U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#36-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: October 31 – November 6, 2014

Turbine Operation

McNary had 10 to 11 units available for power generation this week. On November 1, the soft constraint one percent criterion began. On November 4, 5 and 6, operational units ran outside the criteria due to other units being out of service for the dive installation of study equipment. Unit outages are recorded in Table 1 below.

Table 1. Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Main Reason for Outage
11	Sep 18, 2013 to Jan 31, 2015	About one year and 4.5 months.	Turbine bearing issue continues.
4	Mar 27 to Jan 31, 2015	About 10 months.	Turbine bearing issue continues.
9	Aug 11 to Mar 25, 2015	About 7.5 months.	Maintenance then rewind contract.
6	Nov 3 to 6	About 3.5 days.	Annual maintenance.
1 & 2	Nov 3	About 6.6 hours.	Dive installation of adult fallback study equipment.
1, 2 & 3	Nov 4	About 27.5 hours total.	Dive installation of study equipment.
5 & 7	Nov 5	About 15.9 hours total.	Dive installation of study equipment.
7, 8 & 10	Nov 6	About 16.8 hours total.	Dive installation of study equipment.
2	Nov 6	About 16 minutes.	Completed trash rack cleaning at slot 2B for study.

Adult Fish Passage Facilities

On October 31, November 2 and 4, McNary fisheries biologists performed measured inspections of the adult fishways. On October 31, visual adult fish counts concluded. On November 3, the project raised the picketed leads and winterized the count stations.

On November 13, a dive will occur to retrieve the camera near SFEW2. Simultaneously, project personnel will install bulkheads at floating entrance, W-14, to facilitate future removal for rehabilitation.

Fish Ladder Exits: During measured inspections, all Fish Passage Plan criteria were met on both ladders' exits.

At the Washington exit, the operators reset multiple false alarms at weir 339.

At the Oregon exit, traveling screen differentials remained low and trash rack differentials decreased to a range of 0.8 to 0.9 feet.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points met criteria. In the near future, the project will replace the LEDs (Light Emitting Diodes) for W2 and W3 with a panel display.

All inspection points at the Oregon ladder entrances met criteria. At the south entrance, SFEW1 and SFEW2 were occasionally out of calibration. Electrical upgrades of the Oregon entrances will be completed in the near future.

Collection channel surface velocities averaged 1.4 feet per second.

Auxiliary Water Supply System: For the report week, the PUD turbine unit in the Washington ladder recorded one interruption in service. On November 3, from 1118 to 1152 hours, the unit was out of service. No reason was recorded. The bypass system operated well during the outage.

Fish pumps 1 and 3 ran satisfactorily with blade angles of 30 degrees. Pump 2 is currently out of service for major overhaul under contract. This work should be completed by September, 2015.

The juvenile facility continues to supply the usual 450 cfs to the north powerhouse pool with no interruptions in service to report.

Juvenile Fish Passage Facility

Fall primary bypass season continues as does light winter maintenance at the facility and "phased in" winterization.

Forebay Debris/Gatewell Debris/Oil: Floating forebay debris consisting mostly of milfoil and woody material was light. Fresh incoming debris was minimal. Changes in wind direction moved the woody debris from the powerhouse to the Oregon shore and back. There was no debris present at the spillway.

Our trash rack differential readings revealed no problems. On November 6, the project completed cleaning the rack in slot 2B. We removed approximately 5 cubic yards of debris. No ESA listed species or lamprey were observed in the debris. For several years, we have not been able to reach the bottom of this rack. On November 4, a diver found a 25 foot long, 18 inch diameter log lying vertically on the rack. The diver installed a chocker around the log and maintenance crews utilized the forebay deck crane to facilitate removal.

We observed no problems in the gatewell slots.

ESBSs/VBSs: ESBSs are installed at all units except units 4 and 11, which are out of service. The screens in slots 1A and 13C remain in timer mode. On October 31 and November 1, the screen in slot 1B triggered an alarm and the operators recalibrated it without further incidences. On November 2, operators switched the screen to timer mode following additional alarms. On November 4, screens in units 1, 2 and 3 passed video inspections. Inspections were conducted during the unit outages for the dives.

VBS differential monitoring revealed one screen out of criteria when the associated unit operated at 79 megawatts. On October 31, November 4 and 5, the project staff cleaned this screen and eleven more as a preventative measure. We observed no ESA listed species or lamprey. VBS rehabilitation continues with unit 11 as the staging area.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Forty two orifices were open all week. During VBS and trash rack cleaning, we closed the orifices at the slots the work was being done and opened spare orifices in adjacent slots.

There are no other technical problems to report as all systems functioned well in automatic mode. With the system in primary bypass 24 hours per day, 7 days per week, the fisheries staff continued to monitor the channel around the clock.

Bypass Facility: During the fall primary bypass season, all systems are off. Light maintenance and partial winterization are in progress. PIT tag detection occurs only in the full flow pipe during the fall season.

This week, the fisheries staff dewatered the separator and began rehabilitation work below the water line.

River Conditions

River conditions during the week are outlined in Table 2 as provide by COE data. Our data day runs from 0000 to 2400 hours each day.

Table 2. River conditions at McNary Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temp. (^{o}F)*		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
118.0	91.2	0.0	0.0	58	57	6.0	6.0

*Taken from the unit 1 scroll case.

Other

Inline Cooling Water Strainers: Cooling water strainer examinations were conducted on November 4. Only juvenile shad were recovered.

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

Avian Activity: Bird counts are no longer occurring.

Repairs to the outfall's water cannon pump are still being arranged.

During other inspections, we noted in the tailwater area, gulls and cormorants feeding in the powerhouse flow. At times, in the afternoon, several hundred gulls were observed. We also noted gulls and cormorants roosting on the navigation lock wing wall, which is part of the spill zone. In addition, we noted grebes floating on the water below the spillway. Finally, we observed gulls and cormorants occasionally at the bypass outfall. Bird numbers are affected by the juvenile shad out migration and their own migratory patterns.

In the forebay area, we observed an occasional gull or group of gulls along with an occasional cormorant. Grebe numbers peaked at a high of about 75. We observed gulls occasionally on the rock by the Washington boat dock or roosting on the upper navigation lock wing wall. There appears to be a large flock of gulls roosting at various locations on project.

This week, 3 grebes entered the gatewell slots. We removed 2 and returned them to the river. One grebe passed to the juvenile collection channel, joining the one grebe reported in this location last week. We removed both grebes from the channel and returned them to the forebay.

Research: The adult lamprey passage study continues to be phased out. On November 13, a dive team will remove the camera just outside of weir SFEW2. Preparations for the adult steelhead fallback study continue. Installation of powerhouse transducers will be completed by November 7. On November 10, a transducer will be installed at the TSW. Following the TSW transducer installation, transducers will be installed on the ESBSs for the remainder of the week. The University of Idaho continues preparations for a winter adult steelhead radio tracking study.

Project: Ice Harbor
Biologist: Ken Fone
Dates: October 31 – November 6, 2014

Turbine Operation

Unit 3 was taken out of service on July 7 at 1346 hours to investigate a generator electrical grounding problem and for annual maintenance, and remains out of service due to an oil leak. Unit 6 was taken out of service at 1048 hours on October 6 for annual maintenance. Unit 2 was removed from service on October 14 at 0940 hours for digital governor installation.

Units were operated within 1% of peak turbine efficiency as specified in the Fish Passage Plan.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on November 3, 4, and 6.

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. Fish ladder exits were clear of debris and the bubblers were operating satisfactorily. Both the north and the south shore picketed leads are in their deployed positions.

Fishway Entrances and Collection Channel: The south shore entrance (SFE) depth and channel/tailwater differential were in criteria, except for a differential of 2.1 feet on November 6. 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 on all inspections. Fishway entrance criteria are 8 feet depth or greater, or on sill. Channel/tailwater differential criteria are 1 – 2 feet.

Auxiliary Water Supply System: Two of the 3 north shore fish pumps were operated throughout the week. Six of the 8 south fish pumps were operated.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was little to no debris observed in the forebay and gatewells.

STSs/VBSs: STSs are in position for juvenile fish guidance and have been in cycle-run mode since July 21. Unit 3 STSs were removed for the season on November 4, since the unit will remain out of service past December 15. Unit 1 STSs were operated in continuous-run mode on

November 6 in support of vibration testing on the STS in slot 1B. Sensor fish release pipes are installed in this slot. Unit 1, 2, 4, 5, and 6 STS inspections were performed on October 20 and 22. No significant problems were found.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass was placed in operation on March 17. The collection channel operated with 20 to 21 orifices open.

Juvenile Bypass Facility: The bypass is in operation.

Fish Sampling: Sampling operations began on April 2 and ended on July 15.

Removable Spillway Weir: Spill in support of fish passage began on April 3 and ended on August 31. The contractor for the spill bay 2 ogee and flow deflector modifications continued concrete cutting and ogee chipping. Diving began this week to install temporary bulkheads in preparation for the flow deflector modification.

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
23.7	16.6	0	0	60	58	7.8	7.6

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Monthly turbine cooling water strainer inspections took place on October 20 and 22. One Siberian prawn and approximately 250 juvenile shad mortalities were recovered.

Invasive Species: No new exotic species have been found.

Avian Activity: Contracted hazing of piscivorous birds for 16 hours per day began on April 1 and ended on June 30. The piscivorous bird count program at the project began on April 1 and ended on July 15. Moderate numbers of gulls, cormorants, and grebes were seen around the project during the week.

Research: Researchers plan to release sensor fish through unit 1 between November 7 and December 15 for the turbine characterization study. Pipes for the release of the sensor fish were installed on the framework of the STS in gatewell slot 1B on November 5.

Project: Lower Monumental
Biologists: Bill Spurgeon and Ray Addis
Dates: October 31 – November 6, 2014

Turbine Operation

All available units are being operated within the hard 1% peak efficiency criteria. Unit 6 remains out of service for six year overhaul.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on November 3, 5 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, the gate depth readings were 7.4', 7.1'and 7.2 feet. South powerhouse channel/tailwater head was in of 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 8.5', 7.9'and 8.5 feet. SSE2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections.

The collection channel velocity remained in criteria (1.5 - 4.0 ft/sec) this week.

Any criteria violations at the fishway entrances are related to the failure of the PLC (Programmable Logic Circuit) for automated control. Without automated control, the FCRG (Fishway Control Regulating Gate) drifts closed causing the fishway entrance head to go out of criteria at the south shore entrances. Operators are manually controlling the FCRG and fish pumps to maintain head and depth criteria at fishway entrances. The loss of the fishway PLC also caused all weir gates to be placed in local control. This results in criteria violations if monitoring and adjustment does not occur as tailwater level fluctuates. To minimize this, SPE1 and SPE2 are placed on sill.

The replacement PLC for automated control of the fishway has been received. It is currently undergoing programming. The automated system is expected to return to service by the end of the in water work window. The operators have been instructed to conduct a physical inspection on night shift to replace the FPP inspection via data screen conducted normally on that shift.

Auxiliary Water Supply System: AWS pumps were rotated out of service one at a time on October 18 for quarterly inspections. All AWS pumps were in service and operating on the remaining days of this report period.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 39 square yards of forebay debris observed during this period. Gatewell debris ranged from 0 - 30% surface coverage. Oil absorbent pads were placed in 4 gatewells due to a sheen that was likely caused by grain dust.

STSs/VBSs: STSs are operating in cycle mode. STSs were inspected November 4, 5 and 6. All screens passed inspection.

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

Collection Facility: The facility was dewatered for winter maintenance on October 15.

Transport Summary: Fish transport is not occurring at this time.

River Conditions

Summer spill ended at 0000 hours on September 1. 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
23.0	18.5	0.0	0.0	59.0	58.0	5.5	4.5

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on November 3. Live fish included 1 prawn. Mortalities included l5 prawn and 90 shad.

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

Avian Activity: Daily tailrace counts ceased at end of collection season on October 1. No additional action trigger points were met from the avian action plan through this time period.

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

Project: Little Goose
Biologists: Towns Burgess and Richard Weis
Dates: October 31 – November 6, 2014

Turbine Operation

Turbine units 1, 4, 5 and 6 were available for most of this report period. Unit 3 was placed out of service on July 7 at 0700 hours for a planned six year overhaul. Unit 2 was placed out of service on November 3 for planned annual maintenance. All available turbine units were operated within the 1% peak efficiency range.

Adult Fish Passage Facility

Adult fishway inspections were performed on November 3, 5, and 6.

Fish Ladder: Ladder exit differentials ranged between 0.0 and 0.1 ft. (criteria $\leq$ 0.5 ft.). Water depths over diffuser 13 weirs held steady at 1.2 feet (criteria 1.0-1.3 ft.). No differential was observed at the picketed leads (criteria $\leq$ 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 1.2 and 1.6 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.1 and 8.2 feet (criteria $\geq$ 8.0 ft). NPE weirs rested on sill and depths ranged between 7.0 and 7.4 feet (criteria $\geq$7.0 ft). NSE weirs are in manual mode and depths ranged between 7.1 and 7.4 feet (criteria $\geq$ 6.0 ft.). North powerhouse surface water velocity measured between 2.1 and 2.4 fps. Collection channel surface water velocity near the north shore entrances ranged between 1.9 to 2.4 fps (criteria 1.5 to 4.0 fps).

Auxiliary Water Supply System: All fish pumps operated within criteria.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Estimated amounts of woody debris in the immediate forebay ranged between 0 and 5 sq ft.

Spillway Weir: The spillway weir was removed from service on August 4.

ESBSs/VBSs: ESBSs operated within criteria this report period. All brushes operated as designed. All screens met criteria.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile system continued to operate with 18 open orifices.

Transportation Facility: The collection and transportation facility operated within criteria this week. Fish collection and transportation ended on October 31, with only one reporting day this report period. Fish collection on October 31 totaled 210. The descaling and mortality rates on October 31 were 7.6% and 0.0%, respectively.

Transport Summary: The final truck of the season departed the facility on October 31 with no problems encountered.

River Conditions

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
22.4	20.2	0	0	68.4	57.7	6.0+	5.0

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were checked on November 1. No fish were found.

Invasive Species: No zebra mussels were observed on the substrate monitor on October 21. The next inspection is scheduled for November 21.

Avian Activity: USDA-APHIS bird hazing ended on June 20.

Table 2. Tailrace counts of foraging piscivorous birds at Little Goose Dam.

Date	Time (hours)	Gulls	Cormorants	Terns	Pelicans
October 31	1300	38	22	0	0
November 1	1400	17	18	0	0
November 2	1330	33	6	0	0
November 3	1130	30	18	0	0
November 4	1600	19	13	30	0
November 5	1300	20	19	0	0
November 6	1530	14	12	0	0

Gas Bubble Disease: WDFW Gas Bubble Trauma monitoring concluded on July 28.

Research: The University of Idaho continued their adult salmonid and adult lamprey passage study.

Project: Lower Granite
Biologists: Elizabeth Holdren and Ches Brooks
Dates: October 31 – November 6, 2014

Turbine Operation

Since November 1, available units have been operated within the soft constraint 1% operational criteria. Unit 1 was removed from service for annual maintenance at 0716 hours on October 21. The expected return to service date for unit 1 is November 24. Unit 5 was removed from service for annual maintenance at 0657 hours on September 2. A contact issue with unit 5 blades and liner is being investigated during the outage. The expected return to service date for unit 5 is now November 18. Turbine unit 6 was taken out of service as scheduled from 1242 hours on November 4 until 1223 hours on November 5 in support of RSW dive inspections.

Adult Fish Passage Facility

The fish ladder was inspected by Corps biologists on October 31, November 1, 2 and 3. Visual adult fish counts concluded on October 31. Daytime video counts began on November 1and are scheduled to continue through December 30.

Fish Ladder: Fishway exit head differentials and depths over the weirs were in criteria (≤0.5' and 1.0-1.3', respectively) on all inspections. Picketed lead head differentials were in criteria (≤ 0.3') on all inspections.

Fishway Entrances and Collection Channel: NSE1 was out of criteria (criteria ≥ 7' or on sill) on all inspections with depth readings ranging from 4.7 to 4.9 feet. NSE2 was out of criteria (criteria ≥ 7' or on sill) on all inspections with depth readings ranging from 6.3 to 6.0 feet. North shore channel/tailwater head differentials were out of criteria (criteria 1' - 2') on the October 31 and November 2 inspections. Both out of criteria head differential readings measured 0.9 feet. NSE2 has been out of service since 2011 and is currently suspended with a hoist system at a compromised depth of 630.0 feet. The gate requires a complete rehab and will remain out of service until funding is available. Entrance weir depths are being sacrificed in an attempt to maintain channel/tailwater head differential.

The NPE1 weir gate was in depth criteria (criteria ≥ 8' or on sill) on all inspections. The NPE2 weir gate was in depth criteria (criteria ≥ 8' or on sill) on all but the November 3 inspection. On this date at 1318 hours, NPE2 was found inoperable, and out of criteria with a depth of 7.6', during the fishway inspection. The electrical crew was notified and the gate was repaired, returning within in criteria by 1458 hours the same day; a motor control fuse was at fault. North powerhouse channel/tailwater head differentials were in criteria (criteria 1' - 2') on all inspections.

SSE1 and SSE2 weir gates were in depth criteria (criteria ≥ 8' or on sill) on all inspections. South shore channel/tailwater head was in criteria (criteria 1'- 2') on all inspections

Collection channel velocities were out of criteria (criteria 1.5-4.0 fps) on all inspections. The daily average channel velocity readings averaged 1.1 feet per second. The powerhouse electrical crew is investigating the velocity meter and looking into alternatives for replacement.

Auxiliary Water Supply System: All AWS pumps were available for service. Pumps 1 and 3 were operated. AWS pump 2 was in standby mode. Fish pump 1 is operating at fast speed to provide additional water to the fishway channel. As scheduled, all AWS pumps were taken out of service from 1224 until 1709 hours on November 5 in support of a dive inspection of the construction bridge.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Forebay debris varied during the week due to wind strength and direction. Daily monitoring and removal of gatewell debris continues.

ESBSs/VBSs: ESBSs are deployed in all operational units. The brush cleaning cycle is set for once every two hours.

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

Collection Facility: The sample rate was 50% on October 31 for the final sample work up. Fish facility operation was changed to secondary bypass at 0700 hours on October 31. The same day at 1015 hours, Lower Granite's juvenile fish facility operation was changed from secondary bypass to primary bypass. Staff reported that historically, fish mortalities occurred on the incline screen when the facility was in primary bypass. Therefore the separator remained manned twenty-four hours to monitor the screen. While in primary bypass Corps biological technicians observed juvenile fish mortalities accumulating on the dewatering incline screen. A temporary barrier screen was installed on the incline screen on 31 October to prevent fish from becoming stranded on the screen. Due to the water current at the barrier screen location fish became fatigued and impinged on the barrier screen. At 0800 hours on 1 November, Corps personnel made adjustments to the water supply and modifications to the barrier screen. These adjustments and modifications were unsuccessful. At 0800 hours on 2 November, the facility was again entered secondary bypass operation. Mortalities included 98 unclipped subyearling Chinook, 51 juvenile crappie, and 2 sand rollers.

Transport Summary: The final transport truck of the season departed Lower Granite on October 31. The semi-tractor and the 3500 gallon tanker-trailer were utilized.

River Conditions

River conditions during the week are outlined in Table 1 below. No spill is occurring at this time.

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
22.9	18.6	0.1	0.0	59.0	56.0	5.0+	3.8

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainer inspections last took place on October 28. There were no lamprey mortalities. No other fish species were recovered. The combined unit run time was 1,003.1 hours. The next inspections are scheduled for late November.

Invasive Species: No zebra/quagga mussels were observed at the monitoring station on October 13.

Avian Activity: Daily piscivorous bird 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
October 31	0820	3	5	0
November 1	1640	13	10	0
November 2	1530	22	9	0
November 3	0740	20	17	0
November 4	0740	13	11	0
November 5	0820	7	10	0
November 6	0820	8	9	0

Adult Fish Trap Operations: The adult fish trap facility was in operation 24 hours per day. Collection of fall adult Chinook for truck transportation to Cherry Lane Hatchery has concluded as brood stock needs have been met. Collection of fall adult Chinook for truck transportation to Lyons Ferry Hatchery has resumed in order to obtain additional brood stock and for run reconstruction modeling.

Research

Research: Onsite juvenile fish research has concluded for the year.