**U.S. ARMY CORPS OF ENGINEERS**
**WALLA WALLA DISTRICT**
**FISH FACILITIES WEEKLY REPORT**
**#37-2018**

**Project: McNary**
Biologist: Bobby Johnson and Denise Griffith
Dates: November 9 to 15, 2018

## Turbine Operation

| Yes | No | Turbine Unit Status | | |
|---|---|---|---|---|
| | X | All 14 turbine units available for service. (See Table 1 & comments below). | **Hard** | **Soft** |
| | X | Available turbines operated within 1% peak efficiency? Constraint in effect. | | X |

Table 1. McNary Unit Outages (OOS) and Return to Service (RTS)

| | OOS | | RTS | | |
|---|---|---|---|---|---|
| **Unit** | **Date** | **Time** | **Date** | **Time** | **Outage Description** |
| 6 | 10/01 | 0740 | 12/04 | NA | Nine year overhaul. |
| 9 to 11 | 11/13 | 0953 | 11/13 | 1119 | Rotated outages for ESBS camera inspections. |
| 7 | 11/14 | 0656 | 11/14 | 1211 | Valve replacement. |

Comments: Units were operated outside the soft one percent constraint at BPA's request as needed.

## Adult Fish Passage Facilities

McNary fisheries biologists performed adult fishways measured inspections on November 9, 11 and 15. NOAA fisheries personnel did their last monthly inspection on October 31.

Fish Ladder Exits:

| Yes | No | Location | Criteria | Comments |
|---|---|---|---|---|
| X | | Oregon Exit | Head over weir 1.0' to 1.3' | |
| X | | Oregon Count Station Differential | 0.0' to 0.5' | |
| X | | Washington Exit | Head over weir 1.0' to 1.3' | |
| X | | Washington Count Station Differential | 0.0' to 0.5' | |

Comments: Debris loads were minimal to light (woody material) near the Oregon ladder exit and minimal to very light (aquatic vegetation) near the Washington ladder exit. Trash racks were cleaned by the general maintenance staff as needed.

There are no problems to report at either exit. On November 13, scheduled maintenance was performed on the Oregon exit traveling screens.

Fishway Entrances and Collection Channel:

| Yes | No | Sill | Location | Criteria | Comments |
|---|---|---|---|---|---|
| X | | | North Oregon Entrance Head Differential | 1.0' – 2.0' | |
| X | | | NFEW2 Weir Depth | ≥ 8.0' | |
| X | | | NFEW3 Weir Depth | ≥ 8.0' | |
| X | | | South Oregon Entrance Head Differential | 1.0' – 2.0' | |
| X | | | SFEW1 Weir Depth | ≥ 8.0' | |
| X | | | SFEW2 Weir Depth | ≥ 8.0' | |
| X | | | Oregon Collection Channel Velocities | 1.5 to 4.0 fps | Averaged 2.3 fps. |
| X | | | Washington Entrance Head Differential | 1.0' – 2.0' | |
| X | | | WFE2 Weir Depth | ≥ 8.0' | |
| X | | | WFE3 Weir Depth | ≥ 8.0' | |

Comments: There are no problems to report.

Auxiliary Water Supply System:

| Operating Satisfactory | Standby | Out of Service | Auxiliary Water Supply System (AWS) |
|---|---|---|---|
| X | | | WA shore Wasco County PUD Turbine Unit. |
| | X | | WA shore Wasco PUD Bypass. |
| X | | | Oregon Ladder Fish Pump 1, Blade angle: 22. |
| X | | | Oregon Ladder Fish Pump 2, Blade angle: 20 to 23. |
| X | | | Oregon Ladder Fish Pump 3, Blade angle: 22 to 23. |
| X | | | OR North Powerhouse Pool supply from juvenile fishway. |

Comments: There are no problems to report.

**Juvenile Fish Passage Facility**

Maintenance at the juvenile passage facility continued.

Forebay Debris/Gatewell Debris/Oil:

| Yes | No | NA | Item | Comments |
|---|---|---|---|---|
| X | | | Forebay debris load acceptable? (amount) | Very light to moderate near powerhouse. |
| X | | | Trash rack differentials measured this week? | Daily. |
| X | | | Trash rack differentials acceptable? | |
| | X | | Any debris seen in gatewells? (% coverage) | |
| | X | | Any oil seen in gatewells? | |

Comments: The forebay debris loads near the powerhouse were very light to moderate. Debris consisted of aquatic vegetation and woody material. New incoming debris loads were minimal. Debris accumulations along the spillway were minimal.

No trash racks were cleaned and no problems were noted in the gatewell slots this week.

Extended-length submersible bar screen (ESBSs)/Vertical barrier screen (VBSs):

| Yes | No | NA | Item |
|---|---|---|---|
| X | | | ESBSs deployed in all slots and in service? |
| X | | | ESBSs inspected this week? |
| X | | | ESBSs inspection results acceptable? |
| X | | | VBSs differentials checked this week? |
| X | | | VBSs differentials acceptable? |

Comments: The brush cycles for the screens in 3A, 3C and 4A slots remained in timer mode. On November 12, the fisheries technician noted the brush on the ESBS in 9B slot was not fully cycling in automatic mode. The operator was able to reset the brush and switched the cycle to timer mode. An electrician resolved the issue the next day and returned the brush cycle to automatic mode. On November 13, biologist noted the brushes on the ESBSs in unit 1 were cycling in timer mode. The biologist requested the electrical staff to look into the issue, which could be more than proximity switch failure.

On November 13, ESBSs were inspected in units 9 through 11 with no problems found. However, during the last two screen inspections, we were experiencing issues with the underwater camera.

VBS differential monitoring occurred daily. No high differentials were measured. On November 11 and 15, a total of three screens were cleaned. No fish mortalities were noted.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe:

| Yes | No | NA | Item | Number of orifices in service |
|---|---|---|---|---|
| X | | | Orifices operating satisfactory? | 42 |
| X | | | Dewatering and cleaning systems operating satisfactory? | |

Comments: Orifices were adjusted for the VBS cleaning as required. Orifice valve operators with air and oil leaks were repaired as needed this week.

On November 12, at 1317 hours, the rectangular screen cleaning brush tripped a run time alarm, which resulted in the transition brush not running and tripping a no run alarm. The only record we have of these alarms was recovered from the PLC. The most logical assumption is the rectangular brush briefly jammed on debris. Once the brush cleared the debris and parked, both alarms cleared. Between 1317 and 1400 hours, the fisheries technician on duty had passed through the control room and had inspected the channel system finding no evidence of the alarms. Thus, no one knew of the alarms until the biologist examined the PLC panel view.

Bypass Facility:

| Yes | No | NA | Item |
|---|---|---|---|
| | | X | Sample gates on? |
| | | X | PIT-tag sampling system on? |

Comments: All systems remained out of service for winter maintenance, which continues.

TSW Operations: The TSWs remained out of service.

## River Conditions

Table 2. River Conditions at McNary Dam.

| Daily Average River Flow (kcfs) | | Daily Average Spill (kcfs) | | Water Temperature (°F) | | Water Clarity (Secchi disk - feet) | |
|---|---|---|---|---|---|---|---|
| High | Low | High | Low | High | Low | High | Low |
| 147.9 | 115.9 | 0.0 | 0.0 | 55.0 | 52.0 | 6.0 | 6.0 |

Comments: The above data is supplied by McNary control room. Spillway hoist and crane maintenance concluded.

**Other**

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur in December.

Avian Activity: Casual avian observations were made during other inspections. One pelican was observed in the tailwater zone this week. No terns were noted on project. Gull and cormorant numbers appeared to fluctuate with the juvenile shad outmigration. Gulls and cormorants were feeding in the powerhouse flow and at the outfall. Both species were roosting on structures around the tailwater area. Gulls were also roosting on the outfall pipe.

A gull flock, gull or cormorant was occasionally noted in the forebay area.

Large gull flocks and a few cormorants were noted roosting around the project outside the observation zones. Areas near both boat docks were used.

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

Fish Rescue/Salvage**:** None occurred.

Research: None occurred.

**Project: Ice Harbor**
Biologist: Ken Fone
Dates: November 9 – November 15, 2018

## Turbine Operation

| Yes | No | Turbine Unit Status | | |
|---|---|---|---|---|
| | X | All 6 turbine units available for service (see table & comments below for details). | Hard | Soft |
| X | | Available turbines operated within 1% peak efficiency? Constraint in effect. | | X |

Ice Harbor Unit Outages (OOS) and Return to Service (RTS).

| | OOS | | RTS | | |
|---|---|---|---|---|---|
| Unit | Date | Time | Date | Time | Outage Description |
| 2 | 4/25/16 | 0606 | --- | --- | Runner replacement |
| 4 | 9/20/18 | 1619 | --- | --- | Investigate for possible oil leak |
| 3 | 11/7/18 | 0753 | --- | --- | Runner replacement |
| 1 | 11/15/18 | 1519 | 11/15/18 | 1724 | Replace STS in slot 1A |

Comments: Units 6, 5, and 1 were taken out of service one at a time for STS inspections on November 14 and 15.

## Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on November 13, 14, and 15.

Fish Ladders:

| Yes | No | Location | Criteria | Measurements |
|---|---|---|---|---|
| X | | North Ladder Exit Differential | Head $\leq$ 0.3’ | |
| X | | North Ladder Picketed Lead Differential | Head $\leq$ 0.3’ | |
| X | | North Ladder Depth over Weirs | Head over weir 1.0’ to 1.3’ | |
| X | | South Ladder Exit Differential | Head $\leq$ 0.3’ | |
| X | | South Ladder Picketed Lead Differential | Head $\leq$ 0.3’ | |
| X | | South Ladder Depth over Weirs | Head over weir 1.0’ to 1.3’ | |

Fishway Entrances and Collection Channel:

| Yes | No | Sill | Location | Criteria | Measurements |
|---|---|---|---|---|---|
| X | | | South Shore Entrance (SFE-1) Weir Depth | $\geq$ 8.0’ or on sill | |
| X | | | South Shore Channel/Tailwater Differential | 1.0’ – 2.0’ | |
| X | | | South Shore Channel Velocity | 1.5 – 4.0 fps | |
| | | X | North Powerhouse Entrance (NFE-2) Weir Depth | $\geq$ 8.0’ or on sill | |
| X | | | North Powerhouse Entrance Channel/Tailwater Differential | 1.0’ – 2.0’ | |
| | | X | North Shore Entrance (NEW-1) Weir Depth | $\geq$ 8.0’ or on sill | |
| | X | | North Shore Channel/Tailwater Differential | 1.0’ – 2.0’ | 2.1’ |

Comments: The NEW-1 channel/tailwater differential was slightly above criteria on the November 13 inspection. This was probably due to the tailwater transducer needing to be calibrated, which was reported to the electricians.

Auxiliary Water Supply (AWS) System:

| Operating Satisfactory | Standby | Out of Service | Auxiliary Water Supply System (AWS) |
|---|---|---|---|
| 5 pumps | 3 pumps | | Status of the 8 South Shore AWS Pumps |
| 2 pumps | 1 pump | | Status of the 3 North Shore AWS Pumps |

Comments: None.

**Juvenile Fish Passage Facility**

Forebay Debris/Gatewell Debris/Oil:

| Yes | No | NA | Item | Comments |
|---|---|---|---|---|
| X | | | Forebay debris load acceptable? (amount) | 60 square yard |
| | X | | Gatewell drawdown measured this week? | Not done due to an oversight |
| | | X | Gatewell drawdown acceptable | |
| X | | | Any debris seen in gatewells (% coverage) | 0 to 5% |
| X | | | Any oil seen in gatewells? | 3C gatewell and head gate slots |

Comments: A light oil sheen was observed in 3C gatewell and head gate slots on November 7. Project maintenance staff believe that the sheen is residual oil off of the intake gate hydraulic cylinder rod. The oil sheen was documented and reported to the proper authorities. Oil absorbing socks were deployed in the slot on November 19.

STSs/VBSs:

| Yes | No | NA | Item |
|---|---|---|---|
| | X | | STSs deployed in all slots and in service? |
| | X | | STSs in continuous-run mode (Note: if not, then STSs are in cycle-run mode)? |
| X | | | STSs inspected this week? |
| | X | | STSs inspection results acceptable? |
| | | X | VBSs differentials checked this week? |
| | | X | VBSs differentials acceptable? |

Comments: The STSs are in cycle-run mode. Unit 3 STSs were pulled up on November 9, since the unit will be out of service for the long term. Unit 6, 5, and 1 STSs were inspected on November 14 and 15. The STS in slot 1A was found to have an 8" diameter hole in the mesh. Approximately 75 juvenile shad were found already dead in the adjoining intact screen. This STS was replaced with a spare STS later the same day.

Orifices, Collection Channel, Dewatering Structure, and Flume:

| Yes | No | NA | Item | Number open and in service |
|---|---|---|---|---|
| X | | | Orifices operating satisfactory? | 20 |
| X | | | Dewaterer and cleaning systems operating satisfactory? | |

Comments: Orifice 1BN light was found to be not working, with the light fixture hanging loose, on November 8. Orifice 1BS was opened in place of 1BN. A trouble report was created on November 19 to repair the light.

Unit 3 orifices were closed on November 9 for STS removal and remain closed under the safe clearance for the unit. The maintenance bulkhead was placed in slot 3C, and the slot will be unwatered, to reduce leakage into unit 3. On November 15, the project biologist requested that an orifice be re-opened in slots 3A and 3B.

Juvenile Fish Facility: The fish facility is being operated in primary bypass.

Fish Sampling: Sampling is done for the year.

Removable Spillway Weir (RSW): Voluntary spill for fish passage is done for the year.

## River Conditions

River conditions at Ice Harbor Dam.

| Daily Average River Flow (kcfs) | | Daily Average Spill (kcfs) | | Water Temperature* (°F) | | Water Clarity (Secchi disk - feet) | |
|---|---|---|---|---|---|---|---|
| High | Low | High | Low | High | Low | High | Low |
| 21.4 | 17.2 | 0 | 0 | 55 | 54 | 8.2 | 8.0 |

*Unit 1 scroll case temperature.

## Other

Inline Cooling Water Strainers: Monthly inspections for lamprey ended in June and will start up again in December. Unit 1, 3, 5, and/or 6 strainers were cleaned on November 9 and 11 because of juvenile shad plugging up the strainers. A total of approximately 5,848 dead juvenile shad were removed.

Avian Activity: There were large numbers of gulls, pelicans, cormorants, and grebes observed around the project. Most of the gulls, pelicans, and cormorants were observed foraging downstream of the powerhouse and the grebes were observed foraging in the forebay.

Invasive Species: No exotic species that are new to the area have been found.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by Anchor, frozen and properly disposed of in a landfill. Sampling is done for the year.

Fish Rescue/Salvage: Unit 2 stoplogs were removed from the water on November 13. One smallmouth bass, 2 sculpins, 2 crayfish, and approximately 300 Siberian prawns were rescued from the side-ribs of the stoplogs. The fish were released in the tailrace in good condition.

Research: There is no on-site research occurring at this time.

**Project: Lower Monumental**
Biologists: Chuck Barnes and Raymond Addis
Dates: November 9 - 15, 2018

## Turbine Operation

| Yes | No | Turbine Unit Status | | |
|---|---|---|---|---|
| | X | All 6 turbine units available for service (see table & comments below for details). | Hard | Soft |
| X | | Available turbines operated within 1% peak efficiency? Constraint in effect. | | X |

Lower Monumental Unit Outages (OOS) and Return to Service (RTS)

| | OOS | | RTS | | |
|---|---|---|---|---|---|
| Unit | Date | Time | Date | Time | Outage Description |
| Unit 1 | 12/10/2014 | | 11/20/2018 | ERTS | Rehabilitation Overhaul |
| Unit 4 | 9/19/2018 | 1600 | 12/28/18 | ERTS | Inspection of Oil Governor System/Blade Seal Replacement |

Comments: Units went into Hard Constraint at 0001 on April 1 and Soft Constraint on November 1st.

## Adult Fish Passage Facility

The adult fishways were inspected by Corps biologists on November 13, 14 and 15.

Fish Ladder:

| Yes | No | Location | Criteria | Measurements |
|---|---|---|---|---|
| X | | North Ladder Exit Differential | Head ≤ 0.5’ | |
| X | | North Ladder Picketed Lead Differential | Head ≤ 0.4’ | |
| X | | North Ladder Depth over Weirs | Head over weir 1.0’ to 1.3’ | |
| X | | South Ladder Exit Differential | Head ≤ 0.5’ | |
| X | | South Ladder Picketed Lead Differential | Head ≤ 0.3’ | |
| X | | South Ladder Depth over Weirs | Head over weir 1.0’ to 1.3’ | |

Comments: None.

Fishway Entrances and Collection Channel:

| Yes | No | Sill | Location | Criteria | Measurements |
|---|---|---|---|---|---|
| X | | | North Shore Entrance (NSE-1) Weir Depth | ≥ 8.0’ or on sill | |
| X | | | North Shore Entrance (NSE-2) Weir Depth | ≥ 8.0’ or on sill | |
| X | | | North Shore Channel/Tailwater Differential | 1.0’–2.0’ | |
| | | X | South Powerhouse Entrance (SPE-1) Weir Depth | ≥ 8.0’ or on sill | |
| | | X | South Powerhouse Entrance (SPE-2) Weir Depth | ≥ 8.0’ or on sill | |
| X | | | South Powerhouse Entrance Channel/Tailwater Differential | 1.0’–2.0’ | |
| X | | X | South Shore Entrance (SSE-1) Weir Depth | ≥ 8.0’ | |
| X | | | South Shore Entrance (SSE-2) Weir Depth | ≥ 6.0’ | |
| X | | | South Shore Channel/Tailwater Differential | 1.0’ – 2.0’ | |

Comments:
South Powerhouse Entrance (SPE-1) was at sill during all inspections with readings of 6.6, 7.0 and 7.0 feet respectively.
South Powerhouse Entrance (SPE-2) was at sill during all inspections with readings of 6.6, 7.0 and 7.0 feet respectively.
South Shore Entrance (SSE-1) was at sill during the November 13 and 14 inspections with readings of 7.6 and 7.8 feet respectively.

Auxiliary Water Supply System:

| Operating Satisfactory | Standby | Out of Service | Auxiliary Water Supply System (AWS) |
|---|---|---|---|
| No | | X | AWS Fish Pump 1 |
| Yes | | | AWS Fish Pump 2 |
| Yes | | | AWS Fish Pump 3 |

Comments: AWS Fish pump 1 is out of service for seized Wicket Gate Bushings. Current estimated RTS date is 7 February, 2019.

**Juvenile Fish Passage Facility**

Forebay Debris/Gatewell Debris/Oil:

| Yes | No | NA | Item | Comments |
|---|---|---|---|---|
| X | | | Forebay debris load acceptable? (amount) | 337 sq yd average |
| X | | | Gatewell drawdown measured this week? | |
| X | | | Gatewell drawdown acceptable | |
| X | | | Any debris seen in gatewells (% coverage) | 0 - 25% |
| | X | | Any oil seen in gatewells? | |

Comments: None.

STSs/VBSs:

| Yes | No | NA | Item |
|---|---|---|---|
| X | | | STSs deployed in all slots and in service? |
| | X | | STSs in continuous-run mode (Note: if not, then STSs are in cycle-run mode)? |
| | X | | STSs inspected this week? |
| | | X | STSs inspection results acceptable? |
| | | X | VBSs differentials checked this week? |
| | | X | VBSs differentials acceptable? |

Comments: STS's operating on cycle mode due to average sub-yearling Chinook and sockeye lengths being greater than 120 mm.

Orifices, Collection Channel, Dewatering Structure, and Flume:

| Yes | No | NA | Item | Number open and in service |
|---|---|---|---|---|
| X | | | Orifices operating satisfactory? | 18 |
| | X | | Dewaterer and cleaning systems operating satisfactory? | |

Comments: PDW mechanical cleaning brush was turned off on weekend days in case of faults. The run frequency of the bubbler debris removal system was increased to keep the screen clear of debris.

Collection Facility: Collection for truck transport ended at 0700 on October 1 and the facility operation was changed to primary bypass. The facility was dewatered at 1230 on October 3 for cleaning and winter maintenance.

Transport Summary: Alternate day trucking ended at 0700 on October 1.

Spillway Weir: RSW went into service when Spring Spill began at 0001 on April 3. RSW was closed at 1245 on August 8 due to TMT decision. Summer Spill ended at 00:00:00 on September 1.

**River Conditions**

River conditions at Lower Monumental Dam.

| **Daily Average River Flow (kcfs)** | | **Daily Average Spill (kcfs)** | | **Water Temperature (°F)*** | | **Water Clarity (Secchi disk - feet)** | |
|---|---|---|---|---|---|---|---|
| High | Low | High | Low | High | Low | High | Low |
| 21.1 | 18.5 | 0 | 0 | 52.0 | 50.5 | 6.0 | 5.4 |

*Scroll case temperatures.

**Other**

Inline Cooling Water Strainers: Cooling water strainers are not inspected in October.

Avian Activity: Observation of piscivorous birds during fish ladder inspections ended on October 1. Bird hazing efforts by USDA personnel ended at 2000 on June 2. Observation of piscivorous birds during fish ladder inspections ended on October 1. Tailrace observations for bird hazing effectiveness ended with the June 30 observation.

Outfall pipe bird water cannons were turned off on June 11, due to a damaged water cannon at pipe exit. The standby set of cannons have a missing water cannon and were already out of service.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on October 1.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by PSMFC and Anchor, frozen and properly disposed of in a landfill. Juvenile fish collection ended at 0700 on October 1.

Fish Rescue/Salvage: No fish rescue during this reporting period.

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

**Project: Little Goose**
Biologists: Scott St. John and Richard Weis
Dates: November 09 - November 15, 2018

## Turbine Operation

| Yes | No | Turbine Unit Status | | |
|---|---|---|---|---|
| | X | All 6 turbine units available for service (see table & comments below for details). | **Hard** | **Soft** |
| X | | Available turbines operated within 1% peak efficiency? Constraint in effect. | | X |

Little Goose Unit Outages (OOS) and Return to Service (RTS)

| | OOS | | RTS | | |
|---|---|---|---|---|---|
| **Unit** | **Date** | **Time** | **Date** | **Time** | **Outage Description** |
| 5 | 04/14/17 | 14:11 | 11/16/18 | 17:00 | Spider and upper guide bearing repair. |
| 3 | 10/23/18 | 07:04 | 11/13/18 | 16:45 | Unit Annual |

Comments: None.

## Adult Fish Passage Facility

Little Goose fish facility and Anchor QEA staff inspected the adult fishway on November 13, 14 and 15.

Fish Ladder:

| Yes | No | NA | Location | Criteria | Measurements |
|---|---|---|---|---|---|
| X | | | Fish Ladder Exit Differential | Head $\leq$ 0.5’ | |
| X | | | Fish Ladder Picketed Lead Differential | Head $\leq$ 0.3’ | |
| X | | | Fish Ladder Depth over Weirs | Head over weir 1.0’ to 1.3’ | |
| | X | | Fish Ladder Cooling Water Pumps in Service | | |
| | | X | Fish Ladder Exit Cooling Water Pumps Operating Satisfactorily | | |

Comments: None.

Fishway Entrances and Collection Channel

| Yes | No | Sill | Location | Criteria | Measurements |
|---|---|---|---|---|---|
| X | | | South Shore Entrance (SSE-1) Weir Depth | $\geq$ 8.0’ | |
| X | | | South Shore Entrance (SSE-2) Weir Depth | $\geq$ 8.0’ | |
| X | | | South Shore Channel/Tailwater Differential | 1.0’ – 2.0’ | |
| | | X | North Powerhouse Entrance (NPE-1) Weir Depth | $\geq$ 7.0’ or on sill | |
| | | X | North Powerhouse Entrance (NPE-2) Weir Depth | $\geq$ 7.0’ or on sill | |
| X | | | North Powerhouse Entrance Channel/Tailwater Differential | 1.0’–2.0’ | |
| X | | | North Shore Entrance (NSE-1) Weir Depth | $\geq$ 6.0’ or on sill | |
| X | | | North Shore Entrance (NSE-2) Weir Depth | $\geq$ 6.0’ or on sill | |
| X | | | North Shore Channel/Tailwater Differential | 1.0’–2.0’ | |
| X | | | Collection Channel Surface Velocity | 1.5 – 4.0 fps | |

Comments: Adult fishway control system is currently operating in manual mode. The fishway is currently operating within criteria.

Auxiliary Water Supply System:

| Operating Satisfactory | Standby | Out of Service | Auxiliary Water Supply System (AWS) |
|---|---|---|---|
| X | | | AWS Fish Pump 1 |
| X | | | AWS Fish Pump 2 |
| X | | | AWS Fish Pump 3 |

Comments: None.

**Juvenile Fish Passage Facility**

Forebay Debris/Gatewell Debris/Oil:

| Yes | No | NA | Item | Comment |
|---|---|---|---|---|
| X | | | Forebay debris load acceptable? (amount) | |
| | X | | Gatewell drawdown measured this week? | |
| | | X | Gatewell drawdown acceptable | |
| | X | | Any debris seen in gatewells (% coverage) | |
| | X | | Any oil seen in gatewells? | |

Comments: Gatewell drawdowns were measured on October 31 on units 1 and 2 and were in criteria. There is currently 65 sq. ft. of floating woody debris inside the trash shear boom in the forebay.

ESBS/VBS:

| Yes | No | NA | Item |
|---|---|---|---|
| X | | | ESBSs deployed in all slots and in service? |
| | X | | ESBSs inspected this week? |
| | | X | ESBSs inspection results acceptable? |
| | X | | VBSs differentials checked this week? |
| | | X | VBSs differentials acceptable? |
| | X | | VBSs inspected this week? |

Comments: VBS differentials were measured October 31 on units 1 and 2 and were in criteria.

Orifices, Collection Channel, Dewatering Structure, and Flume:

| Yes | No | NA | Item | Number open and in service |
|---|---|---|---|---|
| X | | | Orifices operating satisfactory? | 20 |
| X | | | Dewaterer and cleaning systems operating satisfactory? | |

Comments: None.

Collection Facility: Juvenile fish facility switched to primary bypass at 07:00 on November 01.

Transport Summary: Collection for transportation ended at 07:00 on November 01.

Spillway Weir: Adjustable spillway weir was closed for the season on August 03 at 15:30.

## River Conditions

River conditions at Little Goose Dam.

| Daily Average River Flow (kcfs) | | Daily Average Spill (kcfs) | | Water Temperature* (°F) | | Water Clarity (Secchi disk - feet) | |
|---|---|---|---|---|---|---|---|
| High | Low | High | Low | High | Low | High | Low |
| 20.4 | 18.2 | 0.0 | 0.0 | 52.3 | 51.7 | 5.5 | 5.2 |

*Ladder temperature.

## Other

Inline Cooling Water Strainers: Inline cooling strainers are being inspected and results submitted every other week.

Avian Activity: Average daily piscivorous bird counts ended on October 31 per the Fish Passage Plan requirement at Little Goose Dam.

Invasive Species: No invasive species have been observed on the mussel station.

Siberian Prawn: Juvenile Fish Facility is currently in primary bypass and not sampling.

Gas Bubble Trauma (GBT): GBT monitoring ended for the year.

Fish Rescue/Salvage: None.

Research: None.

**Project: Lower Granite**
Biologists: Elizabeth Holdren and Stephen Hampton
**Dates: November 9 – November 15, 2018**

## Turbine Operation

| Yes | No | Turbine Unit Status | | |
|---|---|---|---|---|
| | X | All 6 turbine units available for service (see table & comments below for details). | **Hard** | **Soft** |
| X | | Available turbines operated within 1% peak efficiency? Constraint in effect. | | X |

Lower Granite Unit Outages (OOS) and Return to Service (RTS)

| | OOS | | RTS | | |
|---|---|---|---|---|---|
| **Unit** | **Date** | **Time** | **Date** | **Time** | **Outage Description** |
| 1 | Nov 13 | 0732 | | | Thrust Bearing Electrical Isolation |
| 3 | Nov 12 | 1130 | Nov 13 | 1045 | Loss of communication for AGC control |
| 4 | Nov 07 | 0700 | | | Annual maintenance and digital governor upgrade |

Comments: Unit are being operated in the soft constraint of 1% efficiency. Units were rotated out of service for ESBS removal November 13-15.

## Adult Fish Passage Facility

Lower Granite and Anchor QEA staff inspected the adult fishway November 9, 10, 12, and 14.

Fish Ladder:

| Yes | No | NA | Location | Criteria | Measurements |
|---|---|---|---|---|---|
| X | | | Fish Ladder Exit Differential | Head ≤ 0.5’ | |
| X | | | Fish Ladder Picketed Lead Differential | Head ≤ 0.3’ | |
| X | | | Fish Ladder Depth over Weirs | Head over weir 1.0’ to 1.3’ | |
| | X | | Fish Ladder Cooling Water Pumps in Service | | |
| | | X | Fish Ladder Cooling Water Pumps Operating Satisfactorily | | |

Comments: None.

Fish Ladder Entrances and Collection Channel:

| Yes | No | Sill | Location | Criteria | Measurements |
|---|---|---|---|---|---|
| X | | | South Shore Entrance (SSE-1) Weir Depth | ≥ 8.0’ | |
| X | | | South Shore Entrance (SSE-2) Weir Depth | ≥ 8.0’ | |
| X | | | South Shore Channel/Tailwater Differential | 1.0’ – 2.0’ | |
| X | | | North Powerhouse Entrance (NPE-1) Weir Depth | ≥ 8.0’ or on sill | |
| X | | | North Powerhouse Entrance (NPE-2) Weir Depth | ≥ 8.0’ or on sill | |
| X | | | North Powerhouse Entrance Channel/Tailwater Differential | 1.0’–2.0’ | |
| | X | | North Shore Entrance (NSE-1) Weir Depth | ≥ 7.0’ or on sill | |
| | | | North Shore Entrance (NSE-2) Weir Depth | ≥ 7.0’ or on sill | OOS |
| | X | | North Shore Channel/Tailwater Differential | 1.0’–2.0’ | 0.8 |
| X | | | Collection Channel Surface Velocity | 1.5 – 4.0 fps | |

Comments: North shore channel/tailwater head differential was out of criteria November 14. The out of criteria reading was likely due to the systems delay adjusting to changing tailwater elevations. North shore tailwater elevation sensor was reset November 5 and again November 6 due to a 0.5 feet discrepancy between the fish ladder control system and the physical reading.

Auxiliary Water Supply System:

| Operating Satisfactorily | Standby | Out of Service | Auxiliary Water Supply (AWS) |
|---|---|---|---|
| X | | | AWS Fish Pump 1 |
| X | | | AWS Fish Pump 2 |
| | X | | AWS Fish Pump 3 |

Comments: None.

**Juvenile Fish Passage Facility**

Forebay Debris/Gatewell Debris/Oil:

| Yes | No | NA | Item | Comments |
|---|---|---|---|---|
| X | | | Forebay debris load acceptable? (amount) | Average Coverage of 28.9 $yd^2$ |
| X | | | Gatewell drawdown measured this week? | |
| X | | | Gatewell drawdown acceptable | |
| | X | | Any debris seen in gatewells (% coverage) | |
| | X | | Any oil seen in gatewells? | |

Comments: None.

ESBSs/VBSs:

| Yes | No | NA | Item |
|---|---|---|---|
| | X | | ESBSs deployed in all slots and in service? |
| | X | | ESBSs inspected this week? |
| | | X | ESBSs inspection results acceptable? |
| X | | | VBSs differentials checked this week? |
| X | | | VBSs differentials acceptable? |

Comments: ESBS's were removed November 13-15.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

| Yes | No | NA | Item | Number open and in service |
|---|---|---|---|---|
| X | | | Orifices operating satisfactory? | 17 |
| | X | | Dewaterer and cleaning systems operating satisfactory? | |

Comments: Primary dewaterer floor screen brushes, side screen brushes, and the pneumatic screen cleaners are being operated in manual mode by powerhouse operators due to mechanical and programing issues with the new system. Overflow weirs in groups A, B, and C remain in auto; weir group D continues to be operated in manual to achieve optimal flow from the PDW to the transport flume. Problems are being investigated and troubleshooting the system for needed repairs during the winter outage is ongoing. Gatewell slot 4B is dewatered for VBS screen repair while the unit is out of service for annual maintenance and digital governor upgrade. PDW was placed in Emergency Bypass for sensor fish releases as part of the JBS upgrade evaluation at 1033 hours November 13. JBS collection channel was dewatered at 1155 hours November 15.

Collection Facility: The facility operated in primary bypass until 1033 hours November 13 when operations were changed placed in emergency bypass mode.

Transport Summary: N/A

Spill/Spillway Weir: N/A.

**River Conditions**

River conditions at Lower Granite Dam.

| Daily Average River Flow (kcfs) | | Daily Average Spill (kcfs) | | Water Temperature* (°F) | | Water Clarity (Secchi disk - feet) | |
|---|---|---|---|---|---|---|---|
| High | Low | High | Low | High | Low | High | Low |
| 30.4 | 22.4 | 0 | 0 | 54.3 | 52.9 | $5.0^{+}$ | $5.0^{+}$ |

*Cooling water intake temperature.

**Other**

Inline Cooling Water Strainers: N/A.

Invasive Species: No mussels were present on the November 12 inspection.

Siberian Prawn: N/A

Avian Activity: Biologist daily piscivorous bird counts at Lower Granite Dam ended October 31.

Gas Bubble Trauma (GBT) Monitoring: N/A.

Adult Fish Trap Operations: The adult trap is operating seven days a week with a 20% sample rate for coho collection.

Fish Rescue/Salvage: N/A

Research: N/A