U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#14-2013

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: May 31 – June 6, 2013

Turbine Operation

McNary had 12 to 13 units available for power generation this week. On April 1, the hard constraint one percent criteria began and no units ran outside the criterion this week. Unit outages are recorded in Table 1.

Table 1. Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Reason
14	Sep 18 – Jun 28	About 9 months.	Turbine bearing issues continue.
3	Jun 4 to Unknown	Unknown.	Turbine bearing issue.
1, 2 & 3	Jun 4	69 minutes total.	ESBS camera inspections.
11	Jun 4	2 hours.	Governor adjusted.
6	Jun 5	5.3 hours.	Tap hub.

Adult Fish Passage Facilities

On May 31, June 1 and 4, the McNary fisheries biologists performed measured inspections of the adult fishways. When the juvenile facility is in primary bypass, the fisheries staff helped to monitor the picketed leads. Visual fish counting continues. On June 15, lowering Oregon ladder entrance weirs, SFEW1, SFEW2, NFEW2 and NFEW3, nightly for adult lamprey passage with begin.

Fish Ladder Exits: During the inspections, all Fish Passage Plan criteria were met on both ladders' exits.

At the Oregon exit, our differential monitoring of the traveling screens revealed no problems. For the week, the operators reset two traveling screen alarms.

The project cleaned both exits' picketed leads regularly. Debris loads along the Washington shore have been fluctuating yet overall it is decreasing. Tumbleweeds also remain along some of the Oregon shoreline with debris increasing slightly there.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria except on June 1 when entrance weir, W3, measured 7.9 feet. The biologist noted the tailwater sensor and both entrance weirs were out of calibration. The

technical staff resolved the problem by week's end. Spill turbulence is causing calibration drifts which are very difficult to correct. Also, weir, W3, has a slight amount slack in its south cable. The project will address this issue at a later date.

At the Oregon ladder entrances, all points were in criteria. At the north power house entrance, NFEW2 only had a slight amount of slack in its south cable at times. At the south power house entrance, we continue to note calibration drifts at SFEW1. The project will continue to examine both issues.

The Oregon ladder's collection channel velocity average 1.6 feet per second. We continue to use surface readings.

Auxiliary Water Supply System: For the report week, the Wasco county PUD in the Washington ladder had no interruptions.

For the Oregon ladder, fish pumps 1 and 3 operated all week with blade angles of 30 degrees. Fish pump 2 remains out of service for major overhaul which will require a contract.

The juvenile facility continues to supply the usual 450 cfs to the north powerhouse pool.

Juvenile Fish Passage Facility

The spring season with alternating days of primary and secondary bypass with the switch occurring every morning at 0700, continues. No deviations from this schedule occurred. We bypassed 114,413 smolts and 3,800 juvenile lampreys this week.

Forebay Debris/Gatewell Debris/Oil: For the week, forebay debris along the powerhouse was very light to moderate as fine debris from recent rains along with tumbleweeds and woody debris arrived at the project. Weather and project operations affected the debris' dispersal. On June 6, from 0900 to 1200, the project spilled the moderate amount of debris that was along the spillway. Due to the fine nature of the powerhouse debris, we did not attempt to spill it.

The fisheries staff found no problems when measuring trash rack differentials so this week the project did not clean trash racks.

We noted no problems in the gatewell slots. On June 5, the general maintenance crew removed the ESBS rope at 8B, 9A, 9B and 11A slots from the orifice inflow.

ESBSs/VBSs: All ESBS's are installed except at unit 14 which are out of service. The screens at 2A and 3A slots remain in timer mode. On June 1, after alarming, operators put the screen in 7B slot in timer mode where it remains.

On June 4, our camera inspections at units 1 to 3 revealed no problems including two of the screens which are in timer mode.

VBS differential monitoring revealed five screens out of criteria. On June 1, 5 and 6, the project cleaned these screens and ten others. The increase cleaning was due to the fine debris which arrived at the project this week. When cleaning the VBS's, we observed one juvenile lamprey and six smolt mortalities.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: For the week, we had 42 orifices open with one problem observed, the four ESBS ropes mentioned above. We noted no harm to fish. During VBS cleaning and while unit 6 was out of service, we closed the orifices at the slots and opened spares at adjacent slots so debris on the VBS's would not enter the channel.

All systems operated well in automatic mode.

Finally, the fisheries staff monitored the channel during VBS cleaning and unit 6's outage along with primary bypass.

Transportation Facility: With the spring bypass season, both primary and secondary bypass modes return all fish are to the river. PIT tag detection will occur in the full flow pipe during primary bypass and throughout the facility during secondary bypass. Smolt monitoring will occur on secondary bypass days.

We turned the sample gates on and off every other day to be on with secondary. 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 lines. Also, PSMFC preformed the weekly test of the PIT system. The secondary PIT/bypass gates remain off and open for bypass season.

On June 3, we noted the truck release valve had inadvertently been opened on the sample raceway. Fortunately, we observed no adverse affect on fish. On June 4, a district engineer toured the facility for the follow up contract to the new bypass system installation from last year.

We continue to do ice block checks of the return to river lines, though the bypass outfall is too far away to see the blocks exit the pipe even with binoculars.

Transport Summary: There is nothing to report.

River Conditions

River conditions during the week are outlined in Table 2 as provided by the smolt monitoring staff, PSMFC. The data day runs from 0700 to 0700 hours. On June 2, PSMFC installed their temperature monitoring equipment. On June 15, they will begin their daily reports.

The spring spill season which calls for 40 percent of flow being spilled and both TSWs in operation continues. Only on June 6, due to flow in excess of powerhouse capacity, 46 percent of flow was spilled. Also, that day, the spill pattern was altered in order to spill debris. Finally, that day, a safety video was filmed at one of the TSWs. TSWs will be removed from their slots and taken out of service on June 10. On June 19, the summer spill season will begin.

Table 2. River conditions at McNary Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (^{o}F)		Water Clarity* (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
266.0	237.0	122.1	95.1	58.9	55.5	5.7	5.0

*****Control room data.

Other

Inline Cooling Water Strainers: The results from the cooling water examination on June 4 are reported in Table 3. We found three smolts at unit 1, two of which were lost. We observed no other species of interest.

Table 3. Fish recovered from inline cooling water strainers at McNary Dam, June 4, 2003.

Unit	Live Lamprey	Lamprey Mortalities	Unit Total
1	3	51	54
2	0	11	11
3	0	3	3
4	1	8	9
5	0	2	2
6	0	3	3
7	0	5	5
8	0	13	13
9	0	4	4
10	0	1	1
11	0	0	0
12	0	3	3
13	0	3	3
14	0	0	0
Total	4	107	111

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

Avian Activity: We continued bird counts with each zone being observed once a day usually in the morning. In the forebay area, we observed a high count of 6 grebes with an occasional tern, pelican or osprey. We also noted pelicans, cormorants and gulls on the rocks by the Washington boat dock.

Two grebes were seen in the gatewell slots this week. One remains in the slot and the other passed to the juvenile collection channel were it remains.

In the tailwater area, we had high counts of 34 gulls, 10 terns and 9 pelicans with an occasional cormorant noted. Most of the birds were in the spill basin with the pelicans feeding on adult shad along the navigation lock wing wall. We observed a high count of 8 gulls with an

occasional tern, pelican or cormorant noted by the bypass outfall. Overall, bird numbers appear to be decreasing.

Hazing personnel continue to work 7 days a week with 2 shifts covering the day light hours. The fisheries staff continues to work with the propane and water hazing cannons to keep them functioning well.

Research: The FGE study at units 6, 7, 12 and 13; GBT examinations and the Oregon exit traveling screen study continue.

Project: Ice Harbor
Biologist: Mark Plummer
Dates: May 31 – June 6, 2013

Turbine Operation

Turbine units 1- 4 and 6 are in service. Turbine unit 3 was out of service June 3 from 0840 hours to 1000 hours to allow work on the governor oil pump. Turbine unit 5 remained out of service due to blade cracks.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fish ways June 4, 5, and 6.

Fish Ladders: The north and south shore adult fish ladder inspection areas (picketed leads, head differentials, fish way exits, and depth over weirs) were within criteria.

Table 1. Adult Fishway Performance at Ice Harbor Dam:

	22-May	28-May	29-May	30-May	4-Jun	5-Jun	6-Jun
CHANNEL VELOCITIES IN SOUTH FISHWAY:	1.7	1.8	2.0	1.4	1.9	1.6	1.8
DIFFERENTIALS/DEPTHS:							
Ladder Exit	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Ladder Weirs	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Counting Station	0.2	0.1	0.1	0.1	0.1	0.2	0.1
North Fish Ladder							
Ladder Exit	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Ladder Weirs	1.1	1.2	1.2	1.2	1.1	1.1	1.2
Counting Station	0.1	0.0	0.0	0.0	0.0	0.1	0.0
Collection Channels							
South Shore	1.9	1.6	1.5	1.2	1.6	1.7	1.8
North Powerhouse	1.4	1.2	1.1	1.3	1.1	1.0	1.3
North Shore	1.3	1.9	1.3	1.3	1.6	1.2	1.0
Weir Depths							
SFE 1	8.7	8.9	8.9	9.1	8.9	8.7	8.6
NFE 2	8.4	9.4	9.1	8.3	9.7	10.0	10.5
NSE 1	8.4	7.0	7.7	8.6	7.5	8.4	9.0
CRITERIA POINTS:							
Channel Velocities	YES	YES	YES	NO	YES	YES	YES
Differentials							
South Fish Ladder							
Ladder Exit	YES	YES	YES	YES	YES	YES	YES
Ladder Weirs	YES	YES	YES	YES	YES	YES	YES
Counting Station	YES	YES	YES	YES	YES	YES	YES
North Fish Ladder							
Ladder Exit	YES	YES	YES	YES	YES	YES	YES
Ladder Weirs	YES	YES	YES	YES	YES	YES	YES

Table 1. Adult Fishway Performance at Ice Harbor Dam – continued:

	22-May	28-May	29-May	30-May	4-Jun	5-Jun	6-Jun
CRITERIA POINTS (North Fish Ladder continued):							
Counting Station	YES	YES	YES	YES	YES	YES	YES
Collection Channels							
South Shore	YES	YES	YES	YES	YES	YES	YES
North Powerhouse	YES	YES	YES	YES	YES	YES	YES
North Shore	YES	YES	YES	YES	YES	YES	YES
Weir Depths							
SFE	YES	YES	YES	YES	YES	YES	YES
NFE	YES	YES	YES	YES	YES	YES	YES
NSE	YES	NO	NO	YES	NO	YES	YES

The north adult fish way entrance was out of criteria June 4. With the amount of spill in the area of the entrance it is difficult to maintain proper elevation. The entrance is being operated in manual mode to prevent excessive up and down movement. The shift operator was asked to adjust the entrance to the lowest possible depth before losing the collection channel differential. It is a constant battle to maintain both criteria with the spill. Fish way entrance criterion is 8 feet depth, greater than 8 feet depth, or on sill. All channel/tail water differentials were in criteria. Channel/tail water differential criteria are 1 – 2 feet.

Auxiliary Water Supply System: Two of the 3 north shore fish pumps were operated without problems. Six of 8 south fish pumps are in service. All south fish pumps are available for operation.

Juvenile Fish Passage Facility

Fore bay Debris/Gate well Debris/Oil: No problems to report. Fish ladder exits are clear of debris and the bubblers are operating satisfactorily.

STSs/VBSs: STSs are in operation. No problems were found on the May inspections. STS/VBS inspections are scheduled for June 25 and 26. Turbine strainer inspections will be done at the same time. One juvenile lamprey mortality was found lodged in the STS during the inspections.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile bypass is watered up with 20 open orifices. The incline screen cleaner brush operated satisfactorily.

Juvenile Bypass Facility: No problems to report.

Fish Sampling: The first sample was April 8. Sampling days will alternate from Monday and Wednesday to Tuesday and Thursday each week.

Removable Spillway Weir: The RSW is in operation. Spill for fish began April 3, 2013.

Fish Sampling:

June 3:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	3	0	0	0
UC-CH	10	0	0	0
C-CH-O	3	0	0	0
UC-CH-O	3	0	0	0
C-SH	45	2	0	2
UC-SH	16	1	0	0
C-COHO	---	---	---	---
UC-COHO	5	0	0	0
C-SOCK	1	1	0	0
UC-SOCK	1	0	0	0
TOTAL	87	4	0	2

June 5:

Species	Sampled	#De-scaled	Morts	Avian Marks
C-CH	25	0	0	0
UC-CH	22	0	0	0
C-CH-O	5	0	0	0
UC-CH-O	9	0	0	0
C-SH	9	0	0	2
UC-SH	12	0	0	2
C-COHO	---	---	---	---
UC-COHO	1	0	0	0
C-SOCK	1	0	0	0
UC-SOCK	---	---	---	---
TOTAL	84	0	0	4

River Conditions

River conditions during the week are outlined in Table 1.

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
77.1	57.7	51.8	19.2	56	55	5.2	4.0

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Results of the main turbine cooling water inspections for May:

Table 3: Fish Recovered from Inline Cooling Water Strainers

Date	Turbine Unit	Fish Recovered
21-May	3	8 juv. lamprey mortalities.
	4	56 juv. lamprey mortalities, 1 adult lamprey mortality, 1 juv. Catfish
	5	Un-watered for blade repair
	6	54 juv. lamprey mortality, 1 live juv. lamprey (released)
22-May	1	4 juv. lamprey mortality
	2	1 live juv. lamprey (released)

Invasive Species: No invasive species were detected this week.

Avian Activity: Formal bird counts began April 8 and are in progress. Hazing activities by APHIS began April 1. The fish facility is conducting bird observations when possible.

Research: The south fish ladder adult fish trap is currently being used to capture adult Chinook. Further investigation into the fish trap jib crane tripping on overload continues.

Project: Lower Monumental
Biologists: Bill Spurgeon and Elizabeth Lindsey
Dates: May 31 – June 6, 2013

Turbine Operation

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

Adult Fish Passage Facility

The adult fishway was inspected by Corps and PSMFC/State biologists on June 1, 2, and 5.

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

Fishway Entrances and Collection Channel: NSE1 and NSE 2 weir gates were in depth criteria (criteria: ≥ 8' or on sill) on all inspections with the exception of NSE 2 having a gate depth reading on 7.9 feet on June 5. This reading may have been taken when automatic adjustment of the gate was occurring. North shore channel/tailwater head was in criteria (1'-2') on all inspections.

SPE 1 and SPE 2 weir gates were in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill the gate depth readings were 6.5', 6.7', and 6.3 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 6.8', 7.1', and 6.3 feet. SSE 2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections.

Auxiliary Water Supply System: AWS pumps 1 and 3 were operated throughout this period. Two pump operation will continue until bearing repair and shaft alignment work is completed on pump 2, approximately July 15.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 6.0 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-15% 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.

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

Collection Facility: The facility is in collection for transport mode. Collection for Battelle research on subyearling Chinook passage and survival resumed on May 31. On June 1, 2013 at about 1730 hours a Corps bio tech noticed Battelle's fish holding tank did not have a screen over the drain in the tank holding fish for tagging. Further investigation revealed fish on the grating above the storm drain and multiple fish in the end of the drain hose. Battelle personnel were immediately contacted and returned to Lower Monumental to correct the problem. There was a total of 118 fish in the holding tank at the time of the incident and Battelle reported 65 mortalities.

Transport Summary: Every-other-day barging began on June 5.

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
75.5	62.2	28.8	23.3	56.0	55.0	4.7	4.4

*Scrollcase temperatures.

Other

Spring spill continues.

Inline Cooling Water Strainers: Cooling water strainers were inspected on June 5. No live lamprey were recovered. Mortalities included 80 juvenile lamprey, 5 juvenile salmon, and 1 Siberian prawn.

Invasive Species: There were no zebra mussels observed at the monitoring stations on June 2.

Avian Activity: Bird hazing ended for the season on June 2.

Research: PNNL researchers subyearling Chinook research resumed on May 31 (see above for details). Researchers ceased collecting juvenile lamprey for use in overflow weir and orifice passage studies at Lower Granite Dam.

Project: Little Goose
Biologist: Richard Weis
Dates: May 31 – June 6, 2013

Turbine Operation

Turbine units 1 through 6 were available for most of this report. Unit 4 was forced out for an oil leak in the governor cabinet on June 5. Turbine units were operated within the 1% criteria.

Adult Fish Passage Facility

USACE and ODFW fisheries biologists performed measured inspections of the adult fishway May 31, June 4, 5, and 6.

Fish Ladder: The ladder exit head differentials ranged between 0 and 0.1 feet (criteria $\leq$ 0.5 ft.). Water depths over the weirs held steady at 1.1 feet (criteria 1.0-1.3 ft.) and picketed lead head differentials remained steady at 0.0 feet (criteria $\leq$ 0.3 ft.). No debris was observed at the picketed leads or 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 2.2 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.1 and 8.5 feet (criteria $\geq$8.0 ft). As a result of 2 pump operations and decreased channel to head differentials, NPE2 remained closed. NPE1 weir rested on sill and depths ranged between 5.0 and 5.9 feet (criteria $\geq$7.0 ft or on sill). NSE weirs are at fixed elevations of 532.0 feet and depths ranged between 5.0 and 5.8 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity ranged between 1.8 and 2.7 fps (criteria $\geq$1.5 fps) near the NPE on 2 inspections. Collection channel subsurface water velocity was measured on May 22 using the Hydrologic Current Meter. Three measurements were conducted from near surface, mid depth and near bottom. The subsurface velocity averaged 2.1fps with 2 pumps in service.

Auxiliary Water Supply System: Fish pumps one and two operated within criteria ranging between 73 and 76 rpm. Fish pump 3 remains out of service and is undergoing repairs.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Woody debris observed this week ranged from 100 to 500 square feet inside the trash shear boom. Drawdown measurements were performed on turbine units 1 through 3 on June 6. All measurements were within proper operating range and indicated no significant buildup of debris on trashracks, ESBS and VBS screens.

Spillway Weir: The spillway weir was switched to the high crest position on June 3.

ESBS/VBS: All ESBS operated within criteria this report period. ESBS screen brushes were manually operated for inspection on May 23. All brushes operated as designed.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile collection system was operated throughout this period with 23 open orifices.

Transportation Facility: The facility continued collection for transport. Fish collection for the week ranged between 10,503 and 25,040 for a total of 100,968. The descaling and mortality rate was 0.3% and less than 0.1% respectively.

Transport Summary: Direct loading ended on May 28 with the 2000 and 4000 series barges removed from transport. Daily barging operations using only the 8000 series barges commenced May 29. Every other day operations started with the first no barge day on June 4.

River Conditions

River conditions during the week are outlined in Table 1.

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
73.2	58.1	22.2	17.3	58.8	54.8	6.0	4.5

*Ladder temperature.

Other

Invasive Species: The zebra mussel substrate monitor was inspected on May 7. No mussels were observed. The next inspection is scheduled for June 8.

Cooling Water Strainers: Cooling water strainers for all units were inspected on June 6. No fish were found.

Avian Activity: Maximum bird count from single survey included 25 cormorants, 21 gulls and 7 pelicans. USDA-APHIS bird hazing continued through this report period.

Research: WDFW Gas Bubble Trauma research was conducted on June 3. No signs of GBT were seen. UC Davis is performing underwater video monitoring of the new lamprey orifices in the adult fish ladder. University of Idaho is conducting Adult Salmon Passage Studies using radio-telemetry. Battelle PNNL is on-site starting the second year of BiOp Performance Standard Tests.

Project: Lower Granite
Biologists: Mike Halter and Ches Brooks
Dates: May 31 – June 6, 2013

Turbine Operation

Lower Granite had all turbine units available for power generation at the beginning of the report period. Turbine unit #4 was forced out of service at 1929 hours on June 2 due to regulator problems. It was returned to service at 1700 hours on June 3 following replacement of a new card in the exciter. Turbine unit #6 was out of service on June 6 from 1200 until 1315 hours in support of testing the feasibility of conducting video inspections of the upstream gate well slots using the project's submersible ROV. This inspection of slot 6A was successful.

Adult Fish Passage Facility

On May 31- June 3 COE fish biologists conducted daily inspections of the adult fishway system.

Fish Ladder: All criteria were met.

Fishway Entrances and Collection Channel: Head differential readings remained within criteria at all fishway entrances during the period inspections.

Weir depths at the south shore fishway entrances also met criteria during all weekly inspections. The north powerhouse fishway entrances were on sill during all inspections this week with depths ranging from 5.7 to 6.2 feet due to tailwater elevations below 636.0 feet (these gates bottom out at elevations below 636.0 feet). Weir depths at the north shore entrances ranged from 3.6 to 5.1 feet (criterion $\geq$ 7.0 feet). Only north shore entrance 1 can adjust its' depth relative to the tailwater elevation. North shore entrance 2 is manually set at a compromise depth of 630.0 feet. Normally weir depth readings at the north shore entrances are sacrificed in order 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 1.20 feet per second and averaged 1.09 feet per second.

Auxiliary Water Supply System: Fish pumps 2 and 3 were run during the week without any problems. Fish pump 1 was returned to available status at 0800 hours on June 4.

Juvenile Fish Passage Facility

Fish collection numbers varied during the week. Sample rates during the week ranged from 2% up to 10% in order to help accommodate fish marking needs for testing the prototype overflow weir and 14-inch orifice in the collection gallery.

Forebay Debris/Gatewell Debris/Oil: The amount of forebay debris varied during the week due to wind strength and direction; none was removed.

ESBSs/VBSs: VBS/ESBS video inspections last took place on May 17-18. The next inspections are scheduled for June 17.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed at least every 3 hours around the clock in an attempt to keep them free of materials that might impact fish passage.

Transportation Facility: Daily fish collection numbers at Lower Granite averaged 21,737 as subyearling Chinook releases continued to arrive. Lower fish numbers coupled with the need to divert most of the fish over to NOAA for their marking operation again left few fish available for direct loading this week. If fish numbers increase significantly, we will resume direct loading fish barges. It *should have been noted in a prior report that lamprey friendly tailscreens - with a larger mesh size - were installed on both the upstream and downstream raceways the week of May 13.*

Transport Summary: The first everyday barge left Lower Granite on May 2. The only research barge of the season (index barging) departed Lower Granite on April 26. Research fish are now being barged along with the general fish collection. Every day barging from Little Goose began on May 3 and Lower Monumental began on May 8. Every day fish barging was scheduled to continue through the month of May. The smaller barges (direct loaded at Little Goose) were taken off line on May 28. The last everyday barge left Lower Granite on June 3. Every-other-day barging will take place until mid-August.

Removable Spillway Weir: Mandatory spill operations began at 0000 hours on April 3. The RSW continues to be operated in support of general spill operations.

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* (^{o}F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
74.4	59.4	20.4	20.2	55.7	55.4	4.8	4.3

*Scrollcase temperature.

Other

Video counts in the adult fish ladder counting room began on March 1 and concluded on March 31. Visual counting between the hours of 0400 and 2000 began on April 1.

Invasive Species: The zebra mussel substrate near the adult fishway exit was examined for zebra mussels on June 1. No evidence of zebra mussels was found. The next inspection is scheduled for early July.

Inline Cooling Water Strainers: Cooling water strainers were last inspected for lamprey entrainment on May 29. A total of 135 lamprey were found in the strainers over a combined run time of 2,703.7 unit hours. The next cooling water strainer inspections are scheduled for late June.

Avian Activity: Formal bird counts and hazing started on April 1. Gulls are presently being hazed from dawn to nearly dusk and the control agents have been very successful in keeping them out of the tailrace area of the dam.

Adult Fish Trap: The adult fish trap was watered up and sampling began on March 4. The sample rate is now 25%. Since in 2013 adult trapping will only be conducted Monday thru Friday the 25% sample rate represents an overall weekly sample rate of 21%. Genetic samples will be taken from one out of every 10 hatchery steelhead. All wild steelhead captured will be PIT-tagged and scale and genetic samples taken. Any previously PIT-tagged steelhead (either hatchery or wild) will have both scale and genetic samples taken for verification purposes.

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.

Biological Evaluation of Prototype Overflow weir and 14 inch Orifice: A prototype overflow weir and enlarged 14 inch orifice were installed into intake gatewell 5A during the winter. These structures will be evaluated by UC Davis, Biomark and Blue Leaf Environmental. Biological testing will take place from April 15-June 30; the goal is to release 350 hatchery steelhead and 350 hatchery yearling Chinook into the gatewells six days a week, beginning April 15. When yearling spring/summer fish numbers decline 350 hatchery subyearling Chinook will be collected and released.

Nez Perce Tribe (NPT)/U. of Idaho (UI)/Columbia River Intertribal Fisheries Commission (CRITFC) – Kelt Study: The goal of this research project is to study the physiology and endocrinology of steelhead kelts to evaluate the feasibility and success of several strategies for rehabilitating and handling steelhead collected at LGR. Also, to understand and identify the suite of physiological changes that occurs in Snake River steelhead during the process of sexual

maturity, and to determine changes that occur post spawning that are associated with successful downstream migration and recovery to spawn again. As part of this collaborative study to investigate approaches to increase adult steelhead returns the NPT will select up to 150 fish for transport to the Dworshak National Fish Hatchery holding facility.

United States Fish and Wildlife Service (USFWS), United States Geological Service (USGS), Pacific Northwest National Laboratory (PNNL) and National Marine Fisheries Service (NMFS) –Holdover Fall Chinook Study: This study is part of the regional discovery based research titled "Investigating passage of ESA-listed fall Chinook salmon at Lower Granite Dam during winter when the fish bypass system is not operated". This is a cooperative study of the survival and prevalence of the reservoir-type life history of juvenile fall Chinook salmon in the Snake River and the passage of subyearlings and reservoir-type fish through the lower Snake River. This part of the study collects PIT-tagged yearling fall Chinook holdovers in the Sort by Code tanks at LGR from the 2012 release of Dworshak hatchery fish.

National Marine Fisheries Service (NMFS)-Monitoring the Migrations of Wild Snake River Spring/Summer Chinook: This study is done to monitor the migration behavior and survival of wild spring/summer Chinook salmon in the Snake River basin. The specific goals are to characterize the migration timing and estimate parr-to-smolt survival to LGR of different wild Chinook populations as they migrate from their natal rearing areas and determine migration patterns and what environmental factors influence those patterns. Fish were PIT-tagged during the summer of 2012 in natal streams and are diverted to the Sort by Code tanks at LGR.