

Hydrologically Connected Surface Water and Groundwater Relevant Law/Water Use in Some Other Western States

1995 Withdrawals for Irrigation Kansas, Colorado and Nebraska

State	Groundwater %	Surface Water %	Groundwater %	Acres Withdrawn	Irrigated Acres
Kansas	53.4%	46.6%	16%	1,750,000	3,060,000
Colorado	18.4%	81.6%	16%	1,400,000	2,710,000
Nebraska	76.5%	23.5%	16%	8,480,000	7,840,000

Source: Estimated Use of Water in the United States-1995 US Geological Survey Circular 1200

Saturated Thickness of the High Plains Aquifer 1997

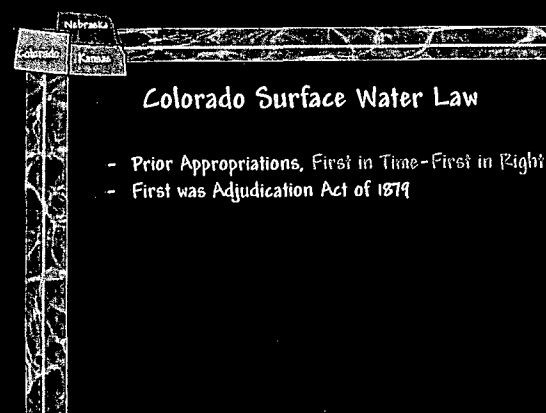
Groundwater Level Rises and Declines- 1980 to 1997

General Groundwater Law Concepts

- Absolute Ownership
- Reasonable Use
- Correlative Rights
- Prior Appropriations

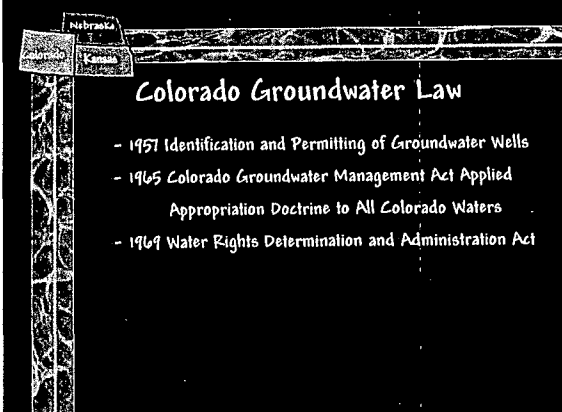
Colorado Water Use

- 84% of Withdrawals for Irrigation are from SW
- 44% of the Irrigated Acreage of Nebraska
- 86% of Public Water Supply Withdrawals are from SW
- All but a Very Small % of Groundwater Withdrawals for Irrigation are from Eastern Colorado
- Significant Groundwater Level Declines from Pre-development have occurred in parts of the Upper Republican Basin



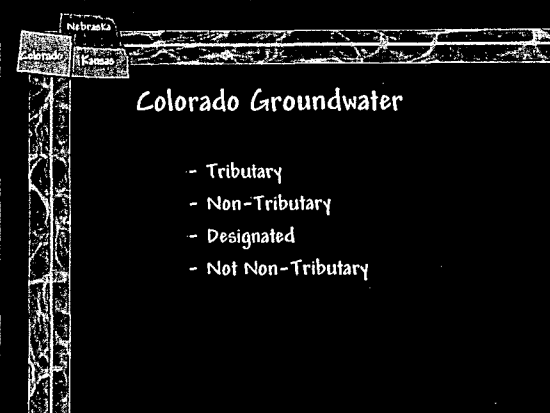
Colorado Surface Water Law

- Prior Appropriations, First in Time-First in Right
- First was Adjudication Act of 1879



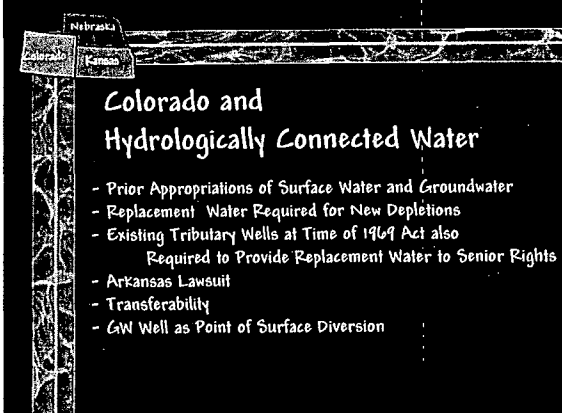
Colorado Groundwater Law

- 1957 Identification and Permitting of Groundwater Wells
- 1965 Colorado Groundwater Management Act Applied
- Appropriation Doctrine to All Colorado Waters
- 1969 Water Rights Determination and Administration Act



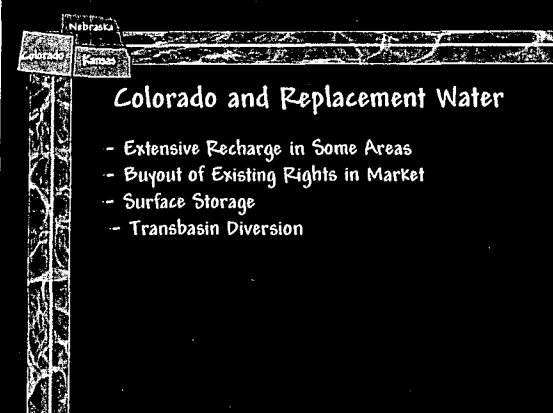
Colorado Groundwater

- Tributary
- Non-Tributary
- Designated
- Not Non-Tributary



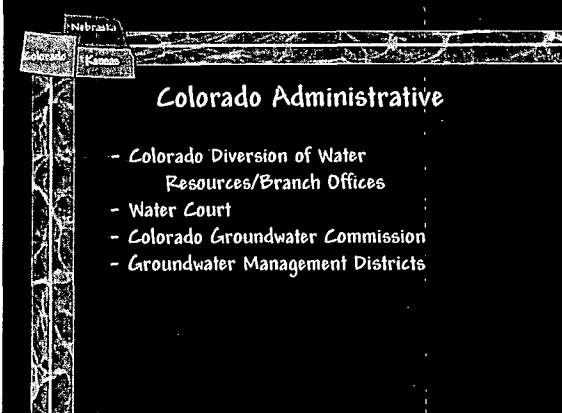
Colorado and Hydrologically Connected Water

- Prior Appropriations of Surface Water and Groundwater
- Replacement Water Required for New Depletions
- Existing Tributary Wells at Time of 1969 Act also Required to Provide Replacement Water to Senior Rights
- Arkansas Lawsuit
- Transferability
- GW Well as Point of Surface Diversion



Colorado and Replacement Water

- Extensive Recharge in Some Areas
- Buyout of Existing Rights in Market
- Surface Storage
- Transbasin Diversion



Colorado Administrative

- Colorado Diversion of Water Resources/Branch Offices
- Water Court
- Colorado Groundwater Commission
- Groundwater Management Districts

Kansas Water Use

- 92% of Withdrawals for Irrigation are from Groundwater
- 77% of Irrigated Acreage is Irrigated from Wells
- 41% of the Irrigated Acreage of Nebraska
- 56.5% Public Water Supply Withdrawals are from Surface Water
- Major Water Level Declines from Pre-development in Southwest Kansas with Significant Declines in Some Other Areas

Average Annual Rate of Ogallala Decline in Kansas*

Ogallala in Kansas	GWMGT Dist. #4	Upper Republican
1970s 1.4 ft / year	.88 ft / year	
1980s .82 ft / year	.38 ft / year	
1990s .55 ft / year	.21 ft / year	.11 ft / year

Source: *GWMGT District #4 Webpage from Division of Water Resources Statistics

Kansas Surface Water Law

- Prior Appropriation, First in Time-First in Right Legislation Passed 1886

Kansas Groundwater Law

- Also Prior Appropriation Since 1945 Legislation
- (limited domestic exemption)

When Issuing Appropriations for Groundwater Chief Engineer is to Consider "Public Interest" which Includes Safe Yield of the Area and the Impact Additional Appropriations will have on Prior Appropriations. Safe Yield Generally Required for New Appropriations.

Kansas Groundwater Management Districts- 1972 Legislation

- Authorized Development of Local Plans for Regulation and Management
- In Practice Chief Engineer of DWR has Generally Followed District Guidelines when Issuing Permits
- Powers also Include:
 - Power to Levee Water Charges
 - Power to Build Water Works
 - Eminent Domain

Nebraska
Kansas

Groundwater Regulations for Benefit of Surface Water

Nebraska
Kansas

Kansas Groundwater Management Districts Map

Nebraska
Kansas

Kansas Groundwater Management District #4 Goals Toward Control of New Development

- To Prohibit New Development that Exceeds the Long Term Annual Recharge in the local Area of a Proposed New Water Right
- Prevent Any New Water Right from Directly Impairing Any Existing Water Right to an Unreasonable Degree
- To Provide Limited Access to New Water Rights for Small, Legitimate Use Requests in Specified Circumstances

Nebraska
Kansas

- Reduce Diversions from the Aquifer from Existing Water Rights 15% by the Year 2010 by:
 - Increasing Water Use Efficiency
 - Elimination of Irrigation on Unauthorized Places of Use
 - Elimination of Overpumping Authorized Quantities of Water
 - Promoting the Enrollment of Water Rights into WRCP
 - Supporting the Creation and Proper Operation of Water Banks
- Insure that All Water Use Within the District is per the Kansas Water Appropriation Act
- Protect All Valid and Efficiently Utilized Water Rights Within the District to the Maximum Extent Possible

Nebraska
Kansas

New Mexico

- Only a Small Percentage of Rights Adjudicated
- Prior Appropriations for Groundwater Since 1927
- Declared Groundwater Basins Cover to Over Half the State
- If Wells Existed Prior to Declared Area Surface Water Right Holders Only Recourse for Pumping Effects is to go to Court or Wait for Well Owner to try to Change Right
- After Declared Area Initiated New Applicants Must Run Hydro Model if There is a Depletion Effect it Must be Offset by Purchasing Valid Existing Rights

Nebraska
Kansas

Texas

- Rule of Capture - Surface Owner May Withdraw Groundwater for Use Without Limitation or Liability to Neighboring Owners for Any Harmful Effects
- Use Must be Beneficial, Non-Wasteful and Non Malicious
- When Issuing a Surface Permit Texas Natural Resources Conservation Commission is to Assess Any Affects on Groundwater
- Groundwater Districts Develop Plans for Most Efficient Use and Require Permits
- Edwards Aquifer Authority

North Dakota

- Prior Appropriations for Groundwater
- State Engineer has Statutory Authority to Restrict or Temporality Curtail Groundwater Pumping to Protect Senior Surface Water Rights-such action never taken
- State Engineer May Condition or Deny a New Groundwater Permit to Protect Senior Appropriators-this has been done

Wyoming
Nevada
Arizona
California
Oklahoma

Alternate Approaches

- Designated Basins With Moratoriums
- Replacement Water
- Movement Towards/Achieving Safe Yield in Designated Basins (via allocations Etc.)
- Gradual Depletion and Non Interference
- Transferability
- * Cut Off Lines for Legal Presumption

Nebraska

- 76% of Irrigation Withdrawals from Groundwater
- 87% of Irrigated Acreage Supplied from Wells
- 116% of the Combined Irrigated Acreage of Colorado and Kansas
- 84% of Public Water Supply Withdrawals are from Groundwater

Nebraska Surface Water Law

Complete Prior Appropriation Law Since 1895
Forerunners in 1877 and 1889

Nebraska Groundwater Law

- Public Ownership
- Landowners Have Right to Make Reasonable & Beneficial use on Overlaying Lands Subject to Correlative Rights of Others and Subject to Management Under the Groundwater Management and Protection Act