
State Water Resources Control Board

July 2, 2020

Ernest A. Conant
Mid-Pacific Regional Director
U.S. Bureau of Reclamation
econant@usbr.gov

ORDER 90-5 SACRAMENTO RIVER TEMPERATURE MANAGEMENT

Dear Mr. Conant:

This letter responds to recent submittals from the U.S. Bureau of Reclamation (Reclamation) to the State Water Resources Control Board (State Water Board or Board) relating to Reclamation's 2020 Sacramento River Temperature Management Plan (TMP) pursuant to State Water Board Water Right Order 90-5.

Thank you for providing some additional modeling information as requested on June 22. While we were initially encouraged by the new information provided that seemed to show some improved conditions since the TMP was submitted, modeling released two days later on June 24 showed projected lower end of September cold water pool levels that raise concerns. We were encouraged, however, to see the additional modeling scenarios provided that showed there are additional actions Reclamation can take to protect the fishery this year.

Prior to construction of Shasta Dam, winter-run Chinook salmon spawning and early rearing habitat encompassed approximately 200 miles of snow-fed cold water streams in the upper reaches of the Sacramento River and its tributaries. These stream systems remained cold throughout the year, which protected salmon eggs and emergent fry from heat-induced mortality. With the construction and operation of Shasta and Keswick Dams, winter-run Chinook salmon no longer have access to this historic cold water habitat. Their only remaining habitat is now limited to a small stretch of the Sacramento River below Keswick Dam, where cooler temperatures are dependent on reservoir releases. Accordingly Order 90-5 requires Reclamation to take actions reasonably within its control to protect winter-run Chinook salmon and other native species from elevated temperatures and other adverse conditions created by Reclamation's operations on the Sacramento River.

Based on modeling you provided on June 24, which shows different outcomes than modeling provided two days earlier, it appears there will be nearly 70 TAF less cold water available at the end of September to manage temperatures than was identified in

E. JOAQUIN ESQUIVEL, CHAIR | EILEEN SOBECK, EXECUTIVE DIRECTOR

your June 22 submittal and 33-46 TAF less than forecasted in May when the Board first considered the TMP. Mortality estimates based on the new information also indicate some increase in projected temperature dependent mortality to winter-run Chinook salmon eggs compared to projections for May.¹

Additionally, using Reclamation's June 24 modeling, the scenario in which 100 TAF of water is retained in storage for temperature management shows significant improvements in cold water storage, carryover storage, and mortality compared to Reclamation's proposed operations as outlined in the TMP.

Table 1. Difference between Reclamation's TMP and a scenario in which an additional 100 TAF is retained in storage (based on June 24 modeling)

	Reclamation's TMP Operations	100 TAF Additional Storage
Amount of cold water storage (less than 56 degrees F at the end of September)	469 TAF	522 TAF
Carry over storage going into next year	To Be Determined – will depend on deliveries this fall that are not yet modeled	+100 TAF more storage than Reclamation's proposed operations ²
Percentage estimated winter-run Chinook salmon egg mortality (stage independent)	NMFS estimate – 34-35% Reclamation estimate – 25%	NMFS estimate – 16-22% Reclamation estimate – 13%

As Table 1 demonstrates, if Reclamation holds back 100 TAF of releases, there is expected to be 53 TAF more cold water at the end of September, 100 TAF more carryover storage going into next year, and a significant reduction in estimated winter-run Chinook salmon egg mortality compared to Reclamation's operations as proposed in the TMP.

In light of Reclamation's most recent modeling showing that the end of September cold water pool in Shasta Reservoir has diminished and that retaining additional water will improve protection for endangered winter-run Chinook salmon and other species this year and improve conditions going into next year, changes should be made to the TMP to protect the fishery. Reclamation as the operator is in the best position to identify the additional actions and related modifications to the TMP it will take to ensure it is taking

¹ Reclamation also includes other estimates of mortality (Anderson 2018) that assumes eggs are only sensitive to higher temperatures during a short period before hatching, but NMFS concluded that at this point that model should not be relied on because it has not been calibrated or peer reviewed and could underestimate mortality (NMFS 2019). The Department of Fish and Wildlife has also indicated similar concerns related to use of the Anderson model.

² The volume of water available as carry over storage next year could be reduced if a portion is used this year for the benefit of Fall-run Chinook salmon.

actions within its control to manage the impacts of its operations in compliance with Water Right Order 90-5, and given the urgency of taking action to make improvements this year, we request that Reclamation respond to this letter within **five days** identifying its proposed modifications to the TMP.

If you have any questions regarding this letter, please contact Diane Riddle at diane.riddle@waterboards.ca.gov. Please be aware that due to the public health concerns regarding the COVID-19 virus and the resulting pandemic, many State Water Board staff are telecommuting; therefore, the best avenue of communication at this time is via email.

Sincerely,



Eileen Sobeck
Executive Director
State Water Resources Control Board