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COLORADO WATER LAW: AN HISTORICAL OVERVIEW

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TWO RIVERS

Thomas Hornsby Ferril

Two rivers that were here before there was
A city here still come together: one
Is a mountain river flowing into the prairie;
One is a prairie river flowing toward
The mountains but feeling them and turning back
The way some of the people who came here did.

Most of the time these people hardly seemed
To realize they wanted to be remembered,
Because the mountains told them not to die.

I wasn't here, yet I remember them,
That first night long ago, those wagon people
Who pushed aside enough of the cottonwoods
To build our city where the blueness rested.
They were with me, they told me afterward,
When I stood on a splintered wooden viaduct
Before it changed to steel and I to man.
They told me while I stared down at the water:
'If you will stay we will not go away.'

Introduction

Rivers, plains, and mountains make us Coloradans. Residing on one of two sides of this Continent's backbone, some of us look to the West to the Great Divide, others to the East. When our hearts follow our eyes, when we think about this magnificent land and our fellow Coloradans on the other side, we truly gain the power of this rivered place. Thomas Hornsby Ferril called on us—his fellow Coloradans—to remember and to live our origins: strength of mountain stream, hope of prairie stream.

Beneficial use and preservation are two primary public policies which guide western natural resource law; they are the two chambers of our western heart, the two lobes of our brain. Colorado water law establishes the right of water appropriation to serve public and private needs. New uses and changes in existing water rights continue to exist and evolve within the framework of the water law. The preservation interests are addressed primarily by state and federal land use law and environmental regulatory law, such as is evidenced by the acquisition of open space and parks by public entities, as well as federal land reservations for national parks, monuments, wilderness areas, and wildlife preserves.

Western prior appropriation water law is a property rights-based allocation and administration system, which promotes multiple use of a finite resource. The fundamental characteristics of this system guarantee security, assure reliability, and cultivate flexibility. Security resides in the system's ability to identify and obtain protection for the right of use. Reliability springs from the system's assurance that the right of use will continue to be recognized and enforced over time. Flexibility emanates from the fact that the right of use can be transferred to another, subject to the requirement that other appropriators not be injured by the change.

Dean Frank Trelease described an "ideal water law" as being a property rights system of uses, which rewards initiative, promotes reliable planning and decision making, and subjects those property rights to regulation in the public interest:

An ideal water law should give a water right those characteristics that will encourage and enable people to make the best decisions as to water use in their own interests and hence ultimately in the public interest. Private uses of water should be based upon property rights not dissimilar to the property rights in more stable and tangible assets, and like other property rights they should be subject to regulation in the public interest.

Colorado water law illustrates the public interest at work through the interplay of two forces. On the one hand, individual and public entity initiative secure water supplies for beneficial use in a system of property rights creation. On the other hand is the enforcement of those rights, subject to local, state, and federal regulation aimed at meeting societal choices made by legislative means.

This article focuses on major historical and legal themes that emerge from Colorado's water experience. It is accompanied by an appendix intended to highlight the major historic, statutory, and case law events that give structure to Colorado water law.

Custom and Necessity in the Colorado Territory

President Thomas Jefferson wrote to Meriwether Lewis that "[t]he object of your mission is single, the direct water communication from sea to sea formed by the bed of the Missouri & perhaps the Oregon." His use of the term *perhaps* suggests that Jefferson, the scientist, was at

work. But Jefferson's mistaken belief in a mighty waterway of commerce crossing an entire continent stemmed directly from his grounding in the law of running water, and from his assumption that the geography of well watered climes also existed in the Louisiana Territory.

The Justinian Code of the fifth century enunciated what we recognize today as the riparian doctrine: running water is the property of the public for use by traders and fisherman, whereas the banks of the river are the property of the adjoining landowner. The law of running water was inclusive of a riparian landowner's right to make a *de minimus* use, or reasonable use, for milling and domestic purposes. Of course, this use was subject to the water's return to the stream without substantial alteration to either its quality or quantity. This law of running water was carried into the English common law. But as the waters ran out in the vast mountainholds of the new American West, Lewis and Clark would ultimately ditch their boats and trek by foot and horse. So, too, would the western territories ultimately ditch riparian water law as inapplicable to their climate and use.

Of the public lands secured to the United States by the Louisiana Purchase of 1803 and the 1848 Treaty of Guadalupe Hidalgo, Colorado was carved out of the then-existing Kansas and Utah Territories when Kansas became a state in 1861. Thirty-seven percent of Colorado still resides in federal ownership. The settlers of the new frontier were invited onto the public domain through policies enacted by the federal government aimed at securing the occupation of the continent by citizens of the United States. One of these settlers, Benjamin Eaton, was to have a profound role in early Colorado water use.

After gold was discovered at the confluence of Cherry Creek and the South Platte River, Eaton traveled from Iowa to the very western part of the Kansas Territory, journeying with an 1859ers hope of locating vast riches. Born into an Ohio farming family, he viewed canals as a means by which to float boats and barges towards the mighty rivers rather than a means by which to water crops. First attempting to make a life in the Front Range mining camps, Eaton eventually struck out for the San Juans in the dead of winter by way of the Sangre de Christos. The promise of quick riches was soon played out. However, in the course of his introduction to the extremes of mountain weather and living, Eaton came to learn how water could be re-routed from a more abundant stream for use at water deficient mining locations.

Eaton ventured away from the Colorado mining camps to work the irrigated farm land of the Maxwell Land Grant outside Cimarron in northern New Mexico. Tapping into a rich Southwestern water heritage, he soon added to his growing appreciation for Western water usage. It was in New Mexico that he was introduced to *acequias*, the community ditches that had utilized gravity to deliver water to the fields of northern New Mexico since the founding of Santa Fe in 1609. By 1700, an estimated sixty *acequias* were operating in New Mexico, with an additional one hundred in the 1700s, and then three hundred more in the 1800s. Because the official seats of government were located far away in Spain and Mexico, expediency dictated that local custom become the law in a pioneering New Mexico. In order to serve local conditions, many equitable principles of community cooperation were applied when distributing water. Of course, these early Spanish settlers did not invent Southwestern irrigation. Native peoples of the Americas had practiced irrigation long before the Spanish entrance into the New World. Indeed,

a Spanish explorer entering New Mexico in 1583 reported finding "many irrigated corn fields with canals and dams" built by Pueblo Indians.

Eventually, Benjamin Eaton left the New Mexico territory and began to draw on his experiences with the New Mexican *acequias*. In 1864, he dug a direct flow ditch from the Poudre river to his farm. He helped other settlers in Greeley in the construction of the Union Colony No. 2 Canal in the early 1870s. It was Eaton who oversaw the construction of the incredibly long and wide Larimer and Weld Canal in Northern Colorado. He then assisted in laying out the High Line Canal that would run through the Denver basin. As a member of the Territorial and State Legislatures, Eaton worked to shape water legislation, including the Adjudication Acts of 1879 and 1881. He served as Governor from 1885-87, and later founded the town of Eaton, to which he brought a sugar beet factory.

Eaton was just one of many Colorado pioneers. Throughout the state, farms and towns took shape interdependently. The Homestead Act of 1862 was instrumental in promoting settlement on the public domain, and as the mining camps disappeared, communities sprang up as agricultural activity and productivity increased. Soon the valleys of the Arkansas, the Gunnison, the San Luis, and the Grand, blossomed. The homestead entries in the State of Colorado totaled 107,618, and covered 22,146,400 acres of land. Only Montana and North Dakota experienced more entries.

Settlers of the West favored independent action and feared corporate monopolies. The Jeffersonian ideal of strong families civilizing the continent through farming animated the Homestead Law as well as the Western water doctrine of beneficial use, whose principles spurned waste and speculation. Water served the public interest as that interest was then perceived in Colorado. In 1861, the Territorial Legislature provided that water could be taken from the streams to lands not adjoining the waterways. Thus occurred, at the earliest opportunity, Colorado's departure from the common law riparian doctrine and its reasonable use corollary. In 1872, the Colorado Territorial Supreme Court recognized rights of way by reason of the "natural law" of custom and necessity. No one could now dispute that water could be carried to the place of use through intervening lands owned by others.

Congressional Deference and the Colorado Constitution

Through the 1866 Mining Act, the 1877 Desert Lands Act, and subsequent legislation, Congress provided that states and territories could establish their own water laws and create property rights to unappropriated water on and off the federal lands:

What we hold is that following the act of 1877 if not before, all non-navigable waters then a part of the public domain became *publici juris*, subject to the plenary control of the designated states, including those since created out of the territories named, with the right in each to determine for itself to what extent the rule of appropriation or the common-law rule in respect of riparian rights should obtain.

The oft-reiterated congressional choice not to adopt a federal water law system reflected the nation's pro-settlement agenda and its preference for federalism. Just like the appropriation doctrine itself, congressional deference to state water law choices arose out of the westward-leaning frontier experience.

The Colorado Constitution of 1876 declared that unappropriated water is "the property of the public . . . dedicated to the use of the people of the state, subject to appropriation," that the right to appropriate the unappropriated waters of the natural streams of the state for beneficial use in order of priority shall never be denied, and that rights of way for the conveyance of water by ditches, canals, and flumes can be secured for agricultural, domestic, mining, and manufacturing purposes from the stream across intervening public, private, or corporate lands by payment of just compensation.

Riding on the notoriety of his audacious Colorado River expeditions of 1869 and 1871, John Wesley Powell informed Congress of the need for an irrigation survey to locate reservoir sites, and the need for recognition of the "natural law" of appropriation and use of water arising by custom and necessity in the arid lands west of the hundredth meridian. Powell wrote that "monopoly of land need not be feared. The question for legislators to solve is to devise some practical means by which water rights may be distributed among individual farmers and water monopolies prevented." In Colorado, neighboring farmers also recognized this critical fact and began to form mutual ditch companies for water delivery. A share in a mutual ditch company represents the ownership *pro rata* of the water rights and the waterworks of that company. In contrast, carrier ditches were corporate entities formed to construct and operate waterworks for profit. Under the state constitution, they were made the subject of county commission rate regulation.

Colorado water law often exhibits its anti-speculation, pro-individual public policy choice. Within the context of state water law, governmental regulation is employed for the primary purpose of identifying and administering rights which water users enjoy by virtue of appropriation for beneficial use under Colorado's Constitution and statutes. Colorado Supreme Court case law and the statutes of the Colorado General Assembly are the primary sources which define and describe this state's water law. Of course, United States' public land law, natural resource law, and environmental law have also had a profound effect on water development and use in Colorado.

Enduring and Evolving Principles of Beneficial Use

A water right is a property right that arises solely by the act of placing water, theretofore unappropriated, to the appropriator's beneficial purpose. Its place of diversion and use may occur in different watersheds. Successful application to a beneficial use is required, regardless of the method of capture or conveyance. The essential element and value of a water right is its priority for beneficial use to the exclusion of others not then in priority. Beneficial use, the concept of fructifying the land and its product through human labor, is the means by which a water use

ripens into a vested water right. Over an extended period of time, a pattern of historic diversions and use under the decreed right at its place of use will mature and become the measure of the water right for purposes of change. The right is typically quantified not in a flow measurement of cubic feet per second of diversion, but rather in acre-feet of water consumed. Beneficial use is not a defined term in the Colorado Constitution, but the statutory definition of "beneficial use" is the "use of that amount of water that is reasonable and appropriate under reasonably efficient practices to accomplish without waste the purpose for which the appropriation is lawfully made."

An efficient means of diversion suitable to the use must be effectuated. For example, a municipality diverting a domestic water supply cannot utilize a large, open and leaky structure for conveyance to a location remote from the source of supply. Indeed, an irrigator utilizing an inefficient surface diversion may be required to employ wells to effectuate the diversion if a junior appropriator who might benefit undertakes to pay the expenses involved.

Following application to beneficial use, unconsumed water in the form of return flows must be made available to fill subsequent appropriations. The owner of a water right has no right as against a junior appropriation to waste water or to divert more than can be used beneficially. Nor may that owner extend the time or quantity of diversion and use above that for which the appropriation was made. Imported or developed water, such as trans-mountain or non-tributary water, may be consumed to extinction for beneficial purposes. Reservoirs may be constructed in the natural bed of a stream, provided that their operation does not injure senior water rights.

Discharge of pollution by a senior appropriator which impairs junior beneficial uses, such as mining waste, cannot be justified as a beneficial use of water under the senior appropriation. Extended non-use or intentional acts may result in an abandonment of either the whole water right, or a part thereof.

Colorado case law and statutes have emerged which recognize myriad purposes. These include traditional agricultural, stock watering, domestic, municipal, commercial, and industrial uses, power generation, and flood control uses, as well as new and ever-evolving uses such as minimum stream flow appropriations by the Colorado Water Conservation Board, dust suppression, mined land reclamation, boat chutes, fish ladders, nature centers, fish and wildlife culture, recreation, residential environment, release from storage for boating and fishing flows, and augmentation of depletions in order to divert water out-of-priority for the purpose of making a beneficial use which otherwise would be curtailed.

Only the State Water Conservation Board may obtain an appropriation without a means for capturing, possessing and controlling water. This exception was made for the purpose of preserving the natural environment to a reasonable degree. The Board may appropriate water for minimum flow and lake levels in priority, and it may also buy or accept the donation of other rights for change of use to instream flow. The Water Conservation Board holds instream flow rights on approximately 8,000 miles of Colorado streams.

Adjudication of Rights for Administration of Priorities

So as to assure that rights may be administered in relation to each other under varying conditions of available supply, a priority system of water rights for beneficial use requires a mechanism for determining the source of supply, type of uses, date and amount of appropriation, location and identity of the diversion structure, and place of use.

Soon after statehood, Colorado undertook the identification of existing rights and claimed rights through a litigation process. The Adjudication Acts of 1879 and 1881 provided: (1) for the identification of irrigation rights by priority and quantity through judicial decree proceedings, and (2) for the administration of these court judgments to occur under the watch of state water officials. This intermixed governance of water rights by the state legislative, executive, and judicial branches continues to this day under the provisions of the State Constitution and statutes. Of course, the act of an appropriator placing water to beneficial use alone can bring into existence a Colorado water right.

Government surveys of sections and townships had not yet been completed when settlers made their agricultural claims under the 1879 and 1881 Adjudication Acts. They estimated their present and future need for water. The result was that considerably more water was allotted in some instances than actually utilized, and priorities were recognized for more than the flow of the stream. Because claims not yet perfected do not enjoy the full status of being water rights, courts began to distinguish between "conditional" rights and those water rights arising by application of water to beneficial use.

Failure to timely adjudicate a water right results in its postponement to those rights which have been adjudicated. Priorities are now set according to the year in which the application for a decree is filed and then ranked in order of the date of appropriation. The 1969 Water Right Determination and Administration Act created a system of seven water divisions with water judges and division engineers assigned to adjudicating and administering decreed rights to the natural streams and all surface and groundwater tributary thereto.

A conditional water right, pursued diligently to completion, preserves a priority which relates back to the first step initiating the appropriation, assuming the use is perfected. An absolute decree: (1) confirms that amount of depletion from the stream which can be taken in priority as a property right, and (2) entitles the subsequent operation of the right in the amount of its decreed quantity, so long as the water is applied beneficially. Water officials enforce decrees of the courts, not unadjudicated claims.

Changes of Water Rights

Not until 1903 did the Legislature provide for the adjudication of domestic and all uses other than irrigation. Because of its relatively small consumptive burden and its obvious necessity for sustenance of farmers, miners, laborers, and residents of nascent towns, the use of domestic water was considered incidental and non-injurious to agricultural use. Also, the Colorado Constitution might have appeared to provide that domestic use could supersede all other uses, regardless of appropriation date: "[W]hen the waters of any natural stream are not sufficient for the service of all of those desiring the use of the same, those using the water for domestic purposes shall have the preference over those claiming for any other purpose."

The rise of cities claiming the domestic use preference to supersede other water rights resulted in two important legal developments: (1) water rights can be sold and changed from one use and location to another, and (2) senior vested water rights cannot be taken or superseded without payment of just compensation. In 1891, the Colorado Supreme Court determined that agricultural water rights could be sold to a city provided that the water rights of others are not injuriously affected by the change. The court reasoned that running water in its natural course is "the property of the public." However, a "right . . . to its use . . . will be regarded and protected as property" "The exclusive right to divert and use the water . . . may be transferred and conveyed like other property." Invoking the Fourteenth Amendment of the United States Constitution, and the takings and due process clauses of the state constitution, the court held that a city could not rely upon the domestic water preference clause of the Colorado Constitution to supersede the priority of a senior appropriation unless the city paid just compensation for the senior right and proceeded in accordance with authorizing eminent domain legislation.

The Colorado Supreme Court also held that changes of water rights require notification and the opportunity to be heard so that those who might be adversely affected may be protected. A water rights transfer is limited in time and quantity to the amount of water

historically withdrawn and consumed over time in the course of applying water to beneficial use under the tributary appropriation without diminishment of return flows.

Progressive Conservation

The progressive conservation movement of the late nineteenth and early twentieth century had its most dramatic test of conflict and durability in Colorado. The principal subject was water. Again, natural law and gravity played strongly into law, policy, and politics. President Grover Cleveland, followed by President Theodore Roosevelt, withdrew millions of acres of forest land from settlement under the Homestead Act. Senator Henry Teller of Colorado literally screamed for the federal lands in Colorado to be transferred to state and private ownership. John Muir of California argued just as passionately for preservation and non-use of the public lands. Gifford Pinchot, Roosevelt's progressive forester, argued eloquently for the scientific management of timber so as to preserve and enhance water supplies. Because the forested watersheds were the site of numerous ditches, dams, reservoirs, and settled water rights utilized for the capture, possession and control of water for a beneficial use of federal property by both farmers and

municipalities, farmers and municipalities in Colorado, dependent for their water on continued access to the forests, supported Roosevelt and Pinchot:

The attitude of Coloradans toward Roosevelt and Pinchot clearly illustrated the divergence of opinion that existed in the state over the conservation issue. For while the two men were accorded widespread contempt in the Colorado backwoods, they also commanded a large following all across the state. Roosevelt's support came primarily from urban centers, plains cities such as Denver, Colorado Springs, and Pueblo and Western Slope settlements like Delta and Montrose, areas dependent on the preservation of mountain watersheds for irrigation and water supplies.

The pledge to Colorado and the West that congressional forest reservations would not operate in derogation of state water law was enacted as a provision of the National Forest Organic Act of 1897. Nearly a century later, the United States Supreme Court relied on this provision to reject the notion that the National Forest reservations were intended to create federal instream flow rights. As of 1973, the Forest Service was administering 14.3 million acres of Colorado timberland.

The Reclamation Era

Progressive conservationists viewed water storage as a matter of the public interest: "The movement to construct reservoirs so as to conserve spring flood waters for use later in the dry season gave rise both to the term 'conservation' and to the concept of planned and efficient progress, a concept which lay at the heart of the conservation idea." With its provisions for both storage and distribution works, farmers in Colorado embraced the 1902 Reclamation Act. These works would be constructed and financed by the federal government subject to low interest repayment of a portion of the capital and operating costs. As with the National Forest Organic Act, the Reclamation Act preserved the application of state water law.

Whether constructed with federal funds or other financial resources, reservoirs were essential to Colorado's economic well-being. Because stream levels radically drop after the mountain snow melt, Colorado farmers found that direct flow water rights could not supply the "finish water" in August and September before the harvests were in. The growing municipalities were junior in time and right to the senior agricultural ditches and required year round supply. Water storage rights allowed unappropriated water to be captured and preserved for the time of need. Farmers and small towns could not afford the construction of significant and expensive waterworks for storage and long distance conveyance. A revision to the Reclamation Act allowed municipal use to be added as a component of Bureau of Reclamation Reservoirs. The Reclamation Era thus took Powell's survey of water storage sites into the Twentieth Century—first for agricultural use, and then for multi-purpose municipal, industrial, power, and recreational use.

The Reclamation Act gave rise to Colorado irrigation districts, water conservancy districts, and water conservation districts. These districts were empowered by the General Assembly with contracting and financing authority designed to enable local sponsors to enter into reclamation

partnerships with the federal government. The earliest projects served Western Slope irrigation uses, such as the Uncompahgre Project on the Gunnison and the Grand Valley Project on the Colorado. The immediate result was that irrigated land on the Western Slope doubled from three hundred thousand to six hundred thousand acres. Much of the effort by Colorado Congressmen Ed Taylor and Wayne Aspinall on behalf of the state was to ensure that citizens on the Colorado River side of the Divide would also benefit.

The Colorado–Big Thompson Project (C–BT) was the first reclamation project to pierce the Continental Divide. It included the Adams Tunnel for bringing water to the farms, cities, and businesses of the seven counties lying in the northeastern part of the state. In 1937, an historic agreement between Western Slope and Eastern Slope water users provided for the construction and operation of Green Mountain Reservoir for the benefit of the Western Slope as a mitigation plan in connection with Eastern Slope diversions through the C–BT Project. The Fryingpan–Arkansas Project of the Bureau of Reclamation and the Southeastern Water Conservancy District, which included Reudi Reservoir for the Western Slope, followed suit.

As a result of this 1937 agreement, the Colorado Legislature created the Colorado Water Conservation Board, the Colorado River Water Conservation District, and the Northern Colorado Water Conservancy District. Other reclamation projects followed. The Rio Grande Water Conservation District sponsored the Closed Basin Project while the Animas–La Plata Water Conservancy District and Southwestern Water Conservation District are attempting to implement the Ute Indian Water Rights Settlement—a settlement predicated on Bureau of Reclamation construction of the Animas–La Plata Project. To ensure Upper Colorado River Basin water uses while Colorado River compact deliveries are made to the Lower Basin States of Arizona, Nevada, and California, the Aspinall (Curecanti) Unit of the Colorado River Storage Project exists outside of Gunnison to operate in connection with Navajo Dam in New Mexico, Glen Canyon Dam in Utah, and Flaming Gorge Dam in Wyoming. Were Major Powell to have returned in 1951, he would have "g[otten] the impression that resurrection morn had really dawned."

Reclamation reservoirs form only a part of Colorado and the West's water supply infra-structure. As of 1990, Colorado reservoirs numbered more than 1,900 statewide, with the capability of storing 8.85 million acre feet of water.

Great and Growing Cities

In 1908, the Colorado Supreme Court reiterated that cities could not divert water belonging to senior priorities for domestic or other uses without paying just compensation for the taking of property. The court also cautioned that municipal users must be efficient: "the law contemplates an economical use of water Water is too valuable to be wasted, either through an extravagant application for the purpose appropriated or by waste resulting from the means employed to carry it to the place of use."

A 1913 case established that one town could not prevent another town's water pipeline from passing through its boundaries. The court determined that any person, corporation, or public

entity has a right of condemnation under the Colorado Constitution for the conveyance of domestic water, but the town through which the pipeline passes may reasonably regulate the manner in which the pipeline is maintained.

Ownership by a city of its public works, including water, was another goal of progressive conservationists. Denver's purchase of the Union Water Company and its establishment of a citizen water board in 1918 had the primary aim of converting a privately owned monopoly into a public asset. Denver's Moffat Tunnel, built between 1922 and 1928 for the dual purpose of carrying the railroad and Denver's Fraser River and Williams Fork River water, preceded the Northern District's Adams Tunnel, which was commenced in 1944. Denver's Dillon Reservoir on the Blue River, a reservoir which stores water for delivery through the Roberts Tunnel, is junior to Green Mountain Reservoir and the Colorado-Big Thompson project. Decades of litigation between Denver on the one hand, and the United States, the Northern District, and the Colorado River District on the other hand, established the senior status of the Western Slope and Northeastern Colorado diversions in this regard.

The General Assembly has vested cities with the authority outside of the jurisdiction of the Public Utilities Commission to set water rates for service within their boundaries and extra-territoriality, and to enter into perpetual water contracts. That great and growing cities have a broad need to serve municipal water purposes was enunciated by the Colorado Supreme Court in 1939.

Today, municipal and quasi-municipal governmental entities such as water and sanitation districts, intergovernmental authorities, water conservancy and water conservation districts, are the foremost actors in the water acquisition arena. For example, the City of Thornton acquired close to half of the shares of a northern Colorado mutual irrigation company. Subsequently, the city's decree for conditional water rights, and exchange and augmentation plans was quantified and approved with numerous conditions to prevent injury. The retained jurisdiction of the water court is included in the decree to monitor uses by the city that may not mature until the mid-twenty first century.

Between 1960 and 1990, withdrawals for domestic uses of water in the West more than doubled, rising from six and a half to fourteen million acre-feet while the region's population grew by seventy-five percent. Agriculture still accounted for seventy-eight percent of total water withdrawals and ninety percent of total consumptive use. Nonetheless, over the next twenty-five years it is projected that the West will add another twenty-eight million residents, and the significance of municipal and quasi-municipal entities will continue to grow.

Because of contemporary permitting difficulties in constructing additional projects for capturing unappropriated water, municipalities must consider alternative water supplies. Possible alternative supplies include the following: the conversion of senior agricultural water through change of use proceedings, the tapping of tributary and non-tributary groundwater, and demand side conservation management, recharge, exchange, and augmentation.

Equitable Apportionment and Water Compacts

At midnight on December 21, 1857, Lieutenant Joseph Ives of the United States Corps of Topographical Engineers commenced a steamboat journey up the Colorado River from the Gulf of California. Progress upstream was steady but slow as the explorers surveyed the River and the surrounding countryside. In early March of 1858, the steamboat came to a stunning crash on a rock where Lake Mead now stands in the Black Canyon outside of Las Vegas, Nevada. Ives declared that point of the Colorado River to be the upper end of navigation, and he proceeded overland to the rim of the Grand Canyon where he proclaimed an end to human visitation of this region: "Ours has been the first, and will doubtless be the last, party of whites to visit this profitless locality. It seems intended by nature that the Colorado River, along the greater portion of its lovely and majestic way, shall be forever unvisited and undisturbed."

The 1858 Ives map shows the Little Colorado River as the source of the Colorado River. Eleven years later, Major Powell, tied to a chair on a wooden dory, roared into the gut of the primordial chasm of the Grand Canyon from a long upstream reach. From that point on, the water geography, politics, and law of the Colorado River would tie the Upper Basin and the Lower Basin together.

Colorado came to the 1922 Colorado River Compact negotiations fully informed of the equitable apportionment doctrine and its consequences. In 1907, the United States had argued that the remaining unappropriated waters of the West had been withdrawn from appropriation through the enactment of the 1902 Reclamation Act; development would occur under this theory as the national government saw fit, not otherwise.

Kansas and Colorado argued diametrically opposing theories. Kansas alleged that its riparian water law should require Colorado to by-pass water supplies of the Arkansas River to Kansas because the Kansas Territory, created in 1854, had run to the Continental Divide origins of that river prior to the formation of the Colorado Territory in 1861. Colorado contended that its state constitutional doctrine of prior appropriation had been accepted by the United States Congress when Colorado was admitted to the Union in 1876; thus, all water arising in Colorado was subject to use therein.

Enunciating the doctrine of equitable apportionment, the Supreme Court ruled that each state can choose its own water law, whether riparian or prior appropriation, but no state can impose its choice of law on another state. The national government's interest in the reclamation of arid lands could not supplant the water law selection of either state, and an equitable apportionment of the interstate water body can be ordered through the exercise of the Court's original jurisdiction. Although they had defeated the national government's water reservation claim, both states were left with the possibility of continuous litigation to determine from time to time what an equitable apportionment between them might be.

Because the irrigated valley of the Arkansas River within Colorado had perfected water rights and productive uses, Colorado won the opening rounds of its struggle with Kansas. However, in 1922, Colorado received a bitter lesson in the judicial application of prior appropriation to the equitable apportionment doctrine. The Court found Wyoming's uses in the Laramie and North Platte River basins to be senior and controlling, thereby precluding future development within Colorado. Even the most ardent proponents of Western prior appropriation law were

thunderstruck with the nerve shattering implications of a first in time—first in right state anchoring the interstate river and controlling the destiny of its elevated neighbors.

Delph Carpenter had represented Colorado in the Wyoming case and in disputes with Nebraska over the waters of the Platte River. He turned to the Compact Clause of the United States Constitution as Colorado's best hope for a secure and perpetual allocation of waters arising in Colorado, but shared by eighteen downstream states.

The Colorado River Compact negotiators intended to allow each state to effectuate its own choice of water law and to use its allocated water within its boundaries whenever it might choose in the future—this all without fear of the timing of development in other states, and also to ensure that the United States would not allocate the water contrary to the choice of the states. However, Arizona did not ratify the Colorado River Compact until 1944. As a result of Arizona's delay, and pursuant to the terms of the 1928 Boulder Canyon Project Act, the Secretary of Interior became the administrator and contracting officer for the Lower Basin apportionment among Arizona, California, and Nevada.

A compact is both state and federal law. It is meant to govern interstate water allocation and replace the original jurisdiction of the United States Supreme Court, except with regard to enforcement of the compact. For example, in 1995, the 1948 Arkansas River Compact was enforced against Colorado by decision of the United States Supreme Court. Ratification of a compact may be seen as the exercise by Congress of its power to consent to interstate commerce limitations inherent in fulfillment of the compact's purpose. A state may create and vest water rights as property, but only with regard to its allocated share of the interstate waters.

Due to the work of Carpenter and many others, Colorado is a signatory to nine congressionally ratified interstate compacts with other states commencing with the Colorado River agreement in 1922: Colorado River Compact, La Plata River Compact, South Platte River Compact, Arkansas River Compact, Rio Grande River Compact, Republican River Compact, Upper Colorado River Compact, Amended Costilla Creek Compact, and Animas–La Plata Project Compact.

Three equitable apportionment decrees in which Colorado has a continued water allocation interest are *Nebraska v. Wyoming*, *Wyoming v. Colorado*, and *Colorado v. New Mexico*.

Integration Of Federal Rights

Colorado, like other western states, allocated water and created water rights under its own system of law. In 1907, the United States Supreme Court enunciated the federal reserved water rights doctrine, first recognized for Native American tribal reservations. A federal land reservation, by necessary implication, may involve a United States reservation of unappropriated waters necessary for the primary purposes of the reservation. The water reservation dates to the creation of the land reservation.

Due to the fact that the states could not integrate the federal reserved water rights claims into a unitary system of water rights administration without congressional waiver of sovereign

immunity and consent to join federal agencies in state forums, Congress adopted the McCarran Amendment in 1952. This provided for state court adjudication jurisdiction over federal claims. Colorado led the way in three different cases before the United States Supreme Court in requiring the appearance of the United States in state water proceedings. As a result, the United States has obtained decrees in the seven water division courts for its federally reserved and state appropriative rights to serve uses on federal lands and in federal facilities.

Groundwater

Between 1943 and 1969, the use of tributary groundwater rose dramatically as surface irrigators and municipalities (particularly in the South Platte and Arkansas River Basins) discovered that wells were an efficient means of diversion and were not then subject to curtailment administration in the same manner as surface diversions.

The 1943 Adjudication Act recodified the provisions of Colorado's adjudication law, provided a mechanism for supplementary adjudication and transfers of water rights to changed uses, but made no specific mention of adjudicating rights to groundwater. In contrast, the 1969 Water Right Determination and Administration Act declared that "it is the policy of this state to integrate the appropriation, use, and administration of underground water tributary to a stream with the use of surface water in such a way as to maximize the beneficial use of all of the waters of this state."

Knowledge of groundwater and its impact on surface rights grew in the years between the 1943 and the 1969 Adjudication Acts. As out-of-priority pumping of groundwater connected to surface streams came to be recognized as a significant detriment to surface supply, the Colorado Supreme Court, in 1951, articulated a presumption that all groundwater finds its way to a surface stream and is subject to appropriation and administration in priority in times of short supply. One claiming that groundwater is not tributary has the burden of proving that fact by clear and convincing evidence. The Court also held that a well user must sink a tributary well to a reasonable depth and cannot command the level of the aquifer by fixing the point of withdrawal at a shallow depth. However, when the well is at a reasonable depth, a junior may be required by decree to bear the expense of providing the senior with an adequate means of diversion if the junior's lowering of the water table will cause the senior well to fail.

In 1965, the General Assembly adopted the Groundwater Management Act, thereby providing the State Engineer with the authority to issue, condition against injury, or deny permits for any diversion effectuated by means of a well. The Act also established the means for designating groundwater basins to be managed by local groundwater districts, subject to the authority of the Ground Water Commission. Designated groundwater basins are those wherein aquifers with modest recharge and attenuated connection to the stream system are the main source of an area's water supply, such as the Ogallala Aquifer.

With the advent of conjunctive use of tributary groundwater and surface water, the maximum utilization of the waters of the state, through vested rights, was heralded as Colorado's

constitutional water law doctrine. Wells which make out-of-priority diversions must replace their depletions by an approved substitute supply or augmentation plan to enable continued operation.

Non-tributary water is not part of the "natural stream" to which the Colorado Constitution's appropriation provisions apply. It is subject instead to the plenary power of the Legislature with regard to its allocation and use. The General Assembly has provided for the establishment of non-tributary groundwater rights according to surface land ownership. Non-tributary groundwater rights become vested rights either by construction of a well or an adjudication, with the amount of authorized withdrawals based upon a hundred year life of the non-tributary supply and the acreage amount of surface ownership. Certain Denver Basin deep groundwater formations are the subject of provisions requiring some augmentation of the surface stream; these bear the confusing designation "not non-tributary."

The Legislature has provided that small capacity wells which draw from tributary aquifers for domestic single household purposes may divert under a presumption of non-injurious effect to other rights. These wells may be adjudicated with a date of priority relating back to issuance of their permit for the purpose of seeking protection vis-a-vis water rights that are junior to them.

The Environmental Era

In 1965 the Colorado Supreme Court declared that the maintenance of instream flow "is a riparian right and is completely inconsistent with the doctrine of prior appropriation." However, in 1979, the Court upheld the constitutionality of Colorado's 1973 statute which allowed the Colorado Water Conservation Board to make and enforce minimum stream flow and lake level appropriations in priority for the purpose of preserving the environment to a reasonable degree. The environmental era had intervened. The Legislature was concerned about potential preemption of Colorado water law if a way to integrate instream flow rights within the appropriation doctrine could not be devised. The Conservation Board's statutory program requires the Board to consult with and take into account federal agency recommendations, including those of the Forest Service and the U.S. Fish and Wildlife Service, but the ultimate determination of the amount to be appropriated and maintained is assigned to the Conservation Board's sound discretion under the statute's criteria.

In contrast to California, Colorado has not adopted the public trust doctrine. Nor is "the public interest" employed as a water allocation factor in Colorado water adjudication proceedings. Nonetheless, since a water right comes into being only by application of water to beneficial use, the inability to obtain a needed regulatory permit or obtain financing for needed waterworks may effectively prevent the maturation of a conditional right into a perfected water right. Colorado's "can and will" doctrine recognizes that conditional rights, which hold a place in the priority system predicated on actual use being made, might not ripen into water rights. Speculative acquisition or retention of conditional rights is not allowed, and water users hoping to improve the priority status of their rights often challenge each others' conditional rights at the time a finding of reasonable diligence is sought from the water court.

The maximum utilization doctrine enunciated in *Fellhauer* has been tempered by the Colorado Supreme Court's reference to "optimum use" requiring that "proper regard for all significant factors, including environmental and economic concerns," be taken into account. The court foreshadowed the possibility that a balancing of resource use might be applicable when it refused to endorse the removal of water loving vegetation as a means for "developing" water free of the river's call. Draining of a peat bog or wetlands, or creating impermeable land surfaces, such as by paving, have likewise been disallowed as a means for obtaining additional consumptive use or augmentation water.

The Endangered Species Act, the Federal Clean Water Act and the Federal Land Policy and Management Act have created significant environmental review and approval requirements attendant to obtaining a federally required permit to build waterworks necessary to perfect a water right. The Environmental Protection Agency ("EPA") vetoed the Two Forks Project Permit under its section 404(c) Clean Water Act authority. At the state level, Eagle County invoked Colorado land use statutes to review a water project of the cities of Aurora and Colorado Springs. In *Riverside Irrigation District v. Andrews*, the court construed section 101(g) of the Clean Water Act as expressing that "Congress did not want to interfere any more than necessary with state water management." Furthermore, the Court refused to decide whether, in the event of irreconcilable conflict, the Endangered Species Act supersedes the congressionally ratified South Platte River Compact. Colorado has worked to avoid head-on conflict. Endangered species recovery plans in the Platte and Upper Colorado River Basins are being pursued in conjunction with Colorado's use of its water compact entitlements.

Basin wide efforts to meet environmental standards while the states continue development and use of their interstate apportioned waters have precedent. The Colorado River Basin Salinity Control Program is a seven basin state/federal initiative designed to maintain water quality standards for salinity at three compliance points in the Lower Basin. State line salinity standards were deemed unnecessary in light of this undertaking to achieve salinity water quality standards adopted by the EPA. An effort to require EPA permit regulation of dams throughout the United States as point sources of pollution was also rejected by the Federal Court of Appeals. The State of Colorado and several of its water user districts appeared as *amicus* on behalf of EPA in both cases, while environmental organizations active in Colorado appeared as plaintiff in those suits.

Colorado environmental and water user interests joined in supporting the 1986 congressional designation of seventy-five miles of the Cache La Poudre River as a Wild and Scenic River with its attendant creation of a federal water right junior to pre-existing state water rights. These interests also supported the 1993 Colorado Wilderness Act which preserved any pre-existing federal water rights and disclaimed congressional intention to create a wilderness reserved water right with regard to that Act.

State and federal statutes and administrative policies have always affected Colorado's prior appropriation law. The Colorado Water Quality Control Commission has extensive authority to regulate point and non-point sources of pollution, but cannot impose minimum stream flows for pollution program purposes. State water law does not attempt to comprehensively address environmental concerns; those are addressed primarily through land use and environmental regulatory laws, and land and water purchase and reservation programs.

Colorado's system of transferable water rights allows a market in new and changed uses to occur. Riparian water law, unlike prior appropriation law, is not well suited to a market approach because that legal system restricts the use of water to riparian landowners within the watershed, severely limits the amount of water that can be consumed, and does not promote the efficient allocation of water.

Market transfers are grounded in property law and depend upon the right to reduce a public resource to private possession:

Four characteristics (have been identified as) necessary to convert a common property resource to a regime of individual property rights in order to induce market allocation. They are (1) maximum exclusivity within the constraint of the physical nature of the resource; (2) free transfer at costs which are low relative to the value of the resource; (3) absence of positive and negative externalities that prevent the transfer of the resource or impose excessive, unaccounted for costs on third parties, and (4) a clear, general definition of permitted and prohibited activities.

As a result of over-appropriated streams, environmental permitting requirements for surface diversions, and resistance by local areas to diversions for other areas of the state, cities seeking additional water supplies are looking increasingly to water transfers, out-of-priority diversions by wells and augmentation plans utilizing replacement water sources, and use of with non-tributary water.

Conclusion

The irrigated use sector contains a large reservoir of water for agricultural production, conserved open space, and infra-structure that has long-lasting value to Colorado. To what extent that resource should support the increasing urbanization of the state will be determined by voluntary market transfers and regulatory choices. Under Colorado law, conditional water rights and water storage rights will continue to function as an essential element in use of the state's allocated share of interstate waters. The needs and values of twenty-first century citizens will shape and reshape a water law which is well-grounded in the history and heritage of this magnificent land.

Prior appropriation law is egalitarian, equitable, and efficient in that: (1) beneficial uses are recognized without regard to the economic value which will be produced therefrom (e.g., the individual subsistence farmer and the manufacturing corporation are equally entitled to appropriate unappropriated water); (2) access to the available supply is based on the need for a beneficial purpose; and (3) no more water belongs to the water right than the amount reasonably necessary under the circumstances to effectuate the use.

If economic efficiency is defined to mean that water should serve the highest value need, then economic efficiency is not achieved by the system except through voluntary transfers in the

market place. Furthermore, reallocating water to junior uses by involuntary means to serve emerging social and environmental policy choices is not permitted under the water law, unless that reallocation is carried out through the proper channels of condemnation, with payment of just compensation. Nevertheless, regulation within the police power of local, state and federal government authority may significantly affect the operation of the appropriation doctrine. For example, when the necessary permits to construct water works cannot be obtained, a conditional water right may not become a vested, perfected water right.

Because of its birth within the public domain, the West has been, is, and always will be shaped by values of beneficial use and preservation amidst a vast, beautiful, and rapidly urbanizing landscape. Water, the intermediary substance of life, will flow and pool, be guarded and traded, dance and sing, be used, consumed, and returned as Colorado, mother of many rivers, continues to play its vital role in water policy.