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SECRETARY FOR
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State Water Resources Control Board

JUL 07 2015

Mr. Ron Milligan
U.S. Bureau of Reclamation
2800 Cottage Way
Sacramento, CA 95825

Dear Mr. Milligan:

APPROVAL OF THE JUNE 25, 2015 SACRAMENTO RIVER TEMPERATURE MANAGEMENT PLAN

This letter is in regard to your submittal of the June 25, 2015 Sacramento River Temperature Management Plan (Temperature Plan) pursuant to State Water Resources Control Board (State Water Board) Order 90-5 and condition 6 of the Order I issued on April 6, 2015, acting on a Temporary Urgency Change Petition (TUCP) submitted by the U.S. Bureau of Reclamation (Reclamation) and the Department of Water Resources (DWR). Condition 6 of the April 6 Order required Reclamation to submit a Temperature Plan to the Sacramento River Temperature Task Group (SRTTG) and to me. The Temperature Plan is posted at:

http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/tucp/2015/junetempplan.pdf. This letter approves the June 25, 2015 Temperature Plan, provided that Reclamation complies with the conditions listed on pages 3, 4 and 5 of this letter.

The revised Temperature Plan does not achieve a temperature of 56 degrees F as required by Order 90-5, but it should provide for stable, but higher, temperatures throughout the temperature control season, ranging from 56 to 58 degrees F. The June 25 Temperature Plan is expected to be more protective than targeting 56 degrees F now and running out of cold water before the temperature control season is complete. However, there are still concerns with maintaining temperature control throughout the egg incubation period with the revised plan that will need to be managed very closely due to the very low cold water storage levels, expected heat waves, and inaccuracies of the temperature model that was used to develop the revised plan. The June 25 Temperature Plan targets lower Shasta/Keswick Reservoir releases than the previous plan (submitted on May 4, 2015) to help conserve cold water storage.

Background

Pursuant to State Water Board Order 90-5 and condition 6 of the April 6 TUCP Order, Reclamation was required to develop and implement a Temperature Management Plan for the Sacramento River to ensure that CVP operations will provide reasonable protection for winter-run Chinook salmon and other salmonids. In the planning process, the TUCP Order required that Reclamation address temperature control issues that occurred last year that led to the mortality of nearly all of the 2014 brood year of juvenile winter-run Chinook salmon. Specifically, despite modeling that indicated that Reclamation could achieve temperatures last year to protect winter-run, they were unable to do so. Reclamation attributed this circumstance to the inability to access cold water out of the side gates of the Shasta Dam Temperature Control Device as expected under the temperature modeling.

FELICIA MARCUS, CHAIR | THOMAS HOWARD, EXECUTIVE DIRECTOR

Reclamation submitted a draft temperature management plan for the Sacramento River in mid-April, and an updated plan on May 4, 2015 to the Executive Director of the State Water Board and the National Marine Fisheries Service, Department of Fish and Wildlife and the U.S. Fish and Wildlife Service (collectively fisheries agencies). The temperature modeling that Reclamation provided indicated that temperatures suitable for winter-run Chinook salmon of 56 degrees Fahrenheit (F) could be maintained throughout the temperature control season at the proposed Clear Creek compliance location with the proposed operations.

Based on information indicating that Reclamation's draft plan would meet the 56 degree F temperature target at Clear Creek throughout the temperature control season, on May 14, 2015, the Executive Director provisionally approved the temperature management plan. In that approval the Executive Director indicated that the plan was required to be updated as necessary to ensure temperature compliance throughout the temperature control season and that Reclamation was required to prepare a final plan by June 1 for approval. In addition, the Executive Director also directed Reclamation to notify him immediately if there were any indications that the plan would not achieve temperature compliance throughout the temperature control season.

On May 29, 2015, the Executive Director met with staff from Reclamation, DWR and the fisheries agencies to discuss: (1) updated temperature profile measurements taken at Shasta Lake indicating that the reservoir was warmer than expected; and (2) associated temperature modeling information showing that it was very unlikely that Reclamation would be able to meet the 56 degree F temperature target with the operations provisionally approved two weeks earlier. Following the May 29 meeting, the Executive Director sent Reclamation a letter temporarily suspending the provisional approval of the draft temperature management plan and directing Reclamation to maintain releases from Keswick Reservoir below Shasta Lake at no more than 7,500 cubic-feet per second (cfs) through June 10, and lower if possible, to conserve additional cold water supplies. In addition, the Executive Director directed Reclamation to work with the fisheries agencies and State Water Board staff to develop a revised plan. On June 24, 2015 the State Water Board held a public workshop to discuss summer and fall drought-related State Water Project and Central Valley Project operations in the Bay-Delta Watershed. As stated above, Reclamation submitted the revised Temperature Plan on June 25, 2015.

NMFS July 1, 2015 Concurrence Letter

On July 1, 2015 the National Marine Fisheries Service (NMFS) submitted a concurrence letter to Reclamation and DWR on the Contingency Plan for Water Year 2015 Pursuant to Reasonable and Prudent Alternative Action I.2.3.C of the 2009 Coordinated Long-term Operation of the CVP and SWP biological Opinion, Including a revised Temperature Plan. In its concurrence letter, NMFS stated that it concurs with the Temperature Plan, as proposed for the CVP in Reclamation's June 25, 2015, letter, and its associated Updated Biological Information. NMFS acknowledges that "storage in Shasta Reservoir at the beginning of the temperature management season in June, and the quantity and quality of the cold water pool, will not provide for suitable winter-run habitat needs throughout their egg and alevin incubation and fry rearing periods." NMFS goes on to say that "the base operations plan, including the Keswick release schedule, delayed use of full side gates, and real-time monitoring and decision-making based on winter-run run timing, location of redds, air and surface water temperature modeling, and projected versus actual cold water storage conditions and downstream water temperatures, represents the best that can be done with a really bad set of conditions." NMFS also notes "that these conditions could have been largely prevented through upgrades in monitoring and modeling, and reduced Keswick releases in April and May" and concludes: "Based on extensive

analyses of alternative scenarios (6,000 to 8,000 cfs Keswick releases), the plan provides a reasonable possibility that there will be some juvenile winter-run survival this year.”

July 3, 2015 TUCP Order Temperature-Related Conditions

To ensure that the changes approved in the July 3, 2015 Temporary Urgency Change Petition Order will not have unreasonable impacts on fish and wildlife, the Condition 6 of the Order includes the following provisions related to temperature:

- Reclamation shall implement the Sacramento River Temperature Management Plan with any changes required by the Executive Director. Key elements of the Plan from the Shasta Temperature Management Plan-Key Concepts include:
 - i. Base Keswick releases of 7,250 cfs in June and July.
 - ii. Base Keswick releases of 7,250 cfs in August, 6,500 cfs in September, and 5,000 cfs in October, subject to change in accordance with the realtime monitoring and decision making process described below based on the performance of the plan in June and July.
 - iii. Actual operations will be decided using a real-time monitoring and decision making process that includes representatives from the relevant federal and State agencies. This decision making process may yield adjustments to base operations depending on real-time conditions on the ground.
 - iv. Reclamation will convene the real-time monitoring and decision making group at least weekly, and more frequently if necessary to inform decisions about temperature operations.
 - v. Decisions regarding real-time adjustment to base operations will be made using the principles identified in the Shasta Temperature Management Plan-Key Components.

- Reclamation shall immediately update the Sacramento River Temperature Management Plan as conditions change or upon the request of the fisheries agencies or Executive Director or his designee. The plan shall provide reasonable protection for winter-run Chinook salmon during the 2015 spawning and rearing period and consider other fisheries needs, including spring-and fallrun Chinook salmon. Reclamation shall conduct all necessary modeling, monitoring and reporting to inform temperature operations. Specifically, Reclamation shall submit to the fisheries agencies and State Water Board staff:
 - i. Updated reservoir temperature profile measurements no less than weekly for Shasta and every two weeks for Trinity and Whiskeytown reservoirs in digital format, unless otherwise approved;
 - ii. Immediately upon any change in conditions or upon the request of the fisheries agencies or State Water Board staff, updated annotated temperature modeling including the following information:
 1. Identification of the model run date;
 2. Input and output files;
 3. Keswick flow release level (if static), or time series, as appropriate;
 4. The meteorological assumptions used for the run;
 5. Titles or notes that explain the temperature target of the run, and at what location; and

6. Other notes that describe if the run was done to target a specific temperature based on the other run assumptions or if the meteorological conditions were simply imposed on another run.
 - iii. With the exception of weekends and holidays, daily updates of average daily river temperature conditions, including the Shasta temperature control device weighted average, Spring Creek Power House weighted average, and Sacramento River miles 302, 298 and 293 temperatures; 10-day forecasted Redding high and low air temperatures; and
 - iv. Actual and forecasted CVP and SWP monthly operations immediately upon any significant change in conditions, including input assumptions for major system inflows and outflows, including accretion and depletion assumptions.
- For the remainder of the drought, Reclamation shall meet no less than weekly with the Sacramento River Temperature Task Group (SRTTG) to discuss operations and options for reducing or avoiding redd dewatering, stranding and temperature impacts to winter-run Chinook salmon. Reclamation shall immediately notify the SRTTG of any significant changes to environmental or operational conditions that may affect temperatures and shall convene a meeting with the SRTTG to discuss unless the SRTTG members indicate a meeting is not needed. Reclamation shall provide notes from the meetings to the SRTTG within 5 days following the meeting for review and approval and shall post the approved notes and handouts from the meetings on its website immediately upon approval. Reclamation shall confer on recommendations from the SRTTG during the consultation process and other applicable CVP and SWP operational decision-making meetings. Reclamation shall immediately make available technical information requested by the Executive Director or his designee through the consultation process. Reclamation shall report monthly to the State Water Board during its Board meeting on actions that have been or will be taken to reduce impacts to winter-run Chinook salmon, through the remainder of the drought.
- Reclamation shall meet with State Water Board and fisheries agency staff before August 7, 2015, to develop a plan for providing information and tools needed to independently run the Sacramento River Temperature model.
- In consultation with the fisheries agencies and State Water Board staff, perform a review and evaluation of the water year 2015 temperature control season to evaluate the effectiveness of temperature control operations this year, as well as necessary actions to improve temperature control operations in the future, beginning in the next water year. Reclamation shall perform any necessary analyses to identify the source of any significant discrepancies between projected and observed temperatures. All analyses associated with this evaluation shall be submitted with the evaluation. The evaluation shall be submitted to the State Water Board and SRTTG by January 15, 2016.

I recognize that changes in Shasta Reservoir operations from what Reclamation proposed in its May 4 Temperature management plan will affect system-wide Central Valley Project and State Water Project operations and water supplies, and that the current plan relies more heavily on the already limited storage available in Folsom and Oroville. I also recognize that the 120,000 acre-feet end of September Folsom storage forecasted in the June 25 Plan represents the minimum acceptable storage to meet community water supply needs, and that other changes in system-wide operation would be necessary if this minimum storage cannot be achieved. This approval is therefore conditioned upon USBR operating the CVP in a manner that results in end

of September storage no less than 120,000 acre-feet. The July 3, 2015 TUCP Order also includes the following condition:

- Upon request of the Executive Director, Reclamation and DWR will propose adjusted operations to ensure that critical water supplies are available for municipal and industrial use, including to cities served by Folsom Lake, and to provide cooling water needed to maintain grid reliability.

I continue to encourage Reclamation and DWR to work with State Water Board staff and the potentially affected parties to both minimize and equitably distribute the water supply effects of the adjusted operations, and to ensure that critical water supply, and health and safety needs are met.

If you have any questions, please contact Diane Riddle at diane.riddle@waterboards.ca.gov or (916) 341-5927.

Sincerely,



Thomas Howard
Executive Director

cc: See next page.

cc: John Leahigh
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