

Ground Water Administration in the Arkansas River Basin, Colorado - History and Current Practice

- Surface Water Development 1860 - 1900, Fully Adjudicated, Over-appropriated
- Well Development begins 1930's, boom in 1950s and 1970s
- Arkansas River Compact - 1948
 - Article IV D “Provided, that the waters of the Arkansas river, as defined in article III, shall not be materially depleted in usable quantity or availability for use to the water users in Colorado and Kansas...

History of Well Administration, pre 1994

- 1965 Colorado Ground Water Management Act
 - Requires Permits for Construction of Wells after May 17, 1965
 - Permit may be denied based upon evaluation of injury to senior rights
 - “The State Engineer . . . **Shall** execute and **administer** the laws of the state relative to the distribution of the surface waters of the state including the **underground waters** tributary thereto **in accordance with the right of prior appropriation**, and he shall **adopt such rules and regulations and issue such orders as are necessary** for the performance of the foregoing duties.”

1966 Priority Administration attempt - Fellhauer

- Division Engineer orders Fellhauer to cease pumping of junior undecreed well in view of 1887 call on river.
 - Supreme Court reverses the trial court which had sustained the Division Engineer's order
 - recognized authority for administration of wells
 - but, Division Engineer acted without any written rules or regulations and without any prescribed guidelines

Water Rights Determination and Administration Act of 1969

- Sets standards and procedures for development of rules and regulations for administration of wells
 - sec 37-92-501
- Plan for Augmentation - make new sources of water available in time place and amount so that a new junior use may divert without causing injury to senior water rights.
- Provides for adjudication of Wells
 - If filed before July 1, 1972, priority can relate back to appropriation date
 - If filed after July 1, 1972, priority junior to all rights filed in prior years

1972 Rules Governing Use of Ground Water Rights in Arkansas River basin.

- Governs alluvial and tributary wells
- For adjudicated wells with filing dates pre- July 1, 1972
 - Allows Diversion only on Monday, Tuesday, or Wednesday of each week
 - Allows different operational period for 3/7 of time approved by Division Engineer
 - Greater pumping allowed pursuant to plan approved by DE to replace depletions so that prior rights are not damaged

1972 Rules not supported by increased staff

- Not effectively enforced
- Ground Water Associations formed

1974 Proposed Amendment to Use Rules

- Calls for 5 days of curtailment per week in 1974, 6 days curtailment in 1975, total curtailment in 1976
- Protested in Water Court, Water Court disapproved of Amendment, Supreme Court sustained the Water Court disapproval (Kuiper v. Atchison, Topeka, and Sante Fe)
 - No evaluation operating experience / effect of 1973 regulations

Kansas v. Colorado - filed in 1984

- Measurement of well diversions is an issue
- Depletions from wells causes depletion of usable stateline flow
- Determination of current and future compliance with Compact is subject of continued litigation in this case.

1994 Measurement Rules

- Require measurement for all tributary wells (except exempt wells)
 - Totalizing Flow Meter
 - Power Coefficient
 - Inactive
- Annual reporting
- Re-verification every 4 years
- Well Tester Certification

Implementation of Measurement Rules

- Supported by 4.5 FTE
- Inventory of Wells
- Data system for storing / processing information
- Issue Orders for compliance as wells are inventoried
- Issue Orders for Re-verification of well test

1994 - 1995 Arkansas River Coordinating Committee

- Governor appoints committee to:
 - Advise and coordinate with SE on development and implementation of rules on administration
 - dealing with post-compact depletions to stateline flows
 - dealing with depletions to flows within Colorado
 - dealing with enforcement of rules and any amendments of rules as may be needed
 - Provide recommendations to Governor, General Assembly, State Engineer and Water Conservation Board

Recommendations of the ARCC

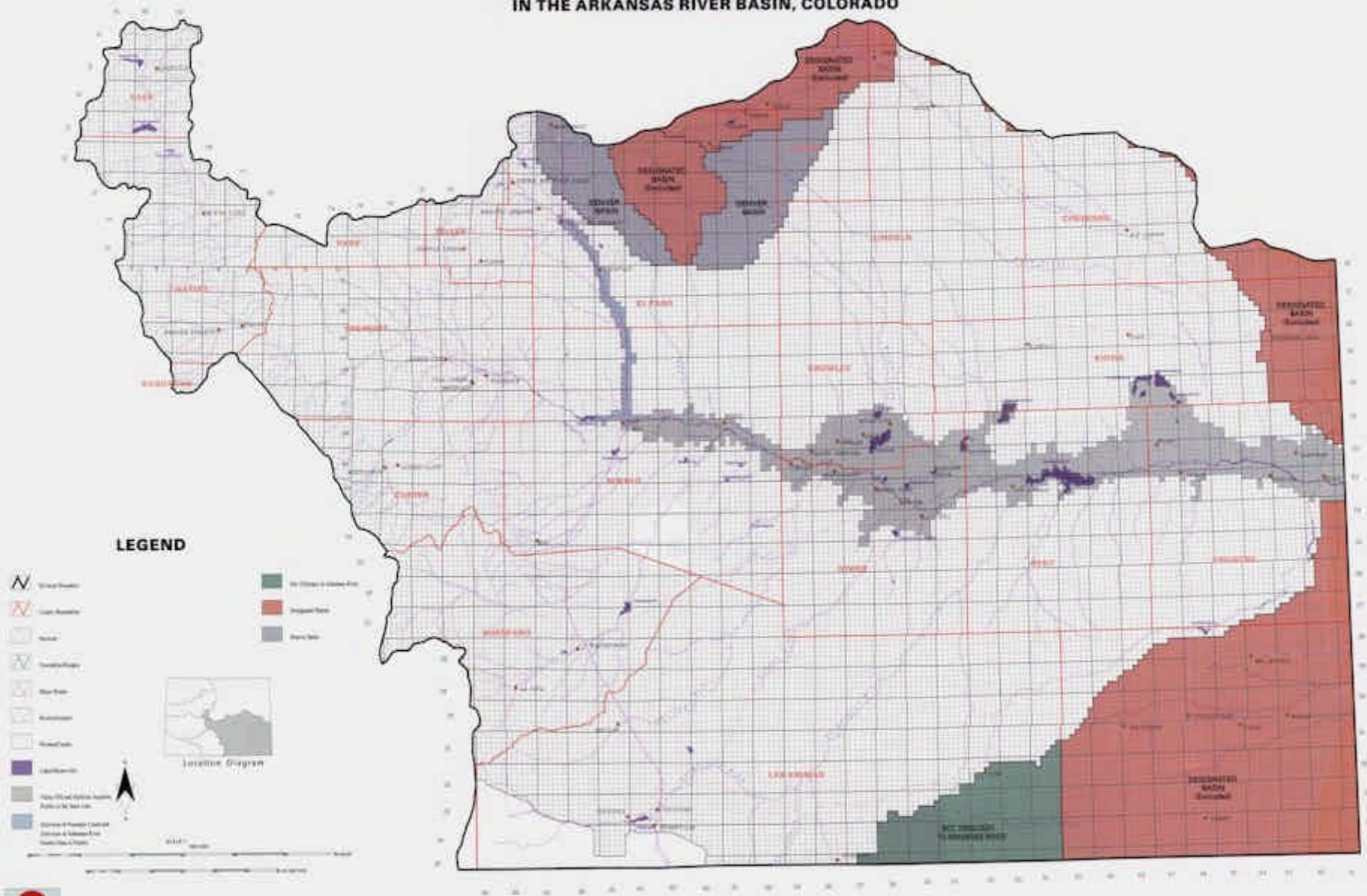
- Rules should address injury to Colorado Water Rights as well as Stateline flows
- Look to existing groups and new entities to provide augmentation water
- Augmentation water may be supplied by conversion of existing irrigation supplies

1996 Amended Use Rules

- Require tributary wells to replace depletions
- Allows for approval of plans to replace depletions
 - Sustaining water rights allowed 10 years to change in court
 - Include standard depletion factors based on irrigation method
 - Requires monthly reporting of diversions / power co's to provide data
- Require well users to submit info on water use (ie irrigation method)
- Supported by legislature, 9.5 FTE

MAP OF ARKANSAS RIVER BASIN, COLORADO

FOR
 AMENDED RULES AND REGULATIONS GOVERNING
 THE DIVERSION AND USE OF TRIBUTARY GROUND WATER
 IN THE ARKANSAS RIVER BASIN, COLORADO



LEGEND

- Water Feature
- Canal Boundary
- Road
- Transportation
- Water Right
- Reservoir
- Road/Canal
- Irrigation
- No Diversion or Storage Area
- Designated Area
- Designated Area
- Groundwater Diversion Area



Operations Under 1996 Use Rules - Plan Approval

- Plans due March 1, April 1 begins plan year
 - Estimates of monthly pumping
 - Calculation of Depletions - timing and location
 - Evaluation of Water being used for augmentation
 - Demonstrate adequacy to replace depletions

Operations Under 1996 Use Rules - Monthly Operations

- Process Power Data & User Supplied Data to determine pumping
- Multiply by depletion factor to determine well head depletions
- Run accounting model for stream depletions
- Operate as needed to deliver replacement water

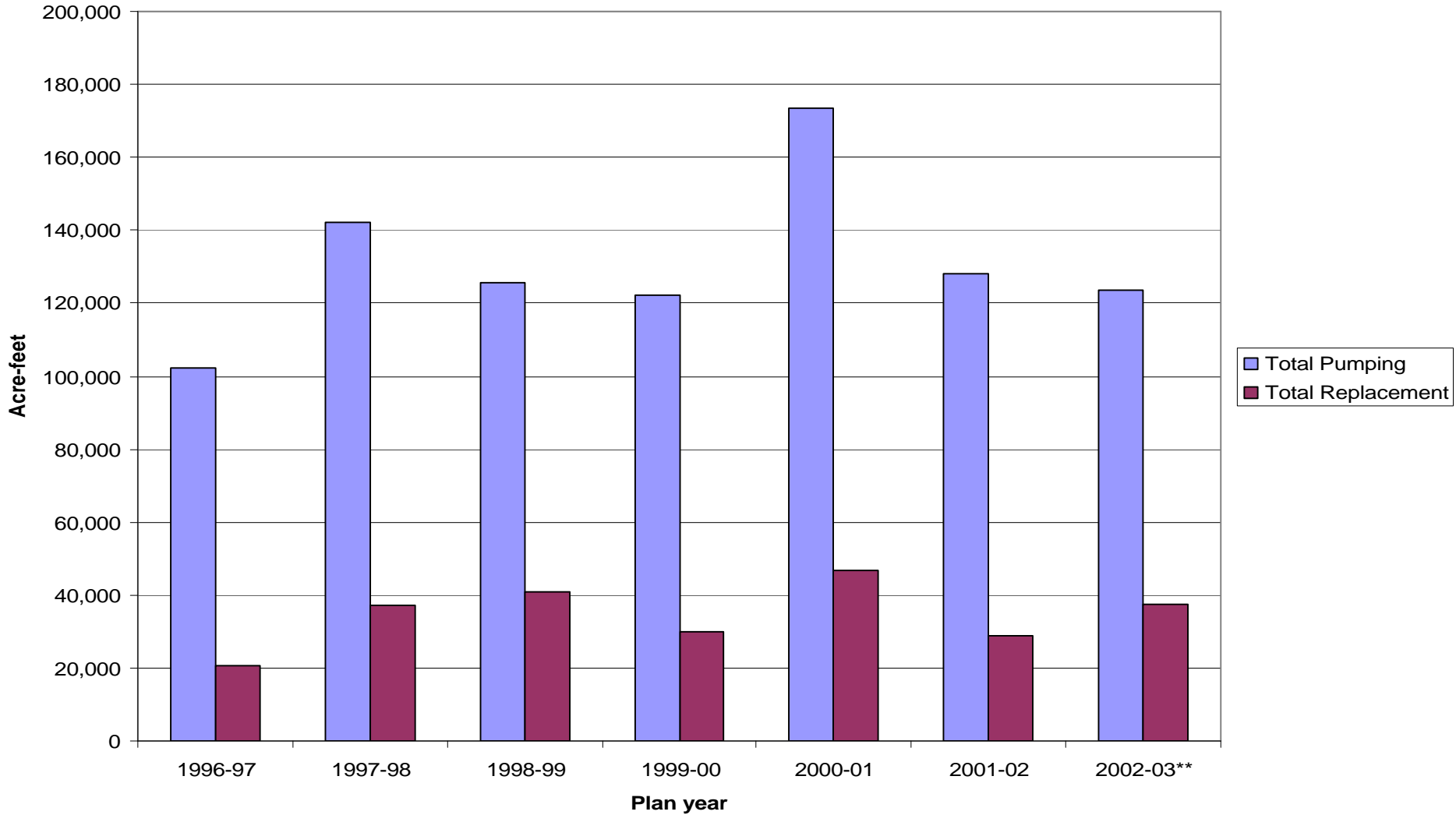
Summary of Arkansas River Replacement Plans

Plan Year	Number of Active Wells*	Number of Active Rule 3 Irrigation Wells	Estimated Total Pumping	Total Pumping	Total Rule 3 Irrigation Pumping	Pre-Compact Allocation	Replacement to Colorado Senior Water Rights	Replacement to Usable Stateline Flows	Total Replacement
1996-97	1,499	1,100	158,147	102,297	73,891	11,277	10,753	10,070	20,823
1997-98	1,429	1,101	203,182	142,158	112,025	11,145	26,542	10,486	37,028
1998-99	1,444	1,072	184,697	125,564	96,123	10,965	30,097	10,888	40,985
1999-00	1,386	1,006	184,200	122,158	94,051	10,323	25,343	4,676	30,019
2000-01	1,420	1,046	183,530	173,659	141,741	9,921	34,846	11,819	46,665
2001-02	1,398	1,031	197,304	128,154	108,928	10,928	21,548	7,433	28,982
2002-03**	1,501	1,090	170,224	123,411	103,563	10,946	28,798	8,678	37,476
Averages 1996-97 to 2002-03	1,440	1,064	183,041	132,332	104,460	10,760	24,855	9,229	34,084

* Does not count all wells when multiple wells were measured under a common metering method

** Year-to-Date (April, 2002 - November, 2002)

Total Pumping vs. Total Replacement



Measures of Program Success

- Special Master's endorsement '96-'98
- Wells continued to operate during '01-'02 drought
 - Without serious objection from senior SW rights
 - Within limitations
 - Without widespread defiance

Critical Factors

- Consensus that rules are necessary
- Comprehensive knowledge of well population
- Rules must have basis in equity -measurement
- Input = support
- Adequate resources to do the job