



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
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APR 14 2016

Mr. Ron Milligan
Operations Manager
U.S. Bureau of Reclamation
Central Valley Operations Office
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Re: Reasonable and Prudent Alternative (RPA) Action IV.2.1 of the National Marine Fisheries Service (NMFS) 2009 Coordinated Long-term Operation of the Central Valley Project (CVP) and State Water Project (SWP) Biological Opinion (NMFS 2009 BiOp) – Request for Flexibility in San Joaquin River Inflow to Export Ratio

Dear Mr. Milligan:

This letter is in response to your April 12, 2016, letter and enclosed “Biological Review of Flexible Implementation of RPA Action IV.2.1 – Spring 2016” (Biological Review). The U.S. Bureau of Reclamation (Reclamation), in conjunction with Oakdale Irrigation District (OID) and South San Joaquin Irrigation District (SSJID), propose to augment the currently scheduled NMFS 2009 BiOp Appendix 2-E flow releases with an additional 75,000 acre feet (af) during the 31-day pulse flow period at Vernalis this April and May provided that the incremental flow can be re-diverted in the Delta to supplement water supplies south of the Delta.. The 31-day pulse flow at Vernalis will increase from an average of 2,000-2,200 cfs without the augmented releases, to an average flow of 3,100 to 3,300 cfs with the augmented releases. Reclamation also proposes to modify CVP/SWP pumping prescribed by RPA Action IV.2.1 to allow the additional incremental release of district water to be pumped at a ratio of 1:1 (as described in Scenario 3 in the Biological Review). The April 2016 San Joaquin Valley Index indicates a “dry” water year type, which under RPA Action IV.2.1 requires a 14-day running average I:E ratio of 2:1 through May 31, or minimum health and safety combined CVP/SWP exports of 1,500 cfs, whichever is greater. Without the augmented releases, the I:E ratio during the 31-day pulse flow at Vernalis is estimated to be about 1.3:1 to 1.5:1. With the augmented releases, Reclamation and DWR will continue to export the combined minimum health and safety 1,500 cfs, and apply a 1:1 I:E ratio to the augmented releases, for an overall resulting I:E ratio of approximately 1.3:1 for the period of the augmented pulse flow.

NOAA's National Marine Fisheries Service (NMFS) is aware that while overall hydrology in California has improved, 74% of the State remains in severe drought¹, with storage remaining

¹ United States Drought Monitor: <http://droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?CA> (accessed 4/13/16)



below average in many reservoirs south of the Delta. Water year 2015 was the driest year in recorded history for the San Joaquin River basin (based on the San Joaquin Valley water year index going back to 1901), resulting in the low initial storage in San Joaquin Basin reservoirs at the beginning of water year 2016. DWR's April 1, 2016, Water Supply Index forecast² indicated that the San Joaquin Valley Index classification is "dry." Reservoir storages as of March 31, 2016³ at New Melones Reservoir, Don Pedro Reservoir, and Lake McClure, are currently 41%, 82%, and 59% of average for this date, respectively.

The Biological Review submitted with Reclamation's letter considers potential effects to Sacramento River winter-run Chinook salmon (*Oncorhynchus tshawytscha*), Central Valley spring-run Chinook salmon (*O. tshawytscha*), California Central Valley (CCV) steelhead (*O. mykiss*), and Southern distinct population segment (DPS) of North American green sturgeon (*Acipenser medirostris*), as well as fall-run Chinook salmon (*O. tshawytscha*); describing the form and trend of effects expected and assigning a qualitative level of certainty to each effect conclusion. Ultimately, quantifying the specific effects of the proposed action is difficult as a result of combined uncertainties relating to:

- specific migration timing and distribution of listed species in the "footprint" of any particular component of the proposed action; and
- uncertainty in the quantitative relationship between any underlying factor (*e.g.*, flow) and the response variable of interest (*e.g.*, migration, survival).

While the proposed flow augmentation is intended to, at least in part, create conditions (*e.g.*, increased flows in the Stanislaus and San Joaquin rivers) that have the potential to provide a significant benefit to species upstream (*e.g.*, increased migration rates and wetted habitat for rearing), there are also potential negative effects to CCV steelhead resulting from increased entrainment at the CVP/SWP facilities associated with a modified I:E ratio. Although the Delta Simulation Model 2 – Particle Tracking Model (PTM) is not a perfect proxy for juvenile salmonids, it does reflect the influence of variation in modeled hydrodynamics. The PTM modeling summarized results for multiple particle insertion points; we highlight results from the Mossdale insertion point as most relevant for understanding the hydrologic conditions that may be experienced by steelhead entering the Delta from the San Joaquin River basin. For particles inserted at Mossdale, cumulative particle entrainment at the CVP/SWP projects was higher in Scenario 3 (the proposed scenario, with the augmented flows and a 1:1 I:E ratio applied to the incremental release of district water) than Scenario 1 (without the augmented flows and minimum health and safety combined CVP/SWP exports of 1,500 cfs; Figure 2 of the Biological Review). The PTM modeling also indicated that there were more total particles passing Chipps Island from the Mossdale injection point after approximately 50 days in Scenario 3 compared to Scenarios 1 and 2 (Figure 8 of the Biological Review), though overall flux past Chipps was low in all scenarios, and differences between scenarios was very small. The migration of steelhead through the Delta does not typically take 50 days, and is hypothesized to be faster under the higher Vernalis flow

² <http://cdec.water.ca.gov/cgi-progs/products/WSFCastDiscussion.pdf>

³ http://cdec.water.ca.gov/cgi-progs/snowsurvey_res/STORAGE

proposed in Scenario 3 compared to the lower Vernalis flow in Scenario 1. Overall, NMFS expects that augmented flows within the Stanislaus River will improve emigration conditions for CCV steelhead smolts, and enhance their downstream survival to the Delta, resulting in a higher overall cumulative survival to Chipps Island.

The following are NMFS's summaries and expectations based on the project description in Reclamation's April 12, 2016, request letter:

- NMFS supports the April 12, 2016, request for flexibility, specifically, the application of a 1:1 I:E ratio under RPA Action IV.2.1 to the augmented flow release of up to 75,000 af of OID and SSJID water (Scenario 3).
- The Stanislaus Operations Group (SOG) should provide technical assistance to Reclamation and NMFS in shaping the pattern and timing of the augmentation flow volume to provide the best biological benefit. Reclamation's letter mentions a "31-day pulse flow at Vernalis," and the modeling assumed augmented flows would occur between April 15 and May 15, but it is possible that operational considerations, coordination with other regulatory requirements, or SOG guidance might result in an augmented pulse flow at Vernalis that is outside of the April 15-May 15 window. Therefore, NMFS's approval of the I:E ratio flexibility applies to the OID and SSJID water whenever it reaches Vernalis, and the 31 days after, as long as that occurs by the end of May.
- Although the New Melones Index (NMI) is very low (1.1 MAF), it has surpassed the 1 MAF threshold exception procedure for multiple dry years identified in RPA Action IV.2.1, and NMFS would expect an I:E ratio of 2:1 (or 1,500 cfs, whichever is greater) as a means to provide reasonable protection to CCV steelhead (Scenario 1). However, in order to facilitate the augmented flow release of up to 75,000 af of OID and SSJID water (Scenario 3) NMFS will accommodate an I:E ratio of 1:1 for the augmented flow, as the augmented flows within the Stanislaus River are expected to improve emigration conditions for CCV steelhead smolts, and result in a higher cumulative survival to Chipps Island.

In conclusion, NMFS concurs with Reclamation's conclusion that the benefit of the proposed augmented pulse flow outweighs the potential increase in entrainment risk in the south Delta. The flexible implementation of the RPA Action IV.2.1 I:E ratio in conjunction with the augmented flow at Vernalis, is consistent with the findings of the opinion and is not likely to jeopardize the continued existence of Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, CCV steelhead, the Southern Distinct Population Segment of North American green sturgeon, and the Southern Resident killer whales, and will not result in the destruction or adverse modification of their designated critical habitats. Furthermore, the implementation of the modified I:E ratio will not exceed levels of take anticipated for implementation of the RPA specified in the NMFS 2009 BiOp. We look forward to continued close coordination with you and your staff throughout this extremely challenging water year.

If you have any questions regarding this letter, please contact me at (206) 526-6150, or contact Maria Rea at (916) 930-3600, or maria.rea@noaa.gov.

Sincerely,


William W. Stelle, Jr.
Regional Administrator

cc: Copy to file: ARN 151422SWR2006SA00268

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