U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#40-2015

Project: McNary
Biologist: Bobby Johnson
Dates: November 27 – December 3, 2015

Turbine Operation

McNary had available 12 to 13 units (out of 14 total units) for power generation this week. On November 1, the soft 1 percent constraint began. Turbine unit outages are recorded in Table 1 below.

Table 1. Unit Outages at McNary Project.

Units	Outage Dates	Outage Length	Reason
14	Oct 5–Dec 17	About 73 days.	9 year overhaul.
10	Nov 24–Dec 2	About 8 days.	Brake issue and inspection.
6, 7, 8 & 12	Dec 1	1.4 hours total.	Extended-length submersible bar screen (ESBS) camera inspections.
6	Dec 2	8.2 hours	Hub tapped.

Adult Fish Passage Facilities

The McNary fisheries biologist performed measured inspections of the adult fishways on November 29, December 1 and 3.

Fish Ladder Exits: Criteria at both exits are 1.0 to 1.3 feet for head over weir and 0.0 to 0.5 feet differential at the count stations. Both ladder exits met all criteria and debris loads were minimal.

On December 3, the tilting weir set point was adjusted at the Oregon ladder exit.

Fishway Entrances and Collection Channel: Criteria for all entrances are pool differentials measuring between 1.0 and 2.0 feet, and weir depths measuring 8.0 feet or deeper.

At the Washington ladder, all inspection points were in criteria.

On November 29, at the Oregon north powerhouse entrance, NFEW2 measured a depth of 7.9 feet. All week, at the south powerhouse entrance, SFEW1 measured depths ranging from 7.8 to 7.9 feet. On December 1 and 3, SFEW2 measured depths of 7.8 and 7.9 feet, respectively. The electrical staff was asked to calibrate the tailwater sensors.

Collection channel surface velocities averaged 1.6 feet per second.

Auxiliary Water Supply System: The Wasco County Public Utility District (PUD) turbine unit in the Washington ladder remains out of service for runner replacement, which was originally scheduled for completion in February, 2016. The crane failure reported in Weekly 38 has delayed completion of this project to an undetermined date. The winter maintenance outage will be unaffected. The bypass functioned satisfactorily.

Two of the three Oregon ladder fish pumps operated satisfactorily with blade angles of 25 degrees with the no interruptions in service. On December 1, new circuit cards were installed in the fish pump annunciation system. Fish pump 2 is currently under contract for major overhaul with completion scheduled for April, 2016.

The juvenile facility continued to supply 450 cubic feet per second to the north powerhouse pool.

Juvenile Fish Passage Facility

The fall primary bypass season continues. The juvenile facility remains watered up to avoid freeze breakage.

Forebay Debris/Gatewell Debris/Oil: The forebay debris load was light to minimal. The amount of new debris was minimal.

No high trash rack differentials were recorded and no trash racks were cleaned.

No problems were observed in the gatewell slots.

ESBSs/Vertical Barrier Screens (VBSs): All turbine units had ESBSs installed. On December 1, screens in unit 14 were raised as the unit will be out of service past December 15. No debris or fish were noted on the screens. The screens in slots 1A, 3B, 11C and 12C remained in timer mode. On December 1, camera inspections in units 6, 7, 8 and 12 revealed one problem. In slot 8A, the screen brush bar was four feet below its recorded location. The operator recalibrated the brush mechanism.

No VBS differentials were recorded and no screens were cleaned. VBS rehabilitations continued.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: Forty two orifices were in use. On November 30, at about 0900 hours, a low water alarm sounded in the control room. The biologist found the orifices in slots 8C and 9A closed. A technician had left both orifices closed during cycling. By 0924 hours, both orifices were reopened. Channel procedures were reviewed with the fisheries staff. Scheduled maintenance continued on the orifice actuators this week. Lighting was replaced as required.

On November 27, at 0925 hours, the side screen brush electrical cord carrier was found broken in several pieces. No alarm occurred, which implies the breakage occurred during the last completed brush cycle. The brush was turned off and an electrician was called in. They taped a fray on the electrical cord outer installation and reinstalled the cord carrier with new sections. At 1300 hours, the side brush returned to service with no further incidents. It appears moist dirt had frozen in the joints of the carrier, which resulted in the breakage. At 1425 hours, the south orifice in slot 1A was closed and the north orifice was opened in an attempt to reduce moisture in cord tray, in which the carrier lies. In addition, the brush cycle time was increased from 240 to 360 minutes. On December 3, after air temperatures increased, the fisheries staff washed the dirt out of the cord carrier tray.

All other systems functioned satisfactorily in automatic mode. On November 29, the cycle times for the rectangular and side screen brushes were increased from 180 to 240 minutes and 360 to 480 minutes, respectively.

Bypass Facility: During the fall primary bypass season, passive integrated transponder (PIT) tag detection occurs only in the full flow pipe. Light maintenance continued.

River Conditions

River conditions during the week are outlined in Table 2 below as provided by the McNary control room. The data period runs from 0000 to 2400 hours each day. Flows and spill are recorded in one-thousand cubic feet per second. Temperatures are recorded in degrees Fahrenheit.

Table 2. River Conditions at McNary Dam.

Daily Average River Flow		Daily Average Spill		Water Temperature (Unit 1 scroll case)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
151.7	97.4	0.0	0.0	48.0	45.0	6.0	6.0

Other

Inline Cooling Water Strainers: On December 1, the cooling water strainer examinations revealed only juvenile shad mortalities.

Invasive Species: The next zebra mussel station examinations will occur in late December.

Avian Activity: In the forebay observation zone, grebes, cormorants and gulls were occasionally noted. Gulls and cormorants were roosting on the rocks by the Washington shore boat dock, which is outside the forebay observation zone.

Gulls and cormorants were observed in the tailwater observation area, roosting on the navigation lock wing wall, in the spill basin or around the powerhouse. They appear to be feeding in the powerhouse flow on juvenile shad.

Gulls and cormorants were observed occasionally feeding near the juvenile bypass outfall.

A large gull flock continued to move around in the general area. An occasional blue heron or bald eagle was noted on project.

Research: There is no on site research in progress at this time.

Project: Ice Harbor
Biologist: Ken Fone
Dates: November 27 – December 3, 2015

Turbine Operation

Unit 1 was removed from service on November 2 at 0417 hours for annual maintenance. Unit 6 was out of service from 0645 hours on December 1 to 1531 hours on December 2 to adjust the breaks and wicket gate packing. Unit 2 was periodically operated slightly below or above the 1% peak efficiency range (soft constraint), due to BPA load requirements and the narrow 1% range of unit 2 (fixed-blade unit).

Adult Fish Passage Facility

Fish facility personnel inspected the adult fishways on December 1, 2, and 3.

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 surfaces above the fish ladder exits were clear of debris and the bubblers were operating satisfactorily. The south shore and north shore picketed leads are raised since adult fish counting is done for the season.

Fishway Entrances and Collection Channel: The south shore entrance (SFE-1) depth and channel/tailwater differential were in criteria on all inspections. The north powerhouse entrance (NFE-2) depth and channel/tailwater differential were in criteria on all inspections. The north shore entrance (NSE-1) depth and channel/tailwater differential were in criteria. Fishway entrance criteria are 8 feet depth or greater, or on sill. Channel/tailwater differential criteria are 1–2 feet.

The south shore channel velocity was in criteria on all inspections. The channel velocity criterion is 1.5-4.0 feet/second.

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

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was approximately 1 square yard of surface debris observed in the forebay. There was little to no surface debris coverage observed in the gatewells.

STSs/VBSs: The STSs are being operated in cycle-run mode. Unit 1 STSs were removed on November 4, since the unit will remain out of service through December 15. Inspections of the STSs for unit 2 through unit 5 occurred on November 16 and 18. Overall, there were a few screen clips missing from the seams, but no significant problems were observed.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass system is operating with 20 orifices open. Orifices were routinely cycled and back-flushed once per day. Orifice light 1AN was found to be burned out on December 2. Orifice 1AN was closed and orifice 1AS opened until the light was replaced on December 3.

Juvenile Fish Facility: Fish are being routed through the bypass pipe.

Fish Sampling: Fish sampling is done for the season.

Removable Spillway Weir (RSW): Mandated spill for fish passage began on April 3 and ended on August 31.

River Conditions

River conditions during the week are outlined in Table 1 below.

Table 1. River conditions at Ice Harbor Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (^{o}F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
23.8	12.1	0	0	52	49	7.6	7.0

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: The cooling water strainers for units 1 and 6 were inspected on December 1. There was a total of approximately 300 juvenile shad found (all mortalities). The other cooling water strainers will be inspected the week of December 14 or 21.

Invasive Species: No new exotic species have been found.

Avian Activity: A relatively high number of cormorants, gulls, and pelicans were seen around the dam during the week, with the majority of birds roosting on or near Eagle Island. Up to 20

cormorants were observed foraging below the end of the juvenile fish bypass pipe during the week. Fish facility personnel periodically used a laser light to scare the cormorants away from the outfall pipe and Eagle Island, and move them further downstream. Generally, efforts were successful when done under overcast skies near dawn or dusk.

Research: There is no on-site fish research in progress at this time

Project: Lower Monumental
Biologists: Bill Spurgeon and Raymond Addis
Dates: November 27 – December 3, 2015

Turbine Operation

The units are being operated within the soft constraint 1% peak efficiency criteria. Unit 1 was removed from service on December 10, 2014 for unit rehabilitation with an estimated return to service date of January 12, 2017. Unit 2 was removed from service at 0800 on November 9 for annual maintenance with an estimated returned to service on January 14, 2016.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on December 2 and 3.

Fish Ladders: Fishway exit head differentials and depth over the weirs were within criteria (≤ 0.5' and 1.0'-1.3', respectively) on all inspections. Picketed lead head differentials were in criteria (≤ 0.4' and ≤ 0.3' for north and south shore fishways, respectively) on all inspections.

Fishway Entrances and Collection Channel: NSE1 and NSE2 weir gates were in depth criteria (criteria: ≥ 8' or on sill) on all inspections. North shore channel/tailwater head was in criteria (1'-2') on all inspections.

SPE1 and SPE2 weir gates were in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, both gate depth readings ranged from 6.6 to 6.8 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 ranged from 7.2 to 7.4 feet. SSE2 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, 2, and 3 were operated throughout this period.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 5 square yards of forebay debris observed during this period. Gatewell debris ranged from 0 - 15% surface coverage. No problems observed in gatewells.

STSs/VBSs: STS operation changed to cycle-run mode on August 7 as average sub-yearling Chinook length became greater than 120 mm. STS inspections were conducted November 3 and 4. All screens found in good operating condition.

Orifices, Collection Channel, Dewatering Structure and Flume: The collection channel was operated with 19 orifices open. Primary dewatering structure (PDW) over head lights are turned off to encourage fish to exit the collection channel.

Collection Facility: The collection season ended at 0700 hours on October 1 at which time the facility went into primary bypass. The JFF (Juvenile Fish Facility) was dewatered for winter maintenance on October 6.

Transport Summary: Fish transport is not occurring at this time.

River Conditions

No spill is in progress at this time. 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
21.6	12.4	0.0	0.0	50	49.8	4.4	4.0

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on November 2. Live fish recovered included 1 yellow perch. Mortalities included 50 Siberian prawns and 74 American shad.

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

Avian Activity: Daily tailrace counts ceased at the end of the collection season on October 1. The bird sprinklers at the outfall pipe exit are dewatered for the winter.

Table 2. Lower Monumental Tailrace Counts of Foraging Piscivorous Birds.

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
N/A					

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

Project: Little Goose
Biologist: Richard Weis
Dates: November 27 – December 3, 2015

Turbine Operation

All turbine units were available for service throughout this report period except units 1, 3 and 6. Unit 3 was out of service for XJ breaker failure. Unit 6 was removed from service for digital governor replacement on November 2. Unit 1 was removed from service on November 30 for annual inspection. Soft 1% peak efficiency constraint criteria have been in effect since November 1.

Adult Fish Passage Facility

Adult fishway inspections were performed on November 30, Dec. 02 and 03.

Fish Ladder: The ladder exit head differentials ranged between 0.1 and 0.3 feet (criteria $\leq$ 0.5 ft.). Water depths over the ladder weirs ranged between 1.2 and 1.3 feet (criteria 1.0-1.3 ft.) and picketed lead head differentials ranged between 0.0 and 0.1 feet (criteria $\leq$ 0.3 ft.). The air bubbler used to prevent debris from collecting near the ladder exit operated satisfactorily.

Fishway Entrances and Collection Channel: The adult fishway system is mostly in manual mode. North shore adult fish entrance weirs are on manual due to failure of the slack cable sensors. North power house weirs are also on manual mode as the fishway computer was raising the weirs off sill and out of criteria. 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 7.7 and 8.6 feet (criteria $\geq$ 8.0 ft). NPE weir depths ranged between 5.3 and 5.9 feet and were on sill (criteria $\geq$7.0 ft. or on sill). NSE weir depths ranged between 5.8 and 6.6 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured at the North powerhouse ranged between 1.3 and 2.2 fps (criteria 1.5 to 4.0 fps). The monthly water velocity measured at the north powerhouse using the Rickly velocity equipment measured 1 foot from bottom, mid depth and surface averaged 3.5fps.

Auxiliary Water Supply System: Fish pumps 2 and 3 operated as designed. The fish pump 1 gear box was rebuilt and is still waiting on return to service.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: The trash/shear boom is currently still on shore. Efforts are underway to have it repaired. Woody debris in the immediate forebay held steady at 0 square feet for the week.

Spillway Weir: The spillway weir was removed for the season on June 18.

ESBS/VBS: ESBSs are all deployed and the gatewells are clean. Drawdowns were performed on unit 1 on November 24. All measurements met criteria.

Orifices, Collection Channel, Dewatering Structure, and Flume: The Juvenile Bypass System (JBS) is running with 18 open orifices.

Transportation Facility: The JFF (Juvenile Fish Facility) collection season ended with the last truck departure on October 31. GBT (Gas Bubble Trauma) sampling ended for the season.

Transport Summary: The collection and transportation facility was placed into primary by-pass on October 31 at 0700 hours.

River Conditions

River conditions during the week are outlined in Table 1 below.

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
19.5	12.1	0	0	47.9	46.9	6.0+	6.0

*Ladder temperature.

Other

Inline Cooling Water Strainers: All cooling water strainers were last checked on December 02. No fish were seen.

Invasive Species: The zebra mussel substrate monitor was inspected on December 3. No zebra mussels were detected.

Avian Activity: Bird hazing ended on June 16. See chart below for the numbers observed.

Table 2. Daily maximum tailrace piscivorous bird counts at Little Goose Dam*.

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
Nov 27	None	0	0	0	0
Nov 28	None	0	0	0	0
Nov 29	None	0	0	0	0
Nov 30	0750	92	32	0	0
Dec 01	None	0	0	0	0
Dec 02	0830	67	31	0	0
Dec 03	0835	123	3	0	0

*Bird counts are taken from a single observation, Forebay and Tailrace.

Scroll Case Temperature: Little Goose Dam has only one temperature probe on the unit 1 scroll case. Temperature readings ranged between 57.0 and 60.0 F. Since unit 1 is currently out of service for annual inspections, scroll case temperature readings may be impacted.

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

Project: Lower Granite
Biologists: Elizabeth Holdren, Robert (JR) Horal
Dates: November 27 – December 3, 2015

Turbine Operation

Units are operating within the soft constraint 1% peak efficiency criteria. Unit 2 was returned to service at 1401 hours on December 3.

Adult Fish Passage Facility

The adult fish ladder was inspected by Corps biologists on November 30 and December 1, 3.

Fish Ladder: Fish ladder exit head differential and depth over the weirs were in criteria (≤0.5' and 1.0-1.3', respectively). Picketed lead head differential was in criteria (≤ 0.3').

Fishway Entrances and Collection Channel: SSE1 and SSE2 weir gates were in depth criteria (criteria ≥8' or on sill). South shore channel/tailwater head differential was in criteria (criteria 1'-2') except for a 0.8 reading on December 3.

NPE1 and NPE2 weir gates were in depth criteria (criteria ≥8' or on sill). North powerhouse channel/tailwater head differential was in criteria (criteria 1'-2').

NSE1 was out of criteria (criteria ≥7' or on sill) on all inspections with a gate depth reading of 4.9', 5.2 and 4.9 feet. NSE2 remains set with a chain fall hoist in the closed position to improve channel/tailwater head differentials. North shore channel/tailwater head differential was out of criteria (criteria 1'-2') during the November 30 and December 1 inspections with readings of 0.9' and 0.7 feet.

Collection channel velocity was out of criteria (criteria 1.5-4.0 fps) with readings ranging from 0.9 – 0.8 fps and an average of 0.8 fps. Alternative methods of measuring collection channel velocity are being investigated.

Auxiliary Water Supply System: The fish ladder is in two pump operation with AWS pumps 1 and 2 operating and pump 3 is in standby mode.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Forebay debris was minimal. Daily gatewell surfaces inspections continued. Floating debris is being removed daily to prevent orifice blockages. No oil was reported in gatewell slots.

ESBSs/VBSs: ESBSs were removed from November 30 to December 2.

Orifices, Collection Channel, Dewatering Structure and Bypass Pipe: The orifices were closed and the collection channel was dewatered on December 2.

Collection Facility: The facility was dewatered on December 2

Transport Summary: Fish transport concluded for the season on October 31.

River Conditions

No spill is occurring at this time. River conditions during the week are outlined in Table 1 below.

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
18.2	12.7	0.0	0.0	51	47	5.0+	5.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainers were inspected November 25. No lamprey or other fish were found.

Invasive Species: No evidence of zebra/quagga mussel was observed December 1.

Adult Fish Trap Operations: The adult trap was removed from service and winterized on November 23.

Fish Rescue Operation: The juvenile collection channel was dewatered December 2. Recovered fish included 1 clipped and 3 unclipped adult steelhead and 1 chiselmouth.

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