2019 Fish Passage Plan

Appendix J

Smolt Monitoring Facility Operating Protocols at Bonneville, John Day and McNary Dams

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1. BONNEVILLE DAM JUVENILE MONITORING FACILITY (JMF)

This Appendix describes operating protocols that will be implemented by agencies conducting research in the Bonneville Dam (BON) Juvenile Monitoring Facility (JMF) to avoid or minimize delayed fish mortality resulting from stress during handling. These protocols were coordinated with fish agencies and tribes in the Fish Passage Operations & Maintenance (FPOM) workgroup.

1.1. General Facility Protocols.

1.1.1. Sample rates should not exceed 25% unless collecting research fish when water temperatures are < 70°F.

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

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

1.1.4. 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 24-hour averages (0000-2400 hours).

1.2. BON JMF Requirements for Users.

All personnel conducting research or monitoring in the JMF will implement the following:

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

1.2.2. Users must have valid State and Federal permits that cover all ESA-listed species that may occur at the project during the collection period. Users shall comply with all permit conditions, even if more restrictive than protocols herein.

1.2.3. 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.

1.2.4. Hard hats worn outside at all times.

1.2.5. Long pants or raingear worn at all times. Shorts not permitted in the lab.

1.2.6. Steel-toed shoes or rubber boots worn at all times. Tennis shoes or sandals not permitted.

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

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

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

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

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

1.2.12. 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.

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

1.2.14. 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.

1.2.15. 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.

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

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

1.3. BON JMF Sample Mode Operations (typically Fish Passage Season Mar 1 – Nov 30).

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

1.3.2. Research updates and equipment or sampling trouble reports will go through Project Biologists to FPOM.

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

1.3.4. 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.

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

1.3.6. To prevent injury and/or mortality to passing fish, 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.

1.3.7. JMF personnel will observe video monitors at least every $^1/_2$ hour or continuously, and manually inspect every 2 hours or more frequently according to trash sweep operation or other debris potential.

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

1.4. BON JMF Sampling at Water Temperatures > 70°F.

1.4.1. Daily average river temperatures will be obtained from the Corps website for Lower Columbia River projects[1]. Project Fisheries will use the Project thermometer in the sample holding tank for official reporting requirements, instantaneous temperatures and when online data are unavailable.

1.4.2. Daily index sampling will be reduced to every-other-day index/condition monitoring.

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

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

1.4.5. Monitoring for gas bubble trauma (GBT) symptoms will continue.

1.4.6. An instantaneous temperature of ≥ 70°F taken from 0630–0700 hours will trigger a change in sampling mode after Project Fisheries notify SMP Biologists.

1.4.7. Normal index sampling may resume when daily average temperatures are ≤ 69.5°F.

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

1.4.9. 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.

1.5. BON JMF Bypass Mode Operation (or when no PDS Monitors).

1.5.1. The upper switchgate will be in bypass mode.

1.5.2. The Emergency fish release valve will be open.

1.5.3. All rotating gates will be set to bypass.

1.5.4. The bypass flume gate will be raised.

1.5.5. Project Biologists will inspect the facility daily.

[1] Temperature data for Lower Columbia River projects at: pweb.crohms.org/tmt/documents/ops/temp/

1.6. BON JMF System Failure Protocols.

1.6.1. 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.

1.6.2. If a high or low water situation occurs in the PDS area, operate as follows:
- **(a)** Contact the control room immediately;
- **(b)** Switch the upper switchgate to bypass mode until the problem is corrected;
- **(c)** Immediately open the emergency fish release valve;
- **(d)** Raise bypass flume gate. *DO NOT ADJUST ANY WEIRS***.**

1.6.3. If a monitoring facility failure occurs, operate as follows:
- **(a)** Open the emergency fish release valve;
- **(b)** Switch the upper switchgate to bypass mode until the problem is corrected;
- **(c)** Raise the bypass flume gate;
- **(d)** Begin fish salvage operations.

1.6.4. If a lower switchgate failure occurs and releases are sent to the wrong high or low outfall, and repairs cannot be made within 24 hours, a special operation will be coordinated via FPOM.

1.6.5. In the event of a problem with either the 2-way or 3-way rotating gates (e.g., stuck open or partially open), the response protocol is as follows:
- **(a)** Switch the upper switchgate to bypass;
- **(b)** Open the emergency fish release valve;
- **(c)** Turn off air to rotating gate and manually rotate half-round pipe section to bypass position;
- **(d)** 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.*
- **(e)** 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.

1.6.6. Once all fish safety issues have been addressed and repairs requested, document the problem in an e-mail to Project Biologists prior to sending to other interested parties.

2. JOHN DAY DAM SMOLT MONITORING FACILITY (SMF)

The following protocols will be implemented by agencies conducting research in the John Day Dam (JDA) Smolt Monitoring Facility (SMF) as precautionary measures to avoid or minimize delayed fish mortality resulting from stress during handling. These protocols were coordinated with fish agencies and tribes in the Fish Passage Operations & Maintenance (FPOM) workgroup.

2.1. General Facility Protocols.

2.1.1. Sample rates should not exceed 25% unless collecting research fish at water temperatures < 70°F.

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

2.2. JDA SMF Requirements for Users.

All personnel conducting research or monitoring in the JDA SMF will implement the following:

2.2.1. Users must have appropriate documentation for conducting research at the dam (see *Guide for Researchers at John Day Dam*).

2.2.2. Users must have valid State and Federal permits that cover all ESA-listed species that may occur at the project during the collection period. Users shall comply with all permit conditions, even if more restrictive than protocols herein.

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

2.2.4. Long pants or raingear worn at all times. No shorts or sweats permitted.

2.2.5. Steel-toed shoes or rubber boots worn at all times. No tennis shoes, sandals permitted.

2.2.6. If users provide Project Biologists with a schedule, it will not be necessary to notify Project Biologists upon arrival and departure.

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

2.2.8. Users are permitted to routinely operate SMF flushing valves and release pipes/valves.

2.2.9. Any modifications to the building or equipment will first be approved by The Dalles/John Day/Willow Creek Project through Project Fisheries.

2.2.10. All anesthetic water will be emptied into the activated charcoal filters tanks.

2.3. JDA SMF Sample Mode Operations (typically Fish Passage Season Mar 1 – Nov 30).

2.3.1. SMP personnel will operate the facility as part of the SMP and to collect fish for regionally-approved research.

2.3.2. Research updates and trouble reports will go through the Project Biologists to FPOM.

2.4. JDA SMF Sampling at Water Temperatures > 70°F.

2.4.1. Daily average river temperatures will be obtained from the Corps website for Lower Columbia River projects[1]. Project Fisheries will use the Project thermometer in the sample holding tank for official reporting requirements, instantaneous temperatures and when online data are unavailable.

2.4.2. Daily 24-hour index sampling will be reduced to twice per week (preferably Mondays and Thursdays) index/condition monitoring from 0700–1300 hours.

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

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

2.4.5. An instantaneous temperature of ≥ 70°F taken between 0630–0700 hours will trigger a change in sampling mode after Project Fisheries notifies SMP Biologists.

2.4.6. Normal index sampling may resume when daily average temperatures are ≤ 69.5°F.

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

2.4.8. 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.

2.5. JDA SMF Bypass Mode Operation.

2.5.1. All rotating gates will be set to bypass.

2.5.2. Project Biologists will inspect the facility every two hours.

2.5.3. If the full-flow PIT-tag detector is effective, the switch gate will be moved to bypass.

2.6. JDA SMF System Failure Protocols.

2.6.1. 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. 4211.

2.6.2. In the event of a problem with either the 2-way or 3-way rotating gates (e.g., stuck open or partially open), the response protocol is as follows:

- **(a)** Contact the Project Biologist, or if unavailable, the control room. Project personnel (SMF Biologist) will request maintenance crews. Repairs should commence within 4 hours of discovering the problem;
- **(b)** Once all fish safety issues have been addressed and repairs requested, document the problem in an e-mail to Project Biologists prior to sending to other parties.

3. McNARY DAM JUVENILE FISH FACILITY (JFF)

Agencies conducting research in the McNary Dam (MCN) Juvenile Fish Facility (JFF) will implement the following protocols as precautionary measures to avoid or minimize delayed fish mortality resulting from stress during handling. The Fish Passage Operations & Maintenance (FPOM) workgroup coordinated these protocols with fish agencies and tribes.

3.1. General Facility Protocols.

3.1.1. Sample rates should not exceed 25% unless collecting research fish at water temperatures < 68.0°F.

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

3.2. MCN JFF Requirements for Users.

All personnel conducting research or monitoring in the MCN JFF shall:

3.2.1. Have appropriate documentation for conducting research at the dam;

3.2.2. Have valid State and Federal permits that cover all ESA-listed species that may occur at the project during the collection period;

3.2.3. Comply with all permit conditions, even if more restrictive than protocols herein;

3.2.4. Wear hard hats at all times when outside, in, under or around the JFF or the dam;

3.2.5. Wear long pants or raingear at all times. No shorts or sweats permitted; and

3.2.6. Wear steel-toed shoes (or rubber boots when likely to enter water) at all times. No tennis shoes or sandals permitted.

3.2.7. If users provide the project biologists with a schedule, it will not be necessary to notify them upon arrival and departure.

3.2.8. Users shall coordinate sample rates with Smolt Monitoring Program (SMP) or MCN project biologists.

3.2.9. Users are not permitted to routinely operate JFF flushing valves and release pipes/valves without the permission of project biologists.

3.2.10. The Project Biologist must approve any proposed modifications to the building or equipment.

3.3. MCN JFF Sample Mode Operations (typically April 6 – September 30).

3.3.1. Sampling Procedures:

3.3.1.a. Personnel will normally conduct sampling in accordance with smolt monitoring program guidelines recommended by the PSMFC. Project and SMP personnel may occasionally alter sampling guidelines if fish research activities require it. Normal alterations of sampling guidelines are to adjust the number of fish sampled to meet approved research needs or to minimize the handling of fish during warm water temperature periods.

3.3.1.b. Electronic counting tunnels count sampled fish and staff verify and adjust the counts by hand counts. Staff will base all fish number estimates and rates on the size of the sample of fish collected. Staff will take samples hourly for 24-hours every-other-day. Project biologists will coordinate with SMP personnel to set sample rates.

3.3.1.c. SMP and project personnel will take and use species composition and weight samples to determine loading densities for raceways (if fish are being collected for research needs). Project personnel will keep a running total of hourly estimates of fish numbers and raceway totals. Daily samples for monitoring descaling will include a minimum of 100 fish of the dominant group(s) for which descaling information is recorded. SMP and project personnel will monitor descaling every-other-day for facility operations. SMP and project personnel may conduct full sample descaling instead of 100 fish subsamples as long as it does not adversely affect other facility operations.

3.3.1.d. Where SMP activities are conducted at collector dams, project biologists may utilize daily total information gathered by those personnel.

3.3.1.e. Research updates and trouble reports will go through project biologists to FPOM.

3.4. MCN JFF Sampling at Water Temperatures >68.0°F.

3.4.1. Personnel will obtain daily average river temperatures from the Corps website at: www.nwd-wc.usace.army.mil/ftppub/water_quality/tempstrings/.

3.4.2. Staff will conduct daily 24-hour index sampling every-other-day, 0700–0700 hours. If juvenile salmonid populations experience high mortality after personnel implement the above procedures, the project will cease fish collection for regular sampling, but SMP and project staff shall continue to collect for fish condition sampling for up to 8 hours per day.

3.4.3. The switchgate selects between sample and bypass mode.

3.4.4. If populations experience high mortality, staff will reduce sample sizes to approximately 100 fish per day, within sampling limitations.

3.4.5. Project or SMP personnel will use a thermometer in the sample holding tank for official reporting requirements, instantaneous temperatures or when online data are unavailable.

3.4.6. An instantaneous temperature of 68.0°F or greater taken between 0630 and 0700 hours will trigger a change in sampling mode after a project biologist notifies SMP biologists.

3.4.7. Normal index sampling may resume when daily average temperatures are ≤ 68.0°F.[1]

3.4.8. If there is a research need to sample at temperatures >68.0°F, the Corps District POC will initiate coordination with FPOM.

3.4.9. If the SMP and project fisheries biologists suspect a bypass system problem during a high temperature sampling period, additional sample collection may occur. Project or District biologists will notify FPOM as soon as possible and provide updates as they attempt to resolve the problem.

3.4.10. For additional measures to take when sampling at water temperatures > 68.0°F, see **FPP Chapter 5 - McNary Dam**.

3.5. MCN JFF Bypass Mode Operation.

3.5.1. Project personnel will set the switchgate to the appropriate bypass mode.

3.5.2. Project personnel will inspect the facility as necessary.

3.6. MCN JFF System Failure Protocols.

3.6.1. Personnel shall immediately report any system failure or abnormality to a project biologist, or if unavailable, the control room at ext. 231.