U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#11-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: May 9 - 15, 2014

Turbine Operation

McNary had 12 units available for power generation this week. On April 1, the hard constraint one percent criteria began. No units ran outside the criterion. Unit outages are recorded in Table 1 below.

Table 1. Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Reason
11	Sep 18 to Jul 31	About 10.5 months.	Turbine bearing issue continues.
4	Mar 27 to Jul 31	About 4 months.	Turbine bearing issue continues.
13 & 14	May 12	2.8 hours total.	Trash rack cleaning.
9, 10, 13 & 12	May 13	8.5 hours total.	Trash rack cleaning.
1, 2 & 3	May 13	1.9 hours total.	ESBS camera inspections.
6 to 9	May 14	8.5 hours total.	Trash rack cleaning.
1, 2 & 3	May 14	12, 13 & 19 minutes each.	Transmission lines 1 & 2 tripped due to substation maintenance.
1 to 3, 5 & 6	May 15	6.2 hours total.	Trash rack cleaning.

Adult Fish Passage Facilities

On May 9, 11 and 13, the McNary fisheries biologist performed measured inspections of the adult fishways. Visual adult fish counts continued. On May 12, district IT (Information Technology) staff began the process of adding a second computer to each count station. Due to LAN (Local Area Network) line switching issues, completion may take some time.

Fish Ladder Exits: Both ladder exits met all Fish Passage Plan criteria during measured inspections. Debris loads remained low near the exits. The Washington exit generally has more debris present than the Oregon exit. Tumbleweeds are an issue at times. The fisheries staff is checking the exits on all shifts when the juvenile system is in primary bypass. On May 13, the operator reset 2 Washington exit weir alarms without incident. At the Oregon exit, our differential monitoring of the traveling screens revealed no problems. Six differential alarms did occur, which the operator reset - also without incident.

Fishway Entrances and Collection Channel: All Washington ladder entrance inspection points met criteria. Occasionally, both weirs have a slight amount of slack in their cables. In the near future, the project will replace the LEDs (Light Emitting Diodes) for entrance weirs W2 and W3 with a PLC (Programmable Logic Circuit), which will integrate into the new control system better. At the Oregon ladder entrances weirs, all inspection points were in criteria except on May 9, when the south powerhouse entrance, SFEW2, measured depths of 7.8 feet. On May 13, the technical staff serviced SFEW2, which continues to have calibration issues. At the north powerhouse entrance, NFEW2's south cable occasionally had a slight amount of slack. We hope to complete the electrical upgrades of the Oregon entrances in the near future. Collection channel surface velocities averaged 1.7 feet per second.

Auxiliary Water Supply System: For the report week, the PUD turbine unit had no interruptions in service. Other than one exception, fish pumps 1 and 3 ran satisfactorily with blade angles of 30 degrees. On May 14, main transmission lines 1 and 2 tripped breakers during substation maintenance, forcing not only units 1, 2 and 3 out of service but fish pumps 1 and 2 as well. The fish pump outages lasted from 1353 to 1410 hours. Pump 2 remains out of service for major overhaul which will require a contract for the winter of 2014–2015. The juvenile facility continues to supply the usual 450 cfs to the north powerhouse pool without any interruptions in service.

Juvenile Fish Passage Facility

The bypass season continues with alternating days of secondary and primary bypass with the switch occurring every morning at 0700 hours. There was no deviations from this schedule as secondary bypass occurred on May 10, 12 and 14. We bypassed 792,629 smolts and no juvenile lamprey this week.

On May 14, when transmission lines 1 and 2 tripped breakers, the facility was without power from 1353 to 1405 hours. The timing of the outage had no adverse effect on sampling activities or the bypass system. The juvenile collection channel remained unaffected.

Forebay Debris/Gatewell Debris/Oil: Moderate to heavy floating forebay debris accumulations was evident this week, mostly in front of the powerhouse. Project operations, trash rack cleaning and weather patterns continued to move the debris. The debris is composed mostly of woody material and tumbleweeds.

Our highest trash rack differential this week was 1.6 feet. Due to concerns over descaling, from May 12 to 15, project personnel cleaned trash racks in all operational units, removing 44 ten-yard truck loads of debris, consisting mostly of tumbleweeds. We noted 17 smolts lost in the debris, most of which came from slot 7B. We also recovered 3 live juvenile lamprey and returned them to the river. No other ESA-listed species or lamprey were seen. Unfortunately, following debris removal, facility descaling rates remained about the same.

We observed no problems in the gatewell slots. Woody debris that fell into the slots during trash rack cleaning will be removed.

ESBSs/VBSs: ESBSs are deployed in all operational units. Only units 4 and 11 are without ESBSs. On May 13, camera inspections in units 1 to 3 revealed no problems. The screen in slot 13C remains in timer mode. On May 9, after the screen in slot 7A was found "short cycling" again, the screen was switched to timer mode ("short cycling" means the cleaner brush is reversing direction earlier than expected). On May 11 and 12, the screen in slot 8C slot was also found "short cycling", even though the operator previously recalibrated the ESBS each time. On May 15, the electrical staff resolved the previously reported issue with slot 3C's ESBS controller run and stop lights being lit at the same time.

VBS differential monitoring revealed no screens out of criteria and we cleaned no screens this week.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Forty two orifices were open all week. Unit 4 orifices remain closed with makeup orifices open at unit 3 to maintain channel elevation. On May 16, unit 4 orifices will return to service and the make-up orifices in unit 3 will no longer be necessary. During trash removals and VBS checks, we closed the orifices in slots where work was being performed and opened spare orifices in adjacent slots. This week, we repaired an air leak at the 14A north orifice operator. There were no issues and all systems functioned well in automatic mode. The transition screen cleaning device will remain out of service until winter. On May 13, the collection channel walkway phone booth light was repaired.

Bypass Facility: During the bypass season, both bypass modes return all fish to the river. PIT tag detection occurs in the full flow pipe during primary bypass and throughout the facility during secondary bypass. Smolt monitoring occurs only on secondary bypass days.

On May 14, the brief power outage had no ill effect on sampling or the system. However, after the outage, the indicator for the B side count tank water supply actuator appeared to be malfunctioning. Fortunately, the issue appeared to have quickly resolved itself.

Sample gates are in operation only during secondary bypass operations (i.e.: in service every-other-day). The gates functioned well. The primary PIT tag system remains off, as the bypass lines provide a better route for the fish than the PIT tag return lines. The secondary PIT/bypass gates remain off and open for bypass. PSMFC personnel continue to perform weekly examinations of the PIT tag detection system.

On May 13, we repaired a leak in the wet lab floor. On May 14, we removed a stick from the flume "wye" which experienced a serious debris blockage earlier this year. The new access hatch is proving invaluable. McNary's lead technician will return May 18 after assisting the Lower Granite Juvenile Fish Facility as a barge rider.

River Conditions

River conditions during the week are outlined in Table 2 as provided by the smolt monitoring staff, whose data day runs from 0700 to 0700 hours. The spring spill program, which calls for 40 percent of the flow to be spilled, continued. Due to flow in excess of powerhouse capacity, 43 to 57 percent of flow was spilled this week. The TSWs remain open in bays 19 and 20.

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
288.3	263.5	156.5	113.7	54.0	52.2	6.0	5.0

*Control room data.

Other

Inline Cooling Water Strainers: The next cooling water strainer examination will occur in June.

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

Avian Activity: Bird counts continue with each zone being counted by the fisheries staff once a day and usually in the morning. Counts are reflected in Table 3.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
May 9	Forebay	0	0	0	0	0
	Spill	81	0	0	0	0
	Powerhouse	49	0	0	0	0
	Outfall	12	0	0	0	0
May 10	Forebay	1	0	0	0	23
	Spill	4	0	0	0	0
	Powerhouse	12	0	0	1	0
	Outfall	46	0	0	0	0
May 11	Forebay	0	0	0	3	14
	Spill	92	0	0	3	0
	Powerhouse	28	0	0	0	0
	Outfall	10	0	0	0	0
May 12	Forebay	1	0	0	0	16
	Spill	110	0	0	1	0
	Powerhouse	2	0	0	0	0
	Outfall	12	0	0	0	0
May 13	Forebay	0	0	0	0	34
	Spill	95	0	0	1	0
	Powerhouse	1	0	0	0	0
	Outfall	15	0	0	0	0
May 14	Forebay	0	0	0	0	0
	Spill	57	1	0	2	0
	Powerhouse	0	0	0	0	0
	Outfall	14	0	0	0	0
May 15	Forebay	0	0	0	0	0
	Spill	NA	NA	NA	NA	NA
	Powerhouse	NA	NA	NA	NA	NA
	Outfall	NA	NA	NA	NA	NA

We missed the avian tailwater counts on May 15.

This week, we observed gulls, pelicans, and cormorants on the rocks by the Washington boat dock. We also noted ospreys and loons on project. No grebes were observed in the juvenile system. On May 10, we did observe gulls beginning to roost on the bypass pipe over the river, possibly on the handrail or the water cannon supply line.

Gulls appear to have learned to avoid hazing. They continue to roost on water upstream of the bypass pipe and feed at the south edge of the spill.

USDA hazing continues with two shifts along boat hazing occurring Monday, Wednesday and Friday as conditions allow. A light lethal take has begun near the bypass outfall during the boat hazing. The bird distress calls deployed along the navigation lock wing wall and around the project appear to have discouraged roosting. All hazing techniques appear to be working well. In June, infrasound will be tested on project as a bird deterrent.

We continue to monitor the water cannon's supply pump. This week, we had no sprinkler system outages.

Research: GBT monitoring and the juvenile survival study continue. This week, the fisheries staff made adjustments to the GBT flush pump's intake and discharge lines, which resolved the priming issue. In preparation for the adult lamprey passage study, on May 13, district personnel came to the project to check the noise levels at SFEW2. Unfortunately, due to equipment issues, the preliminary check was not completed.

Project: Ice Harbor
Biologist: Ken Fone
Dates: May 9 - 15, 2014

Turbine Operation

Turbine units 1 and 3 were forced out of service on May 7 at 1629 hours and 1804 hours, respectively, due to an unintentional release of oil into the turbine pits. Unit 1 was returned to service at 1803 hours on May 8. Unit 3 was returned to service at 1323 hours on May 9. All other turbine units were available for service throughout this report period.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on May 13, 14, and 15.

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) depth and channel/tailwater differential were in criteria on all inspections. The north powerhouse entrance (NFE) depth and channel/tailwater differential were in criteria on all inspections. The north shore entrance (NSE) depth and channel/tailwater differential were in criteria on all inspections. Fishway entrance criteria 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 were operated. South fish pump 4 was out of service from May 6 to May 12 to repair an oil leak.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Fish ladder exits were clear of debris and the bubblers were operating satisfactorily. There was little to no debris observed in the forebay and gatewells.

STSs/VBSs: STSs are in position for juvenile fish guidance and have been in continuous run mode since April 21. STS inspections were performed on April 21, 22 and 23. The STS mesh in the unit 1 C slot was found detached from one of the cross bars. Repairs were completed the same day. The next STS inspections are scheduled for May 19 and 21.

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

Juvenile Bypass Facility: The bypass is in operation.

Fish Sampling: The first sample of the season occurred on April 2. Sampling days continue to alternate weekly on Mondays and Wednesdays, and Tuesdays and Thursdays. Sampling results are outlined in the tables below for May 12 and 14.

Table 1. Fish condition sampling results at Ice Harbor Dam

May 12:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	26	1	0	0
UC-CH	2	0	0	0
C-CH-O	0	---	---	---
UC-CH-O	0	---	---	---
C-SH	97	4	0	3
UC-SH	6	0	0	0
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	1	0	0	0
TOTAL	132	5	0	3

May 14:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	24	5	0	0
UC-CH	5	2	0	0
C-CH-O	0	---	---	---
UC-CH-O	1	0	0	0
C-SH	77	9	0	5
UC-SH	9	1	0	0
C-COHO	0	---	---	---
UC-COHO	1	0	0	0
C-SOCK	0	---	---	---
UC-SOCK	7	1	0	0
TOTAL	124	18	0	5

Removable Spillway Weir: The RSW is in operation position. Spill in support of fish passage began April 3, 2014.

River Conditions

River conditions during the week are outlined in Table 2 below.

Table 2. 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
90.9	69.8	54.4	23.1	57	51	5.4	4.9

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Cooling water strainer inspections took place on April 21, 22 and 23. One lamprey mortality and one juvenile Chinook mortality were recovered from unit 5. No other fish were found. Combined unit run times totaled 2,050.1 hours.

Invasive Species: No new exotic species have been found.

Avian Activity: Piscivorous bird hazing began on April 1. The water cannon is functioning satisfactorily. The avian deterrent program has generally been effective at reducing the numbers of piscivorous birds near the dam. Daily counts are reflected in Table 3 below.

Table 3. Daily Morning Piscivorous Bird Counts at Ice Harbor Dam

Date	Gulls	Cormorants	Caspian Terns	Pelicans	Grebes
May 9	31	40	2	185	0
May 10	50	9	0	12	0
May 11*	60	25	0	7	0
May 12	77	39	0	11	0
May 13	54	73	0	1	0
May 14	37	13	0	25	0
May 15	17	21	2	28	0

*Spillway tailwater zone 1 only

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

Project: Lower Monumental
Biologist: Bill Spurgeon
Lead Biological Science Technician: K. C. Deife
Dates: May 9 - 15, 2014

Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria.

Adult Fish Passage Facility

The adult fishways were inspected by Corps and PSMFC/State biologists on May 9, 10, 11, and 14.

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.

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 7.6', 7.5', 7.7', and 6.6 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections.

SSE1 weir gate was in depth or sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, the gate depth reading was 7.9', 7.9', and 7.0 feet. SSE2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections.

The collection channel velocity remained in criteria (1.5 - 4.0 ft/sec) this week.

Any criteria violations at the fishway entrances are related to the failure of the PLC (Programmable Logic Circuit) for automated control. Without automated control, the FCRG (fishway control regulating gate) drifts closed causing the fishway entrance head to go out of criteria at the south shore entrances. Operators are manually controlling the FCRG and fish pumps to maintain head and depth criteria at fishway entrances. The loss of the fishway PLC also caused all weir gates to be placed in local control. This results in criteria violations if monitoring and adjustment does not occur as tailwater level fluctuates. To minimize this, SPE1 and SPE2 are placed on sill.

The replacement PLC for automated control of the fishway has been received. It is currently being programmed. The automated system is estimated to return to service in June. The operators have been instructed to conduct a physical inspection on night shift to replace the FPP inspection via data screen conducted normally on that shift.

Auxiliary Water Supply System: All AWS pumps were in service and operating throughout this report period.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 3.75 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-20% surface coverage. No oil was observed in gatewells.

STSs/VBSs: STS operation remains in continuous run mode due to the average length of sampled sockeye being less than 120 mm.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel is operating with 20 orifices open. The primary dewaterer automatic weirs were set to 528.1 feet and switched to the off position on May 14 at 1005 hours to eliminate sudden water level fluctuations in the separator.

Collection Facility: The facility is in collection for transport mode.

Transport Summary: Every-day fish transport by barge is occurring.

River Conditions

BPA implemented the use of uniform spill patterns during periods when no market for electricity exists until June 10 at 2359 hours (date is subject to change). The RSW was closed on May 12 from 1154 to 1253 hours to attempt repairs of fish transportation barge fish release plunger. This temporary closure allowed the safe transit of the towboat and barges across the tailrace to the juvenile fish facility. Spill gate 1 was closed on May 12 from 0650 to 1650 hours and May 13 from 0656 to 1630 hours in support of SSE1 weir repairs.

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
88.3	68.0	28.5	26.3	54.0	53.0	4.2	3.4

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on April 2. No live lamprey were recovered. Mortalities included 108 juvenile lamprey and 40 juvenile shad.

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

Avian Activity: Daily tailrace counts of feeding piscivorous birds are summarized in Table 2. Gulls were the dominant species observed during inspections this week. Hazing met the standard from the avian action plan through this time period. This period is near the historic peak for juvenile fish passage (approximately May 12) and should represent the high numbers of birds encountered.

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

Date	Time (hours)	Gulls	Cormorants	Terns
May 9	1100	4	0	0
May 10	1100	45	0	0
May 11	1100	30	0	0
May 12	1100	18	0	0
May 13	1100	15	0	0
May 14	1100	12	0	0
May 15	1100	7	0	0

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

Project: Little Goose
Biologist: Richard Weis
Dates: May 9 - 15, 2014

Turbine Operation

Turbine units 1 through 6 were cycled out then into service this week for trash rack cleanings and VBS inspections on May 12 and 13. Unit 1 was taken out of service on May 13 at 1100 hours due to large tear found on VBS 1A. Unit 1 returned to service after repairs on May 15 at 1058 hours. Unit 4 was taken out of service on May 9 for governor problems and returned to service at 0900 hours. Unit 4 was again removed from service on May 14 due to a faulty fish screen brush motor at 2230 hours. Unit 4 returned to service on May 16 at 0720 hours. All turbine units were operated within 1% peak efficiency range.

Adult Fish Passage Facility

Adult fishway inspections were performed on May 12, 13 and 15.

Fish Ladder: The ladder exit head differential ranged between 0.0 and 0.1 feet (criteria $\leq$ 0.5 ft.). Water depths over the weirs held steady at 1.2 feet (criteria 1.0-1.3 ft.). 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 8.0 and 8.2 feet (criteria $\geq$ 8.0 ft). NPE weirs rested on sill and depths ranged between 5.3 and 5.7 feet (criteria $\geq$7.0 ft). NSE weirs are in manual and depths ranged between 5.7 and 6.0 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity near the junction pool area measured 1.7 fps on May 12. Surface water velocity ranged between 1.7 to 2.0 fps near the north shore entrance (criteria 1.5 to 4.0 fps). On May 14, monthly subsurface water velocities were measured, producing an average of 3.1 fps.

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

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Estimated amounts of woody debris in the immediate forebay ranged between 800 and 1500 sq ft. All trash racks were raked on May 12 and 13. No reportable amounts of debris were removed.

ESBS/VBS: All ESBSs operated without any problems except the screen in slot 4C. Unit 4 was taken out of service for brush motor failure from May 14 at 2230 hours to May 16 at 0720 hours.

Video inspections of all VBSs were performed on May 12 and 13. Several tears to the nylon mesh in slot 1A were observed and unit 1 was removed from service for repairs.

Monthly ESBS brush motors testing was performed on May 15 on 2A – 6C. All brush motors operated within criteria. ESBSs in slots 1A through 1C were not tested due to VBS repair work, testing is rescheduled for May 21. Drawdown measurements across trash racks and ESBS for turbine units 2 – 4 were performed on May 14, all criteria were met.

Orifices, Collection Channel, Dewatering Structure, and Flume: The Juvenile Bypass System operated with 20 to 22 open orifices.

Transportation Facility: The collection and transportation facility operated within criteria for the report period. A total of 929,191 fish were collected for transport. Four Chinook fry were by-passed. The weekly descaling and mortality rates were 2.1% and less than 0.1% respectively.

Transport Summary: All fish collected were transported daily as scheduled. However due to barge mechanical problems some delays occurred. Barge holding capacities were also reduced (restricted) and direct loading operations were interrupted. Barges 2127 and 4394 had faulty engine starters; barge 4382 had air entrained in one of the water supply pump gear boxes; and barge 2187 was removed from service altogether due to a faulty plunger.

Spillway Weir: The spillway weir was in service in the low crest position during this reporting period.

River Conditions

Table 1. River conditions at Little Goose Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (^{o}F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
85.0	67.1	25.9	20.2	52.7	51.4	4.0	2.7

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were checked on May 14. Six salmonids and 52 juvenile lamprey were removed.

Invasive Species: No zebra mussels were observed on the substrate monitor on May 5. The next inspection is scheduled for June 4.

Avian Activity: USDA-APHIS bird hazing was utilized all week. Daily count results are summarized in Table 2 below.

Table 2. Maximum Daily Bird Counts at little Goose Dam.

Date	Gulls	Cormorants	Caspian Terns	Pelicans
May 9	206	7	0	1
May 10	252	14	0	7
May 11	93	10	0	0
May 12	69	9	0	1
May 13	80	10	0	22
May 14	128	10	0	4
May 15	81	12	0	9

Research: The University of Idaho continued adult salmon passage and adult lamprey passage research activities at Little Goose.

Project: Lower Granite
Biologists: Mike Halter, Elizabeth Holdren and Ches Brooks
Dates: May 9 - 15, 2014

Turbine Operation

Lower Granite had all turbine units available for power generation at the beginning of the report period. As scheduled, Turbine unit 6 was removed from service on May 12 at 0719 hours for turbine blade seal inspection; the expected return to service date is June 5. The turbine units are being operated in hard constraint of the 1% operation criteria.

Adult Fish Passage Facility

On May 9, 10, 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 the south shore fishway entrances during the weekly inspections. The head differential reading at the north powerhouse fishway entrances was slightly below criteria on the May 9 inspection with a reading of 0.9 feet (criterion 1.0 -2.0 feet) but met criteria on the May 10 and 12 inspections with readings of 1.0 feet on both dates. Head differential readings at the north shore fishway entrances were out of criteria on the May 9 and May 10 inspections with readings of 0.5 feet and 0.7 feet, respectively (criterion 1.0' – 2.0'). On May 12 the head differential reading met criteria with a reading of 1.0 feet. These out of criteria events at the north shore are associated with the fact that fish pump 1 is now being run in 'slow' speed mode. Fish pump 1's motor management relay system has a tendency to trip the pump offline when the pump is running in 'fast' speed mode during low tailwater conditions (the pump requires up to an hour to restart).

Weir depths at the south shore fishway entrances met criteria on all inspections this week. Weir depths at the north powerhouse fishway entrances were on sill all week due to tailrace elevations below 636.0 feet (at which depths the gates bottom out). Weir depths at the north powerhouse entrances ranged from 5.9 to 7.0 feet. Weir depths at north shore entrance 1 ranged from 4.2 to 5.1 feet (criterion $\geq$ 7.0 feet). Weir depths at north shore entrance 2 ranged from 3.8 to 5.1 feet (criterion $\geq$ 7.0 feet). North shore entrance 2 remains damaged, and cannot adjust for weir depths automatically; this gate has been manually set at a compromise depth of 630.0 feet. Due to a lack of water at the north shore entrances, weir depth readings are being 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 1.00 to 1.20 feet per second and averaged 1.11 feet per second.

Auxiliary Water Supply System: Fish pumps 1 and 3 were run during the week with fish pump 2 held in standby mode.

Juvenile Fish Passage Facility

The sample rate was increased from 0.5% to 1.0% at 0700 hours on May 14 and remained at that level for the duration of the report week. Daily fish collection numbers trended sharply downward during the week and ranged from a high of 223,100 on May 9 to a low of 29,900 on May 15.

Forebay Debris/Gatewell Debris/Oil: The amount of forebay debris varied during the week due to wind strength and direction. No debris spills took place during the week. The JFF staff has been monitoring gatewells daily and removing floating debris with a hand basket to circumvent orifice blockages.

ESBSs/VBSs: ESBSs are deployed in all units and have been operating without issue. The brush cleaning cycle is set for once every 2 hours. The first video VBS inspection of all screens was accomplished on April 25-26. No problems of note were observed.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed every 3 hours around the clock. The 42-inch controller valve on the separator quit working early on the morning of March 24. Powerhouse electricians traced the problem to a bad transformer and replaced it on May 13. The valve is now fully functional.

Transportation Facility: Every day barge transport operations at Lower Granite began on May 2. Fish are being picked up at Little Goose (fish are being directly loaded onto 4000 or 2000 series barges) and Lower Monumental on all trips. Lamprey friendly tail screens (with larger mesh openings) have been installed in all raceways.

Transport Summary: In general, fish barging operations have been proceeding smoothly. Fish barge 8106 developed problems on the fish run which departed Lower Granite on May 9. When the biological technician attempted to release fish at the designated site below Bonneville Dam on the evening of May 10, the plunger on the right rear hold failed to open, trapping fish in the hold. Despite numerous efforts to release the fish, the technician was unable to get the system to work properly because the plunger shaft had pulled loose from a fitting. The barge was returned back to Lower Granite and the trapped fish were released (with minimal mortality) on the morning of May 13. All barges fitted with this plunger system were subsequently checked for problems and the plunger shafts were welded to prevent this from happening again. Every day fish barging operations are currently scheduled to continue through the month of May.

Removable Spillway Weir: The RSW resumed 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
87.0	70.3	22.8	20.2	52.2	51.8	3.8	3.0

*Cooling water intake temperature.

Other

The adult fish counters began visual counts at the counting window on April 1. The counting hours are from 0400 to 2000 hours PST and are scheduled to continue through October 31.

Inline Cooling Water Strainers: Cooling water strainers were last inspected for lamprey on April 28. A total of 5 lamprey mortalities were found in the strainers over a combined run time of 2,988.5 unit hours. The next cooling water strainer inspections are scheduled for late May.

Invasive Species: The zebra mussel substrate near the adult fishway exit was examined for zebra mussels on May 3 inspection. No evidence of zebra mussels was found.

Avian Activity: Formal bird counts and hazing activities began on April 1. Sixteen hour per day hazing began on April 21 and will continue until June 1 (This is in attempt to provide the maximum amount of hazing effort when the highest numbers of juvenile fish are passing the dam).

Table 2. Daily Average Predacious Bird Counts at Lower Granite Dam.

Date	Gulls	Cormorants	Caspian Terns	Pelicans
May 9	37.5	0	0	0
May 10	31.5	0	0	0
May 11	29	0	0	0
May 12	22.5	0	0	0
May 13	9	0	0	0
May 14	5	0	0	0
May 15	3.5	0	0	0

* Numbers are an average of the morning and evening counts off the JFF separator platform.

Adult Fish Trap Operations: The adult fish trap was watered up and sampling began on March 10. The initial sample rate was 28%. On April 14 at 1400 hours the sample rate was lowered to 15%. Since, as in 2013, adult trapping will only be conducted Monday thru Friday the 15% sample rate represents an overall weekly sample rate of 11%. 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. Up to twenty sort by code Lemhi origin Chinook will be radio-tagged and scale and have genetic samples taken.

Research

Idaho Fish and Game (IDFG) Genetic Stock Identification: The goal of this study is to develop fine-scale genetic profiles for natural origin salmon and steelhead; develop genetic stock identification (GSI) techniques to estimate stock-specific escapement over LGR, monitor abundance, productivity and distribution of naturally produced adult and juvenile steelhead and salmon; research and monitor stock-specific life history characteristics. At LGR the goal of the study will be to enumerate and characterize the natural production of spring/summer Chinook salmon and steelhead above LGR with regards to age composition and genetic stock profiles. IDFG will sample Monday through Friday until the first part of July with the goal to collect between 2,000-5,000 genetic samples each from yearling spring/summer Chinook and steelhead and 500-3,000 genetic samples from subyearling fall Chinook.

Nez Perce Tribe (NPT)/U. of Idaho (UI)/Columbia River Intertribal Fisheries Commission (CRITFC) – Kelt Study: The goal of this research project is to study the physiology and endocrinology of steelhead kelts to evaluate the feasibility and success of several strategies for rehabilitating and handling steelhead collected at LGR. Also, to understand and identify the suite of physiological changes that occurs in Snake River steelhead during the process of sexual maturity, and to determine changes that occur post spawning that are associated with successful downstream migration and recovery to spawn again. As part of this collaborative study to investigate approaches to increase adult steelhead returns the NPT will select up to 150 fish for transport to the Dworshak National Fish Hatchery holding facility.

National Marine Fisheries Service (NMFS) In-River Survival: This week, NMFS staff began PIT-tagging Chinook and steelhead smolts for their Survival Study to compare smolt to adult returns of in-river migrating smolts to the smolt to adult returns of transported smolts. PIT-tagged fish are held for 24 hours before being bypassed to the LGR tailrace.

National Marine Fisheries Service (NMFS)-Monitoring the Migrations of Wild Snake River Spring/Summer Chinook: This study is monitoring the migration behavior and survival of wild spring/summer Chinook salmon. The specific goals are to characterize the migration timing and estimate parr-to-smolt survival to LGR of wild Chinook populations as they migrate from their natal rearing areas and determine migration patterns and what environmental factors influence those patterns. Fish were PIT-tagged during the summer of 2013 in natal streams and are diverted to the Sort-By-Code tanks at LGR.

Biological Evaluation of Prototype Overflow Weir and 14 inch Orifice: A prototype broad crested overflow weir and 14 inch diameter orifice were installed into intake gatewell 5A during the winter of 2012. These structures are being evaluated by UC Davis, Biomark and Blue Leaf Environmental in order to test whether these structural modifications will reduce passage times and increase survival of fish through the upper portion of the LGR Juvenile Bypass System. Last winter a sharp crested weir was installed in place of the broad crested weir and a prototype LED light ring was installed on the 14 inch orifice. The goal of the study is to assess the biological and debris passage characteristics associated with each style of passage structure (14 inch orifice - with light ring) and 'sharp crested' overflow weir) during the day, and this year also at night. Results of this study will be used to determine whether any redesign of the weir or orifice

structures is necessary and to determine which of these structures warrant installation in the remaining gatewells. This study will also help inform future management decisions for structural modifications at other Columbia and Snake River dams. Up to 375 fish of each species (clipped yearling Chinook, clipped subyearling Chinook and clipped steelhead) will be collected from the JFF east raceways during the NMFS survival and transport study sampling. These fish are PIT-tagged, photographed, evaluated for condition, held overnight and released the next morning for the day release or the next evening for the night release. The fish are released into gatewell 5A or the gallery channel. To further evaluate these structures up to 100 adult steelhead kelts and up to 2500 juvenile lamprey will be PIT-tagged and released. A subsample of each release group will be collected in the Sort-By-Code tanks and examined for injury.