



## Republican River Accounting: How It's Done

### **Nebraska's preliminary forecast of available water supplies**

*This is part three of a four-part series exploring how Nebraska, Kansas, and Colorado work together to administer the Republican River Compact (Compact) and how Nebraska uses Compact accounting data to help manage water and forecast future water availability in the Republican River Basin.*

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Each fall, NeDNR forecasts the available water supplies for the upcoming year for the Nebraska portion of the Republican River Basin. A preliminary annual dry-year forecast for the upcoming year is provided to the Republican Basin Natural Resources Districts (NRDs) before November 15 of each year, following procedures outlined in the integrated management plans between NeDNR and each NRD. In addition, representatives from Nebraska, Kansas, and Colorado met in September to discuss preliminary 2017 water supply and use balances and an early forecast for 2018, in accordance with a long-term resolution signed by the Republican River Compact Administration (RRCA). Both the September meeting with Kansas and Colorado and the November preliminary annual dry-year forecast help predict the potential need for management actions and controls that may be used in meeting Nebraska's Compact obligations for the remainder of the current year and the upcoming year, as described in this article.



Outlet at Harlan County Dam

#### **Discussion with Kansas and Colorado of 2017 water balance and 2018 early forecast**

In August 2016, the RRCA signed a long-term resolution regarding the operation of Harlan County Lake which includes a provision that provides Kansas the opportunity to request, prior to October 1 of Compact Call Years, that all or a portion of the volume of water held in Nebraska from previous years' compliance

Continued on Page 8

## Republican River Cont.

Continued from Page 1

requirements be made available in Harlan County Lake for Kansas prior to June 1 of the following year. The maximum volume of carry-over water that Kansas could request in 2017 is 9,300 acre-feet. On September 28, we met with representatives from Kansas and Colorado to discuss preliminary 2017 water supply and use balances and an early forecast of 2018 water supplies for Nebraska in the Republican River Basin. Representatives from Kansas attending the meeting indicated that they would not be requesting delivery of the 9,300 acre-feet at that time due to sufficient supplies forecasted to be available in Harlan County Lake. Harlan County Lake ended the 2017 irrigation season with over 20,000 acre-feet greater storage content than at the end of the 2016 irrigation season.

### **Preliminary annual dry-year forecast**

In consultation with the Republican River Basin NRDs, NeDNR provides an annual dry-year forecast of the minimum allocation (water supply) and likely water uses that will occur in the basin for the upcoming year. The state's forecasted balance of water supply and uses for the coming year is used as a basis for determining the potential for management actions and controls. Early forecasts are discussed with the RRCA and the NRDs beginning in September. We typically issue a final forecast in December, which includes updates to the current year accounting and closer estimates of the start of forecast year conditions than are included in the earlier preliminary forecasts.



Diversion Dam on the Republican River

The procedures for our calculations of available streamflow in the Republican River Basin are detailed in the NeDNR, Lower Republican, Middle Republican, and Upper Republican NRDs' integrated management plans. The previous five years of approved or preliminary accounting values and estimations for the Nebraska federal reservoir volumes at the start of the forecast year are used as inputs to the forecast. The forecast provides projections of Nebraska's dry-year supplies and uses, imported water supply credits, and the resulting balances at the Hardy and Guide Rock accounting points for the coming year. The forecast also breaks down the projections for Compact Call Years by each Lower Republican, Middle Republican, and Upper Republican NRDs' allowable groundwater depletions.

At the September 28 meeting with Kansas and Colorado, Nebraska was able to share that, using the best available data to date and early water supply projections from the United States Bureau of Reclamation that 2018 is preliminarily forecast to require management actions for compliance and is therefore expected to be a Compact Call Year. However, as described above, under the terms of the August 2016 RRCA resolution, management actions are expected to be deferred until Fall 2018, at which point the states will reevaluate the water supply conditions and determine if those management actions will be necessary at that time. We will be meeting with the Republican Basin NRDs and surface-water irrigation districts over the next several months to discuss managing the expected water supplies and discuss updates until the final forecast of 2018 allowable depletions to streamflow is issued in December 2017.