



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

NATIONAL MARINE FISHERIES SERVICE
West Coast Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404-4731

August 27, 2021

Board of Directors
Marin Water
220 Nellen Avenue
Corte Madera, California 94925

Re: NOAA's National Marine Fisheries Service's Comments on Marin Water's Proposed Winter 2021-2022 Flow Reduction within the Lagunitas Creek Watershed in Marin County

Dear Board Members:

This letter represents NOAA's National Marine Fisheries Service's (NMFS) comments to the Marin Water Board regarding the pending Temporary Urgent Change Petition (TUCP) for their Kent Lake reservoir operations and instream flow requirements in Lagunitas Creek. In response to this year's drought and low reservoir storage conditions, we understand Marin Water's proposed TUCP will request changes to the State Water Resources Control Board's (SWRCB) 95-17 Order, which established instream flow requirements to protect fishery resources in Lagunitas Creek. Marin Water's analysis indicates that as of August 15, 2021, storage from its seven available reservoirs was critically low (*i.e.*, 39.3 percent of capacity and 51.2 percent of the average storage for this date) due to record low rainfall last winter. Thank you for considering our comments as you prepare to submit the TUCP during the week of September 6, 2021 for approval by SWRCB.

As you are aware, the Lagunitas Creek Watershed supports populations of federally endangered Central California Coast (CCC) coho salmon (*Oncorhynchus kisutch*), and threatened CCC steelhead (*O. mykiss*) and California Coastal (CC) Chinook salmon (*O. tshawytscha*) listed under the Endangered Species Act of 1973 (ESA)(16 U.S.C. 1531 et seq.). The Lagunitas Creek Watershed is identified as a core recovery area or essential population for coho salmon and steelhead in our recovery plans (NMFS 2012 and 2016). Records show that coho salmon historically occurred in at least 31 small coastal streams in Marin County, and have recently only been observed in 17 (55 percent) of these streams, most of which are tributaries to Lagunitas Creek (Moyle et al. 2008). The watershed today supports approximately 10 percent of the remaining CCC coho salmon along the Pacific Coast, is the southernmost wild independent population and, therefore, is considered to be critical to the survival and recovery of the species. In drought conditions, the natural streamflow in tributaries is largely absent, therefore, we expect that the majority of ESA-listed salmonids will spawn and rear in the mainstem Lagunitas Creek and will depend mainly on flow releases from Kent Lake for survival and spawning this fall and winter.

Marin Water is preparing to submit a TUCP to SWRCB, which includes requesting the following changes to the SWRCB 95-17 Order:

1. Delaying the timeframe (from November 1-15 until December 1-15) in which the summer baseflow would be increased to the winter baseflow regime.
2. Decreasing the regular 'dry-year' winter baseflow from 20 cubic feet per second (cfs) to 16 cfs.
3. Eliminating the first (early November) migration pulse flow of 35 cfs.
4. Adaptively managing the initiation of the second migration pulse flow (from November 15 to December 1) to coincide with the timing of natural storm and spawning migration events.

The timeframe of these changes spans a large portion of the CCC coho salmon spawning season. Consequently, in April 2021, Marin Water began developing a PHABSIM hydraulic model to study the potential effects of the proposed changes to salmonid habitat requirements in Lagunitas Creek. The study area included four reaches (modeled at 20, 15, and 10 cfs) that in sum, represent 25 percent of the coho salmon spawning habitat in the mainstem of Lagunitas Creek. Although the model was performed for several life stages of coho salmon and steelhead, the study was focused on habitat availability for spawning coho salmon.

Since April 2021, NMFS staff have worked with Marin Water staff, and other resource agencies to refine the model, review the results of the study, and develop a monitoring plan with adaptive management actions to minimize and avoid impacts to listed salmonids (*i.e.*, *The Lagunitas TUCP Monitoring and Adaptive Management Plan* (AMP)). Our comments on the habitat suitability study and potential impacts to ESA-listed salmonids that may occur as a result of implementing the proposed flow regime, and recommendations for the AMP are as follows:

1. The current fall-spring flow regime in Lagunitas Creek, as mandated by Order 95-17, is significantly lower than the historical unimpaired flows that would have occurred before dams were built in the watershed. These regulated flows are also much lower than the flow recommendations provided by California Department of Fish and Game to SWRCB in 1986 and again in 2008 (DFG 1986, 2008). Given that it is likely that federally-listed fish and their habitats in the watershed are already compromised due to the current regulated flow regime, it is critical that the AMP incorporate actions to avoid substantial impacts to listed salmonids, particularly during this unprecedented drought.
2. We appreciate Marin Water's efforts to assess the effects of the reduced flows associated with the proposed TUCP and AMP. The results from the current habitat suitability model show that reducing streamflow may significantly reduce the area of suitable spawning substrate and potentially decrease redd viability (*i.e.*, unsuitable depths and velocity on redds). This may adversely affect coho salmon and steelhead by increasing the likelihood of redd superimposition and decreased incubation survival. The model showed that a reduction of flows from 20 cfs to 15 cfs will result in approximately a 30 percent reduction of high suitability habitat for coho salmon and steelhead at the four study sites combined. These results are further validated by a

previous study which indicated a 40 percent reduction in spawning habitat suitability for coho salmon when flows were decreased from 25-15 cfs (Bratovich and Kelley 1988).

The PHABSIM hydraulic model was limited to habitat criteria, including depth, velocity and spawning substrate suitability. NMFS recommends that Marin Water also consider the results from previous flow studies in the watershed, as well as findings from their upcoming monitoring efforts to develop a California Environmental Flows Framework (ceff.ucdavis.edu) when making adaptive management decisions. CEFF is a hydrologically based method that uses the functional flows approach and provides ecological-flow criteria for all streams in the State of California.¹

3. Based on recent monitoring results by Marin Water’s fisheries staff, redd superimposition (resulting from competition for insufficient spawning habitat), which can reduce egg survival, occurs in the mainstem Lagunitas Creek at 20 cfs (the SWRCRB Order 95-17 dry-year winter baseflow). NMFS expects these impacts to increase with the proposed decrease in baseflows to 16 cfs, thus the implications of reduced flows on redd superimposition should be studied further.
4. The AMP should include thresholds triggers and provisions for adjusting flow conditions to minimize impacts to salmonids. We recommend that these triggers for temperature, DO, velocity, water surface level over redds, critical riffle depth to maintain passage for spawners, and migration pulse flow (spawning activity) be finalized in coordination with the resource agencies. We would propose that once thresholds are reached, flows should be increased within 24 hours to levels agreed upon in the AMP to avoid or minimize potential impacts to listed fish. For example, critical riffle depths are a major concern which should be monitored. Bratovich and Kelley (1998) used three methods for evaluating flows needed over critical riffles in Lagunitas Creek during the 1982-83 water year and concluded that a minimum flow of 35 cfs was needed for the passage of adult salmon through critical riffles.² Therefore, flow should be adaptively managed if critical riffle depths are not met to ensure that no adult migration or smolt outmigration barriers exist during the TUCP period.
5. We request weekly reports on reservoir storage and river flow conditions, and monitoring results be provided to the resource agencies and the Lagunitas TAC to inform and validate the success of management actions, or the need to adjust them adaptively. Additionally, if winter storms materialize and Marin County reservoirs accumulate storage through normal or extreme precipitation events during the winter of 2021-2022, the agencies should reconvene to determine at what capacity the TUCP

¹ This functional flows approach preserves key aspects of the natural hydrograph and establishes flow-ecology relationships through development of a conceptual model of various flow components and subsequent selection of flow metrics that represent those relationships (*i.e.*, the interaction of different life history stages of listed fish with the condition of riparian vegetation, food production, bench inundation, deposition process, nutrient transport, migration cues, and floodplain connectivity)(Yarnell et al. 2015, 2020).

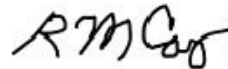
² This study noted that “lack of flows sufficient for passage may have contributed to the decline of the salmon runs in Lagunitas Creek.”

flow regime is discontinued and regular dry-year or normal-year reservoir flow releases resume.

To conserve storage and extend and preserve river flows, Marin Water adopted mandatory water use restrictions for its service area on April 20, 2021, with the goal of a 40 percent reduction in water use. We applaud these efforts and understand a 30 percent savings was reported for the week of August 13 through August 19. Marin Water has obligations under the ESA to ensure that no “take” (defined as:” harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct”) of federally listed species occurs as a result of their reservoir operations (including Lagunitas and Walker creeks). Moving forward, we are available to discuss options and assist you in fulfilling your obligations under the ESA. Meanwhile, NMFS supports the development of the AMP to utilize water storage savings for the implementation of adaptive management actions as we have identified, in minimizing impacts to salmonid resources in Lagunitas Creek.

Thank you for considering our input to ensure all beneficial uses of winter water resources be utilized to the fullest extent possible. We appreciate your collaborative efforts during all phases of this process and expect the County will continue water conservation efforts as a priority to balance water storage and fisheries concerns in the development of this proposed order. Should you have questions regarding this letter, please contact me at the letterhead address above, or at bob.coey@noaa.gov or 707-575-6090, or Jodi Charrier of my staff at jodi.charrier@noaa.gov or 707-575-6069.

Sincerely,



Robert Coey
North Coast Branch Chief
North Central Coastal Office

cc: Ryan Watanabe, Manfred Kittel, Jessie Maxfield, Mark Gard - CDFW
Leslie Ferguson, Mike Napolitano, Nicole Fairly, Xavier Fernandez – RWQCB

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