U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#03-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: March 14 – 20, 2014

Turbine Operation

McNary had 12 units available for power generation this week. The hard constraint one percent criteria will begin April 1. Until then, units may run outside the soft constraint at the BPA's request. Unit outages are recorded in Table 1.

Table 1. Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Reason
3	Jun 4, 2013 – Apr 10, 2014	About 10 months.	After rewind, thrust bearing.
11	Sep 18 – Unknown	Unknown.	Turbine bearing issues continue.
4	Mar 17	Eight hours.	Slip ring maintenance.
12	Mar 19	3.5 hours.	Remove adult study release line.
1, 2, 4 to 8, 12 & 13	Mar 19	7.5 hours total.	Take units in and out of service to remove forebay debris.
1	Mar 20	Three hours.	Install juvenile passage study equipment.
14	Mar 20	3.2 hours.	Install juvenile passage study equipment.

Adult Fish Passage Facilities

On March 14, 17 and 19, the McNary fisheries biologist performed measured inspections of the adult fishways. On April 1, visual adult fish counting will resume.

Fish Ladder Exits: During measured inspections, both ladders met all Fish Passage Plan criteria. During the week, debris loads fluctuated near the exits. At the Oregon exit, traveling screens differentials were satisfactory and no problems were evident. Multiple differential alarms did occur, which the operator reset without incident. On March 16, the roving operator found the north traveling screen off and returned it to automatic mode. Project staff were unable to determine why the screen was off.

Fishway Entrances and Collection Channel: At the Washington ladder entrances, all inspection points were in criteria. In the near future, the project will replace the LEDs for W2 and W3 with a PLC (Programable Logic Circuit), which will integrate into the new control system better. At the Oregon ladder, at the north powerhouse entrance, NFEW2 and NFEW3 depths measured 7.5 to 7.7 feet all week. This is probably due to the juvenile system not supplying the usual 450 cfs

to the north powerhouse pool at this time. Project personnel will look into other possible causes. All other Oregon entrance inspection points were in criteria. Also, this week, NFEW2 and NFEW3 underwent scheduled maintenance. Collection channel velocities averaged 1.1 feet per second. We took these readings from surface observations.

Auxiliary Water Supply System: For the report week, the PUD turbine had no interruptions in service. Pumps 1 and 3 operated satisfactory with blade angles of 30 degrees and no interruptions in service. Pump 2 remains out of service for major overhaul which will require a contract for the winter of 2014–2015. The juvenile facility remains in winter maintenance and is not yet supplying the usual 450 cfs to the north powerhouse pool. We will return the system to service in late March.

Juvenile Fish Passage Facility

The facility remains shut down for winter maintenance, which is nearing completion. Around March 25, we will re-water the system. On March 16, the powerhouse lost the station service air system. This did not affect juvenile fish facility operations.

Forebay Debris/Gatewell Debris/Oil: This week, floating forebay debris accumulations were heavy to moderate. On March 19, the project used the intake deck crane's boom to move the debris towards the north end of the powerhouse. The debris comprising mainly of woody material and tumble weeds, is scheduled to be spilled next week. We continue to monitor trash rack differentials. The project was not able to clean trash racks this week but will begin next week in all operational units. For the week, we observed no problems in the gatewell slots.

ESBSs/VBSs: All ESBSs remain raised and screen maintenance is nearly concluded. ESBS installations are scheduled to take place from April 5 to 15 in a similar fashioned as the last 5 seasons in support of juvenile lamprey passage. VBS differential monitoring will begin when ESBS installations begin.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: The orifices remain closed for winter maintenance which is nearly concluded. The channel will be re-watered and bypass operations will begin in late March. We still noted water in the orifice air lines at times. On March 16, the fisheries staff cleaned the orifice covers. Adult jump netting was examined and the wood platforms below the orifice traps were removed.

Bypass/Sampling Facility: The facility remains dewatered for winter maintenance which is nearing completion. This week, we installed lamprey friendly screens in the PIT tag system's sample tanks. Also, we rebuilt the main system sample tanks' net frames.

River Conditions

River conditions during the week are outlined in Table 2 as provided by the control room. Data periods run from 0000 to 2400 hours each day. Water temperature is taken from the unit 1 scroll case. Involuntary spill occurred all week.

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
260.5	224.1	71.4	46.1	43	42	2.4	1.3

Other

Inline Cooling Water Strainers: The next examination will occur in early April.

Invasive Species: The biologist will conduct a zebra mussel station examination on March 23.

Avian Activity: Bird counts will resume later in the month when technicians are on shifts. This week, we observed an occasional gull or cormorant near the project. Because the bypass system is not yet functional, there are no birds to observe at the outfall.

Research: TSW2 which was previously installed in bay 20 with a hoist in support of the adult survival study, was operated during this report period as needed for research fish releases. The TSW will remain in place for the spring spill program.

The adult fish survival study concluded this week and the release lines were removed from the TSW and slot 12A. Equipment for the juvenile survival study was installed this week across the forebay from north to south.

Project: Ice Harbor
Biologist: Mark Plummer
Dates: March 7 – 13, 2014

Turbine Operation

Turbine unit 6 remained out of service. Turbine unit 6 is currently out of service for digital governor installation. The scheduled return to service date is March 28.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on March 17, 18, and 19.

Fish Ladders: The north fish ladder inspection areas (picketed leads, head differentials, fishway exits, and depth over weirs) were in criteria on all inspections. The south fish ladder inspection areas (picketed leads, head differentials, fishway exits, and depth over weirs) were in criteria on all inspections. Both the north and the south shore picketed leads are down (in their deployed positions).

Fishway Entrances and Collection Channel (inspection date order): The south shore entrance (SFE) and channel/tailwater differential was in criteria on all inspections. The north powerhouse entrance (NFE) and channel/tailwater differential were in criteria on all inspections. The north shore entrance (NSE) and channel/tailwater differential were also in criteria on all inspections except on March 18. During this inspection, the channel/tailwater differential exceeded criteria at 2.2 feet. Fishway entrance criterion is 8 feet depth, greater than 8 feet depth, 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 without problems. Six of 8 south fish pumps are in service. All south fish pumps are available for operation.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Fish ladder exits are clear of debris and the bubblers are operating satisfactorily. Turbine unit trash rack raking is tentatively scheduled for the week of March 24.

STSs/VBSs: STSs are currently raised for annual maintenance. STSs are tentatively scheduled to be lowered into operating position the week of March 24.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass was put in operation March 17. Twenty orifices are open.

Juvenile Bypass Facility: The bypass is in operation.

Fish Sampling: The first sample is scheduled for April 2. Sampling days will alternate each week.

Removable Spillway Weir: The RSW is in operation as river flows exceeded powerhouse capacity. Routine spill in support of fish passage is expected to begin April 3, 2014.

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
89.6	72.9	15.9	3.1	44	42	1.9	1.9

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Cooling water strainer inspections will take place on March 24.

Invasive Species: During ladder and facility maintenance, surfaces were examined for invasive species, none were found.

Avian Activity: Bird hazing will begin April 1.

Research: No research is in progress at this time.

Project: Lower Monumental
Biologists: Bill Spurgeon and Elizabeth Holdren
Dates: March 7 – 13, 2014

Turbine Operation

The units are being operated in soft constraint of the 1% operation criteria. BPA requests resulted in multiple unit operations outside the 1% criteria this week. Unit 4 operated outside the 1% criteria on March 15 for six seconds. This was not due to BPA request. Units were rotated out of service for trash rack raking on March 17 and 18. Unit 5 was removed from service at 1300 hours on October 29 for 6 Year Overhaul/Thrust Bearing Replacement with an estimated return to service date of April 11, 2014.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on March 17, 18, 19, and 20.

Fish Ladders: 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 (≤ 0.4' 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 except on March 18 and 19. While on sill, the gate depth readings were 7.5', 7.5', 7.1', and 7.1 feet. North shore channel/tailwater head was in criteria (1'-2') on all inspections except March 17 when the channel/tailwater head was 0.9 feet.

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

SSE1 weir gate was in depth criteria (criteria: ≥ 8' or on sill) on all inspections except on March 18 the gate depth reading was 5.3 feet. SSE2 was in criteria (6' above sill) on all inspections.

All criteria violations at the fishway entrances and collection channels are due 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 in both the south shore channel and south powerhouse channel. Operators are manually controlling the FCRG and fish pumps to maintain head criteria at fishway entrances. The loss of the fishway PLC also caused all weir gates to be placed in local control, resulting in criteria violations if adjustment does not occur as tailwater level fluctuates. To minimize this, SPE1 and SPE2 were placed on sill.

A replacement for the PLC for automated control of the fishway has been ordered. Upon arrival it will require programming prior to returning to service. The automated system is estimated to

return to service in May. 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 1, 2, and 3 were operated throughout this period. AWS pump 2 was removed from service on March 20 at 1715 hours with suspected woody debris plugging the wicket gates. The problem is currently being investigated.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 687.5 square yards of forebay debris observed during this period. No oil was observed in gatewells.

STSs/VBSs: STSs were raised for winter maintenance on December 16 and 17 and are scheduled to be installed late in the week of March 24.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel was dewatered for winter maintenance on December 17. The primary bypass outfall avian deterrent water cannons were watered up on December 20. The bypass is scheduled to be watered up the week of March 24.

Collection Facility: The facility is in winter maintenance mode.

Transport Summary: Fish 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
87.5	70.7	18.1	0.0	43.5	43.0	1.2	0.6

*Scrollcase temperatures.

Other

Spill for fish passage has yet to begin. Involuntary spill (no market for the electricity) occurred on March 15, 16, 17, 18, and 19.

Inline Cooling Water Strainers: Cooling water strainers were inspected on March 3. Twelve live lamprey were recovered. Mortalities included approximately 166 juvenile lamprey, 6 peamouth, and 40 Siberian prawns.

Invasive Species: No zebra mussels were observed at the monitoring stations on March 2.

Avian Activity: Gulls and cormorants were the dominant piscivorous bird species observed during fish ladder inspections this week. Daily tailrace counts of feeding piscivorous birds will be reported starting April 1in Table 2 (the chart below is meant to show the format only).

Table 2. LMO Tailrace Counts of Feeding Piscivorous Birds (Hazing Effectiveness Monitoring).

Date	Time	Tail Race	Species			Total	Observer	Notes
			Gull	Cormorant	Tern			
3/28/14								
3/29/14								
3/30/14								
3/31/14								
4/1/14								
4/2/14								
4/3/14								

Research: No onsite research activity to report at this time.

Project: Little Goose
Biologist: George Melanson and Richard Weis
Dates: March 7 – 13, 2014

Turbine Operation

Turbine units 1 through 6 were available for service this report period except for short term planned outages on units 3 – 6 in support of ESBS deployments and trash rack raking. Soft constraints of 1% peak efficiency criteria are in effect.

Adult Fish Passage Facility

Adult fishway inspections were performed on March 17, 18 and 20.

Fish Ladder: The ladder exit head differentials ranged between 0.0 and 0.1 feet (criteria $\leq$ 0.5 ft.). Water depths over the weirs measured between 1.1 and 1.2 feet (criteria 1.0-1.3 ft.) and no differential was observed at the picketed leads (criteria $\leq$ 0.3 ft.). No debris was observed at the picketed leads or the ladder exit area. 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 1.8 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.3 and 8.6 feet (criteria $\geq$ 8.0 ft). For the most part, NPE weir depths ranged between 5.6 (sill) and 7.4 feet (criteria $\geq$7.0 ft. or on sill). NPE 2 was observed raised and the entrance closed on March 19. The transducer target broke off and the automatic controls raised the weir. The weir was switched to manual mode lowered to position. NSE weirs were manually operated and depths ranged between 4.8 and 6.5 feet (criteria $\geq$ 6.0 ft.). Collection channel sub surface water velocity measured 2.3 fps near the north powerhouse. Surface water velocities ranged between 1.5 and 1.8 fps near the junction pool and between 1.6 and 2.3 fps near the north shore entrance (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: Woody debris in the immediate forebay was estimated at 100 sq ft. An estimated 2.5 cubic yards of woody debris was removed from gatewells after the ESBSs were deployed. Trash racks 3B – 6C were raked on March 18. All racks were mostly clear of debris.

Spillway Weir: The spillway weir is scheduled to be placed back in service April 3 at the start of spring spill for fish passage.

ESBS/VBS: ESBSs in slots 5A – 6C were deployed on March 17, those in slots 4A - 4C on March 18 and those in slots 3A – 3C on March 20.

Orifices, Collection Channel, Dewatering Structure, and Flume: The Juvenile Bypass System was watered up on March 17 and placed into primary bypass operation. Nineteen orifices are open.

Transportation Facility: The transportation facility is scheduled to be placed back into service March 26.

Transport Summary: Fish transport is estimated to begin late April.

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
78.4	64.8	17.0	0	42.9	42.6	2.0	1.3

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers on all units were inspected on March 19. A total of 238 dead juvenile Pacific Lamprey was removed. The majority were Macropthalmia.

Invasive Species: The zebra mussel substrate monitor is scheduled for inspection on April 2.

Avian Activity: Bird counting and hazing will resume in April.

Research: University of Idaho has resumed adult salmon and steelhead monitoring.

Project: Lower Granite
Biologists: Mike Halter and Ches Brooks
Dates: March 7 – 13, 2014

Turbine Operation

Lower Granite had turbine units 1, 2, 3, 4, 5 and 6 available for power generation at the beginning of the report period. On March 15, Turbine unit 5 was out of service from 1505 until 1521 hours for Remedial Action Scheme (RAS) testing. Turbine unit 6 was removed from service at 1000 hours on March 17 in support of dive operations to inspect the RSW. The unit returned to available status at 1150 hours on March 20. Turbine units 1, 2 and 3 were rotated out of service on March 17 to allow for trash raking. The trash rake crane developed a problem early the same afternoon (which has now been fixed) and the remaining trash racks will be raked in the near future. Turbine units 6, 5, 4, 3 and 2 respectively, were rotated out of service for approximately four hours each from March 17 – 21 to allow for ESBS deployment (for more detail, see the ESBS/VBS section below). The turbine units are being operated in soft constraint of the 1% operation criteria.

Adult Fish Passage Facility

On March 17, 18, and 19 COE fish biologists conducted inspections of the adult fishway system.

Fish Ladder: All criteria were met.

Fishway Entrances and Collection Channel: Head differential readings remained within criteria at the south shore and north powerhouse fishway entrances during the week. Weir depths at the north shore fishway entrances were within criteria on the March 17 and 19 inspections but below criteria on the March 18 inspection with a depth of 0.5 feet (criterion 1.0 – 2.0 feet).

Weir depth inspections at the south shore and north powerhouse fishway entrances produced mixed results this week. The weir depth at SSE-1 was slightly below criteria on the March 18 inspection with a depth of 7.8 (criterion ≥ 8.0 feet) but met criteria on the other two inspections. Weir depths at SSE-2 were slightly below criteria on the March 17 and 18 inspections with depths of 7.9 and 7.8 feet respectively (criterion ≥ 8.0 feet) but met criteria on the March 19 inspection. Weir depths at both north powerhouse entrances met criteria on the March 17-18 inspections but were on sill on the March 19 inspection due to a forebay elevation below 636.0 feet. Weir depths at north shore entrance #1 ranged from 4.9 to 5.3 feet during the week (criterion ≥ 7.0 feet). Weir depths at north shore entrance #2 ranged from 5.4 to 7.1 feet (criterion ≥ 7.0 feet). Only north shore entrance 1 can adjust its' depth relative to the tailwater elevation. North shore entrance 2 is manually set at a compromise depth of 630.0 feet. Normally weir depth readings at the north shore entrances are sacrificed in attempt to maintain the requisite 1.0 foot of head differential.

Velocity readings in the adult fishway collection channel transition pool area ranged from 1.02 to 1.15 feet per second and averaged 1.09 feet per second.

Auxiliary Water Supply System: Fish pumps 1 and 2 were run during the week. Fish pump 3 is out of service awaiting a part needed to complete lower guide bearing repairs; the pump is now expected return to service by late March.

Juvenile Fish Passage Facility

The juvenile fish collection gallery and separator were watered up on the morning of March 20. The system was placed in bypass mode (all fish diverted out the outfall pipe to mid-river) and will operate in bypass only mode until the morning of March 25 when sampling begins.

Forebay Debris/Gatewell Debris/Oil: The amount of forebay debris varied during the week due to wind strength and direction. The trash racks of turbine units 1 through 3 were raked this week.

ESBSs/VBSs: Installation of the ESBSs began on March 17. By the end of the report week turbine units 6, 5, 4 and 3 have had their respective screens deployed. Turbine unit 2 has its C slot screen deployed. The final 5 screens are scheduled for deployment starting the morning of March 24.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: The collection channel and related structures were watered up on the morning of March 20.

Transportation Facility: Due to the initiation of fish screen installation, the juvenile collection gallery was watered up starting at 0800 hours on March 20. The separator was also watered up and fish are being diverted back to the river through the long bypass pipe (secondary bypass). Formal fish sampling activities are scheduled to begin on March 25.

Transport Summary: Nothing to report. General fish barge operations are scheduled to begin somewhere in the April 21 – May 1 time period. The first research barge (index barge) is scheduled to depart on April 10.

Removable Spillway Weir: Diving operations took place during the week to inspect the RSW. The RSW is presently off line. It will resume operation with normal spring spill activities on April 3.

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
85.9	69.1	20.2	0.0	46.1	45.2	2.6	1.7

*Scrollcase temperature.

Other

Video counts in the adult fish ladder counting room began on March 1. The recording hours are from 0400 to 2000 hours. Daytime visual counts from 0400 to 2000 are scheduled to begin on April 1.

Inline Cooling Water Strainers: Cooling water strainers were last inspected for lamprey on February 25. A total of 205 lamprey mortalities were found in the strainers over a combined run time of 1179.6 unit hours. The next cooling water strainer inspections are scheduled for late March 2014.

Invasive Species: The zebra mussel substrate near the adult fishway exit was last examined for zebra mussels on the March 6 inspection. No evidence of zebra mussels was found.

Avian Activity: Formal bird counts and hazing activities are scheduled to begin on April 1.

Adult Fish Trap Operations: The adult fish trap was watered up and sampling began on March 10. The initial sample rate is 28%. Adult trapping will only be conducted Monday thru Friday as was done in 2013. The 28% sample rate represents an overall weekly sample rate of 20%. Genetic/scale samples will be taken from one out of every 10 hatchery steelhead. All wild steelhead captured will be PIT-tagged and scale and genetic samples taken. Any previously PIT-tagged steelhead (either hatchery or wild) will have both scale and genetic samples taken for verification purposes.