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VIA ELECTRONIC MAIL (commentletters@waterboards.ca.gov)

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State Water Resources Control Board
P.O. Box 100
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Re: COMMENT LETTER – DRAFT DELTA FLOW CRITERIA REPORT

Dear Members of the Board:

The San Joaquin River Group Authority ("SJRGA"), a joint powers authority comprised of the City and County of San Francisco, the Friant Water Authority, the Merced Irrigation District, the Modesto Irrigation District, the Oakdale Irrigation District, the San Joaquin River Exchange Contractors Water Authority, the South San Joaquin Irrigation District and the Turlock Irrigation District, has had an opportunity to review the draft Delta Flow Criteria Report, and has the following comments.

As a general comment, it is important that the approach taken focuses on using flow as the criteria to "Halt the population decline and increase populations of native species as well as species of commercial and recreational importance by providing sufficient flow and water quality at appropriate times to promote viable life stages of these species," rather than using flow as a method of implementing other criteria. Criteria such as dissolved oxygen and temperature can be influenced by flow, in varying degrees, but they are also influenced by other, multiple, interacting or potentially independent factors. As a result, using flow as the criteria in lieu of the "true" criteria will fail to provide an adequate measure of whether fish are adequately protected. Furthermore, since criteria such as temperature and dissolved oxygen can be influenced by actions other than flow, using flow as surrogate criteria would have the effect of requiring flow and the expenditure of water supply that that could otherwise be allocated to other beneficial uses. Although the present proceeding does not evaluate implementation measures, establishing flow alone as criteria would constrain possible implementation actions in the future by limiting such actions to flow alone. If fish need a minimum dissolved oxygen concentration, then the criteria needs to be dissolved oxygen, if fish need a minimum temperature, then the criteria needs to be temperature, and finally, if fish need a minimum flow, then the criteria needs to be flow. However, the criteria for measuring or improving fish habitat should not be flow if flow is merely a surrogate for

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other more basic deficiencies and is therefore no criteria at, but all merely an implementation tool intended to achieve certain dissolved oxygen, temperature, or other criteria goals or requirements.

The 60% unimpaired flow criteria for the San Joaquin River from February through June was developed based upon a desire for at least 5,000 cfs in most years. The Draft Report cites the TBI/NRDC 3 to support the need for 5,000 cfs. However, TBI/NRDC did not recommend 5,000 cfs as an amount of flow necessary for benefits only flow can provide, but, rather, as a method of maintaining 65°F. In other words, TBI/NRDC did not recommend flow as criteria. It recommended 65°F as criteria and 5,000 cfs as a method of implementing the criteria. (TBI/NRDC 3, p. 13, 17-19.) The TBI/NRDC analysis used to develop the recommendation only evaluated flow-temperature relationships up to May 31. (TBI/NRDC 3, p. 19.) The flow-temperature relationship through June may differ and require substantially more than 5,000 cfs. 5,000 cfs/60% unimpaired flow may be insufficient to meet 65°F, especially as ambient air temperatures increase in June. As TBI/NRDC 3 notes, 5,000 cfs was enough to keep temperatures at or below 70°F, but was not always sufficient to keep temperatures at to below 65°F. Even with unspecified "high flows", instream temperatures sometimes exceeded 65°F. (Id.) Consequently, even with "high flows" as criteria, the 65°F requirement would be unmet from time to time and fish would then be inadequately protected. This disparity illustrates precisely why flow should not be used as a surrogate for other criteria (which in this case in temperature). Regardless, the State Board previously evaluated the use of flow to maintain temperatures in the Delta when it adopted the 1991 Water Quality Control Plan for Salinity.[1] Even at 68°F, using reservoir releases would be unreasonable, due to the distance from the reservoirs to the Delta and uncontrollable factors such as ambient air temperature. (Id. at 5-16.) For these reasons, the State Board considered reservoir releases for controlling water temperatures in the Delta a waste of water and would require a test of reasonableness before considering reservoir releases for such a purpose.

Other San Joaquin River flow recommendations appear to be based on the Salmon survival model developed by the DFG. (Draft Report, p. 59.) Version 1.0 of the model first appeared during the periodic review process resulting in the 2006 Bay-Delta Plan. Version 1.0 was peer reviewed and severely criticized. Version 1.0 of the model relied on retaining one outlier year and eliminating a second outlier year in order to maintain a desirable R-square value. Absent the outlier, the R-square was only 0.22. DFG planned to address this issue in future versions of the model. DFG has since unveiled Versions 1.5 and 1.6 of the model, but since neither version has seen any public or peer review, it is unknown whether outliers remain an issue or if other issues with the model are present. CALSIM II, by comparison, was subject to extensive public and peer review processes that even included workshops, but nothing of the sort has occurred with the most recent versions of the DFG salmon survival model. Based on DFG's charts, the current version of the model appears to retain the outlier year and exclude the other outlier year. Since no public or peer review has occurred, however, neither the public nor the State Board can

[1] SWRBC, 1991 Water Quality Control Plan for Salinity for the San Francisco Bay and Sacramento-San Joaquin Delta Estuary (May 1991), p. 5-15 to 5-16.

be certain that the model's analysis is untainted by the use and exclusion of outliers. Critical reports to the Legislature and the potential for future actions based upon them should avoid potentially embarrassing reliance on such untested and unsubstantiated models. This is especially true when the recommendations are as jaw dropping as those contained in the Draft Report.

Water Code section 85086 requires the SWRCB to use the best available scientific information to develop new Delta outflow criteria. Sullivan, et al (2006)[2] defining "best available science" states that in order for scientists to achieve high-quality science, studies must be conducted using the scientific process, which typically includes the following elements:

- A clear statement of objectives;
- A conceptual model, which is a framework for characterizing systems, making predictions, and testing hypotheses;
- A good experimental design and a standardized method for collecting data;
- Statistical rigor and sound logic for analysis and interpretation;
- Clear documentation of methods, results, and conclusions; and
- Peer review.

The DFG salmon model clearly does not meet the definition of best available science. While it may contain a clear statement of objectives and a conceptual model, it falls short of meeting the basic definition of science. At best, this model should be labeled as "hypothesized science."

The San Joaquin River dissolved oxygen ("DO") objective can also be influenced by flow, depending on conditions. The Draft Report notes that San Joaquin River flow conditions result in dissolved oxygen ("DO") conditions below the objective in the Bay-Delta Plan. (Draft Report, p. 59.) However, the Central Valley Regional Board determined in its total maximum daily load ("TMDL") for DO impairment in the Ship Channel that oxygen demanding substances from upstream and the geometry of the Ship Channel also contributed to DO conditions below the objective.[3] Since each of the three causes are held 100 percent responsible, addressing any of the three causes would result in compliance with the DO objective. Additional flow is unnecessary and, as the Staff Report adopting the DO TMDL noted, no additional amount of flow significantly improves DO absent a barrier at the Head of Old River. Currently, installation of the spring barrier is prohibited before June 15 in accordance with Judge Wanger's decision to protect Delta Smelt.[4] Increased flow is therefore not a viable method of improving DO in the Ship Channel at times that would benefit out-migrating salmon.

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[2] Sullivan, P. J., et al. Defining and Implementing Best Available Science for Fisheries and Environmental Science, Policy, and Management. *Fisheries* (Vol. 31, No. 9), September 2006. Accessed at http://www.fws.gov/wafwo/fisheries/publications/fisheries3109.pdf

[3] Central Valley Regional Water Quality Control Board. 2009. *Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin, Fourth Edition. Revised September 2009* (with Approved Amendments), p. IV-37.01

[4] NRDC v. Kempthorne, 2007 WL 4462395 at *10 (E.D. Cal. Dec. 14, 2007).

In any event, the purpose of the DO objective is to maintain migratory corridors for Chinook salmon. In evaluating salmon migration through the Delta, Hallock noted that, although not established, the minimum positive river flow past Stockton could be as low as 400 cfs if the water was of San Joaquin River origin, if DO and temperature were suitable, and if an adequate amount of San Joaquin River water remained in the San Joaquin River past Turner and Columbia Cuts.[5] Numerous factors, not just DO interact and affect the ability of salmon to migrate through the Ship Channel. DO, like temperature, again illustrate why flow cannot be a surrogate for other criteria. Flow in the Ship Channel could be high or it could be as little as 400 cfs, but if other factors are unfavorable, migration, the beneficial use, i.e., migration, will not be protected.

The State Water Board needs to distinguish between flows for the sake of flow, the benefits that only flow can generate, and incidental benefits of flow that could be provided by other means. Flow criteria may serve as just one of multiple implementation actions for DO or temperature objectives, but should not subsume them. If it does, then the only implementation action available will be flow. Flow may seem like low hanging fruit when it comes to improving Delta conditions, but for those who must conserve water, fallow lands, and find new sources of supply that could prove no less controversial, and all at potentially bankrupting costs, it is anything but low hanging fruit.

Very truly yours,
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[5] Hallock, R.J., R.F. Elwell and D.H Fry, Jr. 1970. Migrations of adult King Salmon, *Oncorhynchus tshawytscha* in the San Joaquin Delta. California Department of Fish and Game Fish Bulletin 151, p. 77.