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SECTION II - RRCC WATER ADMINISTRATION (Dec. 2006)

A. BACKGROUND

Ongoing drought conditions in the Republican River basin have created a situation that requires rethinking all aspects of the state's efforts to comply with the Republican River Compact. The initial Integrated Management Plans (IMP) jointly developed by the Department of Natural Resources and the basin Natural Resources Districts in 2004 and 2005 were developed using a historical water supply that was larger than what has subsequently been available. In addition, significant increases in groundwater pumping and irrigated acres during the settlement negotiations led to a charge on the available water supply both in 2002 and subsequent years as the impact of the lag effect has manifest itself.

These conditions have led to a disconnect between the current individual groundwater allocations within each NRD and the available water supply for use in Nebraska. The regulatory effort of the NRDs have shown some ability to lessen the impact of pre-IMP pumping increases and has initiated a downward trend in streamflow depletion resulting from groundwater use. In the absence of drought and the pre-IMP pumping increases these allocations would have likely provided the reduction in lag effect projected by DNR and the NRDs. Likewise, groundwater irrigators have used less than their full allocation in each of the first two years of the current IMP. Unfortunately, this does not appear at this time to be enough to keep up with the ongoing drought.

We are now entering the final year of the three year allocations in the Upper, Middle and Lower Republican NRDs contained in their respective rules and regulations. We are unfortunately well behind where we should be in developing the next set of allocations and other necessary controls. Further, consideration should be given to the question whether additional controls for 2007 are necessary to meet our Compact obligations. With that in mind, we have put together this initial proposal to begin the development of the next set of NRD controls and possible changes to how DNR regulates surface water in the basin.

B. OBJECTIVES

1. Immediate

a. Reduce consumptive use in 2007 and next IMP cycle to meet reductions in the state's anticipated allocation resulting from current drought conditions

b. Adjustments for 2 and 5 year averages

2. **Long-term**

   a. Develop flexibility in the IMPs to address fluctuations in state allocations resulting from climatic change

   b. Address surface water delivery/use efficiency

   c. Determine optimal level of irrigated acres based on current water use technology

3. **Basin economy**

   a. Maximize our use of available state allocation

   b. Minimize impact to basin and state economy

   c. Promote long term stability and certainty

C. MANAGEMENT OPTIONS

The management options described herein are based on the fundamental premise that water management for Compact purposes can only be significantly impacted in the short term (3 year management cycles) by changes in management of quick response wells, surface water diversions and development and utilization of off-stream/off-season storage projects. The upland groundwater well component is addressed through a long-term allocation set at a level to protect and enhance the water savings produced by the management of quick response wells and surface water.

1. Groundwater Controls

   a. Allocations for quick response groundwater wells based on water supply ranges

      Water supply ranges are a predicted state allocation based on target streamflow depletions from groundwater use and projected available surface water. In this instance, we would use three target ranges from which groundwater allocations would be set to meet the various projected targets.

      The first target is an "extended drought" range. This range represents the minimum value of water supply that would be available for Nebraska. This target range would be based on the lowest likely state allocation. In 2005, that number was

198,940 acre feet. We would propose using 195,000 – 210,999 acre feet as the target range.

The second target is an "anticipated drought" range. This range represents the value of water supply corresponding to allocations during the second/third year of a drought and also be consistent with the significant downward change in available allocation as a drought cycle begins. We would propose using 211,000 – 239,999 acre feet as the target range.

The final target is an "average climate" range. This range represents the value of water supply in average to wet climatic conditions. The current allocations are based in part on a water supply at this level.

Using these target ranges, allocations would be set for quick response wells at levels to meet each target range.

b. Allocations for upland wells

Allocations for upland wells will be based on two objectives: 1) allocations that address the impact to streamflow from the lag effect from upland well pumping; and, 2) allocations set at a level to protect and enhance the water savings produced by the management of quick response wells and surface water.

c. Reduction in irrigated acres

The following measures should be considered and modeled using the groundwater model and the accounting formulas under the "extended drought," "anticipated drought" and "average climate" target ranges:

i. Regulatory reduction of certified irrigated acres in the range of 10% to 20% in the quick response area and long-term reduction of certified irrigated acres in upland areas to meet optimal irrigated acre value.

ii. Compensated retirement of certified irrigated acres in the range of 10% to 20% in the quick response area and long-term compensated retirement of certified irrigated acres in upland areas to meet optimal irrigated acre value.

reduce pump but let people retire acres
don't retire acres cause want to be able to use in wet years

iii. Development of CREP/EQUIP hybrid program that reduces irrigated acres but allows dry land farming

d. Restore imported water supply credit to previous volumes

Regulation specific to groundwater wells hydrologically connected to imported water supplies) ?

2. Surface Water Administration

a. DNR

Administer surface water rights to protect streamflow provided by reductions in groundwater use Change in law? (conduct channels)

Administer surface water rights to meet Compact obligations (*Hindeliter v. LaPlata River*, 304 U.S. 92 (1938)).

b. Measures identified in Compact Settlement Agreement

Supplementing water for Nebraska Bostwick Irrigation District by providing alternate supplies from below Guide Rock or from outside the Basin

Reducing use of storage by Nebraska Bostwick Irrigation District above Guide Rock

Dry year leasing of surface water rights that divert at or above Guide Rock

c. Additional measures surface water

i. Bostwick Irrigation District

One or two year dry year leases. Manage flow through canals to provide recharge in alluvial aquifer

Permanent retirement of irrigation district. Manage flow through canals to provide recharge in alluvial aquifer

ii. Frenchman Creek Basin

Address Enders Reservoir, including finding a way to drain Enders Reservoir.

Permanent retirement of Frenchman Valley Irrigation District.

Permanent retirement of Riverside Canal

iii. Frenchman-Cambridge

Lease water to release to Harlan County Reservoir

Administer storage in Medicine Creek

One or two year dry year leases. Manage flow through canals to provide recharge in alluvial aquifer

Permanent retirement of irrigation district. Manage flow through canals to provide recharge in alluvial aquifer

3. Streamflow Augmentation

a. Surface water re-timing projects

Off-stream/off-season surface water storage projects which could provide water to downstream state during irrigation season and which could also be used to store imported water for future re-timing

b. Groundwater streamflow augmentation

Examine efficacy of pumping groundwater in to the river, either above Harlan County or Guide Rock using the tributaries as a delivery mechanism. This is a "borrow-now, pay-later" deal but could help us in the future provide an additional increment of consumptive use reduction. article

c. Stream flow augmentation Platte River –

Demonstration project from voluntary participants to obtain additional mound credits or increase virgin water supply at time when credit would not otherwise be given.

4. Phreatophyte control

D. INFORMATION NEEDS

1. Model runs of management options

   Determination of groundwater depletion component of the "extended drought," "anticipated drought" and "average climate" target ranges

   Determination of allocations consistent with the "extended drought," "anticipated drought" and "average climate" target ranges

   Total groundwater related stream flow depletion separated out into what portion is from use in each accounting year and what is lag effect. Information should also be provided by basin and Compact sub-basins.

   Total groundwater related stream flow depletion separated out into what portion is from quick response wells and what portion is from upland wells

   Impact to groundwater related stream flow depletion determination from additional retirement or reduction of irrigated acres by regulation based on specific zones or regions

   Any other runs necessary to evaluate management options

2. Accounting runs of management options

   As necessary to evaluate management options

3. Predictive tools

   Develop necessary tools to determine predicted allocation for upcoming year and broader prediction for outlying years

Year	Allocation	CBCU	IWS Credit	Alloc-(CBCU-IWS)	GW CBCU	SW CBCU
1995	332,550	295,880	17,902	54,572	190,317	105,581
1996	377,300	278,900	24,394	122,794	201,532	77,366
1997	337,700	315,680	16,434	38,454	186,345	129,340
1998	315,410	297,750	17,677	35,337	185,460	112,301
1999	299,050	302,890	18,444	14,604	203,488	99,390
2000	291,920	296,530	18,656	14,046	184,020	112,493
2001	299,380	292,320	18,242	25,302	212,871	79,446
2002	236,550	265,910	13,996	-15,364	180,438	85,465
2003	227,580	262,780	9,780	-25,420	204,165	58,614
2004	205,630	252,650	10,380	-36,640	213,115	39,530
2005[1]	198,940	252,690	11,965	-41,785	210,879	41,803
Averages 1995-2005	283,819		16,170		197,512	85,575
2000-2005	243,333		13,837		200,915	69,559
2003-2005	210,717		10,708		209,386	46,649

[1] w/ NFR evap above HC