U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#10-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: May 2 - 8, 2014

Turbine Operation

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

Table 1. Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Reason
11	Sep 18 to Jul 31	About 10.5 months.	Turbine bearing issue continues.
4	Mar 27 to Jul 31	About 4 months.	Turbine bearing issue continues.
6	May 7	6.5 hours.	Project tapped the hub.

Adult Fish Passage Facilities

On May 2, 4 and 6, the McNary fisheries biologist performed measured inspections of the adult fishways. Visual adult fish counting continues.

Fish Ladder Exits: During measured inspections, both ladder exits met all Fish Passage Plan criteria. Debris loads remained low near the exits. The Washington exit generally has more debris present than the Oregon exit. The fisheries staff is checking the exits on all shifts when the juvenile system is in primary bypass. On May 3 and 4, the operator reset multiple Washington exit weir alarms without incident. On May 5, the operator adjusted the exit weir set points. At the Oregon exit, our differential monitoring of the traveling screens revealed no problems. Ten differential alarms occurred, which the operator reset. On May 5, the project performed scheduled maintenance on the traveling screens.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria. Occasionally, the W3 south cable exhibited a slight amount of slack. In the near future, the project will replace the LEDs for W2 and W3 with a Programmable Logic circuit (PLC), which will integrate into the new control system better.

At Oregon ladder entrances, all inspection points were in criteria. Occasionally, NFEW2's south cable had showed a slight amount of slack. SFEW2 appears to be drifting in and out of calibration. We hope to complete the electrical upgrades of the Oregon entrances in the near future. Collection channel surface velocities averaged 1.5 feet per second.

Auxiliary Water Supply System: For the report week, the PUD turbine unit had no interruptions in service. Fish pumps 1 and 3 ran satisfactorily with blade angles of 30 degrees. Pump 2 remains out of service for major overhaul which will require a contract for the winter of 2014–2015. The juvenile facility continues to supply the usual 450 cfs to the north powerhouse pool without any interruptions in service.

Juvenile Fish Passage Facility

The bypass season continues with alternating days of secondary and primary bypass with the switch occurring every morning at 0700 hours. There were no deviations from this schedule as secondary bypass occurred on May 2, 4, 6 and 8. We bypassed 292,088 smolts and 200 juvenile lamprey this week.

Forebay Debris/Gatewell Debris/Oil: Floating forebay debris was moderate to heavy and was mostly at the powerhouse. Project operations and weather patterns continue to move the debris.

On May 7, fresh tumbleweeds came in from up river. Some of the debris went over the TSWs with the rest collecting on the powerhouse. On May 8, the project removed five ten-yard truck loads of tumbleweed from slots 12A to 14A. We noted no ESA-listed species or lamprey in the debris.

We did not clean trash racks this week. The next full cleaning is scheduled for later in May. Trash rack differential readings revealed no problems.

We observed no problems in the gatewell slots.

ESBSs/VBSs: ESBSs are deployed in all operational units. Only units 4 and 11 are without ESBSs. Camera inspections will begin on May 13. The screen in slot 13C remains in timer mode. During the week, we found the screen in slot 7A "short cycling" on three occasions (cleaner brush reversing direction earlier than expected). The operator recalibrated the screen each time. The run and stop light are both still on at the same time at 3C slot's ESBS controller. We have asked the technical staff to look into both issues.

VBS differential monitoring revealed no screens out of criteria. On May 8, we cleaned two screens as a preventative measure at slots 7A and 7B. No ESA-listed species, lamprey or other species of interest were observed in the debris. Unit 6 VBSs were not cleaned as debris on these VBSs sloughed off while the unit was out of service.

On May 5 to 7, VBS inspections took place at unit 9, and in units 11 to 14 as part of a preventative maintenance program. Also, we examined the screen in slot 4A. We cleaned these screens and observed 13 lost smolts.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Forty two orifices were open all week. Unit 4 orifices remain closed with makeup orifices open at unit 3 to maintain channel elevation. During trash removals and VBS checks, we closed the orifices in slots where work was being performed and opened spare orifices in adjacent slots.

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

On May 4, we noted a dislodged access door on the full flow PIT tag detectors. On May 5, project mechanics reinstalled the door.

Bypass Facility: During the bypass season, both bypass modes return all fish to the river. PIT tag detection occurs in the full flow pipe during primary bypass and throughout the facility during secondary bypass. Smolt monitoring occurs only on secondary bypass days.

Sample gates are in operation only during secondary bypass operations (i.e.: in service every-other-day). The gates functioned well. The primary PIT tag system remains off, as the bypass lines provide a better route for the fish than the PIT tag return lines. The secondary PIT/bypass gates remain off and open for bypass. PSMFC personnel continue to perform weekly examinations of the PIT tag detection system.

McNary's lead bio-technician has been temporarily reassigned as a barge rider at the Lower Granite Operating Project.

River Conditions

River conditions during the week are outlined in Table 2 as provided by the smolt monitoring staff, whose data day runs from 0700 to 0700 hours each day. The spring spill program, which calls for 40 percent of the flow to be spilled, continued. Due to flow in excess of powerhouse capacity, 46 to 55 percent of flow was spilled this week. The TSWs remain open at bays 19 and 20.

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
311.7	252.2	169.0	115.1	52.1	50.5	6.0	5.4

*Control room data.

Other

Inline Cooling Water Strainers: The results for the May 6, inline cooling water strainer examinations are shown in Table 3 below. Units 4 and 11 are out of service. The recovered smolts appeared to be sockeye, Chinook and steelhead. We could not positively identify many of the smolts.

Table 3. Cooling Water Strainer Examination Results.

Unit	Live Lamprey	Lost Lamprey	Live Smolts	Lost Smolts
1	0	0	0	13
2	0	0	0	0
3	0	0	0	0
5	0	1	0	0
6	0	2	0	0
7	0	2	0	0
8	0	2	0	1
9	0	3	0	0
10	0	3	0	1
12	0	2	0	0
13	0	2	0	0
14	0	0	0	13
Total	0	17	0	28

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

Avian Activity: Bird counts continue with each zone being counted by the fisheries staff once a day, usually in the morning. Counts are reflected in Table 4 below.

This week, we observed gulls, pelicans, and cormorants on the rock by the Washington boat dock. We also noted ospreys and loons on project. On May 6, one grebe entered a gatewell slot, passed to the collection channel and then to the separator, where we released it.

Gulls appear to have learned to avoid hazing. We observed groups of gulls roosting on water on the forebay after feeding in the tailwater. Those feeding on the tailwater are at the south edge of the spill and upstream of the bypass pipe. They are also roosting on the water in the area above the bypass pipe. All these areas are in the center of the river where active hazing, including the boat borne hazing, cannot reach the birds.

USDA hazing continues with two shifts along boat hazing occurring Monday, Wednesday and Friday as conditions allow. A light lethal take has begun near the bypass outfall during the boat hazing. The bird distress calls deployed along the navigation lock wing wall and around the project appear to have discouraged roosting. All hazing techniques appear to be working well. In early June, infrasound will be tested on project as a bird deterrent.

On the night of May 6, (prior to sunrise on May 7), the hazing sprinkler pump tripped off line. Last week, concern with the system's check valve led to "24 hours per day, 7 days per week" pump operations. However, this caused the intake screen to clog with debris and the pump to lose prime. On May 7, at 1345 hours, we returned the pump to service.

The contractor informed us the check valve was not an issue and, on May 9, at noon, we returned the sprinkler system to automatic mode, which will allow it to be off at night and debris to slough off the intake screen.

Table 4. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
May 2	Forebay	1	0	0	0	7
	Spill	43	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	10	0	0	0	0
May 3	Forebay	20	0	0	0	2
	Spill	62	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
May 4	Forebay	0	0	0	0	0
	Spill	26	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	10	0	0	0	0
May 5	Forebay	15	0	0	0	3
	Spill	259	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
May 6	Forebay	34	0	0	0	0
	Spill	71	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	8	0	0	1	0
May 7	Forebay	0	0	0	1	3
	Spill	52	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	29	0	0	1	0
May 8	Forebay	0	0	0	0	4
	Spill	52	0	0	0	0
	Powerhouse	32	0	0	0	0
	Outfall	8	0	0	0	0

Research: GBT (Gas Bubble Trauma) monitoring and the juvenile survival study continue. Twice this week, we had to prime the GBT flush line pump. The flush line pushes fish from the separator area to the wet lab. The fisheries staff will make adjustments to the pump intake and discharge lines to resolve the issue.

Project: Ice Harbor
Biologist: Ken Fone
Dates: May 2 - 8, 2014

Turbine Operation

Turbine units 1 and 3 were forced out of service on May 7 at 1629 hours and 1804 hours, respectively, due to an unintentional release of oil into the turbine pits. Unit 1 was returned to service at 1803 hours on May 8. Unit 3 remained out of service through the end of this reporting period. All other turbine units were available for service.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on May 5, 6, 7 and 8.

Fish Ladders: The north fish ladder inspection areas (picketed leads, head differentials, fishway exits, and depth over weirs) were in criteria on all inspections. The south fish ladder inspection areas (picketed leads, head differentials, fishway exits, and depth over weirs) were in criteria on all inspections. Both the north and the south shore picketed leads are down in their deployed positions.

Fishway Entrances and Collection Channel (inspection date order): The south shore entrance (SFE) depth and channel/tailwater differential were in criteria on all inspections. The north powerhouse entrance (NFE) depth and channel/tailwater differential were in criteria on all inspections, except for an entrance head differential of 0.7 feet on May 5. The entrance weir depth was reduced, but still kept in criteria, to provide the required head differential on subsequent inspections. The north shore entrance (NSE) depth and channel/tailwater differential were in criteria on all inspections. Fishway entrance criteria is 8 feet depth, greater than 8 feet depth, or on sill. Channel/tailwater differential criteria are 1 – 2 feet.

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

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Fish ladder exits were clear of debris and the bubblers were operating satisfactorily. There was little to no debris observed in the forebay and gatewells.

STSs/VBSs: STSs are in position for juvenile fish guidance and have been in continuous run mode since April 21. STS inspections were performed on April 21, 22 and 23. The STS in the Unit 1 C slot was found detached from one of the cross bars. Repairs were completed the same day. Cooling water strainer inspections were simultaneously completed during the STS inspections.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass was placed in operation on March 17. Twenty orifices are open.

Juvenile Bypass Facility: The bypass is in operation.

Fish Sampling: The first sample took place April 2. Sampling results are outlined in the tables below for May 6 and 8. Sampling days continue to alternate weekly on Mondays and Wednesdays, and Tuesdays and Thursdays.

Table 1. Fish condition sampling results at Ice Harbor Dam.

May 6:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	69	6	0	1
UC-CH	32	4	0	0
C-CH-O	0	---	---	---
UC-CH-O	1	0	0	0
C-SH	26	2	0	2
UC-SH	4	0	0	1
C-COHO	1	0	0	0
UC-COHO	1	0	0	0
C-SOCK	0	---	---	---
UC-SOCK	1	0	0	0
TOTAL	135	12	0	4

May 8:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	56	4	0	2
UC-CH	23	2	0	1
C-CH-O	0	---	---	---
UC-CH-O	0	---	---	---
C-SH	39	2	0	2
UC-SH	6	1	0	1
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	7	1	0	0
TOTAL	131	10	0	2

Removable Spillway Weir: The RSW is in operating configuration. Spill in support of fish passage began April 3, 2014.

River Conditions

River conditions during the week are outlined in Table 2 below.

Table 2. 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
106.0	75.6	71.1	38.4	52	51	5.8	5.8

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Cooling water strainer inspections took place on April 21, 22 and 23. One lamprey mortality and one juvenile Chinook mortality were recovered from unit 5. No other fish were found. Combined unit run times totaled 2,050.1 hours.

Invasive Species: No new exotic species have been found.

Avian Activity: Bird hazing began April 1. The water cannon is functioning satisfactorily. Daily counts are reflected in Table 3 below.

Table 3. Daily Morning Predacious Bird Counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Pelicans
May 2	-	-	-	-
May 3	30	100	0	6
May 4*	40	20	0	8
May 5	68	11	0	2
May 6	78	9	0	13
May 7	50	36	0	19
May 8	75	63	0	7

*Spillway Tailwater Zone 1 only.

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

Project: Lower Monumental
Biologist: Bill Spurgeon
Lead Biological Science Technician: K. C. Deife
Dates: May 2 - 8, 2014

Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria. Units were rotated out of service on May 6, 7, and 8 for STS inspections.

Adult Fish Passage Facility

The adult fishways were inspected by Corps and PSMFC/State biologists on May 2, 3, 4, and 7.

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

Fishway Entrances and Collection Channel: NSE1 and NSE2 weir gates were in depth criteria (criteria: ≥ 8' or on sill) on all inspections. North shore channel/tailwater head was in criteria (1'-2') on all inspections except May 7 when the channel/tailwater head was 0.8 feet (reported to shift operator for correction).

SPE1 and SPE2 weir gates were in depth or sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, the gate depth readings were 6.9 feet and 6.8 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections except May 7 when the channel/tailwater head was 0.6 feet (reported to shift operator for correction).

SSE1 weir gate was in depth or sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, the gate depth reading was 7.3' and 7.4 feet. SSE2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections.

The channel velocity was out of criteria on May 3 when the channel velocity reading was 4.5 ft/sec (criteria: 1.5-4.0 ft/sec). The pump RPM was similar to the other inspections during this period so this may have been an error with the electronic velocity monitor or in the reading of the gage.

Any criteria violations at the fishway entrances are related to the failure of the Programmable Logic Circuit (PLC) for automated control. Without automated control, the FCRG (fishway control regulating gate) drifts closed causing the fishway entrance head to go out of criteria at the south shore entrances. Operators are manually controlling the FCRG and fish pumps to maintain head and depth criteria at fishway entrances. The loss of the fishway PLC also caused all weir gates to be placed in local control. This results in criteria violations if monitoring and adjustment does not occur as tailwater level fluctuates. To minimize this, SPE1 and SPE2 are placed on sill.

The replacement PLC for automated control of the fishway has been received. It is being currently being programmed. The automated system is estimated to return to service in June. The operators have been instructed to conduct a physical inspection on night shift to replace the FPP inspection via data screen conducted normally on that shift.

Auxiliary Water Supply System: All AWS pumps were in service and operating throughout this report period.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 5.5 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-20% surface coverage. No oil was observed in gatewells.

STSs/VBSs: STS operation remains in continuous run mode due to the average length of sampled sockeye being less than 120 mm. STSs were inspected May 6, 7 and 8. All screens passed inspection.

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

Collection Facility: PIT diversion gate intermittent banging was noticed on the "B" side flume on May 5. This became increasingly worse until on May 8th when the "B" side separator exit was closed and the PIT gate cylinder and regulator were changed. It is suspected that over oiling adversely affected the piston travel which caused the cylinder shaft to bend slightly. This adversely affected the alignment which negatively affected the slow close setting (causing the banging). The oiler was appropriately reset. PSMFC came out and rechecked and calibrated the system. The "B" side separator exit was closed from 0645 to 0730 hours on May 8 to correct the problem.

Transport Summary: Every-day barging began on May 2. The numbers of sample fish for "A" side (small fish) were biased on May 2. The "A" side separator exit hatch pneumatic control was inadvertently moved to "close" position while repairs to the "B" side (large fish) separator exit hatch were being conducted. This caused the "A" side separator exit hatch to slowly close through the night. Water velocity in the flume decreased allowing fish to hold above the sample switch gate. When the sample switch gate opened a number of fish greater than the sample rate entered the sample counter tanks. The result was a biased sample and an over-estimate of "small" fish barged. No fish were harmed in this activity but the sample number and therefore transport numbers for this day are less accurate than normal.

River Conditions

Spring spill operation was initiated at 0001 hours on April 3. Spill gate 1 was closed on May 6 from 0730 to 1805 hours and May 7 from 0640 to 1620 hours to repair SSE1 weir gate. Bulk

spill pattern remained in place while spill gate 1 was closed. River conditions during the week are outlined in Table 1 below.

Table 1. River conditions at Lower Monumental Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (^{o}F)*		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
101.1	71.7	28.4	26.8	53.0	50.0	4.2	3.9

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on April 2. No live lamprey were recovered. Mortalities included 108 juvenile lamprey and 40 juvenile shad.

Invasive Species: No zebra mussels were observed at the monitoring stations on May 2.

Avian Activity: Daily tailrace counts of feeding piscivorous birds are summarized in Table 2. Gulls were the dominant species observed during inspections this week.

Table 2. Tailrace Counts of Foraging Piscivorous Birds at Lower Monumental Dam.

Date	Time (hours)	Gulls	Cormorants	Terns
May 2	1100	0	0	0
May 3	1100	0	0	0
May 4	1100	3	0	0
May 5	1100	15	0	0
May 6	1100	20	0	0
May 7	1100	33	0	0
May 8	1100	12	0	0

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

Project: Little Goose
Biologist: George Melanson
Lead Biological Science Technician: James Brandon
Dates: May 2 - 8, 2014

Turbine Operation

Turbine units 1 through 6 were available for all of this reporting period. All turbine units were operated within 1% peak efficiency range.

Adult Fish Passage Facility

Adult fishway inspections were performed on May 4, 6 and 8.

Fish Ladder: The ladder exit head differential ranged between 0.0 and 0.1 feet (criteria $\leq$ 0.5 ft.). Water depths over the weirs held steady at 1.2 feet (criteria 1.0-1.3 ft.). No differential was observed at the picketed leads (criteria $\leq$ 0.3 ft.). No debris was observed at the picketed leads or the ladder exit area. 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 0.8 and 1.7 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.0 and 8.5 feet (criteria $\geq$ 8.0 ft). NPE weirs were on sill and ranged between 5.7and 6.3 feet (criteria $\geq$7.0 ft). NSE weirs are in manual and depths ranged between 5.7 and 6.4 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity ranged between 1.6 and 1.9 fps near the junction pool and 2.1 to 2.6 fps near the north shore entrance (criteria 1.5 to 4.0 fps).

Auxiliary Water Supply System: All fish pumps operated within criteria. Fish pump 2 was removed from service on May 7 from 1210 to 1510 hours and on May 8 from 1204 to 1540 hours to replace a faulty temperature probe. During the outages, fish pumps 1 and 3 were increased in RPM to maintain adequate water supply.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Estimated amounts of woody debris in the immediate forebay ranged between 1000 and 2500 sq ft.

Spillway Weir: The spillway weir was in service in the low crest position during this reporting period.

ESBS/VBS: All ESBSs operated as designed. Drawdown differential measurements were performed on Units 1 through 4 on May 8. All criteria were met.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile system operated with 20 to 22 open orifices.

Transportation Facility: The collection and transportation facility operated within criteria for the report period. A total of 1,665,447 fish were collected for transport. The descaling and mortality rates were 1.3% and less than 0.1% respectively.

Transport Summary: Daily barge loading and transport was performed satisfactorily; no problems to report.

River Conditions

Table 1. River conditions at Little Goose Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (^{o}F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
101.4	72.9	34.9	21.8	55.9	50.1	4.4	3.6

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were checked on May 8. Four salmonids and 5 juvenile lamprey were removed.

Invasive Species: No zebra mussels were observed on the substrate monitor on May 5. The next inspection is scheduled for June 4.

Avian Activity: USDA-APHIS bird hazing efforts continued all week. Daily count results are summarized in Table 2 below.

Table 2. Maximum Daily Bird Counts at little Goose Dam.

Date	Gulls	Cormorants	Caspian Terns	Pelicans
May 2	63	16	0	0
May 3	96	5	0	0
May 4	67	14	0	0
May 5	67	7	0	0
May 6	150	8	0	0
May 7	216	6	0	0
May 8	70	9	0	0

Research: The University of Idaho adult salmonid passage study and the adult lamprey passage study are in progress at Little Goose.

Project: Lower Granite
Biologists: Mike Halter, Elizabeth Holdren and Ches Brooks
Dates: May 2 - 8, 2014

Turbine Operation

Lower Granite had all turbine units available for power generation during the report period. The turbine units are being operated in hard constraint of the 1% operation criteria.

Adult Fish Passage Facility

On May 2, 3, and 5 COE fish biologists conducted inspections of the adult fishway system.

Fish Ladder: All criteria were met.

Fishway Entrances and Collection Channel: Head differential readings remained within criteria at the south shore and north powerhouse fishway entrances during the weekly inspections. The head differential readings at the north shore fishway entrances were out of criteria on the May 3 and May 5 inspections with readings of 0.8 feet and 0.9 feet, respectively (criterion 1.0' – 2.0'). These out of criteria events are associated with the fact that fish pump one is now being run in 'slow' speed mode. Fish pump one's motor management relay system has a tendency to trip the pump offline when the pump is running in 'fast' speed mode during low tailwater conditions (the pump requires up to an hour to restart).

Weir depths at the south shore fishway entrances met criteria on all inspections this week. Weir depths at the north powerhouse fishway entrances were on sill all week due to tailrace elevations below 636.0 feet (at which depths the gates bottom out). Weir depths at the north powerhouse entrances ranged from 6.0 to 7.5 feet. Weir depths at north shore entrance 1 ranged from 4.7 to 5.0 feet (criterion $\geq$ 7.0 feet). Weir depths at north shore entrance 2 ranged from 3.8 to 5.6 feet (criterion $\geq$ 7.0 feet). North shore entrance 2 remains damaged, and cannot adjust for weir depths automatically; this gate has been manually set at a compromise depth of 630.0 feet. Due to a lack of water at the north shore entrances, weir depth readings are being sacrificed in attempt to maintain the requisite 1.0 foot of head differential.

Velocity readings in the adult fishway collection channel transition pool area ranged from 0.99 to 1.20 feet per second and averaged 1.12 feet per second.

Auxiliary Water Supply System: Fish pumps 1 and 3 were run during the week with fish pump 2 held in standby mode.

Juvenile Fish Passage Facility

The sample rate remained at 0.5% during the report week. Fish collection numbers for the week and possibly the year peaked on May 6 with 438,800 fish collected; the last day of the report week collection was down to 269,400.

Forebay Debris/Gatewell Debris/Oil: The amount of forebay debris varied during the week due to wind strength and direction. No debris spills took place during the week. JFF staff have been monitoring gatewells daily and removing floating debris with a hand basket in attempt to circumvent orifice blockages.

ESBSs/VBSs: ESBSs are deployed in all units and have been operating without issue. The brush cleaning cycle is set for once every two hours. The first video VBS inspection of all screens was accomplished on April 25 and 26. No problems of note were observed.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed every three hours around the clock. The 42-inch controller valve on the separator quit working early on the morning of March 24. Powerhouse electricians have traced the problem to a bad transformer and have one on order. Separator personnel are manually operating the valve (when needed) with a drill attached to the hand crank on the operator.

Transportation Facility: Every day barge transport operations at Lower Granite began on May 2. Fish are being picked up at Little Goose (direct loaded 4000 or 2000 barges) and Lower Monumental on all trips. The debris load has been light and we were able to direct load barges at Lower Granite from May 6 through the rest of the report week. Lamprey friendly tail screens (with larger mesh openings) were deployed in the upstream raceways on May 8 and will be installed in the downstream raceways on May 11.

Transport Summary: The first everyday barge left Lower Granite on May 2. Fish barging operations have been going smoothly. Every day fish barging is scheduled to continue through the month of May. The first research barge was scheduled to depart Lower Granite on April 10 but did not due to the Little Goose navigation lock outage. The Little Goose navigation lock returned to service at 1800 hours on April 21 and the only research (specific) barge of the season departed Lower Granite on April 25.

Removable Spillway Weir: The RSW resumed operation with normal spring spill activities on April 3.

River Conditions

River conditions during the week are outlined in Table 1 below.

Table 1: River conditions at Lower Granite Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (F^o)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
103.9	74.0	36.2	20.3	53.8	50.8	4.4	3.0

*Cooling water intake temperature.

Other

The adult fish counters began visual counts at the counting window on April 1. The counting hours are from 0400 to 2000 hours PST and are scheduled to continue through October 31.

Inline Cooling Water Strainers: Cooling water strainers were last inspected for lamprey on April 28. A total of 5 lamprey mortalities were found in the strainers over a combined run time of 2,988.5 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 examined for zebra mussels on the May 3 inspection. No evidence of zebra mussels was found.

Avian Activity: Formal bird counts and hazing activities began on April 1. Extended hazing efforts (16 hours per day) began on April 21 and will continue until June 1. This is in attempt to provide the maximum amount of hazing effort when the highest numbers of juvenile fish are passing the dam.

Table 2. Daily Average Predacious Bird Counts at Lower Granite Dam.

Date	Gulls	Cormorants	Caspian Terns	Pelicans
May 2	0	0	0	0
May 3	8	0	0	0
May 4	29	0	0	0
May 5	3	0	0	0
May 6	5	0	0	0
May 7	2	0	0	0
May 8	4	0	0	0

* Numbers are an average of the morning and evening counts off the JFF separator platform.

Adult Fish Trap Operations: The adult fish trap was watered up and sampling began on March 10. The initial sample rate was 28%. On April 14 at 1400 hours the sample rate was lowered to 15%. Since, as in 2013, adult trapping will only be conducted Monday thru Friday the 15% sample rate represents an overall weekly sample rate of 11%. Genetic/scale 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. Up to 20 sort by code Lemhi origin Chinook will be radio-tagged and scale and genetic samples taken.

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.

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.

National Marine Fisheries Service (NMFS) In-River Survival: This week, NMFS staff began PIT-tagging Chinook and steelhead smolts for their Survival Study to compare smolt to adult returns of in-river migrating smolts to the smolt to adult returns of transported smolts. PIT-tagged fish are held for 24 hours before being bypassed to the LGR tailrace.

National Marine Fisheries Service (NMFS)-Monitoring the Migrations of Wild Snake River Spring/Summer Chinook: This study is monitoring the migration behavior and survival of wild spring/summer Chinook salmon. The specific goals are to characterize the migration timing and estimate parr-to-smolt survival to LGR of 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 2013 in natal streams and are diverted to the Sort-By-Code tanks at LGR.

Biological Evaluation of Prototype Overflow Weir and 14 Inch Orifice: A prototype broad crested overflow weir and 14 inch diameter orifice were installed into intake gatewell 5A during the winter of 2012. These structures are being evaluated by UC Davis, Biomark and Blue Leaf Environmental in order to test whether these structural modifications will reduce passage times and increase survival of fish through the upper portion of the LGR Juvenile Bypass System. Last winter a sharp crested weir was installed in place of the broad crested weir and a prototype LED light ring was installed on the 14 inch orifice. The goal of the study is to assess the biological and debris passage characteristics associated with each style of passage structure (14 inch orifice - with light ring and “sharp crested” overflow weir) during the day, and this year also at night. Results of this study will be used to determine whether any redesign of the weir or orifice structures is necessary and to determine which of these structures warrant installation in the remaining gatewells. This study will also help inform future management decisions for structural modifications at other Columbia and Snake River dams. Up to 375 fish of each species (clipped yearling Chinook, clipped subyearling Chinook and clipped steelhead) will be collected from the East JFF raceways during the NMFS survival and transport study sampling. These fish are PIT-tagged, photographed, evaluated for condition, held overnight and released the next morning for the day release or the next evening for the night release. The fish are released into gatewell 5A or the gallery channel. To further evaluate these structures up to 100 adult steelhead kelts and up to 2500 juvenile lamprey will be PIT-tagged and released. A

subsample of each release group will be collected in the Sort-By-Code tanks and examined for injury.