

MEMORANDUM FOR THE RECORD**SUBJECT: Sampling reduction due to increased and steady sample tank mortality.**

Narrative: 1. Over the last three sample days, mortalities in the JFF sample tank have exceeded 3%. Sunday, August 23, we experienced 5 mortalities in a sample of 63, near 8% mortality level. We believe we are seeing the effects of heat stress. High air temperatures and lack of wind at times may have contributed to warm water temperatures in the sample facility. When the spill was reduced, per the FPP, we stopped use of the sawtooth unit priority pattern as most units were returned to service. One trigger for use of the sawtooth pattern is the sample tank water temperature reaching 68 degrees F, which it did quite some time ago. The next trigger is a 3% sample tank mortality, which has just begun. Looking through the FPP, our next alternative is to reduce sampling. The sample tanks are the only place mortality has been consistently occurring and is the best place to gauge mortality. Please see the table below.

To reduce overall holding time and temperatures that the fish are sampled at, we will switch to sampling during 0000 to 0800 hours (8 hours) with the sample inspection beginning immediately at 0800 hours. The sample should be examined and released before the water temperatures rise significantly. Looking at the temperature data, this is the time frame that appears to be the best. Sample tank temperature was 69.90 to 71.36 degrees F from Monday's data with the lowest temperatures available in the morning.

We are going to use a 25% sample rate just to see if we can get 100 smolts. The last sample, we were at 10% and got 63 smolts in 24 hours. Five of the fish were mortalities.

Table 1. McNary Sample Tank Mortality Increase August 2020.

Date	Mortality Rate	Fish Number	Max. Tank Temp (F)	Comments
Aug 7	2.84	4	70.20	Highest rate to date.
Aug 9	No sampling.	NA	70.24	JCC Issues.
Aug 11	No sampling.	NA	71.96	JCC Issues.
Aug 13	3.45	2	68.70	First time over 3.0%.
Aug 15	0.00	0	69.64	20 kcfs spill started at 0001.
Aug 17	No sampling.	NA	70.24	JCC Issues.
Aug 19	4.36	18	71.62	Start of concern.
Aug 21	6.06	8	71.19	2 nd straight day over 3.0%.
Aug 23	7.94	5	71.62	3 rd straight day over 3.0%.

Location: McNary juvenile fish facility.

Method: Due to increased sample tank mortality, the sample will be reduced to 8 hours during cooler air and water temperatures. Further alteration or elimination of sampling may occur if the mortality rate is not reduced. After the sample tank temperature declines to below 68 degrees F, 24-hour sampling will resume.

Timeline - Duration: August 24 to time at which sample tank temperature declines.

A. Species: Subyearling Chinook.

B. Origin: Mostly wild.

C. Length: Approximately 4 to 5 inches.

D. Marks and Tags: None noted.

E. Marks and Injuries Found on the Carcasses: None noted.

F. Future and Preventative Measures: Switch to morning sampling and continue to follow the FPP.

G. Photos Taken: No

Bobby Johnson
Project Fisheries Biologist
McNary Lock and Dam