U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#21-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: July 18 - 24, 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. Also, the summer unit priority sequence, known as the "saw tooth" pattern with 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.
9 & 10	Jul 22	51 minutes total.	ESBS camera inspections.

Adult Fish Passage Facilities

On July 18, 20 and 22, the McNary fisheries biologist performed measured inspections of the adult fishways. Visual adult fish counting continues. The fisheries staff is checking the exits on all shifts when the juvenile system is in primary bypass. The adult lamprey passage season and video tape review continues. Also, exit temperature monitoring continues.

On July 23, project personnel raised and inspected the lamprey passage researcher camera frame at SFEW2.

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

The lamprey study researcher has had to clean Eurasian milfoil from the cameras at both exits. To do this, they have had to remove walkway grating. The project has advised them that this is a safety issue and that they need to work with the general maintenance crew to resolve the problem.

At the Washington exit, the amount of milfoil is fairly light. All week, multiple exit weir alarms occurred, which the operator reset. Weir 339 triggered the most alarms. Project personnel also performed scheduled maintenance on the tilting weirs. On July 25, PSMFC will add an

uninterrupted power supply (UPS) to count station PIT system. It is assumed PSMFC will also install a UPS at the Oregon exit. Our differential monitoring of the Oregon exit's traveling screens revealed no problems. The operators 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 20, the operators also made one set point adjustment. We have provided a radio to the counters as the phone still works intermittently. The outside phone line is expected to be replaced in about a month.

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 for W2 and W3 with a panel view, which will integrate into the new control system better. The panel view has been ordered. On July 21, scheduled mechanical maintenance on the dewatering pumps occurred.

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

Surface collection channel velocities averaged 1.6 feet per second.

Auxiliary Water Supply System: For the report week, the PUD turbine unit in the Washington ladder had one interruption in service. On July 23, from 0858 to 1200 hours, the PUD turbine unit was off line. No reason was recorded. During this outage, the bypass system worked well.

Fish pumps 1 and 3 ran satisfactory with blade angles of 30 degrees without any interruptions in service. 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 supplying 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 19, 21, and 23. We bypassed 124,131 smolts and 300 juvenile lamprey this week.

For the week, sample mortality rate ranged from 0.0 to 2.9 percent. The change in weather to cooler day time temperatures appears to have moderated any mortality issues for now.

Forebay Debris/Gatewell Debris/Oil: Floating forebay debris, consisting mostly of woody material and milfoil was very light. Incoming debris (mostly milfoil) remains light. Project operations and wind moved the debris back and forth from the powerhouse to the Oregon shore. There is no debris at the spillway.

Our trash rack differential readings revealed no problems and no racks were cleaned this week. One problem was observed in the gatewell slots. On July 19, in slot 7B, an ESBS rope was drawn into the intake side of the orifice. We removed the rope and noted no harm to fish.

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 at units 9 and 10 revealed no problems. In slot 9C, two juvenile lamprey mortalities were noted at the top of the screen.

VBS differential monitoring efforts revealed no screens out of criteria. On July 19, 22 and 24, we cleaned 7 screens as a preventative measure. We noted 3 smolt mortalites, all of which were found at turbine unit 7. 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 in the slots where the work was being performed and opened spare orifices in adjacent slots. As noted above, an ESBS rope was removed from the orifice intake at slot 7B.

There are no issues to report and all systems functioned well in automatic mode. The transition screen cleaning device will remain out of service until winter.

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 service only during secondary bypass which occurs every other day. The gates and all operational systems functioned well. The primary PIT tag diversion system remains off as the bypass lines provide a better route for the fish than the PIT tag lines. PSMFC continues to perform weekly examinations of the PIT system. The secondary PIT/bypass gates remain off and open for bypass.

On July 18, a contractor installed tint on the separator observation building's west windows. Next week, a roof inspection will occur as the facility roof is in need of repair and/or replacement.

River Conditions

River conditions during the week are outlined in Table 2 below as provided by the smolt monitoring staff, whose data periods runs from 0700 to 0700 hours each day. Water temperature monitoring efforts continued. PSMFC provides temperature monitoring results in a separate report. The summer spill program, which calls for 50 percent of flow to be spilled, continued. The project has maintained the 50 spill 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
204.8	178.9	102.5	89.5	68.6	67.2	6.0	6.0

*Control Room Data

Other

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

Invasive Species: On July 18, the zebra mussel station examinations revealed no problems. On July 22, we installed a new station at the Oregon ladder's exit.

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

Hazing by USDA continues with one shift per day.

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. Pelicans are working both shorelines for adult shad, with the Washington side receiving most of their attention. Finally, mostly 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. No grebes were seen anywhere else on site. We observed gulls, cormorants and pelicans on the rock by the Washington boat dock. We also noted ospreys on project.

Table 3. Daily Avian Counts at McNary Dam.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
July 18	Forebay	4	0	0	0	7
	Spill	3	3	7	28	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	5	0
July 19	Forebay	12	0	0	0	13
	Spill	3	0	7	33	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	9	0
July 20	Forebay	1	3	0	1	14
	Spill	4	1	10	31	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	6	0
July 21	Forebay	14	0	0	1	20
	Spill	1	0	10	20	0
	Powerhouse	0	0	0	2	0
	Outfall	0	0	1	7	0
July 22	Forebay	6	0	0	1	26
	Spill	4	1	23	7	0
	Powerhouse	0	0	0	0	0
	Outfall	1	0	0	2	0
July 23	Forebay	1	0	0	1	0
	Spill	0	0	10	28	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	6	0
July 24	Forebay	12	0	0	0	0
	Spill	0	0	0	25	0
	Powerhouse	0	0	0	2	0
	Outfall	0	0	0	5	0

Research: GBT monitoring, the juvenile salmonid survival and the adult lamprey passage studies continue. Occasionally, we had to prime the GBT flush line pump.

Project: Ice Harbor
Biologist: Ken Fone
Dates: July 18 - 24, 2014

Turbine Operation

Turbine unit 2 tripped a protective relay action 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 occurring. Unit 6 was out of service from June 12 at 0925 hours, to July 21 at 1356 hours in order to change the turbine oil and to 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. Units 1, 4, 5, and 6 were taken out of service one at a time on July 21 and 23 to facilitate STS inspections.

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 21, 22, 23, and 24.

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 21 when the differential was 2.3 feet. The high differential may be due to the difficulty in getting an accurate reading of the tailwater elevation because of turbulence from 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 have been periodically observed in intake slot 3C and gatewell slot 3C since July 10.

Oil absorbent pads that are in the gatewell slot have reduced the sheen. Light oil sheens were observed in gatewell slots 3A and 5B on July 21, but were not observed on inspections later in the week.

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: The first sample of the season occurred on April 2. Sampling days alternated weekly on Mondays and Wednesdays, and Tuesdays and Thursdays. The last sample of the season occurred on July 15.

Removable Spillway Weir: The RSW is in operation. 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	33.2	32.4	23.6	69	67	7.2	6.0

*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 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. The piscivorous bird count program at the project began on April 1 and ended on July 15.

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

Project: Lower Monumental
Biologists: Bill Spurgeon and K.C. Deife
Dates: July 18 - 24, 2014

Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria. Unit 2 was out of service on July 21 from 0730 to 1118 hours for operating gate cylinder removal. Unit 4 was removed from service on July 21 at 0730 hours for annual maintenance. Unit 1 was out of service on July 21 from 1230 to 1313 hours in support of intake gate removal.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and PSMFC/State biologists on July 18, 19, 20, and 23.

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' and 7.3 feet on July 19 and 23, respectively. 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 5.9', 5.4', 5.9', and 5.8 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections.

SSE1 weir gate was in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, the gate depth readings were 6.1', 6.0', 6.3', 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 with the exception of a 0.7 feet reading on July 20.

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 0-20% surface coverage. No oil was observed in gatewells.

STSs/VBSs: STS are operating in cycle mode.

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

Collection Facility: No problem with the facility during this 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 below.

Table 1. River conditions at Lower Monumental Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (^{o}F)*		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
40.6	31.3	17.0	16.6	70	68	5.0+	5.0+

*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 18	1100	28	0	0
July 19	1100	43	0	8
July 20	1100	42	0	3
July 21	1100	11	0	6
July 22	1100	18	0	0
July 23	1100	8	0	2
July 24	1130	16	0	2

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

Project: Little Goose
Biologist: James Brandon
Dates: July 18 - 24, 2014

Turbine Operation

Turbine units 1, 2, 4, 5 and 6 were available for 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 until August 08. All turbine units were operated within 1% peak efficiency range.

Adult Fish Passage Facility

Adult fishway inspections were performed on July 21, 22 and 23.

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 were measured 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 1.5 and 1.9 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.1 and 8.3 feet (criteria $\geq$ 8.0 ft). NPE weirs rested on sill and ranged between 5.2 and 5.6 feet (criteria $\geq$7.0 ft). NSE weirs are in manual and depths ranged between 5.3 and 5.5 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity near the junction pool area ranged between 1.5 to 1.8 fps. Surface water velocity ranged between 1.7 to 2.3 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 10 and 200 sq ft.

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

ESBS/VBS: All ESBSs operated without any problems except the screen in slot 1C. The screen in slot 1C displayed a trouble light on July 19, which was subsequently reported to operator. The ESBS cleaning brush limit switches were reset and brush was back in normal service by 1745 hours.

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 19,765 fish were collected for transport. One subyearling Chinook fry was bypassed as was one juvenile steelhead smolt. The descaling and mortality rates were 0.8% and 0.9% respectively. This week, three adult lamprey were removed from the sample and released above the dam at Little Goose Landing.

Transport Summary: Every other day barging continued during this reporting period. All collected fish were transported with the exception of one Chinook fry and one juvenile steelhead that were bypassed.

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
39.4	33.5	11.8	9.5	70.0	68.7	6.0	5.5

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were checked on July 18. 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	Gulls	Cormorants	Caspian Terns	Pelicans
July 18	23	18	0	2
July 19	32	9	0	3
July 20	30	18	0	2
July 21	45	16	0	2
July 22	16	2	0	0
July 23	16	2	0	0
July 24	15	7	0	0

Research: The University of Idaho continued their adult salmon and 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 18 - 24, 2014

Turbine Operation

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

Adult Fish Passage Facility

On July 19 and 20 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 were below criteria on all inspections with readings of 0.8 and 0.9 feet respectively (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 5.3 to 5.7 feet. The weir depths at the north shore entrances were out of criteria all week. Weir depths at north shore entrance 1 ranged from 4.4 to 4.7 feet (criterion $\geq$ 7.0 feet). Weir depths at north shore entrance 2 ranged from 3.3 to 3.7 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 1.04 to 1.21 feet per second and averaged 1.14 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 10% to 50% at 0700 hours on July 18 and was lowered back to 10% at 0700 hours the next day – all in support of ongoing USGS research. The sample rate

remained at 10% until 0700 hours on July 24 when it was raised to 20% - again for research purposes.

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 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 next inspections are scheduled for late August.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed every 3 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 go into partial primary bypass in order to pressure wash the incline screen.

Transportation Facility: Operations progressed smoothly at the facility during the week. Descaling for all species combined was 0.71% for the week and is 0.82% for the season compared to 2.14% in 2013 and 1.52% for the 2008-2012 average. The cumulative descaling rate through July 17 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 departed Lower Granite on the odd numbered days of the month during June and continue to do so in July. Barge 8108 has been repaired (bad engine safety relay) and is scheduled to return to service for the trip that will leave 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 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
39.7	33.3	18.7	18.5	67.0	66.7	5.0+	5.0+

*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.

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 24 – 25, auxiliary pumps 1 and 2 were run during the week to provide cooler water to the adult fish ladder.

Inline Cooling Water Strainers: Cooling water strainers were 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 (Table 2).

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

Date	Time (hours)	Gulls	Cormorants	Terns	Pelicans
July 18	1930	1	0	0	0
July 19	1930	1	0	0	0
July 20	1930	7	1	0	0
July 21	1930	0	0	0	0
July 22	1930	0	2	0	0
July 23	1930	2	0	0	0
July 24	1930	0	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 is undergoing operational testing and may return to service as soon as July 28.

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 Chinook 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 (Fridays) 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.