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## Opening Session: In the Beginning

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increase statewide in the same time period. However, agriculture is part of the historic culture of the Counties. The report referenced a survey conducted by CSU in Gunnison County that found only fifty-four percent of the winter visitors would return if one-quarter of the ranch land was converted to a different use. Townsend argued that much of the economic value of agriculture to the Counties is intrinsic rather than qualitative. Additionally, the future development of energy resources in the Counties will likely depend on water supply. Energy extraction from sources like oil shale, natural gas, coal, and uranium in the Counties will place an additional demand on water, which has the potential to trigger adverse economic effects.

Townsend concluded that the West Slope is already fully compromised from past transmountain diversions. Plans for future diversions without mitigation measures to address the environmental impacts of lower stream flows, degradation of water quality, degradation of water clarity, and compromised aquatic environment will have adverse economic impacts on the entire State, not just the Counties. A full copy of the report prepared by Coley/Forrest, Inc. is located at [www.nwccog.org](http://www.nwccog.org).

*Joseph Norris*

#### OPENING SESSION: IN THE BEGINNING

This year's conference theme was to learn from the past. The opening session speakers discussed how weather, population trends, and politics have influenced Colorado's water history. The Year of Water is designed to be a year of action, and how Coloradans plan for the future should be informed by what has been learned from the past.

#### *Transforming Hindsight into Foresight*

Patty Limerick of the Center for the American West wrote, *A Ditch in Time: Denver, the West, and Water*, a book on the history of Denver and its relationship with water, which is to be released by Fulcrum Publishing in 2012. In her presentation, Ms. Limerick identified the characteristics of the 1930s-era West that encouraged a spirit of action in water development. She then addressed how Coloradans can learn from the spirit of the 1930s in addressing today's water problems.

Strong political leadership was a defining characteristic of the 1930s. New Deal legislation enabled dynamic water development programs at all levels of government. Despite the financial pressures of Great Depression, citizens expressed widespread enthusiasm for public works projects. During droughts, political leaders were willing to ask citizens to cut back on consumption partially because it was expected that the end of the drought would allow citizens to return to higher consumption. Accordingly, in the 1930s, a reduction in the quantity of water available for consumptive use was not viewed as a reduction in the quality of life, the way it would be viewed today. When looking to the future, Ms. Limerick encouraged Coloradans to learn from the lessons of the 1930s when con-

sidering how water is characterized (for example, as a static entitlement or as something more flexible) and how water problems should be addressed.

Ms. Limerick also shared several concepts that Coloradans must embrace to more effectively solve water problems. First, she urged Coloradans not take engineers for granted. Instead, water decision makers can improve engineering and conservation practices by encouraging better communication between engineers and society. Second, recognize that water is intrinsically an issue of conflict, but also that it is too important to fight over. Ms. Limerick disagrees with the infamous phrase that "water is for fighting over." Instead, she submitted that water is for negotiating and compromise. Next, she urged that the embedded nature of water transfers through food must be considered in order to best understand water use in society; that Coloradans must embrace the concept of "virtual water." Virtual water addresses how much water is used to produce a specific food item or create a product, at all steps in the production process. Ms. Limerick asserted that when people understand that their water use necessarily includes not just water consumed directly, but also embedded "virtual water," they will be better equipped to make purchasing decisions that reduce overall water consumption. Finally, Ms. Limerick pointed out that generational transitions are a perfect opportunity to change the status quo for water use in society. Young people are most willing to change because they are not yet stuck in their water habits.

#### *Lessons from Colorado's Recorded Weather History*

Nolan Doesken, the Colorado State Climatologist from the Colorado Climate Center in the Atmospheric Science Department at Colorado State University, spoke next. Mr. Doesken presented on the history of collecting weather data in Colorado and how this information has historically been used.

In the 1870s and -80s, scientists began regularly collecting weather data in Colorado. Denver itself began taking weather measurements in November 1871 and specifically at Pike's Peak in 1873. Colorado Agricultural College, now Colorado State University, began important scientific research on Colorado's climate and water resources in the 1870s. But before the weather stations were even built, railroad publicists began promoting Colorado's three hundred days of sunshine, lush vegetation, and abundance of fresh water (which would prove only partially true).

By 1885, scientists had collected enough data to form an initial model of the climatology of Colorado. The State was classified as semiarid with highly variable precipitation. The Colorado state legislature created the Colorado State Weather Service in the late 1880s and appropriated the Weather Service \$2000 to install weather stations across the state to improve monitoring. The weather stations were installed by 1890, but the Weather Service was disbanded that same year when the U.S. Department of Agriculture took responsibility for climate monitoring and reporting. By 1918, U.S. Department of Agriculture reports indicated that Colorado's climate had great variability but was generally stable.

During the 1920s, favorable climate conditions and mechanized farming equipment spurred agricultural growth. But the early 1930s brought extremely hot, dry weather followed by major flooding in 1935. This crisis prompted climate monitoring improvements and resulted in a better understanding of the amount of water in the state. The Works Progress Administration then began tracking and gathering climate data in Colorado. In 1939, for the first time, a new precipitation map of Colorado showed the relationship between elevation and precipitation. Snow surveys also began in the 1930s to help track the amount of water embedded in snowpack. Just as climatologists in the 1930s recognized the importance of observing trends and studying data, climatologists today continue to observe and learn about Colorado's climate.

### *Choosing a Place to Live: The "Why" of Colorado's Population Trends*

Elizabeth Garner, a demographer at the State Demography Office in the Colorado Department of Local Affairs, was third to speak. Ms. Garner addressed the trends that have influenced population growth in different areas of Colorado over time.

Historically, Colorado's population has grown when economic opportunities trigger migration into the state. In 1870, Colorado had a population of just 40,000 people; by 1900, the population had increased to 540,000, a 1250% increase, with an annual average growth rate of 9% over 30 years. In the late 1800s, Colorado's economy was dominated by hunting, trade, mining, agriculture, and rail construction. By 1900, the male to female ratio in Colorado had started to balance out, indicating that families rather than lone workingmen were settling in the state. The five most populous Colorado counties in 1900 were Arapahoe, Pueblo, El Paso, Teller, and Las Animas.

Between 1900 and 1920, agriculture, particularly in the Eastern Plains, drove Colorado's population growth as the number of farms increased from 24,000 to 59,000. Colorado's population also increased from 540,000 to 940,000 in these two decades. During this time population peaked in Baca, Bent, Cheyenne, Crowley, Kit Carson, Kiowa, and Lincoln counties thanks to continued growth in agriculture, mining, manufacturing, and tourism. By 1920, the five most populous Colorado counties were Denver, Pueblo, Weld, El Paso, and Las Animas.

The 1920s to 1940s marked the slowest-growing decades in Colorado history. The slowed growth rate is attributed to the mining busts in which Las Animas County lost 16% of its population, and the Dust Bowl, during which the number of farms declined by 14%. Despite this slowed rate of growth, the population in Colorado still grew overall from 940,000 to 1,123,000. The Denver metropolitan area also grew as its economy shifted away from agriculture toward manufacturing and trade.

Ms. Garner next addressed whether the past is a good indication of the future for Colorado's population trends. Today, 60% of Colorado's population comes from outside the state. Colorado's population growth is still driven largely by the economy and the State especially attracts young people looking for available jobs. The Front Range is the largest

population region in the State, but the Western Slope is the region with the highest “family” growth. Colorado’s 2010 official population was 5.08 million, and the anticipated population in 2040 is approximately 7.8 million.

### *Colorado Politics through the Decades*

Last to speak was Floyd Ciruli, a pollster and political analyst at the firm Ciruli Associates. Mr. Ciruli presented a history of the leaders and events that established the major trends in Colorado water resource management.

Mr. Ciruli identified the following ten major themes in Colorado water resource management history: boom and bust; floods and droughts; upper and lower basins; Washington D.C. and Colorado; Republicans and Democrats; Western Slope and Front Range; agriculture and cities; recreation and agriculture or cities; Hansen and Taylor; and Colorado Water Conservation Board and Colorado Water Congress. Since the 1930s, political and policy tensions between each major set of interests have shaped Colorado’s water.

Mr. Ciruli identified three types of leaders were instrumental in shaping Colorado water management: Colorado’s governors, U.S. Secretaries of the Interior and members of the U.S. House of Representatives who sat on key House Committees, and finally, the group of individuals who secured the money for Colorado’s water projects. According to Mr. Ciruli, four men in particular—Ed Taylor, Clifford Stone, Frank Delaney, and Charles Hansen—made their mark in Colorado water history by leading the funding of the 1937 Colorado-Big Thompson Project.

Mr. Ciruli next provided a timeline of the key events in Colorado water policy and politics. Finally, Mr. Ciruli presented the following eight issues that represent the current policy and political divide on water: (i) diversion out of basin versus no diversion out of basin; (ii) new structures versus no structures; (iii) some financial or environmental mitigation versus prohibitive mitigation; (iv) conservation and reuse as part of an overall strategy versus only conservation and reuse; (v) recognize new water users like the environment or kayaking versus the traditional concept of beneficial use; (vi) using aquifers last versus using aquifers first; (vii) allowing purchase from agricultural water versus no purchase or removal of water from agriculture; and (viii) Colorado River entitlement to store and use versus no entitlement to store and use.

In sum, by understanding the historical political and water resource management trends, Coloradans will be better able to make the decisions that will shape Colorado’s water management future.

*Jessica Bidgood*