Updated 11/17/09

# JOHN DAY DAM NORTH FISHWAY
# DEWATERING PLAN

## FISHLADDER DEWATERING (to tailwater elevation)

### Overview

The north fishway is dewatered annually for winter maintenance (December, January, February). Juvenile and adult steelhead and adult lamprey are commonly found during dewatering process. Most fish move downstream with receding water on their own volition. However there are occasions when removal and transport for release are needed. Attempts are made to capture all lamprey before encountering exposed diffuser grating where they become entrapped in diffusion chambers. Salmonids take priority over resident fish during salvage operations. Personnel enter the count station as soon as possible to remove lamprey. Personnel also enter the lower section where diffuser grating become exposed as soon as possible to prevent fish stranding atop grating. Attempts will be made to release adult fish in forebay and juvenile fish in tailrace, but removal location and added stress of transport will be considered in the determination. The south fishway will remain in service during the north fishway outage, unless coordinated with regional managers.

### Preparation

Operations (JDO)

- Set fishway at orifice flow 48-72 hrs prior to dewatering.
  1. Turn off all attraction water pumps
  2. Close diffuser valve 9 (water supply for diffuser 16)
  3. Close exit sills
- Notify rescue personnel prior to start of dewatering.
- Hang necessary clearance cards.
- Operator provided for diffuser 16's control valve #9 operation for flushing water.
- Immediately before dewatering;
  1. Open diffuser valve 9 to 20%
  2. Open exit sills

Structural (JDS)

- Provide extension ladders at access locations;
  1. First weir downstream of the exit
  2. Count station
  3. First 180° bend
  4. Second 180° bend
- Remove count station picket leads.
- Assure adequate exit bulkheads seals. Install exit bulkheads when needed.
- Notify project of potential deck blockage.

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Mechanical (JDM)

- Schedule necessary preventative maintenance
- Electrical (JDE Assure diffuser valve 9 is in working order)
- Schedule necessary preventative maintenance

Fisheries (TJF)

- Coordinate dates and times for outage with all involved project personnel, COE Portland District and regional fish managers.
- Open crowder and turn off lights after count season.
- Provide fish rescue equipment (nets, bags, ropes, tank…)
- Conduct a pre-work/safety meeting which covers; Activity Hazard Analysis, job responsibilities, radio contact plan, preparation status
- Request the necessary clearances, including 6 AWS pumps to cover the last stage of dewatering operation. Exit bulkhead, valve 9 power/controls and diffuser 16 drain valve control will be cleared on request and accepted by radio.

**Procedures**

1. Open count station diffuser control valve 9 approx 30% for flushing water. To remain in manual during the dewatering. Operator will be on standby at the control for manual adjustments.
2. Open exit sills to allow personnel to walk through weir slots.
3. Install exit bulkheads. Assure all personnel are ready to enter prior to installing last bulkhead leaf.
4. Clearance holder will accept clearance; exit bulkhead, valve 9 control and diffuser 16 drain valve control will be implemented by request and accepted by radio. All entrants will sign Master tag prior to entry.
5. Three people (team 1) will enter the ladder immediately downstream of the exit with dipnets. All fish will be pushed downstream. Flashlights are needed under the roadway where water remains about 3' deep. One person will follow along the walkway. Fall harness and lanyard required.
6. As team 1 continues down the ladder, diffuser valve# 9 will be closed in steps to lower the water at the count station, per fisheries request via radio. Approx 15 minutes will be required between adjustments to allow levels to stabilize. If amount of leakage is high, resulting in excessive flow into the overflow section after diffuser 9 valve is fully closed, diffuser #16 drain valve will be throttled down to allow for only small flushing flow into the overflow section. Diffuser valve 9 will only be adjusted down but not up while personnel are in the ladder. Team 1 should push the adult salmonids to the CS area first without worrying for other fish left behind since they can be properly evacuated in the second run. Quick reaching of the CS on the first run is of essence!
7. When team 1 arrives at the count station, two people (team 2) will begin to move down the ladder through orifices, pushing fish down stream. One person will follow along walkway with rope and bag. Fall harness and lanyard required. Reluctant fish will be bagged and lowered to tailrace deck where another person will retrieve and lower to tailrace for release.
8. Orifice blockers will be placed on the first over flow weirs prior to team 2 starting. Two personnel will remain at the count station for removing fish and transporting to the forebay release site. A salvage tank will be available at the count station if needed.
9. Two personnel (team 3) will enter the first 180° bend as soon as possible to push fish down stream with receding water. Team 3 will proceed down ladder when team 2 arrives at first 180 bend. Team 3 will continue to the second 180° bend.
10. Two personnel (team 4) will enter the second 180° bend as soon as possible and install orifice blockers. All fish and lamprey encountered will be removed. Two personnel will be on tailrace deck to pull fish bags and release to tailwater.
11. Team 4 will proceed down ladder when team 3 arrives at second 180 bend. Team 3 will remain at second 180 until all fish are removed. Fish will be removed by rope/bag and released to tailrace.
12. Team 4 will install orifice blocking grates in last weir before tailwater elevation. Ropes will be attached to the orifice blocking grates and tied to tailrace deck handrails.
13. Team 4 will proceed back to the second 180° bend for egress.
14. After a short break, diffuser valve 9 will be closed. Diffuser chamber drain may be opened depending on the amount of leakage from exit bulkhead. If chamber drain opened, plumbing to tailrace will be inspected for breaks or leakage.
15. The entire ladder will be checked for missed fish by walking its length two more times immediately following the first pass to assure no missed fish.
16. Diffuser chamber drain valve will be closed at the end of the dewatering operation to allow bulkhead leakage flow down the ladder overnight. If exit bulkheads are tightly sealed, diffuser valve 9 will be slightly opened to provide overnight flow.
17. All exposed diffuser grating will be monitored several days after to monitor for lamprey. Lamprey will be removed and released to river.

**ENTRANCE DEWATER (below tailwater)**

**Overview**

The north fishway entrance may require dewatering for maintenance and diffuser grating inspection. This requires pumping below tailwater elevation. Attempts will be made to dewater every year, but ROV

inspection can be used in case where dewatering cannot be accomplished. Fish rescue efforts occur when water levels allow access. Water levels will be periodically checked to assure no fish stranding.

**Preparation**

Operations;

- Notify rescue personnel prior to start of dewatering.
- Hang necessary clearance cards.

Structural;

- Request necessary safety clearances.
- Assure adequate entrance EW1/EW2 bulkhead seals and install.

Mechanical;

- Assure dewatering pumps are in working order.
- Schedule necessary preventative maintenance.

Electrical

- Deactivate automation for entrance weirs.
- Assure power supply to dewatering pumps.
- Schedule necessary preventative maintenance.

Fisheries;

- Coordinate dates and times for outage with all involved project personnel, COE Portland District and regional managers.
- Provide necessary equipment and personnel.
- Conduct a pre-work/safety meeting which covers; Activity Hazard Analysis, job responsibilities, radio contact plan, preparation status

**Procedure**

1. Entrance bulkheads will be installed in the downstream guide to allow inspection of the entrance weirs and their respective guides.
2. Dewatering pumps will be operated. House pump #7 will slowly lower entrance level. To rapidly reduce water level open mud valve and allow sump pump 3A to evacuate water. The dewatered area will be monitored to prevent stranding fish.
3. Safety clearances will be accepted and master tag signed.
4. Two people will enter when water level allows.
5. One person will follow on tailrace deck to remove by rope and bag and release to tailrace.

**Equipment Required**

Fish Tank – transport fish if needed. Aeration required.
Ropes and Fish Bags – transport fish to fish tank or release site.
Dipnets – capture fish.
Safety Harnesses – fall protection for ladder walkway and manbasket.
Hardhats – mandatory
Waders – depending on water depth encountered.
Gloves – hand protection.
Personal Floatation Device – drowning protection.
Radios – Live batteries
Sturgeon stretcher or cargo net – remove large sturgeon via crane

**FISHWAY REWATER**

1. Close exit sills to present forebay.
2. Install count station picket leads.
3. Open count station crowder.
4. Remove entrance bulkheads.
5. Reactivate EW1 entrance weir automation (set for 9’ depth).
6. Reactivate diffuser valve 9 automation (set for 1’ over weir).
7. Remove all access ladders.

8. Remove orifice blockers (180 bends and tailwater elev)
9. Remove all other equipment
10. Pull bulkhead leafs and allow ladder to fill slowly.
11. Start 3 of 6 auxiliary water pumps.