

**U.S. ARMY CORPS OF ENGINEERS  
WALLA WALLA DISTRICT  
FISH FACILITIES WEEKLY REPORT  
#41-2017**

**Project: McNary**

Biologist: Bobby Johnson and Denise Griffith

Dates: December 1 – 7, 2017

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**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.
9	Dec 5	33 minutes	Extended-length submersible bar screens (ESBSs) camera inspections.
13	Dec 6	11.2 hours	Oil and grease inspection.
6	Dec 6	4.1 hours	Hub tapped.

**Adult Fish Passage Facilities**

General Comments: McNary fisheries biologists performed measured inspections of the adult fishways on December 1, 3 and 5. 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’): 0.9’ on December 1.
- 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. There was no apparent reason for the head over weir being out of criterion on December 1.

At the Oregon exit and along the shoreline, debris loads were light to minimal. Tilting weir 339 remains in manual mode.

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: There are no problems to report.

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 26 degrees.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Oregon Ladder Fish Pump 2: Blade angle was approximately 20 to 22 degrees.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Oregon Ladder Fish Pump 3: Blade angle was approximately 20 to 21 degrees.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Oregon North Powerhouse Pool supply from juvenile fishway.

Comments: There are no problems to report. On December 7, from 1225 to 1405 hours, fish pumps 1 and 3 were alternately removed from service for testing. During this time, fish pump 2 and the pump not being tested were operated at high blade angles.

**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 checked="" type="checkbox"/>	<input 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. Woody debris was removed from the gatewell slots as needed this week.

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, 3B, 7B, 8C, 12B, units 11 and 14 remained in timer mode. The brush on the screen in 2A slot appears to be cycling less frequently than the brushes on the ESBSs in adjacent slots. On December 4, the control room operators began to run the brush hourly to insure the brush cycled fully every hour. Also, that day, the cycle for the brush on the screen in 2B slot was switched from timer to automatic mode. On December 5, the electrical staff tested the ESBS controls for the screens in unit 1. This week, the station service contractor was preparing for the rewiring of the last ESBS controls, which will be for units 1 to 4, during the winter outage season. ESBS camera inspections occurred only in 9A slot this week. The camera's pan and tilt function finally failed completely. A new pan and tilt motor will be ordered so the camera will be functional next season.

VBS differential monitoring continued. No high differential measurements were recorded. Twelve screens total were cleaned on December 2 and 6. No mortalities were observed.

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. On December 1, an extra orifice was found open in 4B slot. Channel procedures were reviewed. Moisture in the orifices air supply line was bleed off daily. On December 6, at 0905 hours, we found the side screen brush articulating electrical cord carrier broken in two locations and twist in another. The electrical staff repaired the carrier by 1030 hours and the brush was returned to service. We continued to operate the transition screen cleaning brush manually to insure it completes a full cleaning cycle.

On December 4, from 1000 to 1005 hours, a power outage occurred in the channel, which again was related to the station service upgrades. The outage caused no issues.

The juvenile channel rehabilaition contractor began preparations for the winter outage this week.

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
165.1	120.9	0.0	0.0	48.0	46.0	6.0	6.0

Comments: There are no problems to report.

## Other

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

Invasive Species: The next mussel station examinations will occur on December 10.

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, cormorant 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: December 1 – December 7, 2017

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**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 all of the 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.

**Adult Fish Passage Facilities**

Fish facility personnel inspected the adult fishways on December 4, 5, 6, and 7.

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 121 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: Orifice 5CN was observed to be plugged on the morning of December 4. The orifice was cycled and backflushed to clear out woody debris. After backflushing, 5 to 10 dead juvenile shad were observed in gatewell 5C, indicating there were probably dead shad impinged on the orifice debris.

The water pump for the bird abatement hydrocannon was removed and the water line was drained on December 4, due to forecasted freezing weather.

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
35.1	26.5	0	0	48	46	10.7	8.2

\*Unit 1 scroll case temperature.

## Other

Inline Cooling Water Strainers: Turbine unit 4 and/or 6 strainers were cleaned on December 2, 4, 5, 6, and 7 because of juvenile shad plugging up the strainers. A total of approximately 5,500 dead juvenile shad were removed.

Transformer cooling water and fire-suppression water strainers were inspected on December 4. There were no fish present.

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: December 1 – 7, 2017

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**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 9, 2017. Unit 2 was removed from service at 0705 and returned to service at 1300 on December 5 to tap the hub. Unit 4 was removed from service at 1601 on December 6 to investigate blade seal leakage with an estimated return to service date of January 11, 2018.

**Adult Fish Passage Facility**

The adult fishway was inspected by Corps biologists on December 4, 6 and 7.

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 7.0, 6.7 and 7.4 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 230 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 50% 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: Orifice 1A1 was open without an attractant light on during the December 6 inspection. Powerhouse operator switched orifices and informed powerhouse electricians.

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
33.2	28.8	0	0	44.8	43.9	6.4	5.8

\*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 December 4.

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: December 1-7, 2017

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**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	5-Dec	06:58	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 on December 4, 5 and 6.

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.

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 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"/> | 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 4,180 square feet of floating woody debris in the immediate forebay. Trash rack differentials were measured on December 7 and were in criteria.

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 checked="" type="checkbox"/> | <input type="checkbox"/>            | VBSs differentials checked this week? If so, were results acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |

Comments: VBS differentials were measured on December 7 and were in criteria.

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 2 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
31.9	28.6	0	0	45.4	44.6	6.0+	5.8

\*Ladder temperature.

Comment: None.

## Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on December 05.

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: December 1-December 7, 2017

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**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. Unit 2 was removed from service from 0716-1204 hours December 5 for caisson removal.

**Adult Fish Passage Facility**

General comments: Adult fish facilities were inspected by Corps biologists December 4, 5, 6, and 7.

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. NPE-1 was closed from 1106-1620 hours during the December 5 inspections for electricians to perform PMs. NPE 1 was closed from 0714-1623 hours December 6 for troubleshooting NPE weir gates calibration issues identified December 5. 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 32.5 yard<sup>2</sup> 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.

## 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
32.8	29.3	3.5	3.4	43.3	41.9	4.7	4.0

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

### Other

Adult Fish Trap Operations: Winter maintenance mode.

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. 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.