

Peer Review Plan

Scientific Information in Support of the Upper Red River Basin Study (URRBS), Oklahoma

Date: July 8, 2021

Originating office: Bureau of Reclamation, Arkansas-Rio Grande-Texas Gulf Coast Region, Oklahoma-Texas Area Office

Reclamation roles:

Director or delegated manager: Brent Esplin, Regional Director, Missouri Basin Region, Bureau of Reclamation

Peer Review Lead: Subhrendu Gangopadyay, Supervisory Civil Engineer, Technical Service Center, Bureau of Reclamation

Study Manager: Collins Balcombe, Supervisory Program Coordinator, Arkansas-Rio Grande-Texas Gulf Coast Region, Oklahoma-Texas Area Office, Bureau of Reclamation

Subject and Purpose:

The URRBS is being conducted through a partnership with the Oklahoma Water Resources Board (OWRB), Lugert-Altus Irrigation District, and Mountain Park Master Conservancy District. The overall purpose of the URRBS is to identify strategies that improve the reliability of irrigation, municipal, and industrial supplies from the Bureau of Reclamation's (Reclamation) Lugert-Altus and Tom Steed Reservoirs, while also maximizing overall beneficial use of water in the basin. Under state water law, when "interference" occurs (during a critical drought), senior water right permit holders have priority over junior permit holders. One of the key goals of the URRBS is to identify a range of parameters and thresholds that could initiate curtailment to minimize interference on reservoir permits. OWRB can further consider, after completion of the URRBS, incorporating this science-driven approach into OWRB's permitting and enforcement procedures within the basin.

Scientific information in support of this goal entails the development and integration of ground and surface water models that quantify reservoir yield, as well as the magnitude and frequency of surface water permit shortages within the basin under a range of current and future water rights management scenarios, both ground and surface water. Reservoir yield and surface water permit shortages are first quantified under a range of "status quo" management scenarios (i.e. a future with no changes in management). These impacts are then compared to impacts that would be expected under future adaptive management that incorporates pre-determined thresholds intended to minimize interference during periods of drought. When reached, the threshold(s) could trigger the curtailment of surface

water diversions that are junior to the more senior rights, including those to water stored in Reclamation reservoirs. If implemented, these thresholds may minimize “interference”, reduce uncertainty, and protect reservoir yield while maximizing beneficial use during drought periods.

Impact of Dissemination:

Reclamation’s Policy CMP P14, “Peer Review of Scientific Information and Assessments”, requires an evaluation of whether scientific information to be disseminated by Reclamation must be peer reviewed. The models, analyses, and findings produced by Reclamation have the potential to change water policy and inform regulatory decision-making by the OWRB, and thus, is considered to be “influential” scientific information pursuant to Section 4.A. of CMP P14.

Peer Review Scope:

The entirety of the scientific information supporting the URRBS is expected to be comprised of nine technical memorandums (TMs). Four of the nine TMs are the subject of a peer review plan that was published in February 2021¹. The peer review scope of this plan is only comprised of two of the nine TMs and relates to the two reservoir yield models described below. The model files are not subject to review at this time. The remaining three TMs will be the subject of a third and final peer review plan that will be published when those TMs have been completed.

The following TMs are the subject of this review:

1. Reclamation's Reservoir Yield (RRY) Model on Lugert-Altus Reservoir, W.C. Austin Project. This TM describes data sources, methods, and records used to develop the RRY model. This includes the inputs (e.g., inflow, precipitation) and outputs (e.g., evaporation, sedimentation, deliveries) used to simulate reservoir yield and water supply dependability. The report describes three yield analyses for Lugert-Altus Reservoir. The first analysis is based on data available prior to reservoir construction as documented in Reclamation’s 1937 Project Planning Report for the W.C. Austin Project. This analysis was performed for comparative purposes and to verify the yield model’s performance in replicating the pre-construction calculation performed in the late 1930s. The second analysis was based on post-construction storage conditions and new inflow records through the year 2016. The third method was developed in support of the URRBS using new inflow sequences that considered depletions from future ground- and stream- water development scenarios in the Lugert-Altus Reservoir hydrologic basin. The inflow depletion analysis supporting the third method was performed by OWRB in collaboration with Reclamation using a new Surface Water Allocation Model (SWAM) on the Nork Fork Red River basin. The SWAM, also developed in support of the URRBS, is the subject of a

¹ <http://www.usbr.gov/main/qoi/peeragenda.html>.

separate peer review being conducted under a peer review plan published in February 2021.

2. Reclamation's Reservoir Yield (RRY) Model on Tom Steed Reservoir, Mountain Park Project. This TM describes data sources, methods, and records used to develop the RRY model. This includes the inputs (e.g., inflow, precipitation) and outputs (e.g., evaporation, sedimentation, deliveries) used to simulate reservoir yield and water supply dependability. This report describes four yield estimates for Tom Steed Reservoir. The first two calculations were based on data collected prior to reservoir construction as documented in Reclamation's planning reports for the Mountain Park Project. These two yield estimates were repeated as part of this study for comparative purposes and to verify the RRY models performance in replicating previous calculations performed in the 1960s and 1970s. The third calculation was based on post-construction storage conditions and new inflow records through the year 2016. The fourth method was developed in support of the URRBS using new inflow sequences that considered depletions from future ground- and stream- water development scenarios in the Tom Steed Reservoir hydrologic basin. The inflow depletion analysis supporting the fourth method was performed by OWRB in collaboration with Reclamation using the new SWAM on the Nork Fork Red River basin cited under No. 1 above that is the subject of the peer review plan published in February 2021.

The reviewer is to provide comments solely on the scientific information being reviewed, and not on any agency decision or policy, and not on editorial mistakes, if applicable. The reviewer will answer the following questions for both of the TMs. If the reviewer has a concern or suggested improvement, recommendations shall be provided on actions that could be taken to alleviate those concerns for each of the following:

1. Are the goals, definitions, methods, and results understandable?
2. Are the methods technically sound?
3. Are methods appropriately applied and results technically sound?
4. Are assumptions and uncertainties appropriately characterized?
5. Are there any issues, concerns, or suggestions that are not covered by the questions above?

Timing of Review:

The Peer Review Plan is expected to be published by July 8, 2021 on Reclamation's peer review website:

<http://www.usbr.gov/main/qoi/peeragenda.html>. A meeting and/or webinar will be held between Reclamation and the peer reviewer to discuss the details of this Peer Review Plan. The reviewer must provide his/her comments within 45 calendar days of this meeting. The tentative due date for comments is expected to be August 20, 2021.

Methodology of Review:

The review will be conducted by one individual. At completion of the review, comments will be compiled by the reviewer in a comment excel file template provided by Reclamation, and Reclamation will coordinate with the reviewer and authors/developers of the scientific information to address comments. When the review is completed, a Peer Review Report will be compiled that identifies the reviewer by name and credentials, his/her individual comments, as well as Reclamation's responses and actions taken to satisfy concerns, if applicable. The Peer Review Report will be posted on Reclamation's peer review website. The peer review process will not provide opportunities for public participation.

Reviewer Selection Process:

The peer reviewer was selected considering expertise, balance, independence, and conflict of interest. The peer reviewer has an advanced education and expertise in hydrology, water resources engineering, water resources planning and management, and decision-support modeling and tools, etc.

Delivery of findings:

The peer reviewer will submit his/her comments to the Peer Review Lead by the end of the review period. The comments will include a response to each of the questions cited under "Peer Review Scope", as well as description of findings in a comment matrix (template provided by Reclamation). The comments will be provided digitally to the Peer Review Lead.

Response to Peer Review:

After receiving peer review comments, Reclamation will provide a response to each of the comments, ensuring that comments are adequately and fairly addressed, as applicable.

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 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 contacts:

Subhrendu Gangopadyay, Bureau of Reclamation, Peer Review Lead,
Technical Service Center, jspears@usbr.gov, 303-445-2465.

Collins Balcombe, Bureau of Reclamation, Study Manager, Oklahoma-
Texas Area Office, cbalcombe@usbr.gov, 512-899-4162.