Appendix J Bonneville Dam Protocols for Juvenile Monitoring Facility Operations

1. General. The following protocols will be implemented by agencies conducting research in the Bonneville Dam Powerhouse Two Juvenile Monitoring Facility (JMF). These protocols were coordinated with fish agencies and tribes through the Fish Passage Operation and Maintenance Coordination Team (FPOM). The purpose of these protocols is to provide precautionary measures to limit delayed mortality resulting from stress when handling fish.

1.1. Sample rates should not exceed 25% unless collecting fish for research when temperatures are below 70°F.

1.2. Personnel conducting research or monitoring must be present at the facility to monitor the separator bars for debris and stranded fish.

1.3. The Corps reserves the right to terminate trapping operations at any time.

1.4. Project Biologists will use the Corps temperature probe reading as the official temperature. Temperatures are taken in the general holding tank and are both instantaneous readings and 0000 to 2400 daily averages.

2. General Requirements for JMF Users. All personnel conducting research or monitoring in the JMF will implement the following requirements.

2.1. Users must have appropriate documentation for conducting research at the dam. (See *Guide for Researchers at Bonneville Dam*).

2.2. Users must have valid state and federal permits that cover all listed species passing the project during the trapping period and users shall comply with all fish handling conditions in the permit. **Note: If permit conditions are more restrictive than the following protocols, users must follow permit conditions.**

2.3. JMF personnel will be trained in the proper operation of the JMF to insure fish and personnel safety. Users may request training through the Project Biologists.

2.4. Hard hats are to be worn outside at all times.

2.5. Long pants or raingear are to be worn at all times. Shorts will not be permitted in the lab.

2.6. Steel-toed shoes or rubber boots will be worn at all times. No tennis shoes or sandals are permitted.

2.7. If JMF users supply the Project Biologists with a season schedule, it will not be necessary to notify Project Biologists upon arrival and departure.

2.8. Users may coordinate with Smolt Monitoring Program (SMP) personnel regarding sample rates.

2.9. Users are permitted to routinely operate flushing valves, fish lifts, and release pipes/valves within the monitoring building.

2.10. Any modifications to the building or equipment will first be approved by Bonneville Project through Project Fisheries.

2.11. All anesthetic water will be emptied into the sewage lift station after running through the activated charcoal filters.

2.12. Project Biologists will operate the upper switchgate at the start and end of each season. Users may operate the upper switchgate as necessary when separator bar monitoring is not available.

2.13. The lower switchgate is in automatic control. Users will monitor and report to Project biologists any problems with the lower switchgate.

2.14. On seasonal ascending tailwater elevations, the transition from low to high outfall should be between tailwater elevations at the upper end of 16' to 18' range.

2.15. On seasonal descending tailwater elevations, the transition from high to low outfall should be between tailwater elevations at the lower end of 18' to 16' range.

2.16. Avian cannons will be operated 24 hours per day from March 1 through November 1.

2.17. Project operators and mechanics are responsible for starting and stopping avian cannons.

3. Operations in Sample Mode (typically Fish Passage Season March 1- November 30).

3.1. During August, avian SMP personnel will operate the sampling facility as part of the SMP and to collect fish for regionally-approved research.

3.2. Research updates and equipment or sampling trouble reports will go through the Project Biologists to the FPOM Coordination Team.

3.3. JMF personnel will monitor the JMF continuously while in sample mode to ensure proper functioning and to provide quick response to an emergency while the JMF is in sample operation.

3.4. JMF personnel will perform a walk-through inspection of the entire facility (except the 2-mile transport flume) every two hours to ensure safe fish passage conditions.

3.5. During August, avian cannons may be shut off if Project Biologists observe no predatory birds at the outfall and coordinate through FPOM.

3.6. Particular attention will be paid to the following: dewatering facilities including the PDS, SDS, PDS screen cleaner system, adult transport flume, juvenile hopper, all valves and auxiliary water systems, flushing water systems and their perforated plates, all gates including switch and diverter gates, PIT-tag detectors, and all monitoring building systems including holding tanks, valves, and conduits to prevent injury and/or mortality to passing fish.

3.7. JMF personnel will observe video monitors at least every 1/2 hour or continuously, and manually inspect every two hours or more frequently according to trash sweep operation or other debris potential.

3.8. JMF personnel shall monitor kelt passage over the separator.

4. Sampling at Water Temperatures > 70°F.

4.1. Daily average river temperatures at Bonneville Dam will be obtained from the Corps website of Daily Water Temperatures at Lower Columbia River projects at: http://www.nwd-wc.usace.army.mil/tmt/documents/ops/temp/daily_by_basin.html

4.2. Daily Index sampling will be reduced to every other day index/condition monitoring.

4.3. The upper switchgate is used to select between sample and bypass mode.

4.4. Sample sizes will be reduced to approximately 100 fish per day.

4.5. Monitoring for Gas Bubble Trauma (GBT) symptoms will continue.

4.6. Project Fisheries will use the Project temperature probe in the sample holding tank for official reporting requirements, instantaneous temperatures, and when web-based temperatures are unavailable.

4.7. An instantaneous temperature of 70°F or greater taken between 0630 and 0700 hours will trigger a change in sampling mode after Project Fisheries notify SMP Biologists.

4.8. Normal index sampling may resume when the daily average temperature decreases to ≤ 69.5°F.

4.9. If there is a research need to sample at temperatures above 70°F, coordination with FPOM will be initiated by the researcher through the District POC.

4.10. If the SMP and Project Fisheries Biologists suspect a bypass system problem during a high temperature sampling period, additional sample collection may occur. FPOM will be notified ASAP and provided with updates as problem resolution attempts proceed.

5. Operation in Bypass Mode (or when PDS monitors are not present).

5.1. The upper switchgate will be in bypass mode.

5.2. The Emergency fish release valve will be open.

5.3. All rotating gates will be set to bypass.

5.4. The bypass flume gate will be raised.

5.5. Project Biologists will inspect the facility daily.

6. System Failures.

6.1. Any system failure or abnormality will be reported to a Project Biologist immediately. If a Project Biologist is unavailable, the control room will be contacted at ext. 2221 or 2222.

6.2. If a high or low water situation occurs in the PDS area, operate as follows:

6.2.1. Contact the control room immediately.

6.2.2. Switch the upper switchgate to bypass mode until the problem is corrected.

6.2.3. Immediately open the emergency fish release valve.

6.2.4. Raise bypass flume gate. **DO NOT ADJUST ANY WEIRS.**

6.3. If a monitoring facility failure occurs, operate as follows:

6.3.1. Open the emergency fish release valve.

6.3.2. Switch the upper switchgate to bypass mode until the problem is corrected.

6.3.3. Raise the bypass flume gate.

6.3.4. Begin fish salvage operations.

6.4. If a lower switchgate failure occurs that results in releasing to the wrong high or low outfall and repairs can not be made within 24 hours, the special operation will be coordinated through FPOM.

6.5. If a problem with either the 2-way or 3-way rotating gates is discovered (e.g., stuck open or partially open), the response protocol is as follows:

6.5.1. Switch the upper switchgate to bypass.

6.5.2. Open the emergency fish release valve.

6.5.3. Turn off the air to the rotating gate and manually rotate the half-round pipe section to the bypass position.

6.5.4. Inspect the affected areas for stranded fish and return them to the flume. **Dead fish should be held in a bucket for processing by research personnel.**

6.5.5. Contact the Project Biologist, or if that is not possible, the control room operator. Project personnel will request maintenance crews. Repairs should commence within 4 hours of discovering the problem.

6.5.6. Once all fish safety issues have been addressed and repair requests made, the problem should be thoroughly documented in writing and that information e-mailed to Project biologists prior to sending to other interested parties.