U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#10-2015

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: May 1 - 7, 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.
4	May 4	5.3 hours.	Mechanical and electrical adjustments.
13	May 4 – 5	27.7 hours.	Replaced governor discharge valve.
11 & 14	May 5	2.2 hours total.	Extended-length submersible bar screen (ESBS) camera inspections.
6	May 6	5.2 hours.	Hub tapped.

Adult Fish Passage Facilities

The McNary fisheries biologist performed measured inspections of the adult fishways on May 1, 4 and 7. Visual adult fish counts continued.

The adult lamprey passage research group examined the Oregon ladder south powerhouse entrance, meeting with district and operating project personnel on May 7. The main discussion point was future coordination of research needs with the fish pump 2 contract obligations.

Fish Ladder Exits: Both ladder exits met all Fish Passage Plan (FPP) criteria. Debris loads in the area of the exits were generally minimal. A brief light debris influx occurred along the Oregon shore on May 1.

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

At the Washington ladder entrance, the control system panel view back light would not activate on May 4. The electrical staff resolved the issue the next day.

At the Oregon ladder north powerhouse entrance, the pool elevation sensor was found out of calibration on May 7. The electrical staff resolved the issue.

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 this week. Secondary bypass occurred on May 2, 4, and 6. Although 502,012 smolts were bypassed this week, no juvenile lamprey were bypassed.

Forebay Debris/Gatewell Debris/Oil: The forebay debris load remained light and generally centered on the powerhouse except when northeast winds would temporarily move it toward the Oregon shore. Incoming debris was very light.

No high trash rack differentials were recorded and no trash racks were cleaned. The general maintenance staff will clean trash racks next week.

No problems were observed in the gatewell slots. Several piece of woody debris were removed this week.

ESBSs/VBSs: All operational turbine units have ESBSs installed. Screens were not installed at unit 12 as this unit is out of service. The operator found the ESBS cleaning brush "short cycling" in slot 14A on May 4. "Short cycling" occurs when the cleaning brush prematurely reverses direction before reaching the end of the screen. Screen cleaner travel was recalibrated. The ESBS camera inspections at units 11, 13 and 14 revealed no problems on May 5.

Rehabilitation of vertical barrier screens (VBSs) continued. No high VBS differentials were recorded. The VBSs in slots 1A, 1B, 7A and 7B were cleaned on May 7. The fisheries staff observed 34 smolt mortalities. No juvenile lamprey were observed on the VBSs.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: Forty two orifices were in use. The south orifice valve actuator air exhaust ports were replaced in slot 8C. During VBS cleaning operations, orifices in the affected slots were closed with makeup water coming from orifices in adjacent slots.

The rectangular screen cleaner jammed on woody debris, triggering a timing alarm on May 3. The fisheries technician removed the device from automatic operation. The technician manually operated the electronic controls and returned the cleaner to the parked position. Afterwards, the device continued to operate soundly in automatic mode.

The fisheries staff began to operate the transition screen cleaner twice a day on May 5. The cleaner latch pin did not fully insert when the device parked, causing a timing alarm later that day. The latch pin inserted later when a powerhouse mechanic manually operated the electronic controls. The mechanic adjusted, lubricated and added a counter weight to the pin on May 6.

A powerhouse mechanic repaired the air hoist by unit 8 on May 4. This hoist is used to lift the emergency bypass floor panels in and out of the channel.

Bypass Facility: During the bypass season, primary and secondary bypass modes return all fish 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.

A fisheries mechanic repaired an air leak at the primary bypass gate actuator on May 4.

River Conditions

River conditions during the week are outlined in Table 2 below as provided by the smolt monitor 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 spilled in 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
191.5	143.7	76.8	57.6	55.1	53.7	6.0	6.0

*Control room data.

Other

Inline Cooling Water Strainers: The cooling water strainer examinations on May 5 are outlined in Table 3 below. The smolt mortalities were all yearling Chinook. Five were clipped. Unit 8 did not have strainers installed. The mechanics immediately reinstalled the strainers. Unit 12 was out of service.

Table 3. Cooling Water Strainer Examination Results.

Unit	Live Lamprey	Lamprey Mortalities	Live Smolts	Smolts Mortalities
1	0	0	0	4
2	0	2	0	0
3	0	0	0	0
4	0	0	0	0
5	0	1	0	0
6	0	0	0	0
7	0	0	0	1
8	NA	NA	NA	NA
9	0	0	0	1
10	0	0	0	0
11	0	0	0	0
12	NA	NA	NA	NA
13	0	2	0	0
14	0	0	0	2
Total	0	5	0	8

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

Avian Activity: Avian counts are recorded in Table 4 below.

Gulls were observed in the forebay feeding and roosting along with an occasional group of grebes, a blue heron or an osprey. The gulls appear to be attracted by the large number of smolts in the forebay. 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 or cormorant was observed. Gulls along with an occasional cormorant were noted feeding at the juvenile bypass outfall. A large flock of pelicans was observed in the wildlife park on May 4.

Bird hazing distress calls remain deployed around the project and the bird hazing water cannon continued to function satisfactorily.

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 week.

Table 4. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
May 1	Forebay	1	0	0	0	2
	Spill	16	0	0	2	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
May 2	Forebay	2	0	0	0	6
	Spill	17	1	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	13	0	0	0	0
May 3	Forebay	2	0	0	0	0
	Spill	62	1	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	5	0	0	0	0
May 4	Forebay	15	0	0	0	0
	Spill	24	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	2	1	0	0	0
May 5	Forebay	23	0	0	0	0
	Spill	67	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	8	0	0	0	0
May 6	Forebay	3	0	0	0	0
	Spill	45	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	5	0	0	0	0
May 7	Forebay	5	0	0	0	0
	Spill	120	2	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	4	0	0	0	0

Research: Gas bubble trauma (GBT) examinations continued. Preparations for the adult lamprey passage study began this week.

Project: Ice Harbor
Biologist: Ken Fone
Dates: May 1 - 7, 2015

Turbine Operation

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

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on May 4, 5, 6, and 7.

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 21 and 23. Inspection of 1B and 1C VBSs 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. Orifices were routinely cycled and back-flushed three times per day.

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

Fish Sampling: Sampling days will alternate from Monday and Wednesday, to Tuesday and Thursday, each week. Sampling occurred on May 4 and 6. Sampling results are outlined in Table 1 below. There was an increase in the number of descaled fish observed in the sample on May 6. Fish facility personnel will continue to inspect fish passage routes for possible causes.

Table 1. Fish condition sampling results at Ice Harbor Dam

May 4:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	4	2	0	0
UC-CH	2	0	0	0
C-CH-O	0	---	---	---
UC-CH-O	0	---	---	---
C-SH	92	4	0	3
UC-SH	7	0	0	1
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
TOTAL	105	6	0	4

May 6:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	12	0	0	0
UC-CH	12	1	0	0
C-CH-O	0	---	---	---
UC-CH-O	0	---	---	---
C-SH	85	9	0	3
UC-SH	24	2	0	3
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
TOTAL	133	12	0	6

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
68.1	53.1	50.1	42.8	55	52	6.8	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 land-based hazing of piscivorous birds occurred for 16 hours per day. Additionally, concurrent boat-based hazing took place for 8 hours per day, 5 days per week. 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
May 1	12	36	0	0	7
May 2	16	37	0	0	0
May 3	43	42	0	0	0
May 4	11	9	0	0	0
May 5	17	22	0	0	0
May 6	14	22	0	0	3
May 7	8	26	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: May 1 - 7, 2015

Turbine Operation

The units are being operated within the hard constraint 1% 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. Units 2 through 6 were rotated out of service for STS inspections on May 5 and 6.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and Blue Leaf Environmental biologists on May 1, 2, 3 and 6.

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 6.1 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 6.0 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 8.25 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-25% surface coverage. No problems were observed in the gatewells.

STSs/VBSs: STSs are operating in cycle mode. STS inspections were conducted May 5 and 6 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: Collection into raceways for transport began at 0700 hours on May 1.

Transport Summary: Every-day barging began on May 2.

River Conditions

Spring spill operations in support of fish passage was 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
65.2	51.1	26.0	23.0	55.0	54.0	4.5	3.5

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on May 6. There were no live fish recovered. Mortalities included 12 salmonid smolts and 1 Siberian prawn.

Invasive Species: No zebra mussels were observed at the monitoring stations on May 3.

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 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
May 1	1100	4	0	0	0
May 2	1100	0	0	0	0
May 3	1100	0	0	0	0
May 4	1100	0	0	0	0
May 5	1100	0	0	0	0
May 6	1100	0	0	0	0
May 7	1110	0	0	0	0

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

Project: Little Goose
Biologist: Richard Weis
Dates: May 1 - 7, 2015

Turbine Operation

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

Adult Fish Passage Facility

Adult fishway inspections were performed on May 03 and 07.

Fish Ladder: The ladder exit head differentials held steady at ranged between 0.0 feet (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 control system is in manual mode. Channel to tailwater head differentials ranged between 0.7 and 2.2 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.0 and 8.9 feet (criteria $\geq$ 8.0 ft). NPE weir depths ranged between 4.3 and 4.6 feet and was on sill (criteria $\geq$7.0 ft. or on sill). NSE weir depths ranged between 6.5 and 7.1 feet and was on sill (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured at the North powerhouse ranged between 2.0 and 3.0 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 2.6 fps.

Auxiliary Water Supply System: Fish pumps 2 and 3 operated as designed. The fish pump 1 gear box has been rebuilt and is waiting on parts to allow the rebuilt gear box to be set into place.

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 0 to 20 square feet.

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

ESBS/VBS: ESBS screens are all deployed and gatewells are clean. VBS video inspections were performed on units 5 and 6 on May 4 and unit 4 on May 5. No problems were seen.

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 day. GBT (Gas Bubble Trauma) sampling was performed on May 4 and no signs of GBT were seen.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 299,608 fish were collected for transport. The descaling and mortality rates were 1.0% and 0.03% respectively. This weekly report period saw 1 adult lamprey removed from sample and released in the tailrace.

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
64.9	52.1	19.4	15.0	54.9	54.2	5.2	4.6

*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.

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

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

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
May 1	1000	8	4	0	0
May 2	1230	113	6	0	0
May 3	1600	35	0	0	0
May 4	1530	91	0	0	0
May 5	0800	66	4	0	0
May 6	0803	56	2	0	0
May 7	0800	60	0	0	0

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

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

Project: Lower Granite
Biologists: Elizabeth Holdren and Ches Brooks
Dates: May 1 - 7, 2015

Turbine Operation

Units are operating within the hard constraint 1% criteria. Unit 2 returned to service at 0927 hours April 1 following VBS repair in slot 2A. Unit 3 was out of service from 0601 hours May 4 until 1535 hours May 5 for debris removal and repair of the VBS in slot 3B.

Adult Fish Passage Facility

The adult fishway was inspected by Corps or Blue Leaf Environmental biologists on May 1, 2, 3, 5, 6, and 7.

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. 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 depths reading were 5.3', 5.4', 5.4', 5.6', 5.8', and 5.6 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. North shore channel/tailwater head differentials were in criteria (criteria 1'-2') on all inspections. Monitoring will continue.

Collection channel velocity was out of criteria (criteria 1.5-4.0 fps) on all inspections with readings ranging from 1.0 - 1.2 fps, the weekly average being 1.1 fps. Alternative methods of measuring collection channel velocity are being investigated for installation as part of the pending 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. The ESBS in slot 2A was returned to service on May 1 following power cord repair of damage that occurred during slot 2A ESBS removal. Removal of woody debris observed on the VBS in slot 3B metal retaining strap was completed May 4 – 5. The next inspections are scheduled for late May.

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

Collection Facility: Collection for fish transport continues.

Transport Summary: Daily barge transport is occurring.

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
67.2	52.6	20.3	20.0	53.0	52.0	5.0	4.7

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: The next inspections are scheduled for late May.

Invasive Species: The zebra/quagga mussel observation station was examined May 3. No evidence of zebra/quagga mussels was found.

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
May 1	1900	1	0	0
May 2	1900	8	0	0
May 3	1900	0	0	0
May 4	1900	0	0	0
May 5	0640	5	0	0
May 6	1900	0	0	0
May 7	0630	1	0	0

GBT: PSMFC personnel conducted gas bubble trauma (GBT) examinations on May 7.

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%.

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 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.