Peer Review Plan

Technical Memorandum No. ENV-2021-001 West-Wide Climate and Hydrology Assessment

Date: November 16, 2020

Originating Office: Bureau of Reclamation, Technical Service Center, Denver Federal Center Bldg. 67, Mail Code: 86-68210, Denver, CO 80225

Reclamation roles:

- Director or delegated manager: Dean Marrone, Water Resource and Planning Office Manager, Water Resource and Planning Office, Bureau of Reclamation
- Peer Review Lead: Subhrendu Gangopadhyay, Civil Engineer, Technical Service Center, Bureau of Reclamation

Subject and Purpose:

"Technical Memorandum No. ENV-2021-001 West-Wide Climate and Hydrology Assessment," March 31, 2021 ("2021 Assessment"). The subject and purpose of the planned report is to address the statutory reporting requirement under the SECURE Water Act Section 9503(c). The 2021 Assessment provides an analysis and assessment of water reliability in the West. The 2021 Assessment evaluates risks to water supplies across the West from changes to precipitation and temperature, consistent with previous reports in 2011 and 2016. The 2021 Assessment also includes analyses based on paleohydrology to understand long-term historical variations in streamflow and drought across the western United States. Paleohydrology is used in the 2021 Assessment in combination with climate change projections as an additional resource to inform planning based on the longer historical record available from tree-ring based reconstructions of hydroclimate variables. The 2021 Assessment includes the following analyses:

1) Analysis of hydroclimate projections for the eight major Reclamation river basins;
2) West-wide evaluation of droughts using reconstructions of the drought index Palmer Drought Severity Index (PDSI), and PDSI projections;
3) Analysis of the probability of shifting between a wet state or dry state using reconstructions of PDSI;
4) Analysis of risk of drought using a calculation of storage deficit index for selected reservoirs;
5) Evaluation of the risk to water deliveries and other listed resources under 9503(b)(3) using streamflow reconstructions and climate projections as applicable;
6) Urban landscape irrigation demand analysis; and,
7) Groundwater impacts assessment literature synthesis.

Impact of Dissemination:
The audience for the technical memos includes water managers in the western states, Reclamation stakeholders, and the public. It will be distributed through the Reclamation website.

The 2021 Assessment is considered influential scientific information as defined by Office of Management and Budget Final Information Quality Bulletin for Peer Review (70 FR 2664-2677) and the Reclamation Manual Policy CMP P14 Peer Review of Scientific Information and Assessments.

Peer Review Scope:

The 2021 Assessment is focused on developing hydroclimate projections, use of hydroclimate reconstructions, statistical analysis of hydroclimate datasets and use of water resources system models to provide water reliability assessments. The hydroclimate projections are based on the Coupled Model Intercomparison Project Phase 5 (CMIP5) archive and downscaled using the statistical downscaling method, LOCA (LOcalized Constructed Analogs). In addition, the VIC (Variable Infiltration Capacity) hydrology model was used in the development of runoff and subsequently streamflow, and snow water equivalent (SWE) values.

We are requesting peer reviewers to evaluate the following analyses in the 2021 Assessment and to provide input on whether these analyses are well supported, clearly described, and integrated to provide a comprehensive set of information useful to evaluate water management issues in the western states:

- Hydroclimate analysis (chapter 3);
- West-wide drought analysis (chapter 4);
- Storage-deficit ratios and risk analysis (chapter 5);
- Water supply reliability assessment (chapter 6);
- Urban landscape demands analysis (chapter 7);
- Analysis of climate impacts on groundwater (chapter 8); and,
- Uncertainty analysis (chapter 9).

In addition to providing comments on the applicable sections of the report, peer reviewers will be asked to provide responses relative to the following questions:

Question 1. For the purpose of producing a high-level characterization of water reliability across the Western United States, are the data and methods employed appropriate and consistent with practices in the field?

Question 2. Are the findings presented in the 2021 Assessment consistent with findings documented in contemporary peer-reviewed scientific publications that you are familiar with?

The following are not the subject of this peer review, as they have been sufficiently reviewed and documented in peer-reviewed scientific publications:

- The CMIP5 archive, LOCA downscaling method and the VIC hydrology model;
- Datasets used in downscaling methods;
- Reconstructed streamflow and reconstructed PDSI datasets used in the analyses.

Also not included in the peer scope is:

- The water resources system models are planning/operational tools used by Reclamation.
- Advice or comment on a policy or decision
- Report format
- Editorial comments

Timing of Review:

Task	**Date**
Kick-Off Meeting with Reviewers	11/16/2020
Start Review of Report	11/16/2020
Comments Due	12/09/2020
Reply to Peer Review Comments	02/28/2021

Methodology of Review:

The review will be conducted by invited individuals with relevant expertise and experience. The review will be completed independently, not as a panel discussion. The review process will begin with an orientation meeting for reviewers that will include the technical memo authors. The identities of the reviewers will be disclosed in the final Peer Review Report. Review findings/comments will not be attributed to the individual reviewer. There will not be an opportunity for public participation in this peer review.

Number of Peer Reviewers:

Ten peer reviewers are anticipated.

Reviewer Selection Process:

The peer reviewers are expected to have group expertise in climate science and associated hydrologic impacts and water management in the Western United States. Peer reviewers will have education, professional experience, and peer recognition in their field and will have contributed to their field. Peer reviewers will be both internal and external to Reclamation. Peer reviewers will not have a conflict of interest.

Organizations with expertise identified above will be asked to provide a reviewer. These include Reclamation, the United States Geological Survey, the National Oceanic and Atmospheric Organization, United States Army Corps of Engineers, and the Western Governors Association – Western States Water Council.

Selection of peer reviewers will be made by the Reclamation Water Resource and Planning Office.

Delivery of findings:

The peer review team members will each submit a report of their findings to the Peer Review Lead by the end of the review period. At a minimum, their report will include a brief description of their findings and recommendations in a comment matrix. The comment matrix will be provided by the Peer Review Lead in the form of a spreadsheet. The report of findings must answer the questions provided in the Peer Review Scope. The answers will be provided on a separate tab of the comment matrix spreadsheet. The report will be provided digitally to the

Peer Review Lead.

Response to Peer Review:

At the conclusion of receiving peer review comments, the Peer Review Lead will submit a final Peer Review Report, which will summarize the findings of the peer review and list the comments provided by the reviewers, 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. The Peer Review Report will be issued to the peer reviewers and will not be made public.

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, and reviewers are being asked to provide individual reviews on the subject matter. Reclamation is not seeking consensus advice from the reviewers as a group.

Agency contact:

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