U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#12-2013

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: May 17 – May 23, 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. Unit outages are recorded in Table 1.

Table 1. Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Reason
3	Jun 4, 2012 – May 18	About one year.	After thrust bearing and testing, unit returned to service.
14	Sep 18 – Jun 28	About nine months.	Turbine bearing issues continue.
2, 5 & 9	May 17	2.6 hours total.	Trash racks cleaned.
7 to 9 & 11 to 13	May 20	8.2 hours total.	Trash racks cleaned.
10	May 20	8.5 hours.	Repair oil head packing, trash racks cleaned.
4 to 7	May 21	4.1 hours total.	Trash racks cleaned.
7, 8 & 9	May 21	1.6 hours total.	ESBS camera inspections.
4 to 13	May 21	8.0 hours total.	Units in and out of service to move debris to spillway.
1 to 3	May 22	4.8 hours total.	Trash racks cleaned.
4	May 23 to 24	About 9 hours.	ESBS PLC failed.

Adult Fish Passage Facilities

On May 17, 18 and 22, 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 counts continued.

Fish Ladder Exits: During the inspections, both ladder exits met all Fish Passage Plan criteria were met. At the Washington exit, the regulating weir triggered an alarm once and the roving operator reset it.

At the Oregon exit, our differential monitoring of the traveling screens revealed no problems. On May 22, for electrical work elsewhere on project, the Oregon exit had a brief power outage of 10 to 15 minutes.

The project cleaned picketed leads at both ladder exits regularly including on the weekends. Debris loads along the Washington shore have been fluctuating. The operators are sending some of the tumbleweeds downstream through the navigation lock. Tumbleweeds are also along some of the Oregon shoreline.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria. Spill turbulence is causing calibration drifts which are very difficult to correct. 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 and NFEW3 each had very little slack in their cables at times. The biologist did note that the south cable on NFEW2 occasionally had slightly more slack than the north cable. The project will continue to examine the issue of these weirs having slack cables at times.

At the south power house entrance, we continue to note calibration drifts at SFEW1. The project is monitoring the issue.

The Oregon ladder's collection channel velocity average 1.6 feet per second. We used surface readings. We are preparing to send to velocity meter to the factory for programming.

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

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 hours, continued. No deviations from this schedule occurred. We bypassed 236,894 smolts and 31,800 juvenile lamprey this week.

Forebay Debris/Gatewell Debris/Oil: For the week, forebay debris along the powerhouse was heavy to very light. Much of the new incoming debris went over the TSWs consisted of tumbleweeds. Weather and project operations affected the debris dispersal. Trash rack cleaning removed some of the floating debris. On May 21, from 1142 to 1515 hours, the project used unit operations and the forebay deck crane to move the debris to the TSWs where it was spilled. A moderate amount of debris remains on the spillway.

This week, the highest trash rack different the fisheries staff measured was 1.6 feet. On May 17 and 20 to 22, the project cleaned trash racks from units 1 to 13 with unit 14 being out of service. We removed 37 ten-yard truck loads of debris and one log. We observed 14 smolts, one juvenile lamprey and one nine foot sturgeon lost in the trash. The sturgeon appeared to be a hooking mortality caused by an angler. Table 2 reflects descaling rates around the time of trash rack cleaning. The date is the morning of the sample examination.

Table 2. Descaling Rates.

Date	Descaling Percentage
May 15	4.1
May 17	5.9
May 19	11.1
May 21	4.1
May 23	12.8
May 25	4.7

We noted no problems in the gatewell slots. On May 20, the fisheries staff removed an ESBS rope from the orifice inflow in slot 3A.

ESBSs/VBSs: All ESBSs are installed except at unit 14 which is out of service. The screen at slot 2A remains in timer mode. On May 20, the biologist found the screen at slot 11B short cycling. The operator recalibrated it. On May 23, the PLC for the screens at unit 4 failed. The electrical staff returned the PLC and unit to service early the next morning. On May 21, our camera inspections at units 7 to 9 revealed no problems.

VBS differential monitoring revealed no screens out of criteria and the project cleaned none this week.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: For the week, we had 42 orifices open with 2 problem observed. As mentioned above, we moved the ESBS rope at 3A slot. Also, on May 21, we cleared a partially blocked orifice at 6B slot. No harm was noted to fish in either case. During trash rack cleaning, we closed the orifices at the affected slot and opened spares at adjacent slots.

All systems operated well in automatic mode. We had no further problems with the side screen cleaning device which we monitored closely. On May 21, the rectangular screen cleaning mechanism failed on its downstream limit. The electrical staff adjusted the limit and additional monitoring exposed no new problems. The transition screen cleaning device remains out of service until it can be examined during a channel dewatering.

Finally, the fisheries staff monitored the channel during trash rack cleaning, debris spill operations, screen cleaning device issues and 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 occurs in the full flow pipe during primary bypass and throughout the facility during secondary bypass. Smolt monitoring occurs

on secondary bypass days. We turned the sample gates on and off every other day so that they operate only during secondary bypass days. 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.

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 3 as provided by the smolt monitoring staff (PSMFC). The data day runs from 0700 to 0700 hours.

The spring spill season which calls for 40 percent of flow being spilled and both TSWs in operation continued. All week, due to flow in excess of powerhouse capacity, 50 to 59 percent of flow was spilled. The project spilled the forebay debris as described above.

Table 3. River conditions at McNary Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (^{o}F)		Water Clarity* (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
333.1	282.8	174.5	161.1	55.1	53.7	4.5	4.2

*****Control room data.

Other

Inline Cooling Water Strainers: The next examination will be in early June.

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

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 pelican, tern, gull, cormorant or osprey. Also, we noted pelicans, cormorants and gulls on the rocks by the Washington boat dock.

We noted no grebes in the gatewell slots or elsewhere in the juvenile bypass system.

In the tailwater area, we had high counts of 125 gulls and 75 terns with an occasional pelican noted. Most of the birds were in the spill basin. We observed high counts of 31 gulls and 20 terns with an occasional pelican or cormorant noted by the bypass outfall. The assistant biologist realized only one technician was observing terns and asked the other technicians to be more diligent.

Hazing personnel continue to work seven days a week with two shifts covering the day light hours. The fisheries staff continues to work with the propane hazing cannons to keep them functioning well. Also, the water hazing cannon had no issues this week. We continue to turn the water cannon on and off with day light hours, which seems to have eliminated the pump trip outs reported last week.

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 17 – May 23, 2013

Turbine Operation

Turbine units 1- 4 and 6 are in service. Main turbine units 3 – 6 were out of service May 21 and units 1 and 2 out of service May 22 for short period to conduct STS/VBS/Strainer inspections. Turbine unit 5 remained out of service due to blade cracks.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fish ways May 20, 21, and 22.

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:

DATE	7-May	8-May	13-May	14-May	15-May	20-May	21-May	22-May
CHANNEL VELOCITIES IN SOUTH FISHWAY:	2.1	1.6	1.7	1.2	1.2	1.7	NA	1.7
DATE	7-May	8-May	13-May	14-May	15-May	20-May	21-May	22-May
DIFFERENTIALS/DEPTHS:								
South Fish Ladder								
Ladder Exit	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0
Ladder Weirs	1.1	4.1	1.2	1.2	1.1	1.1	1.1	1.1
Counting Station	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2
North Fish Ladder								
Ladder Exit	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Ladder Weirs	1.2	1.1	1.2	1.2	1.2	1.1	1.1	1.1
Counting Station	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1
Collection Channels								
South Shore	1.9	1.9	1.8	1.7	1.7	1.7	1.7	1.9
North Powerhouse	1.2	1.3	1.3	1.8	1.5	1.5	1.5	1.4
North Shore	1.2	1.0	1.1	1.8	1.3	1.1	1.2	1.3
Weir Depths								
SFE 1	8.6	8.6	8.3	8.6	9.5	8.9	11.5	8.7
NFE 2	9.1	10.3	11.7	9.4	10.3	8.5	11.0	8.4
NSE 1	7.8	10.8	7.8	13.0	10.8	9.8	11.3	8.4

Table 1. Adult Fishway Performance Continued:

DATE	7-May	8-May	13-May	14-May	15-May	20-May	21-May	22-May
CRITERIA POINTS:								
Channel Velocities	YES	YES	YES	NO	NO	YES	NA	YES
Differentials								
South Fish Ladder								
Ladder Exit	YES	YES	YES	YES	YES	YES	YES	YES
Ladder Weirs	YES	YES	YES	YES	YES	YES	YES	YES
Counting Station	YES	YES	YES	YES	YES	YES	YES	YES
North Fish Ladder								
Ladder Exit	YES	YES	YES	YES	YES	YES	YES	YES
Ladder Weirs	YES	YES	YES	YES	YES	YES	YES	YES
Counting Station	YES	YES	YES	YES	YES	YES	YES	YES
Collection Channels								
South Shore	YES	YES	YES	YES	YES	YES	YES	YES
North Powerhouse	YES	YES	YES	YES	YES	YES	YES	YES
North Shore	YES	YES	YES	YES	YES	YES	YES	YES
Weir Depths								
SFE 1	YES	YES	YES	YES	YES	YES	YES	YES
NFE 2	YES	YES	YES	YES	YES	YES	YES	YES
NSE 1	SILL	YES	SILL	YES	YES	YES	YES	YES

The south adult fish way velocities on May 14 and 15 were out of criteria due to high tail water elevations. 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. No problems with the incline screen cleaner brush.

Juvenile Bypass Facility: No problems to report.

Fish Sampling: The first sample is took place 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: Sampling took place on May 20 and 22. Results are included in the tables below.

Table 2. May 20, 2013 Fish Sampling Results, Ice Harbor Dam.

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	15	0	0	0
UC-CH	16	0	0	0
C-CH-O	6	0	0	0
UC-CH-O	8	0	0	0
C-SH	25	2	0	1
UC-SH	24	2	0	0
C-COHO	---	---	---	---
UC-COHO	2	---	---	---
C-SOCK	2	---	---	---
UC-SOCK	---	1	0	0
TOTAL	98	5	0	1

Table 3. May 22, 2013 Fish Sampling Results, Ice Harbor Dam.

Species	Sampled	#De-scaled	Morts	Avian Marks
C-CH	19	0	0	0
UC-CH	12	0	0	0
C-CH-O	1	0	0	0
UC-CH-O	---	---	---	---
C-SH	35	2	0	0
UC-SH	18	0	0	1
C-COHO	---	---	---	---
UC-COHO	---	---	---	---
C-SOCK	5	1	0	0
UC-SOCK	9	0	0	0
TOTAL	99	3	0	0

River Conditions

River conditions during the week are outlined in Table 4.

Table 4. 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
102.4	76.9	67.2	22.9	56	55	3.8	3.4

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers:

Table 5. Main Turbine Units Cooling Water Strainer Inspection Results for May 2013.

Date	Turbine Unit	Results
21-May	3	8 juv. lamprey morts.
	4	56 juv. lamprey morts, 1 adult lamprey mort, 1 juv. catfish
	5	Un-watered for blade repair
	6	54 juv. lamprey morts, 1 live juv. lamprey (released)
22-May	1	4 juv. lamprey morts
	2	1 alive 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.

Research: The south fish ladder adult fish trap is currently being operated to capture Spring Chinook.

Project: Lower Monumental
Biologists: Bill Spurgeon and Elizabeth Lindsey
Dates: May 17 – May 23, 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 May 17, 18, 20, and 22.

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. North shore channel/tailwater head was in criteria (1'-2') on all inspections.

SPE 1 and SPE 2 weir gates were in depth or sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill the gate depth readings were 7.5' and 7.1 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections.

SSE1 weir gate was in depth or sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill the gate depth readings were 7.5' and 7.5 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 31.3 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 as subyearling Chinook lengths averaged 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. No problems noted.

Transport Summary: Every-day barging is occurring.

River Conditions

River conditions during the week are outlined in Table 1.

Table 1. River conditions at Lower Monumental Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (^{o}F)*		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
100.4	76.3	27.5	22.7	54.5	53.5	3.0	2.6

*Scrollcase temperatures.

Other

Spring spill continues. Spillway gate 2 was out of service from 0700 hours on May 22 to 1400 hours on May 23 for motor repair. Spillway gates 1 and 3 were used to maintain prescribed spill levels during this outage.

Inline Cooling Water Strainers: Cooling water strainers were inspected on May 1. No live lamprey were recovered. Mortalities included 5 juvenile lamprey, 16 juvenile salmon, and 3 juvenile steelhead.

Invasive Species: There were no zebra mussels observed at the monitoring stations on May 5.

Avian Activity: Bird counts and bird hazing activities are in progress. Hazing is taking place over 2 work shifts so that all daylight hours are covered.

Research: PNNL researchers are on site making preparations for upcoming subyearling Chinook research. Researchers continued to collect juvenile lamprey for use in overflow weir and orifice passage studies at Lower Granite Dam.

Project: Little Goose
Biologists: George Melanson and Richard Weis
Dates: May 17 – May 23, 2013

Turbine Operation

Turbine units 1 through 6 were available for service this report. 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 17, 19, 21 and 23.

Fish Ladder: The ladder exit head differentials ranged between 0 and 0.1 feet (criteria $\leq$ 0.5 ft.). Water depths over the weirs ranged between 1.1 and 1.2 feet (criteria 1.0-1.3 ft.) and picketed lead head differentials remained steady at 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 8.2 and 8.6 feet (criteria $\geq$8.0 ft). As a result of two pump operations and decreased channel to head differentials, NPE2 remained closed. NPE1 weir rested on sill and depths ranged 5.3 and 5.6 feet (criteria $\geq$7.0 ft or on sill). NSE weirs are at fixed elevations of 532.0 feet and depths ranged between 5.2 and 5.9 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured 2.0 and 3.0 fps (criteria $\geq$1.5 fps) near the NPE on two inspections. Collection channel subsurface water velocity was measured on May 22 using the Hydrologic Current Meter. Three measurements were conducted from near surface, mid channel and near bottom. The subsurface velocity averaged 2.1fps with two pumps operating.

Auxiliary Water Supply System: Fish pumps 1 and 2 operated within criteria ranging between 77 and 79 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 200 to 800 square feet inside the trash shear boom. Drawdown measurements were performed on Turbine units 1 through 4 on May 22. 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 is operating in the low crest position.

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 15,750 and 64,610 for a total of 246,483. The descaling and mortality rate was 0.9% and less than 0.1% respectively.

Transport Summary: Direct loading and daily barging operations were satisfactorily completed.

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
130.1	94.7	42.4	30.7	54.6	53.0	3.3	2.8

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers for all units were inspected on May 22. We removed 197 juvenile lamprey mortalities and 1 salmonid mortality.

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

Avian Activity: The maximum bird count from a single survey included 17 cormorants, 188 gulls, 2 grebes and 20 pelicans. USDA-APHIS bird hazing continued through this report period.

Research: WDFW Gas Bubble Trauma research was conducted on May 20. No signs of GBT were seen. Blue Leaf and UC Davis collected juvenile lamprey from the sample on May 21 to study LGR Weir Fish Passage performance. UC Davis is performing Underwater Video Monitoring of the Adult Fish Ladder Orifice Modifications. University of Idaho is performing Adult Salmon Passage Studies using radio-telemetry. Battelle is on-site starting the second year of BiOp Performance Standard Tests.

Project: Lower Granite
Biologists: Mike Halter and Ches Brooks
Dates: May 17 – May 23, 2013

Turbine Operation

Lower Granite had all turbine units available for power generation at the beginning of the report period. Turbine unit #2 was taken out of service at 1824 hours on May 20 due to a failed fish screen in slot 2B. Turbine unit #1 was then forced out of service at 0649 hours on May 21 to remove an ESBS and place it in slot 2B. Turbine unit #2 was then returned to service at 1427 hours on May 21 following the ESBS installation. Turbine unit #1 was returned to service at 1348 hours on May 23. All units were rotated out of service briefly on May 17 and 18 in support of VBS inspections.

Turbine units #6 and #4 were taken out of service briefly on May 23 for gatewell dipping operations to check descaling rates between standard fish screens and the "John Day" fish screen installed in slot 6C. The outage times were: unit #6 from 1244 to 1345 hours, unit #4 from 1427 to 1450 hours.

Adult Fish Passage Facility

On May 17 and 18, COE fish biologists conducted inspections of the adult fishway system. A third inspection was conducted with the ODFW biologist from Little Goose Dam on May 20.

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 6.4 to 6.9 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 4.4 to 7.3 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 0.96 to 1.10 feet per second and averaged 1.04 feet per second.

Auxiliary Water Supply System: Fish pumps 2 and 3 were run during the week without any problems.

Juvenile Fish Passage Facility

The sample rate was increased from 0.5% up to 2.0% on the morning of May 20 due to greatly reduced fish collection numbers. The sample rate was increased again to 4.0% at 0700 hours on May 23 and remained at that level through the duration of the week.

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 took place on May 17-18. The inspector noted that several small sections of strapping used for securing the mesh were possibly missing from units 1, 2 and 3 VBS's, but that poor visibility made it hard to be sure. He also noted that the mesh was entirely in place. These areas will be examined again during the next inspection. It was also noted that the unit 6 VBS possibly had three rivets missing from the left strap.

A gatewell dipping operation took place on May 23 in attempt to determine if the replacement fish screens obtained from John Day Dam caused increased fish descaling in comparison to the fish screens presently in use. At the present time, a John Day fish screen is installed in the C slot on turbine unit 6 only. The "A", "B" and "C" slots of turbine unit 6 were dipped. In addition, the C slot on turbine unit 4 was also dipped in attempt to see if there is a difference between the two types of fish screens when installed in a C slot.

A total of 179 smolts were examined from unit #6 (99 from slot 6A, 34 from slot 6B, and 46 from slot 6C). Five descaled fish were found in slot 6A (5.05% descaling). Zero descaled fish were found in slot 6B and slot 6C (0.00% descaling). In addition a total of 5 smolts were examined from gatewell slot 4C and none were descaled (0.00% descaling). *Note: unit #4 was only run for one hour prior to gatewell dipping in slot 4C.*

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.

The separator inclined screen at Lower Granite supplies water to the raceways and fish holding tanks. When it becomes clogged, the holding facility water supply is threatened. It became necessary to dewater the inclined screen (dewatering structure) and rake/power-wash it on two occasions: the morning of May 17 at 0810 hours and the early morning of May 18 at 0340 hours. Each cleaning event took from 20 to 30 minutes.

Transportation Facility: Every day barge transport operations at Lower Granite began on May 2. The debris load moving through the system was relatively high during the week and caused plugging issues with the collection gallery orifices and the inclined screen. Fish numbers also decreased significantly. Lower fish numbers coupled with the need to divert most of the fish over to NOAA for their marking operation left few fish available for direct loading. Consequently, we elected to pass on direct loading operations during the week. If debris drops off and fish numbers increase, we will resume direct loading fish barges.

Transport Summary: The first daily 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 is scheduled to continue through the month of May. Every-other-day fish barging should then continue until mid-August. This has been a relatively low fish collection and fish transport season at Lower Granite. Nevertheless we have barged more fish to date than we did during the entire 2012 season.

Removable Spillway Weir: Mandatory spill operations began at 0000 hours on April 3. The RSW was 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
101.2	75.4	26.7	20.5	54.1	53.3	2.8	2.6

*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.

Inline Cooling Water Strainers: Cooling water strainers were last inspected for lamprey entrainment on April 30. A total of 78 lamprey were found in the strainers over a combined run time of 2,007 unit hours. The next cooling water strainer inspections are scheduled for late May.

Invasive Species: The zebra mussel substrate near the adult fishway exit was last examined for zebra mussels on May 6. No evidence of zebra mussels was found. The next inspection is scheduled for early 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.