U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#07-2013

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: April 12 - 18, 2013

Turbine Operation

McNary had 11 units available for power generation this week. From April 12 to 14, the project ran a 72 hour test of unit 3, which remains out of service. Since April 1, all turbine units have been operating under the hard constraint one percent efficiency criteria. No units ran outside the criteria this week. Unit outages are recorded in Table 1.

Table 1. Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Reason
3	Jun 4, 2012 – Unknown	About one year.	After rewind, thrust bearing.
14	Sep 18 – May 2	Seven months.	Turbine bearing issues continue.
10	Mar 31 - Apr 19	20 days.	Turbine bearing issue.
5, 1 & 2	Apr 12	4.2, 2.9 & 2.3 hours each.	Trash rack cleaning.
9 & 11	Apr 12	3.0 & 3.8 hours each.	Semiannual maintenance.
2, 4 & 6	Apr 13	2.1, 3.0 & 1.1 hours each.	Trash rack cleaning.
6, 7 & 8	Apr 14	0.8, 2.8 & 5.9 hours each.	Trash rack cleaning.
12 & 13	Apr 15	6.8 hours each.	ESBS installation.
9 & 11	Apr 16	6.9 hours each.	ESBS installation.
7	Apr 17	2.5 hours.	ESBS installation.
13	Apr 17	2.8 hours.	Replaced study transducer on ESBS at 13A slot.
8	Apr 17	2.5 hours.	Repaired oil leak.
5	Apr 17	2.3 hours.	Trash rack cleaning.
2	Apr 17	3.0 hours.	Replaced failed ESBS in 2A slot.
9	Apr 18	3.0 hours.	Trash rack cleaning.

Adult Fish Passage Facilities

On April 12, 14 and 17, the McNary fisheries personnel performed measured inspections of the adult fishways. When the juvenile facility is in primary bypass, the fisheries staff helped to monitor the picketed leads. Visual fish counting continues. On April 18, at 1240 hours, the

roving operator noted the Washington exit weir, 337, was not functioning properly. The motor was running but the weir was not moving. The mechanics found a key in the linkage between the motor and gear box had failed so they began repairs. At 1605 hours, during the work, the brake on the weir failed, folding the weir over and tilting it 45 degrees downstream. At 1636 hours, the operators began orifice flow to reduce stress on the weir. The weir would not move under its own power so the general maintenance crew began examining how to reposition it. The crew was not able to complete the work that day before dark. The project left the ladder on orifice flow over night to protect the weir from damage. The PUD continued to supply auxiliary water to the lower ladder. On April 19, the maintenance crew was able to use the exit crane to reposition the weir and at about 1020 hours, the operators returned the ladder to normal operation. By 1111 hours, the operators had the exit on automatic mode.

The project notified the region of the incident. No fish were harmed. Due to low fish passage at the ladder, there was probably very little delay during the issue.

Fish Ladder Exits: During the inspections, all Fish Passage Plan criteria were met on both ladders' exits. The project cleaned both exits' picketed leads regularly. The Washington exit had one low water alarm which the operator reset. At the Oregon exit, there were eight traveling screen alarms which the operator reset. Our differential monitoring of the screens revealed no problems.

Fishway Entrances and Collection Channel: On April 14, at the Washington ladder entrance, W3 measured 7.6 feet. Spill turbulence is causing calibration drifts which are very difficult to correct. On April 14, at the Oregon ladder entrances, SFEW1 measured 7.9 feet. On April 17, the electricians calibrated SFEW1 and SFEW2. The Oregon ladder's collection channel velocity average 3.4 feet per second.

Auxiliary Water Supply System: For the report week, the Wasco county PUD in the Washington ladder had no interruptions. For the Oregon ladder, fish pumps 1 and 3 operated all week with no interruptions and blade angles 30 degrees. Pump 2 remains out of service for major overhaul which will require a contract. The juvenile facility continues to supply the usual 450 cfs to the north powerhouse pool.

Juvenile Fish Passage Facility

The spring season with alternating days of primary and secondary bypass with the switch occurring every morning at 0700 hours, continues. No deviations from this schedule occurred. We bypassed 16,793 smolts and 1,760 juvenile lampreys this week.

Forebay Debris/Gatewell Debris/Oil: For the week, forebay debris was light as trash rack cleaning, weather and project operations removed or moved much of the debris. Also, incoming debris has decreased. The highest trash rack different the fisheries staff measured this week was 2.1 feet. The project cleaned racks at units 1, 2 and 4 to 10. We removed approximately 64 ten-yard truck loads of debris which was mostly tumble weeds. The project plans to continue cleaning trash racks next week. We cleaned unit 10 while it was out of service. We observed

less than a dozen smolts lost in the debris with no juvenile lamprey being observed. We noted no problems in the gatewell slots.

ESBSs/VBSs: This week, the project installed ESBS's at units 7, 9 and 11 to 13 on or before the April 17 extension. On April 18, we installed unit 10's screens before it returned to service. Only units 3 and 14 are without ESBS's as the units are out of service. On April 17, the screen at 2A slot failed and the project replaced it. We will begin camera inspections in mid May. On April 16 and 17, respectively, our VBS differential monitoring revealed two screens out of criteria at 4A and 5B slots which the general maintenance crew cleaned immediately.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: For the week, we had 42 orifices open and we cleared three total obstructions at 1A, 1B and 5B slots with no harm to fish noted. When trash rack and VBS cleaning, we closed the orifices at unit during the cleaning and opened spares at adjacent units.

On April 12, at 0650 hours we closed the orifices at unit 5 for trash cleaning. Due to miscommunication, we did not reopen the orifices unit April 13, at 0845. The unit ran over night with ESBS's in place. Fortunately, fish numbers were low and we observed no ill effect on fish. The project appears to have resolved the issue with the powerhouse air system as the moisture in the orifice air supply line has decreased and the rectangular screen air burst system is recovering normally.

All systems operated well in automatic mode except on April 15, when the transition screen cleaning device jammed on the D beam while in the cleaning position. Due to the repeated issues with this mechanism over the years, the fisheries staff removed the device from service until it can be examined during a channel dewatering. The electricians replaced all control panel indicator lights this week. Finally, the fisheries staff monitored the channel during trash rack and VBS cleaning along with primary bypass.

Transportation Facility: With the spring bypass season, both primary and secondary bypass modes return all fish are to the river. PIT tag detection will occur in the full flow pipe during primary bypass and throughout the facility during secondary bypass. Smolt monitoring will occur on secondary bypass days.

We turned the sample gates on and off every other day to be on with secondary. The gates functioned well. The primary PIT tag system remains off as the bypass lines provide a better route for the fish than the PIT lines. Also, PSMFC preformed the weekly test of the PIT system. The secondary PIT/bypass gates remain off and open for bypass season. We continue to do ice block checks of the return to river lines, though the bypass outfall is too far away to see the blocks exit the pipe even with binoculars.

Transport Summary: There is no fish transport in progress at this time.

River Conditions

River conditions during the week are outlined in Table 2 as provided by the smolt monitoring staff, PSMFC. The data day runs from 0700 hours to 0700 hours. The spring spill season which calls for 40 percent of flow being spilled and both TSWs in operation continues. All week, due to spill in excess of powerhouse capacity 40 to 54 percent of flow was spilled.

Table 2. River conditions at McNary Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (^{o}F)		Water Clarity* (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
282.1	242.6	149.7	98.2	47.4	46.8	6.0	4.5

*****Control room data.

Other

Inline Cooling Water Strainers: The project will examine the main unit cooling water strainers again in early May.

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

Avian Activity: We continue bird counts with each zone being observed once a day usually in the morning. In the forebay, we observed a high count of 25 grebes with an occasional pelican, tern or osprey seen. We noted one grebe at 6B slot which pasted to the channel and out of the system.

In the tailwater area, we had high counts of 15 gulls and 25 terns with an occasional cormorant or osprey noted. Most of the birds were in the spill basin. We observed an occasional tern or gull by the bypass outfall. Hazing personnel continue to work seven days a week. On April 21, a second hazing shift with begin to cover the day light hours each day. Also, lethal take of gulls has been allowed for this year. Finally, the hazing water cannon continued to function well.

On April 15, we reviewed bird data entry with the COE fisheries field unit.

Research: On April 15, the FGE study began at units 6, 7, 12 and 13. On April 17, the ESBS at 13A slot was raised so the researcher could replace a transducer.

The researcher for the Oregon exit traveling screen study has most of his equipment in place.

GBT examinations continue.

Project: Ice Harbor
Biologist: Mark Plummer
Dates: April 12 - 18, 2013

Turbine Operation

Turbine units 1- 4 and 6 are in service. Turbine unit 5 remained out of service due to blade cracks.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fish ways April 15, 16, and 17.

Fish Ladders: The north and south shore adult fish ladder inspection areas (picketed leads, head differentials, fish way exits, and depth over weirs) were within criteria.

Fishway Entrances and Collection Channel (inspection date order): The south shore entrance (SFE) was off sill with a depth of 8.9 feet, off sill with a depth of 8.5 feet, and off sill with a depth of 9.1 feet. The north powerhouse entrance (NFE) was off sill with a depth of 10.0 feet, on sill with a depth of 8.1 feet, and on sill with a depth of 9.1 feet. The north shore entrance (NSE) was on sill with a depth of 8.8 feet, on sill with a depth of 7.2 feet, and on sill with a depth of 6.9 feet. Fishway entrance criterion is 8 feet depth, greater than 8 feet depth, or on sill. All channel/tailwater differentials were in criteria. Channel/tailwater differential criteria are 1 – 2 feet.

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

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: No problems to report. Fish ladder exits are clear of debris and the bubblers are operating satisfactorily.

STSs/VBSs: STSs are in operation. April STS/VBS inspections are scheduled for April 23 and 24. Turbine strainer inspections will be conducted at the same time.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile bypass is "watered up" with 20 open orifices in service.

Juvenile Bypass Facility: No problems to report.

Fish Sampling: The first sample took place April 8, followed by additional sampling on April 11, 16 and 18. Subsequent sampling days will alternate from Monday and Wednesday to Tuesday and Thursday each week.

Removable Spillway Weir: The RSW is in operation. Spill for fish began April 3, 2013.

Fish Sampling Results:

April 16:

Species	Sampled	#Descaled	Morts	Avian Marks
UC-CH	43	2	0	3
C-CH-O	---	---	---	---
UC-CH-O	---	---	---	---
C-SH	5	0	0	0
UC-SH	5	0	0	0
C-COHO	---	---	---	---
UC-COHO	---	---	---	---
C-SOCK	---	---	---	---
UC-SOCK	1	0	0	0
TOTAL	96	4	0	4

April 18:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	21	1	0	0
UC-CH	17	1	0	0
C-CH-O	---	---	---	---
UC-CH-O	---	---	---	---
C-SH	19	0	0	1
UC-SH	6	0	0	1
C-COHO	1	0	0	0
UC-COHO	---	---	---	---
C-SOCK	---	---	---	---
UC-SOCK	---	---	---	---
TOTAL	64	2	0	2

River Conditions

River conditions during the week are outlined in Table 1.

Table 1. 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
66.2	47.5	49.6	37.4	50	48	4.8	4.6

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Main turbine cooling water inspections are scheduled for April 23 and 24.

Invasive Species: No invasive species were detected this week.

Avian Activity: Formal bird counts began April8 and are in progress. Hazing activities began April 1.

Research: There is no research is in progress at this time.

Project: Lower Monumental
Biologists: Bill Spurgeon and Elizabeth Lindsey
Dates: April 12 - 18, 2013

Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria. Unit 1 operating priority was changed on April 15 to last on and first off under all flow conditions

Adult Fish Passage Facility

The adult fishway was inspected by Corps and PSMFC/State biologists on April 13, 14, 17, and 18.

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 NSE 2 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.

SPE 1 and SPE 2 weir gates were in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, the gate depth readings were 6.1', 6.7', 6.5', and 5.7 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, the gate depth readings were 6.9', 7.3', 6.7', and 6.1 feet. SSE 2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') this week.

Auxiliary Water Supply System: AWS pumps 1 and 3 were operated throughout this period. Two pump operation will continue until bearing repair and shaft alignment work is completed on pump 2, approximately July 15.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 30.0 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-40% surface coverage. No oil was observed in gatewells.

STSs/VBSs: STS operation was changed to continuous run mode on April 9 as the average length of sampled sockeye is less than 120 mm.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel is operating with 19 orifices open. The bypass outfall bird sprinkler suction line was repaired on April 17 and became operational on April 18. The outfall sprinkler heads are not operating correctly thus further repairs will need to be completed.

Collection Facility: Collection for condition sampling began on April 1. Subsequent collection for condition monitoring will occur every third day.

Transport Summary: No transport in progress at this time.

River Conditions

River conditions during the week are outlined in Table 1.

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
65.7	47.1	31.0	29.7	49.0	47.5	3.8	3.0

*Scrollcase temperatures.

Other

Spring spill operation is occurring. On April 15 from 1215-1300 hours spill operations were changed to uniform spill with the RSW off to determine if the outfall bird sprinkler suction line repairs and the upstream barge loading mooring bit could be lowered under these spill conditions. It was determined that repairs to the outfall sprinkler suctions line would be possible but turbulence due to spill would jeopardize the safety of personnel on the boat and equipment at the mooring bit location. A change in spill operation was coordinated and spill was shut down on April 17 from 1325-1335 hours to lower the mooring bit.

Inline Cooling Water Strainers: Cooling water strainers were inspected on April 2. No live lamprey were recovered. Recovered mortalities included 13 juvenile lamprey, 1 juvenile salmon, 1 juvenile channel catfish, and 26 Siberian prawns.

Invasive Species: There were no zebra mussels observed at the monitoring stations on April 1.

Avian Activity: Formal bird counts have been in progress since April 1. Bird hazing activities also began April 1.

Research: There is no research is in progress at this time.

Project: Little Goose
Biologists: George Melanson and Richard Weis
Dates: April 12 - 18, 2013

Turbine Operation

Turbine units 1 through 6 were available for service throughout this report period. All turbine units were operated within the 1% criteria.

Adult Fish Passage Facility

USACE and ODFW fisheries biologists performed measured inspections of the adult fishway April 12, 13, 16 and 18.

Fish Ladder: The ladder exit head differentials ranged between 0 and 0.1 feet (criteria ≤ 0.5 ft.). Water depths over the weirs ranged between 1.0 and 1.1 feet (criteria 1.0-1.3 ft.) and picketed lead head differentials held steady at 0 feet (criteria ≤ 0.3 ft.). No debris was observed at the picketed leads or the ladder exit. The air bubbler used to prevent debris from collecting near the ladder exit operated satisfactorily.

Fishway Entrances and Collection Channel: Channel to tailwater head differentials ranged between 1.3 and 2.2 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 7.9 feet (on sill) and 8.5 feet (criteria ≥8.0 ft). As a result of 2 pump operations and decreased channel to head differentials, NPE2 remained closed. NPE1 weir rested on sill and depths ranged 5.0 and 5.3 feet (criteria ≥7.0 ft or on sill). NSE weirs are at fixed elevations of 532.0 feet and depths ranged between 4.8 and 5.3 feet (criteria ≥ 6.0 ft.). Collection channel surface water velocities (criteria 1.5 fps) ranged from 2.4 to 2.7 near the NSE. Surface water velocities at the junction pool were not measureable due to up-welling from diffuser 2 that dominated over lateral laminar flows.

Auxiliary Water Supply System: Fish pumps 1 and 2 operated within criteria ranging between 73 and 77 rpm. Fish pump 3 remains out of service and is undergoing repairs.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Woody debris observed this week ranged from 2,000 to 7,500 square feet inside the trash shear boom. Drawdowns measurements were performed on Turbine units 1 – 3 and 5 on April 16. All measurements were within proper operating range and indicated no significant buildup of debris on trashracks, ESBS and VBS.

Spillway Weir: The spillway weir operated in the high crest position.

ESBS/VBS: All ESBS operated within criteria this report period. All ESBS screens were manually operated for inspections. All brushes operated satisfactorily.

Orifices, Collection Channel, Dewatering Structure, Flume: The juvenile collection system was operated throughout this period with 22 open orifices.

Transportation Facility: The facility switched from primary to secondary bypass operations on April 12 and 17 at 0700 to 0700 hours the following day to collect a 24 hour sample of fish for condition sampling. The April 12-13, fish collection estimated total was 8,862 and the April 17-18 total was 41,401. All fish were bypassed. The combined descaling and mortality rate was 0.4% and 0% respectfully.

Transport Summary: Transport operations are expected to begin in late April or early May.

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
61.7	44.2	18.6	13.2	48.7	47.0	3.8	3.2

*Ladder temperature.

Other

Invasive Species: The zebra mussel substrate monitor was inspected on April 7. No mussels were observed.

Cooling Water Strainers: On April 17 cooling water strainers were inspected. Recovered mortalities included 3 salmonids and 36 juvenile lamprey.

Avian Activity: Maximum bird count form single survey included 33 cormorants, 19 gulls and 2 pelicans. USDA-APHIS bird hazing started on April 1 and continued through this report period.

Research: Gas Bubble Trauma research was conducted on April 12 and 17. No signs of GBT were observed.

Project: Lower Granite
Biologist(s): Mike Halter and Ches Brooks
Dates: April 12 - 18, 2013

Turbine Operation

Lower Granite had all turbine units except for unit 6 available for power generation at the beginning of the report period. Turbine unit 6 is out of service because the project does not yet have an ESBS fish screen ready to be installed in slot 6C. Previously, unit 6 was operated with an ESBS borrowed from unit 5. The ESBS was returned last week when unit 5 became available for service.

Adult Fish Passage Facility

On April 13 & 14 the Lower Granite fisheries biologists performed measured inspections of the adult fishway system. A third inspection was conducted with Dave Benner from the Fish Passage Center on April 16.

Fish Ladder: All criteria were met.

Fishway Entrances and Collection Channel: Head differential readings remained within criteria at all fishway entrances during the period inspections.

Weir depths at the south shore fishway entrances also met criteria during all weekly inspections. The north powerhouse fishway entrances were on sill during all inspections this week with depths of 5.6– 5.7 feet due to tailwater elevations below 636.0 feet (these gates bottom out at elevations below 636.0 feet). Weir depths at the north shore entrances ranged from 3.5 to 5.1 feet (criterion $\geq$ 7.0 feet). Only north shore entrance 1 is able to adjust depth relative to the tailwater elevation. North shore entrance 2 is manually set at a compromise depth of 630.0 feet. Normally weir depth readings at the north shore entrances are sacrificed in order to maintain the requisite 1.0 foot of head differential.

Velocity readings in the adult fishway collection channel transition pool area ranged from 0.98 feet per second to 1.16 feet per second and averaged 1.07 feet per second.

Auxiliary Water Supply System: Fish pumps 2 and 3 were operated during the week. The motor re-wedge work on fish pump 1 has been completed. Project management plans to switch out fish pump 2 with fish pump 1 on the morning of April 22. Fish pump 1 and fish pump 3 would then be operated and fish pump 2 held in reserve. Regional review and coordination of these plans are in progress.

Juvenile Fish Passage Facility

The sample rate was increased from 1% to 4% at 0700 hours on April 17 in order to accommodate fish marking needs for the prototype overflow weir and 14-inch orifice in the collection gallery. All fish other than those sampled are being diverted back to mid-river through the bypass pipe (secondary bypass).

Forebay Debris/Gatewell Debris/Oil: The amount of forebay debris varied during the week due to wind strength and direction; none was removed.

ESBSs/VBSs: VBS/ESBS video inspections are scheduled for April 19-20.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed every three hours around the clock in an attempt to keep them free of materials that might impact fish passage.

Transportation Facility: General barge transport operations are uncertain at this time but will probably begin in early May. The research barge trip for April 18 has been cancelled. The first research barge trip is now scheduled for April 25.

Transport Summary: Nothing to report.

Removable Spillway Weir: Mandatory spill operations began at 0000 hours on April 3. The RSW was operated in support of general spill operations.

River Conditions

River conditions during the week are outlined in Table 1.

Table 1. River conditions at Lower Granite 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
60.5	45.2	20.3	20.0	49.3	48.9	4.2	4.0

*Scrollcase temperature.

Other

Video counts in the adult fish ladder counting room began on March 1 and concluded on March 31. Visual counting between the hours of 0400 and 2000 began on April 1.

Inline Cooling Water Strainers: Cooling water strainers were last inspected for lamprey entrainment on March 27. A total of 44 lamprey were found in the strainers over a combined run time of 1,389.3 unit hours. The next cooling water strainer inspections are scheduled for late April.

Invasive Species: The zebra mussel substrate near the adult fishway exit was last examined for zebra mussels on April 1. No evidence of zebra mussels was found. The next inspection is scheduled for early May.

Avian Activity: Formal bird counts and hazing started on April 1.

Adult Fish Trap: The adult fish trap was watered up and sampling began on March 4. The initial sample rate is 21%. Since in 2013 adult trapping will only be conducted Monday thru Friday the 21% sample rate represents an overall weekly sample rate of 15%. Genetic samples will be taken from one out of every 10 hatchery steelhead. All wild steelhead captured will be PIT-tagged and scale and genetic samples taken. Any previously PIT-tagged steelhead (either hatchery or wild) will have both scale and genetic samples taken for verification purposes.

Research

Idaho Fish and Game (IDFG) Genetic Stock Identification: The goal of this study is to develop fine-scale genetic profiles for natural origin salmon and steelhead; develop genetic stock identification (GSI) techniques to estimate stock-specific escapement over LGR, monitor abundance, productivity and distribution of naturally produced adult and juvenile steelhead and salmon; research and monitor stock-specific life history characteristics. At LGR the goal of the study will be to enumerate and characterize the natural production of spring/summer Chinook salmon and steelhead above LGR with regards to age composition and genetic stock profiles. IDFG will sample Monday through Friday until the first part of July with the goal to collect between 2,000-5,000 genetic samples each from yearling spring/summer Chinook and steelhead and 500-3,000 genetic samples from subyearling fall Chinook.

Biological Evaluation of Prototype Overflow Weir and 14 inch Orifice: A prototype overflow weir and enlarged 14 inch orifice were installed into intake gatewell 5A during the winter for biological testing from April 15-June 30 and will be evaluated by UC Davis, Biomark and Blue Leaf Environmental. They will release 350 hatchery steelhead and 350 hatchery yearling Chinook into the gatewells six days a week, beginning April 15. When yearling spring/summer fish numbers decline 350 hatchery subyearling Chinook will be collected and released.

Nez Perce Tribe (NPT)/U. of Idaho (UI)/Columbia River Intertribal Fisheries Commission (CRITFC) – Kelt Study: The goal of this research project is to study the physiology and endocrinology of steelhead kelts to evaluate the feasibility and success of several strategies for rehabilitating and handling steelhead collected at LGR. Also, to understand and identify the suite of physiological changes that occurs in Snake River steelhead during the process of sexual maturity, and to determine changes that occur post spawning that are associated with successful downstream migration and recovery to spawn again. As part of this collaborative study to investigate approaches to increase adult steelhead returns the NPT will select up to 150 fish for transport to the Dworshak National Fish Hatchery holding facility.

United States Fish and Wildlife Service (USFWS), United States Geological Service (USGS), Pacific Northwest National Laboratory (PNNL) and National Marine Fisheries Service (NMFS)

– Holdover fall Chinook Study: This study is part of the regional discovery based research titled "Investigating passage of ESA-listed fall Chinook salmon at Lower Granite Dam during winter when the fish bypass system is not operated". This is a cooperative study of the survival and prevalence of the reservoir-type life history of juvenile fall Chinook salmon in the Snake River and the passage of subyearlings and reservoir-type fish through the lower Snake River. This part of the study collects PIT-tagged yearling fall Chinook holdovers in the Sort by Code tanks at LGR from the 2012 release of Dworshak hatchery fish.

National Marine Fisheries Service (NMFS)-Monitoring the Migrations of Wild Snake River Spring/Summer Chinook: This study is done to monitor the migration behavior and survival of wild spring/summer Chinook salmon in the Snake River basin. The specific goals are to characterize the migration timing and estimate parr-to-smolt survival to LGR of different 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 2012 in natal streams and are diverted to the Sort by Code tanks at LGR.