SIMULATING SALINITY CONCENTRATION AT THE COLORADO RIVER BASIN SCALE

POSTER ABSTRACT

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The U.S. Environmental Protection Agency (EPA) suggested the development of water quality criteria for salinity in the Basin following passage of the Federal Water Pollution Control Act (Clean Water Act) of 1972. In response, the Basin States formed the Colorado River Basin Salinity Control Forum (Forum) to develop numeric salinity criteria and an implementation plan to ensure compliance while allowing the Basin States to continue to develop their Compact-allocated water. The Forum recommends, the States adopt, and EPA approves the flow-weighted average annual salinity criteria for three locations on the lower Colorado River. The criteria, first established in 1975, are reviewed every 3 years; the latest review was completed in 2014.

Reclamation's long-term planning model, the Colorado River Simulation System (CRSS) implemented in RiverWare, supports the Triennial Review of the flow-weighted average annual salinity criteria in the lower Colorado River and development of a salinity control implementation plan. The framework supporting salinity modeling within CRSS begins with a nonparametric regression model to simulate the natural flow and salt mass relationship coupled with a nonparametric temporal disaggregation model to transfer from an annual to the monthly time step required for the planning model. The planning model integrates the projected natural salt mass with salinity contributed by irrigated agriculture and removed by trans-basin diversion and salinity control projects thereby simulating projected salinity concentrations throughout the Colorado River basin. This framework supports the stochastic methods required to model projected supply variability and determine the associated variability in salinity concentration that is consistent with projected supply variability. This framework is presented and its use in the 2014 Triennial Review is demonstrated.