U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#28-2015

Project: McNary
Biologist: Bobby Johnson
Dates: September 4 - 10, 2015

Turbine Operation

McNary had 13 to 14 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
6	Aug 31–Sep 8	About 9 days.	Asbestos abatement and hub tapped.
2, 4 & 5	Sep 8	61 minutes.	Extended-length submersible bar screen (ESBS) camera inspections.

Adult Fish Passage Facilities

The McNary fisheries biologist performed measured inspections of the adult fishways on September 5, 7 and 9. Visual adult fish counts, review of video tape for adult lamprey counts and exit temperature monitoring continued. On September 9, NOAA (National Oceanic & Atmospheric Administration) fisheries personnel completed their monthly inspection.

All systems continued to be monitored diligently as water temperatures continued to decline slightly.

On September 9, the contractor working on the potable water system had an eight inch water line slip off a mounting. At 1607 hours, the operators closed valve group 3, which enabled the contractor to repair the water line. From 1618 to 1831 hours, the Oregon ladder fish pumps were operated using raw cooling water. From 1754 hours to September 10 at 0900 hours, the Wasco County Public Utility District (PUD) turbine unit in the Washington ladder was operated using raw cooling water. There were no interruptions in service in either ladder. The operators began to fill the new potable water reservoir on September 10 at 0737 hours.

Fish Ladder Exits: Criteria at both exits are 1.0 to 1.3 feet for head over weir and 0.0 to 0.5 feet differential at the count stations. Both ladder exits met all criteria. Picketed leads were cleaned at both exits as required, including weekends.

At the Washington ladder exit, the regulating weir set point was adjusted on September 5. Aquatic vegetation quantities were minimal to light in the exit area.

At the Oregon ladder exit, the operators adjusted the regulating weir and tilting weir set points on September 9. Also that day, mechanics completed the weekly Oil Accountability Program (OAP) tilting weir examination. A high picketed lead differential alarm occurred on September 10. The general maintenance staff cleaned the leads immediately. Debris loads were light along the Oregon shore.

Fishway Entrances and Collection Channel: Criteria for all entrances are pool differentials measuring between 1.0 and 2.0 feet, and weir depths measuring 8.0 feet or deeper.

At the Washington entrance, all entrance inspection points met criteria.

At the Oregon ladder, on September 9, the north powerhouse entrance weir, NFEW3, measured depths of 7.9 feet, possibly due to low tailwater elevation. All other inspection points were in criteria.

Collection channel surface velocities averaged 1.5 feet per second.

Auxiliary Water Supply System: The 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 with no interruptions in service. On September 5, the operators reset a cover plate high water alarm at fish pump 3. Fish pump 2 is currently under contract for major overhaul with completion scheduled for April, 2016.

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 September 5, 7 and 9. This week, 32 juvenile lamprey and 96 smolts were bypassed. Juvenile shad were the predominant species sampled.

The B side sample tank water temperature and fish in all areas continued to be monitored. Warm water temperatures continued to be a concern though the temperatures have been decreasing slightly.

Forebay Debris/Gatewell Debris/Oil: The forebay debris load was minimal to very light and scattered across the powerhouse face. New incoming debris was minimal as was debris quantities along the Oregon shore.

No high trash rack differentials were recorded and no trash racks were cleaned.

No problems were observed in the gatewell slots.

ESBSs/VBSs: All turbine units have ESBSs installed. The screens in slots 1A, 3B, 11C and 12C remained in timer mode. ESBS camera inspections conducted in units 2, 4 and 5 revealed no problems on September 8.

No high VBS (vertical barrier screen) differentials were recorded and no screens were cleaned. VBS rehabilitations continued.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: Forty two orifices were in use.

All systems functioned satisfactorily in automatic mode. On September 6, the rectangular screen cleaning brush cycling time was increased from 180 to 240 minutes as debris loads decreased. Also that day, the fisheries staff noted the north side dewatering valve produced a popping sound when closing. A project mechanic examined the valve and determined the noise came from the valve and that the actuator was operating properly. Since the valve is located well below the surface, further examination or repair requires dewatering the channel completely. This normally occurs only during the winter maintenance season. At this time, the valve appears to be functioning satisfactorily. The fisheries staff will continue to monitor the valve more frequently.

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 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.

Algae removal from the system continued on every primary bypass day.

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.

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
112.5	80.0	0.0	0.0	67.3	66.3	6.0	6.0

*Control room data.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on October 6.

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

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

Bird hazing distress calls remain deployed around the project and continued to function satisfactorily. The fisheries mechanic and the general maintenance staff continued to clean the bird hazing water cannon pump intake three times a week.

In the forebay observation zone, a small flock of grebes was counted. A cormorant, osprey or gull was occasionally observed. Gulls were roosting on the rocks by the Washington shore boat dock, which is outside the forebay observation zone.

Gulls and cormorants were observed in the tailwater observation area, roosting on the navigation lock wing wall and feeding in the powerhouse flow. An occasional pelican was observed long the shorelines. Overall bird numbers have declined except for gulls and cormorants. It appears they are feeding on juvenile shad.

Occasionally, a gull or cormorant was observed near the juvenile bypass outfall.

Great blue herons and mergansers were also occasionally observed near the project.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
Sept 4	Forebay	0	0	0	0	0
	Spill	36	17	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Sept 5	Forebay	0	0	0	0	4
	Spill	37	39	0	0	0
	Powerhouse	17	2	0	0	0
	Outfall	0	0	0	0	0
Sept 6	Forebay	0	0	0	0	5
	Spill	74	29	0	0	0
	Powerhouse	10	1	0	1	0
	Outfall	0	0	0	0	0
Sept 7	Forebay	0	0	0	0	5
	Spill	3	13	0	0	0
	Powerhouse	4	0	0	0	0
	Outfall	2	1	0	0	0
Sept 8	Forebay	2	0	0	0	4
	Spill	29	20	0	0	0
	Powerhouse	5	0	0	0	0
	Outfall	2	0	0	0	0
Sept 9	Forebay	0	0	0	0	7
	Spill	57	36	0	0	0
	Powerhouse	5	0	0	0	0
	Outfall	2	1	0	0	0
Sept 10	Forebay	0	0	0	0	6
	Spill	16	10	0	0	0
	Powerhouse	1	0	0	0	0
	Outfall	0	0	0	0	0

Research: The adult lamprey passage study continued. On September 9, the researcher raised, examined and cleaned the camera frame installed at SFEW2.

Project: Ice Harbor
Biologist: Ken Fone
Dates: September 4 - 10, 2015

Turbine Operation

Units 4 and 3 were taken out of service for annual maintenance at 0830 hours and 0930 hours, respectively, on August 31. Units 5 and 6 were out of service from 0727 hours to 1406 hours on September 9 to provide calm water conditions for the spillway stilling basin hydrographic survey for dam safety. Units were operated within the 1% peak efficiency range (hard constraint).

Adult Fish Passage Facility

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

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-1) depth and channel/tailwater differential were in criteria on all inspections. The north powerhouse entrance (NFE-2) depth and channel/tailwater differential were in criteria on all inspections. The north shore entrance (NSE-1) depth and channel/tailwater differential were in criteria on all inspections. 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. Six of the eight south shore AWS pumps were operated throughout the week.

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: STSs are being operated in cycle-run mode. Inspection of the STSs in units 1 through 5 and unit 2 VBSs occurred on August 13, 17, and 19. There were no screen problems observed.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The bypass is operating with 20 orifices open. Orifices were routinely cycled and back-flushed once per day.

Juvenile Fish Facility: Fish are being routed through the bypass.

Fish Sampling: Fish sampling is done for the season.

Removable Spillway Weir (RSW): Mandated spill for fish passage began on April 3 and ended on August 31.

River Conditions

River conditions during the week are outlined in Table 1 below.

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
22.2	10.7	0	0	69	67	8.1	6.3

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: The inline cooling water strainers associated with units 1 through 5 were inspected on August 17 and 19. Fish recoveries included 3 juvenile channel catfish, 1 juvenile shad, and 7 Siberian prawns (all mortalities).

Invasive Species: No new exotic species have been found.

Avian Activity: A relatively low number of piscivorous birds were seen around the dam during the week.

Research: Beginning on September 9, sensor fish were released into the unit 1 turbine intake via pipes installed on the STS framework in gatewell slot 1B, in support of the turbine environment characterization study.

Project: Lower Monumental
Biologists: Bill Spurgeon and Raymond Addis
Dates: September 4 - 10, 2015

Turbine Operation

The units are being operated within the hard constraint 1% peak efficiency 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. Unit 5 was removed from service on September 10 at 1235 hours to take a hub oil sample and returned to service at 1335 hours. Unit 6 was removed from service on August 31 at 0725 hours for annual maintenance with an estimated return to service date of September 17.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and Blue Leaf Environmental biologists on September 4, 5, 6 and 9.

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 6.8 to 7.3 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections.

SSE1 weir gate was in depth or sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, gate depth readings ranged from 7.6 to 7.7 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 9 square yards of forebay debris observed during this period. Gatewell debris ranged from 0 - 5% surface coverage.
No problems observed in gatewells.

STSs/VBSs: STS operations changed to cycle-run mode on August 7 as average sub-yearling Chinook length became greater than 120 mm. STS inspections were conducted September 1 and 2 with all screens found in good operating condition.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel was operated with 19 to 20 orifices open. Orifice 33 was found open with an inoperative light on September 5. Powerhouse operator promptly corrected the problem upon notice.

Collection Facility: Operated in collection for transport mode. No problems occurred.

Transport Summary: Every-other-day truck transport is occurring and is scheduled to continue through 0700 hours on October 1.

River Conditions

Routine summer spill operation in support of fish passage ended at 2400 hours on August 31. 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
22.0	13.1	0.0	0.0	68.5	67	5.0	4.5

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on September 2. Live fish recovered included 47 Siberian prawns. Mortalities included 50 Siberian prawns.

Invasive Species: No zebra mussels were observed at the monitoring stations on September 4.

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

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

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
Sept 4	1100	0	0	0	0
Sept 5	1100	4	2	0	0
Sept 6	1100	4	1	0	0
Sept 7	1100	0	1	0	0
Sept 8	1100	1	1	0	0
Sept 9	1100	1	1	0	0
Sept 10	1100	0	2	0	0

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

Project: Little Goose
Biologist: Richard Weis
Dates: September 4 - 10, 2015

Turbine Operation

All turbine units were available for service throughout this report period except units 3 and 4. Unit 4 was removed from service on August 18 for annual maintenance. Unit 3 was placed out of service on August 25 for Digital governor installation. Hard constraint 1% peak efficiency criteria are in effect. No violations were seen.

Adult Fish Passage Facility

Adult fishway inspections were performed on Sept. 06, 08 and 10.

Fish Ladder: The ladder exit head differentials ranged between 0.0 and 0.5 feet (criteria $\leq$ 0.5 ft.). Water depths over the ladder weirs ranged between 1.2 and 1.3 feet (criteria 1.0-1.3 ft.) and picketed lead head differentials ranged between 0.0 and 0.1 feet (criteria $\leq$ 0.3 ft.). 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. Channel to tailwater head differentials ranged between 0.7 and 1.3 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 9.2 and 10.2 feet (criteria $\geq$ 8.0 ft). NPE weir depths ranged between 4.7 and 5.9 feet (criteria $\geq$7.0 ft. or on sill). NSE weir depths ranged between 5.8 and 8.0 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured at the North powerhouse ranged between 1.5 and 2.1 fps (criteria 1.5 to 4.0 fps). The monthly water velocity measured at the north powerhouse using the Rickly velocity equipment measured 1 foot from bottom, mid depth and surface averaged 3.8 fps.

Auxiliary Water Supply System: Fish pumps 2 and 3 operated as designed. Fish pump 1 gear box was rebuilt and is waiting on additional parts needed to return the pump to service.

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 between 0 and 6,600 square feet for the week.

Spillway Weir: The spillway weir was removed for the season on June 18.

ESBS/VBS: ESBSs are all deployed and gatewells are clean except for slot 3A which has a light sheen of oil. The fish screen in 2B tripped a breaker on Sept. 06 at 1300 hours and repaired by 1330 hours. Drawdowns were not done this week.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile bypass system is running with 20 open orifices.

Transportation Facility: The JFF (Juvenile Fish Facility) was transporting every other day by truck. GBT (Gas Bubble Trauma) sampling ended for the season.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 321 fish were collected for transport. The descaling and mortality rates were 0.9% and 2.63% respectively. This weekly report period saw 1 adult lamprey removed from 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
21.7	17.0	0.0	0.0	67.1	66.1	6.0	5.1

*Ladder temperature.

Other

Inline Cooling Water Strainers: All cooling water strainers were checked on August 26. No fish were seen.

Invasive Species: The zebra mussel substrate monitor was inspected on September 13. No zebra mussels were detected.

Avian Activity: Bird hazing ended on June 16. See Table 2 below for daily observed counts.

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

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
Sept 4	1015	17	19	0	0
Sept 5	1045	11	8	0	0
Sept 6	1230	17	26	0	0
Sept 7	1116	22	24	0	0
Sept 8	1200	17	9	0	0
Sept 9	1130	13	16	0	0
Sept 10	1105	17	11	0	0

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

Scroll Case Temperature: Little Goose Dam has only one temperature probe on the Scroll Case in unit 1 only. The temperature ranged between 66.0 and 67.5

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

Project: Lower Granite
Biologists: Elizabeth Holdren, Robert (JR) Horal
Dates: September 4 - 10, 2015

Turbine Operation

Units are operating within the hard constraint 1% criteria. Unit 6 was removed from service for annual maintenance August 12. Units were operated out of the unit priority operating order (unit 4 in operation and unit 2 in standby mode) from 1359-2200 hours on September 10. This allowed the testing of unit 4 thrust bearing shoes as coordinated through FPOM. No problems with the thrust bearings shoes were detected.

Adult Fish Passage Facility

The adult fish ladder was inspected by Corps or Blue Leaf Environmental biologists on September 5, 7, and 9.

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 or depth criteria (criteria ≥8' or on sill) on all inspections. While on sill, the weir gate depth readings were 7.6 feet. North powerhouse channel/tailwater head differential was out of criteria (criteria 1'-2') on all inspections with head differentials of 0.8', 0.9', and 0.7' feet.

NSE1 remains closed. NSE2 was raised with a chain fall hoist from an elevation of 626.5 feet to 628.0 feet September 10 to improve channel/tailwater head differentials. NSE2 was in depth criteria (criteria ≥7' or on sill) on all inspections. North shore channel/tailwater head differential was out of criteria (criteria 1'-2') on all inspections with differentials of 0.4', 0.6', and 0.6'feet. An underwater ROV inspection of NSE1 is scheduled for 1630 hours on September 11.

Collection channel velocity was out of criteria (criteria 1.5-4.0 fps) on all inspections with readings ranging from 1.0 – 0.9 fps and a weekly average of 1.0 fps. Alternative methods of measuring collection channel velocity are being investigated.

Auxiliary Water Supply System: The fish ladder is in two pump operation with AWS pumps 1 and 2 operating and pump 3 is in standby mode.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Forebay debris was minimal. Daily gatewell surfaces inspections continue. Floating debris is being removed daily to prevent orifice blockages. No oil was reported in gatewell slots.

ESBSs/VBSs: Video inspections are scheduled for late October.

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

Collection Facility: Collection for juvenile transport and condition sampling continues.

Transport Summary: Truck transport continues with truck departing Lower Granite on odd numbered days this month.

River Conditions

Summer spill in support of fish passage ended at 0001 hours on September 1. 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
23.9	18.0	0.0	0.0	66.0	64.0	5.0+	5.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainers are scheduled for inspection and the end of September.

Invasive Species: No evidence of zebra/quagga mussel was observed September 7.

Avian Activity: Piscivorous bird observation counts are taken from the juvenile fish separator platform one hour after sunrise and one hour before sunset. Maximum piscivorous bird counts are summarized in Table 2 below.

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

Date	Time (hours)	Gulls	Cormorants	Terns
September 4	0720	1	0	0
September 5	0720	4	0	0
September 6	0720	2	0	0
September 7	0720	1	0	0
September 8	0720	1	0	0
September 9	0725	1	0	0
September 10	0725	1	0	0

Fish Ladder Temperature Mitigation: Auxiliary pump 1 (supplies water to the ladder exit) and the three temporary ladder cooling pumps remain in 24 hour operation.

Adult Fish Trap Operations: The adult trap is in 24 hour operation with a 12% sample rate. Collection of fall adult Chinook for truck transportation to Lyons Ferry Hatchery and for the Nez Perce Hatchery at Cherry Lane is occurring.

Fish Rescue Operation: No fish rescues occurred this week.

Research

U.S. Geological Survey (USGS) Early Life History of Juvenile Fall Chinook: The project focuses on research, monitoring, and evaluation of spawning and early life history of Snake River fall Chinook salmon, develop strategies to reduce non-indigenous fish, and enhance research on salmon predators and invasive species. LGR and LGO reservoirs food web changes are being investigated to determine importance of non-native Siberian prawn and opossum shrimp in juvenile salmon diets. USGS did not sample during this report week.