U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#15-2015

Project: McNary
Biologist: Bobby Johnson
Dates: June 5 - 11, 2015

Turbine Operation

McNary had 11 to 13 of 14 units available for power generation. The hard 1 percent constraint continued. No turbine units ran outside the constraint. Turbine unit outages are recorded in Table 1 below.

Table 1. Unit Outages at McNary Project.

Units	Outage Dates	Outage Length	Reason
12	Feb 8 – Aug 1	About 6 months.	Rewind contract.
3	Jun 9 – 20	About 11 days.	Bearing inspection.
10	Jun 10 – 18	About 8 days.	Bearing inspection.

Adult Fish Passage Facilities

The McNary fisheries biologist performed measured inspections of the adult fishways on June 5, 7 and 10. Visual adult fish counts continued. Monitoring of exit water temperatures will begin on June 15. New temperature probes were ordered this past winter. The fisheries mechanics installed a shelf at the Oregon ladder count station (the shelf was installed inside the count station, not in the fishway itself).

Fish Ladder Exits: Both ladder exits met all Fish Passage Plan (FPP) criteria. Debris loads in the area of the exits were generally minimal to moderate with brief influxes of aquatic vegetation.

At the Washington ladder exit, the operators adjusted the regulating weir set point on June 7 and 10. On June 8, the general maintenance staff removed a log from the exit trash rack.

Fishway Entrances and Collection Channel: All entrance inspection points met criteria.

At the Oregon ladder north powerhouse entrance, the electricians completed installation of a new controller for weir NFEW1, which is normally raised and used as a backup weir.

Collection channel surface velocities averaged 1.6 feet per second.

Auxiliary Water Supply System: The Wasco County Public Utility District (PUD) turbine unit in the Washington ladder had no interruptions in service.

Two of the three Oregon ladder fish pumps operated satisfactorily with blade angles of 30 degrees. Pump 2 is currently under contract for major overhaul. The repairs should be completed by September, 2015.

The juvenile facility continued to supply 450 cubic feet per second to the north powerhouse pool.

Juvenile Fish Passage Facility

The fish passage season consists of alternating days of primary and secondary bypass modes. The switch occurs every morning at 0700 hours. There were no deviations in the schedule. Secondary bypass occurred on June 5, 7, 9 and 11. This week, 1,950 juvenile lamprey and 44,100 smolts were bypassed.

Hot weather and warm water temperatures became a concern this week. The smolt monitoring staff recorded an air temperature of 102.8 degrees Fahrenheit (F) on June 8. The highest sample tank water temperature they recorded was 67.1 degrees F on June 9. The McNary fisheries staff began to measure the sample tank temperature daily on June 8. A digital thermometer will be ordered and installed in the B side sample tank as soon as possible.

The heating/cooling system at the facility has been an issue since its installation. Also, this week, the fisheries staff opened windows and installed fans in the wet lab in order to keep air temperatures at a reasonable level during sampling and gas bubble trauma (GBT) monitoring.

Forebay Debris/Gatewell Debris/Oil: The forebay debris load was very light to heavy and generally centered on the powerhouse except when northeast winds would temporarily move accumulations toward the Oregon shore. After top spillway weir (TSW) closure on June 8, a brief yet large influx of aquatic vegetation occurred.

No high trash rack differentials were recorded and no trash racks were cleaned. This week, descaling rates ranged from 2.6 to 3.9 percent. The arrival of subyearling Chinook appears to be lowering the rate.

No problems were observed in the gatewell slots.

ESBSs/VBSs: All operational turbine units have extended-length submersible bar screen (ESBSs) installed. Screens were not installed at unit 12 as this unit is out of service. ESBS camera inspections conducted on June 10 in unit 3 revealed no problems.

On June 9, the ESBS brush bar on the screen in 9A slot was found not to be running the full length of the screen as programmed. The operators immediately recalibrated the mechanism. The screens in 3B and 11C slots remained in timer mode.

Rehabilitation of the vertical barrier screens (VBSs) continued. No high VBS differentials were recorded. The VBSs in the A and B slots at unit 1, and units 7 through 9 were cleaned on June 11. While cleaning, the general maintenance staff also removed sponge from the downstream sides of the VBSs. The fisheries staff observed no juvenile lamprey or smolt mortalities.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: Forty two orifices were in use. During VBS cleaning, orifices in the affected slots were closed, with makeup water coming from orifices in adjacent slots.

All systems functioned satisfactorily in automatic mode. Due to the increase in aquatic vegetation, on June 10, the rectangular screen cleaning brush cycle time was reduced from every 180 minutes to 120 minutes.

Bypass Facility: During the bypass season, primary and secondary bypass modes return all fish are to the river. Passive integrated transponder (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.

The sample gates are turned on and off every other day so that they are in service only during secondary bypass. The gates and all operational systems functioned well. The PIT tag sample gates remained turned off. The facility bypass lines provide a superior route for the fish over the PIT tag sample release lines downstream of the PIT tag sample gates. Pacific State Marine Fish Commission (PSMFC) maintenance staff continued their weekly checks of the PIT tag detection system. The A and B side flume bypass gates remain off and open for secondary bypass.

River Conditions

River conditions during the week are outlined in Table 2 below as provided by the smolt monitoring staff. The data period runs from 0700 to 0700 hours each day. Flows and spill are recorded in one-thousand cubic feet per second. Temperature is recorded in degrees Fahrenheit. Routine spring spill in support of fish passage continued. Forty percent of river flow is spilled in the spring season. The TSWs were closed on June 8 at 0940 hours. Both TSWs were removed and standard spill gates were installed. The gates in bays 19 and 20 were attached to a spillway hoist and crane, respectively. Both gates were reopened on June 10 at 1115 hours. FPP spill patterns were followed. The summer spill program will begin June 16. Spill hoist gearbox inspections occurred this week.

The smolt monitoring staff will begin reporting temperature data on June 15.

Table 2. River conditions at McNary Dam.

Daily Average River Flow		Daily Average Spill		Water Temperature		Water Clarity* (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
198.2	169.2	79.6	67.8	67.1	63.3	6.0	6.0

*Control room data.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on July 7.

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

Avian Activity: Avian counts are recorded in Table 3 below.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
Jun 5	Forebay	0	0	0	0	65
	Spill	28	0	0	6	0
	Powerhouse	0	0	0	0	0
	Outfall	0	1	0	0	0
Jun 6	Forebay	0	0	0	0	18
	Spill	18	2	0	2	0
	Powerhouse	0	1	0	0	0
	Outfall	10	0	0	1	0
Jun 7	Forebay	0	0	0	0	12
	Spill	27	0	0	10	0
	Powerhouse	0	1	0	0	0
	Outfall	7	0	0	1	0
Jun 8	Forebay	0	0	0	0	3
	Spill	5	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	1	0
Jun 9	Forebay	0	0	0	0	0
	Spill	14	0	0	8	0
	Powerhouse	0	1	0	0	0
	Outfall	0	0	0	5	0
Jun 10	Forebay	2	0	0	0	2
	Spill	28	0	0	12	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	4	0
Jun 11	Forebay	0	0	2	0	0
	Spill	48	1	0	2	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	3	0

United States Department of Agriculture – Animal and Plant Health Inspection Service – Wildlife Services (USDA–APHIS–WS) personnel continued bird hazing at the project. A second shift and boat hazing continued. However, on June 5 and 8, boat hazing did not occur so abatement efforts could be concentrated on the grebes in the forebay. Limited lethal take of gulls and cormorants continued.

Grebe numbers began to decline in the forebay. No grebes were noted elsewhere. An occasional gull, cormorant, pelican, night heron, blue heron, tern or osprey was also observed. Gulls, pelicans and cormorants were roosting on the rocks by the Washington shore boat dock, which is outside the forebay zone.

Gulls and cormorants were observed in the tailwater area feeding in the spillway flow along with pelicans along the edges. Pelicans were also observed along the Oregon shore at night by the juvenile facility. Pelican numbers appear to be rising. Gulls, cormorants and pelicans were noted feeding at the juvenile bypass outfall.

Bird hazing distress calls remain deployed around the project and continued to function satisfactorily. From June 5 at 1115 hours to June 8 at 0700 hours, the bird hazing water cannon was out of service due to the pump intake being obstructed by algae. The fisheries mechanics cleaned the intake from June 8 through June 11.

One snowy egret has been observed in the wildlife park on the downstream side of the project.

Research: Gas bubble trauma (GBT) examinations and preparations for the adult lamprey passage study continued. From June 17 to 18, the lamprey researcher will install the camera frames around the lamprey passage structure at SFEW2.

Project: Ice Harbor
Biologists: Ken Fone
Dates: June 5 - 11, 2015

Turbine Operation

All units were available for service. All units were operated within the 1% peak efficiency range (hard constraint).

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on June 8, 9, 10, and 11.

Fish Ladders: The north fish ladder inspection areas (head differentials at fishway exit and picketed leads, and depth over weirs) were in criteria on all inspections. The south fish ladder inspection areas (head differentials at fishway exit and picketed leads, and depth over weirs) were in criteria on all inspections. Criteria for head differentials at ladder exits and picketed leads, and depth over the weirs are 0.5 feet or less, 0.3 feet or less, and 1.0-1.3 feet, respectively. The water surfaces above the fish ladder exits were clear of debris and the bubblers were operating satisfactorily.

Fishway Entrances and Collection Channel: 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, except for a depth of 7.8 feet on June 8. The north shore entrance (NSE) depth and channel/tailwater differential were in criteria, except for a depth of 6.5 feet on June 8. The powerhouse operator was informed and lowered these two entrance gates in manual control to meet the depth criteria. Fishway entrance criteria are 8 feet depth or greater, or on sill. Channel/tailwater differential criteria are 1 – 2 feet.

The south shore channel velocity was in criteria on all inspections. The channel velocity criterion is 1.5-4.0 feet/second.

Auxiliary Water Supply (AWS) System: Two of the three north shore AWS pumps were operated throughout the week. North shore pump 3 was taken out of service at 0846 hours on April 22 to replace the pre-lubrication pump. Six of the eight south shore AWS pumps were operated.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was no surface debris observed in the forebay. There was little to no surface debris coverage in the gatewells.

STSs/VBSs: STS operations were changed from cycling mode to continuous-run mode on June 3 due to the average fork length of subyearling chinook being less than 120 mm at the Lower Monumental Juvenile Fish Facility. Monthly inspection of each unit's STSs last occurred on

May 19 and 21. Inspection of unit 3 VBSs and the slot 1A VBS also occurred. No screen problems were observed.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The bypass is operating with 20 orifices open. Orifices were routinely cycled and back-flushed three times per day. On June 8, the mechanical screen cleaner failed when the power cord track became tangled with a cleaning tool that had fallen onto the track. The track was temporarily separated to untangle and remove the cleaning tool, and the mechanical screen cleaner was returned to service on June 9.

Juvenile Fish Facility: Fish are being routed through the bypass, except when sampling operations are occurring.

Fish Sampling: Sampling continued to alternate from Mondays and Wednesdays to Tuesday and Thursdays each week. Sampling occurred on June 9 and 11. Sampling results are outlined in Table 1 below. The descaling rate was 3% on both days.

Removable Spillway Weir (RSW): Mandated spill for fish passage began on April 3. The RSW is in operation.

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

June 9:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	0	---	---	---
UC-CH	0	---	---	---
C-CH-O	69	3	0	0
UC-CH-O	54	1	0	0
C-SH	3	0	0	0
UC-SH	2	0	0	1
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
TOTAL	128	4	0	1

June 11:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	0	---	---	---
UC-CH	0	---	---	---
C-CH-O	57	2	0	0
UC-CH-O	74	2	0	0
C-SH	0	---	---	---
UC-SH	0	---	---	---
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
TOTAL	131	4	0	0

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
54.7	43.8	41.7	14.7	63	62	7.7	6.5

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Monthly turbine cooling water strainer inspections last occurred on May 19 and 21. The fish (all mortalities) found were 7 juvenile steelhead, 2 juvenile lamprey, approximately 74 Siberian prawns, and 1 juvenile walleye. Semi-annual transformer cooling water strainer inspections occurred on June 8. Fish recoveries included 33 live juvenile lamprey and 4 juvenile lamprey mortalities. Live fish were released back to the river in good condition,

Invasive Species: No new exotic species have been found.

Avian Activity: Daily total bird numbers observed this week (Table 3) fluctuated up and down, but overall decreased from what was observed last week. The bird counts occurring on Fridays, Saturdays, and Sundays are done by the bird hazers when they are not actively hazing. Contracted land-based hazing of piscivorous birds occurred for 16 hours per day. Additionally, concurrent boat-based hazing took place for 8 hours per day, 3 days per week. The hazing program has generally been effective at pushing birds away from the dam.

Table 3. Daily maximum piscivorous bird counts at Ice Harbor Dam

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
June 5	3	9	0	1	12
June 6	14	24	0	0	17
June 7	10	26	0	0	16
June 8	0	3	0	0	7
June 9	6	3	0	0	9
June 10	5	10	0	0	3
June 11	21	3	0	0	10

Research: Hydroaccoustic transducers mounted on the STS frame in gatewell slot 1B, and on the slot 1B trash rack, are collecting data for the turbine intake fish distribution study.

Project: Lower Monumental
Biologists: Bill Spurgeon and Raymond Addis
Dates: June 5 - 11, 2015

Turbine Operation

The units are being operated within the 1% hard constraint operational criteria. Unit 1 was removed from service on December 10, 2014 for unit rehabilitation with an estimated return to service date of January 12, 2017.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and Blue Leaf Environmental biologists on June 5, 6, 7 and 11.

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 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. SPE1 and SPE2 weir gates were in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, both gate depth readings ranged from 5.7 to 6.0 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections. SSE1 weir gate was in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, gate depth readings ranged from 4.6 to 6.1 feet. SSE2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections with the exception of June 6 with a differential of 2.6 feet. Operator believed the automatic control system may have been slow in adjusting for a change in conditions. The head differential was within criteria upon later inspection.

Auxiliary Water Supply System: AWS pumps 1, 2, and 3 were operated throughout this period.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 25 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-10% surface coverage.
No problems observed in gatewells.

STSs/VBSs: STSs are operating in continuous-run mode due to average sub-yearling length being less than 120 mm. STS inspections were conducted June 2 and 3 with all screens found in good operating condition.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel was operated with 18 orifices open.

Collection Facility: Operated in collection for transport mode. No facility problems this period.

Transport Summary: Alternate day barging began on May 22.

River Conditions

Routine spring spill operations were initiated at 0001 hours on April 3. Spill was either halted or limited during barge docking and loading operations. 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
54.1	44.7	23.8	19.4	64.9	63.0	4.6	3.6

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on June 3. There was one live juvenile lamprey recovered. Mortalities included 12 juvenile lamprey, 2 salmon smolts, and 1 steelhead smolt.

Invasive Species: No zebra mussels were observed at the monitoring stations on June 5.

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

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

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
June 05	1100	20	0	0	0
June 06	1100	23	0	0	0
June 07	1100	10	2	0	0
June 08	1100	6	0	0	0
June 09	1100	11	1	0	0
June 10	1100	17	1	0	0
June 11	1100	15	2	0	0

*Bird counts are taken from a single observation, Forebay and Tailrace.

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

Project: Little Goose
Biologist: Richard Weis
Dates: June 5 - 11, 2015

Turbine Operation

All turbine units were available for service throughout this report period. Unit 6 was not available for power generation after headgates were installed to determine work load needed for digital governor controls installation from June 8 to June 10. Hard constraint peak 1% efficiency criteria are in effect. No violations were seen.

Adult Fish Passage Facility

Adult fishway inspections were performed on June 05, 07 and 11.

Fish Ladder: The ladder exit head differentials ranged between 0.0 and 0.1feet (criteria $\leq$ 0.5 ft.). Water depths over the ladder weirs ranged between 1.1 and 1.3 feet (criteria 1.0-1.3 ft.) and picketed lead head differentials held steady at 0.0 feet (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: The Adult Fishway is in automatic mode. RJS was here on May 20 to update hardware and software. We are still getting incorrect gate elevation readings when the gate is in the lower quarter of the fish channel at NSE. NSE 1 and 2 are in manual mode. Channel to tailwater head differentials ranged between 1.0 and 2.0 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 7.9 and 8.6 feet (criteria $\geq$ 8.0 ft). NPE weirs were on sill, with depths ranging between 4.0 and 4.7 feet (criteria $\geq$7.0 ft. or on sill). NSE weir depths ranged between 5.6 and 7.9 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured at the North powerhouse ranged between 1.5 and 4.0 fps (criteria 1.5 to 4.0 fps).

Auxiliary Water Supply System: Fish pumps 2 and 3 operated as designed. Fish pump 1 gear box was rebuilt and is waiting on parts to allow placement of the gear box into position.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: The trash/shear boom is currently still on shore. Efforts are underway to have it repaired. Woody debris in the immediate forebay was 0 square feet for the week.

Spillway Weir: The spillway weir is operating in the High Crest position.

ESBS/VBS: ESBSs are all deployed and gatewells are clean except gatewell 5A which has oil absorbent pads deployed as a slight sheen of oil had been seen. Drawdowns were performed on units 1 and 2 on June 11. All criteria were met.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile bypass system is operating with 21 open orifices.

Transportation Facility: The JFF was transporting every other day. GBT (Gas Bubble Trauma) sampling was performed on June 08. No signs of GBT were seen.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 109,736 fish were collected for transport. The descaling and mortality rates were 1.1% and 0.1% respectively. This weekly report period saw 2 adult lamprey removed from the sample and released upstream at Little Goose Landing.

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
53.6	44.9	16.2	13.4	66.3	63.9	4.2	3.2

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were not checked this week.

Invasive Species: The zebra mussel substrate monitor was inspected on June 02. No zebra mussels were detected.

Avian Activity: Bird counts and hazing resumed on April 01. See Table 2 for count details.

Table 2. Daily maximum tailrace piscivorous bird counts at Little Goose Dam.

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
June 05	1300	26	0	0	0
June 06	1115	50	0	0	0
June 07	0800	10	0	0	0
June 08	1120	0	5	0	0
June 09	0830	0	4	0	0
June 10	1530	13	0	0	2
June 11	0850	35	3	0	0

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

Project: Lower Granite
Biologists: Elizabeth Holdren and Ches Brooks
Dates: June 5 - 11, 2015

Turbine Operation

Units are operating within the hard constraint 1% operational criteria. Unit 2 was out of service from 0930 to 1319 hours on June 11 to replace the ESBS in slot 2C.

Adult Fish Passage Facility

The adult fishway was inspected by Corps or Blue Leaf Environmental biologists on June 7, 9, 10, and 11.

Fish Ladder: Fish ladder exit head differential and depth over the weirs were in criteria (≤0.5' and 1.0-1.3', respectively) on all inspections. Picketed lead head differential was in criteria (≤ 0.3') on all inspections.

Fishway Entrances and Collection Channel: SSE1 and SSE2 weir gates were in depth criteria (criteria ≥8' or on sill) on all inspections with the exception of SSE1 and SSE2 weir depth readings of 7.8 feet and 7.9 feet on June 7, respectively. South shore channel/tailwater head differential was in criteria (criteria 1'-2') on all inspections.

NPE1 and NPE2 weir gates were in sill criteria (criteria ≥8' or on sill) on all inspections. While on sill, the weir gate depth readings were 4.7', 5.5', 5.1' and 5.3 feet. North powerhouse channel/tailwater head differential was in criteria (criteria 1'-2') on all inspections.

NSE1 remains in the closed position. NSE2 is set with a chain fall hoist at 626.0 feet. NSE2 was in depth criteria (criteria ≥7' or on sill) on all inspections with the exceptions 6.8 feet and 6.9 feet readings on June 7 and June 10, respectively. The north shore channel/tailwater head differential was out of criteria (criteria 1'-2') on all inspections with readings of 0.9', 0.8', 0.9' and 0.8 feet. All readings were taken from the electronic display on the FSC board due to the north shore access elevator being out of service.

The collection channel velocity was out of criteria (criteria 1.5-4.0 fps) on all inspections with readings ranging from 1.0 - 1.1 fps and a weekly average of 1.1 fps. Alternative methods of measuring collection channel velocity are being investigated for installation as part of the adult fish ladder control system upgrade.

Auxiliary Water Supply System: The fish ladder is in two AWS pump operation with pumps 1 and 2 in service.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Forebay debris varied with wind strength and direction. Daily gatewell surfaces inspections continue with floating debris being removed by hand basket to prevent orifice blockages. No oil was reported in gatewell slots.

ESBSs/VBSs: The screen cleaner motor for the ESBS in slot 2C failed at 0930 hours on June 11. The screen was swapped with the spare ESBS and screen operations in slot 2C resumed at 1319 hours the same day. The next video inspections are scheduled for late June.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed every three hours.

Collection Facility: Collection for transport continues.

Transport Summary: Every other day barge transport is occurring with barges departing on odd numbered days.

River Conditions

Routine spring spill in support of fish passage is in progress. 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
55.8	46.7	20.3	20.1	65.0	61.0	4.3	1.7

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were last inspected May 28.

Invasive Species: No evidence of zebra/quagga mussel was observed May 3.

Avian Activity: Hazing activities began April 1. Piscivorous bird observation counts are taken from the juvenile fish separator platform one hour after sunrise and one hour before sunset. Maximum piscivorous bird counts are summarized in Table 2 below. Pelicans have been observed foraging in the Lower Granite tailrace since May 11. Though pelicans are not included in the table below, 35 or more are frequently observed foraging in the tailrace and an additional 15-20 have been observed resting on the sand island downstream from Boyer Park.

Table 2. Daily maximum tailrace piscivorous bird counts at Lower Granite Dam.

Date	Time (hours)	Gulls	Cormorants	Terns
June 5	1930	15	0	0
June 6	1930	16	0	0
June 7	1930	4	0	0
June 8	1945	7	0	0
June 9	1945	3	0	0
June 10	1945	1	0	0
June 11	0600	4	0	0

Adult Fish Trap Operations: The adult fish trap is operating at a sample rate of 15% Monday through Friday.

Fish Rescue Operation: No fish rescue occurred.

Research

Idaho Fish and Game (IDFG) Genetic Stock Identification: This study aims to enumerate and characterize natural production of yearling Chinook and juvenile steelhead above LGR with regards to age composition and genetic stock profiles. IDFG will sample Monday through Friday through mid June with a goal of collecting 2,000-5,000 genetic samples from yearling Chinook and juvenile steelhead.

Nez Perce Tribe (NPT)/U. of Idaho (UI)/Columbia River Intertribal Fisheries Commission (CRITFC) – Kelt Study: NPT began steelhead kelt collection March 29. This research project investigates steelhead kelt physiology and endocrinology to evaluate the feasibility and success of rehabilitating strategies. NPT will transport up to 150 kelts to the Dworshak National Fish Hatchery as part of this study.

National Marine Fisheries Service (NMFS) In-River Survival: NMFS staff has begun 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 2014 in natal streams and are diverted to the Sort-By-Code tanks at LGR.