

**U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#40-2017**

Project: McNary

Biologist: Bobby Johnson and Denise Griffith

Dates: November 24 – 30, 2017

Turbine Operation

General Comments: The soft 1% peak efficiency constraint continues.

Yes No Turbine Unit Status

 All 14 turbine units available for service throughout the week (see Table 1 for outage details below).

Table 1. Unit Outages at McNary Project.

Units	Outage Dates	Outage Length	Reason
3	Oct 10 to Dec 8	60 days	9-year overhaul.
4 to 8	Nov 28	1.7 hours total	Extended-length submersible bar screens (ESBSs) camera inspections.

Adult Fish Passage Facilities

General Comments: McNary fisheries biologists performed measured inspections of the adult fishways on November 25, 26 and 29. Video review of adult passage will continue to February 28, 2018.

Fish Ladder Exits: Criteria met?

Yes No Location, Criteria and Measurements

- Oregon Exit (Criteria – Head over weir 1.0’ to 1.3’)
- Oregon Count Station Differential (Criteria – Differential 0.0’ to 0.5’)
- Washington Exit (Criteria – Head over weir 1.0’ to 1.3’)
- Washington Count Station Differential (Criteria – Differential 0.0’ to 0.5’)

Comments: The trash racks and picketed leads were cleaned as needed, including Saturdays, at both exits.

Debris loads at the Washington exit and along the shoreline were minimal. However, floating aquatic vegetation was noted in the area. The biologist cleaned the picketed leads on November 26.

At the Oregon exit and along the shoreline, debris loads were minimal to moderate. Tilting weir 339 remains in manual mode. The regulating weir set point adjusted on November 29.

Fishway Entrances and Collection Channel:

<u>Yes</u>	<u>No</u>	<u>Location, Criteria and Measurements</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	North Oregon Entrance Head Differential (Criteria – 1.0' to 2.0')
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NFEW2 Weir Depth (Criteria – $\geq 8.0'$)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NFEW3 Weir Depth (Criteria – $\geq 8.0'$)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	South Oregon Entrance Head Differential (Criteria – 1.0' to 2.0')
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SFEW1 Weir Depth (Criteria – $\geq 8.0'$)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SFEW2 Weir Depth (Criteria – $\geq 8.0'$)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Oregon Collection Channel Velocities (Criteria –1.5 to 4.0 fps): Averaged 1.9 fps.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Washington Entrance Head Differential (Criteria – 1.0' to 2.0')
<input checked="" type="checkbox"/>	<input type="checkbox"/>	WFE2 Weir Depth (Criteria – $\geq 8.0'$)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	WFE3 Weir Depth (Criteria – $\geq 8.0'$)

Comments: The general maintenance staff adjusted the floating orifice gates on November 27.

Auxiliary Water Supply System:

<u>Yes</u>	<u>No</u>	<u>In Service?</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Washington shore Wasco County PUD Turbine Unit.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Washington shore Wasco PUD Bypass. Service was not required.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Oregon Ladder Fish Pump 1: Blade angle was approximately 20 to 24 degrees.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Oregon Ladder Fish Pump 2: Blade angle was approximately 21 to 22 degrees.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Oregon Ladder Fish Pump 3: Blade angle was approximately 20 to 23 degrees.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Oregon North Powerhouse Pool supply from juvenile fishway.

Comments: There are no problems to report. Fish pump exciter testing did not occur this week. The testing has not been rescheduled.

Juvenile Fish Passage Facility

General Comments: Fall primary bypass season and preparations for winter maintenance continue at the facility and in the collection channel.

Forebay Debris/Gatewell Debris/Oil:

<u>Yes</u>	<u>No</u>	<u>Item</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Forebay debris load acceptable?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Trash rack differentials measured? If so, were differentials acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Any debris seen in gatewells?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Any oil seen in gatewells?

Comments: Forebay debris loads near the powerhouse were moderate to heavy. Debris loads at the spillway were minimal. New incoming debris loads were minimal and consisted of floating aquatic vegetation. No trash racks were cleaned.

ESBSs/Vertical barrier screen (VBSs):

Yes No Item

- ESBSs deployed in all slots?
- ESBSs inspected this week? If so, were results acceptable? Yes No N/A
- VBSs differentials checked this week? If so, were results acceptable? Yes No N/A

Comments: The brush cycles for the screens in slots 1A, 2A, 2B, 3B, 7B, 8C, 12B, units 11 and 14 remained in timer mode. The brush on the screen in slot 2A appears to be cycling less frequently than the brushes on the ESBSs in adjacent slots. The ESBS brush cycle for this screen had to be restarted by the control room operator on November 25 and 30. This issue, which appears to be a problem we have not observed in the past, will continue to be monitored. ESBS camera inspections occurred at units 4 through 8 on November 28. No problems were found.

VBS differential monitoring continued. No high differential measurements were recorded. One screen was cleaned on November 30. Five VBSs total were inspected on November 27 and 30. No problems were found. No mortalities were observed during the cleaning or inspections.

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

Yes No Item

- Orifices operating satisfactory? 42 orifices were open.
- Dewatering and cleaning systems operating satisfactory?

Comments: Orifices were adjusted as required for VBS cleaning and inspection. Moisture in the orifices air supply line was bled off daily. The transition screen cleaning brush continued to be operated manually to ensure it completes a full cleaning cycle.

A power outage occurred in the channel, which again was related to the station service upgrades on November 28, from 0945 to 0957 hours. The outage caused no issues.

Bypass Facility:

Yes No Item

- Sample gates on? Fall bypass season continues.
- Passive integrated transponder (PIT) tag system on? Fall bypass season continues.

Comments: During the fall primary bypass season, PIT tag detection occurs in the full flow pipe. All systems remained out of service as light maintenance and preparations for the winter work list continue.

River Conditions

General Comments: River conditions were provided by the control room and outlined in Table 2 below. The data period runs from 0000 to 2400 hours each day.

Table 2. River Conditions at McNary Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
151.0	100.7	0.0	0.0	50.0	49.0	6.0	6.0

Comments: There are no problems to report.

Other

Inline Cooling Water Strainers: Cooling water strainer examinations will occur on December 12.

Invasive Species: Mussel station examinations will occur in early December.

Avian Activity: Casual avian observations continue while doing other inspections. Overall, gull and cormorant numbers appear to be fluctuating with the juvenile shad outmigration. A large number of gulls were roosting on project inside and outside of the counting zones in multiple locations. Low numbers of gulls and cormorants were feeding at the bypass outfall. Higher numbers of gulls were also feeding in the powerhouse flow. The gulls and cormorants in the spillway zone are roosting on the navigation lock wing wall and other structures.

In the forebay zone, an occasional gull, gull flock, blue heron or grebe was observed. Gulls and cormorants were occasionally observed on the rocks by the Washington shore boat dock.

Fish Salvage/Rescue: None occurred.

Research

Item: No onsite research is occurring at this time.

Project: Ice Harbor

Biologist: Ken Fone

Dates: November 24 – November 30, 2017

Turbine Operation

Yes No Turbine Unit Status

- All 6 turbine units available for service throughout the week (see comments below for outage details).
- Available turbine units operated within 1% peak efficiency constraint. Constraint in effect: Hard Soft.

Comments: Unit 2 was taken out of service on April 25, 2016, at 0606 hours for the runner replacement. Unit 1 was removed from service at 0741 hours on November 27 for annual maintenance. Unit 3 was noted to be operating a few megawatts below the 1% peak operating efficiency range on the November 27, 28, and 29 fishway inspections. This was due to the GDACS program needing to be updated with the narrower operating efficiency range of unit 3 since it became a fixed-blade unit.

Fish recovery operations occurred in unit 1 scroll case while it was being unwatered on November 30. Approximately 150 juvenile shad and 1 channel catfish mortalities were observed in the scroll case. No other fish were observed.

Adult Fish Passage Facilities

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

Fish Ladders:

Yes No Location, Criteria and Measurements

- North Fish Ladder Exit Differential (Criteria – Head \leq 0.5')
- North Fish Ladder Picketed Lead Differential (Criteria – Head \leq 0.3')
- North Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0' to 1.3')
- South Fish Ladder Exit Differential (Criteria – Head \leq 0.5')
- South Fish Ladder Picketed Lead Differential (Criteria – Head \leq 0.3')
- South Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0' to 1.3')

Comments: The picketed leads are raised out of the water for the remainder of the season.

Fishway Entrances and Collection Channel:

Yes No Sill Location, Criteria and Measurements

- South Shore Entrance (SFE-1) Weir Depth (Criteria: \geq 8.0' or on sill)
- South Shore Channel/Tailwater Differential (Criteria: 1.0' – 2.0')
- South Shore Channel Velocity (Criteria: 1.5 – 4.0 fps)
- North Powerhouse Entrance (NFE-2) Weir Depth (Criteria: \geq 8.0' or on sill)
- North Powerhouse Channel/Tailwater Differential (Criteria: 1.0' – 2.0')
- North Shore Entrance (NSE-1) Weir Depth (Criteria: \geq 8.0' or on sill)
- North Shore Channel/Tailwater Differential (Criteria: 1.0' – 2.0')

Comments: None.

Auxiliary Water Supply (AWS) System:

Yes No In Service and Operating Satisfactory?

- South Shore AWS Pumps. Six of the eight south shore AWS pumps were in service.
 North Shore AWS Pumps. Two of the three north shore AWS pumps were in service.

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes No Item

- Forebay debris load acceptable? An average of 27 square yards of debris was observed.
 Trash rack differentials measured this week? If so, were differentials acceptable? Yes No N/A
 Any debris seen in gatewells (i.e: over 10% coverage)? Surface coverage ranged from 0% to 20%.
 Any oil seen in gatewells?

Comments: None.

STSS/VBSs:

Yes No Item

- STSS deployed in all slots and in service?
 STSS in continuous-run mode (If not, then STSS are in cycle-run mode)?
 STSS inspected this week? If so, were results acceptable? Yes No N/A
 VBSs differentials checked this week? If so, were results acceptable? Yes No N/A

Comments: STSS are in cycle-run mode. Unit 2 STSS are not installed since the unit will not be returned to service this year.

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

Yes No Item

- Orifices operating satisfactory? How many are open and in service? 20.
 Dewaterer and cleaning systems operating satisfactory?

Comments: None.

Juvenile Fish Facility: The fish facility is in bypass operation.

Fish Sampling: Sampling is done for the year.

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

River Conditions

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

Table 1. River conditions at Ice Harbor Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
53.3	37.8	0	0	Not available	Not available	Not available	Not available

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine cooling water strainer inspections for lamprey are no longer required from July to November. Unit 1, 3, 4, 5, and/or 6 strainers were cleaned on November 25, 27, 28, and 30 because of juvenile shad plugging up the strainers. A total of approximately 15,500 dead juvenile shad were removed.

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

Avian Activity: There were large numbers of piscivorous birds seen around the project, including gulls, pelicans, mergansers, cormorants, and grebes. Most of them were observed roosting on Eagle Island and/or foraging opportunistically downstream of the powerhouse and at the navigation lock discharge.

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

Project: Lower Monumental

Biologists: Chuck Barnes and Raymond Addis

Dates: November 24 – November 30, 2017

Turbine Operation

Yes No Turbine Unit Status

- All 6 turbine units available for service throughout the week (see comments below for outage details).
- Available turbine units operated within 1% peak efficiency constraint.

Constraint in effect: Hard Soft. Soft constraint began at 0000 hours on November 1.

Comments: Unit 1 was removed from service on December 10, 2014 for Unit Rehabilitation with an estimated return to service date of May 31, 2018. Unit 5 was removed from service on January 17, 2017 due to a turbine oil leak with an estimated return to service at the end of February, 2018. Unit 3 was removed from service at 0845 on October 20 for a digital governor installation with an estimated return to service of December 7, 2017.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on November 27, 28 and 29.

Fish Ladders:

Yes No Location, Criteria and Measurements

- North Fish Ladder Exit Differential (Criteria – Head \leq 0.5')
- North Fish Ladder Picketed Lead Differential (Criteria – Head \leq 0.4')
- North Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0' to 1.3')
- South Fish Ladder Exit Differential (Criteria – Head \leq 0.5')
- South Fish Ladder Picketed Lead Differential (Criteria – Head \leq 0.3')
- South Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0' to 1.3')

Comments: None.

Fishway Entrances and Collection Channel:

Yes No Sill Location, Criteria and Measurements

- North Shore Entrance (NSE-1) Weir Depth (Criteria: \geq 8.0' or on sill)
- North Shore Entrance (NSE-2) Weir Depth (Criteria: \geq 8.0' or on sill)
- North Shore Channel/Tailwater Differential (Criteria: 1.0' – 2.0')
- South Powerhouse Entrance (SPE-1) Weir Depth (Criteria: \geq 8.0' or on sill)
- South Powerhouse Entrance (SPE-2) Weir Depth (Criteria: \geq 8.0' or on sill)
- South Powerhouse Entrance Channel/Tailwater Differential (Criteria: 1.0' – 2.0')
- South Shore Entrance (SSE-1) Weir Depth (Criteria: \geq 8.0' or on sill)
- South Shore Entrance (SSE-2) Weir Depth (Criteria: \geq 6.0' or on sill)
- South Shore Channel/Tailwater Differential (Criteria: 1.0' – 2.0')

Comments: South Powerhouse Entrance weirs (SPE-1 and SPE-2) were on sill during all inspections. While on sill readings for both were 6.6, 7.1 and 7.8 feet.

Auxiliary Water Supply System:

- | <u>Yes</u> | <u>No</u> | <u>In Service and Operating Satisfactory?</u> |
|-------------------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | AWS Fish Pump 1. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | AWS Fish Pump 2. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | AWS Fish Pump 3. |

Comments: Pump 1 will be out of service throughout this season unless an emergency occurs.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

- | <u>Yes</u> | <u>No</u> | <u>Item</u> |
|-------------------------------------|-------------------------------------|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Forebay debris load acceptable? An average of 302 square yards of debris observed in forebay. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Trash rack differentials measured this week? If so, were differentials acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Any debris seen in gatewells? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Any oil seen in gatewells? |

Comments: Gatewell debris ranged from 0 to 40% during inspections.

STSS/VBSs:

- | <u>Yes</u> | <u>No</u> | <u>Item</u> |
|-------------------------------------|-------------------------------------|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | STSS deployed in all slots and in service? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | STSS in continuous-run mode (Note: if not, then STSS are in cycle-run mode)? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | STSS inspected this week? If so, were results acceptable? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | VBSs differentials checked this week? If so, were results acceptable? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |

Comments: STS's were operating on cycle mode due to CH0 lengths being over the 120 mm criteria point.

Orifices, Collection Channel, Dewatering Structure, and Flume:

- | <u>Yes</u> | <u>No</u> | <u>Item</u> |
|-------------------------------------|--------------------------|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Orifices operating satisfactory? How many are open and in service? 18. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Dewaterer and cleaning systems operating satisfactory? |

Comments: None.

Collection Facility: Collection for transport ended at 0700 on October 1, at which time the facility was placed into primary bypass. The collection facility was dewatered on October 11.

Transport Summary: Transport season ended on October 1.

River Conditions

General Comments.

Table 1. 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
52.9	12.3	0	0	47.0	46.0	6.4	5.2

*Scrollcase temperatures.

Spill: The RSW spill was closed on August 18. Summer spill ended at 0000 on September 1.

Other

Inline Cooling Water Strainers: Cooling water strainers were last inspected on August 16

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on November 27.

Avian Activity: Gulls and cormorants were the predominant piscivorous bird species observed during fish ladder inspections this week. Tailrace counts ended on July 13.

Outfall pipe bird water cannons were shut down and dewatered on October 12.

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

Project: Little Goose

Biologists: Scott St. John & Richard Weis

Dates: November 24-30, 2017

Turbine Operation

Yes No Turbine Unit Status

All 6 turbine units available for service throughout the week (see Table 1 for outage details).

Available turbine units operated within 1% peak efficiency constraint.

Constraint in effect: Hard Soft.

Table 1. Little Goose Unit Outages

Unit	OOS Date	OOS Time	RTS Date	RTS Time	Outage Description
1	27-Nov	07:15	15-Dec	17:00	Unit Annual
3	27-Nov	16:59	N/A	N/A	Low Turbine Oil Level
5	14-Apr	14:11	31-July	17:00	Turbine Guide Bearing and Spider Repair (ERTS July 31, 2018)

Comments: None.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists and Anchor QEA staff on November 28, 29 and 30.

Fish Ladder:

Yes No Location, Criteria and Measurements

Fish Ladder Exit Differential (Criteria – Head \leq 0.5')

Fish Ladder Picketed Lead Differential (Criteria – Head \leq 0.3')

Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0' to 1.3')

Emergency Ladder Exit Cooling Water Pumps in Service

Emergency Ladder Exit Cooling Water Pumps Operating Satisfactorily.

Comments: Emergency cooling pump permanent power is scheduled to be installed during the winter maintenance outage.

Fishway Entrances and Collection Channel:

Yes No Sill Location, Criteria and Measurements

South Shore Entrance (SSE-1) Weir Depth (Criteria: \geq 8.0')

South Shore Entrance (SSE-2) Weir Depth (Criteria: \geq 8.0')

South Shore Channel/Tailwater Differential (Criteria: 1.0' – 2.0')

North Powerhouse Entrance (NPE-1) Weir Depth (Criteria: \geq 7.0' or on sill)

North Powerhouse Entrance (NPE-2) Weir Depth (Criteria: \geq 7.0' or on sill)

North Powerhouse Entrance Channel/Tailwater Differential (Criteria: 1.0' – 2.0')

North Shore Entrance (NSE-1) Weir Depth (Criteria: \geq 6.0' or on sill)

North Shore Entrance (NSE-2) Weir Depth (Criteria: \geq 6.0' or on sill)

North Shore Channel/Tailwater Differential (Criteria: 1.0' – 2.0')

Collection Channel Surface Velocity (Criteria: 1.5 – 4.0 fps)

Comments: Rickly velocity measurement was conducted on November 27 and averaged 3.1 fps. NSE channel to tailwater was out of criteria on November 29 and measured 0.9 feet. Adjustments were made immediately and the adult fishway is currently operating within criteria.

Auxiliary Water Supply System:

<u>Yes</u>	<u>No</u>	<u>In Service and Operating Satisfactory?</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AWS Fish Pump 1 (operating).
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AWS Fish Pump 2 (operating).
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AWS Fish Pump 3 (operating).

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

<u>Yes</u>	<u>No</u>	<u>Item</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Forebay debris load acceptable.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Trash rack differentials measured this week? If so, were differentials acceptable? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Any debris seen in gatewells (i.e: over 10% coverage)?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Any oil seen in gatewells?

Comments: There is an estimated 180 square feet of floating woody debris in the immediate forebay.

Spillway Weir: Temporary spillway weir was closed for the season on July 19 at 09:00.

ESBS/VBS:

<u>Yes</u>	<u>No</u>	<u>Item</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	ESBSs deployed in all slots and in service?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	ESBSs inspected this week? If so, were results acceptable? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	VBSs differentials checked this week? If so, were results acceptable? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A

Comments: None.

Orifices, Collection Channel, Dewatering Structure, and Flume:

<u>Yes</u>	<u>No</u>	<u>Item</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Orifices operating satisfactory? How many are open and in service? <u>19 open.</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dewaterer and cleaning systems operating satisfactory? N/A

Comment: Orifices and primary dewatering structure are being back flushed every 8 hours.

Collection Facility: Juvenile Fish Facility switched to primary bypass on November 1 at 07:00.

Transport Summary: Collection for transport ended on November 02 with the last truck leaving LGS.

River Conditions

River conditions during the week are outlined in Table 2 below.

Table 2. 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
49.4	35.2	0	0	46.8	46.0	6.0+	5.6

*Ladder temperature.

Comment: None.

Other

Inline Cooling Water Strainers: Cooling water strainers will be inspected again starting in December.

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

Avian Activity: USDA bird hazing ended on June 25 and USACE bird counts ended on October 31.

Gas Bubble Trauma: Final GBT sampling for the season was conducted on August 21.

Research: No research is currently being conducted at this time.

Siberian Prawn: Collection ended for the season on November 1.

Project: Lower Granite

Biologists: Elizabeth Holdren and Stephen Hampton

Dates: November 24 - November 30, 2017

Turbine Operation

Yes No Turbine Unit Status

- All 6 turbine units available for service throughout the week (see comments below for outage details).
 Available turbine units operated within 1% peak efficiency constraint. Constraint in effect: Hard Soft.

Comments: Unit 1 remains out of service for blade/runner repair. Unit 2 currently has hydraulically locked blades that limit operation to the upper end of 1% peak efficiency constraint. Unit 3 is currently in operation as the priority unit. Unit 2 was returned to service from annual maintenance at 1524 hours November 30.

Adult Fish Passage Facility

General comments: Adult fish facilities were inspected by Corps biologists November 27, 28, 29, and 30.

Fish Ladder:

Yes No Location, Criteria, and Measurements

- Fish Ladder Exit Differential (Criteria – Head \leq 0.5')
 Fish Ladder Picketed Lead Differential (Criteria – Head \leq 0.3')
 Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0' to 1.3')
 Ladder Temperature Pumps in Service.
 Ladder Temperature Pumps Operating Satisfactorily.

Comments: None

Fish Ladder Entrances and Collection Channel:

Yes No Sill Location, Criteria and Measurements

- South Shore Entrance (SSE-1) Weir Depth (Criteria: \geq 8.0' or on sill)
 South Shore Entrance (SSE-2) Weir Depth (Criteria: \geq 8.0' or on sill)
 South Shore Channel/Tailwater Differential (Criteria: 1.0' – 2.0')
 North Powerhouse Entrance (NPE-1) Weir Depth (Criteria: \geq 8.0' or on sill)
 North Powerhouse Entrance (NPE-2) Weir Depth (Criteria: \geq 8.0' or on sill)
 North Powerhouse Entrance Channel/Tailwater Differential (Criteria: 1.0' – 2.0')
 North Shore Entrance (NSE-1) Weir Depth (Criteria: \geq 7.0' or on sill)
 North Shore Entrance (NSE-2) Weir Depth (Criteria: \geq 7.0' or on sill)
 North Shore Channel/Tailwater Differential (Criteria: 1.0' – 2.0')
 Collection Channel Velocity (Criteria: 1.5 – 4.0 fps)

Comments:

NSE-2 has been out of service since 2011 and remains set with a chain fall hoist in the closed position to improve channel/tailwater head differential. The fish ladder control system continues to be unable to consistently maintain both depth over the weir and channel/tailwater head differential at the north shore during spill at current tailwater elevation. NSE depth over the weir criteria is being sacrificed to achieve channel/tailwater head differentials.

Collection Channel Velocity: Collection channel velocities were in criteria on all inspections.

Auxiliary Water Supply System:

- | <u>Yes</u> | <u>No</u> | <u>In Service and Operating Satisfactory?</u> |
|-------------------------------------|-------------------------------------|---|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | AWS Fish Pump 1 (operating). |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | AWS Fish Pump 2 (operating). |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | AWS Fish Pump 3 (operating). |

Comments: AWS pump 2 is in standby mode. AWS pump 1 is in fast operation.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

- | <u>Yes</u> | <u>No</u> | <u>Item</u> |
|-------------------------------------|-------------------------------------|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Forebay debris load acceptable? Debris was observed in the powerhouse forebay this week. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Trash rack differentials measured this week? If so, were differentials acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Debris in gatewells (i.e.: over 10% coverage)? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Oil in gatewells? |

Comments: Forebay debris in front of the powerhouse averaged about 28.0 yard² this week.

ESBSs/VBSs:

- | <u>Yes</u> | <u>No</u> | <u>Item</u> |
|--------------------------|-------------------------------------|--|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | ESBSs deployed in all slots and in service? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | ESBSs inspected this week? If so, were results acceptable? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | VBSs differentials checked this week? If so, were results acceptable? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |

Comments: ESBS are dogged off in gatewell slots.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

- | <u>Yes</u> | <u>No</u> | <u>Item</u> |
|--------------------------|-------------------------------------|--|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Orifices operating satisfactory? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Dewaterer and cleaning systems operating satisfactory? |

Comments: Dewatered.

Collection Facility: Dewatered.

Transport Summary: No transport is occurring.

River Conditions

General Comments.

Table 1: 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
47.5	34.3	3.6	3.4	45.7	44.0	3.5	2.8

*Collection channel temperature readings were taken due to unit 1 and 2 temperatures being unavailable during maintenance.

Other

Adult Fish Trap Operations: The adult trap season ended at 0900 hours November 19. The Trap was dewatered for winter maintenance November 21.

Inline Cooling Water Strainers: N/A.

Invasive Species: No signs of mussels were present during the November 1 inspection.

Avian Activity: N/A

Spill: Spill is being managed based on river flow. If river flows fall below the minimum generation requirements and flow needed for RSW operation, spill bay 2 will be opened two stops (3.5 kcfs). Spill was changed to spill bays 2 and 7 (3.5 kcfs each) 0808 hours November 30. If river flows fall below the minimum generation requirements and flow needed to operate both spill bays open 2 stops, constant spill will be shifted to spill bay 2. This operation will continue through December 15. When needed water will be pooled to provide spill for fish and minimum generation.

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

Research: N/A.