U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#35-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: October 24 – 30, 2014

Turbine Operation

McNary had 10 to 11 units available for power generation this week. The hard constraint one percent criterion continues until November 1, with no units having run outside the criteria. Unit outages are recorded in Table 1 below.

Table 1. Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Main Reason for Outage
11	Sep 18, 2013 to Jan 31, 2015	About one year and 4.5 months.	Turbine bearing issue continues.
4	Mar 27 to Jan 31, 2015	About 10 months.	Turbine bearing issue continues.
9	Aug 11 to Mar 25, 2015	About 7.5 months.	Maintenance then rewind contract.
6	Oct 25 to 26	About 21 hours.	Bearing oil leak repaired.
3	Oct 27	About four hours.	Speed level adjustment/repair.
12, 13 & 14	Oct 28	68 minutes total.	ESBS camera inspections.
7	Oct 29	About 4.2 hours.	ESBS at 7A slot replaced.
1 to 3, 5 to 8, 10, 13 & 14	Oct 30	About 6.6 hours total.	Cleaned trash racks for installation of study equipment next week.

Adult Fish Passage Facilities

On October 24, 26 and 29, the McNary fisheries biologist performed measured inspections of the adult fishways. The fisheries staff is checking the exits on all shifts as the juvenile system is in primary bypass. Visual adult fish counts will conclude at the end of the day on October 31. The project will raise the picketed leads and winterize the count stations on November 3.

Fish Ladder Exits: During measured inspections, both fish ;adder exits met all Fish Passage Plan criteria. The project staff continued to clean the picketed leads as required including weekends.

At the Washington exit, the amount of milfoil in the area is very light.

At the Oregon exit, debris loads, though slowly dissipating, continue to fluctuate depending on wind direction. The traveling screen differentials remain low and the trash rack differentials decreased to a range of 0.8 to 1.1 feet. On October 29, the exit set points were adjusted.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria. In the near future, the project staff will replace the LEDs for W2 and W3 with a panel display.

At the Oregon ladder entrances, all inspection points met criteria. At the south entrance, SFEW1 and SFEW2 were occasionally out of calibration. Electrical upgrades of the Oregon entrances will be completed in the near future.

Surface collection channel velocities averaged 1.7 feet per second. This week, the maintenance staff removed the velocity meter with plans to install a Doppler unit in its place. The old meter will sent to the vender for modification. Modifications will allow use of the meter as a high flow sensor at the picketed leads at the Oregon exit. A high flow sensor will detect when the leads are obstructed.

Auxiliary Water Supply System: For the report week, the PUD turbine unit at the Washington ladder had no interruptions in service.

Fish pumps 1 and 3 operated satisfactorily with blade angles of 30 degrees. Pump 2 is currently out of service for major overhaul under contract. This work should be completed by September, 2015.

The juvenile facility continues to supplying the usual 450 cfs to the north powerhouse pool with no interruptions in service to report.

Juvenile Fish Passage Facility

Fall primary bypass season continues. We continued light winter facility maintenance and phased in winterization.

Forebay Debris/Gatewell Debris/Oil: Floating forebay debris consisting mostly of milfoil and woody material was light. Fresh incoming debris was minimal. Changes in wind direction moved the woody debris from the powerhouse to the Oregon shore and back. There was no debris present at the spillway.

Our trash rack differential readings revealed no problems. On October 30, the project cleaned 10 trash racks in support of the upcoming adult steelhead fallback study. Transducers will be installed at each cleaned rack next week. We cleaned two additional racks at unit 1. We removed approximately 25 cubic yards of debris. This material consisted of woody material mixed in with logs, tumbleweeds and milfoil. No ESA listed species or lamprey were seen in the debris.

We observed no problems in the gatewell slots. We removed sticks from the gatewell slots after trash racking was completed.

ESBSs/VBSs: ESBSs are installed at all units except units 4 and 11, which are out of service. The screens in slots 1A and 13C remain in timer mode. On October 29, the screen in slot 7A, which had been in timer mode, was replaced due high motor amp readings. On October 27, the screen in slot 6A was recalibrated. On October 28, the camera inspections at units 12, 13 and 14 revealed no problems.

VBS differential monitoring revealed no screens out of criteria. On October 28, project personnel cleaned four screens as a preventative measure. We observed ESA listed fish or lamprey mortalities. VBS rehabilitation continues with unit 11 as the staging area.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Forty two orifices were open all week. During VBS and trash cleaning, we closed the orifices at the slots the work was being done and opened spare orifices at adjacent slots.

There are no other technical problems to report as all systems functioned well in automatic mode. Since the system in primary bypass 24 hours a day/7 days per week, the fisheries staff monitored the channel around the clock. This week, the maintenance staff installed removable plugs in the road drains in critical areas above the channel.

Bypass Facility: The Fall primary bypass season is in progress. All systems are off, light maintenance and partial winterization continues. PIT tag detection occurs only in the full flow pipe during the fall season.

This week, scheduled maintenance continued on various systems including repairs to outside lighting. On October 27, a contractor completed installation of three access gates in the back fence.

River Conditions

River conditions during the week are outlined in Table 2 as provided by COE data. Our data day runs from 0000 to 2400 hours each day. Scheduled maintenance on the spillway hoists continues. On October 27, a slight amount of spill occurred in support of hoist testing.

Table 2. River conditions at McNary Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temp. (^{o}F)*		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
113.5	85.5	0.1	0.0	62	59	6.0	6.0

*Taken from unit 1 scroll case.

Other

Inline Cooling Water Strainers: The next cooling water strainer examination will occur on November 4.

Invasive Species: The zebra mussel station examination on October 26 revealed no problems.

Avian Activity: Bird counts are no longer occurring.

On October 30, we winterized the outfall water cannon system. Pump repairs are still being arranged. Also, that day, we removed all bird distress calls in preparation for winter weather.

During the course of other inspections, we noted in the tailwater area, gulls and occasionally cormorants feeding in the powerhouse flow. We also note gulls and cormorants roosting on the navigation lock wing wall, which is part of the spill zone. At times, we noted grebes and mergansers roosting on the water below the spillway. Finally, we observed occasional gulls and cormorants at the bypass outfall. Bird numbers are affected by the juvenile shad out migration and their own migratory patterns.

In the forebay locations, we occasionally observed a gull or group of gulls, along with an occasional cormorant. Grebe numbers increased to a high of 35. At times, we observed gulls on the rock by the Washington boat dock.

One grebe remains in the juvenile collection channel.

Research: The adult lamprey passage study continues to be phased out, with equipment at the picketed leads requiring removal. Preparations for the adult steelhead fallback study continue with installation of transducers set to begin on November 3. The University of Idaho continues preparations for a winter adult steelhead radio tracking study.

Project: Ice Harbor
Biologist: Ken Fone
Dates: October 24 – 30, 2014

Turbine Operation

Unit 3 was taken out of service on July 7 at 1346 hours to investigate a generator related electrical grounding problem and for annual maintenance. This unit remains out of service due to an oil leak. Unit 6 was taken out of service at 1048 hours on October 6 for annual maintenance. Unit 2 was removed from service on October 14 at 0940 hours for digital governor installation. All available units were operated within 1% of peak turbine efficiency as specified in the Fish Passage Plan.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on October 28, 29, and 30.

Fish Ladders: The north fish ladder inspection areas (head differentials at fishway exit and picketed leads, and depth over weirs) were in criteria on all inspections. The south fish ladder inspection areas (head differentials at fishway exit and picketed leads, and depth over weirs) were in criteria on all inspections. Criteria for head differentials at ladder exits and picketed leads, and depth over the weirs are 0.5 feet or less, 0.3 feet or less, and 1.0-1.3 feet, respectively. Fish ladder exits were clear of debris and the bubblers were operating satisfactorily. Both the north and the south shore picketed leads are in their deployed positions.

Fishway Entrances and Collection Channel: The south shore entrance (SFE) depth and channel/tailwater differential were in criteria on all inspections. The north powerhouse entrance (NFE) depth and channel/tailwater differential were in criteria on all inspections. The north shore entrance (NSE) depth and channel/tailwater differential were in criteria on all inspections. Fishway entrance criteria are 8 feet depth or greater, or on sill. Channel/tailwater differential criteria are 1 – 2 feet.

Auxiliary Water Supply System: Two of the 3 north shore fish pumps were operated throughout the week. Six of the 8 south fish pumps were operated.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was little to no debris observed in the forebay and gatewells.

STSs/VBSs: STSs are in position for juvenile fish guidance and have been in cycle run mode since July 21. Unit 1, 2, 4, 5, and 6 STS inspections were performed on October 20 and 22. No significant problems were found.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass was placed in operation on March 17. The collection channel operated with 20 orifices open.

Juvenile Bypass Facility: The bypass is in operation.

Fish Sampling: Sampling operations began on April 2 and ended on July 15.

Removable Spillway Weir: Spill in support of fish passage began on April 3 and ended on August 31. The contractor for the spill bay 2 ogee and flow deflector modifications began concrete cutting and chipping of the ogee during the week of October 20, with these activities occurring between the hours of 1300 and 2400 when there are generally fewer adult fish present in the fish ladders.

River Conditions

River conditions during the week are outlined in Table 1 below.

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
22.4	18.0	0	0	61	60	8.1	7.8

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Monthly turbine cooling water strainer inspections took place on October 20 and 22. A total of 1 Siberian prawn and approximately 250 juvenile shad mortalities were found.

Invasive Species: No new exotic species have been found.

Avian Activity: Contracted hazing of piscivorous birds for 16 hours per day began on April 1 and ended on June 30. The piscivorous bird count program at the project began on April 1 and ended on July 15. Relatively low numbers of gulls, pelicans, and grebes were seen around the project during the week. Up to about 40 cormorants were observed on the project during the reporting week, with most of them moving around in the tailrace.

Research: Researchers plan to release sensor fish through unit 1 between November 7 and December 15 for the turbine characterization study. Pipes for the release of the sensor fish will be installed on the framework of the STS in gatewell slot 1B.

Project: Lower Monumental
Biologists: Bill Spurgeon and Ray Addis
Dates: October 24 – 30, 2014

Turbine Operation

All available units are being operated within the hard 1% peak efficiency criteria. Unit 6 remains out of service for six year overhaul.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on October 27, 29, and 30.

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 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 7.2', 7.1'and 7.0 feet. South powerhouse channel/tailwater head was in of criteria (1'-2') on all inspections.

SSE1 weir gate was in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, the gate depth readings were 8.1', 8.0'and 7.9 feet. SSE2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections.

The collection channel velocity remained in criteria (1.5 - 4.0 ft/sec) this week.

Any criteria violations at the fishway entrances are related to the failure of the PLC (Programmable Logic Circuit) for automated control. Without automated control, the FCRG (Fishway Control Regulating Gate) drifts closed causing the fishway entrance head to go out of criteria at the south shore entrances. Operators are manually controlling the FCRG and fish pumps to maintain head and depth criteria at fishway entrances. The loss of the fishway PLC also caused all weir gates to be placed in local control. This results in criteria violations if monitoring and adjustment does not occur as tailwater level fluctuates. To minimize this, SPE1 and SPE2 are placed on sill.

The replacement PLC for automated control of the fishway has been received. It is currently undergoing programming. The automated system was estimated to return to service in August. The operators have been instructed to conduct a physical inspection on night shift to replace the FPP inspection via data screen conducted normally on that shift.

Auxiliary Water Supply System: AWS pumps were rotated out of service one at a time on October 18 for quarterly inspections. All AWS pumps were in service and operating satisfactorily throughout this report period.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 21 square yards of forebay debris observed during this period. Gatewell debris ranged from 0 - 15% surface coverage. Oil absorbent pads were placed in 4 gatewells due to a sheen that was likely caused by grain dust.

STSs/VBSs: STSs are operating in cycle run mode. STSs were inspected October 7 and 8. All screens passed inspection.

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

Collection Facility: The facility was dewatered for winter maintenance on October 15.

Transport Summary: Transport is not occurring at this time.

River Conditions

Summer spill ended at 0000 hours on September 1. River conditions during the week are outlined in Table 1 below.

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
22.0	18.1	0.0	0.0	61.0	59.5	6.0	5.0

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on October 7. No live fish were recovered. Mortalities included l prawn.

Invasive Species: No zebra mussels were observed at the monitoring stations on October 9.

Avian Activity: Daily tailrace counts ceased at end of collection season on October 1. No additional action trigger points were met from the avian action plan through this time period.

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

Project: Little Goose
Biologists: Towns Burgess and Richard Weis
Dates: October 24 – 30, 2014

Turbine Operation

Turbine units 1, 2, 4, 5 and 6 were available for most of this report period. Unit 3 was placed out of service on July 7 at 0700 hours for a planned six year overhaul. All available turbine units were operated within the 1% peak efficiency range.

Adult Fish Passage Facility

Adult fishway inspections were performed on October 28, 29 and 30.

Fish Ladder: Ladder exit differentials ranged between 0.0 and 0.1 ft. (criteria $\leq$ 0.5 ft.). Water depths over diffuser 13 weirs ranged between 1.2 and 1.3 feet (criteria 1.0-1.3 ft.). No differential was observed at the picketed leads (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 1.3 and 1.5 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.1 and 8.3 feet (criteria $\geq$ 8.0 ft). NPE weirs rested on sill and depths ranged between 7.1 and 7.3 feet (criteria $\geq$7.0 ft). NSE weirs are in manual mode and depths ranged between 6.8 and 7.2 feet (criteria $\geq$ 6.0 ft.). North powerhouse surface water velocity measured between 1.6 and 2.1 fps. Collection channel surface water velocity near north shore entrance ranged between 2.0 to 2.4 fps (criteria 1.5 to 4.0 fps).

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

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Estimated amounts of woody debris in the immediate forebay ranged between 20 and 150 sq ft.

Spillway Weir: The spillway weir was removed from service on August 4.

ESBS/VBS: ESBSs operated within criteria this report period. All brushes operated as designed. All screens met criteria.

Orifices, Collection Channel, Dewatering Structure, and Flume: The number of opened orifices in the juvenile system was reduced to 18 open orifices.

Transportation Facility: The collection and transportation facility operated within criteria this report period. Daily fish collection ranged between 15 and 132 and totaled 566 for the week. The descaling and mortality rates were 4.6% and 0.7% respectively.

Transport Summary: Every other day trucking continued with no problems encountered.

River Conditions

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	18.1	0	0	60.2	59.6	6.0+	6.0

*Ladder temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were checked on October 25. No fish were found.

Invasive Species: No zebra mussels were observed on the substrate monitor on October 21. The next inspection is scheduled for November 21.

Avian Activity: USDA-APHIS bird hazing ended on June 20.

Table 2. Tailrace counts of foraging piscivorous birds at Little Goose Dam.

Date	Time (hours)	Gulls	Cormorants	Terns	Pelicans
October 24	1400	22	14	0	0
October 25	1430	14	12	0	0
October 26	1200	19	8	0	0
October 27	1300	22	17	0	0
October 28	0830	8	3	0	0
October 29	1255	21	19	0	0
October 30	1402	33	18	0	0

Gas Bubble Disease: WDFW Gas Bubble Trauma monitoring concluded July 28.

Research: The University of Idaho continued their adult salmonid and adult lamprey passage study.

Project: Lower Granite
Biologists: Elizabeth Holdren and Ches Brooks
Dates: October 24 – 30, 2014

Turbine Operation

Units are being operated within the 1% hard constraint operational criteria. Unit 1 was removed from service for annual maintenance at 0716 hours on October 21. The expected return to service date for unit 1 is November 24. Unit 5 was removed from service for annual maintenance at 0657 hours on September 2. A contact issue with unit 5 blades and liner is being investigated during the outage. The expected return to service date for unit 5 is now November 18.

Adult Fish Passage Facility

The fish ladder was inspected by Corps biologists on October 24, 25 and 26. Visual adult fish counts are scheduled to continue through October 31.

Fish Ladder: Fishway exit head differentials and depths over the weirs were in criteria (≤0.5' and 1.0-1.3', respectively) on all inspections. Picketed lead head differentials were in criteria (≤ 0.3') on all inspections.

Fishway Entrances and Collection Channel: NSE1 was out of criteria (criteria ≥7' or on sill) on all inspections with depth readings ranging from 4.8 to 5.0 feet. NSE2 was out of criteria on all but the October 26 inspection. While out of criteria NSE2 depth readings ranged from 6.2 to 6.4 feet. North shore channel/tailwater head differentials were out of criteria (criteria 1'-2') on all inspections. The out of criteria head differential readings were 0.9, 0.8 and 0.9 feet respectively. NSE2 has been out of service since 2011 and is currently suspended with a hoist system at a compromised depth of 630.0 feet. The gate requires a complete rehab and will remain out of service until funding is available. Entrance weir depths are being sacrificed in an attempt to maintain channel/tailwater head differential.

NPE1 and NPE2 weir gates were in depth criteria (criteria ≥8' or on sill) on all inspections. North powerhouse channel/tailwater head differentials were in criteria (criteria 1'-2') on all inspections.

SSE1 and SSE2 weir gates were in depth criteria (criteria ≥8' or on sill) on all inspections. South shore channel/tailwater head was in criteria (criteria 1'-2') on all inspections

The collection channel velocity was out of criteria (criteria 1.5-4.0 fps) on all inspections. Daily average channel velocity readings averaged 1.1 feet per second. Powerhouse electrical crew is investigating the velocity meter and looking into alternatives for replacement. Physical surface velocity readings were taken at the north and south shore channels. The north shore channel

surface velocity readings were 1.7 and 1.8 fps and south shore channel readings were 2.3 and 2.3 fps.

Auxiliary Water Supply System: All AWS pumps were available for service. Pumps 1 and 3 were operated. AWS pump 2 remains in standby mode. Fish pump 1 is operating in "fast speed" mode to provide additional water to the adult fishway.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Forebay debris varied during the week due to wind strength and direction. Daily monitoring and removal of gatewell debris continues.

ESBSs/VBSs: ESBSs are deployed in all operational units. The brush cleaning cycle is set for once every 2 hours.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being back-flushed every 3 hours.

Collection Facility: The sample rate was increased from 50% to 100% on October 25 due to a one day decrease in subyearling Chinook numbers. The sample rate was returned to 50% the following day where it remained for the duration of the report week. The weekly descaling rate was 5.00%. Descaling for the season is 1.33%, compared to a seasonal rate of 2.72% in 2013 and 2.00% for the 2008-2012 seasonal average.

Transport Summary: Every-other-day truck transport is occurring with trucks departing on odd numbered days this month. The 300 gallon midi tank was used on October 25, while the 3500 gallon semi-truck / trailer combination was used for all other trips.

River Conditions

River conditions during the week are outlined in Table 1. No spill is occurring at this time.

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
22.9	19.9	0.0	0.0	60.5	59.0	5.0	3.9

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainer inspections took place on October 28. There were no lamprey mortalities. No other fish species were recovered. The combined unit run time was 1,003.1 hours. The next inspections are scheduled for late November.

Invasive Species: No zebra/quagga mussels were observed at the monitoring station on October 13.

Avian Activity: Daily piscivorous bird counts are taken from the juvenile fish separator platform one hour after sunrise and one hour before sunset. Maximum piscivorous bird counts are summarized in Table 2 below.

Table 2. Daily maximum tailrace picivorous bird counts at Lower Granite Dam.

Date	Time (hours)	Gulls	Cormorants	Terns
October 24	0820	2	7	0
October 25	0820	4	12	0
October 26	0820	6	16	0
October 27	0820	15	10	0
October 28	1650	2	3	0
October 29	0820	7	5	0
October 30	0820	8	2	0

Adult Fish Trap Operations: The adult fish trap facility was in 24 hours per day operation. Collection of fall adult Chinook for truck transportation to Cherry Lane Hatchery has concluded as brood stock needs have been met. Collection of fall adult Chinook for truck transportation to Lyons Ferry Hatchery resumed in order to obtain additional brood stock and for run reconstruction modeling.

Research

Research: Onsite juvenile fish research has concluded for the year.