U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#19-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: July 4 - 10, 2014

Turbine Operation

McNary had 10 to 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. Turbine Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Reason
11	Sep 18, 2013 to Nov 15, 2014	About one year and two months.	Turbine bearing issue continues.
4	Mar 27 to Nov 15	About 7.5 months.	Turbine bearing issue continues.
1 & 2	Jul 7 to 11	About 4 days.	Transformer 1 maintenance & testing.
6, 7 & 8	Jul 8	66 minutes total.	ESBS camera inspections.

Adult Fish Passage Facilities

On July 4, 6 and 8, the McNary fisheries biologist performed measured inspections of the adult fishways. Visual adult fish counts continued. The fisheries staff is checking the exits on all shifts when the juvenile system is in primary bypass. The adult lamprey passage season continues and on July 1, video tape review counting began. Ladder exit temperature monitoring also continued. On July 10, the lamprey passage study cameras installed at SFEW2 was adjusted.

On July 17, a dive is planned in support of lamprey passage structure repairs at SFEW2. Repairs will allow the structure to fully open.

Fish Ladder Exits: During measured inspections, both ladder exits met all Fish Passage Plan criteria except on July 6, when the Oregon ladder's head over weir and count station differential measured 1.6 feet and 0.7 feet, respectively due to a power failure. Debris loads remained fairly low near the exits. Details of the failure, backup power used and returning the electrical service are outlined in Table 2 below.

At the Oregon exit, our differential monitoring of the traveling screens revealed no problems. On July 4, one false differential alarm occurred, which the operator reset. All other exit alarms were related to the power failure and restoration of services. Each time power was lost, the exit set

points were adjusted. Debris loads in the area of the exit have fluctuated depending on wind direction. We have provided a radio to the counters as the phone still works intermittently. The project hopes to replace the outside phone line in 1 to 2 months.

Table 2. The Power Outage at the Oregon Ladder Exit.

Date	Time	Issue or Result
Jul 6	0056	Multiple exit alarms. Operators examine.
	0705	Fish counter reports partial power loss. Computer is working and PIT system energized. Operators continue examination. Find 480V power loss. No power to exit weirs, crane or traveling screens.
	0745	Electricians called in.
	0819	Operators find two blown fuses at fishway electrical feed.
	0855	Biologist inspected exit and called control room. The forebay had not changed overnight, ladder slightly out of criteria but fish passing well.
	1020	Two electricians and one mechanic on sight. PSMFC on site to service PIT tag detector.
	1054	Electricians cut all power to exit and find short underground. Fish counter without computer and PIT system without power 4.6 hours.
	1532	Project has exit back on line with diesel generator. Traveling screen and exit crane without power. Weirs without power for about 14 hours.
Jul 7		Generator remains on as project digs hole and starts repairs.
Jul 8		Fuses replaced and tested, repairs made and site filled in.
Jul 9	0825	Final above ground repairs completed.
	0851	Systems tested.
	0937	Generator turned off, exit and systems without power for 2 hours.
	1135	Exit energized and all systems back on project power except crane. Traveling screens down for about 3 and half days.

The project plans to upgrade the electrical systems that failed at the Oregon exit this fall. Meanwhile, the exit crane continues to have a power issue and until repairs can be made, a portable crane will be used to clean the picketed leads.

The Washington exit generally has more Eurasian milfoil and we have cleaned the picketed leads more often here. The milfoil is also hanging up on the cameras used for the lamprey passage study, with the research having to remove the milfoil. All week, multiple exit weir alarms occurred, which the operator reset. On July 4, they also adjusted the set points.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria. In the near future, the project will replace the LEDs (Light emitting Diodes) for W2 and W3 with a panel view, which will integrate into the new control system better. The panel view has been ordered.

At the Oregon ladder entrances, all inspection points were in criteria. At the south powerhouse entrance, both SFEW1 and SFEW2 drifted in and out of calibration. We hope to complete the upgrades of the Oregon entrances in the near future.

Also, the project staff has begun to plan the rehabilitation of the Oregon powerhouse floating entrances. Collection channel surface velocities averaged 1.7 feet per second.

Auxiliary Water Supply System: For the report week, the PUD turbine unit in the Washington ladder had no interruptions in service. Fish pumps 1 and 3 operated satisfactorily with blade angles of 30 degrees. However, on July 3, when the pumps were switched to bus 1 in preparation for transformer 1 service, there was a brief pump outage, which was not recorded. On July 11, the bus switch back resulted in a 21 minute pump outage from 1613 to 1634 hours. Pump 2 remains out of service for major overhaul which will require a contract for the winter of 2014–2015. The project continues plans for asbestos abatement on the 1000 cfs supply conduit discharge valves. These valves were disconnected from the conduit last winter so conduit flow will not be affected. The juvenile facility continues to supplying the usual 450 cfs to the north powerhouse pool with no interruptions in service to report.

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 were no deviations from this schedule. Secondary bypass occurred on July 5, 7 and 9. We bypassed 615,870 smolts and 8,600 juvenile lampreys this week. For the week, descaling rates ranged from 2.0 to 1.6 percent. Project personnel will continue to perform all operations and inspections promptly.

On July 7, from 0630 to 0645 hours and July 10, from 1712 to 1751 hours, the facility experienced power outages due to transformer 1 maintenance. Since the facility was in primary bypass, this had no ill effect on the system. On July 10, a planned transformer switch could not be completed. On July 11, from 0851 to 0904 hours, the transformer switch was again attempted and successfully completed. This time the facility was in secondary bypass. However, with the sample rate set at 0.5 percent, no samples were missed. The sample gates were turned off during this power outage.

This week, facility operations and procedures to be utilized when ambient water temperatures are at 70 degrees or more were reviewed.

Forebay Debris/Gatewell Debris/Oil: Floating forebay debris, which was mostly woody material and milfoil was light to moderate. Incoming debris remains light and mostly consisted of milfoil. Project operations and wind moved the debris back and forth from the southern half of the powerhouse to the Oregon shore.

Our highest trash rack differential was 1.7 feet at slot 3A, which will be cleaned next week. We observed one problem in the gatewell slots. On July 7, a boom was briefly in slot 2A when the transformer work began. A slight oil sheen was removed.

ESBSs/VBSs: ESBSs are installed at all operational units. Only units 4 and 11 are without ESBSs. The screens in slots 7A, 8C and 13C remain in timer mode. Camera inspections in units

6, 7 and 8 revealed no problems. During the inspections, five smolt mortalities were observed in the slots. Four of these were in unit 7.

VBS differential monitoring revealed no screens out of criteria. On July 5, 7 and 10, we cleaned 11 screens as a preventative measure. We noted one live juvenile lamprey, which we returned to the river. We also noted 28 lost smolts. Seventeen of these smolts were located in unit 7. VBS rehabilitation continues.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Forty two orifices were open all week. On July 7, the orificein slot 2A was closed with a spare opened in slot 1C while the oil boom was in the gatewell. During VBS and trash rack cleaning, we closed the orifices in the slots the work was being performed and opened spare orifices at adjacent slots. There are no issues to report and all systems functioned well in automatic mode. On July 7, for about 30 seconds, the side dewatering valves were in manual mode while operators were tracing an electrical problem. No outage occurred in the channel. The transition screen cleaning device will remain out of service until winter.

On July 10, we found an unclipped adult sockeye mortality at the base of the stairwell by unit 14. We will examine the area and make any improvements to the jump netting that may be required.

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.

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 July 10, a hydraulic oil reservoir at the B side sample holding tank was replaced.

River Conditions

River conditions during the week are outlined in Table 3 as provide by the smolt monitoring staff, whose data day runs from 0700 to 0700 hours each day. Water temperature monitoring continues. PSMFC reports the results in a separate report. The summer spill program, which calls for 50 percent of flow to be spilled, continues. The project has maintained the 50 percent spill level.

Table 3. 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
271.8	221.5	136.1	111.0	67.5	63.5	6.0	5.8

*Control Room Data.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur in early August.

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

Avian Activity: On July 12, swing shift boat hazing by USDA personnel will conclude.

The bird distress calls deployed along the navigation lock wing wall and around the project appear to have discouraged roosting. However, for the first time, possibly due to the lack of gulls, we observed terns roosting on the navigation lock wing wall along with the cormorants. The fisheries staff monitors and adjust all hazing equipment as needed. All hazing techniques appear to be working well with birds concentrated along the south edge of the spill. Pelicans are working both shorelines for adult shad.

All species were observed at times at the bypass outfall.

No grebes were observed anywhere on project. The gulls observed in the forebay were all juveniles and appear to be scavenging.

Again, we observed gulls, cormorants and pelicans on the rock by the Washington boat dock. We also noted ospreys on project. Bird numbers appear tracking with fish numbers.

We continue to examine, monitor temperature and add oil to the outfall water sprinkler supply pump. On July 6, at 0800 hours, we noted the sprinkler had tripped a breaker. At 0830 hours, after returning to the facility, we reset the system. There were no other outages. On July 7, the fisheries staff conducted a camera inspection of the pump's intake and found it partly obstructed by algae growth. On July 9, the staff cleaned the intake. Pump repairs are being arranged.

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 4 below.

Research: GBT monitoring, the juvenile salmonid survival and the adult lamprey passage studies continue. On July 6, survival study researchers lost power to their trailer on the intake deck by unit 14. On July 7, by 1230 hours, they had restored the power by using other sources. Project staff traced the issue back to researcher equipment later that day. On July 8, project staff reconnected the trailer to its original power source.

Table 4. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
July 4	Forebay	6	2	0	0	0
	Spill	57	10	7	15	0
	Powerhouse	0	0	0	4	0
	Outfall	3	0	0	4	0
July 5	Forebay	5	0	0	0	0
	Spill	0	0	18	25	0
	Powerhouse	0	0	1	0	0
	Outfall	0	0	0	8	0
July 6	Forebay	14	0	0	0	0
	Spill	3	6	10	14	0
	Powerhouse	0	0	0	0	0
	Outfall	1	1	1	1	0
July 7	Forebay	15	1	0	0	0
	Spill	4	0	6	25	0
	Powerhouse	0	1	0	3	0
	Outfall	1	0	1	5	0
July 8	Forebay	20	0	0	0	0
	Spill	5	0	11	22	0
	Powerhouse	0	0	1	2	0
	Outfall	1	0	1	4	0
July 9	Forebay	0	0	0	0	0
	Spill	7	10	4	30	0
	Powerhouse	0	0	1	6	0
	Outfall	2	6	0	4	0
July 10	Forebay	0	0	0	0	0
	Spill	2	3	4	41	0
	Powerhouse	0	0	0	9	0
	Outfall	4	0	0	3	0

Project: Ice Harbor
Biologist: Ken Fone
Dates: July 4 - 10, 2014

Turbine Operation

Turbine unit 2 tripped a protective relay at 1142 hours on May 18 and remains out of service due to a problem associated with the turbine shaft bearing. Unit 2 annual maintenance is also occurring. Unit 6 was removed from service on June 12 at 0925 hours and remains out of service to change the oil and repair a turbine guide bearing leak. Unit 3 was taken out of service on July 7 at 1346 hours to investigate a generator electrical grounding problem.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on July 7, 8, 9, and 10.

Fish Ladders: The north fish ladder inspection areas (picketed leads, head differentials, fishway exit, and depth over weirs) were in criteria on all inspections. The south fish ladder inspection areas (picketed leads, head differentials, fishway exit, 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, except on July 10 when the differential was 2.4 feet. The high differential was most likely due to an errant reading of the fluctuating tailwater elevation caused by project spill. Fishway entrance criteria are 8 feet depth or greater, 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, except when pump 2 tripped off at 2130 hours on July 9 due to an oil system warning. After determining that the oil system was operating properly, pump 2 was restarted at 2155 hours the same evening. Six of 8 south shore fish pumps were operated.

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. Oil sheens were observed in intake slot 3C and gatewell slot 3C on July 10. Oil absorbent pads were placed in the gatewell slot on the same day.

STSs/VBSs: STSs are in position for juvenile fish guidance and have been in continuous run mode since May 27. STS inspections and unit 6 VBS inspections were performed on June 24 and 25. Personnel observed a narrow gap in the mesh of the STS in slot 5A due to a few missing retaining clips at the end of one of the seams. Clips were immediately reinstalled to close the gap.

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.

Table 1. Fish condition sampling results at Ice Harbor Dam

July 7:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	0	---	---	---
UC-CH	0	---	---	---
C-CH-O	17	5	0	1
UC-CH-O	27	3	0	0
C-SH	0	---	---	---
UC-SH	0	---	---	---
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
TOTAL	44	8	0	1

July 9:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	0	---	---	---
UC-CH	0	---	---	---
C-CH-O	32	3	0	0
UC-CH-O	56	3	0	0
C-SH	0	---	---	---
UC-SH	0	---	---	---
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
TOTAL	88	6	0	0

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
64.1	54.3	44.4	18.6	64	60	6.7	5.4

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Monthly turbine cooling water strainer inspections took place on June 13, 24, and 25. A total of 3 juvenile lamprey, 1 juvenile salmonid, and 1 Siberian prawn were found, all of which were mortalities.

Invasive Species: No new exotic species have been found.

Avian Activity: Contracted hazing of piscivorous birds for 16 hours per day began on April 1 and ended on June 30. The avian deterrent program has generally been effective at reducing the numbers of piscivorous birds near the dam. Daily maximum birds counted in the tailrace for July 7-10 are provided in Table 3.

Table 3. Daily maximum piscivorous bird counts in the tailrace at Ice Harbor Dam

Date	Gulls	Cormorants	Caspian Terns	Pelicans	Grebes
July 4	---	---	---	---	---
July 5	---	---	---	---	---
July 6	---	---	---	---	---
July 7	0	0	0	16	0
July 8	0	0	0	13	0
July 9	0	0	0	16	0
July 10	0	10	0	14	0

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

Project: Lower Monumental
Biologists: Bill Spurgeon and K.C. Deife
Dates: July 4 - 10, 2014

Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria. Unit 2 was removed from service on June 30 at 0705 hours for annual maintenance. Units were rotated out of service for STS/VBS inspection on July 8, 9, and 10.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and PSMFC/State biologists on July 5, 6, and 9.

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. An unclipped adult Chinook was observed between the north shore picketed leads on June 27. This was likely due to the powerhouse crew not following standard operating procedures for cleaning picketed leads.

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 6.9', 6.7', and 7.2 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections with the exception of readings of 0.9' and 0.6 feet on July 5 and 9, respectively.

SSE1 weir gate was in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, the gate depth readings were 7.3', 7.0', and 6.0 feet. SSE2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections with the exception of a 0.9 feet reading on July 9.

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 undergoing programming. The automated system is estimated to return to service in July. 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 period.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 0.0 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-26% surface coverage. No oil was observed in gatewells.

STSs/VBSs: STS operation remains in continuous run mode due to subyearling Chinook length averaging less than 120 mm. STS/VBS's were inspected July 8, 9, and 10. All screens passed inspection.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel is operating with 20 orifices open.

Collection Facility: The facility operated satisfactorily during this period.

Transport Summary: Every-other-day barging is occurring.

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
61.4	51.2	17.0	16.6	64	62	5.0+	4.5

*Scrollcase temperatures.

Other

Spill: Summer spill began at 0001 hours on June 21 with the initiation of the bulk spill pattern.

Inline Cooling Water Strainers: Cooling water strainers were inspected July 7. One live Siberian prawn was recovered. Mortalities included 10 juvenile lamprey and 60 Siberian prawn.

Invasive Species: No zebra mussels were observed at the monitoring stations on July 6.

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 for the season ended on June 2. No additional action trigger points were met from the avian action plan through this time period.

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

Date	Time (hours)	Gulls	Cormorants	Terns
July 4	1100	9	2	0
July 5	1100	7	0	0
July 6	1100	8	0	0
July 7	1100	2	1	0
July 8	1100	1	0	0
July 9	1100	15	2	0
July 10	1100	14	1	0

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

Project: Little Goose
Biologists: Richard Weis and James Brandon
Dates: July 4 - 10, 2014

Turbine Operation

Turbine units 1, 4, 5 and 6 were available for this reporting period. Unit 2 had a forced outage on July 6 from 0245 to 0254 hours. The generator failed to start, and the BPA was told the unit was out of service. The operator attempted a restart and was successful. This unit was available for the rest of the reporting period. Unit 3 was placed out of service on July 7 at 0700 hours in support of a planned six year overhaul. Unit 3 is scheduled to be out of service till Aug. 8. All turbine units were operated within the 1% peak efficiency range.

Adult Fish Passage Facility

Adult fishway inspections were performed on July 6, 8 and 10.

Fish Ladder: The ladder exit head differential ranged between 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 1.3 and 1.9 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.0 and 8.3 feet (criteria $\geq$ 8.0 ft). NPE weirs rested on sill and ranged between 5.4 and 5.8 feet (criteria $\geq$7.0 ft). NSE weirs are in manual and depths ranged between 5.3 and 5.7 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity near the junction pool area ranged between 1.1 to 2.0 fps. Surface water velocity ranged between 2.4 to 2.8 fps near the north shore entrance (criteria 1.5 to 4.0 fps).

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

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Estimated amounts of woody debris in the immediate forebay ranged between 100 and 250 sq ft. Small amounts of oil were seen in gatewells 5A and 5B on July 10 after a rain. Oil absorbent pads are deployed.

Spillway Weir: The spillway weir was operated in the high crest position.

ESBS/VBS: All ESBSs operated without problems except for the screen in slot 1B which triggered a trouble light on July 7. This screen was manually run until July 8 when the cleaning brush set points were recalibrated.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile system operated with 22 open orifices.

Transportation Facility: The collection and transportation facility operated within criteria this report period. A total of 31,195 fish were collected for transport. Nine Chinook subyearling fry were by-passed. The descaling and mortality rates were 1.4% and 0.13% respectively. To date 13 adult lamprey have been removed from sample and released above the dam at Little Goose Landing.

Transport Summary: Every other day barging operations continued during this reporting period. All collected fish were transported with the exception of the above mentioned Chinook fry.

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
60.5	50.8	18.1	16.0	67.2	64.1	6.0	5.7

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were checked on July 1. No fish were seen and none were recovered.

Invasive Species: No zebra mussels were observed on the substrate monitor on June 13. The next inspection is scheduled for July 13.

Avian Activity: USDA-APHIS bird hazing ended on June 20.

Table 2. Maximum Daily Bird Counts by Species at Little Goose Dam.

Date	Gulls	Cormorants	Caspian Terns	Pelicans
July 4	13	19	0	0
July 5	13	32	1	0
July 6	6	20	0	3
July 7	9	13	0	3
July 8	6	9	0	0
July 9	23	10	0	2
July 10	13	10	0	1

Research: The University of Idaho continued their adult salmon and adult Lamprey passage study. The U of I is placing new lamprey detection sensors at the SSE, the NSE, the NPE and the 180 degree turn halfway up the ladder.

Gas Bubble Disease: No signs of GBT were found this week.

Project: Lower Granite
Biologists: Elizabeth Holdren and Ches Brooks
Dates: July 4 - 10, 2014

Turbine Operation

Lower Granite had 5 turbine units available for power generation during the report period. Unit 6 was taken out of service at 0719 hours on May 12 for blade repair and annual maintenance. Turbine units are being operated in hard constraint of the 1% operation criteria.

Adult Fish Passage Facility

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.

There are 3 auxiliary pumps that draw water from elevation 705 feet (about 30 feet down); these pumps were designed to supply water to the fish ladder during the reservoir drawdown test in 1992. Auxiliary pumps 1 (supplies water to the ladder exit) and 2 (supplies water to diffuser 14) were put into operation at 0930 hours on July 10 in order to supply cooler water to the fish ladder.

On July 4, 5 and 9 COE fish biologists conducted inspections of the adult fishway system.

Fish Ladder: All criteria were met.

Fishway Entrances and Collection Channel: Head differential readings at the south shore and north powerhouse fishway entrances remained within criteria during the weekly inspections. Head differential readings at the north shore fishway entrances met criteria on the July 4 inspection but were below criteria on the July 5 and 9 inspections with readings of 0.9 feet on both dates (criterion $\geq$ 1.0 feet).

Weir depths at the south shore fishway entrances met criteria on all inspections this week. Weir depths at the north powerhouse fishway entrances remained on sill this week due to tailrace levels below 636.0 feet (at which level the gates bottom out). Weir depths at both north powerhouse entrances ranged from 5.5 to 5.9 feet. The weir depths at the north shore entrances were out of criteria all week. Weir depths at north shore entrance 1 ranged from 4.6 to 4.8 feet (criterion $\geq$ 7.0 feet). Weir depths at north shore entrance 2 ranged from 3.6 to 3.8 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 0.97 to 1.21 feet per second and averaged 1.13 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 raised from 5% to 10% at 0700 hours on July 5 and was lowered back to 5% at 0700 hours on July 6. The sample rate was again raised to 10% at 0700 hours on July 8 where it remained for the rest of the report week.
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. JFF staff have been monitoring gatewells daily and removing floating debris with a hand basket in attempt 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. ESBS/VBS monthly inspections were last conducted on June 27 and 28. The inspector noted that several small sections of strapping used for securing the mesh were possibly loose on the unit 3 VBSs along with several missing rivets, but that less than ideal visibility made it hard to be certain. He also noted that the mesh was entirely in place. These areas will be examined again during the next inspection.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed every 3 hours around the clock. Debris levels moderated during the week with a mix of smaller vegetative and larger woody material moving through the system.

Transportation Facility: Operations proceeded smoothly at the facility during the week. There were some issues with smaller vegetative and larger woody debris in the raceways but nothing that caused plugging of the inclined screen, flumes, or pipes. Lamprey friendly tailscreens (larger screen mesh) remain installed in all raceways.

Transport Summary: The facility switched to every other day fish barging operations on June 1 (May 31 was the first day without a barge departure from Lower Granite). Fish barges departed Lower Granite on the odd days of the month of June, and will continue to do so in July. During the barge trip that departed on July 7, the barge rider reported that engine 2 on barge 8108 had shut off several times for no apparent reason. This barge was taken off line upon its return on July 10 for maintenance. Barge 8107 will take its place for the trip departing on July 11. All barges other than the 2 involved in every other day transport have been returned back to Lower Granite for storage and maintenance work. Due to lower numbers of fish being transported, and the consequent need to run only one fish engine on the barges for aerator water, the decision was made to allow the towboat contractors to fuel fish barges on an every other trip basis.

Removable Spillway Weir: The project began FOP (Fish Operations Plan) summer spill operations of 18 kcfs 24 hours a day at 0001 hours on June 21; the RSW is operated as a normal part of summer spill activities which are scheduled to last through the end of August.

River Conditions

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
62.7	53.0	18.6	18.5	66.0	62.3	5.0+	5.0+

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainers were inspected for on June 26. A total of 14 lamprey mortalities were found. The combined unit run time was 2,089.2 hours. The next cooling water strainer inspections are scheduled for late July.

Invasive Species: The zebra mussel substrate near the adult fishway exit was examined for zebra mussels on the July 4 inspection. No evidence of zebra mussels was found. The next inspection will take place in early August.

Avian Activity: Formal bird counts and hazing activities began on April 1. Sixteen hour per day hazing began on April 21 and concluded on June 1. Eight hour a day hazing took place through the end of June. Tailrace piscivorous bird counts are taken daily one hour after sunrise and one hour before sunset from the juvenile fish wet separator platform (Table 2).

Table 2. Maximum Tailrace Counts of Piscivorous Birds at Lower Granite Dam.

Date	Time (hours)	Gulls	Cormorants	Terns	Pelicans
July 4	1945	4	0	0	0
July 5	1945	5	0	0	0
July 6	1945	5	0	0	0
July 7	1945	4	0	0	0
July 8	1945	2	0	0	0
July 9	1945	2	0	0	0
July 10	1945	3	0	0	0

Adult Fish Trap Operations: At approximately 1110 hours on July 7, NOAA personnel discovered that a crane/basket used to hoist fish at the adult fish trap had failed at the Lower Granite adult trap facility. The basket assembly is an 8'x10" rectangular I-Beam structure with rubberized canvas sheeting. The cables (the initial failure *may* have involved an eye bolt) which hoist the basket failed while the NOAA fisheries group was in their office. The basket itself had 3 broken cables and was balanced inside the hoist area of the fish trap. There was no injury to personnel. All of the approximately 5 adult salmoninds either egressed to the river through a

drain pipe or where netted out safely. The time required to complete repairs is not certain. The project operations, electrical and mechanical crews are taking steps to begin repair. The current estimate to complete repairs at this time is one to two weeks.

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. The final day for this research was July 4.

United States Geological Survey (USGS) Research, Monitoring, and Evaluation of Spawning and the Early Life History of the Snake River fall Chinook salmon ESU: Under the 2008/2014 Biological Opinions RPA 55.4 "Research, monitoring, and evaluation of spawning and the early life history of the Snake River fall Chinook salmon ESU" the RPA specifically states the need to "investigate, describe, and quantify key characteristics of the early life history of Snake River fall Chinook salmon in the main-stem Snake, Columbia, and Clearwater Rivers". This study is needed because efforts to reconstruct the juvenile subyearling run at LGR by using a method that relies on expanding fish numbers in the sample tank results in negative values for natural-origin fish, particularly in May and early June during the peak of passage. An alternative is to estimate the number of hatchery and natural fish in the sample tank directly by using morphological characteristics identified by Tiffan and Connor (2011). Discrimination between the two groups of fish relies on photographing fish and conducting a discriminant analysis of principal components obtained from morphological measures on the fish. Once a week (Friday) through the end of July, USGS personnel will sample and photograph up to 100 unmarked, run at large and up to 20 marked subyearling fall Chinook. Sampling was done only twice this week due to the July 4th holiday.

Biological Evaluation of Prototype Overflow Weir and 14 Inch Orifice: Blue Leaf and Biomark and UC Davis completed their marking work on Sunday, June 15. The overflow weir/14 inch orifice study has concluded fish releases for the season but due to high turbidity during May the video portion of the study was not completed. Since turbidity in the river is now suitable for video monitoring of passage, UC Davis has requested that both the 14 inch and 10 inch orifices in gatewell 5A remain open and Unit 5 remain as the second highest priority unit. This work was completed on July 8.