U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#44-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: December 26 – 31, 2014

Turbine Operation

McNary had 11 units available for power generation this week. The soft constraint one percent criterion began September 1. This week, operational units ran outside the criteria as requested by BPA. The weather for the week was fairly mild until December 29, when northeast winds preceded a cold front. 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.	Rewind contract continues.

Adult Fish Passage Facilities

On December 27, 29 and 31, the McNary fisheries staff performed measured inspections of the adult fishways.

The Washington ladder winter outage is scheduled for January 5 to 21. The Oregon outage is scheduled for January 22 to February 28.

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 exit trash rack.

At the Washington exit, one regulating weir alarm was reset this week.

The Oregon exit traveling screen differentials remain low. The operators reset two false traveling screen alarms this week. On December 27, they also adjusted the regulating weir set point.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in 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 were in criteria except on December 31, when NFEW2 and NFEW3 both measured depths of 7.7 feet. This is probably due to flow no longer being supplied by the juvenile facility to the north powerhouse entrance. At the south powerhouse entrance, SFEW1 and SFEW2 continue 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. Contractor asbestos monitoring continues. 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 juvenile system remains out of service for winter maintenance, which is occurring throughout the system.

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

Our trash rack differential readings revealed no problems and no racks were cleaned. We will be monitoring trash rack differentials throughout the winter season. As per FPP, we will clean trash racks before January 15.

In slot 3B, we observed a small amount of hydraulic fluid, which we removed with absorbent pads. Also, in slots 2B and 10A, we removed soaker pads as ESBS oil was no longer present.

ESBSs/VBSs: Seasonal maintenance continues as all ESBSs have been raised. This week, we noted a programming issue with the unit 1 screen controller.

VBS differential monitoring will resume next season. VBS rehabilitation continues with unit 11 being utilized as the staging area.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: All orifices remain closed for winter maintenance season and channel systems remained winterized. The project staff continued scheduled electrical and mechanical maintenance. Both the rectangular and transition screen cleaning devices are being repaired.

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
175.5	143.9	0.0	0.0	45	42	6.0	6.0

* Temperatures taken from the 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's water cannon pump are scheduled for mid-February, 2015.

During inspections, we noted in the tailwater area, gulls feeding in the powerhouse flow. We also 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 gulls occasionally roosting on the rocks by the Washington boat dock.

We also noted pelicans on project with as many as 30 observed.

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

Project: Ice Harbor
Biologist: Ken Fone
Dates: December 26 – 31, 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 6 was out of service from December 16 at 1442 hours to December 29 at 2020 hours due to a faulty sectionalizing disconnect. Unit 1 was taken out of service for annual maintenance and digital governor installation on December 23 at 0759 hours. Units 4 and 5 were removed from service from 0602 hours to 2020 hours on December 29 to repair the bus sectionalizing disconnect.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on December 29, 30, and 31. Adult fish counts ended for the season on October 31.

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. On December 29, a northeast wind created turbulent conditions in the forebay, causing damage to the ladder exit debris booms. The south debris boom logs were starting to separate from each other, and the north debris boom became detached from its anchor points and was found floating near spill gate 9. Both debris booms were repaired and reinstalled on December 30. The north and the south shore picketed leads were placed in their raised positions on November 3.

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 3 north shore AWS pumps were operated throughout the week. Six of the 8 south shore 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 the seal ruptured. Oil socks were deployed in the gatewell and intake gate slots.

STSs/VBSs: STSs are raised 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 this report period 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
40.9	17.9	0	0	42	42	8.0	7.6

*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 26 – 31, 2014

Turbine Operation

All available turbine units are being operated within the 1% soft constraint 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 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 criteria (criteria: ≥ 8' or on sill) on December 30 and out of criteria on the December 29 inspection. While out of criteria the depth reading was 7.9 feet (not on sill). 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 5.8' and 7.3 feet. South powerhouse channel/tailwater head was out of criteria (1'-2') on the December 30 inspection with a reading of 0.6 feet.

SSE1 weir gate was in sill or depth criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, the gate depth reading was 6.8' feet. SSE2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria on December 29 but out of criteria on the December 30 inspection (criteria 1'- 2') with a reading of 0.8 feet.

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 3 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
39.5	24.8	0.0	0.0	42	42	5+	5+

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on December 1. No live fish were seen. Mortalities included 22 prawn and 205 unidentified species. The unidentified species were most likely shad.

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

Avian Activity: N/A.

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

Project: Little Goose
Biologist: Richard Weis
Dates: December 26 – 31, 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. Soft constraints of the 1% peak efficiency criteria are in effect.

Adult Fish Passage Facility

Adult fishway inspections were performed on December 30 and 31.

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 1.1 and 1.6 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 ranged between 7.1 and 7.4 feet (criteria ≥7.0 ft). NSE weirs are in manual mode and depths ranged between 5.9 and 6.5 feet (criteria ≥ 6.0 ft.). North powerhouse surface water velocities averaged 1.9 fps. Collection channel surface water velocities near north shore entrance ranged between 2.1 to 2.2 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 200 and 2,400 sq ft.

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

ESBS/VBS: All ESBSs have been removed for the season.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile system is shut down for the season.

Transportation Facility: The juvenile collection and transportation facility is dewatered and currently 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
34.9	30.9	0	0	41.8	41.6	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 26	---	---	---	---	---
December 27	---	---	---	---	---
December 28	---	---	---	---	---
December 29	---	---	---	---	---
December 30	---	---	---	---	---
December 31	---	---	---	---	---

*Observations not taken this report period.

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 26 – 31, 2014

Turbine Operation

Units are being operated within the 1% soft constraint operational criteria. Unit 1 was removed from service at 0716 hours on October 21 for annual maintenance. Unit 1 is expected to be returned 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 29.

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

Fishway Entrances and Collection Channel: NSE1 was out of criteria (criteria ≥7' or on sill) on the inspection with a depth reading of 5.1 feet. NSE2 was in depth criteria (criteria ≥7' or on sill) on the inspection with a depth reading of 7.8 feet. North shore channel/tailwater head differentials were out of criteria (criteria 1'-2') on the inspection with a reading of 0.5 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). North powerhouse channel/tailwater head differentials were slightly out of criteria (criteria 1'-2') on the inspection with a reading of 0.9 feet.

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

The collection channel velocity was out of criteria (criteria 1.5-4.0 fps) on this inspection. The channel velocity reading was 1.1 feet per second. Alternatives for measuring channel velocity are being investigated.

Auxiliary Water Supply System: All AWS pumps were available for service. Pumps 1 and 2 were in operation and pump two was in standby mode.

Juvenile Fish Passage Facility

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

ESBSs/VBSs: ESBS winter maintenance is occurring.

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.

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
35.9	29.1	0.0	0.0	44.2	44.2	5.0+	5.0+

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainers were inspected on December 30. A total of 241 lamprey mortalities were recovered over a combined run time of 1,425.8 hours. The next inspections are scheduled for late January.

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

Avian Activity: No avian counts were taken during this report period.

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

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

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