` U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#11-2013

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: May 10 – May 16, 2013

Turbine Operation

McNary had 12 units available for power generation this week. From May 13 to 17, the project test ran unit 3 after which time it returned to service. 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 17	About one year.	After rewind, thrust bearing.
14	Sep 18 – May 24	About eight months.	Turbine bearing issues continue.
6	May 15	4.5 hours.	Hub tapped.
1	May 16	1.5 hours.	Trash racks cleaned.

Adult Fish Passage Facilities

On May 10, 12 and 15, 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.

Fish Ladder Exits: During the inspections, both ladder exits met all Fish Passage Plan criteria except on May 10 and 12, when the Washington count station head over weir measured 0.9 feet each day. On May 13, the roving operator adjusted the exit set points. Also, at the Washington exit, weir 339 alarmed once and the operator reset it.

The project cleaned both exits' picketed leads 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.

At the Oregon exit, there were four false south traveling screen alarms which the operator reset. Our differential monitoring of the screens revealed no problems. On May 16, for electrical work elsewhere on project, the Oregon exit had a brief power outage of 10 to 15 minutes.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria except on May 12 when entrance weir, W2, measured 7.5 feet. The

biologist found the pool differential sensor and weir, W3, out of calibration. After calibration, weir, W2, returned to 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. On May 14, from about 1300 to 1700 hours, the project replaced NFEW2 with a weir which had heavy plastic rollers. However, after removal, we found no issue with the stainless steel rollers on the replaced weir. The project will continue to examine the issue of these weirs have slack cables at times. While NFEW2 was being replaced, NFEW1 was lowered.

At the south power house entrance, we continue to note calibration drifts at SFEW1. The project is monitoring the issue. During the week, the general maintenance staff adjusted all 12 floating powerhouse entrances.

The Oregon ladder's collection channel velocity average 1.7 feet per second. We used surface readings. This week, we realized that the velocity meter had not been program properly at the factory and all its readings had been in error. We will return the meter to the factory in the near future.

Auxiliary Water Supply System: For the report week, the Wasco county PUD in the Washington ladder had one interruption in service. On May 15, from 0859 to 1455 hours, the unit was out of service to replace an air cooler. During this time, the bypass system worked well.

For the Oregon ladder, fish pumps 1 and 3 operated all week with blade angles of 30 degrees and had two interruptions in service. On May 14, both pumps were out of service for eight minutes for a bus switch. Later that day, from 1419 to 1635 hours, both pumps were down so weir, NFEW2, could be replaced. 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, continues. No deviations from this schedule occurred. We bypassed 397,780 smolts and 1,400 juvenile lampreys this week.

Forebay Debris/Gatewell Debris/Oil: For the week, forebay debris was heavy with most of it being at the powerhouse and spill. Much of the incoming debris went over the TSW's and was tumbleweeds. Weather, debris infusion and project operations affected the debris' dispersal.

The highest trash rack different the fisheries staff measured was on May 15 at 1A slot and was 2.3 feet. On May 16, the project removed one ten-yard truck load of debris from the surface at this slot and two truckloads from the slot's trash rack. We observed three lost smolts in the trash. The project plans to continue cleaning trash racks next week. We noted no problems in the gatewell slots.

ESBSs/VBSs: All ESBS's are installed except at unit 14 which are out of service. On May 13, the project installed unit 3's screens for unit testing and return to service.

The screen at 2A slot remains in timer mode. On May 10, the biologist found the screen had failed. The electrical staff returned the screen to service by using a remote PLC. The next day, the assistant biologist noted the screen had only one minute between cycles. The roving operator was able to adjust the PLC to nine minutes between cycles. On May 13, the technical staff reprogrammed the screen's main PLC and returned it to normal timer mode. The staff then programmed and reset all ESBS PLCs with the same program. They also resolve the lighting issue with unit 6's PLC.

We will begin camera inspections on May 21.

On May 11 and 15, our VBS differential monitoring revealed a total of two screens out of criteria. The project cleaned these screens and two others. During the cleaning, we observed approximately 74 smolts and one juvenile lamprey which were lost.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: For the week, we had 42 orifices open with one problem observed. We removed a small stick at 1A slot orifice. We also replaced orifice lighting as required. During VBS and trash rack cleaning, we closed the orifices at the slot and opened spares at adjacent slots.

All systems operated well in automatic mode. On May 14, we removed a piece of debris from the rectangular screen cleaning device. On May 16, the side screen cleaning device alarmed twice that day and would not restart after the second alarm. We found no cause for the alarms. The technical staff reset the mechanism, which has been operating well since. 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 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.

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.

The spring spill season which calls for 40 percent of flow being spilled and both TSW's in operation continues. All week, due to flow in excess of powerhouse capacity, 51 to 59 percent of flow was spilled. The project is considering spilling forebay debris.

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
356.7	297.6	209.2	150.5	55.7	54.1	6.0	6.0

*****Control room data.

Other

Inline Cooling Water Strainers: On May 7, the project examined the main unit cooling water strainers. We reported the wrong count in last week's report. We found 13 juvenile lampreys and 10 smolts lost. We could not identify the smolts. The next examination will be in early June.

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

Avian Activity: We continue bird counts with each zone being observed once a day usually in the morning. In the forebay area, we observed an occasional loon, grebe, pelican, gull, cormorant or osprey. Also, we noted pelicans and gulls on the rocks by the Washington boat dock.

We noted no grebes in the gatewell slots or elsewhere on project.

In the tailwater area, we had high count of 85 gulls with an occasional pelican, cormorant or tern noted. Most of the birds were in the spill basin. We observed a high count of 52 gulls with an occasional pelican or tern noted by the bypass outfall.

Hazing personnel continue to work seven days a week with two shifts covering the day light hours. Also, lethal take of gulls has been allowed for this year. The fisheries staff continues to work with the propane hazing cannons to keep them functioning well. On May 13 and 14, the water hazing sprinklers' pump tripped off line once each day. We have not found the cause. So we have begun to turn the water cannon on and off with day light hours.

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 10 – May 16, 2013

Turbine Operation

Turbine units 1- 4 and 6 are in service. Turbine unit 4 was out of service May 13 from 0653 hours to 1116 hours due to replacement of the 3D cam transducer. Turbine unit 5 remained out of service due to blade cracking.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fish ways May 13, 14, and 15.

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.

Fishway Entrances and Collection Channel (inspection date order): The south shore entrance (SFE) was off sill with a depth of 8.6 feet, off sill with a depth of 8.6 feet, and off sill with a depth of 9.5 feet. The north powerhouse entrance (NFE) was off sill with a depth of 11.7 feet, off sill with a depth of 9.4 feet, and off sill with a depth of 10.3 feet. The north shore entrance (NSE) was on sill with a depth of 7.6 feet, on sill with a depth of 8.9 feet, and on sill with a depth of 8.9 feet. Fishway entrance criterion is 8 feet depth, greater than 8 feet depth, or on sill. All channel/tailwater differentials were in criteria. Channel/tailwater 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

Forebay Debris/Gatewell 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 April inspections. May STS/VBS inspections are scheduled for May 21 and 22. Turbine strainer inspections will be done at the same time.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile bypass is watered up with 20 open orifices. The dewatering screen brush lifting cable was repaired and continues to be a problem. The cable comes off of the sheave and will not lift the brush off the screen. This period, maintenance welded guides on the sheave to prevent the cable from coming off.

Juvenile Bypass Facility: No problems to report.

Fish Sampling: The first sample is scheduled for 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:

May 14:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	14	0	0	0
UC-CH	5	0	0	0
C-CH-O	---	---	---	---
UC-CH-O	1	0	0	0
C-SH	67	1	0	3
UC-SH	15	0	0	1
C-COHO	---	---	---	---
UC-COHO	---	---	---	---
C-SOCK	---	---	---	---
UC-SOCK	---	---	---	---
TOTAL	102	1	0	4

May 16:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	12	1	0	0
UC-CH	2	0	0	0
C-CH-O	---	---	---	---
UC-CH-O	---	---	---	---
C-SH	81	2	0	0
UC-SH	12	0	0	0
C-COHO	---	---	---	---
UC-COHO	---	---	---	---
C-SOCK	---	---	---	---
UC-SOCK	---	---	---	---
TOTAL	107	3	0	0

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
136.0	99.9	75.6	42.7	56	54	5.1	3.6

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Main turbine cooling water inspections for May are scheduled for 22 and 23.

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: A clipped adult Chinook was lost in the adult trap during research activities on May 13. A memorandum for the record regarding this incident was sent to the appropriate agencies the same day. Researchers reviewed protocol, and resume trapping activities after making minor modifications to the trap. As of May 16, a total of 118 adult fish have been trapped and tagged. With the exception of the mortality incurred on May 13, all trapped fish were released without incident.

Project: Lower Monumental
Biologists: Bill Spurgeon and Elizabeth Lindsey
Dates: May 10 – May 16, 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 10, 11, 12, and 15.

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 criteria (criteria: ≥ 8' or on sill) on all inspections. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections.

SSE1 weir gate was in depth criteria (criteria: ≥ 8' or on sill) on all inspections. 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 operations 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 14.0 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-10% surface coverage. No oil was observed in gatewells.

STSs/VBSs: STS operation was changed to continuous run mode on May 13 due to subyearling Chinook length averaging less than 120 mm.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel is operating with 19-20 orifices open. The primary dewaterer automatic weirs were set to 528.1 feet and

switched to the off position on May 13 to eliminate sudden water level fluctuations in the separator.

Collection Facility: The facility is in collection for transport mode.

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
131.5	99.0	26.3	21.8	55.0	54.0	4.3	2.7

*Scrollcase temperatures.

Other

Spring spill continues.

Inline Cooling Water Strainers: Cooling water strainers were inspected on May 1. No live lampreys 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: On May 16, researchers began collecting 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 10 – May 16, 2013

Turbine Operation

Turbine units 1 through 6 were available for service this report period with the following exceptions. Units 1 – 4 were forced out of service on May 9 from 0730 to 0755 hours to DC charger breaker trip. Unit 1 remained out of service to May 10 at 1526 hours due to exciter regulator problems. Unit 1 was removed from service for planned outage to rake trash on May 13 from 1104 to 1356 hours. Unit 3 was forced out of service on May 11 at 0704 to May 13 at 0707 hours due to exciter problems. Unit 5 was out of service May 13 at 1251 hours to May 16 at 1058 hours due to exciter problems. 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 10, 13 and 14.

Fish Ladder: The ladder exit head differentials remained steady at 0.1 feet (criteria $\leq$ 0.5 ft.). Water depths over the weirs remained steady at 1.1 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 1.5 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 5.4 and 6.1 feet (criteria $\geq$7.0 ft or on sill). NSE weirs are at fixed elevations of 532.0 feet and depths ranged between 5.9 and 6.2 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured 1.9 fps (criteria $\geq$1.5 fps) near the NPE.

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 800 to 2,000 square feet inside the trash shear boom. Unit 1 trash racks were raked on May 13; approximately 10 cubic yards of debris was removed. Drawdown measurements were performed on Turbine units 1 through 4 and 6 on May 15. 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 changed to the low crest position on May 9.

ESBS/VBS: All ESBSs operated within criteria this report period except 3C. During inspection on May 12, 3C was tripped off; the limits switches were reset and the screen returned to operation on May 13. Unit 3 was not operated during this time due to the exciter problems. Video inspections of the VBS screens on unit 2 were performed on May 13. All screens were viewed to be in good operating condition. All other VBS screens associated with Turbine units 1, and 3 – 6 were inspected the previous week and were also observed to be in good operating condition.

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 105,218 and 280,443 for a total of 1,119,342. The descaling and mortality rate was 0.4% and less than 0.1% respectively.

Transport Summary: All 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	56.2	52.9	4.4	3.2

*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 7.

Cooling Water Strainers: Cooling water strainers were inspected on May 15. We removed 152 juvenile lamprey and 4 salmonids. All recovered fish were mortalities.

Avian Activity: Maximum bird count from a single survey included 11 cormorants, 180 gulls, 2 grebes and 5 pelicans. USDA-APHIS bird hazing continued through this report period.

Research: Gas Bubble Trauma research was conducted on May 15. One fish showed minor signs of GBT.

Project: Lower Granite
Biologists: Mike Halter and Ches Brooks
Dates: May 10 – May 16, 2013

Turbine Operation

Lower Granite had all turbine units available for power generation at the beginning of the report period. Turbine unit 6 was out of service from 1009 until 1100 hours on May 16 in support of a gatewell dipping operation (see below for details).

Adult Fish Passage Facility

On May 10, 11 and 13 the Lower Granite fisheries biologists performed measured 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 6.8 to 7.9 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 4.8 to 5.9 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 0.87 to 1.07 feet per second and averaged 0.98 feet per second.

Auxiliary Water Supply System: A temporary loss of fish pump #1 occurred on May 15, 2013. An emergency maintenance operation to repair a leaking O-ring on the thrust bearing oil supply coupling on fish pump #1 was conducted on the afternoon of May 15. The anticipated repair time to replace the O-ring was estimated at 10-15 minutes. Following are the actual chain of events:

- May 15 @ 1511 hours shutdown fish pump #1 for emergency maintenance to replace leaking O-ring on fish pump #1 thrust bearing oil supply coupling.
- May 15 @ 1523 hours fish pump #1 returned to service following above maintenance.
- May 15 @ 1543 hours fish pump #1 tripped off line.
- May 15 @ 1700 hours fish pump #1 clearance was accepted.
- May 16 @ 0730 hours fish pump #2 discharge bulkhead removed and fish pump #2 and #3 in operation and supplying water to adult fish ladder system.

The temporary loss of fish pump #1 likely resulted in significantly reduced head differential readings, reduced weir depths, and lower velocities at the adult fishway entrances. However, the outage took place on the afternoon of May 15 after adult fish movements up the ladder had likely slowed down for the day. The biggest potential impact to adult fish movements would have been early on the morning of May 16. Fortunately fish pump #2 was brought back on line by 0730 hours and this should have resulted in minimal disturbance to adult fish passage.

Juvenile Fish Passage Facility

The sample rate remained at 0.5% during the report week. Fish collection numbers for the week and possibly the year peaked on May 13 with 244,000 fish collected; the last day of the report week collection was down to 120,800.

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 April 19-20. The next video inspections are scheduled for May 17-18.

A gatewell dipping operation took place on May 16 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 and a total of 336 smolts were examined (96 from slot 6A, 157 from slot 6B and 83 from slot 6C). Four descaled fish were found in 6A (4.2%). Eleven descaled fish were found in 6B (7.0%). Three descaled fish were found in 6C (3.6%). This operation is scheduled to continue one day per week through the month of June.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed at least every three 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, life support (i.e.: water supply) to the holding facilities is threatened. It was necessary to dewater the inclined screen (dewatering structure) and rake/power-wash it on three occasions: the morning of May 15 at 0630 hours, the afternoon of May 15 at 1515 hours and the morning of May 16 at 0630 hours. Each cleaning event took from 20 to 30 minutes.

Transportation Facility: Every day barge transport operations at Lower Granite began on May 2. All operations to date have been going smoothly. The debris load had been light and we were able to direct load barges at Lower Granite on May 10-11. Debris entering the facility increased significantly after this and direct loading operations did not take place for the remainder of the report week.

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. Daily 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.

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
137.3	100.7	29.7	20.3	55.5	55.2	4.2	3.5

*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 May 6. No evidence of zebra mussels was found. The next inspection is scheduled for early June.

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.

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.