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AGENDA ITEM MEMO

BOARD MEETING DATE: August 21, 2025

TO: Board Members

THROUGH: Bryan McMath, Executive Administrator
Ashley Harden, General Counsel
Georgia Sanchez, Chief Financial Officer
John T. Dupnik, P.G., Deputy Executive Administrator, Water Science and Conservation

FROM: Nelun Fernando, Ph.D., Manager, Water Availability
Carla G. Guthrie, Ph.D., Director, Surface Water

SUBJECT: Improving reservoir evaporation estimates with the U.S. Geological Survey

ACTION REQUESTED

Consider authorizing the Executive Administrator to amend the Fiscal Year 2025 contract with the U.S. Geological Survey (USGS) for improving reservoir evaporation estimates by adding \$191,500 for continuation of the current study into fiscal years 2026 and 2027, for a total cost not to exceed \$416,500, including \$336,500 from the Texas Water Development Board (TWDB) and \$80,000 from the USGS.

BACKGROUND

Through past workshops and discussions, the Texas Commission on Environmental Quality and regional water planning consultants have emphasized the importance of having reliable, accurate estimates of reservoir evaporation to support estimates of water availability for water planning and permitting and for use in water management operations. In 2023, funding from the TWDB, Lower Colorado River Authority, and U.S. Army Corps of Engineers – Fort Worth District supported Texas A&M University and the Desert Research Institute to develop a new reservoir-specific daily evaporation dataset for all 189 major water supply reservoirs in Texas. The new dataset uses a physically-based model and accounts for hydrometeorological conditions and reservoir properties, providing locally-specific, daily estimates of evaporation—a substantial improvement over the conventional methods and datasets typically used.

Stakeholders requested additional validation of this new dataset prior to potentially adopting it for use. In July 2024, the Executive Administrator authorized use of general revenue from the A.1.2. Water Resources Data strategy to contract with the USGS to undertake a

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Bryan McMath, Executive Administrator

Comparison of evaporation estimates using three different methods and input data collected from six Texas reservoirs, 2019 – 2026 (TWDB contract #2500012904). The project makes use of several assessments to validate the daily lake evaporation estimates. These assessments include a comparison of the daily estimates to: (1) legacy quadrangle evaporation estimates at different timesteps to understand key differences with the dataset currently used as input to the Water Availability Models; (2) reservoir evaporation estimates that use meteorological and water temperature data collected at *in-situ* open water reservoir evaporation monitoring stations maintained by the TWDB; and (3) evaporation estimates from water-budget analyses at reservoirs where additional data collection and monitoring of inflows to, and outflows from, the reservoir are not required. The project report will document the findings of the validation assessments and identify best practices for validating the daily dataset.

KEY ISSUES

The budget for the three-year scope of work submitted by the USGS in August 2024 was \$416,500, with a total requested contribution of \$336,500 from the TWDB and \$80,000 in cooperative matching funds from the USGS. To initiate the project, the TWDB contributed \$145,000 in fiscal year 2025 to cover the first year of costs. Work currently underway includes comparison of daily estimates with the legacy quadrangle evaporation data and data collected at *in-situ* monitoring stations. The next phase of the study will include quarterly temperature profile surveys at three reservoirs that have been identified as suitable for assessment of the water-budget approach to reservoir evaporation estimation and a comparative assessment of the daily evaporation estimates with lake energy budgets developed with the temperature survey and *in-situ* solar radiation data. This item, therefore, seeks authorization to amend the contract with the USGS to add \$191,500 in general revenue from Strategy A.1.2 for fiscal years 2026 – 2027 to complete the study. With the proposed amendment, the total contract amount would not exceed \$416,500, including \$336,500 from the TWDB and \$80,000 from the USGS.

RECOMMENDATION

The Executive Administrator concludes that continued progress towards validating reservoir evaporation estimates for major water supply reservoirs furthers the objectives of statewide water resources data dissemination and recommends approval of the proposed amendment.