U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#37-2013

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: November 8 - 14, 2013

Turbine Operation

McNary had 8 to 10 units available for power generation this week. On November 1, the soft one percent constraint began. Units ran outside the criterion on November 8. Unit outages are recorded in Table 1.

Table 1. Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Reason
4	Jun 24 – Jan 30, 2014	About 7 months.	Rewind contract.
11	Jun 28 – Jan 30, 2014	About 7 months.	Rewind contract.
3	Jun 4 – Feb 4, 2014	About 8 months.	Turbine thrust bearing issue.
10	Oct 30 – Unknown	Unknown.	Turbine guide bearing issue.
12	Nov 4 – 8	About 5 days.	Annual maintenance.
9	Nov 5 – 8	About 4 days.	Governor filter replaced.
9, 12 & 13	Nov 12	Total 1.5 hours.	ESBS camera inspections.
14	Nov 12 – 21	About nine days.	Annual maintenance.

Adult Fish Passage Facilities

On November 8, 10 and 13, the McNary fisheries biologists performed measured inspections of the adult fishways. On November 12 and 13, a diver utilizing an ROV inspected a joint leak in the Washington ladder 20' downstream of the ladder exit. This leak complicates winter maintenance as forebay water enters when the ladder is being drained. The project staff plans to repair this leak during the winter maintenance season.

Fish Ladder Exits: Both ladders met all Fish Passage Plan criteria during inspections. At the Oregon exit, due to encoder issues, weir 340 remains in manual mode. Our differential monitoring of the traveling screens revealed no problems. One regulating weir and one traveling screen alarm occurred this week, which operators reset without incident.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria. W2 is operating well with the digital encoder. The LED remains unplugged. W3 is still occasionally experiencing calibration drifts. On November 10, the assistant biologist again found W3 moving excessively. The operator switched the weir to manual operation. The technical staff resolved the problem and determined that the weir

requires a new encoder, which the maintenance staff plans to install during the winter maintenance season.

At the Oregon ladder entrances, all points were in criteria. At the north powerhouse entrance, NFEW2's south cable occasionally had a slight amount of slack. The average surface velocity readings in the Oregon ladder collection channel was 1.4 feet per second..

Auxiliary Water Supply System: The Wasco county PUD in the Washington ladder had no interruptions in service. For the Oregon ladder, the fish pumps had one interruption in service. On November 11, for 14 minutes, fish pump 1 was out of service due to a farval grease alarm. When in service both fish pumps 1 and 3 operated with blade angles of 30 degrees. Fish pump 2 remains out of service for major overhaul which will require a contract. Preparations for this work are in progress. The juvenile facility continues to supply the usual 450 cfs to the north powerhouse pool.

Juvenile Fish Passage Facility

The juvenile system remains in primary bypass for the fall season. The facility also remains "watered up" to avoid freeze breakage. Light maintenance continues. The fisheries staff continues to monitor the juvenile collection channel around the clock.

Forebay Debris/Gatewell Debris/Oil: For the week, forebay debris along the powerhouse was light consisting mainly of woody material. Changes in wind, weather and project operations continue to redistribute the debris. Trash rack differential measurements revealed no problems and no racks were cleaned. A small amount of oil was removed from slot 10C with absorbent pads. Otherwise, no problems were observed in the gatewell slots this week.

ESBSs/VBSs: ESBSs are deployed in all units except in slots associated with unit 11. The screens stored at unit 11 will be used as spares. The ESBSs in slots 2A, 3A, 7B, 8C, 10C and 13A remain in timer mode. Camera inspections took place in units 9, 12 and 13 on November 12. The new camera performed flawlessly and all inspected screens were found in satisfactory condition.

VBS differential monitoring revealed no screens out of criteria and none were cleaned. Since units 3 and 11 are out of service, slot 3C and slots associated with unit 11 are being used to cycle in rehabilitated VBSs. The replacement of the VBS in slot 6B has been again delayed to next week.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: For the week, we had 40 or 42 orifices opened with no problems to report. On November 10, after encountering issues with the south side dewatering valve, the assistant biologist reopened closed orifices at unit 4 to increase side dewatering valve openings. This reduced the likelihood of the valve jamming at lower operating ranges.

All systems operated well in automatic mode. However, as mentioned in last week's report, on November 8, from about 1000 to 1200 hours, the south side dewatering valve jammed. From

about 1200 to 1400 hours, the technical staff examined the PLC (programmable logic circuit) and electrical system. They found nothing wrong and returned the valve to automatic operation. For now, we will assume the problem is mechanical. Since repairs require unwatering of the collection channel, this work is slated to take place during the winter maintenance season. Until then, the fisheries staff will monitor the channel 24 hours per day, 7 days per week.

Again this week, PSMFC reported electrical interference with the PIT tag detectors in the full flow pipe. There appears to be an issue with a breaker in a panel near the detectors. The maintenance staff will continue to investigate the problem.

Transportation Facility: Since we are in the fall primary bypass season, we have removed all systems from service. PIT tag detection occurs only in the full flow pipe. Light maintenance continues and the facility remains watered to avoid freeze breakage.

This week, we began rehabilitation of the primary gate actuator, which had an air leak. Electricians also rewired lighting in the wet lab.

Transport Summary: Transport did not occur at McNary this year. After regional discussion, transport will no longer occur at McNary in the future.

River Conditions

River conditions during the week are outlined in Table 2 as provided by the COE. Our data day runs from 0000 to 2400 hours. Scheduled spill gate maintenance continued.

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
117.3	101.4	0.0	0.0	55	53	6.0	6.0

Other

Inline Cooling Water Strainers: Cooling water strainer examinations took place on November 12. One juvenile lamprey mortality was recovered from unit 13.

Invasive Species: The next zebra mussel station examination will occur in late November.

Avian Activity: Formal bird counts concluded on September 30. Casual observations continued, especially while conducting other inspections. In the forebay area, we observed an occasional group of grebes or gulls as well as a cormorant. Gulls continued to be observed on the rocks by the Washington shore boat dock. One grebe passed into the gatewell slots and then the juvenile collection channel. Later, it passed out of the system.

In the tailwater area, we noted gulls, cormorants and an occasional merganser or grebe. Most of the feeding birds were in powerhouse area. Grebes were usually seen by the spillway. Birds continue to roost on the navigation lock wing wall. Bird numbers maybe fluctuating with their seasonal movements and juvenile shad out migration.

We observed an occasional gull or cormorant by the bypass outfall.

The hazing sprinkler system remains out of service. A new system will be installed this winter in conjunction with the full flow bypass clean up contract. This week, the fisheries staff winterized the sprinkler. The three gull distress calls remain deployed.

Project: Ice Harbor
Biologist: Mark Plummer
Dates: November 8 - 14, 2013

Turbine Operation

Main turbine units 3 and 5 were available for operation. Turbine unit 2 returned to service November 14 at 1545 hours. Turbine unit 1 remains out of service for annual maintenance. Turbine unit 4 remains out of service for governor installation. Turbine unit 6 remained out of service.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fish ways November 11, 13, and 14.

Fish Ladders: The north and south shore adult fish ladder inspection areas (picketed leads, head differentials, fish way exits, and depth over weirs) were within criteria.

Fishway Entrances and Collection Channel: Fish way entrance criterion is 8 feet depth, greater than 8 feet depth, or on sill. All fish way entrances were within criteria, on sill, or greater than 8 feet of depth. All channel/tail water differentials were in criteria. Channel/tail water 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 were operated without problems. All are available for operation.

Juvenile Fish Passage Facility

Forebay Debris/Gate well Debris/Oil: Fish ladder exits are clear of debris and the bubblers are operating satisfactorily.

STSs/VBSs: STSs are in cycle run mode operation. STS/VBS inspections were performed October 21 and 23. No problems to report. Turbine strainer inspections were done at this time, results are described below. The next inspections are scheduled for November 18 and 20.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile bypass is watered up with 20 open orifices.

Juvenile Bypass Facility: No problems to report.

Fish Sampling: The first sample took place April 8 and the last sample was performed July 15.

Removable Spillway Weir: The RSW is not in operation. Spill for fish began April 3, 2013 and ended August 31 at 2359 hours.

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
25.3	11.2	0.0	0.0	56	54	7.8	7.8

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on October 21 (units 2, 4 & 5) and October 23 (units 1 and 3). Unit 6 was not inspected as it remains out of service. No lamprey were seen or recovered during these inspections.

Invasive Species: No new invasive species were detected this week.

Avian Activity: The fish facility is conducting bird observations when possible. Observable predation has decreased as juvenile fish numbers decline.

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

Project: Lower Monumental
Biologists: Bill Spurgeon and Elizabeth Holdren
Dates: November 8 - 14, 2013

Turbine Operation

The units are being operated in soft constraint of the 1% operation criteria. Unit 5 was removed from service at 1300 hours on October 29 for annual maintenance.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on November 9, 12, 13, and 14.

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. North shore picketed leads were raised on November 14.

Fishway Entrances and Collection Channel: NSE1 weir gate was in depth criteria (criteria: ≥ 8' or on sill) on all inspections. NSE 2 was out of criteria on November 12 and 13 with readings of 7.3' and 7.8 feet respectively. These discrepancies were due to NSE 2 being set at 431.0 feet rather than on sill at 429.0 feet pending transducer replacement. The transducer for NSE 2 position output was replaced on November 14 and the gate was returned to remote operation. North shore channel/tailwater head was in criteria (1'-2') on all inspections.

SPE 1 and SPE 2 weir gates were in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill the gate depth readings were 7.3', 6.5', 6.7' and 6.7 feet. South powerhouse channel/tailwater head was in 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 7.9', 7.5', 7.6', and 7.6 feet. SSE 2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections.

Auxiliary Water Supply System: AWS pumps 1 and 3 were operated throughout this period. Two pump operation will continue until bearing repair and shaft alignment work is completed on pump 2 in late November.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 65.0 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-40% surface coverage. Gatewell slots were dipped on November 14. No oil was observed in gatewells.

STSs/VBSs: STSs are operating in cycle run mode.

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

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
22.5	19.2	0.0	0.0	52.0	51.0	5.0	4.4

*Scrollcase temperatures.

Other

Spill for fish passage ended at 0000 hours on September 1.

Inline Cooling Water Strainers: Cooling water strainers were inspected on November 5. No live lamprey was recovered. Mortalities included about 220 juvenile shad and 19 Siberian prawns.

Invasive Species: No zebra mussels were observed at the monitoring stations on November 4.

Avian Activity: Bird hazing has ceased for the season.

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

Project: Little Goose
Biologists: Richard Weis
Dates: November 8 - 14, 2013

Turbine Operation

Turbine units 2- 6 were available for most of this report period. Turbine unit 1 is removed from service for scheduled exciter replacement. Turbine unit 3 was returned to service on November 13 at 1250 hours following completion of annual inspection and maintenance. All available turbine units were operated within the 1% criteria.

Adult Fish Passage Facility

USACE and ODFW fisheries biologists performed measured inspections of the adult fishway on November 13 and 14.

Fish Ladder: The ladder exit head differentials ranged between 0.1 and 0.2 feet (criteria $\leq$ 0.5 ft.). Water depths over the weirs remained steady at 1.1 feet (criteria 1.0-1.3 ft.) and picketed lead head differentials remained steady at 0.0 feet (criteria $\leq$ 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 1.5 and 1.9 feet (criteria 1.3 to 2.0 ft.). SSE weir depths ranged between 8.3 and 8.7 feet (criteria $\geq$8.0 ft). NPE weirs ranged between 6.9 and 7.1 feet (criteria $\geq$7.0 ft or on sill). NSE weirs are at fixed elevations of 532.0 feet and depths ranged between 6.7 and 7.0 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocities ranged between 1.9 and 2.0 (criteria $\geq$1.5 fps). Collection channel subsurface water velocity was measured on November 13 using the hydrologic current meter. The velocity averaged 2.8 fps with 3 fish pumps operating and all weirs in open positions.

Auxiliary Water Supply System: All fish pumps operated within criteria ranging between 72 and 75 rpm.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Woody debris was minimal. Gatewells for the most part, remained clear of debris.

Spillway Weir: The spillway weir was removed from service on August 1. Spill for summer fish season ended on September 1.

ESBS/VBS: All ESBSs operated within criteria this report period. ESBSs were tested for proper operation on October 16. All ESBSs operated as designed.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile collection system was operated throughout this period with 18 open orifices.

Transportation Facility: The facility was switched to primary by-pass on October 31 at 0700 hours. All fish are routed to the tailrace mid-channel area. Seasonal maintenance work at the facility is in progress.

Transport Summary: Fish transport ended on October 31.

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
21.1	13.0	0	0	50.9	50.7	6.0+	6.0+

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers on all units were checked on November 14. No fish were found.

Invasive Species: The zebra mussel substrate monitor was last inspected on October 25; no mussels were observed. The next inspection is scheduled for November 25.

Avian Activity: A maximum of 71 gulls and 15 cormorants were counted during bird surveys.

Research: University of Idaho is performing Adult Salmon Passage Studies using radio telemetry.

Project: Lower Granite
Biologists: Mike Halter and Ches Brooks
Dates: November 8 - 14, 2013

Turbine Operation

Lower Granite had turbine units 1, 3, and 5 available for power generation at the beginning of the report period. Turbine unit 6 remained out of service for cavitation repair, followed by annual maintenance. The expected return to service date is January 5, 2014. Turbine unit 4 was returned to service following governor work at 1528 hours on November 12. Turbine unit 2 remained out of service for a six year overhaul. The planned return to service date is December 16, 2013.

Adult Fish Passage Facility

On November 11, 12 and 14 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 weekly inspections. Head differential readings at the north shore entrances were within criteria on the November were slightly below criteria on all three inspection with a reading of 0.7 – 0.8 feet (criterion 1.0 – 2.0 feet).

Weir depths at the south shore fishway entrances met criteria during the November 11 and 14 inspections but were slightly below criteria on the November 12 inspection when both gates had a weir depth of 7.9 feet (criterion $\geq$ 8.0 feet). Weir depths at the north powerhouse were within criteria on all inspections this week with depths ranging from 8.0 to 8.2 feet. Weir depths at the north shore entrances ranged from 4.7 to 6.7 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 order to maintain the requisite 1.0 foot of head differential.

Velocity readings in the adult fishway collection channel transition pool area ranged from 0.95 to 1.13 feet per second and averaged 1.04 feet per second.

Auxiliary Water Supply System: Fish pumps 1 and 3 were run during the week. On October 31, fish pump 1's speed was changed from slow to fast which helped head differential readings at the fishway entrances. Fish pump 2 is in standby.

Juvenile Fish Passage Facility

Juvenile fish collection and transportation operations ended at 0700 hours on October 31. The system was switched to secondary bypass (all juvenile fish routed out the pipe to mid-river release) this provides continued PIT-tag interrogation and weather permitting, will continue until December 15.

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: The next VBS/ESBS inspections are planned for late November.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed every 3 hours around the clock in an attempt to keep them free of materials that might impact fish passage. Debris levels were relatively light this week.

Transportation Facility: The JFF operated smoothly during the week. There were no operational problems of any kind. The separator remains "watered up" to bypass fallback adult salmonids and enumerate PIT-tagged juvenile fish (Lower Granite does not have PIT-tag detection on through the primary bypass pipe and the separator has to remain operational to track PIT-tags). Separator personnel also continued to monitor adult fallback salmonids for condition factors. Due to the continued presence of jack Chinook in the juvenile bypass system, the facility has continued to employ a smaller gap series of separator bars to keep smaller jack Chinook from falling through the separator bars and allow for enumeration. These bars have proven quite effective.

Transport Summary: Nothing to report. Fish trucking operations concluded on October 31 and the semi tractor has been returned to the McNary Project.

Removable Spillway Weir: The RSW was operated in support of general spill operations during the season. Mandatory spill operations in support of fish passage ended on September 1.

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
24.2	16.1	0.0	0.0	51.5	50.6	5.0	5.0

*Scrollcase temperature.

Other

Visual counts in the adult fish ladder count station between the hours of 0400 and 2000 began on April 1 and concluded on October 31. Video counts during the same hours began on November 1 and will continue through December 31.

Invasive Species: The zebra mussel substrate near the adult fishway exit was examined for zebra mussels on November 1. No evidence of zebra mussels was found. The next inspection will take place in early December.

Inline Cooling Water Strainers: Cooling water strainers were last inspected for lamprey entrainment on October 21. No lamprey were found in the strainers over a combined run time of 1,005 unit hours. The next cooling water strainer inspections are scheduled for late November.

Avian Activity: Formal bird counts and hazing started on April 1. Avian hazing activities concluded for the season on June 30. Facility staff continue to make daily counts of avian predators from the separator platform.

Adult Fish Trap Operations: Adult fish trap operations continued with a sample rate of 20%. Scale samples will be taken from 1 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.

IDFG is radio tagging adult 'B' run wild and hatchery steelhead to examine the difference in movement, staging and if the fish are straying from predicted/natural areas.

WDFW is radio tagging fall Chinook that were PIT-tagged as juveniles by Tiffani Marsh over the last 4 years.

The Nez Perce are conducting a study to monitor the effectiveness of adult 'B' run steelhead hatchery (supplementation) in the Clearwater sub-basin. Utilizing sort-by-code; fifty each of known South Fork Clearwater adults – comprised of: Clearwater natural, supplementation and conventional steelhead will be radio tagged. The two main goals of this study are: 1. Compare the relative performance of these three groups. 2. Determine spatial overlap in the spawning distribution of these groups.

Fall Chinook Transport: Collection of adult fall Chinook for transport to Lyons Ferry Hatchery continued during the week. The Nez Perce Hatchery at Cherry Lane needs have been met and they are no longer trucking fish. Due to falling adult numbers trucking is now being conducted on an as needed basis. Trucking operations will continue into mid November (or until hatchery needs are met). Dewatering of the adult fish trap complex is scheduled for November 25.