. 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 November 18 and 19. No problems to report.

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 concluded 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
20.1	14.9	0.0	0.0	52	48	8.7	8.0

*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 decreased as juvenile fish numbers decline.

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

Project: Lower Monumental
Biologists: Bill Spurgeon and Elizabeth Holdren
Dates: November 22 - 28, 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. Unit 3 was returned to service at 1745 hours on November 23 after being forced out of service at 1733 hours on November 20 due to an oil leak at the north wicket gate servo actuators. Turbine units 4 and 6 were taken out of service in support of routine slip ring maintenance. Unit 4 was removed from service from 0740 to 1304 hours and Unit 6 was removed from service from 1306 to 1445 hours.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on November 25, 26 and 27.

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. 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. 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 7.1', 6.9', 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: ≥ 8' or on sill) on all inspections. While on sill the gate depth readings were 7.8', 7.8', and 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 operations 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 40.0 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-10% 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 ended 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
19.4	14.8	0.0	0.0	47.0	46.5	4.6	4.6

*Scrollcase temperatures.

Other

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

Inline Cooling Water Strainers: Cooling water strainers were inspected on November 5. No live lamprey was recovered. Recovered mortalities included about 220 juvenile shad and 19 Siberian prawns.

Invasive Species: No zebra mussels were observed at the monitoring stations on November 4.

Avian Activity: Bird hazing has ceased for the season.

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

Project: Little Goose
Biologists: George Melanson
Dates: November 22 - 28, 2013

Turbine Operation

Turbine units 1 through 6 were available for most of this report period. Turbine unit 2 was removed from service for scheduled exciter replacement on November 25. Turbine units were operated within the 1% criteria.

Adult Fish Passage Facility

Adult fishway inspections were performed on November 26 and 27.

Fish Ladder: The ladder exit head differentials held steady at 0.1 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 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 0.8 and 1.7 feet (criteria 1.0 to 2.0 ft.). SSE weir depths held relatively steady at 8.3 feet (criteria $\geq$8.0 ft). NPE weirs ranged between 6.7 and 7.1 feet (criteria $\geq$7.0 ft or on sill). NSE weirs are at fixed elevations of 532.0 feet and depths ranged between 6.6 and 7.0 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocities measured near the junction pool ranged between 1.5 and 1.6 (criteria $\geq$1.5 fps). Collection channel subsurface water velocity was measured on November 13, using the hydrologic current meter. Velocities averaged 2.8 fps with 3 fish pumps operating and all weirs in open positions.

Auxiliary Water Supply System: For the most part, all fish pumps operated within criteria ranging between 72 and 75 rpm. During the fishway inspection on November 26, fish pump 2 was found off-line at 1430 hours and reported to the shift operator. The pump was returned to service at 1940 hours. During the outage fish pumps one and three operating speeds were increased to provide additional water. The channel to head criteria was not met at the north shore entrances (with pump 2 off-line), measuring 0.8 feet.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: An estimated 300 square feet of woody surface debris was observed inside the trash-shear boom. 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.

ESBSs/VBSs: All ESBSs operated within criteria this report period. ESBS screens were tested for proper operation on November 18. All ESBSs operated as designed.

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 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
18.7	14.7	0	0	46.2	45.9	6.0+	6.0+

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers on all units were checked on November 14. 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 29 gulls and 17 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: November 22 - 28, 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.

Adult Fish Passage Facility

On November 23, 24 and 25 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 shore fishway entrances during the weekly inspections. Head differential readings at the north powerhouse entrances were within criteria on the November 23 and 24 inspections but were slightly below criteria on the November 25 inspection with a reading of 0.9 feet (criterion 1.0 – 2.0 feet).

Weir depths at the south shore fishway entrances were within criteria on all 3 inspections this week. Weir depths at the north shore fishway entrances were out of criteria on the November 23 inspections with weir depths on both gates of 7.8 feet (criterion $\geq$ 8.0 feet). Weir depths at the north shore entrances ranged from 4.5 to 7.3 feet (criterion $\geq$ 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.

Velocity readings in the adult fishway collection channel transition pool area ranged from 1.00 to 1.18 feet per second and averaged 1.06 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 and weather permitting, will continue until December 15.

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: The next VBS/ESBS inspections are planned for late November.

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

Transportation Facility: The JFF operated smoothly during the week. There were no operational problems of any kind. The separator remains "watered up" to bypass fallback adult salmonids and enumerate PIT-tagged juvenile fish (Lower Granite does not have PIT-tag detection on a bypass pipe and the separator has to remain operational to track PIT-tags). Separator personnel also continued to monitor adult fallback salmonids for condition factors.

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
20.4	16.7	0.0	0.0	48.5	48.2	5.0	4.4

*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 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 last examined for zebra mussels on November 1. No evidence of zebra mussels was found. The next inspection will take place in early December.

Avian Activity: Formal bird counts and hazing started on April 1. Avian hazing activities concluded for the season on June 30. The project continues to make daily counts of avian predators from the separator platform.

Adult Fish Trap Operations: The adult fish trap was completely dewatered for the season at 0800 hours on November 25 and all related trap operations and research have concluded for the season.