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Memorandum

December 17, 2021

To: Erik Ekdahl, Deputy Director
Division of Water Rights
State Water Resources Control Board
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From: Tina Bartlett
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**Subject: Alternative flows review under Section 875(c)(2)(B) of the Drought
Emergency Regulation for December on the Shasta River**

Dear Deputy Director Ekdahl:

The purpose of this memorandum is to transmit an alternative flows review under Section 875(c)(2)(B) of the Drought Emergency Regulation for December on the Shasta River. This review was conducted in the spirit of Resolution 6 of the Shasta and Scott drought emergency flow requirements adopted on August 30, 2021. Resolution 6 states:

“Resolved #6; The State Water Board directs staff to continue to work with CDFW to evaluate and refine the drought minimum instream flows adopted in this regulation if new scientifically-defensible information becomes available....”

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Brief Background

On June 15, 2021, the California Department of Fish and Wildlife (CDFW) transmitted a letter providing drought emergency minimum flow recommendations for the Shasta and Scott Rivers to inform proposed 2021 drought emergency regulations. The State Water Resources Control Board (SWRCB) then hosted two public outreach meetings regarding the drought emergency regulations on July 1, and July 20, 2021. At both meetings CDFW presented the best available science that supported its recommendations and addressed comments. CDFW also requested interested parties submit additional scientific information that could inform the drought emergency regulations or adjustments in the future. On August 17, 2021, the SWRCB approved drought emergency regulations that included CDFW recommended minimum flows, and several pathways to request an exemption (e.g., health and safety, non-consumptive uses, etc.). On August 30, 2021, the Office of Administrative Law adopted the drought emergency regulation for the Shasta and Scott Rivers and it went into effect.

When developing minimum instream flow recommendations for the SWRCB, CDFW relied on the best available science (*emphasis added*) with the knowledge that we were mired in a continued extreme drought and adult migration of Chinook and Coho Salmon was just 2 to 3 months away. In the public workshops and hearing, CDFW agreed to further evaluate minimum flow requirements, and invited all interested parties to submit information or suggestions beyond regulation adoption. Resolution 6 of the adopted regulations was approved to accommodate adaptive management.

The Montague Water Conservation District (MWCD) recently made a concerted effort to consult with scientific experts, provide additional scientific information, and suggest CDFW re-evaluate the best available information they relied on to make its recommendations. MWCD transmitted their request on November 11, 2021. The most significant suggestion was that CDFW relied on a minimum flow standard based on a dry year water type, and that it should further analyze an alternative scenario for a critically dry year water type that was intended for the drought emergency minimum flows.

Section 875(c)(2)(B) of the Emergency Regulation

The California Department of Fish and Wildlife or the National Marine Fisheries Service may notify the Deputy Director that the pertinent life stage(s) of the pertinent species the flows are crafted to protect is not yet, or is no longer present at the time anticipated, or the California Department of Fish and

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Wildlife, after coordination with the National Marine Fisheries Service, may notify the Deputy Director that lower alternative flows at the Yreka gage, or that alternative flows at a different point or points in the watershed provide equal or better protection for the pertinent species' relevant life stage. Using this information, as well as other information that could affect the need for curtailments to meet minimum flow needs for fisheries purposes, including weather forecasting, the need for flows to ramp up or down, the contributions of voluntary flow 3 measures, and future flow needs, the Deputy Director may determine not to issue curtailment orders, to issue curtailment orders to a smaller priority grouping described in section 875.5, or to suspend curtailment orders already issued in order of priority as described in section 875.5, as applicable.

CDFW Review

CDFW consulted with the authors of McBain and Trush (2014) and other reports prior to submitting drought emergency minimum flow recommendations. CDFW re-consulted with the authors of McBain and Trush (2014) upon the receipt of the MWCD request for further review. They agreed that it is common scientific practice to analyze approximately 5 water year types, and their analysis focused primarily on two (average and dry). The authors did not have an immediate suggestion for what a critically dry year flow or dry year storage adjustment standard might look like without additional analysis.

CDFW then conducted an internal review of the McBain and Trush (2014) models using a critically dry year scenario. Flow-habitat results from the three sites in McBain and Trush (2014) were composited. The resulting overall flow-habitat relationships had a peak amount of spawning habitat at 125 cubic feet per second (cfs) for spawning. At 105 cfs, spawning habitat was still greater than 80% of the maximum habitat value. The minimum depth of a redd is typically 0.5 feet, and the tailspill depth is typically 0.3 feet less than the redd depth. Accordingly, a drop of more than 0.2 feet in water surface elevation would be expected to start exposing tailspills. Rating curves in McBain and Trush (2014) (Figure 29) show that dropping flows from 150 to 125 cfs would result in up to a 0.2-foot drop in water surface elevation, but that dropping flows from 150 to 105 cfs would result in up to a 0.38-foot drop in water surface elevation. Since Shasta River flows are currently at 150 cfs. December through February flows any lower than 125 cfs may result in a significant risk to redd dewatering.

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CDFW consulted with the authors of McBain and Trush (2014), internal subject matter experts, the National Marine Fisheries Service, and the SWRCB staff. CDFW is producing and reviewing weekly adult spawning migration reports and is keenly aware of likely spawning efforts under the currently regulated flows. Based on this preliminary review, CDFW concludes that the drought emergency minimum flows for the remainder of December may be lowered from 150 cfs (daily average) to 135 cfs (daily average) without resulting in significant impacts on migration, dewatering or reduced water quality for existing redds, reducing spawning or rearing habitat availability, or increasing water temperature. The currently approved drought emergency flows are scheduled to drop to 135 cfs starting in January 2022. Lastly, this alternative flow meets the scientific standard of equal protection for the pertinent species' relevant life stage described in 875(c)(2)(B) of the Emergency Regulation. CDFW plans to continue investigating available information to determine whether reductions in other winter months are warranted. Flow reductions do not appear warranted for the other months because of other key variables such as temperature and migration.

We appreciate the opportunity to provide this evaluation considering Resolution 6 of the approved regulation. If you have any questions regarding this memorandum, please contact Environmental Program Manager Joe Croteau at joe.croteau@wildlife.ca.gov.

References

McBain and Trush, 2014. Shasta River Instream Flow Needs Assessment. 221 pg.

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