U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#09-2015

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: April 24 - 30, 2015

Turbine Operation

McNary had 12 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 – Oct 9	About 8 months.	Rewind contract.
11	Apr 26	4.0 hours.	Servo pump motor tripped/oil leak.
8	Apr 27 – 30	85.1 hours.	Replace thrust bearing drip pan.
6	Apr 28	3.7 hours.	Examine tripping issue from Apr 15.

Adult Fish Passage Facilities

The McNary fisheries biologist performed measured inspections of the adult fishways on April 24, 26 and 28. Visual adult fish counts continued.

Fish Ladder Exits: Both ladder exits met all Fish Passage Plan (FPP) criteria. Debris loads in the area of the exits were minimal. The general maintenance staff cleaned the picketed leads as required. Attempts to expand the local area network (LAN), in order to install a second computer at the count stations, continued.

The air lines to the Washington ladder count station were repaired on April 24 (compressed air powers the count and viewing window cleaning brushes).

The Oregon ladder exit set points were adjusted on April 24 and 26. Additional overhead lighting was added at the picketed lead and nearby walkway areas this spring. Operators are now able to remotely observe the picketed leads at night from the control room.

Fishway Entrances and Collection Channel: All entrance inspection points met criteria except April 24 as described below.

At 1015 hours, facility staff noted that the Oregon entrance weirs, NFEW2 and NFEW3 were raised out of the water. FPP criterion is 8.0+ feet below tailwater elevation or on sill. There was about 4 feet of head on upstream side of the weirs. Pool differential criterion is 1.0 to 2.0 feet. The closed entrances forced flow towards the south in the collection channel and out the floating orifices. The collection channel velocity at the south where northern and southern auxiliary water met was nearly zero. The "stacked" water resulted in a south entrance pool differential of 3.0 feet.

The operator found NFEW1 had been activated. NFEW1 is normally raised and used only as a backup entrance, When operational, NFEW1 became the master weir, resulting in the raising and closure of entrance weirs NFEW2 and NFEW3, creating a blockage.

The operator returned NFEW1 to the normal out of service status and then tried to manually lower the the other 2 weirs from the control room. Due to the water head pressure, the weirs did not move.

From 1155 to 1225 hours, fish pumps 1 and 3 had their blade angles reduced to zero degrees. Once the head pressure was reduced, NFEW2 and NFEW3 were lowered and returned to automatic operation.

On the night of April 23 (prior to the morning of the April 24), an operator may have inadvertently activated NFEW1. The ladder may have been out of criteria for up to 18 hours.

On April 27, the electrical staff reprogrammed the control system so NFEW1, when operational, would no longer be the master weir. They also found that the alarm system had inadvertently been left off after winter or scheduled maintenance. The alarm system was reactivated. This should eliminate the possibility of this happening again.

Flow volume at the open entrances was high. Conversations with the fish counters suggested the following: April 25 morning counts on the Washington ladder are lower than on April 24. This suggest while the Oregon ladder was out of criteria, some Chinook salmon transitioned to the Washington ladder. The Oregon ladder counts were higher in the afternoon on April 24 than the morning counts after entrance set points were reestablished. April 25 morning counts on the Oregon shore were higher than on April 24. This suggests that there was some possible delay for Chinook entering the Oregon ladder on the morning of April 24. However, the afternoon counts for both days were about the same on the Oregon ladder, which would suggest very little delay. Examination of the Portland District Adult Fish Count website shows a gradual increase in spring Chinook numbers for both ladders from April 23 to 25, which suggest very little delayed passage.

Collection channel surface velocities averaged 1.7 feet per second for April 26 and 28.

The Washington ladder entrance pool differential was 0.8 feet on April 24. Both entrance weirs were moving excessively. The pool elevation sensor required calibration, which was completed on April 27.

Auxiliary Water Supply System: The Wasco County Public Utility District (PUD) turbine in Washington ladder unit had no interruptions in service. Two of the three Oregon ladder fish pumps operated satisfactorily with blade angles of 30 degrees with one interruption in service as mentioned above. From 1155 to 1225 hours on April 24, both pumps had their blade angles reduced to zero. 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 this week. Secondary bypass occurred on April 24, 26, 28 and 30. No juvenile lamprey and 98,601 smolts were bypassed.

Forebay Debris/Gatewell Debris/Oil: The forebay debris load remained light to minimal and generally centered on the powerhouse except when northeast winds would temporarily move it toward the Oregon shore. There was minimal incoming debris. No high trash rack differentials were recorded and no trash racks were cleaned. No problems were observed in the gatewell slots. Several piece of woody debris were removed this week.

ESBSs/VBSs: All operational turbine units have extended-length submersible bar screens (ESBSs) installed. Screens were not installed at unit 12 as this unit is out of service. The first ESBS camera inspections will occur on May 5.

Rehabilitation of vertical barrier screens (VBSs) continued. No high VBS differentials were recorded and no VBSs were cleaned.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: Forty two orifices were in use, with no issues to report. The fisheries staff continued to operate the transition screen cleaner on day shifts, Monday through Thursday.

Bypass Facility: During the bypass season, primary and secondary bypass modes return all fish are to the river. PIT tag detection occurs in the full flow pipe during primary bypass and throughout the facility during secondary bypass. Smolt monitoring occurs 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. 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. One or two sticks were removed from the junction where the sample raceway release and the secondary bypass lines meet on April 25, 27 and 29. No injured fish were seen.

For approximately 15 years, an experimental bar screen drain has been installed between the porosity unit perforated plate and the separator. Debris has been noted to accumulate in this bar screen even though the drain valve is closed and has not been in use. The fisheries mechanics filled the bar screen with silicone on April 29. This may help to reduce descaling. We will remove the drain and replace the bar screen with a solid plate next winter maintenance season.

The fisheries mechanics repaired an air leak on the west raceways release line manifold valve and replaced the raceway 8 back flush valve oil reservoir on April 30.

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 with both top spillway weirs (TSWs) opened. Forty percent of river flow is the spill requirement during the spring season. The spill pattern was altered for navigation as required.

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
168.7	140.3	67.4	56.3	54.1	50.5	6.0	6.0

*****Control room data.

Other

Inline Cooling Water Strainers: The next cooling water strainer examination will occur on May 5.

Invasive Species: The zebra mussel station examinations revealed no problems on April 24.

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

Grebes were observed in the forebay in low numbers along with an occasional gull, cormorant, loon or osprey. Gulls, pelicans and cormorants were roosting on the rocks by the Washington shore boat dock, which is outside the forebay zone. No grebes were observed in the gatewell slots or in the juvenile bypass system.

Gulls were observed in the tailwater area feeding at the southern edge of the spillway flow. An occasional pelican, flock of pelicans or cormorant was occasionally observed. Gulls along with an occasional cormorant or pelican were noted feeding at the juvenile bypass outfall.

Bird hazing distress calls remain deployed around the project and the bird hazing water cannon continued to function satisfactorily. The pump timer was manually set on April 27 and 28 to insure the sprinkler would be functioning during day light hours. The electrician noted that the timer wires were crossed so that "on was off" and "off" was on". The sprinkler was briefly out of service each day while the electrician set the timer.

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. The boat will be used on Monday, Wednesday and Friday each week. Limited lethal take of gulls and cormorants will begin next.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
Apr 24	Forebay	2	1	0	0	4
	Spill	147	2	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	22	0	0	3	0
Apr 25	Forebay	1	0	0	0	0
	Spill	139	1	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	13	0	0	0	0
Apr 26	Forebay	0	0	0	0	2
	Spill	33	0	0	10	0
	Powerhouse	0	0	0	0	0
	Outfall	8	0	0	0	0
Apr 27	Forebay	0	0	0	0	4
	Spill	72	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	2	0	0	0	0
Apr 28	Forebay	1	1	0	0	4
	Spill	60	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	5	4	0	0	0
Apr 29	Forebay	0	0	0	0	6
	Spill	65	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	10	0	0	0	0
Apr 30	Forebay	0	0	0	0	1
	Spill	74	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	5	0	0	0	0

Research: Gas bubble trauma (GBT) examinations continued. The fisheries mechanics repaired the GBT flush water supply line on April 28. Preparations for the adult lamprey passage study will begin next week.

Project: Ice Harbor
Biologist: Ken Fone
Dates: April 24 - 30, 2015

Turbine Operation

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

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on April 27, 28, 29, and 30.

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 on all inspections. The north shore entrance (NSE) depth and channel/tailwater differential were in 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: Inspection of each unit's STSs occurred on April 21and 23. Inspection of VBSs in slots 1B and 1C occurred on April 23. No screen problems were observed.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The bypass is operating with 20 orifices open.

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

Fish Sampling: Sampling days continued to alternate between Mondays and Wednesdays, to Tuesdays and Thursdays, each week. Sampling occurred on April 28 and 30. Sampling results are outlined in Table 1 below. There was an increase in the number of descaled fish observed in the sample on April 30. Fish facility personnel will continue to inspect fish passage routes for possible causes.

Table 1. Fish condition sampling results at Ice Harbor Dam

April 28:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	28	0	0	0
UC-CH	26	1	0	0
C-CH-O	0	---	---	---
UC-CH-O	0	---	---	---
C-SH	79	2	0	2
UC-SH	2	1	0	0
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
TOTAL	135	4	0	2

April 30:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	9	3	0	1
UC-CH	4	2	0	1
C-CH-O	0	---	---	---
UC-CH-O	0	---	---	---
C-SH	103	10	0	3
UC-SH	3	0	0	0
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
TOTAL	119	15	0	5

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

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
55.8	47.0	45.2	36.9	52	50	7.3	6.4

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Turbine cooling water strainer inspections occurred on April 21 and 23. The fish (all mortalities) found were 1 juvenile steelhead, 5 juvenile lamprey, 3 Siberian prawns, and 1 sandroller.

Invasive Species: No new exotic species have been found.

Avian Activity: Daily total bird numbers observed this week (Table 3) were similar to 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 hazing of piscivorous birds for 8 hours per day began on April 1, and increased to 16 hours per day on April 12. Additionally, boat-based hazing for 8 hours per day, 3 days per week, began the week of April 12, and increased to 5 days per week beginning the week of April 26. The hazing program has 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
April 24	21	45	0	0	14
April 25	31	55	0	0	8
April 26	15	34	0	0	5
April 27	0	23	0	0	0
April 28	1	18	0	0	0
April 29	23	9	0	0	5
April 30	12	19	0	0	0

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

Project: Lower Monumental
Biologists: Bill Spurgeon and Raymond Addis
Dates: April 24 - 30, 2015

Turbine Operation

The units are being operated in hard constraint of the 1% operation 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 April 24, 25, 26 and 29.

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 5.5 to 6.4 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 5.9 to 6.8 feet. SSE2 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, 2, and 3 were operated throughout this period.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 2.5 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-30% surface coverage.
No problems observed in gatewells.

STSs/VBSs: STSs are operating in cycle mode.

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

Collection Facility: Every other day, twenty-four hour condition sampling took place on April 24, 26, 28 and 30. Collection for transport is scheduled to begin at 0700 hours on May 1.

Transport Summary: No transport. The first barge is scheduled to depart on May 2.

River Conditions

Spring spill operations were initiated at 0001 hours on April 3. 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
54.6	47.0	28.0	26.1	52.5	51	4.0	4.0

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on April 8. In all, 1 live lamprey was recovered. Mortalities included 26 juvenile lamprey and 1 juvenile steelhead.

Invasive Species: No zebra mussels were observed at the monitoring stations on April 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. Hazing met the standard from the avian action plan through this time period.

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

Date	Time (hours)	Gulls	Cormorants	Terns	Pelicans
April 24	1100	4	0	0	0
April 25	1100	6	0	0	0
April 26	1100	0	0	0	0
April 27	1100	3	0	0	0
April 28	1100	0	0	0	0
April 29	1100	0	0	0	0
April 30	1110	4	1	0	0

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

Project: Little Goose
Biologist: Richard Weis
Dates: April 24 - 30, 2015

Turbine Operation

All turbine units were available for service throughout this report period. Hard constraint 1% peak efficiency criteria are in effect. No violations were seen.

Adult Fish Passage Facility

Adult fishway inspections were performed on April 24, 27 and 30.

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 held steady at 1.2 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 system is in manual mode. Channel to tailwater head differentials ranged between 1.1 and 2.1 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 7.6 and 9.2 feet and are on sill (criteria $\geq$ 8.0 ft). NPE weir depths ranged between 4.4 and 5.8 feet and is on sill (criteria $\geq$7.0 ft. or on sill). NSE weir depths ranged between 5.9 and 6.9 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured at the North powerhouse ranged between 1.8 and 1.9 fps (criteria 1.5 to 4.0 fps). The monthly April water velocity measured at the north powerhouse using the Rickly velocity equipment measured 1 foot from bottom, mid depth and surface averaged 2.6fps.

Auxiliary Water Supply System: Fish pumps 2 and 3 operated as designed. Fish pump 1 gear box was rebuilt and has been sitting on the third floor ready for installation.

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 estimated between 10 to 100 square feet.

Spillway Weir: The spillway weir was placed back in service April 2 at 1530 in the High Crest position.

ESBS/VBS: ESBSs are all deployed and gatewells are clean. Drawdown measurements were conducted on April 30 on units 1 and 2. Both units met criteria.

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

Transportation Facility: The JFF is currently sampling every other day and is in secondary by-pass. GBT (Gas Bubble Trauma) sampling was performed on April 27 and no signs of trauma were seen.

Transport Summary: Fish collection for transport will begin on May 1. The first barge leaves Little Goose on May 2.

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
54.8	45.0	16.4	13.4	53.8	51.7	5.0	4.4

*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 April 2. No zebra mussels were detected. Next inspection is scheduled for May 4.

Avian Activity: Bird counting and hazing resumed on April 1. See chart below for details.

Table 2. Little Goose Dam Tailrace Counts of Foraging Piscivorous Birds.

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
April 24	1600	10	0	0	0
April 25	0715	18	12	0	0
April 26	1400	35	1	0	0
April 27	1400	34	5	0	0
April 28	1430	12	1	0	0
April 29	1515	11	4	0	0
April 30	1430	26	8	0	0

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

Project: Lower Granite
Biologists: Elizabeth Holdren and Ches Brooks
Dates: April 24 - 30, 2015

Turbine Operation

Units are operating within the hard constraint 1% criteria. Units were rotated out of service on April 24 and 25 for ESBS/VBS inspections. Unit 2 was forced out of service at 0924 hours April 26 for VBS repair in slot 2A.

Adult Fish Passage Facility

The adult fishway was inspected by Corps or Blue Leaf Environmental biologists on April 24, 25, 26, 27, 28, and 29.

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 a 7.9 feet reading April 28. South shore channel/tailwater head differential was in criteria (criteria 1'-2') on all inspections with the exception of a 0.9 feet reading April 28.

NPE1 and NPE2 weir gates were in sill criteria (criteria ≥8' or on sill) on all inspections. While on sill, the weir gate depths reading were 5.2', 4.9', 5.1', 5.3', 5.0', and 5.4 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 except for two 6.8 feet readings April 25 and April 28. North shore channel/tailwater head differentials were in criteria (criteria 1'-2') on inspections with the exception of a 0.9 feet reading April 27 and a 0.5 feet reading on April 29. The out of criteria observations were likely due to wind and spill generated wave action creating tailrace conditions that effect staff gauge reading accuracy. Monitoring will continue.

Collection channel velocity was out of criteria (criteria 1.5-4.0 fps) on all inspections with readings ranging from 0.9 - 1.2 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 ladder is in two pump operation with AWS pumps 1 and 3 in service. Operation of AWS pump 1 motor in "fast speed" mode trips the overload safety relay during low tailwater conditions. Pump 2 is out of service for lower guide bearing repairs.

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: Video inspections occurred April 24 - 25. During the April 25 inspections two tears were observed in lower section of the VBS in slot 2A. Repairs on VBS in slot 2A were completed on April 30. The power cord for the ESBS in slot 2A was damages when the screen was removed for VBS repair. The screen was repaired and installed the next day. Removal of woody debris observed in a metal retaining strap on the VBS in slot 3B is being scheduled for next week.

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

Collection Facility: The juvenile facility operated in secondary bypass mode. Daily collection for condition sampling continues.

Transport Summary: Everyday barge transport is scheduled to start May 2.

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
55.5	47.7	20.4	20.2	52.4	52.1	5.0	4.4

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainers were inspected on April 27. No live lamprey were recovered. Mortalities included 37 juvenile lamprey, 7 juvenile salmonids and 1 sandroller. The next inspections are scheduled for late May.

Invasive Species: The zebra/quagga mussel observation station was last examined April 4. The next inspection is scheduled for early May.

Avian Activity: Hazing activities began April 1. Piscivorous bird counts began March 26 with observations being 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.

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

Date	Time (hours)	Gulls	Cormorants	Terns
April 24	1840	4	0	0
April 25	0700	3	0	0
April 26	0700	1	0	0
April 27	1840	0	0	0
April 28	0700	3	0	0
April 29	1900	8	0	0
April 30	0640	3	1	0

Adult Fish Trap Operations: The adult fish trap is operating at a sample rate of 11% Monday through Friday with an average weekly sample rate of 8%.

Gas Bubble Trama: PSMFC personnel conducted GBT examinations on April 30.

Fish Rescue Operation: No fish rescues occurred this week.

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 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.