U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#26-2013

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: August 23 - 29, 2013

Turbine Operation

McNary had 10 to 11 units available for power generation this week. On April 1, the hard constraint 1 percent criteria began and no units ran outside the criterion this week. Unit outages are recorded in Table 1.

Table 1. Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Reason
4	Jun 24 – Jun 30, 2014	About one year.	Rewind contract.
11	Jun 28 – Jun 30, 2014	About one year.	Rewind contract.
3	Jun 4 – Sep 27	About four months.	Turbine bearing issue.
2	Aug 26 – 30	Five days.	Annual maintenance.
1	Aug 27	10.2 hours.	Transformer 1 maintenance.

Adult Fish Passage Facilities

On August 23, 25 and 28, McNary fisheries biologists performed measured inspections of the adult fishways. Project personnel continue to clean the picketed leads at both exits regularly, especially when the juvenile fish facility is operating in primary bypass mode. Twice this week at night, technicians found the Oregon count station differential out of criteria due to milfoil on the leads. In each case, the general maintenance staff cleaned the leads upon morning arrival. Visual fish and video lamprey counts, continued along with temperature monitoring and the nightly lowering of Oregon ladder entrance weirs (SFEW1, SFEW2, NFEW2 and NFEW3) in support of adult lamprey passage. Monitoring of the weirs revealed no problems.

Fish Ladder Exits: Project personnel cleaned the picketed leads at both exits regularly. Eurasian milfoil continues to be a problem. During the inspections, both ladder exits met all Fish Passage Plan criteria except as discussed below.

At the Washington exit, on August 28, the exit weirs triggered an alarm. Normal weir operations resumed after operators reset the alarm. On August 28, the Oregon exit's head over weir differential measured 0.9 feet. This reading may have been affected by scheduled weir maintenance which took place from August 26 to 28. Our differential monitoring of the traveling screens revealed no problems. Due to encoder (electronic control) issues, weir 340 remains in manual operation.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria except on August 23 and 28, when W2 measured depths of 7.7 and 7.3 feet, respectively. Tailwater elevations were low at the time of these readings with spill occurring. Since the digital encoder at W2 and the LED are currently unplugged and out of service, control room personnel would need to confirm these readings.

Spill turbulence continues to cause calibration drifts for weir, W3, which are very difficult to correct. The motor for W1 has been sent out for rehabilitation. The project will rotate out the weir motors over time, having all of them eventually rehabilitated.

At the Oregon ladder entrances, all points were in criteria except on August 25 when the north powerhouse pool differential measured 0.7 feet. Again, the tailwater elevation was low. On August 28, the operators adjusted all entrance weirs in an effort to improve this differential.

On August 29, at the north powerhouse entrances, project personnel conducted scheduled maintenance. On August 28, south entrance weir, SFEW1, was out of calibration. On August 26, the general maintenance staff adjusted the floating orifice entrances. Project staff will continue to examine all weir issues.

Oregon ladder collection channel velocities averaged 1.3 feet per second from surface readings. Power outages again affected velocity meter settings.

Auxiliary Water Supply System: For the report week, the Wasco County PUD turbine unit in the Washington ladder operated satisfactorily without any interruptions in service. Oregon ladder fish pumps 1 and 3 also operated satisfactorily with blade angles of 30 degrees with no interruptions in service. Fish pump 2 remains out of service for major overhaul which will require a contract. The juvenile fish facility continues to supply the usual 450 cfs to the north powerhouse pool.

Juvenile Fish Passage Facility

The season continues with alternating days of primary and secondary bypass with the switch occurring every morning at 0700 hours. We bypassed 2,605 smolts and 1,650 juvenile lamprey. This week, due to difficulties with the side screen cleaning device in the juvenile channel reported last week, secondary bypass operations did not occur as previously scheduled on August 24 and 26.

Forebay Debris/Gatewell Debris/Oil: For the week, forebay debris along the powerhouse and spillway was very light consisting mostly of Eurasian milfoil which continues to arrive on project in light patches. Winds and project operations affected debris dispersal.

The fisheries staff found trash rack differential measurements satisfactory and no racks were raked. We noted no unusual problems in the gatewell slots. However some man-made debris such as milk cartons and toy shovels were removed when observed. Next week, slots associated with turbine unit 13 will be unwatered in supported of scheduled unit maintenance.

ESBSs/VBSs: ESBSs are deployed in all units except at unit 11which is out of service until June 3, 2014. The screens in slots 2A, 3A, 7B, 8C and 10C remain in timer mode. ESBSs associated with turbine unit 13 are scheduled for removal next week in support of unit maintenance. The ESBS in slot 10C triggered an alarm on August 27. Normal operation resumed after the operator reset the alarm. Camera inspections took place in slots 9A, 9B, 9C and 10A and all these were found to be satisfactory. Screens in slots 10B and 10C could not be inspected as the camera failed. Although the camera was subsequently repaired, it cannot be lowered into the water under an O ring is ordered and replaced. A new camera is being manufactured by a contractor at this time.

VBS differential monitoring revealed no screens out of criteria. However, on August 24, 27 and 29, the project cleaned 13 screens as a preventative measure. We anticipate the upcoming spill closure to increase debris loads at the powerhouse. During VBS cleaning operations, no juvenile lamprey, smolt or juvenile shad mortalities were observed. We will use slots in units 4 and 11 to cycle in rehabilitated VBSs over time.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: For the week, we had 39 or 42 orifices open with no problems observed. From August 24 to 28, we utilized 39 orifices, as 3 orifices were closed in slots associated with unit 4 which is out of service. This change lowered the amount of side dewatering valves openings which in turn reduces the likelihood of the side screen becoming obstructed with debris. Unit 11 orifices are being closed in support of VBS rehabilitations as needed with additional orifices being opened in nearby slots also as needed.

All systems operated well in automatic mode except the for the side screen cleaning device. As mentioned in last week's report, we determined we would have to be present in the channel to trip the upstream limit switch so the device would travel back downstream and not stall. We did this every 3 hours from August 23 to August 27 at which time a new motor was installed. At 1041 hours, the device returned to automatic operation with no further problems. An access slot to the motor's brake adjustment was covered so water could not enter.

The system remained in primary bypass until August 28 at 0700 hours, when normal operations resumed. Also, the fisheries staff monitored the channel during VBS cleanings and during primary bypass operations. Finally, we replaced attraction lights and adjusted orifice value actuators as needed.

Transportation Facility: Both primary and secondary bypass modes return all fish are to the river. PIT tag detection occurs in the full flow pipe during primary bypass operations and throughout the facility during secondary bypass operations. Smolt monitoring occurs only during secondary bypass days. Sample gates are turned on and off as need daily to insure that sample gates function only during secondary bypass operations. The primary PIT tag system remains off as the bypass lines provide a better route for the fish than the PIT lines. PSMFC personnel performed the weekly test of the PIT system as usual. The secondary PIT/bypass gates remain off and open for the bypass season.

On August 27 during transformer 1 maintenance, the facility experienced 3 power outages which totaled one hour in duration. Since the facility was in primary bypass mode, this had no affect on sample collection. However, one outage was long enough to reset the sample gates' PLC (Programmable Logic Circuit). Following the outages, PSMFC personnel examined the facility PIT tag computers. The outfall water cannon had to be restarted after each outage.

Transport Summary: Transport will not occur at McNary this year.

River Conditions

River conditions during the week are outlined in Table 2 as provided by the PSMFC smolt monitoring staff. The data day runs from 0700 to 0700 hours. The summer spill season which requires 50 percent of flow being spilled will conclude at 0001 hours on September 1. Daily temperature monitoring will also cease September 1. As river flows decrease, the chief operator has been adjusting the spill pattern at times for barge traffic entering and exiting the navigation lock.

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
153.0	146.0	76.6	63.8	71.1	70.1	6.0	6.0

*****Control room data.

Other

Inline Cooling Water Strainers: The next cooling water strainer examination will occur on September 10.

Invasive Species: Zebra mussel station examinations on August 28 revealed no problems.

Avian Activity: We continued bird counts with each zone being observed once a day usually in the morning. In the forebay area, we observed high counts of 20 grebes, two gulls, two ospreys and 3 cormorants. Also, we noted cormorants and a few gulls on the rocks by the Washington boat dock. We observed no grebes elsewhere on project. In the tailwater area, we had high counts of 120 gulls, 17 cormorants and 10 terns with an occasional pelican observed. All of the birds were in the spill basin. Bird numbers appear to be fluctuating with juvenile shad numbers. Also, the birds may have begun outmigration themselves. We observed a high count of 6 cormorants by the bypass outfall. The fisheries staff continues to work with the propane and water hazing cannons to keep them functioning well. On August 26, the water cannon was reset following power outages.

Research: The adult lamprey passage study and Oregon exit traveling screen studies continued. GBT examinations will conclude August 30.

Project: Ice Harbor
Biological Science Technician: Donald Dennis
Dates: August 23 - 29, 2013

Turbine Operation

Turbine unit 1 was operated all week. Turbine units 2, 4 and 6 were available for service throughout this report period. Turbine unit 3 was available for service on August 23, 24, and 25 then subsequently removed from service on August 26 at 0740 hours in support of annual maintenance. Turbine unit 5 remains out of service due to blade cracks.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on August 26, 27, 28 and 29.

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. The south fish ladder picketed leads required frequent cleaning due to aquatic vegetation fouling.

Adult Fishway Performance: Center fishway weir 2 remains out of service. The south adult fish pumps will need to be shut down to remove the bulkhead in front of the weir. Currently, center fish way weir 1 is being operated. Fishway entrance criterion is 8 feet depth, greater than 8 feet depth, or on sill. All fishway entrances were within criteria on sill with less than 8 feet of depth. All channel/tail water differentials were in criteria. Channel/tail water 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 were operated without problems. All are available for operation.

Juvenile Fish Passage Facility

Fore bay Debris/Gate well Debris/Oil: No problems to report. Fish ladder exits are clear of debris and the bubblers are operating satisfactorily.

STSs/VBSs: STSs are in cycle run mode operation. No problems were found during the August inspections. STS/VBS inspection were performed August 20 and 22. No problems to report all looked well. Turbine strainer inspections were done at this time.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile bypass is watered up with 20 open orifices. No problems with the incline screen cleaner brush.

Juvenile Bypass Facility: No problems to report.

Fish Sampling: The first sample was April 8 and the last sample of the season was performed July 15.

Removable Spillway Weir: Spill in support of fish passage began April 3, 2013. The RSW was in service until August 21 when closure became necessary due to the lack of river flow and the need to maintain minimum generation. Spill continued in the non-RSW spill bays. This change in operation was coordinated through TMT.

Fish Sampling: Juvenile fish sampling concluded July 15.

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
23.90	18.20	13.90	9.10	70	69	6.9	6.5

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Results of the main turbine cooling water inspections for August are listed in Table 2 below:

Table 2. Cooling Water Inspection Results, 20 August 2013, Ice Harbor Dam.

Date	Unit	Results
20-Aug	6	None
20-Aug	5	Not inspected – unwatered for blade repair.
20-Aug	4	None
20-Aug	3	None.
20-Aug	2	1 juvenile lamprey mortality
20-Aug	1	None.

Invasive Species: No new invasive species were detected this week.

Avian Activity: APHIS hazing activities ended June 30. Fish facility personnel are conducting bird observations whenever possible.

Research: No on-site researchers are present at this time.

Fish Salvage: A fish salvage took place in the unit 3 scroll case on August 26. No fish were seen and none were recovered.

Project: Lower Monumental
Biologists: Bill Spurgeon and Elizabeth Holdren
Dates: August 23 - 29, 2013

Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria. Unit 3 was removed from service at 0800 hours on August 12 for annual maintenance. Units 1, 2, and 4 were taken out of service at 0659 hours on August 19 to in support of Doble testing of transformers. During the period of Doble testing, units 5 and 6 were in standby mode available for generation. Unit 5 was run at speed-no-load for station service through the day (0700-1800 hours). All units were returned to service following the completion of Doble testing at 1612 hours on August 26.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and PSMFC/State biologists on August 23, 24, 25, 26, and 28.

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 5.0', 5.6', 5.2', 5.5', and 5.0 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 5.8', 6.6', 6.4', 6.4', and 6.0 feet. SSE 2 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 and 3 were operated throughout this period. Two pump operations will continue until bearing repair and shaft alignment work is completed on pump 2, approximately September 30.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 0.0 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-11% surface coverage. No oil was observed in gatewells.

STSs/VBSs: STSs are operating in cycle mode.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel is operating with 20 orifices open.

Collection Facility: The facility is in collection for transport mode. Facility mortality exceeded 6% on August 27, 28 and 29. Percent mortality was 14.4, 13.2, and 26.9, respectively. Sampled sub-yearling Chinook had suspected columnaris rates of 14.7% (16 infected out of 109 sampled) on August 27, 16.0% (21 infected out of 131 sampled) on August 28, and 22.6% (26 infected out of 115 sampled) on August 29.

Transport Summary: Every-other-day transport is occurring with trucks departing on even numbered days.

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
22.5	19.5	10.0	6.6	70.0	68.0	5.0+	4.6

*Scrollcase temperatures.

Other

Summer spill began on June 21. A modified spill pattern was implemented on August 21 due to river flows being insufficient to operate the RSW while maintaining minimum generating requirements for 1% peak efficiency operating criteria. The RSW was operational when river flows were sufficient.

Inline Cooling Water Strainers: Cooling water strainers were inspected on August 6. No live lamprey were recovered. Mortalities included 1 juvenile lamprey and 2 juvenile catfish.

Invasive Species: No zebra mussels were observed at the monitoring stations on August 2.

Avian Activity: Bird hazing has ceased for the season.

Research: No researchers are present on site at this time.

Project: Little Goose
Biologist: Richard Weis
Dates: August 23 - 29, 2013

Turbine Operation

Turbine units 1 through 5 were available for all of this report period. Unit 6 was returned to service on August 28 at 1600 hours following annual maintenance and inspection. All available turbine units were operated within the 1% criteria.

Adult Fish Passage Facility

USACE and ODFW fisheries biologists performed measured inspections of the adult fishway on August 25, 27 and 29.

Fish Ladder: The ladder exit head differentials remained steady at 0.1 feet (criteria $\leq$ 0.5 ft.). Water depths over the weirs ranged between 1.1 and 1.2 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.). 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 1.8 and 2.1 feet (criteria 1.3 to 2.0 ft.). SSE weir depths ranged between 8.0 (sill) and 8.2 feet (criteria $\geq$8.0 ft). NPE2 was lowered and opened on August 20 with the return to service of fish pump 3. NPE weirs rested on sill and depths ranged between 4.7 and 5.4 feet (criteria $\geq$7.0 ft or on sill). NSE weirs are at fixed elevations of 532.0 feet and depths ranged between 5.0 and 5.2 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured near NPE was 2.2 fps for the single reading (criteria $\geq$1.5 fps). Collection channel subsurface water velocity was measured on August 5 using the Rickly Hydrologic Current Meter. Three measurements were conducted from near surface, mid depth and near bottom. The subsurface velocity average was 3.1 fps with 2 pumps operating and NPE 2 raised and closed.

Auxiliary Water Supply System: All fish pumps operated within criteria ranging between 71 and 74 rpm. Fish pump 3 was removed from service on August 24 for 2 hours to re-torque bolts. Fish pump 1 and 2 were increased in rpm during the outage.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Woody debris was minimal. Gatewells remained clear of debris.

Spillway Weir: The spillway weir was removed from service on August 1 at 0915 hours.

ESBS/VBS: All ESBSs operated within criteria this report period. All brushes operated as designed.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile collection system was operated throughout this period with 23 open orifices.

Transportation Facility: The facility continued collection for transport. Daily fish collection for the week ranged between 202 and 538 and totaled 2,609. The descaling and mortality rates were 0.4% and 1.0% respectively. The facility switched to 100% sample rate on August 17 to accommodate midi-tank truck loading.

Transport Summary: Every-other-day trucking operations began with the first truck departure on August 18. Fish are being transported to below Bonneville Dam and released at the Smolt Monitoring Facility outfall pipe. A total of 2,049 fish were transported. All loading and transport operations were completed satisfactorily.

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
21.9	11.7	9.4	7.5	71.7	71.0	6.0	5.0

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were checked on August 28. No fish were found.

Invasive Species: The zebra mussel substrate monitor was last inspected on August 20. No mussels were observed. The next inspection is scheduled for September 19.

Avian Activity: Maximum bird count from single survey included 14 cormorants and 20 gulls.

Research: UC Davis is performing underwater video monitoring of the new lamprey orifices in the adult fish ladder. University of Idaho is performing Adult Salmon Passage Studies using radio telemetry.

Project: Lower Granite
Biologists: Mike Halter and Ches Brooks
Dates: August 23 - 29, 2013

Turbine Operation

Lower Granite had turbine units #1, 2, 3, 4 and 5 available for power generation at the beginning of the report period. Turbine unit #6 was removed from service on June 24 for cavitation repair, followed by annual maintenance. The expected return to service date is December 7. All available turbine units were out of service from 0725 until 1525 hours on August 23 in support of VBS inspections. Special unit operations for adult passage did not take place this week because of constraints due to powerhouse roof repair work (although auxiliary pumps one and two were operated all week). Roof repair requires a powerhouse outage from approximately 0930 to approximately 2230 hours Monday thru Saturday for the next 3 to 4 weeks. During this outage turbine unit #5 is run at speed no-load (5 kcfs) for station service.

Adult Fish Passage Facility

On August 23, 25 and 28 COE fish biologists conducted inspections of the adult fishway system.

Fish Ladder: All criteria were met.

Fishway Entrances and Collection Channel: Head differential readings remained within criteria at the south shore and north powerhouse fishway entrances during the weekly inspections. The head differential reading at the north shore fishway entrances was slightly out of criteria on the August 25 inspection with a reading of 0.9 feet (criterion 1.0' – 2.0').

Weir depths at the south shore fishway entrances also met criteria during all weekly inspections with depths ranging from 8.0 to 8.1 feet. The north powerhouse fishway entrances were on sill during all inspections this week with depths ranging from 5.7 to 6.1 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 3.4 to 5.0 feet (criterion $\geq$ 7.0 feet). Only north shore entrance 1 can adjust its 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 0.97 to 1.21 feet per second and averaged 1.08 feet per second.

Auxiliary Water Supply System: Fish pumps 1 and 3 were run during the week without any problems. Fish pump 2 is now in standby mode.

Juvenile Fish Passage Facility

The sample rate remained at 100% during the report week.

Forebay Debris/Gatewell Debris/Oil: Due to concerns over elevated descaling rates the trash racks associated with turbine units 2 and 5 were raked on 8/27/13, with a fair amount of thick "Christmas" tree like debris being removed from the trash rack in front of gatewell slot 5B. JFF personnel would recommend (along with the smolt monitoring crew) that the project pursue the raking trash racks associated with units 1, 3 and 4 trash racks before the completion of powerhouse roof repairs.

ESBSs/VBSs: VBS/ESBS video inspections took place on August 23. No issues of note were reported. The next inspections are planned for late September.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed every 3 hours around the clock in an attempt to keep them free of materials that might impact fish passage. Debris levels were very light during the report week.

Transportation Facility: The JFF operated smoothly during the week. There were no operational problems of any kind with fish collection, fish sampling, or fish transportation equipment. Fish collection numbers at Lower Granite decreased during the week with an average daily collection of smolts of 279 (versus a daily average of 427 last week).

Transport Summary: Every-other-day fish barging operations concluded on August 16. All fish barges have been returned to Lower Granite and are docked for maintenance work and winter storage. Fish trucking operations began on August 18 using the pickup midi-tanker. Collected fish numbers have been relatively low and well within the capacity of this transport vehicle.

Removable Spillway Weir: Mandatory summer spill operations began at 0001 hours on June 21. At 1600 hours on August 23 the project was directed to close the RSW and operate the spillways in accordance with Table LWG -11 of the FPP until the end of mandated spill. The goal of this operation is to increase fish passage at the adult ladder.

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
22.8	17.9	12.7	7.7	65.1	64.3	5.0+	3.8

*Scrollcase temperature.

Other

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

Invasive Species: The zebra mussel substrate near the adult fishway exit was last examined for zebra mussels on August 2. No evidence of zebra mussels was found. The next inspection will take place in early September.

Inline Cooling Water Strainers: Cooling water strainers were inspected for lamprey entrainment on August 27. No lamprey were found in the strainers over a combined run time of 394.9 unit hours. The next cooling water strainer inspections are scheduled for late September.

Avian Activity: Formal bird counts and hazing started on April 1. Avian hazing activities concluded for the season on June 30.

Adult Fish Trap: The NOAA adult ladder fish trap did not operate during the week due to low water supply during auxiliary pump operations.

There are 3 auxiliary pumps that draw water from elevation 705 feet (about 30 feet down); these pumps were designed to supply water to the fish ladder during the reservoir drawdown test in 1992. Auxiliary pumps #1 and #2 were run for the duration of the report week.