U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#22-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: July 25 - 31, 2014

Turbine Operation

McNary had 12 units available for power generation this week. The hard constraint one percent criterion continues. No units ran outside the criterion. The warm weather summer unit priority sequence, known as the "saw tooth" pattern (units being alternately on or off), continues. Unit outages are recorded in Table 1 below.

Table 1. 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.
12 to 14	Jul 29	Two hours total.	ESBS camera inspections.

Adult Fish Passage Facilities

On July 25, 27 and 30, the McNary fisheries biologist performed measured inspections of the adult fishways. On July 30, NOAA Fisheries personnel conducted their monthly inspection. The fisheries staff is checking the exits on all shifts when the juvenile system is in primary bypass. Visual adult fish and lamprey counting along with exit temperature monitoring continue. On August 6, project staff will raise the lamprey passage researcher's camera frame at SFEW2 for inspection.

Fish Ladder Exits: During measured inspections, both ladder exits met all Fish Passage Plan criteria.

At the Washington exit, the amount of milfoil is fairly light. All week, multiple exit weir alarms occurred, all of which the operator reset without incident. Weirs 338 and 339 incurred the most alarms. On July 30, the technician reported an odd osculating flow over the regulating weir. This possibly was related to the weir alarms. On July 28 and 29, scheduled maintenance took place on the tilting weirs and the picketed lead hoist. On July 25, PSMFC personnel added an uninterrupted power supply (UPS) to the count station PIT tag detector.

We presume a UPS will also be installed at the Oregon exit. Oregon exit traveling screen differential measurements were acceptable this week. Even though differentials were satisfactory, operators did reset one false traveling screen alarm. Debris loads in the area of the exit have fluctuated depending on wind direction as much of the debris is along the Oregon shore. On July 25, the operators also made one set point adjustment. We have provided a radio to the fish counters as the phone still works intermittently. The project hopes to replace the outside phone line in about a month.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria. In the near future, plans are to replace the LEDs (Light Emitting Diodes) at 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 met criteria. South powerhouse entrances, SFEW1 and SFEW2 continued to drift in and out of calibration. We hope to complete the upgrades of the Oregon entrances in the near future. Collection channel surface velocities averaged 1.5 feet per second.

Auxiliary Water Supply System: For the report week, the PUD turbine unit at the Washington ladder had no interruptions in service. Fish pumps 1 and 3 operated satisfactorily with blade angles of 30 degrees. 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 were no deviations from this schedule. Secondary bypass occurred on July 25, 27, 29 and 31. We bypassed 62,100 smolts and 300 juvenile lamprey this week. We have no unusual mortality or descaling issues to report.

Forebay Debris/Gatewell Debris/Oil: The quantity of floating forebay debris (which consisted mostly of woody material and milfoil) was light to very light. The quantity of incoming debris (mostly milfoil) was very light. Wind continues to move the debris back and forth from the powerhouse to the Oregon shore. There is no debris present at the spillway. Trash rack differential readings were satisfactory, and no racks were cleaned this week. We observed no problems in the gatewell slots.

ESBSs/VBSs: ESBSs are deployed in all operational units. Only units 4 and 11 are without ESBSs. The screens in slots 1A, 7A, 8C and 13C remain in timer mode. Camera inspections in units 12, 13 and 14 revealed no problems. We noted no ESA listed or lamprey mortalities were observed during the camera inspections.

VBS differential monitoring revealed no screens out of criteria. On July 28 and 31, we cleaned 6 screens as a preventative measure. We observed one smolt mortality. VBS rehabilitation continues with unit 11 as the staging area.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Forty two orifices were open all week. During VBS cleaning, we closed the orifices at the slots the work was being done and opened spare orifices at adjacent slots. On July 29, we replaced the handle on the south orifice operator at slot 6C. There are no new technical issues to report as all systems functioned well in automatic mode. The transition screen cleaning device will remain out of service until winter.

On July 29, the assistant project biologist lost the side screen cleaning device's brush checker into the channel. The checker is a half inch fiberglass rod and about 10 feet long. The next day, using a camera, we found the checker under the side screen access walkway. We were not able to remove the checker after several attempts. However, we did move it to the eddy between the side screen cleaning device and the rectangular screen cleaning mechanism. The checker never interfered with the operation of these cleaning devices and it should remain in its current location until the channel is dewatered. On July 31, a new checker was built and its proper use was reviewed with the staff.

Also, on July 30, we switched the side dewatering valves to manual mode operation at the PLC (Programmable Logic Circuit), and then we opened or closed orifices to check the high and low water alarms. The alarms came in at the control room and on the panel view in the channel as expected. However, the channel alarm light did not come on. The light bulb was functional so we asked that the electrical staff check the wiring.

Finally, on July 30, we opened the west flooring dewatering valve a small percentage (the blade was raised one inch) in order to adjust the side dewatering valve openings. Both side valves closed slightly (approximately three to four inches). Due to changes in project operations, the valves had been opening more than usual.

Bypass Facility: During the bypass season, both bypass modes return all fish are 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. PSMFC personnel continue to perform weekly examinations of the PIT tag detection system.

On July 29, contractors conducted a roof inspection for bid purposes as the facility's roof is in need of repair and/or replacement. On July 31, while cleaning debris by the A side sample gate, a technician lost a broom head down the flume. Due to the size of the head, it should have passed through the bypass outfall safely. Subsequent system and ice block checks indicated no evidence of an obstruction.

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 each day. Water temperature monitoring continues. PSMFC reports temperature monitoring results in a separate document. The summer spill program, which calls for 50 percent of flow to be spilled, continued. The project has maintained the 50 percent level.

Table 2. River conditions at McNary Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temp. (^{o}F)		Water Clarity* (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
216.5	193.5	108.4	96.9	69.7	66.7	6.0	6.0

*Control Room Data.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on August 5.

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

Predatory Bird Observations: USDA APHIS hazing will conclude on August 2.

The bird distress calls deployed along the navigation lock wing wall and around the project appear to have discouraged roosting. The fisheries staff monitors and adjust all hazing equipment as needed. All hazing techniques appear to be working well in the tailwater area with gulls, cormorants and terns concentrated at the spill. Also, cormorants roost on the navigation lock wing wall and pelicans are working the Washington shoreline for adult shad. Finally, mostly cormorants and pelicans were observed at the bypass outfall.

We continue to examine, monitor temperature and add oil to the outfall water cannon supply pump. We also continue to check and clean the pump intake. Repairs to the pump are being arranged.

Juvenile gulls and grebes were observed in the forebay area. Grebes were seen nowhere else on site. We observed gulls, cormorants and pelicans on the rock by the Washington boat dock. We also noted ospreys and kingfishers on project.

Bird counts continued with each zone being counted by the fisheries staff once a day, usually in the morning. Counts are reflected in Table 3. Bird numbers appear to be decreasing with the reduction in out migrating smolts.

Table 3. Daily Avian Counts at McNary Dam.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
July 25	Forebay	3	0	0	0	15
	Spill	3	0	0	15	0
	Powerhouse	0	0	0	0	0
	Outfall	1	2	0	2	0
July 26	Forebay	1	0	0	0	0
	Spill	0	0	0	11	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	4	0
July 27	Forebay	5	0	0	0	10
	Spill	0	1	1	2	0
	Powerhouse	NA	NA	NA	NA	NA
	Outfall	0	1	1	5	0
July 28	Forebay	3	0	0	0	9
	Spill	12	4	0	10	0
	Powerhouse	0	0	0	0	0
	Outfall	0	3	0	1	0
July 29	Forebay	11	0	0	0	6
	Spill	0	3	2	12	0
	Powerhouse	0	0	0	1	0
	Outfall	0	2	0	3	0
July 30	Forebay	0	0	0	0	0
	Spill	4	1	1	4	0
	Powerhouse	0	0	0	0	0
	Outfall	0	1	0	3	0
July 31	Forebay	0	0	0	0	8
	Spill	0	2	0	7	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	6	0

Research: GBT monitoring and the adult lamprey passage studies continue. From July 25 to 28, the GBT flush line pump was missing a stop plug. Due to the small size of the plug, the pump remained functional. Data collection in support of the juvenile salmonid survival study should conclude soon with equipment removal scheduled for August.

Project: Ice Harbor
Biologist: Ken Fone
Dates: July 25 - 31, 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. Annual maintenance of unit 2 is also in progress. Unit 3 was taken out of service on July 7 at 1346 hours to investigate a generator electrical grounding problem. Unit 1 was out of service on July 28 from 1109 hours to 1142 hours to perform line switching in support of station service transformer work. Unit 6 was removed from service at 1800 hours on July 31 due to governor problems. All available turbine units were operated within 1% of peak turbine efficiency as specified in the Fish Passage Plan.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on July 28, 29, 30, and 31.

Fish Ladders: The north fish ladder inspection areas (head differentials at picketed leads and fishway exit, and depth over weirs) were in criteria on all inspections. The south fish ladder inspection areas (head differentials at picketed leads and 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 28 and 31 when the differential was 2.4 feet and 2.3 feet, respectively. The high differential may be due to the difficulty in getting an accurate reading of the tailwater elevation because of turbulence from 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 throughout the week. Six of the 8 south 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 beginning on July 10. Oil absorbent pads that are in the gatewell slot have eliminated the sheen.

STSs/VBSs: STSs are in position for juvenile fish guidance and have been in cycle mode since July 21. Units 1, 3, 4, 5, and 6 STS inspections and unit 4 VBS inspections were performed on July 21 and 23. No problems were found.

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: Sampling operations began on April 2 and ended on July 15.

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

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
42.0	31.3	32.1	21.6	69	69	7.0	6.4

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Monthly turbine cooling water strainer inspections of units 1, 3, 4, and 5 took place on July 21 and 23. A total of 2 juvenile lamprey and 6 Siberian prawns 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 piscivorous bird count program at the project began on April 1 and ended on July 15. Relatively low numbers of cormorants and pelicans, and very few gulls and terns, have been seen around the project.

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

Project: Lower Monumental
Biologists: Bill Spurgeon and K.C. Deife
Dates: July 25 - 31, 2014

Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria. Unit 1 was out of service on July 29 from 0700-1100 hours for STS swaps. Unit 4 returned to service on July 31 at 1330 hours from annual maintenance.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and PSMFC/State biologists on July 25, 26, 27, and 30.

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 with the exception of a reading of 7.7 feet on July 25. 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 5.5', 5.0', 5.4', and 5.9 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections with the exception of a 0.9 feet reading on July 30.

SSE1 weir gate was in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, the gate depth readings were 5.9', 5.6', 5.4', and 5.9 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 undergoing programming. The automated system is estimated to return to service in August. 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 0-9% surface coverage. No oil was observed in gatewells.

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

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

Collection Facility: No problems were encountered within the facility during this report period.

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

River Conditions

Summer spill began at 0001 hours on June 21 with the initiation of the bulk spill pattern. 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
39.5	29.8	17.0	16.5	69.5	69	5.0+	4.7

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on 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 25	1100	13	0	0
July 26	1100	5	0	0
July 27	1100	3	0	0
July 28	1100	1	0	0
July 29	1145	2	0	0
July 30	1115	5	0	0
July 31	1130	0	0	0

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

Project: Little Goose
Biologist: Richard Weis
Dates: July 25 - 31, 2014

Turbine Operation

Turbine units 2, 4, 5 and 6 were available for most of this reporting period. Unit 3 was placed out of service on July 7 at 0700 hours for a planned six year overhaul. Unit 3 is scheduled to be out of service till August 08. Unit 1 was placed out of service on July 25 due to exciter problems. Testing this week on unit 1 found a problem with the exciter that is under warranty and the contractor has been notified. Unit 4 was placed out of service on July 30 at 0530 hours. Testing revealed that a phase metering relay fuse had failed and it was replaced. Unit 4 was returned to service at 1900 hours the same day. All turbine units were operated within the 1% peak efficiency range.

Adult Fish Passage Facility

Adult fishway inspections were performed on July 27, 28 and 30.

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 at the ladder exit. The air bubbler used to prevent debris from collecting near the ladder exit operated satisfactorily.

Fishway Entrances and Collection Channel: Channel to tailwater head differentials ranged between 1.3 and 2.0 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.1 and 8.4 feet (criteria $\geq$ 8.0 ft). NPE weirs rested on sill and depths ranged between 5.0 and 5.8 feet (criteria $\geq$7.0 ft). NSE weirs are in manual mode of operation and depths ranged between 5.3 and 5.6 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity near the junction pool area held steady at 1.5 fps. Surface water velocities ranged between 2.0 to 2.7 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: The estimated amounts of woody debris in the immediate forebay ranged between 0 and 1,000 sq ft.

Spillway Weir: The spillway weir was operated in the high crest position. The TSW is scheduled to be removed from service on August 4.

ESBS/VBS: All ESBSs operated without problems. Drawdowns were performed on unit 2 on July 31. All inspection points were in criteria.

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

Transportation Facility: The collection and transportation facility operated within criteria this report period. A total of 7,540 fish were collected for transport. One subyearling Chinook fry was bypassed. The descaling and mortality rates were 1.1% and 1.2% respectively. This weekly report period saw 2 adult lamprey removed from sample and released above the dam at Little Goose Landing.

Transport Summary: Every other day barging continued during this report period with no problems encountered.

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
35.6	30.2	11.5	10.8	74.0	69.3	6.0+	6.0

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were checked on July 26. No fish were seen.

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

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

Table 2. Maximum Daily Bird Counts (single observation) at Little Goose Dam.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
July 25	1200	22	14	0	0
July 26	1200	14	17	0	1
July 27	1400	14	6	0	0
July 28	1030	3	8	0	0
July 29	1130	14	7	0	0
July 30	1320	22	10	0	0
July 31	1015	32	11	0	2

Research: The University of Idaho continued their adult salmonid and adult lamprey passage study.

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

Project: Lower Granite
Biologists: Elizabeth Holdren and Ches Brooks
Dates: July 25 - 31, 2014

Turbine Operation

Lower Granite had five turbine units available for power generation during the report period. Turbine Unit 6 was taken out of service at 0719 hours on May 12 for blade repair and annual maintenance. The expected return to service date for this unit is August 8. All available turbine units are being operated in hard constraint of the 1% operation criteria.

Adult Fish Passage Facility

On July 25 - 28 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 26 – 28 inspections but the July 25 inspection measurement was below criteria with a reading of 0.9 feet (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 4.5 to 4.8 feet (criterion $\geq$ 7.0 feet). Weir depths at north shore entrance 2 ranged from 3.5 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 0.96 to 1.24 feet per second and averaged 1.09 feet per second.

Auxiliary Water Supply System: Fish pumps one and three were operated during the week with fish pump two held in standby mode.

Juvenile Fish Passage Facility

The sample rate was raised from 10% to 25% at 0700 hours on July 26. The sample rate remained at 25% until 0700 hours on July 31 when it was raised to 50%, due to falling fish numbers.

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 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 two hours. ESBS/VBS monthly inspections were last conducted on June 27 and 28. The next inspections are scheduled for late August.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed every three hours around the clock. Debris levels were again relatively light during the week with a mix of smaller vegetative and larger woody material moving through the system. Due in large part to the diligence of the fish facility operators in conjunction with the winter installation of an air burst system under the incline screen/dewatering structure, for the first time in at least five years, it has not been necessary (so far) to enter into partial primary bypass mode in order to pressure wash the inclined screen.

Transportation Facility: Operations progressed smoothly at the facility during the week. The combined descaling rate for all species was 0.61% for the week and is 0.82% for the season compared to 2.10% in 2013 and 1.50% for the 2008-2012 average. The cumulative descaling rate through July 31 of 0.82% is the lowest since at least 1985. 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 depart Lower Granite on the odd days of the month during July. Barge 8108 has been repaired (bad engine safety relay) and returned to service for the trip that left Lower Granite on July 25. All barges other than the two 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 policy allowing the towboat contractors to fuel fish barges on an every other trip basis continued.

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.

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
36.6	31.8	18.7	18.4	66.4	65.9	5.0+	5.0+

*Cooling water intake temperature.

Other

There are three 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. Except for operational configuration testing involving the adult trap facility, diffuser 14, and auxiliary pumps 1 and 2 which occurred on July 25; auxiliary pumps 1 and 2 where run during the week to provide cooler water to the adult fish ladder. Three emergency submersible pumps along with an associated generator are scheduled to be installed in the forebay near the adult ladder exit on August 1.

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: Unit cooling water strainers were last inspected on July 24. A total of 6 lamprey mortalities were found. The combined unit run time was 1,473.0 hours. The next cooling water strainer inspections are scheduled for late August.

Invasive Species: The zebra mussel substrate near the adult fishway exit was last 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 per day hazing began on June 2 and concluded on June 30. Tailrace piscivorous bird counts are taken daily one hour after sunrise and one hour before sunset from the juvenile fish wet separator platform. Counts for this week are tabulated in Table 2 below.

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

Date	Time (hours)	Gulls	Cormorants	Terns	Pelicans
July 25	1930	2	0	0	0
July 26	1930	1	0	0	0
July 27	1930	1	0	0	0
July 28	1930	0	1	0	0
July 29	1930	1	0	0	0
July 30	1930	0	0	0	0
July 31	1930	2	0	0	0

Adult Fish Trap Operations: The Lower Granite adult trap facility was deemed ready for service on July 23. As noted above the adult trap/ladder are undergoing operational testing and the return to service date in not certain.

Research

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 sampled and photographed up to 100 unmarked, run at large and up to 20 marked subyearling fall Chinook. Collection of fish for this study concluded on July 31.