

**U.S. ARMY CORPS OF ENGINEERS  
WALLA WALLA DISTRICT  
FISH FACILITIES WEEKLY REPORT  
#34-2019**

**Project: McNary**

Biologist: Bobby Johnson and Denise Griffith

Dates: October 18 to 24, 2019

**Turbine Operation**

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

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

| Unit(s) | OOS   |      | RTS      |      | Outage Description                              |
|---------|-------|------|----------|------|---|
|         | Date  | Time | Date     | Time |   |
| 5       | 05/23 | 0943 | 01/09/20 | NA   | Turbine blade packing.                          |
| 14      | 08/19 | 1221 | 11/26    | NA   | Oil replacement and turbine bearing.            |
| 13      | 06/10 | 0610 | 12/12    | NA   | Turbine bearing.                                |
| 1 & 12  | 10/22 | 1003 | 10/22    | 1041 | ESBS camera inspections, rotated through units. |

Comments: All return to service dates are subject to change. The soft one percent peak efficiency constraint begins on November 1.

**Adult Fish Passage Facilities**

McNary fisheries biologists performed measured inspections of the adult fishways on October 18, 20 and 24. Adult fish counting will conclude on October 31. The general maintenance staff will raise the picketed leads on November 4. Winter maintenance plans were finalized this week.

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 near the Oregon exit and minimal near the Washington exit. Picketed leads were cleaned as required.

At the Washington shore exit, multiple weir alarms came in and were reset on October 18.

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'         | 7.8' on Oct 20.   |
|     | X  |      | NFEW3 Weir Depth                        | ≥ 8.0'         | 7.8' on Oct 20.   |
| X   |    |      | South Oregon Entrance Head Differential | 1.0' – 2.0'    |                   |
|     | X  |      | SFEW1 Weir Depth                        | ≥ 8.0'         | 7.9' on Oct 20.   |
| X   |    |      | SFEW2 Weir Depth                        | ≥ 8.0'         |                   |
| X   |    |      | Oregon Collection Channel Velocities    | 1.5 to 4.0 fps | Averaged 1.8 fps. |
| X   |    |      | Washington Entrance Head Differential   | 1.0' – 2.0'    |                   |
| X   |    |      | WFE2 Weir Depth                         | ≥ 8.0'         |                   |
| X   |    |      | WFE3 Weir Depth                         | ≥ 8.0'         |                   |

Comments: The out of criteria points listed above for October 20 were possibly due to calibration or set point drifts, control issues and/or low tailwater elevations. In response, the operator adjusted the Oregon ladder entrance weir set points on October 20.

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 shore Fish Pump 1, OOS to December 31.         |
| X                      |         |                | Oregon shore Fish Pump 2, Blade angle: 24 to 26°      |
| X                      |         |                | Oregon shore Fish Pump 3, Blade angle: 26 to 28°      |
| X                      |         |                | OR North Powerhouse Pool supply from juvenile fishway |

Comments: There are no problems to report.

**Juvenile Fish Passage Facility**

The juvenile system remains in primary bypass for the fall season. Light maintenance and preparations for the winter outage continued at the facility. The full flow flume adult flush line valve remains open at this time.

Forebay Debris/Gatewell Debris/Oil:

| Yes | No | NA | Item   | Comments |
|-----|----|----|--|----------|
| X   |    |    | Powerhouse forebay debris load acceptable?   | Light.   |
| 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: Debris was a mixture of aquatic vegetation and woody material. New incoming debris was minimal. The spillway debris load would be described as minimal. Much of the debris moved between the powerhouse and the Oregon shoreline, which is causing the debris to dissipate. No trash racks were cleaned.

There are no problems to report.

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 units 6, 8, 10 and 13 remained in timer mode. Camera inspections in units 1 and 12 revealed no problems on October 22.

Daily VBS differential monitoring continued. No high differentials were recorded and no screens were cleaned.

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

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

Comments: There are no problems to report. Orifice valve operators were repaired as required.

Bypass Facility:

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

Comments: During the fall primary bypass season, all systems remain out of service with light maintenance ongoing.

The separator remains dewatered for inspection. The paint will again be tested to for lead and other elements. After which, the process needed to clean the separator will be determined and proceed. Next, measures of the wall and floor thickness will occur. Finally, a path forward for rehabilitation will be determined.

TSW Operations:

The TSW in spillbay 19 remained closed for the season. The TSW in bay 20 will be operated per the adult steelhead top spillway weir (TSW) passage efficiency study plan.

**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 |
| 85.2                            | 77.1 | 3.1                        | 0.0 | 58.0                   | 57.0 | 6.0                                | 6.0 |

Comments: The above data is from the control room. The spill recorded was due to the TSW passage study.

**Other**

Inline Cooling Water Strainers: The next cooling water strainer inspections will occur on December 3.

Avian Activity: Casual avian observations continued. Bird numbers appear to be fluctuating with their migration and the juvenile shad out migration.

Gull activity fluctuated in the powerhouse zone with birds feeding and roosting. At times, gulls were noted feeding in large numbers. Occasionally, a cormorant was noted.

In the spill zone, gull and cormorant numbers again fluctuated. Three pelicans were observed on October 24. No terns were noted this week. All birds were feeding or roosting. Feeding was especially high when the TSW was open. A large percentage of gulls and cormorants roosted on the top of the navigation lock and Washington ladder walls. Adult and juvenile birds were observed.

In the bypass outfall zone, the gulls and cormorants were mostly roosting on the full flow pipe. However, at times, a fair number of these birds were noted feeding.

The laser for bypass outfall hazing remained in place. The laser was examined and found to not be functioning on October 22. This may explain the high bird counts near the outfall. The laser will be examined again on October 28. By examining bird counts, we may assume the laser began to have issues in mid-August and completely “failed” by the first of October. If the laser can be returned to service, casual avian observations will continue so a comparison can be made between when the laser failed and when it is functional. We will attempt to haze some of the roosting areas by programming more patterns into the laser. Installation of the second laser has been delayed to next spring.

In the forebay zone, an occasional gull flock, gull, loon or cormorant was observed. No grebes were observed on project. Fluctuating numbers of cormorants and gulls were noted roosting outside the zone along the Washington shore line. Large gull flocks and great blue herons have been staging around the project.

Invasive Species: The mussel station examinations on October 24 revealed no problems.

Fish Rescue/Salvage: No fish rescue occurred this week.

Research: The University of Idaho concluded the adult lamprey passage study and will begin removing equipment on October 28. The adult steelhead top spillway weir (TSW) passage efficiency study continued.

**Project: Ice Harbor**

Biologist: Ken Fone

Dates: October 18 – October 24, 2019

**Turbine Operation**

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

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

| Unit | OOS      |      | RTS      |      | Outage Description                           |
|------|----------|------|----------|------|--|
|      | Date     | Time | Date     | Time |  |
| 3    | 5/3/19   | 0641 | ---      | ---  | Turbine runner replacement and stator rewind |
| 6    | 8/14/19  | 0743 | ---      | ---  | Annual maintenance and overhaul              |
| 5    | 10/15/19 | 0741 | ---      | ---  | Install new head gate cylinder in 5A         |
| 2    | 10/23/19 | 1459 | 10/23/19 | 1636 | Repair XW2 breaker trip latch                |

Comments: None.

**Adult Fish Passage Facility**

Ice Harbor fish facility staff inspected the adult fishways on October 22, 23, and 24.

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'            | 2.3'         |
| X   |    |      | South Shore Channel Velocity                             | 1.5 – 4.0 fps          |              |
|     |    | X    | North Powerhouse Entrance (NFE-1) Weir Depth             | $\geq$ 8.0' or on sill |              |
| X   |    |      | North Powerhouse Entrance Channel/Tailwater Differential | 1.0' – 2.0'            |              |
|     |    | X    | North Shore Entrance (NEW-2) Weir Depth                  | $\geq$ 8.0' or on sill |              |
|     | X  |      | North Shore Channel/Tailwater Differential               | 1.0' – 2.0'            | 2.2'         |

Comments: The south shore and north shore channel/tailwater head differentials were above criteria on the October 22 inspection, when the tailwater was lower. The entrance weir gates were all the way down on sill. A calibration check of the PLC readings at the entrances was performed on October 23. The PLC readings at the south shore and north shore were very close to the staff gauge/tape measure readings. Subsequent inspections showed head differentials that were in criteria when the tailwater was a little higher.

Auxiliary Water Supply (AWS) System:

| Operating Satisfactory | Standby | Out of Service | Auxiliary Water Supply System (AWS)   |
|------------------------|---------|----------------|---------------------------------------|
| 7 pumps                | 1 pump  |                | 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)  | Average of 12 square yards             |
| X   |    |    | Gatewell drawdown measured this week?     |  |
| X   |    |    | Gatewell drawdown acceptable              |  |
| X   |    |    | Any debris seen in gatewells (% coverage) | 0-5%                                   |
| X   |    |    | Any oil seen in gatewells?                | Head gate slot 5A and gatewell slot 5A |

Comments: On October 16, less than a cup of hydraulic oil was spilled into head gate slot 5A from the head gate hoses. Oil absorbent socks were deployed and the appropriate state and federal agencies were notified.

STSS/VBSs:

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

Comments: None.

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.

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

Fish Sampling: Sampling is ended for the year.

Removable Spillway Weir (RSW): Voluntary spill for fish passage is ended 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 |
| 25.6                            | 12.7 | 0                          | 0   | 59                      | 57  | 9.5                                | 9.1 |

\*Unit 1 scroll case temperature.

## Other

Inline Cooling Water Strainers: Monthly strainer inspections for lamprey ended in June and will start again in December.

Avian Activity: There were moderate numbers of gulls observed around the project. The birds were observed to be foraging downstream of the powerhouse and at the navigation lock discharge in the tailrace.

Invasive Species: No new exotic species 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: None.

Research: None.

**Project: Lower Monumental**

Biologists: Chuck Barnes and Raymond Addis

Dates: October 18 - 24, 2019

**Turbine Operation**

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

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

| Unit   | OOS        |       | RTS        |      | Outage Description                         |
|--------|------------|-------|------------|------|--|
|        | Date       | Time  | Date       | Time |  |
| Unit 2 | 7/15/2019  | 07:20 | 1/10/2020  | ERTS | Annual Maintenance/Draft Tube Liner Repair |
| Unit 4 | 10/09/2019 | 16:05 | 12/12/2019 | ERTS | Governor Control                           |
| Unit 5 | 10/03/2019 | 15:50 | 12/05/2019 | ERTS | Governor Control                           |
| Unit 6 | 8/05/2019  | 12:20 | 11/01/2019 | ERTS | 6 Year maintenance                         |

Comments: Units went into Hard Restraint at 0001 on April 1.

**Adult Fish Passage Facility**

The adult fishways were inspected by USACE biologists on October 22, 23 and 24.

Fish Ladder:

| Yes | No | Location                                | Criteria                    | Measurements |
|-----|----|---|-----------------------------|--------------|
| X   |    | North Ladder Exit Differential          | Head $\leq$ 0.5'            |              |
| X   |    | North Ladder Picketed Lead Differential | Head $\leq$ 0.4'            |              |
| X   |    | North Ladder Depth over Weirs           | Head over weir 1.0' to 1.3' |              |
| X   |    | South Ladder Exit Differential          | Head $\leq$ 0.5'            |              |
| X   |    | South Ladder Picketed Lead Differential | Head $\leq$ 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                  | $\geq$ 8.0' or on sill |              |
| X   |    |      | North Shore Entrance (NSE-2) Weir Depth                  | $\geq$ 8.0' or on sill |              |
| X   |    |      | North Shore Channel/Tailwater Differential               | 1.0'–2.0'              |              |
|     |    | X    | South Powerhouse Entrance (SPE-1) Weir Depth             | $\geq$ 8.0' or on sill |              |
|     |    | X    | South Powerhouse Entrance (SPE-2) Weir Depth             | $\geq$ 8.0' or on sill |              |
| X   |    |      | South Powerhouse Entrance Channel/Tailwater Differential | 1.0'–2.0'              |              |
|     |    | X    | South Shore Entrance (SSE-1) Weir Depth                  | $\geq$ 8.0'            |              |
| X   |    |      | South Shore Entrance (SSE-2) Weir Depth                  | $\geq$ 6.0'            |              |
| X   |    |      | South Shore Channel/Tailwater Differential               | 1.0' – 2.0'            |              |



Comments: South Powerhouse Entrance weir (SPE-1) was on sill during all inspections with readings of 7.2, 7.3 and 6.6 feet respectively.

South Powerhouse Entrance weir (SPE-2) was on sill during all inspections with readings of 7.2, 7.3 and 6.6 feet respectively.

South Shore Entrance weir (SSE-1) was on sill during all inspections with readings of 7.8, 7.8 and 7.6 feet respectively.

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                                      | Comments           |
|-----|----|----|---|--------------------|
| X   |    |    | Forebay debris load acceptable? (amount)  | 12 yd <sup>2</sup> |
| X   |    |    | Gatewell drawdown measured this week?     |                    |
| X   |    |    | Gatewell drawdown acceptable              |                    |
| X   |    |    | Any debris seen in gatewells (% coverage) | 0 – 15 %           |
|     | 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 were operating in 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?                       | 17                         |
|     | X  |    | Dewaterer and cleaning systems operating satisfactory? |                            |

Comments:

Collection Facility: The facility was dewatered at 1200 on October 3 for cleaning and winter maintenance.

Transport Summary: Transport season ended on September 30.

Spillway Weir: There was no spill during this reporting period.

## 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 |
| 24.9                            | 12.9 | 0.0                        | 0.0 | 59.0                    | 57.0 | 4.2                                | 4.0 |

\*Scrollcase temperatures.

### Other

Inline Cooling Water Strainers: Cooling water strainers were not checked during this reporting period.

Avian Activity: Cormorants were the predominant piscivorous bird species observed during fish ladder inspections this week.

| Date       | Time  | Gulls | Cormorants | Terns | Grebes | Pelicans |
|------------|-------|-------|------------|-------|--------|----------|
| 10/22/2019 | 12:15 | 3     | 4          | 0     | 0      | 0        |
| 10/23/2019 | 15:05 | 0     | 4          | 0     | 0      | 0        |
| 10/24/2019 | 12:30 | 0     | 6          | 0     | 0      | 0        |

Comments: Bird hazing efforts by USDA personnel ended at the end of the working day on June 2. Daily bird hazing effectiveness tailrace observations ended with the June 30 observation.

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 September 30.

Fish Rescue/Salvage: No Fish Rescue/Salvage took place during this reporting period.

Research: No Research took place during this reporting period.

**Project: Little Goose**

Biologists: Scott St. John and Richard Weis

Dates: October 18 – October 24, 2019

**Turbine Operation**

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

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

| Unit | OOS      |       | RTS      |       | Outage Description                    |
|------|----------|-------|----------|-------|---------------------------------------|
|      | Date     | Time  | Date     | Time  |                                       |
| 5    | 04/21/17 | 00:54 | 03/31/21 | 17:00 | Spider and Upper Guide Bearing Repair |
| 2    | 10/07/19 | 07:15 | 11/01/19 | 17:00 | Unit Annual, VBS/ESBS Inspection      |

Comments: None.

**Adult Fish Passage Facility**

Little Goose fish facility, Anchor QEA and/or Oregon Department of Fish and Wildlife staff inspected the adult fishway on October 20, 21, 22 and 24.

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 Pump in Service                    |                             |              |
|     |    | X  | Fish Ladder Exit Cooling Water Pump Operating Satisfactorily |                             |              |

Comments: Cooling water pump were shut off for the season on September 23.

Fishway Entrances and Collection Channel:

| Yes | No | Sill | Location   | Criteria               | Measurement |
|-----|----|------|--|------------------------|-------------|
| 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          | 1.3         |

Comments: The adult fishway continues to operate in manual mode. The equipment used to measure NSE weir depth was found out of service on the August 11 inspection. The October 22 inspection found the Collection Channel Surface Velocity out of criteria. Subsurface water velocity was measured near NPE on October 07 using a Rickly velocity meter and averaged 2.4 feet per second.

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   |    |    | Trash rack differentials measured this week? |         |
| X   |    |    | Trash rack differentials acceptable          |         |
|     | X  |    | Any debris seen in gatewells (% coverage)    |         |
|     | X  |    | Any oil seen in gatewells?                   |         |

Comments: Trash rack differential for Units 1 and 3 were measured on October 25 and were in criteria. There is approximately 2,000 square feet of floating woody debris inside the trash shear boom in the immediate 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?              |

Comments: ESBS/VBS underwater camera inspections were conducted on Unit 2 on October 10 and 11. The inspection found a VBS fastener bar in gatewell 2B partially dislodged. Powerhouse maintenance crews currently have gatewell 2A dewatered for fastener upgrades and will repair the fastener in gatewell 2B during the current annual maintenance outage. VBS differential for Units 1 and 3 were measured on October 25 and were in criteria.

Orifices, Collection Channel, Dewatering Structure, and Flume:

| Yes | No | NA | Item   | Number open and in service |
|-----|----|----|--|----------------------------|
| X   |    |    | Orifices operating satisfactory?                       | 19                         |
| X   |    |    | Dewaterer and cleaning systems operating satisfactory? |                            |

Comments: None.

Collection Facility: The juvenile bypass system is currently operating in criteria. Daily collection for condition sampling began on April 23 at 07:00. The last every other day barge departed on July 30 and every other day truck transport commenced on August 01.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 59 fish were collected, of which 65 transported via truck, which includes fish collected on October 17. The descaling and mortality rates were 5.0% and 0.0% respectively. There were 0 adult lamprey removed from the separator, raceways, and sample and released one mile above the Dam at Little Goose Landing.

Spillway Weir: The adjustable spillway weir (ASW) was closed on July 23 at 15:17 per the guidance outlined in the Columbia Basin Teletype (CBT). The ASW will remain closed for the season.

### River Conditions

| 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 |
| 24.4                            | 12.9 | 0.0                        | 0.0 | 58.1                    | 57.0 | 6.0                                | 5.8 |

\*Ladder temperature.

### Other

Inline Cooling Water Strainers: Cooling water strainers were last inspected on July 3 with no lamprey being observed. Inspections will resume in December per the Fish Passage Plan.

Avian Activity: Daily Piscivorous bird counts at Little Goose Dam will started on April 01.

| Date  | Time | Gulls | Cormorants | Caspian Terns | Pelicans |
|-------|------|-------|------------|---------------|----------|
| 10-18 | 0800 | 32    | 19         | 0             | 0        |
| 10-19 | 1100 | 14    | 33         | 0             | 0        |
| 10-20 | 0745 | 21    | 14         | 0             | 0        |
| 10-21 | 0950 | 17    | 41         | 0             | 0        |
| 10-22 | 1215 | 5     | 2          | 0             | 0        |
| 10-23 | 0830 | 22    | 31         | 0             | 0        |
| 10-24 | 1200 | 28    | 55         | 0             | 0        |

Invasive Species: No zebra or Quagga mussels were observed.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by Oregon Department of Fish and Wildlife and Anchor, frozen and properly disposed of in a landfill. Daily and total Siberian prawn counts at Little Goose Dam for this reporting period are reported below.

| Date   | Sample | Collection* |
|--------|--------|-------------|
| 10-18  | 66     | 66          |
| 10-19  | 101    | 101         |
| 10-20  | 80     | 80          |
| 10-21  | 107    | 107         |
| 10-22  | 66     | 66          |
| 10-23  | 45     | 45          |
| 10-24  | 68     | 68          |
| Totals | 533    | 533         |

\*Collection and sample numbers are the same as the facility when sampling at 100%

Gas Bubble Trauma (GBT): The last gas bubble monitoring occurred on July 15.

Fish Rescue/Salvage: None.

Research: N/A

**Project: Lower Granite**

Biologists: Elizabeth Holdren and Steve Lee

Dates: October 18-24, 2019

**Turbine Operation**

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

Comments: None.

**Adult Fish Passage Facility**

Lower Granite Corps biologist's and Anchor Environmental biologist's inspected the adult fish ladder October 18, 19, 21, and 23.

Fish Ladder:

| Yes | No | NA | Location   | Criteria                    | Comments |
|-----|----|----|--|-----------------------------|----------|
| 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 Cooling Water Pumps Operating Satisfactorily |                             |          |

Comments: None.

Fish Ladder Entrances and Collection Channel:

| Yes | No | Sill | Location   | Criteria               | Comments      |
|-----|----|------|--|------------------------|---------------|
| 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             | $\geq$ 8.0' or on sill |               |
|     |    | X    | North Powerhouse Entrance (NPE-2) Weir Depth             | $\geq$ 8.0' or on sill |               |
| X   |    |      | North Powerhouse Entrance Channel/Tailwater Differential | 1.0'–2.0'              |               |
| X   |    |      | North Shore Entrance (NSE-1) Weir Depth                  | $\geq$ 7.0' or on sill |               |
|     |    |      | North Shore Entrance (NSE-2) Weir Depth                  | $\geq$ 7.0' or on sill | Closed        |
|     | X  |      | North Shore Channel/Tailwater Differential               | 1.0'–2.0'              | 0.8           |
|     | X  |      | Collection Channel Surface Velocity                      | 1.5 – 4.0 fps          | 1.3, 1.4, 0.9 |

Comments: Since May 4 the fish ladder control system screen and local reading for the south shore channel/tailwater and depth over the SSEs have been inconsistent. SSE gates remain in local operation until Operation and District engineering can resolve the control system issues. SSE gates were raised in response to out of criteria reading for NSE entrance differential October 23.

NPE channel velocity sensor readings have consistently read below 1.5 fps for several weeks. Surface velocity is being verified using tape measure and stopwatch and found to be in criteria. Surface velocities and/or NSE velocities will be used until the fish ladder control system NPE velocity issues are resolved. Velocities have been reading below 1.5 fps at both north powerhouse and north shore sensors. Biologists, operators, and District engineers are working to resolve fish ladder velocity issues and control system issues.

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)     |          |
| X   |    |    | Trash rack differentials measured this week? |          |
| X   |    |    | Trash rack differentials acceptable          |          |
|     | X  |    | Any debris seen in gatewells (% coverage)    |          |
|     | X  |    | Any oil seen in gatewells?                   |          |

Comments: Oil absorbent pads remain in gatewells 3C and 6A as a preventative measure.

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: None.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

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

Comments: The collection channel is operating with fifteen 14" orifices and three 10" orifices open to maintain optimal flume flow at current forebay elevation. The north makeup water valve remains in local control due to an automatic control motor hardware failure. Intermittent issues with local and remote operation of orifices for back flushing continue to be observed. Problems are reported to operations when they are identified.

Hours Collection Facility: The facility is in collection for transport mode at a 100% sample rate.

Transport Summary: Every-other-day truck transport continues.

Spillway Weir: No spill

**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 |
| 24.2                            | 17.2 | 0                          | 0   | 55.0                    | 54.0 | 5.0                                | 5.0 |

\*Cooling water intake temperature.

### Other

Inline Cooling Water Strainers: Cooling water strainers were not inspected during this reporting period.

Invasive Species: There were 46 Siberian prawns collected in the sample this week. Of these, 25 were live collected and euthanized and 21 were mortalities when sampled. No signs of Zebra/Quagga mussels were found on submerged substrates.

Avian Activity: Bird wires were removed from the spillway tailrace area August 29 for crane barge access to spillway 1 for PIT tag detection array install. Biologist daily piscivorous bird counts at Lower Granite Dam are listed below.

| Date  | Time | Gulls | Cormorants | Caspian Terns | Pelicans |
|-------|------|-------|------------|---------------|----------|
| 10/18 | 1405 | 1     | 8          | 0             | 0        |
| 10/19 | 1200 | 0     | 7          | 0             | 0        |
| 10/20 | 1050 | 16    | 25         | 0             | 0        |
| 10/21 | 1528 | 1     | 16         | 0             | 0        |
| 10/22 | 1510 | 9     | 24         | 0             | 0        |
| 10/23 | 1144 | 10    | 15         | 0             | 0        |
| 10/24 | 1013 | 4     | 15         | 0             | 0        |

Gas Bubble Trauma (GBT) Monitoring: GBT monitoring has ended for the season.

Adult Fish Trap Operations: Adult trap operation remains at 20% sample rate in 24 hours 7 day a week operation. Chinook brood stock collection ended Oct 24. (Coho brood stock collection ended Oct 25). Collection of B-run steelhead brood stock for IDFG continues.

Fish Rescue/Salvage: N/A

Research:

#### USGS Juvenile Fall Chinook Salmon Growth and Origin

USGS began collection of previously tagged subyearling Chinook utilizing LWG juvenile collection facility SbyC system began October 1 and will continue through October 31. Previously PIT tagged fish are diverted to the SbyC tanks, weighed, measured, GSI sampled, scanned for PIT tag code, recovered from anesthetic, and released back to the river. The objective of this project is to estimate the growth of PIT-tagged subyearling Chinook salmon from the Clearwater River to Lower Granite Dam.

#### National Marine Fisheries Service (NMFS) PIT tagging of Adult Wild Chinook and Adult Steelhead for ISEMP-Related Dispersal Monitoring



The goal of this project is to PIT tag up to 4000 unclipped adult Chinook and 4000 unclipped adult steelhead collected in the adult trap daily sample for dispersal monitoring.

#### National Marine Fisheries Service (NMFS) Ancillary Adult Passage Monitoring

Fish that were PIT as juveniles at LWG are monitored as returning adults through the river and LWG facility. For each returning adult the following is estimated; 1) passage time between sets of detection PIT tag coils, 2) whether the fish was handled at the adult trap, 3) duration the fish was held at the adult trap, 4) overall passage time from ladder entrance to exit, 5) whether the turnpool gate was open or closed during passage. This will be the last year of this evaluation.

#### Sampling of Steelhead, Chinook salmon, and Sockeye salmon by the Idaho Department of Fish and Game (IDFG) and NOAA Fisheries for Biological data collection

Upriver migrating steelhead, spring/summer Chinook salmon, and sockeye salmon are collected from the adult trap beginning April 4 through December 15. The goal is to collect 5-20% of adult steelhead, spring/summer Chinook salmon, and sockeye salmon ascending the ladder April 4-December 15. Data collection includes fish scales, genetics tissue, sex and length, wild/hatchery composition, and non-adipose clipped hatchery fish assessment. All natural origin adult steelhead and spring/summer Chinook salmon trapped will be PIT tagged to estimate headwater tributary escapement. Sockeye salmon may be PIT tagged in the future to estimate metrics regarding conversion rates. Some steelhead and spring/summer Chinook salmon may be radio-tagged or spaghetti-tagged. This information on adult fish forms the basis for status information used in several forums including BiOp-RPA identified needs.

#### PIT Tagging and Genetic Sample Collection from Bull Trout for USFWS

Bull trout will be incidentally collected as part of the normal adult trap daily sample as well as the recaptured previously PIT tagged using adult SbyC system. Untagged bull trout will be PIT tagged, fin clipped for genetic analysis, and have morphometric data collected including weight and length etc. Fin clips will be sent to USFWS to determine the fish's origin. Previously PIT tagged bull trout will only have morphometric data collected. All fish will be released back into the adult fish ladder.