

Peer Review Plan

Water Temperature Modeling Platform for the Central Valley Project

Date: May 27, 2022

Originating office: Bureau of Reclamation, California – Great Basin Region, CVO-400

Reclamation roles:

David Mooney, Area Manager, Bay Delta Office, project sponsor

Peer Review Lead: Donna Garcia, Project Manager and Technical Lead - Randi Field, Hydrologic Engineer, California – Great Basin Region, Bureau of Reclamation

Subject and Purpose:

Reclamation has undertaken an effort for a Water Temperature Model Platform (WTMP) Project which entails the collection of data, development of a data management system, development of a set of physically based tools, and development of a modeling framework. A successful application of this platform would be capable of providing short and long-term water temperature predictions to assist resource managers of major Central Valley Project (CVP) reservoirs with balancing water resources and downstream temperature needs. The development effort covers the northern system – Shasta Lake, Keswick Reservoir, Trinity Lake, Lewiston Reservoir, Upper Trinity River, Upper Sacramento River, Whiskeytown Reservoir, and Clear Creek, the American River system – Folsom Lake, Lake Natoma, and Lower American River, and the Stanislaus River system – New Melones, Tulloch, and Goodwin Reservoirs, and Stanislaus River. The WTMP model development effort began in the fall of 2021 and will extend to the spring of 2024. Delivery of modeling products and documentation are planned throughout this performance period with the following priority: northern (Sacramento/Trinity/Clear Creek), American, and Stanislaus systems. The strategy is to employ peer review of modeling products at interim and final milestones of the WTMP project to allow the development team time to respond or address items raised within the development window.

The WTMP development effort is designed to be accomplished in two phases where the first phase (approximately Fall 2021 – Summer 2022) will secure the project plan, stakeholder outreach, data development and management, model framework selection and design, model selection and design, model calibration, validation and sensitivity testing, and phase one documentation. The second phase (approximately Fall 2022 – Spring 2024) will complete model implementation, estimation of uncertainty, output, and phase two documentation. The selection of models and framework will be completed first using the Shasta/Keswick system as the example of model representation, calibration, and documentation. The final review will cover the remaining systems, application of the models, integration of uncertainty, and complete documentation.

An important element in developing the temperature model and framework for the CVP is putting in place model development guidelines and quality control actions to ensure the final models are effective tools for operators and managers, useful for decision-makers, and provide a level of confidence in stakeholders that model results are representative. Documentation of the quality control and associated measures provide transparency to the process.

Impact of Dissemination:

Under Reclamation policy CMP TRMR-30 Peer Review of Scientific Information and Assessments in fulfillment of the Final Information Quality Bulletin for Peer Review (70 FR 2664-2677) and implementation of the Information Quality Act (Pub. L. 106-554) the science informing the WTMP is determined to be an Influential Scientific Information (ISI). A peer review of the WTMP will be initiated to address scientific information and ISI categorized under model development, model testing, model calibration and validation, model documentation, and model application. A peer review will be completed for the WTMP effort focusing on model selection, the quality of the water temperature models and framework development and model calibration, application, uncertainty, and documentation for the Shasta/Trinity, American and Stanislaus River systems.

Peer Review Scope:

The modeling development and its application are the subjects of this peer review. The peer review panel will be asked to provide responses relative to the following questions:

- Are model development assumptions adequate and clearly explained in the documentation?
- Does the model application adequately reflect actual conditions? (Put another way: does the documentation clearly show the calibration of the model and that the calibration acceptable?)
- Does the documentation adequately characterize differences between the modeled and historical conditions?
- Does the documentation adequately describe the model framework linkages between models?
- Are the models, in forecast mode, adequate for the intended real-time and seasonal planning purposes (i.e., forecast period ranges from 3- to 5-days to six months into the future), based on performance measures, uncertainty, and the fidelity with which the models represent physical processes?

Notes:

- The scope of the review entails the need for both a broader network model that can accommodate the large complex reservoir-river networks for temperature management purposes and a framework that can accommodate the more detailed models that represent specific operation of facilities (including the applicable temperature management infrastructure).

Timing of Review:

A mid-term review was held July 19-21, 2022 and focused on the temperature model framework efforts on the Shasta/Keswick Upper Sacramento River system. The Peer Review Report for the mid-term peer review was made available to Reclamation and posted to the Reclamation project website (<https://www.usbr.gov/mp/bdo/cvp-wtmp.html>) on September 30, 2022. A final peer review is scheduled for September 12-14, 2023 and will evaluate the temperature model framework and application for the entire CVP including the Shasta/Trinity, American/Folsom, and Stanislaus River systems.

Methodology of Review:

Review will be conducted by a peer review panel of 5 individuals. The Delta Stewardship Council (DSC) is administering the peer review through its Delta Science Program in which it coordinates

reviews in accordance with its mission to provide the best possible unbiased scientific information to inform water and environmental decision-making. The identities of the reviewers will be disclosed at the time of the Peer Review meetings. The Public will be able to provide comments during the public peer review meetings.

Number of Peer Reviewers:

It is anticipated that 5 external peer reviewers will be utilized as part of a peer review panel and that the same panel members be used throughout the peer review process. The peer review panel members should have familiarity with water temperature modeling, knowledge of the CVP, familiarity with water temperature modeling issues, and be independent.

Reviewer Selection Process:

The peer reviewer panel members will have expertise in hydrology, water temperature modeling, and water management. Peer reviewers will have education, professional experience, and peer recognition in their field, and will have contributed to their field. The DSC will identify reviewers and complete contractual actions to meet the Peer Review Scope and required expertise identified above and will also assure that peer reviewers do not have a conflict of interest. The public will not be asked to nominate reviewers.

Delivery of findings:

The PRP will provide a consolidated report of the peer review panel's findings within 60 days after the completion of the peer review periods. At a minimum, the report will include a description of the peer review process, subject being reviewed, address questions asked in the peer review panel charge, findings, and recommendations of any of individual peer reviewers. The report will be provided digitally and as a hardcopy to Reclamation.

Response to Peer Review:

At the conclusion of receiving the PRP reports for the peer reviews, the Peer Review Lead will submit a final Peer Review Report to Reclamation's peer review website (<http://www.usbr.gov/main/qoi/peeragenda.html>), which will summarize the findings of the peer review, as well as Reclamation's response to the comment, actions the agency will undertake regarding the comment, and reasons the agency believes those actions will satisfy any key concerns or recommendations.

Federal Register Notice: Federal Register notices **will not** be provided announcing the formation of a peer review team and completion of the final report.

Applicability of the Federal Advisory Committee Act (FACA):

This peer review is not subject to the Federal Advisory Committee Act (FACA) because the review does not involve open meetings or committee chartering. Reclamation is not seeking consensus advice from the reviewers as a group.

Agency Contact: Donna Garcia, Project Manager, US Bureau of Reclamation, dcgarcia@usbr.gov, (916) 804-9018.