U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#43-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: December 19 – 25, 2014

Turbine Operation

McNary had 11 units available for power generation this week. On November 1, the soft constraint one percent criterion began. This week, operational units ran outside the criteria as requested by the BPA. The weather for the week was fairly mild. 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.
13 & 14	Dec 19	4.8 & 6.9 hours ea.	ESBSs removed for season.

Adult Fish Passage Facilities

On December 19, 20 and 21, the McNary fisheries biologist performed measured inspections of the adult fishways.

Fish Ladder Exits: During measured inspections, both ladder exits met all Fish Passage Plan criteria. The exits had no debris issues, though we are still removing milfoil from the Washington ladder's exit trash rack. Traveling screen differentials remain low at the Oregon exit.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points met criteria. In the near future, the project will replace the LEDs (Light Emitting Diodes) for W2 and W3 with a panel view.

At the Oregon ladder entrances, all inspection points met criteria. At the south powerhouse entrance, SFEW2 continued to have occasional calibration drifts. Electrical upgrades of the Oregon entrances will be completed in the near future.

Collection channel surface velocities averaged 1.6 feet per second.

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

Fish pumps 1 and 3 ran 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 fish pump house remains off limits to fisheries staff due to the presence of asbestos. On December 12, a contractor began monitoring the asbestos. The Oregon ladder criteria points should indicate if there are any issues with the fish pumps and pump alarms are included in the control room's monitoring system.

The juvenile facility is no longer supplying the usual 450 cfs to the north powerhouse pool.

Juvenile Fish Passage Facility

The fall bypass session concluded December 22, with the completion of ESBS removals and the closure of collection channel orifices. Winter maintenance will progress more extensively.

Forebay Debris/Gatewell Debris/Oil: Floating forebay debris, consisting mainly of milfoil and woody material, was minimal to light. We noted no fresh incoming debris and there was no debris at the spillway.

Trash rack differential readings were satisfactory and no racks were cleaned. We will be monitoring the trash rack differentials throughout the winter season.

We observed a small amount of ESBS oil in slot 14A, which was removed with absorbent pads.

ESBSs/VBSs: ESBS removals were completed December 19, with the removal of screens in units 13 and 14. The screens in slots 13C and 14B remained in timer mode until they were raised. We examined screens after they were raised and found no additional problems. No ESA listed species or lamprey were seen on the ESBSs. Winter maintenance is now in progress.

VBS differential monitoring revealed no screen out of criteria even when units were operating at loads close to 80 megawatts. No screens were cleaned. Since ESBSs are being raised, VBS differential measurements have concluded for the season. VBS rehabilitation continues with unit 11 as the staging area.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Forty-two orifices remained open during emergency bypass operation until December 22, at about 0815 hours. Since all ESBSs had been raised, we closed the orifices for the winter maintenance season. By 0900 hours, the safety clearance was in place. At approximately 1100 hours, the upper emergency bypass channel had been evacuated of fish. By about 1330 hours, the remaining fish were evacuated from the lower emergency bypass channel to the river. We observed approximately 50 to 75 clipped and unclipped steelhead adults, one subyearling Chinook smolts, three smallmouth bass, two catfish, one chiselmouth, one walleye and a few juvenile shad. No other species of interest

were noted. Channel systems are winterized and scheduled electrical and mechanical winter maintenance continued.

Bypass Facility: The facility remained dewatered and winter maintenance continued. Fish facility mechanics continued separator rehabilitation.

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.

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
175.9	139.4	0.0	0.0	45	45	6.0	6.0

* Temperature taken from the turbine unit 1 scroll case.

Other

Inline Cooling Water Strainers: The next cooling water strainer examination will occur on January 6.

Invasive Species: While dewatering our systems for winter maintenance, we will examine all surfaces for invasive species.

Avian Activity: Bird counts are no longer occurring.

Repairs to the outfall water cannon pump are scheduled for mid-February, 2015.

During inspections, we noted in the tailwater area, gulls feeding in the powerhouse flow and at emergency bypass outfall (when operational). We observed gulls and cormorants roosting on the navigation lock wing wall. Bird numbers appear to be decreasing.

In the forebay area, we observed an occasional gull, cormorant or grebe. No grebes were observed elsewhere. We observed no birds on the rocks by the Washington boat dock.

Occasionally, around the project, we noted Black-Crowned Night and Blue herons along with pelicans and bald eagles.

Research: The University of Idaho's winter adult steelhead radio tracking study continues.

Project: Ice Harbor
Biologist: Ken Fone
Dates: December 19 – 25, 2014

Turbine Operation

Unit 3 was taken out of service on July 7 at 1346 hours to investigate a generator electrical grounding problem, for annual maintenance and remains out of service due to an oil leak from the hub. The plan for the fall and winter is to convert unit 3 into a fixed-blade unit to remedy the problem. Unit 2 was out of service from October 14 at 0940 hours to December 19 at 1625 hours for digital governor installation. Unit 6 was removed from service on December 16 at 1442 hours due to a faulty sectionalizing disconnect. Unit 1 was out of service from 1127 hours to 1258 hours on December 19 to accommodate an electrical check of the wiring on unit 2. Unit 2 was out of service from 1109 hours to 1627 hours on December 22 to repair a leak in the turbine oil piping coming from the heat exchanger. Unit 1 was taken out of service for annual maintenance and digital governor installation on December 23 at 0759 hours.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on December 22 and 23.

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. The water surface above the fish ladder exits were clear of debris and the bubblers were operating satisfactorily. The north and the south shore picketed leads were put in their raised positions on November 3. The counting of adult fish ended for the season on October 31.

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 (AWS) System: Two of the three north shore AWS pumps were operated throughout the week. Six of the eight south AWS pumps were operated.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was little to no debris observed in the forebay and gatewell slots. The observation of oil in 1A gatewell and intake gate slots was reported to the shift operator on December 22. The oil had leaked from the gear box of the raised slot 1A STS when a seal ruptured. Oil socks were deployed in the gatewell and intake gate slots.

STSs/VBSs: STSs are raised and out of the water for the season.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass was in operation from March 17 to December 17.

Juvenile Bypass Facility: The bypass was unwatered for the season on December 17.

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 modifications has poured concrete for the modification of the ogee, and installed temporary bulkheads in preparation for the modification of the flow deflector.

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
38.4	27.2	0	0	45	42	11.2	8.0

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Monthly turbine cooling water strainer inspections took place on December 16 and 17. Approximately 340 juvenile shad mortalities were found.

Invasive Species: No new exotic species have been found.

Avian Activity: Relatively moderate to high numbers of gulls, cormorants, grebes, mergansers, and pelicans were seen around the project during the week.

Research: No on-site research is occurring at this time.

Project: Lower Monumental
Biologists: Bill Spurgeon
Dates: December 19 – 25, 2014

Turbine Operation

The units are being operated within the soft constraint 1% operational criteria. Unit 1 was removed from service for annual maintenance on December 10 at 0745 hours. Unit 2 was removed from service at 1000 hours on December 17 due to governor pump pressure control problems. Both remained out of service throughout this report period.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on December 22 and 23.

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 6.0', and 6.7 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections.

SSE1 weir gate was in sill or depth criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, the gate depth readings were 6.8' and 7.6 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 latest update on getting the automated system back in service is

February 2015. 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: All AWS pumps were in service and operating throughout this report period.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 35 square yards of forebay debris observed during this period.

STSs/VBSs: STSs are out of service for winter maintenance.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel was dewatered on December 17 at 1430 hours.

Collection Facility: N/A.

Transport Summary: N/A.

River Conditions

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
39.7	26.2	0.0	0.0	43	42	5+	5+

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on November 3. Live fish included 1 prawn. Mortalities included l5 prawn and 90 shad.

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

Avian Activity: Bird counts are presently being done concurrently with ladder inspections.

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

Project: Little Goose
Biologist: Richard Weis
Dates: December 19 – 25, 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. Unit 1 was placed out of service for its annual repair on December 1. Unit 1 was placed back into service on December 18. Unit 6 was placed back into service on December 21 after ESBS screens were removed. Soft 1% peak efficiency constraint criteria are in effect.

Adult Fish Passage Facility

Adult fishway inspections were performed on December 22 and 23.

Fish Ladder: Ladder exit differentials held steady at 0.0 ft. (criteria ≤ 0.5 ft.). Water depths over diffuser 13 weirs held steady at 1.2 feet (criteria 1.0-1.3 ft.). No differential was observed at the picketed leads (criteria ≤ 0.3 ft.). No debris was observed at the picketed leads or the ladder exit. The air bubbler used to prevent debris from collecting near the ladder exit operated satisfactorily.

Fishway Entrances and Collection Channel: Channel to tailwater head differentials ranged between 1.3 and 1.7 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.1 and 8.2 feet (criteria ≥ 8.0 ft). NPE weirs rested on sill and depths ranged between 6.6 and 6.8 feet (criteria ≥7.0 ft). NSE weirs are in manual and depths ranged between 6.1 and 6.4 feet (criteria ≥ 6.0 ft.). North powerhouse surface water velocity measured between 1.7 and 1.9 fps. Collection channel surface water velocities near the north shore entrance ranged between 1.8 to 2.0 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 100 and 200 sq ft.

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

ESBS/VBS: Except for unit 6, all ESBS removals were completed for the season with the raising of screens in unit 4 on December 19. As mentioned above, unit 6 did not return to service until ESBS removals in the associated slots were completed on December 21.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile collection channel and bypass is now unwatered and shut down for the season.

Transportation Facility: The juvenile collection and transportation facility previously shut down for the season and is undergoing winter maintenance.

Transport Summary: Fish transportation has ended for the season.

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
41.3	25.7	0	0	43.0	42.6	6.0+	6.0+

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were checked on December 23. No fish were seen.

Invasive Species: No zebra mussels were observed on the substrate monitor on December 15.

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
December 19	---	---	---	---	---
December 20	---	---	---	---	---
December 21	---	---	---	---	---
December 22	---	---	---	---	---
December 23	---	---	---	---	---
December 24	---	---	---	---	---
December 25	---	---	---	---	---

*Observations not taken this week.

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: December 19 – 25, 2014

Turbine Operation

Units are being operated within the soft constraint 1% operational criteria. Unit 1 was removed from service at 0716 hour on October 21 for annual maintenance. Unit 1 is expected to return to service on January 12, 2015. This date may change depending on the completion of permanent fish screen slot closures. Unit 2 was removed from service at 0612 hours on December 1 for annual maintenance.

Adult Fish Passage Facility

The fish ladder was inspected by Corps biologists on December 22 and 23.

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 of 4.5' and 5.0 feet. NSE2 was out of criteria (criteria ≥7' or on sill) on all inspections with depth readings of 5.0', and 6.2 feet. North shore channel/tailwater head differentials were out of criteria (criteria 1'-2') on both inspection with readings of 0.8' and 0.4 feet. NSE2 has been out of service since 2011 and is suspended with a non-adjusting hoist system at an elevation of 630.0 feet. The gate requires a complete rehab and will remain out of service until funding is available.

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

Collection channel velocity was out of criteria (criteria 1.5-4.0 fps) on all inspections. The daily average channel velocity reading was 1.1 feet per second. Alternatives for measuring channel velocity are being investigated.

Auxiliary Water Supply System: Pump 3 was out of service from 1934 hours on December 21 to 0956 hours on December 22 due to a failed shaft coupling. Pumps one and three were in operation and pump two was in standby mode for the remainder of this report period.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Forebay debris varied during the week due to wind strength and direction.

ESBSs/VBSs: ESBS winter maintenance is in progress.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: The collection channel is dewatered.

Collection Facility: The collection facility is in winter maintenance mode.

Transport Summary: No fish transport is occurring at this time.

River Conditions

River conditions during the week are outlined in Table 1 below. 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
42.8	27.2	0.0	0.0	45.6	45.2	5.0+	5.0+

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on November 25. No live lamprey were recovered. No lamprey mortalities or other fish species were recovered. The next inspections are scheduled for late December.

Invasive Species: No zebra/quagga mussels were observed at the monitoring station on December 16.

Avian Activity: Daily piscivorous bird counts concluded on November 13.

Adult Fish Trap Operations: The adult fish trap is dewatered for the winter.

Fish Salvage Operation: No fish salvages occurred during this report week.

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