

**MEMORANDUM FOR THE RECORD****SUBJECT: 24BON035 MFR SMF High Temperature Sampling Protocol Deviation to Support B2FGE Post-Construction Evaluation****Background:**

During the regional Fish Passage Operations and Maintenance (FPOM) meeting on 11 July 2024, USACE requested input from the FPOM representatives regarding high temperature protocol deviations of the Smolt Monitoring Program (SMP) to continue sampling at the Bonneville Dam Juvenile Monitoring Facility (JMF) in the event the river temperatures reached the trigger for high temperature sampling protocol ( $\geq 70^{\circ}\text{F}$ ) during the remaining few days of the Bonneville Dam Powerhouse 2 Fish Guidance Efficiency (B2FGE) Post-Construction Evaluation. At the time of the request, Bonneville Dam forebay had a daily average temperature of  $68.9^{\circ}\text{F}$  (<https://pweb.crohms.org/tmt/documents/ops/temp/202407.lcol.html>) with 9 days remaining of the B2FGE study, which concluded on 20 July.

As per Section 1.4 of Appendix J in the Fish Passage Plan, BON JMF sampling at water temperatures exceeding  $70^{\circ}\text{F}$  would typically initiate daily index sampling to be reduced to every-other-day index/condition monitoring with a sample size target of approximately 100 fish per day. However, Section 1.4.h. allows USACE to initiate coordination with FPOM if there is a research need identified to continue sampling at temperatures  $>70^{\circ}\text{F}$ .

The B2FGE Post-Construction Evaluation study design relies on the daily SMP samples during each mid 1% and upper 1% peak efficiency operational treatments for the duration of the study. The fish condition reported by the SMP are combined with operational data to produce spring and summer mid 1% peak efficiency descaling and mortalities rates, and spring and summer upper 1% peak efficiency descaling and mortality rates. These descaling and mortality rates will be used to compare operational treatments for the evaluation of recent structural modifications in the gatewells of Bonneville Powerhouse 2 Units.

It was identified that the high temperature trigger of  $70^{\circ}\text{F}$  was likely to be met during the remaining days of the B2FGE Post-Construction Evaluation and implementation of standard high temperature protocol would reduce the number of samples collected by SMP and ultimately lower the number of samples to be utilized in the descaling and mortality analysis of the B2FGE Post-Construction Evaluation.

**FPOM Coordination:**

USACE presented the topic to FPOM and included two optional courses of action to help reduce impacts to the B2FGE study during high temperatures:

1. Continue sampling as normal until the B2FGE test is complete on 20 July.
2. Implement high temperature sampling protocol but have the sampling date fall on odd dates and bypass on even dates until 20 July.

**FPOM coordinated decision:** BON SMP will continue a *temporary* deviation of high temperature sampling protocol for the remaining B2FGE testing days, which would use regular daily SMP sampling protocols until 20 July **or until water temperatures reached 71°F, which ever threshold was reached soonest** and then initiate reduced every-other-day-sampling until temperatures receded below 71°F or B2FGE testing was over.

On the morning of July 15, instantaneous BON forebay river temperature exceeded 70°F for the first time since the 11 July FPOM meeting. SMP staff were contacted and the temporary 71°F FPOM coordinated temperature threshold was implemented. This allowed for three additional SMP sampling dates (July 16, 18, 20) where outmigrants otherwise would have been bypassed to river outfall. The extra sampling dates (July 16, 18, 20) collected an additional 687 subyearling samples with a total of three sample mortalities (see Table 1). However, the cause of these mortalities is not known.

**Table 1: BON Daily Smolt Passage Index Data for Subyearlings (CH0) between 15-20 July 2024**

Site	Sample Date	Species	Sample Code	Sample Count	Collection Count	Total Mortalities	Facility Mortalities	Sample Mortalities	PITtag Mortalities	Research Mortalities	Percent Sample Mortality
BO2	7/15/2024	CH0	1	350	17500	7	0	7	0	0	2
BO2	7/16/2024	CH0	1	215	10750	1	0	1	0	0	0.465
BO2	7/17/2024	CH0	1	670	33500	2	0	2	0	0	0.299
BO2	7/18/2024	CH0	1	306	30600	0	0	0	0	0	0
BO2	7/19/2024	CH0	1	269	26900	1	0	1	0	0	0.372
BO2	7/20/2024	CH0	1	166	16600	2	0	2	0	0	1.205

(data obtained from [https://www.fpc.org/smolt/smolt\\_queries/Q\\_smoltpassageindexquery.php](https://www.fpc.org/smolt/smolt_queries/Q_smoltpassageindexquery.php))

B2FGE Testing concluded at 0700 on 20 July 2024 and SMP staff notified Project Fisheries that the SMP initiated regular high temperature sampling protocol at the JMF as per FPP Appendix J Section 1.4 (>70°F) immediately after the B2FGE study concluded and will remain until river temperatures cool down below  $\leq 69.5^\circ\text{F}$ .

**Draft minutes for 11 July 2024 FPOM Meeting:**

3.4.2.1. SRWG:

Update for FGE – Rerecich (USACE) said they need as much sampling as possible for FGE testing at BON PH2. Testing will continue until 0700 on 20 July. Temps are 69° currently but once we get to the 70° trigger the ask is to continue to sample

as normal until test completes on 20 July. Or second best is every other day at a normal sample rate. Switch to bypass on the odd day.

Van Dyke (ODFW) asked how they would account for temp impacts.

Rerecich (USACE) indicated PNNL would need to look at the data and address temp increase impacts. Rerecich relayed info from SMF Bio, Ballinger, stated that at 73° there would be changes in fish behavior in the sample tanks but does not object to normal sampling if temps remain very close to 70F trigger to support the remaining days of FGE study, as long as this request does not continue indefinitely. Rerecich (USACE) said operations at the dam would remain the same.

Ebel (IDFG) said the SMP has a permit, and this might be broader than asking FPOM for a change to the FPP. Ebel (IDFG) said that SMP needs to be address and asked if it was discussed with the SMP and the FPC. He also asked if there was enough fish for statistical power for their test.

Rerecich said the summer period could be short on fish, due to low flows and few units operating.

Conder (NOAA) said they would support continuing at 71° and if temps go over that switching to every other day sampling.

Van Dyke is not sure there is enough information to support changing from the FPP criteria and recommends every other day sampling. Van Dyke said he wants to ensure this is documented in the report.

Morrill and Van Dyke also encouraged investigating the permit with SMP and PNNL to ensure they are aligned.

**ACTION:** Rerecich will check with Ballinger and PNNL concerning permitting prior to proceeding with normal sampling at a 71° threshold.

Morrill (WDFW) sees no issues supporting continued sampling as needed for testing.

Lorz (CRITFC) will go with Conder's (NOAA) recommendation.

Webex CHAT from Ben Hausmann (BPA) to everyone: 10:46 AM

It sounds like we're only talking about the potential for 4 days of sampling at 70 degrees. I think the minimal risk makes sense for the integrity of the FGE study.

Sincerely,  
NWP and Project Biologists