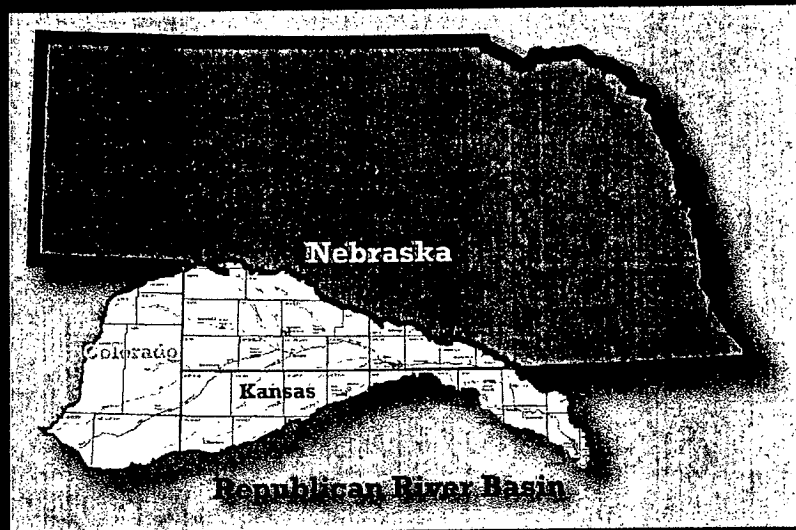


Republican River Compact



Relevant issues related to the joint Integrated Management Plan will be discussed tonight

Will touch on what IS and IS NOT part of the Rep. Riv. Compact



The Republican River Compact

- Signed and Ratified by Congress – 1943
- Divided the waters of the river between Nebraska, Kansas, and Colorado
- “Virgin water supply” is allocated to states for Beneficial Consumptive Use

States negotiated how to divide the waters in the basin

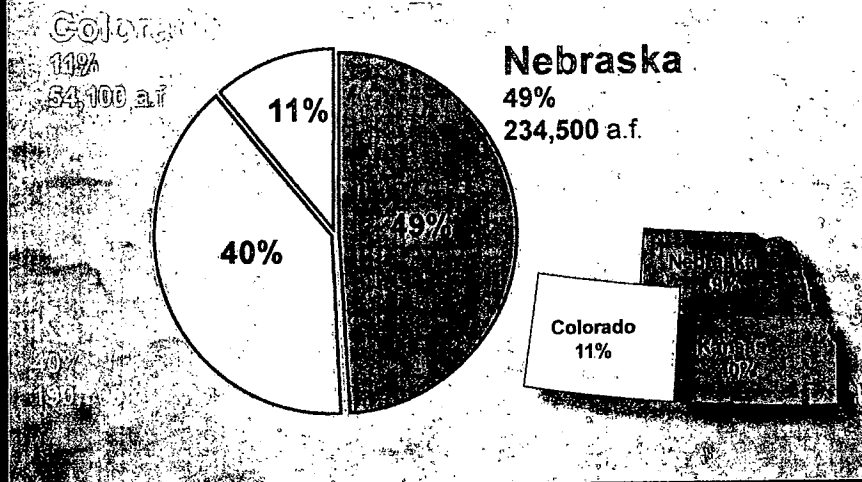
State legislatures approved and Congress ratified

Compact was necessary before funds were obtained for building dams for flood control and irrigation projects

Compact defined the flows in the rivers of the basin without interference by the activities of man at the total Virgin Water Supply

Original Compact Allocations

Republican River Compact Allocations



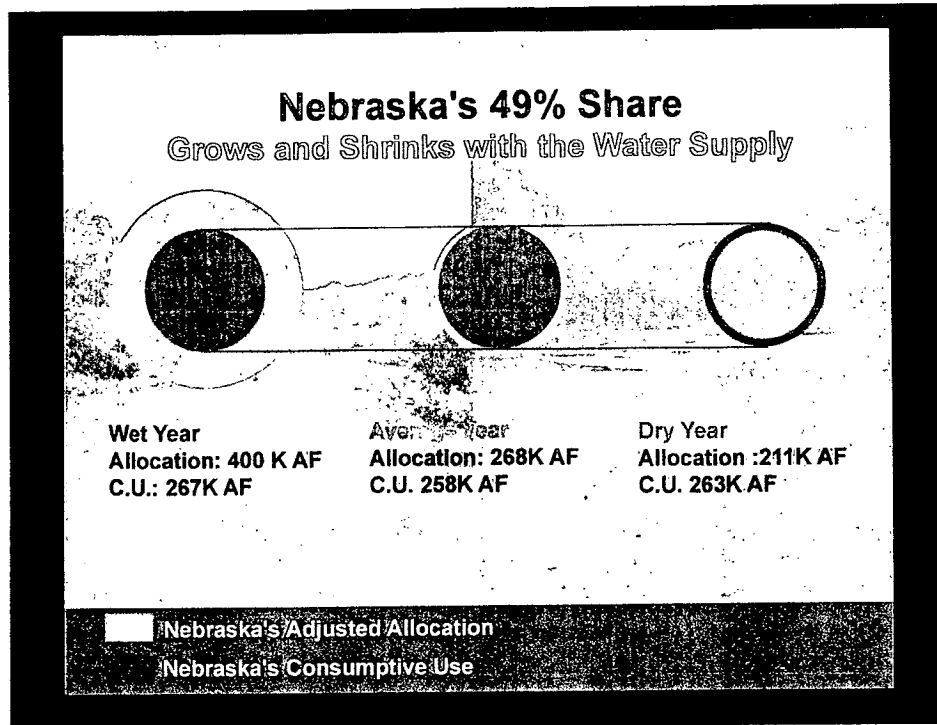
The VWS is determined by measuring river flows at the downstream gage location for each designated sub-basin and summing that with the water that was consumed by the activities of man. i.e. irrigation, municipal and industrial uses of man

The total VWS is summed for the basin and the total is divided between the states for their allocations for Beneficial Consumptive Use of the total supply

It is important to remember that the RRC is not a delivery contract with Kansas. It is an allocation of a volume of water and each state is responsible for using up to, but not over that amount each year.

**Beneficial Consumptive Uses
historically included
uses from
surface water and
alluvial groundwater
only**

No accounting was or is done on the water consumed by conservation practices, more on that later.



Remembering that it is an allocation Compact you can look at the graphic and consider the area in blue as Nebraska's "budget for a particular year". The red area shows what was actually used. To use a banking account analogy, if the red circle goes outside the blue, then you would be "bouncing" checks.

Just as with most folks income, the available water changes from year to year and is a function of the precipitation that falls in the basin.

The numbers used in this example are from a period before the recent controversy and therefore, the Consumptive Use vales are somewhat lower than current levels.

For illustration though, you can see that the red circles indicate that over a few years time the annual use doesn't fluctuate significantly. However, the supply of water does. This is MOST significant during times of drought, when the supply shrinks dramatically, while the demand for water to maintain traditional yields goes up.

SW use drops of during water short years, but GW increases dramatically too.

Kansas Files Lawsuit

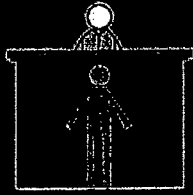
- **Kansas filed suit in May 1998**
- **Major points of Contention**
 - **Proliferation of well development in Nebraska**
 - **Chronic overuse by Nebraska in several subbasins**
 - **Damages for this overuse**

Expansion of irrigated acres and well drilling coupled with a generally shrinking SW supply contributed to KS decision to file a lawsuit

They were encouraged by what they considered a great success in the Arkansas River lawsuit and felt they would benefit from a successful lawsuit and resultant monetary damage payment.

For many years the states computed irrigation CU for SW uses and Alluvial GW uses. Kansas insisted that all GW pumping depleted stream flow and a high percentage of GW pumped resulted in depletions to stream flow

They were also determined to hold NE to the supply and uses within each sub-basin. This would be a severe problem for several sub-basins in Nebraska, while other sub-basins were underutilized from the KS perspective



Rulings by Special Master

- Groundwater use counts to the extent it depletes streamflow – Jan. 2000
- Compact accounting numbers for 1959-1994 are binding and will not be changed – May 2001

NE vigorously argued that non-alluvial GW pumping was not considered as part of the original computation of the VWS and BCU

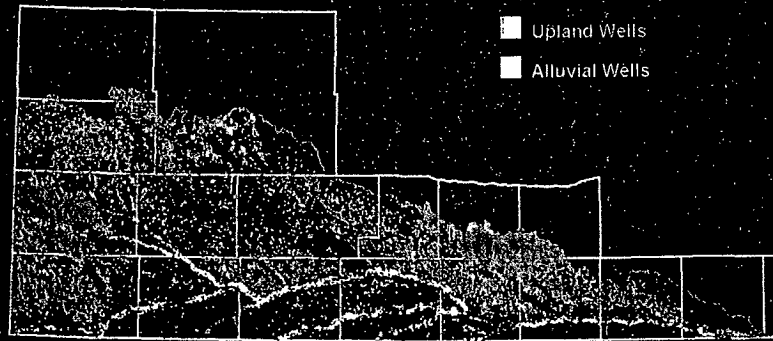
In the first ruling issued by the Special Master, he ruled that all GW pumping is part of the VWS computations to the EXTENT THAT THE PUMPING DEPLETES STREAM FLOW

At that point Kansas wanted to re-compute the VWS and CU for each sub-basin and assess Nebraska for Kansas' perception of over use, trying to set the stage for damage claims

Fortunately Nebraska's arguments that the numbers that had been ratified by all three states through 1994 should not be changed was affirmed by the Court.

This was the second...

Alluvial/Upland Wells



To get a grasp of the significance of switching from computing the BCU from alluvial wells to all wells, one needs to look at the green points on the map, which are alluvial and compare to the red points which are all other wells in the basin.

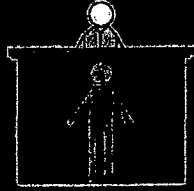
negotiated

Nebraska successfully ~~argued~~ *negotiated* that the SUB-BASIN computations were simply a tool for counting all the supply in the entire Republican Basin. This was ~~affirmed by the Special Master and was the result of two major rulings by the Court.~~ This set the stage for negotiations and a settlement. There is a wrinkle to this, in that during water short years, Nebraska's allocations above Guide Rock, Nebraska are limited to its supply above that point.

Guide Rock is the point on the river where Kansas takes a significant portion of its supply through the Courtland Canal. There is a fair amount of gain in the river below that point.

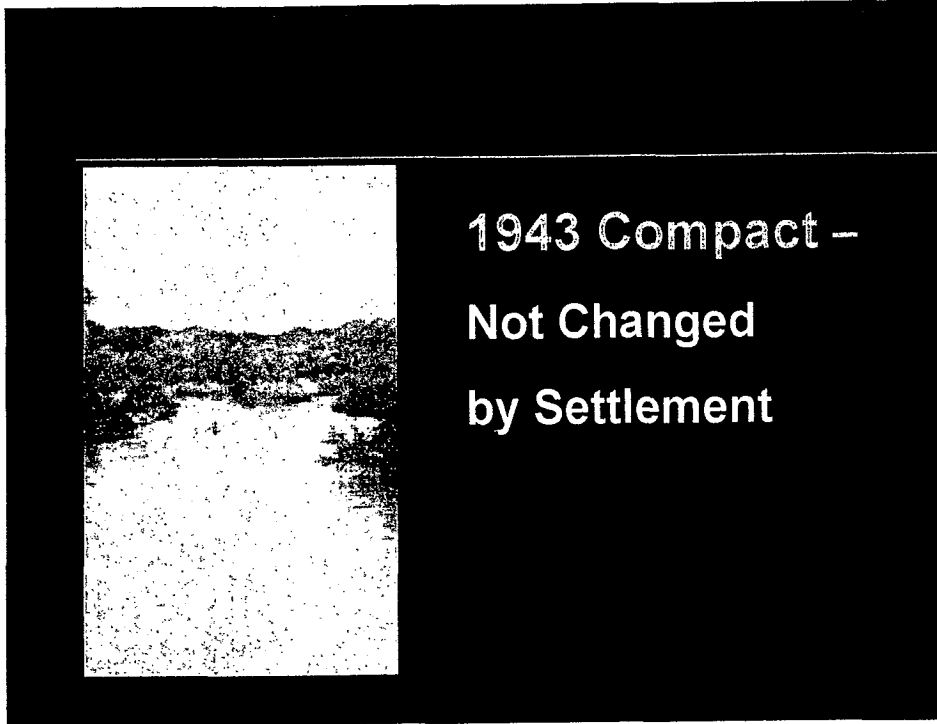
The rest of the work in the Case was technical in nature, related to accounting and computing the extent that GW pumping depletes stream flow

Obviously the task of accounting for the depletions from all wells in the basin is complex.



Rulings by Special Master

**Set the stage for possible
settlement of remaining
technical issues**

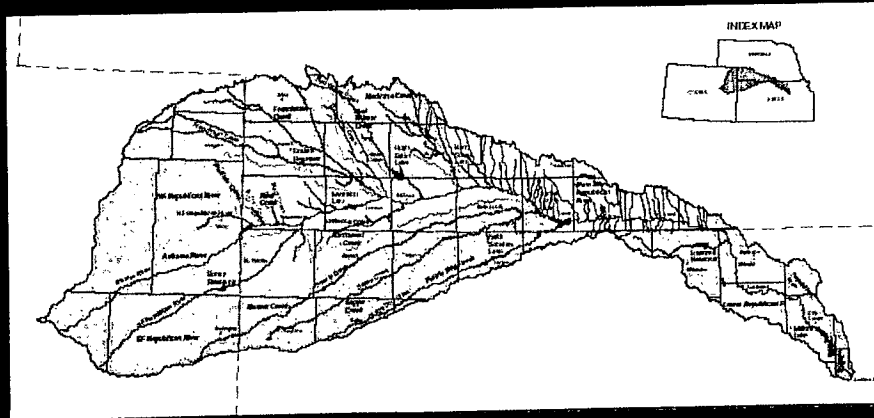


**1943 Compact –
Not Changed
by Settlement**

Neither of the previously mentioned rulings by the Court changed the original Compact

In fact a change in the Compact would need a new contract that would be approved by all three states and the U.S. Congress

Compact Designated Sub-Basins



These colored areas show the designated sub-basins in the whole basin.

water short year split

2002 Settlement of Litigation -

**Provided New,
More Specific
Accounting Procedures**

*move
down
one*

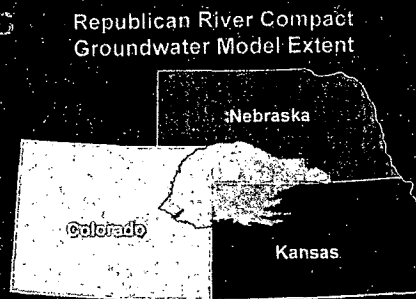


The remainder of the work to be done was technical in nature, relating to accounting procedures and the development of a GW Model for the purpose of accounting for Stream Depletions resulting from GW Pumping.

Model Developed Jointly by Experts from Colorado, Kansas and Nebraska

◦ Nebraska's Experts

- Michael McDonald
- Lee Wilson
- Derrel Martin

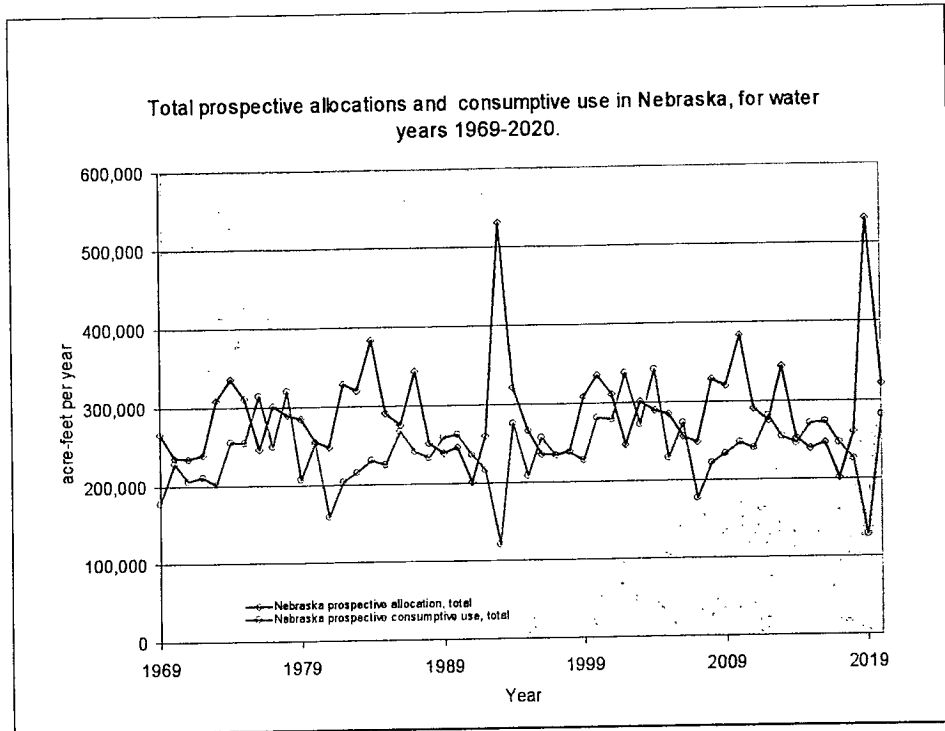


Leading experts in stream/ groundwater interaction, modeling and irrigation systems were retained to assist Nebraska.

The premier GW Model used by the USGS and many others is MODFLOW. This was developed by Mike McDonald, who is a member of Nebraska's technical expert team.

Derrel Martin is a leading expert on irrigation systems and field level CU and recharge from the University of Nebraska (Terry's brother)

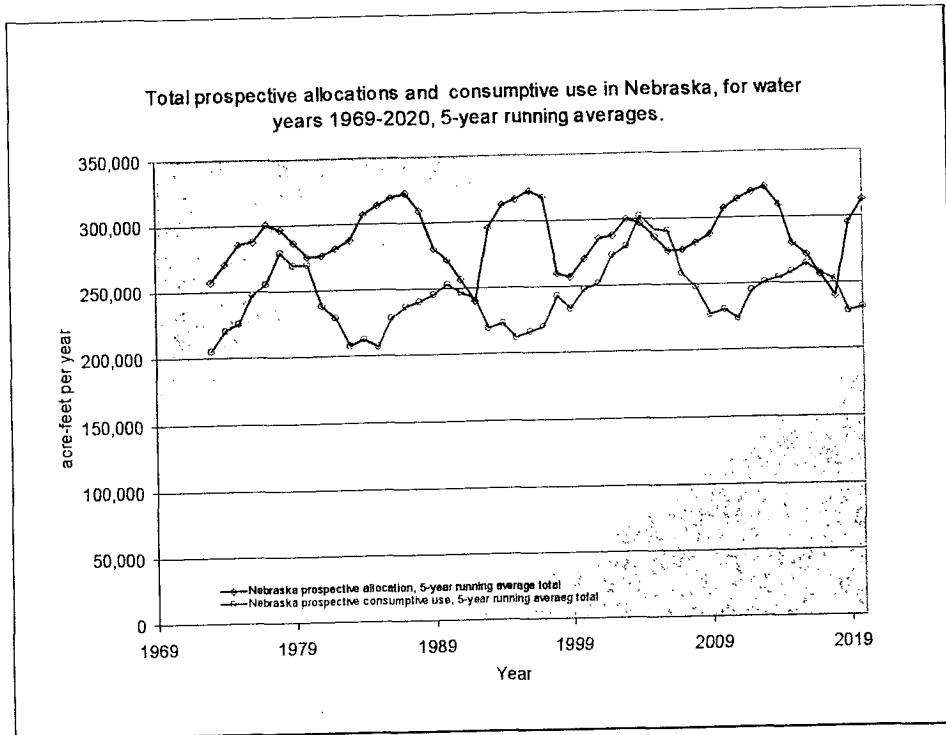
Lee Wilson is a leading water expert out of Santa Fe, who has helped Nebraska on other cases



Because of the fluctuating water supply, it was recognized that the VWS and Allocations would be a problem in about 20% of the years, due to expanded development in Nebraska.

Red above Blue indicates a possible violation of the Compact in this analysis

We needed the flexibility to average our use and supply over several years, in order for the allocation system to be palatable to our water users



Nebraska lobbied for a ten year running average, Kansas argued for NO averaging. In the end a 5-year running average was adopted for normal water supply years

You can see that the red line goes over the blue only a few times. This is a hint that some cut back would be necessary, but less than without the averaging

Development of more irrigated acres must stop

Irrigated Acres and Groundwater Pumpage by NRD

	URNRD	MRNRD	LRNRD
1998-2002 Pumping (AF/Yr)	531,763	309,479	242,289
1998-2002 Depletion to River (AF/Yr)	74,161	52,168	43,954
2002 Irrigated Acres	448,716	290,200	277,500
Expected Certified Acres	448,716	312,000	330,000
Percentage of Debit to Offset	43.5%	30.5%	26.0%

-During the final phase of settlement the State recommended the cessation groundwater well drilling and expanding acres in 2002

-As you can see there were additional acres added. The MRNRD and LRNRD certified acres are projections by NRD officials

-Formula: $(AF / Acres) * 12 = \text{Inches}$

-DNR has decided that the equitable way to split the supply is to base the split on 1998 – 2002 average DEPLETIONS. These percentages are applied to pumping numbers, since the pumping is managed at the water meter, not depletion.

-DNR's working premise is that any expansion of acres and CU after 2002 must be absorbed by the NRD that allowed the expansion

-The closer to a stream you are, the higher your percent of pumping and the sooner your depletion shows up in the river

<u>Inches per acre</u>	URNRD	MRNRD	LRNRD
1998 – 2002:	14.2	12.8	10.5
Current est. :	14.2	11.9	8.8

These numbers are without the necessary reductions for water short years & lag

Future Noncompliance with the Compact will Result in

- **New lawsuit against Nebraska**
- **Payment of either money or water or both if Nebraska has used more than their allocation and violated the Compact**
- **Possible imposition of rules and regulations to insure Compact Compliance by the U. S. Supreme Court**

OUR GOALS to stay in compliance in NRDs are:

- 1 - Reduce pumping in normal years by 5%
- 2 - Additional reductions to stay in compliance in water short years
- 3 - Have Integrated Management Plans in place in each NRD by September '04

Remember, we are already in the second year that will count for our first 5-year average compliance check. We believe we overused by around 30 KAF in 2003 and may be on track to overuse in 2004, unless more rain continues. URNRD's share of the shortfall is 43.5%, which must be made up between now and 2007. The lag effect will continue to grow the depletion from past pumping too.

Thank You

Impacts of Historic and Future Pumping on Baseflow in Nebraska

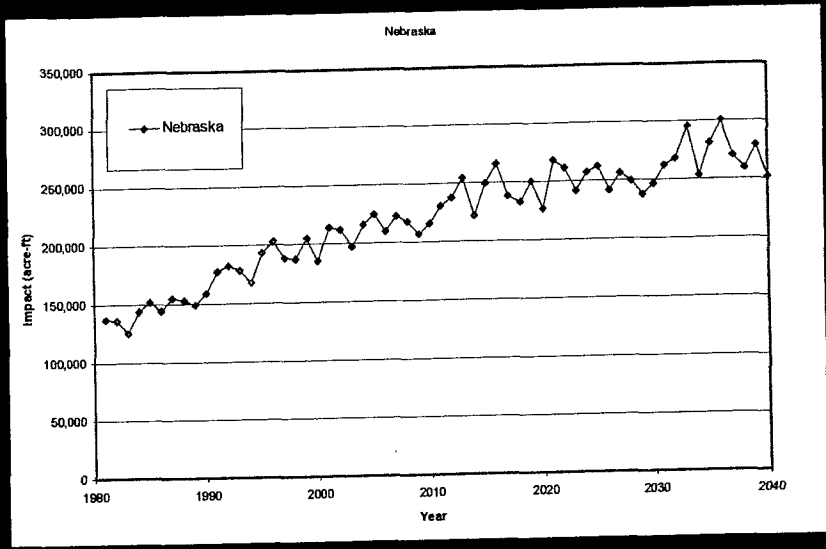


Figure 38