2/27/04

Courtland Canal Automation – Initial Work

The Republican Basin is an area of the state that has been especially affected by drought in recent years. A recent lawsuit settlement between Kansas and Nebraska included provisions to make better use of water in the region. The following provisions are excerpted from the settlement stipulation:

"The States agree to pursue in good faith, and in collaboration with the United States, system improvements in the Basin, including measures to improve the ability to utilize the water supply below Hardy, Nebraska on the main stem."

"Kansas and Nebraska, in collaboration with the United States, agree to take actions to minimize bypass flows at Superior-Courtland Diversion Dam."

The U.S. Bureau of Reclamation has conducted a value study and currently is reviewing a draft appraisal study on the Lower Republican River Basin in Nebraska and Kansas. One of the alternatives in the appraisal study is for automation of Courtland canal. This would significantly improve the ability of the states to better utilize water in times of drought.

The draft appraisal study indicates:

"The automation component consists of automation of the radial gates at 11 check structures and the canal headworks at the Diversion Dam. A local control mode would be used, based on upstream and downstream water depths to control the radial gate. A RTU would provide the control at the individual radial gate. The RTU would consist of a PC-based controller which would receive input from gate position and water depth sensors. The RTU would provide local control of the radial gate based on control algorithms and control software.

Power would be provided to the RTU. The radial gates would be provided with a motor operator to allow the RTU to automatically raise or lower the gate position.

Stilling wells would be installed at the 11 check structures for monitoring the depth upstream and downstream of the radial gate. A pressure transducer would be placed in each stilling well for water depth measurement. The pressure transducer would transmit water depth data back to the RTU."

Date + Source
unknown

Comparison of the Concepts for Each Component in the Three Plans

Target Flow Proposal

Alternative Component	Cappel Committee Alternative	Middle Alternative	Large Committee Alternative
Distribution of allocated water	Allocation to certain groups of wells based on seniority of well.	Groundwater and Surface water share in the base allocation, Surface water is still regulated by priority	Shared equally among all users Possible Floor or Ceiling
Acre-base	Set by registering current acres according to Tax-rolls Moratorium on irrigated acres	Set to current conditions Moratorium in areas that are over allocated	Date in Time - Irrigators show proof
Administration	Basin-wide	NRD's	NRD
Management Areas	Basin-wide with smaller 3-miles square units in areas with certain physical characteristics	Sub-basins watersheds	NRD
Carry-over	Unused allocation carries over up to a set amount, then carries over at a reduced rate to another set amount, no carryover above the second set amount	Cannot carry a negative end-of-year balance for x consecutive years Maximum carry-over equal to the crop use requirements for a crop for x number of years.	up to District (administration)
Transfers	Market based Limit transfers in areas with certain physical characteristics Subject transfers to a percentage adjustment Not allow adverse impacts to other wells or surface water users	Allowed within management areas Transfers given subject to a percentage adjustment, the percentage depends on the uses Carry-over not allowed to be transferred alone	Allowed based on impacts w/ penalties must be requested
Amount allocated	Based on concept of Safe Yield	Amount allocated would depend on the management goal with adjustments to allotment based on a variety of possible physical characteristics or location Amount allocated first set on a certain date, and then the allocation may be adjusted up or down at future dates	Based on the concept of Safe Yield with education period Different allotments for Upland Wells, Alluvial Wells and Surface Water
Municipal and Industrial	Base use set at one point in time	Municipalities have a annual base set on a per capita basis Industrial users have the allotment set based on their current development	History of use Will have allocation
Compensation		None if a sharing plan is implemented	
Meters	All wells and surface water diversions metered Reporting required	All users would be metered	Keep Data
Pooling	Wells allowed to be pooled in certain areas based on physical factors	Not allowed	Not Allowed -Handled by Transfers
Surface Water	Surface water treated as it is presently, Administered by the State	Given same allotments as groundwater, still regulated by priority	Surface water treated the same as Groundwater