U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#13-2015

Project: McNary
Biologist: Bobby Johnson
Dates: May 22 - 28, 2015

Turbine Operation

McNary had 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.
1 & 3	May 26	1.4 hours.	Trash rack cleaning.

Adult Fish Passage Facilities

The McNary fisheries biologist performed measured inspections of the adult fishways on May 22, 24 and 26. Visual adult fish counts continued. The adult lamprey passage structure at Oregon powerhouse entrance, SFEW2, will be opened on June 1.

Fish Ladder Exits: Both ladder exits met all Fish Passage Plan (FPP) criteria. Debris loads in the area of the exits were generally minimal with only brief influxes. At the Washington ladder exit, the operators reset regulating weir alarms on May 22 and 24. They adjusted the exit set points on May 26.

Fishway Entrances and Collection Channel: All entrance inspection points met criteria. Collection channel surface velocities averaged 1.7 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 this week.

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 May 22, 24, 26 and 28. This week, 600 juvenile lamprey and 98,102 smolts 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. This week, descaling rates ranged from 6.8 to 9.5 percent. Trash racks were cleaned at unit 1 along with slots 3A and 3B on May 26. Approximately, three cubic yards of debris was removed. No fish mortalities were observed.

No problems were observed in the gatewell slots.

ESBSs/VBSs: All operational turbine units have ESBSs installed. Screens were not installed at unit 12 as this unit is out of service. ESBS camera inspections did not occur due to trash rack cleaning.

Rehabilitation of vertical barrier screens (VBSs) continued. No high VBS differentials were recorded. The VBSs in unit 1 were cleaned on May 26 and 28. The general maintenance staff also removed sponge from the downstream side of the screens. The fisheries staff observed seven smolt mortalities.

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

All systems functioned satisfactorily in automatic mode. This week, the fisheries staff removed loose items from the abandoned orifice traps at units 4 and 5.

The fisheries mechanics noted paint peeling off the upstream exterior of the bypass pipe on May 26. The paint is missing near the pipe end, over the water.

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. One stick was removed from the junction where the sample raceway release and the secondary bypass lines meet on May 22. We observed no injured fish.

This week, the fisheries mechanics began replacing the shop counter tops.

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 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
221.6	203.9	88.9	81.5	61.3	58.3	6.0	6.0

*Control room data.

Other

Inline Cooling Water Strainers: Inline cooling water strainer examinations will occur on June 2.

Invasive Species: The zebra mussel station examinations revealed no problems on May 22.

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

Grebes in increasing numbers were observed in the forebay along with an occasional gull, cormorant, night heron or osprey. Gulls, pelicans and cormorants were roosting on the rocks by the Washington shore boat dock, which is outside the forebay zone. One grebe was removed from 4B gatewell slot on May 23. Forebay area hazing does not occur during tailwater area boat hazing. The lack of consistent hazing has allowed the grebes to establish themselves closer to the intake deck. The United States Department of Agriculture – Animal and Plant Health Inspection Service – Wildlife Services (USDA–APHIS–WS) has been asked to increase grebe hazing. Gulls were observed in the tailwater area feeding at the southern edge of the spillway flow along with an occasional cormorant or pelican. Pelicans were also observed along the Oregon shore in the evenings. Gulls and an occasional cormorant or pelican were noted feeding at the juvenile bypass outfall. The fisheries staff reinstalled bird wire on the outfall pipe and installed new bird wire on the outfall walkway handrail from May 26 to 28. This should deter gulls from roosting.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
May 22	Forebay	0	0	0	0	21
	Spill	210	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	15	0	0	0	0
May 23	Forebay	0	0	0	0	50
	Spill	150	2	0	3	0
	Powerhouse	0	0	0	0	0
	Outfall	1	0	0	0	0
May 24	Forebay	3	0	0	0	36
	Spill	122	0	0	2	0
	Powerhouse	0	0	0	0	0
	Outfall	10	0	0	0	0
May 25	Forebay	1	0	0	0	18
	Spill	200	2	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	12	1	0	1	0
May 26	Forebay	1	1	0	0	130
	Spill	44	1	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	3	0	0	1	0
May 27	Forebay	3	0	0	0	144
	Spill	35	1	0	2	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
May 28	Forebay	2	0	0	0	85
	Spill	55	2	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	0	2	0	1	0

Bird hazing distress calls remain deployed around the project and continued to function satisfactorily. From May 25 at 0730 hours to May 26 at 0900 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 on May 26. They also removed a small stone from one of two sprinkler heads. The intake was again cleaned on May 28. 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 continued.

Research: Gas bubble trauma (GBT) examinations continued. The GBT release line supply pump was primed on May 22 after the pump had been left on overnight. Preparations for the adult lamprey passage study also continued.

Project: Ice Harbor
Biologists: Ken Fone and Charlie Dennis
Dates: May 22 - 28, 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 May 26, 27, and 28.

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. 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 May 19 and 21. Inspection of VBSs in unit 3 and slot 1A 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.

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

Fish Sampling: Sampling days continued to alternate from Mondays and Wednesdays, to Tuesdays and Thursdays, each week. Sampling occurred on May 26 and 28. Sampling results are outlined in Table 1. The descaling rate was 1% and 5% on May 26 and May 28, respectively, which is a decrease from last week. Fish facility personnel will continue to inspect fish passage routes for possible causes of descaling.

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.

May 26:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	5	0	0	0
UC-CH	3	0	0	0
C-CH-O	2	0	0	0
UC-CH-O	4	0	0	0
C-SH	59	1	0	3
UC-SH	32	0	0	2
C-COHO	1	0	0	1
UC-COHO	3	0	0	0
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	0
TOTAL	109	1	0	6

May 28:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	11	0	0	0
UC-CH	5	0	0	0
C-CH-O	0	---	---	---
UC-CH-O	1	0	0	0
C-SH	98	5	0	4
UC-SH	26	2	1	2
C-COHO	0	---	---	---
UC-COHO	2	0	0	0
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
TOTAL	143	7	0	6

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
68.8	62.8	50.74	18.93	60	57	5.9	5.6

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Turbine cooling water strainer inspections occurred on May 19 and 21. The fish (all mortalities) found were 7 juvenile steelhead, 2 juvenile lamprey, approximately 74 Siberian prawn, and 1 juvenile walleye.

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 were similar to what was observed last week. 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 22	11	15	0	0	14
May 23	3	42	0	0	16
May 24	---	---	---	---	---
May 25	22	53	0	0	15
May 26	4	47	0	0	10
May 27	1	53	1	0	8
May 28	0	9	1	0	2

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 22 - 28, 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 May 22, 23, 24 and 27.

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 6.0 to 6.9 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 6.4 to 7.1 feet. SSE2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections.

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 3.75 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 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. Orifices showed irregular flows on May 22, 23 and 24 during ladder inspections. Orifices with irregular flows were back flushed by JFF personnel or powerhouse operators.

Collection Facility: Collection for transport began at 0700 hours on May 1.

Transport Summary: The last daily barge departure took place on May 22. The first alternate day barge departure occurred on May 24.

River Conditions

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
67.4	62	23.9	22.9	60.0	59.5	5.0	4.0

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on May 6. There were no live fish recovered. Mortalities included 12 salmon 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. Gulls were the dominant species observed during inspections this week. Hazing met the standard from the avian action plan through this time period. Data stored on the server was unavailable for this chart.

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

Date	Time (hours)	Gulls	Cormorants	Terns	Pelicans
May 22	1100				
May 23	1100				
May 24	1100				
May 25	1100				
May 26	1100				
May 27	1100				
May 28	1110				

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

Project: Little Goose
Biologist: Richard Weis
Dates: May 22 - 28, 2015

Turbine Operation

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

Adult Fish Passage Facility

Adult fishway inspections were performed on May 22, 25 and 26.

Fish Ladder: The ladder exit head differentials ranged between 0.0 and 0.1 feet (criteria ≤ 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 ≤ 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 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 0.9 and 2.0 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 7.8 and 8.4 feet (criteria ≥ 8.0 ft). NPE weir depths ranged between 4.7 and 6.0 feet and were on sill (criteria ≥7.0 ft. or on sill). NSE weir depths ranged between 6.0 and 6.7 feet (criteria ≥ 6.0 ft.). Collection channel surface water velocities measured at the North powerhouse ranged between 1.8 and 2.2 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. The fish pump 1 gear box was rebuilt and is waiting on parts needed to place 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 ranged from 0 to 30 square feet.

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 in unit 1 on May 27. All differential measurements met criteria.

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

Transportation Facility: The JFF was transporting fish by barge daily until May 22 when every-other-day fish transport began. GBT (Gas Bubble Trauma) sampling was performed on May 25. No signs of GBT were seen.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 106,458 fish were collected for transport. The descaling and mortality rates were 1.2% and 0.62% 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 below.

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
65.7	61.7	19.5	18.4	61.1	58.0	5.5	2.8

*Ladder temperature.

Other

Invasive Species: The zebra mussel substrate monitor was inspected on May 08. No zebra mussels were detected.

Inline Cooling Water Strainers: Cooling water strainers were checked on May 26. One juvenile lamprey mortality was removed.

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 22	Unknown	130	7	0	1
May 23	1145	135	10	0	0
May 24	1145	26	6	0	3
May 25	1500	76	1	0	3
May 26	0930	52	1	0	1
May 27	1430	64	5	0	1
May 28	1330	18	1	0	2

*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 22 - 28, 2015

Turbine Operation

Units are operating within the hard constraint 1% operational criteria.

Adult Fish Passage Facility

The adult fishway was inspected by Corps or Blue Leaf Environmental biologists on May 22, 23, 24, 25, 26, and 27.

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 depth readings were 5.6', 5.6', 5.6', 5.8', 5.6', and 5.5 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 differential was in criteria (criteria 1'-2') on all inspections with the exception of a 0.8 feet reading on May 27.

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 with 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. Pumps 1 and 3 were rotated out of service from 1400 to 1427 hours on May 27 in support of pump 2 testing following lower guide wall bearing repair. Pump 2 was out of service from 1703 to 1820 hours on May 28 due to a defective relay. The relay was swapped with one from pump 3 and a replacement relay is on order. Pumps 1 and 2 are now 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: Video inspections are scheduled for late May.

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. The final daily transport barge departed Lower Granite on May 22.

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
67.7	64.0	20.5	20.3	59.0	58.0	5.0+	3.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected May 28. Mortalities included 34 juvenile lamprey.

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

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 22	1930	2	0	0
May 23	1930	2	0	0
May 24	0600	5	0	0
May 25	0600	4	0	0
May 26	1930	5	0	0
May 27	0600	2	0	0
May 28	0600	2	0	0

GBT: PSMFC personnel conducted gas bubble trauma (GBT) examinations May 28.

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 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.