U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#42-2013

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: December 13 - 19, 2013

Turbine Operation

McNary had 11 units available for power generation this week. On November 1, the soft one percent constraint began. Units ran outside the criterion on December 13, 14, 17 and 19. 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.
12, 13 & 14	Dec 16	Total 14.7 hours.	ESBS removal.
8, 9 & 10	Dec 17	Total 17.5 hours.	ESBS removal.
1, 2 & 5	Dec 18	Total 15.8 hours.	ESBS removal.
6 & 7	Dec 19	Total 17.4 hours.	ESBS removal.

Adult Fish Passage Facilities

On December 13, 15 and 18, 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. At the Oregon exit, weir 340 remains in manual operation due to encoder issues. Our differential monitoring of the traveling screens revealed no problems. Operators did reset one traveling screen alarm without incident this week.

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. W3 drifted in and out of calibration this week as the weir cannot move until the failed encoder is replaced. The installation of a new control system is in progress. On December 18, a slight amount of slack was also noted in the W3 weir south cable.

All week, at the Oregon ladder entrances, only the pool differentials remained in criteria. Technical staff recalibrated sensors and weirs on December 16, 17, and 18 as the biologist found them out of calibration on December 14. The north powerhouse tailwater sensor, the south

powerhouse tailwater sensor and pools sensors were off by 0.4', 0.9' and 0.4' respectively. NFEW2 and NFEW3 weir depths ranged from 7.4 to 7.8 feet and 6.6 to 7.8 feet respectively. The lowest NFEW3 reading occurred on December 18, while the technical staff was working on the controls. It should be noted that the juvenile facility is no longer supplying water to the north powerhouse entrance.

On December 13 and 15, SFEW1 depths measured 7.0 and 6.7 feet, respectively. SFEW2 depths measured 6.9 and 6.1 feet, respectively on the same dates. Observations during the December 15 inspection indicated that both weirs required calibration. On December 16, the technical staff returned this entrance to criteria. Surface Oregon ladder collection channel velocities averaged 1.8 feet per second.

Auxiliary Water Supply System: The Wasco county PUD turbine in the Washington ladder had no interruptions in service this week. Oregon ladder fish pumps 1 and 3 had no interruptions in service this week, operating 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 is no longer supplying the usual 450 cfs to the north powerhouse pool (the juvenile system remained in emergency bypass mode until December 19, when orifices were closed).

Juvenile Fish Passage Facility

Emergency bypass operations concluded with orifice closures on December 19 at 0700 hours along the raising of the final ESBS in service. Full winter maintenance will soon begin.

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 continue to redistribute the debris. Trash rack differential measurements revealed no problems and no racks were cleaned. The differentials will be checked during the winter season. We noted no problems in the gatewell slots.

ESBSs/VBSs: At the start of this report period, ESBSs remain deployed in all units except those in units 3, 4 and 11. From December 16 to 19, the remaining ESBSs were raised. No operational problems were noted with either the screens or the brush bars. Prior to removal, the ESBSs in slots 2A, 3A, 7A, 7B, 8A, 8C, 10C, 13A and 14B slots operated in timer mode. Off season fish screen maintenance commenced as screens were raised.

VBS differential monitoring revealed no screens out of criteria and none were cleaned. VBS monitoring has concluded for the season since the ESBSs have been removed. VBS rehabilitation will continue during the winter outage season.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: Forty-two orifices were in service until December 19, at 0700 hours, when the collection channel was dewatered for the winter maintenance season. Water in the orifice air supply line continued to be a problem. The two frozen air line exhaust vents reported last week thawed2 out with the changes in weather.

As mentioned above, the collection channel was unwatered on December 19. The operation was conducted in 2 stages after the safety clearances were set in place. From 0900 to 1130 hours, the upper emergency bypass channel was evacuated. This was followed by the evacuation of the lower emergency bypass channel from 1230 to 1330 hours. Two sturgeons, 6 Chinook adults, 2 Chinook jacks and 50 to 75 steelhead adults were returned to the river. Juvenile salmonid recoveries included 2 Chinook and 2 steelhead smolts. Miscellaneous fish included walleye, smallmouth bass, channel catfish and adult shad.

Transportation Facility: Maintenance continued in the winterized facility. This week, the fisheries staff began work on the perforated plate in the porosity control unit. The actual perforated plate repairs or refurbishment will be contracted out this winter. Two power outages totaling 12 minutes did not significantly affect facility operations. A new printer and additional local area network lines ports were also added to the facility conference room this week.

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
144.9	98.3	0.0	0.0	40	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 on December 22.

Avian Activity: On September 30, formal bird counts concluded. Casual bird observations are still being conducted when performing other inspections. Forebay area observations included an occasional group of gulls or a single gull, a small group of grebes, a blue heron, a bald eagle or a cormorant. Gulls are still being observed on the rocks by the Washington boat dock.

In the the vicinity of the tailrace, we noted gulls and cormorants. Most of the feeding birds were in the powerhouse area. Roosting birds were found 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 before it went out of service for the winter.

The three gull distress calls were removed from the outfall this week as bird numbers had declined. The clean up contract for the new outfall pipe has reached the 60% stage of completion. This contract includes the new hazing sprinkler system.

Research: A dive is being planned to remove transducers from the trash racks. These transducers were utilized in support of last season's fish passage research. Finally, the adult steelhead survival study may take place next spring.

Fish Salvage: Fish salvage took place in the juvenile fish collection channel this week. See the Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe section of this report above for details.

Project: Ice Harbor
Biologist: Mark Plummer
Dates: December 13 - 19, 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 blade repair. Turbine unit 1 was out of service December 13 from 0805 hours to 1621 hours to service the line disconnect (ZJ1) between turbine unit 1 and its associated transformer (T1). Turbine unit 1 was also out of service December 18 from 0654 hours to 1120 hours for a BPA line outage that did not happen. The STSs were removed for winter maintenance causing short turbine outages throughout the week.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fish ways December 16, 18, and 19.

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 on December 16 and 19. On this inspection, the south channel/tailwater differential was as 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 were in cycle run mode operation. The last 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 open orifices. The tentative scheduled date 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
21.4	16.0	0.0	0.0	40	39	9.5	9.0

*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 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 13 - 19, 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. Units were rotated out of service on December 16 and 17 for STS removals.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on December 16, 17, 18, and 19.

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', 6.6', 7.2', and 7.2 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 reading was 7.7 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 225.0 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-10% surface coverage. No oil was observed in the gatewells.

STSs/VBSs: STSs were raised for winter maintenance on December 16 and 17.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel was dewatered for winter maintenance on December 17. The primary bypass outfall avian deterrent sprinklers were dewatered on December 17.

Collection Facility: The facility is in winter maintenance mode.

Transport Summary: 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
23.9	14.4	0.0	0.0	40.0	39.5	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 and cormorants were the dominant piscivorous bird species observed during fish ladder inspections this week. Gull abundance ranging from 24 to 81 and cormorant abundance ranged from 1 to 30 birds.

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

Project: Little Goose
Biologist: George Melanson
Dates: December 13 - 19, 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. Turbine units 3 and 4 were removed from service to raise fish screens on December 16 from 0719 to 1120 hours and from 1225 to 1542 hours respectively. Turbine units 5 and 6 were removed from service to raise fish screens on December 17 from 0710 to 1022 hours and from 1042 to 1418 hours respectively.

Adult Fish Passage Facility

Adult fishway inspections were performed on December 17, 18 and 19

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.) The picketed leads were removed from the ladder on December 16. The leads were clean of debris and determined to be in good operating condition. 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 6.5 and 7.2 feet (criteria $\geq$7.0 ft or on sill). NSE weirs are at fixed elevations of 532.0 feet and depths ranged between 6.4 and 7.1 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocities measured near the junction pool ranged between 1.9 and 2.0 and 2.2 to 2.9 near the north shore entrance (criteria $\geq$1.5 fps). Collection channel subsurface water velocity was measured on November 13, using the hydrologic current meter. The velocity 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: Up to an estimated 2000 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.

ESBS/VBS: ESBSs were tested for proper operation on November 18. All ESBS operated as designed. ESBSs in units 3 and 4 were raised on December 16 and ESBS in units 5 and 6 were raised on December 17. ESBS 1A through 6C were inspected. Screens were clean of debris and appeared to be in good working condition. Four dead juvenile shad were recovered, 2 on the ESBS in slot 1B and 1 each on the ESBSs in slots 6A and 6C No other fish were observed.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile collection system was operated through December 16 with 18 open orifices. On December 17, the juvenile bypass system was dewatered and removed from service.

Transportation Facility: 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
21.8	14.3	0	0	37.9	37.8	6.0+	6.0+

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers on all units were checked on December 19. One dead juvenile lamprey (Macrothalmia) was removed from unit 3 strainer.

Invasive Species: The zebra mussel substrate monitor was last inspected on November 21; no mussels were observed. The next inspection is scheduled for December 23.

Avian Activity: Bird counting has ended for the season.

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

Project: Lower Granite
Biologists: Mike Halter and Ches Brooks
Dates: December 13 - 19, 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 1 was taken out of service at 0001 hours on December 16 for vibration testing, then returned to service at 1620 hours on December 18. Turbine unit 6 remains 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 26, 2013.

Adult Fish Passage Facility

On December 13, 14, and 16 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 all adult fishway entrances during the weekly inspections.

Weir depths at the south shore fishway entrances were also within criteria on all inspections this week. The north powerhouse fishway entrances were on sill during the December 13 inspection this week producing weir depths of 7.4' on both gates due to tailwater elevations below 636.0 feet (these gates bottom out at elevations below 636.0 feet). Weir depths on the north powerhouse entrances met criteria on the December 14 and 16 inspections due to increased tailwater elevations. Weir depths at the north shore entrances ranged from 5.0 to 6.4 feet on all inspections this week (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 were not available this week due to a malfunction in the velocity meter.

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 juvenile fish collection gallery and collection/transportation facility were dewatered for the winter season on December 5-6. This was done earlier than usual due to very cold temperatures and the possibility of freeze damage.

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 5-6 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
23.4	18.4	0.0	0.0	39.3	38.2	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 inspected for lamprey on December 18. A total of 52 lamprey were found in the strainers over a combined run time of 793.7 unit hours. The next cooling water strainer inspections are scheduled for January.

Invasive Species: The zebra mussel substrate near the adult fishway exit was last examined for zebra mussels on 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.

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

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