U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#02-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: March 7 – 13, 2014

Turbine Operation

McNary had 8 to 12 units available for power generation this week. The hard constraint one percent criteria will begin on April 1. Until then, units can run outside the soft constraint at 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.
5 to 8	Mar 11 – 13	About 2.5 days.	BPA outage.

Adult Fish Passage Facilities

On March 9, 11 and 13, the McNary fisheries staff performed measured inspections of the adult fishways. Visual adult fish counts will resume April 1.

Fish Ladder Exits: Both ladder exits met all Fish Passage Plan criteria during measured inspections. As flows increased, debris loads increased near the exits.

At the Oregon exit, traveling screen differentials were satisfactory. One differential alarm did occur, which the operator reset without incident. The project is rehabilitating the picketed leads and has ordered material to fabricate new leads. Weir 340 still requires a new encoder, which will be replaced soon.

Fishway Entrances and Collection Channel: At the Washington ladder entrances, all inspection points were in criteria. W2's LED has not yet been replaced and W3 still requires calibration.

At the Oregon ladder, at the north powerhouse entrance, NFEW2 and NFEW3 measured depths ranging from 7.6 to 7.8 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. Collection channel surface velocities averaged 1.6 feet per second.

Auxiliary Water Supply System: For the report week, the PUD turbine had no interruptions in service. Fish pumps 1 and 3 operated satisfactorily with blade angles of 30 degrees, also without

any 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 out of service for 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. The contractor has completed installation of a new bird hazing water cannon system, which was tested on March 13.

Forebay Debris/Gatewell Debris/Oil: Forebay debris loads were light at the beginning of this report period. Debris concentrations became heavy by the end of the week due to incoming woody material and tumbleweeds. The highest trash rack differential was 2.9 feet with the affected unit operating at 79 megawatts. Project personnel will clean racks in all operational units next week. No problems were observed in the gatewell slots this week.

ESBSs/VBSs: All ESBSs remain raised and sceen maintenance is nearly concluded. Screen installations are planned from April 5 to 15. This timeframe is similar to previous screen installation periods over the last 5 seasons in support of juvenile lamprey passage. VBS monitoring will resume with the start of ESBS installations.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: The orifices remain closed for winter maintenance which is near conclusion. 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.

Bypass Facility: The facility remains dewatered for winter maintenance which is nearing completion.

This week, we installed the porosity unit's rebuilt perforated plate. The fisheries staff also completed re-plumbing the sample tanks' anesthesia chambers' flush lines. Finally, the fisheries technicians cleaned the system.

The clean up contractor also reinforced the return to river line's footing downstream of the barge drier, added a ladder at the barge drier, put a locking system on the adult flush valve, added a step at the junction box, put handles on the junction box covers and added a flush line upstream of the barge drier.

River Conditions

TSW2 which was previously installed in bay 20 with a hoist in support of the adult survival study was opened this week as needed for research fish releases. The TSW will remain in place for the spring spill program.

River conditions are outlined in Table 2. This information was taken from control room data, which runs from 0000 to 2400 hours each day. Water temperature data was 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
263.7	211.9	126.6	26.9	40	38	4.5	2.2

Other

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

Invasive Species: The biologist will conduct a zebra mussel station examination later this month.

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. The bypass system is not functional so there are no birds to observe at the outfall.

Research: The adult survival study will conclude early next week. Preparations for the juvenile survival study will follow.

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

Turbine Operation

Turbine unit 5 was out of service March 12 from 1055 hours to 1846 hours and March 13 from 1101 hours to 1438 hours for model validation. Turbine unit 6 is currently out of service for digital governor installation and annual maintenance. The scheduled return to service date is March 28.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways March 10, 11, and 12.

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.

Fishway Entrances and Collection Channel (inspection date order): The south shore entrance (SFE) and channel/tailwater differential were in criteria on all inspections. The north powerhouse entrance (NFE) and channel/tailwater differential were also in criteria on all inspections, except March 11. On this inspection, the channel/tailwater differential exceeded criteria at 2.4 feet. The north shore entrance (NSE) and channel/tailwater differential were in criteria on all inspections. 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 the 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 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 is not in operation. All orifices are closed. The startup date is tentatively scheduled for March 17.

Juvenile Bypass Facility: The bypass is scheduled to be put into operation March 17.

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

Removable Spillway Weir: The RSW is in operation as river flow exceeds powerhouse capacity. Spill for fish is expected to begin April 3, 2014.

River Conditions

Spill began as river flows exceeded powerhouse capability on March 6. 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
145.4	91.4	62.9	14.1	40	39	2.8	1.9

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections will take place late in March.

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. Units were operated outside the 1% criteria per BPA request. No 1% violations occurred outside the period of the BPA's request. 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 March 21, 2014.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on March 10, 11, 12, and 13.

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. North shore channel/tailwater head was in criteria (1'-2') on all inspections except March 13 when the channel/tailwater head was 0.8'.

SPE1 and SPE2 weir gates were in sill criteria (criteria: ≥ 8' or on sill) on all inspections except on March 12 when SPE1 and SPE2 were at 7.5'. 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. SSE2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was out of criteria (1'-2') on March 10 and 13 (0.4' and 0.9').

All criteria violations at the fishway entrances and collection channels are due to the failure of the PLC (Programmable Logic Controller). 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 assure head criteria is maintained at all fishway entrances. The loss of the fishway PLC also caused all weir gates to be placed in local control, resulting in criteria violations 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, the replacement will require programming prior to being placed in 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 remote data screen observations conducted normally on that shift.

Velocity in the south powerhouse channel was out of criteria (criteria: 1.5 – 4.0 fps) on March 10 with a reading of 1.0 fps. Electricians determined the velocity meter was out of calibration. The velocity meter was recalibrated.

Auxiliary Water Supply System: AWS pumps 1, 2, and 3 were operated throughout this period without incident.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 1156.8 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 17th.

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 dewatered on December 17. Both systems are scheduled to be watered up the week of March 17.

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 (°F)*		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
140.7	95.5	43.4	0.0	43.0	42.0	1.3	0.7

*Scrollcase temperatures.

Other

Spill for fish passage has yet to begin. Spill due to high river flows occurred on March 7, 8, 10, 11, and 12.

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.

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

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

Turbine Operation

Turbine units 1 through 6 were available for service this report period with the following exceptions. Turbine unit 4 was forced out of service on March 11 from 0107 to 0848 hours and on March 12 at 2232 hours to March 13 at 1049 hours due to the generator tripping an electrical breaker. Turbine unit two was forced on March 11 at 2329 hours to March 12 at 0757 hours also due to an electrical breaker tripping. The circumstances leading to the tripping of these breakers are under investigation. Turbine units 5 and 6 underwent planned outages on March 12 from 1209 to 1655 hours in support of dive inspections of the trash shear boom. Turbine units 1 and 2 also underwent planed outages on March 13 from 1150 to 1554 hours for dive inspections of the trash shear boom. Soft 1% peak efficiency constraint criteria are in effect.

Adult Fish Passage Facility

Adult fishway inspections were performed on March 10, 11, 12 and 13.

Fish Ladder: The ladder exit head differentials measured 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 1.0 and 1.8 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.3 and 8.9 feet (criteria $\geq$ 8.0 ft). NPE weir depths ranged between 7.0 and 7.6 feet (criteria $\geq$7.0 ft. or on sill). NSE weirs were manually operated and depths ranged between 5.4 and 6.3 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured 1.8 fps near the junction pool and ranged between 1.7 and 2.0 fps near the north shore entrance (criteria 1.5 to 4.0 fps).

The Fishway System Control (FSC) digital meters displayed erroneous values on March 13. These meters display the elevations of the fishway weir gates, channel water, tailwater and the pump channel as supplied from the remote terminal unit (RTU) located at the FSC. This RTU may have failed and efforts are underway to trouble shoot the issue. The fishway system is still operating in the automatic mode as controlled by separate RTUs associated with each fish entrance. The Miltronics MultiRanger and transducer systems continue to function and report reliable elevations. The fishway system control is scheduled for replacement during the in-water work period 2015.

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

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: The trash/shear boom separated approximately mid-section on March 1. Navy divers performed inspections of the boom on Wednesday and Thursday (March 12 and 13). Woody debris in the immediate forebay was estimated at 3,000 square feet. The majority of the debris was removed on Thursday, using the trash rack rake. An estimated 85 cubic yards were removed. Woody debris has collected in gatewells but cannot be removed with the ESBS in the raised screens. During maintenance, several ESBS gear housings were overfilled and small amounts of oil spilled onto the ESBS framework and dripped into gatewells. Oil sheens were present and actions were taken to clean and remove the oil included deploying oil absorbent socks and cleaning ESBS components.

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 remained raised and dogged of for maintenance. ESBSs are scheduled to be deployed on March 17.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile bypass system is scheduled to be placed back into service March 17.

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

Transport Summary: Fish transport is expected 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
125.6	82.7	11.4	0	39.5	38.4	1.7	1.1

*Ladder temperature.

Other

Cooling Water Strainers: Cooling water strainers on all units were inspected on March 11. A total of 115 juvenile Pacific Lamprey mortalities were removed. The majority of the lamprey 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 researchers have 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 and 6 available for power generation at the beginning of the report period. Turbine unit 5 was returned to service at 1554 hours on March 7 following installation of equipment related to the ongoing research for the prototype overflow weir and 14" orifice. The turbine units are being operated in soft constraint of the 1% operation criteria.

Adult Fish Passage Facility

On March 10, 11, and 12 COE fish biologists conducted inspections of the adult fishway system.

Fish Ladder: All criteria were met.

Fishway Entrances and Collection Channel: Head differential readings remained within criteria at all fishway entrances during the weekly inspections.

Weir depths at the south shore and north powerhouse fishway entrances were also within criteria on all inspections this week. By contrast, weir depths at north shore entrance 1 ranged from 4.8 to 5.1 feet during the week (criterion $\geq$ 7.0 feet). Weir depths at north shore entrance 2 ranged from 6.1 to 8.2 feet (criterion $\geq$ 7.0 feet). Only north shore entrance 1 can adjust its' depth relative to the tailwater elevation. North shore entrance 2 is manually set at a compromise depth of 630.0 feet. Normally weir depth readings at the north shore entrances are sacrificed in attempt to maintain the requisite 1.0 foot of head differential.

Velocity readings in the adult fishway collection channel transition pool area ranged from 1.05 to 1.15 feet per second and averaged 1.1 feet per second.

Auxiliary Water Supply System: Fish pumps 1 and 2 were run during the week. Fish pump 3 is out of service for lower guide bearing repairs, the pump is expected return to service by mid March.

Juvenile Fish Passage Facility

The juvenile fish collection gallery and collection/transportation facility were dewatered for the winter season on December 5 - 6, 2013. This was done earlier than usual due to very cold temperatures and the possibility of frost damage. We anticipate watering up the juvenile fish collection gallery and separator on March 20.

Forebay Debris/Gatewell Debris/Oil: The amount of forebay debris varied during the week due to wind strength and direction; none was removed.

ESBSs/VBSs: ESBSs were dogged-off for maintenance work during the week. ESBS deployments are tentatively scheduled to begin on March 17.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: The collection channel remains dewatered for winter maintenance. Water-up of the gallery is tentatively scheduled for March 20.

Transportation Facility: On December 5 – 6, the juvenile fish collection gallery and collection/transportation facility were dewatered for the winter season. Winter maintenance activities continue.

Transport Summary: Routine fish barge transport operations are expected to begin somewhere in the April 21 – May 1 time period.

Removable Spillway Weir: 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
129.4	91.1	22.8	0.0	45.0	45.0	1.7	0.8

*Scrollcase temperature.

Other

Video counts in the adult fish ladder counting room began on March 1. The daily recording period is from 0400 to 2000 hours. Daytime visual counts from 0400 to 2000 hours are scheduled to start 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 on the morning of March 10. The beginning sample rate is 5 days per week 28% and 7 days per week 20%.