State Water Resources Control Board

May 15, 2026

Via electronic mail:

Tom Patton
U.S. Bureau of Reclamation
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Dear Mr. Patton:

COMMENTS ON APRIL 29, 2026 DRAFT TEMPERATURE MANAGEMENT PLAN

State Water Resources Control Board (State Water Board or Board) staff appreciate the opportunity to comment on the April 29, 2026 Draft Sacramento River Temperature Management Plan (TMP) provided by the U.S. Bureau of Reclamation (Reclamation) to the Sacramento River Group (SRG). Board staff have reviewed the draft TMP and have the following comments intended to inform Reclamation's preparation of the final TMP consistent with the requirements of State Water Board Order 90-5.

Order 90-5 included conditions in the water right permits and licenses for Keswick Dam, Shasta Dam, and the Spring Creek Power Plant that require Reclamation to undertake actions within Reclamation's reasonable control to provide for temperature management on the Sacramento River for the protection of Sacramento River fish species, including winter-run and fall-run Chinook salmon.[1]

[1] Order 90-5 requires Reclamation to operate to achieve an average daily temperature of 56 degrees Fahrenheit (F) on the Sacramento River at Red Bluff Diversion Dam (RBDD), located 60 miles downstream of Keswick Dam, to protect aquatic habitat conditions for spawning, rearing, and migration needs of salmon and other native fish populations during periods when higher temperatures would adversely affect the fishery. If there are factors beyond Reclamation's reasonable control that prevent Reclamation from meeting 56 degrees F at RBDD, Reclamation is required to identify an alternative compliance location and prepare an associated TMP for consideration by the State Water Board. Order 90-5 specifies that "[w]hether a particular factor is within the Bureau's reasonable control depends on the specific facts and is a matter for the Chief of the Division of Water Rights or the Board to decide, when the Bureau proposes changes in the location where it will meet the temperature requirement." The draft TMP proposes to operate to meet a daily average of 53.5 degrees F at Clear Creek (CCR). In prior TMP approvals, the Board has accepted that meeting a temperature target of 53.5 degrees F at CCR typically equates to meeting a 56 degree F target at Balls Ferry.

Reclamation's draft TMP states that "Despite high spring Shasta Reservoir storage conditions, Sacramento River temperature management is expected to be challenging in 2026 given the poor snowpack/early snowmelt in the northern Sierra and expected low end-of-September (EOS) storage in Shasta Reservoir." Reclamation's draft TMP projects an EOS storage in Shasta of 2.2 million-acre feet (MAF), which is a relatively low carryover storage level creating concerns for temperature and storage management this year and next year, particularly given the end of April (EOA) storage volume was relatively high at 4.2 MAF. The draft TMP further identifies that the volume of coldest water below 48 degrees Fahrenheit in Shasta Reservoir is expected to be similar to 2015, which was a challenging temperature management season. The draft TMP also indicates that the use of the temperature control device side gates, which are an indication of loss of temperature control, will be used early in the season. Specifically, the first side gate use is identified as mid-August with full side gate use in late August, which could result in loss of temperature control in September, likely leading to mortality of any winter-run eggs that have not yet emerged and threatening conditions for fall-run Chinook salmon.

There is significant uncertainty this year in the level of protection that will be provided to winter-run and fall-run Chinook salmon and the actions that should be implemented to improve conditions this year, as well as going into next year. Reclamation's Temperature Dependent Mortality (TDM) modeling using results from its Central Valley Project Water Temperature Modeling Platform (WTMP) indicate low TDM levels of 0.7% (stage-dependent) and 2% (stage-independent) assuming 2013-2022 redd distributions. In contrast, the modeling results provided by the National Marine Fisheries Service Southwest Fisheries Science Center (SWFSC) indicate TDM ranges from 0.3% to 27% stage-dependent TDM (5% mean TDM) and 9% to 38% stage-independent TDM (16% mean TDM) for a single redd distribution from 2025 and 13 years of redd distributions from 2013-2025.

Given these differences, Board staff requested additional evaluations and information from Reclamation and the SWFSC to better understand the reasons for the differences to inform comments on the draft TMP. In response, Reclamation indicated that it was not able to provide that information before the final TMP is submitted. The State Water Board received a response from the SWFSC which included a simulation of three reservoir release scenarios; Forecast_90 (the baseline also modeled by Reclamation); Alt_1, in which total reservoir releases were reduced by 100 TAF over the course of the temperature management season; and Alt_2, where the same releases were reduced by 200 TAF.[2] Under Forecast_90, mean TDM across redd years was 16% (stage-independent) and 5% (stage-dependent). Alt_1 showed moderate benefits to TDM associated with reduced releases (i.e., additional cold water held in reserve later into the year); while reduced releases under Alt_2 lowered mean TDM by approximately one third, with benefits varying by redd year and meteorology. Alt_2 simulates a scenario in

[2] SWFSC delivered a modeling summary that included these additional results to the SRG on May 11, 2026.

which EOS storage would be 200 TAF higher than Forecast 90 operations, and would provide carryover storage benefits in addition to the reducing TDM in 2026.

Board staff's understanding of Reclamation's proposed operations of Shasta Reservoir as part of the consultation process under section 7 of the Endangered Species Act for the Long-Term Operations of the Central Valley Project and State Water Project (LTO) was that more protective conditions would be provided through the Shasta Operations Framework and the associated bin structure, as well as early consultation with the Board and other agency staff through the Shasta Operations Team (SHOT). While Order 90-5 is a separate regulatory process from the section 7 consultation process, Order 90-5 and the consultation process for Shasta operations overlap, so it is important for the Board to understand how Reclamation proposes to operate under the 2025 Record of Decision (ROD) for LTO and to be able to provide early feedback. Specifically, Board staff's previous understanding – based on Reclamation's description of the Proposed Action for LTO that was evaluated by the 2024 Biological Opinion (BiOp) – was that the EOS carryover storage objective for a year such as 2026 would be at least 2.4 MAF based on the high EOA storage of 4.2 MAF. Further, the SHOT consultation process would have resulted in earlier consultation amongst the agencies starting in February to discuss these issues earlier in the season. However, Reclamation has recently indicated that as a result of LTO changes in 2025 Reclamation would not provide for an EOS carryover this year of 2.4 MAF. Reclamation stated further that the SHOT only has a role in advising on Shasta operations rather than decision making.

Raising the EOS carryover storage to at least 2.4 MAF would have dual benefits of preserving cold water for longer into the year in 2026 (which based on the SWFSC TDM modeling would reduce the chances of higher TDM), while retaining additional storage for water users and the environment should 2027 be dry. As stated in Reclamation's Biological Assessment for the Proposed Action evaluated by the 2024 Biological Opinion, EOS storage of 2.4 MAF "provides a high likelihood of EOA storage greater than 2.8 MAF the following year which is a point at which biological impacts from higher temperatures start to increase significantly." (2024 Biological Opinion, Appendix A, Reclamation's LTO – Biological Assessment, Chapter 3, Proposed Action, p. 3-16.)

These issues with Shasta operational rules should be clarified. We understand that Reclamation is developing a guidance document to help to clarify Shasta temperature management planning and related processes under the 2025 ROD for LTO. Board staff look forward to participating in that effort to help to ensure that the requirements of Order 90-5 are met.

With respect to this year, the Board requests that the final TMP include measures that are more likely to result in favorable temperature management conditions for winter-run and fall-run Chinook salmon, which could include higher EOS carryover storage. The Board also requests that the final TMP include: (1) a thorough description of how Reclamation determined the EOS carryover storage volume and how that determination is consistent with the 2024 BiOp and 2025 ROD; (2) an evaluation of a range of redd distributions for Reclamation's TDM modeling as requested by Board staff; (3) a

discussion of how Reclamation's meteorological assumptions affect its TDM results (since Reclamation indicates that it cannot include an evaluation of a range of assumptions as requested by Board staff); and (4) possible reasons why Reclamation's estimates for temperature-related mortality are generally substantially lower than estimates by the SWSFC. This supporting information is not present in the current draft, and will be important for the Board's evaluation of the final TMP.

In the May 14, 2026 SRG meeting Reclamation staff indicated that despite the precipitation in April and May, Reclamation does not expect that the May forecast will provide for significantly improved storage and temperature management conditions. Consequently, additional actions to adjust summer releases from what is shown in the draft TMP may be appropriate. Those actions would not only conserve cold water and improve EOS storage levels, but would also help to avoid winter-run redds being established at high flow levels and associated dewatering concerns later in the season.

Thank you for your coordination on this matter and consideration of the Board's comments. If you have any questions related to this letter, please contact Diane Riddle or Matt Holland at diane.riddle@waterboards.ca.gov or matthew.holland@waterboards.ca.gov.

Sincerely,

Diane Riddle

Diane Riddle, Assistant Deputy Director
Division of Water Rights
State Water Resources Control Board

cc: Sacramento River Group email distribution list