PUBLIC INPUT
ITEM 1

Colorado Water Plan Comments

October 10, 2014
John M. Duggan
Colorado Water Quality Control Division

General Comments:

The Water Quality Control Division's Source Water Assessment and Protection (SWAP) planning effort is referenced in a few different sections (Environmental and Recreation Projects and Methods, Watershed Health and Management, and Water Quality) of the Colorado Water Plan. We are pleased that references to the SWAP program are included in these sections and suggest that some additional background program information should be provided as follows:

Water Quality Section (7.3)

Please consider the following language

<u>Source Water Assessment and Protection (SWAP) Program Summary</u>

The Colorado Water Quality Control Division is actively engaged in promoting and supporting source water protection planning across Colorado. The program is designed to define drinking water supply areas and identify potential water quality and contaminant risks to drinking water systems. The SWAP program, in collaboration with the Colorado Rural Water Association, provides technical and financial support to encourage voluntary local planning efforts and the implementation of best management practices (BMP's) to minimize source water quality impacts. This effort is a collaborative stakeholder process that contributes to protecting and restoring water quality in the state. As the individual Basin Implementation Plans are developed and projects prioritized, a watershed approach and coordination with existing source water protection plans should be considered to leverage a multi-benefit strategy. The Colorado Water Quality Control Division can provide information about protection plans that are in progress or completed.

Environmental and Recreation Projects and Methods Section (6.6)

Section 6.6.2 BIP Identified Environmental and Recreational Projects and Methods

Please consider the following language

The Basin Implementation Plan (BIP) process is a stakeholder based process that incorporates multiple planning efforts in the various regions. In many basins across the state, public water systems, municipal governments, and communities have developed source water protection plans with specific water quality prevention strategies that should be considered during the project development and prioritization stage. The Colorado Water Quality Control Division can provide information about protection plans that are in progress or completed.

Watershed Health and Management (7.1)

Section 7.1.4 Next Steps

3. Identify existing watershed groups, existing watershed plans and assessments, and source water protection plans completed by public water providers.
6. Critical Community Watershed Wildfire Protection Plans developed in the various basins should be leveraged to identify wildfire zones of concerns, areas requiring fire breaks around water storage reservoirs, and critical water infrastructure access points.

PUBLIC INPUT
ITEM 2

October 30, 2014

The Honorable John Hickenlooper
136 State Capitol
Denver, CO 80203-1792

Dear Governor Hickenlooper,

Please accept the strategies highlighted in this letter, and the attached set of guiding principles, as formal comment on the formation of the Colorado Water Plan on behalf of Colorado's business community.

Water touches every aspect of Colorado's economy; from tourism and recreation to agriculture and manufacturing. Effective water resource management and stable water supplies are critical for our state's long-term success.

In partnership with the Denver Metro Chamber, the Metro Denver EDC, the Colorado Competitive Council, Accelerate Colorado, and Environmental Entrepreneurs, we urge your office and the Colorado Water Conservation Board to emphasize two key values in drafting the Colorado Water Plan: public education and statewide collaboration. The complexity of our water challenges require broad understanding and cooperation as pillars for any statewide undertaking. The plan should be flexible enough to accommodate for the economic, demographic, and geographic diversity of Colorado communities.

We further urge the prioritization of five key strategies while finalizing the Colorado Water Plan. We believe it will take all these strategies in concert to effectively address water supply in Colorado.

1) **Recycling and Reuse** – Existing transbasin water diversions to Colorado's Front Range present an important component in our water system. Transbasin water is protected from leaving the state as part of any multistate compact or agreement. In effect, transbasin water may be recycled into extinction. In order to maximize existing transbasin diversions, new water recycling and reuse investments should be encouraged and incentivized, diminishing the need for further transbasin diversions.

2) **Storage** – Whether storing water underground, expanding existing reservoirs, building dry-storage, or developing new projects; more water must be saved in wet years to be managed efficiently in dry years.

3) **Conservation** – incentivizing water appliance efficiency, incentives for more efficient landscaping, or promoting legal reform that enables more efficient housing plans to take maximum advantage of density for water conservation, these and other tools must be implemented.

4) **Alternatives to Buy and Dry** – Water rights in Colorado are akin to property rights. They can be bought and sold. When an agriculture water transfer occurs, the water rights are sold and that water permanently leaves agricultural use to serve populated urban areas. The drying up of producing agriculture land can have significant economic impacts in rural communities while straining our state's food production resources. Alternative methods must be explored, such as long-term, flexible water leasing, rotational crop fallowing, rotational crop planting strategies, and improved irrigation management. These and other market mechanisms should be studied and implemented.

5) **Permitting** – Improving the efficiency of water project permitting is critical. Serious delays have become commonplace. For example, even efforts to expand existing reservoirs now entail years of permitting review. Most recently, the plan to expand Chatfield Reservoir was approved after 15 years of evaluation. Understanding why these delays occur is an important first step in crafting policies to streamline the permitting process.

   As another step, consider establishing a multijurisdictional, parallel review process that requires permitting agencies to communicate with one another, as well as share their data. Additionally, multipurpose projects with environmental, recreational, power generation, industrial, agricultural, and municipal benefits should be explored, as such projects would broaden stakeholder cooperation. Lastly, it would be useful to improve the awareness of specific requirements for environmental review from the outset.

Whether these or other suggestions are prioritized, the business community stands ready to assist. We are eager to convene additional conversations or forums for the purpose of bringing interested parties together for the formation of the Colorado Water Plan.

Thank you for your consideration and ongoing commitment to Colorado. We appreciate your leadership in developing the Colorado Water Plan on behalf of our state.

Sincerely,

Kelly Brough	Tom Clark	Mizraim Cordero
Chief Executive Officer	Chief Executive Officer	Director
Denver Metro Chamber	Metro Denver EDC	Colorado Competitive Council

Susan Nedell
Rocky Mountains Chapter Director
Environmental Entrepreneurs

Kyle Grivette, CEO
AAA Building Maintenance, LLC

Kyle Grivette
CEO and Founder
AAA Building Maintenance, LLC

Erik Anglund, P.E.
Water Resource Engineer
Anadarko Petroleum Corporation

Jason Dunn
Shareholder
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Greg Morris
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Maureen Shul
President
Castle Pines EDC

Wendy Mitchell
Co-Chair
Accelerate Colorado

Frank Gray
President and CEO
Castle Rock EDC

Kim Bimestefer
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Cigna Mountain States

Dave Davia
Executive Vice President & CEO
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Vice President of Public Policy
Colorado Association of REALTORS

Chris Shapard
Executive Director
Colorado Cleantech Industries Association

Chris Kraft
President
Colorado Dairy Farmers Association

John Armstrong
Co-Chair
Colorado Energy Coalition

Lee Boughey
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Colorado Energy Coalition

Chad Vorthmann
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Colorado Farm Bureau

Beverly Razon
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COPIC Insurance Company

Mark J. Witkiewicz
Managing Director & Chief Operating Officer
Corporex Colorado

Mike Fitzgerald
President and CEO
Denver South Economic Development Partnership

James S. Lochhead
CEO/Manager
Denver Water

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Greater Pueblo Chamber of Commerce

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Donna Lynne, DrPH
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Mechanical Contractors Association of Colorado

Dave Davia
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Dan A. Lewis
Chief Public Affairs Officer
Molson Coors Brewing Company

Gene Hodge
Director of Project Development
Mortenson Construction

Alan J. Krause
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Kathie A. Barstnar
Executive Director
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Ruth Benton
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Amy Sherman
President
Northwest Douglas County EDC

Bob Deibel
President and Owner
OfficeScapes

Dennis Houston
President and CEO
Parker Chamber of Commerce

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South Metro Chamber of Commerce

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Executive Director
The Vail Chamber & Business Association

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Xcel Energy

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Executive Director
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James Mulligan
Attorney at Law

Jason Brinkley
Attorney at Law

Colorado Business Community
Water Policy Principles

Water is of critical importance to Colorado businesses and our state's economy. Colorado business leaders respect and appreciate the work that has been undertaken by the Governor, the Colorado Water Conservation Board and the Basin Roundtables to form a Colorado Water Plan. Therefore, the Colorado business community will engage with the state's policy makers as a long-term plan for Colorado's water policy is developed.

A Colorado Water Plan should recognize:

- **Colorado requires efficient and reliable water to support its growth;** our state's demographic trends make certain that water will remain a critical long-term economic issue in Colorado, and we know that the success of our economy and our quality of life depend upon ensuring the sufficient availability of water;

- **We recognize the doctrine of prior appropriation and do not prioritize one industry's or one region's use of water over another's;** each type of water use has its place in Colorado's diverse economy;

- **Any future water projects should carefully balance the needs of Colorado's economy;** future water projects must benefit all aspects of water use in Colorado including business and industrial, agricultural, recreational, environmental, residential, etc.;

- **We support a balanced approach to water policy that includes conservation, efficiency and reuse strategies as well as increased storage capacity;** Colorado's water requirements necessitate an all-of-the-above approach;

- **The state regulatory processes must be efficient, cost effective and transparent;** state water policy must ensure the availability of cost-effective solutions for water providers, especially since this can directly impact the cost of doing business in our state and inhibit sustainable economic development;

- **We are committed to being a part of the solution;** the business community will actively participate in finding solutions that encourage more efficient and effective use of the water we have, develop necessary new and more efficient water infrastructure, and address the need to deal with variable weather patterns.

PUBLIC INPUT
ITEM 4

Boulder County

Parks and Open Space

5201 St. Vrain Road • Longmont, Colorado 80503
303.678.6200 • Fax: 303.678.6177 • **www.bouldercounty.org**

October 31, 2014

State Water Plan
c/o CWCB
1313 Sherman St., Room 718
Denver, CO 80203

Boulder County provides the following comments based on our general outlook on water supply as well as our ownership of water rights that are associated with our open space holdings. We appreciate the recognition of the need for smart water management and value Governor Hickenlooper's commitment to working with business, recreation, and tourism stakeholders to develop a water plan that benefits every Colorado citizen. The three prioritized outcomes that were outlined in the Colorado State Water Plan – a productive economy that supports agriculture, recreation and tourism; an efficient and effective water infrastructure; and healthy watersheds, rivers, stream and wildlife, fall directly in line with our constituents views on water use.
Boulder County owns a significant amount of water and water rights within the South Platte Basin. Our water is largely used for agricultural use on farms across Boulder County. The County also holds water rights associated with recreational, environmental, wildlife and habitat uses.

Boulder County is a member of the South Platte Basin Round Table, represented by Karen Martinez, Water Resources Specialist in the Parks and Open Space Department. Given the opportunity to submit comments on the Draft Basin Implementation Plan (BIP), the County would like to submit the following:

- The County does not support the "Buy and Dry" trend and agrees with the plan in that there is an over use of "Buy and Dry" within the South Platte Basin. This trend is taking water from productive farmland, which is very concerning to us. The County has purchased property for the purpose of keeping agricultural land in production and we are concerned about the loss of agricultural productivity on other lands throughout the Basin. We will never condone the practice of drying up agricultural land to allow future non-ag development. Interruptible Supply Plans are not something we would support relative to our already purchased agricultural water. We do recognize that ISPs could be beneficial as an alternative to buy and dry in that it provides a means to compensate farmers for fallowing the crop in dry years in exchange for water that was to be used on the farm land.
- The County prefers an increased emphasis on water conservation and efficiency of use in the municipal and industrial sectors, as well as the agricultural sector. We can meet much of our new demands with cost-effective conservation, re-use and other common-sense solutions. Investing in water efficiency programs will allow us to meet our current and future demands while also protecting our natural

resources. Boulder County and Boulder County farmers are successfully participating in the conservation of water on agricultural land by installing center pivot irrigations systems and other conservation practices. These best practices do not result in loss of yield. Often times the actual per acre rate of return is even higher because of a reduction of input costs.

- The potential for increased volatility in weather patterns as a result of climate change also compel us to place a much greater emphasis on conservation than any other method of meeting the water gap.
- The County supports protection and enhancement of environmental and recreational attributes. The County participates with other agencies in stream restoration and enhancement along the river corridors that are within the County. We also have staff who work to protect and restore riparian areas and to create habitat in our own reservoirs and ponds.

Boulder County is appreciative of the efforts of all the Round Tables and looks forward to seeing what the State Water Plan entail. Boulder County is diligent in protecting our most precious resource. The county recognizes the efforts put forth by the Round Tables for the Colorado Water Plan. The county also recognizes the shortage of water statewide and agrees that the development of a Basin Implementation Plan is important if we are to solve the future water gap in a way that preserves our agriculture land for its highest possible use, growing crops.

Karen Martinez

Water Resource Specialist

PUBLIC INPUT

ITEM 5

COMMENTS to, and ANALYSIS of, the 2013 Governor-initiated proposal for development of **"the Colorado State Water Plan"** by the Colorado Water Conservation Board with support from State of Colorado Departments and agencies.

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For a perspective into Colorado's historical state of affairs that ultimately led to the evolution of legal arrangements for the allocation of a scarce water resource in an arid land, and for an understanding of the origins of the completely unique Colorado water legal model to accommodate necessary distribution of not only waters in mountainous miner's camps but also of essential water distribution arrangements for agricultural uses and for community growth necessary for areas not astride watercourses, nor astride "riparian" flows of waters, the legal review of the evolution of Colorado's water estate by David Schorr [see *ECOLOGY LAW QUARTERLY* [Vol. 32:3] 2005] is a scholarly testament essential for this controversial subject's comprehension.

Appropriation as Agrarianism:

Distributive Justice in the Creation of Property Rights

David B. Schorr, J.S.D., 2005, Yale University; LL.M., 2003, Yale University; LL.B., 2000

> *"The water-law doctrine of prior appropriation, developed in Colorado in the late 1800s, has received much scholarly attention, due to the claimed efficiency advantages of the system of private property rights it is supposed to have instituted. Supporters and critics alike have associated the doctrine with values such as the preference for private over common property, the privatization of the public domain, and the facilitation of markets in natural resources.*

> *"Th[e] article relies on analysis of previously unexamined historical sources*

to demonstrate that the appropriation doctrine actually was intended to express contemporary radical, agrarian ideals of broadly distributed property and anti-monopolism. The unofficial codes of the Colorado mining districts, conventionally thought to be the source of the doctrine's "first in time, first in right" principle, focused primarily on rules designed to ensure wide distribution of property. Similarly, the statutes of the Colorado Territory, the water-rights provisions of the state constitution of 1876, and early judicial decisions culminating in the leading case of Coffin v. Left Hand Ditch Co., were mainly concerned to prevent control of water by capitalists, and did so by breaking the common-law monopoly of riparian owners and opening access to the resource to all bona fide users."

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pg. 42 . . .

"If the waters are the property of the public, they are, of course, not owned by riparian land owners. Riparian rights were thus invalidated by implication, a clear invasion of private property rights. As one delegate argued in opposition, the section "gave a man in Gilpin County the same right to the water of a stream in Weld County, as was possessed by those through whose lands it ran. This was an interference with the contract undertaken by the United States with individuals when they pre-empted land."[185]

"But why not suffice with replacing riparian title with ownership by appropriators? Why the communitarian, public-property rhetoric, so at odds with the supposed frontier ethic of individualism and private property?

"The conceptual punch of the section lies precisely in this public-property theory as the basis for the right of appropriation. Opening up the opportunity to acquire a water right to all members of the public was not, as one might have expected, based on a theory of the water being *res nullius*, un-owned, and therefore freely available to all. It was, rather, as in riparian doctrine, the

property of the public, *publici juris*.[186] Only the right to use could be acquired,[187] and then only under conditions stipulated by the owner (through its agent, the state).[188] The recognition of public ownership, lobbied for by the territorial Grange,[189] was important for providing the theoretical and legal underpinnings for the limitations on appropriation that would be applied by the state to prevent the replacement of monopoly by riparian owners with monopoly by speculating appropriators.

"As explained by the economist Richard T. Ely:

> [The] distinction between property in water itself and a private rights to the use of public water....seems like a refinement, but experience shows it has important consequences, inasmuch as the treatment of water as public property to be appropriated by individuals for their beneficial use strengthens public control, making such control easier under American constitutional government than it is when the water itself is regarded as private property.[190]
>
> (see R.T. Ely, *Economics of Irrigation*, unpublished manuscript, *in* HENRY C. TAYLOR & ANNE DEWEES TAYLOR, *THE STORY OF AGRICULTURAL ECONOMICS IN THE UNITED STATES*, 1840-1932, at 833 (1952) (1905)).

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185. Alvin Marsh, *in* DENVER DAILY TRIB., Feb. 19, 1876.

186. *See* Embrey v. Owen, 6 Exch 353, 155 ER 579 (1851). The state Supreme Court later ruled that water had been *publici juris* in Colorado even before the adoption of the state Constitution. Derry v. Ross, 5 Colo. 295, 301 (1880). For *publici juris* in American law, *see* Harry N. Scheiber, *The Road to* Munn*: Eminent Domain and the Concept of Public Purpose in the State Courts*, *in* LAW IN AMERICAN HISTORY 329-402 (Donald Fleming & Bernard Bailyn eds., 1971).

187. City of Denver v. Bayer, 2 P. 6, 7 (Colo. 1883); Wheeler v. N. Colo. Irrigation Co., 17 P. 487, 489-90 (Colo. 1888).

188. 1 WIEL, *supra* note 13, at 197; *Wheeler*, 17 P. at 490; Suffolk Gold Mining & Milling Co. v. San Miguel Consol. Mining & Milling Co., 48 P. 828, 830 (Colo. App. 1897); Stockman v. Leddy, 129 P. 220, 222 (Colo. 1912).

189. *The Grangers*, ROCKY MTN. NEWS, Dec. 18, 1875, at 4. The Grange was part of a larger post-Civil-War agrarian movement, often referred to as "the Granger movement," whose goals included strengthening the independence of yeoman farmers and combating the power of the corporations. *See generally* SOLON JUSTUS BUCK, THE GRANGER MOVEMENT (1913); CARL C. TAYLOR, THE FARMERS' MOVEMENT, 1620-1920, at 139 (1953).

Pg. 43. . .

"The theoretical innovation of this section went yet one step further. The assertion of public ownership, as distinguished from state ownership, was significant for the framers, who evidently had something like the public trust doctrine, with its limits on legislative power to dispose of a public resource, in mind for Colorado's water.[191]

"A proposal to have the constitution declare that "The primary right of ownership in the waters of all the streams in this State is and shall be at all times in the State"[192] was met with opposition from H. P. H. Bromwell, whose experience as a U.S. Congressman and member of the radical 1870 Illinois Constitutional Convention lent him particular influence in the debates:[193]

"Bromwell was not in favor of giving an opportunity for pools to be formed to speculate in water, and did not want the Legislature to be surrounded by such crowds of monopolists. If the capitalists get hold of all the water, they will have the people by the throat. [He] did not want to see the Legislature free to do as they wanted to with all the water of the State.[194]

"His fellow leader of the agrarian "Granger" faction[195] and chair of the committee on irrigation, S. J. Plumb, agreed, saying "that the General Assembly could not be relied upon, and he wanted to get the matter as far from them as possible;"[196] "Mr. Plumb urged that the stream should be under the control of the sovereign people, and not subject to the management and manipulations of the Legislature."[197] The radicals' arguments carried the

day.[198] [[CONSTITUTION OF THE STATE OF COLORADO ARTICLE XVI MINING AND IRRIGATION - Irrigation - Colo. Const. Art. XVI, Section 5 (2012). *Section 5*. Water of streams public property. "The water of every natural stream, not heretofore appropriated, within the state of Colorado, is hereby declared to be the property of the public, and the same is dedicated to the use of the people of the state, subject to appropriation as hereinafter provided." HISTORY: Source: Entire article added, effective August 1, 1876.]].

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190. R.T. Ely, Economics of Irrigation, unpublished manuscript, *in* HENRY C. TAYLOR & ANNE DEWEES TAYLOR, THE STORY OF AGRICULTURAL ECONOMICS IN THE UNITED STATES, 1840-1932, at 833 (1952) (1905); *see also* Samuel C. Wiel, *Public Control of Irrigation*, 10 COLUM. L. REV. 506, 511-15 (1910); Trelease, *supra* note 20, at 640-41.

191. Trelease, *supra* note 20, at 646. *See also* Michael C. Blumm et al., *Renouncing the Public Trust Doctrine: An Assessment of the Validity of Idaho House Bill 794*, 24 ECOLOGY L.Q. 461, 502-03 (1997). *See generally* Joseph L. Sax, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471 (1970).

192. PROCEEDINGS OF THE CONSTITUTIONAL CONVENTION HELD IN DENVER, DECEMBER 20, 1875, at 44 (1907).

193. By contemporary account, Bromwell was styled the "Orthodox Blackstone of the convention." *Our Constitution Makers, Who and What They Are*, DENVER TRIB. SUPP., Feb. 14, 1876. For his anti-corporate activity in the Illinois convention, *see* DEBATES AND PROCEEDINGS OF THE CONSTITUTIONAL CONVENTION OF THE STATE OF ILLINOIS 84, 330-31, 418, 487 (Springfield, E.L. Merritt 1870). *See also* Colin B. Goodykoontz, *Some Controversial Questions Before the Colorado Constitutional Convention of 1876*, 17 COLO. MAG.1, 11 (1940).

194. *Constitutional Convention*, DENVER DAILY TIMES, Feb. 18, 1876, at 4.

195. *The Grangers*, ROCKY MTN. NEWS, Dec. 17, 1875, at 4.

196. *Constitutional Convention*, *supra* note 194, at 4.

197. DENVER DAILY TRIB., Feb. 19, 1876.

198. *See* Platte Water Co. v. N. Colorado Irrigation Co., 21 P. 711 (Colo. 1889) (grant to water company of exclusive rights in section of river held beyond power of legislature).

ABSTRACT

"Why does society create rights of private property, particularly in natural resources? In the last few decades, the accepted answer has stressed the advantages of private property over common property in terms of efficiency or wealth-maximization.7 In contrast with what some have termed this "optimistic" or "happy" view, 8 other scholars have described a "darker" or "pessimistic" story of the creation of private-property rights, one in which interest groups manipulate the law to effect a redistribution of valuable resources in their favor. 9

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7. The seminal article for this point of view is Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV.(papers & proc.) 347 (1967) (arguing that private-property rights emerge when gains in allocative efficiency from the creation of property rights more than compensate for the costs of creating and enforcing those rights). *See also*, *e.g.*, Robert C. Ellickson, *Property in Land*, 102 YALE L.J. 1315 (1993); RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW 32-33 (6th ed. 2003).

8. Stuart Banner, *Transitions Between Property Regimes*, 31 J. LEGAL STUD. S359, S360 (2002); Saul Levmore, *Two Stories about the Evolution of Property Rights*, 31 J. LEGAL STUD. S421, S428, S432 (2002). Others have pointed out that considerations of efficiency may actually militate in favor of transitions from private-property to common-property regimes in some circumstances. *See* CAROL ROSE, *Energy and Efficiency in the Realignment of Common-Law Water Rights*, *in* PROPERTY AND PERSUASION 163 (1994); Henry E. Smith, *Exclusion Versus Governance: Two Strategies for Delineating Property Rights*, 31 J. LEGAL STUD. S453 (2002).

9. *See*, *e.g.*, MORTON J. HORWITZ, THE TRANSFORMATION OF AMERICAN LAW, 1780-1860 (1977); GARY D. LIBECAP, CONTRACTING FOR PROPERTY RIGHTS 1-28 *passim* (1989); Banner, *supra* note 8, at S360; Levmore, *supra* note 8, at S432.

"The Colorado rule was clear:

". . . riparian lands would have no water right incidental to them; all landowners could acquire water rights only by use, regardless of their land's location.

"With regard to constitutional issues relating to the Colorado water estate – clearly owned by the people of the state, the issues of "Reasonable Use" v "Beneficial Use" were solved by the Colorado Supreme Court in Coffin."

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314. Coffin v. Left Hand Ditch Co., 6 Colo. 443, 449-50 (1882). see also: Coffin v. Left Hand Ditch Co. (No. 885), Colo. St. Archives. [[see *Coffin*, 6 Colo. 443, 449-50 (1882)]]

Colorado's water legal estate was, therefore, defined by two absolute precepts:

- Ownership of the water within the state was held by the people, not the state.
- The right to the use of water in Colorado could only be defined by use.

Legislative and judicial pronouncements, since a period of time commencing in the mid 1950's, have severely eroded the intent and construction of the original Colorado constitutional manifest for the allocation of a scarce resource based upon need. Recent water estate manipulation by Colorado court judicial dicta and by Colorado legislative stipulation has significantly changed the direction of the basis of the allocation of the waters of the peoples of Colorado into a market allocation of waters [and of water uses] to the detriment of the people's commons that now demonstrates the control and direction of the public's waters through legislatively-focused and judicially-sanctioned authority exercised by non-owners of waters so as to, supposedly, enhance economic acceleration.

“Next to bottling the air and sunshine,” wrote one influential publicist, “no monopoly of natural resources could be fraught with more possibilities of abuse than the attempt to make merchandise of water in an arid land.”

- William E. Smythe, *The Struggle for Water in the West*, 86 ATLANTIC MONTHLY 646, 648 (1900).

“Generally left unexplored is a third possibility, an account of the evolution of property rights that, while “optimistic,” focuses on the distributive aspects of property law, and not on considerations of efficiency. On this view, property in natural resources may develop in a way that allocates rights primarily according to considerations of distributive justice, that is to say, consistent with norms of fairness in distribution, and not necessarily in a way that advances allocative efficiency. While most scholarship has tended to view distributive considerations in the creation and development of property rights as insidious, this alternative account of property law is an “optimistic” one, in the sense that it describes the evolution of property rights as guided by principles of justice.

“This article explores this third approach to the development of property rights, arguing for the explanatory power of distributive justice in understanding the origins and evolution of the prior appropriation doctrine of water law in the western United States.”

“A prohibition upon the use of property for purposes that are declared by valid legislation to be injurious to the health, morals, or safety of the community is not an appropriation of the property for the public benefit, in the sense in which a taking of property by the exercise of the State's power of eminent domain is such a taking or appropriation.

“The destruction, in the exercise of the police power of the State, of property used . . . in maintaining a public nuisance is not a taking of property for public use, and

does not deprive the owner of it without due process of law. U.S. Supreme Court, Mugler v. Kansas, 123 U.S. 623 (1887).

CONCERNS

◇ COURT DECLARATIONS THAT JUDICIAL PROTECTION / INTERVENTION IN WATER RESOURCE DEVELOPMENT ISSUES FOR THE REVIEW OF STEWARDSHIP OF PUBLIC INTERESTS IN WATER WERE NOT FORTHCOMING. [[see MATTER OF BD. OF CTY COM'RS., 891 P.2d 952, Colo. Supreme Court (1995) : "Conceptually, a public interest theory is in conflict with the doctrine of appropriation because a water court cannot, in absence of statutory authority, deny a legitimate appropriation based on public policy." . . . "We have consistently recognized that the General Assembly has acted to preserve the natural environment by giving authority to the Colorado Water Conservation Board to appropriate water to maintain the natural environment, and **we will not intrude into an area where legislative prerogative governs.**" . . . ". . . use of water has always been deemed a beneficial use under Colorado law and is given priority over other competing beneficial uses by the General Assembly. See § 37-92-305, 15 C.R.S. (1990 & 1994 Supp.). The cross-appellants do not cite any authority that authorizes a water court to deny an application for a conditional decree because of environmental concerns, and we reject the cross-appellants' invitation to create a complex system of common law to balance competing public interests."]].

◇ LEGISLATIVE ACTION TO CHANGE THE DEFINITION OF WATERS OF THE PUBLIC, THEREBY DEPRIVING THE COLORADO PUBLIC AS OWNERS OF WATER THEIR PROPERTY BY AN ACT OF THE LEGISLATURE - SUCH ACTION IN VIOLATION OF UNITED STATE SUPREME COURT HOLDINGS IN ILLINOIS CENTRAL R. CO. V. STATE OF ILLINOIS, 146 U.S. 387 (1892), 13 S. Ct. 110 (December 5, 1892). [[see Senate Bill No. 481 (1979) : – "*Concerning Water Subject to Appropriation*", Ch. 346, Session Laws 1979 (June 22, 1979), at 1366, *water and irrigation* – appropriation and use of water – at Section 4: § 37-92 -102 – Legislative declaration. (1) (a) was amended so as to change, in the "legislative declaration",

the language found there originally from “waters” to “WATER IN OR TRIBUTARY TO NATURAL SURFACE STREAMS.”]].

Codification, formerly / previously at Chapter 148 (C.R.S. 1963) WATER RIGHTS AND IRRIGATION, changed in 1979. [[find here @ Chapter 148 – WATER RIGHTS AND IRRIGATION - C.R.S. 1963 (supp. 1969) (L. 69, pg. 1219, sec. 2): “WATER RIGHTS AND IRRIGATION – Article 2. Appropriation and Use: (CRS 148-2-1). All water property of public. – “All water originating in or flowing into this state, whether found on the surface or underground, has always been and is hereby declared to be the property of the public, dedicated to the use of the people of the state, subject to appropriation and use in accordance with law.”

[**N. B.** ed. note:] Senate Bill No. 481: – “*Concerning Water Subject to Appropriation*”, Ch. 346, Session Laws 1979 (June 22, 1979), at 1366*, water and irrigation* – appropriation and use of water – at Section 4: § 37-92 -102 – Legislative declaration. (1) (a) was amended so as to change, in the “legislative declaration”, the language found there originally from “waters” to WATER IN OR TRIBUTARY TO NATURAL SURFACE STREAMS. Also struck were the words whether found on the surface or underground thereby restructuring not only the prior existing statutory proclamation previously in statute but also inherently modifying statute provisions pertaining the constitutional precepts (see Art. XVI, Section 5) regarding the range and extent of the waters of the public subject to “appropriation and use”.

> [[*For reference*: see the 1892 U. S. Supreme Court decision Illinois Central R. Co. v. State of Illinois, 146 U.S. 387 (1892), 13 S. Ct. 110 (December 5, 1892). The Illinois Legislature in 1869 had passed legislation that had provided much of the waterfront of Lake Michigan in Chicago to the Illinois Central Railroad as a fee simple absolute ownership. When a newly-elected Legislature passed legislation to overturn the grant from the 1869 Legislature, subsequent legal actions passed through the courts until the 1892 United States Supreme Court decision. In his majority opinion, Justice Field, commenting on the “common law doctrine” being discussed opined in the following manner: “... this doctrine has been often announced by this court, and is not questioned by counsel of the parties.” “The doctrine is

founded upon the necessity of preserving for the public the use... of waters from private interruption and encroachment... . We hold, therefore, that the same doctrine as to the dominion and sovereignty over and ownership of ... waters are subject to the same trusts and limitations." "The question, therefore, to be considered, is whether the Legislature was competent to thus deprive the state of its ownership of the submerged lands in the harbor of Chicago, and the consequent control of it waters..." .

"The state holds the title to the lands by common law, which we have already shown." *"It is a title different in character from that which the state holds lands intended for sale. It is different from the title which the United States hold in the public lands which are open for preemption and sale. It is a title held in trust for the people of the state that they may enjoy the navigation of the waters, carry over commerce over them, and have the liberty of fishing therein, freed from the obstruction or interference of private parties." . . .*

"... the exercise of that trust requires the government of the state to preserve such waters for the use of the public. The trust devolving upon the state for the public, and which can only be discharged by the management and control of property in which the public has an interest, cannot be relinquished by a transfer of property. The control of the state for purposes of the trust can never be lost ...".

FURTHERMORE : Senate Bill No. 481 (1979) : – "*Concerning Water Subject to Appropriation*", Ch. 346, Session Laws 1979 (June 22, 1979), at 1366, *water and irrigation* – appropriation and use of water – at Section 4: § 37-92 -102 – Legislative declaration. (1) (a) <u>was amended</u> so as to include a right of successive use of an appropriator : 37-82-106. **Right to reuse of imported water.**

(1) Whenever an appropriator has lawfully introduced foreign water into a stream system from an unconnected stream system, such appropriator may make a succession of uses of such water by exchange or otherwise to the extent that its volume can be distinguished from the volume of the streams into which it is introduced. Nothing in this section shall be construed to impair or diminish any water right which has become vested.

(2) To the extent that there exists a right to make a succession of uses of foreign, nontributary, or other developed water, such right is personal to the developer or his successors, lessees, contractees, or assigns. Such water, when released from the dominion of the user, becomes a part of the natural surface stream where released, subject to water rights on such stream in the order of their priority, but nothing in this subsection (2) shall affect the rights of the developer or his successors or assigns with respect to such foreign, nontributary, or developed water, nor shall dominion over such water be lost to the owner or user thereof by reason of use of a natural watercourse in the process of carrying such water to the place of its use or successive use.

[[Article is not unconstitutional on theory that it delegates judicial functions to an administrative agency of the executive branch of the government. Kuiper v. Lundvall, 187 Colo. 40, 529 P.2d 1328 (1974), cert. denied, 421 U.S. 996, 95 S. Ct. 2391, 44 L.Ed.2d 663 (1975).]]

[[This article is not unconstitutional on theory that it bestows powers upon the state engineer and the Colorado ground water commission to grant or refuse a permit to drill a well thereby giving them, in effect, the authority to adjudicate a water right. Kuiper v. Lundvall, 187 Colo. 40, 529 P.2d 1328 (1974), cert. denied, 421 U.S. 996, 95 S. Ct. 2391, 44 L. Ed.2d 663 (1975).]]

◇ JUDICIAL CHANGES RECONFIGURING AND REPOSITING THE LEGAL STATUS OF “APPROPRIATORS / DIVERTERS” FROM THE STATUS OF COMMON CARRIERS TO “USERS” OF WATERS DIVERTED WHILE SECONDARILY EMPOWERING APPROPRIATORS / DIVERTERS TO ENABLE THOSE APPROPRIATORS / DIVERTERS THE ABILITY TO ALLOCATE WATERS AFTER DELIVERY TO BENEFICIAL USERS TO RETAIN “END USE” / “SUBSEQUENT USE” AND “FINAL DISPOSITION” OF WATER USES – CONCEPTS NOT HERE-TO-FORE GRANTED IN LAW. [[The “decision” from the Colorado Supreme Court in *Fulton Irr. D. Co*. [1972]: "We hold that when Denver delivers water to a customer tap, it does not lose dominion over the water later returning to its sewer.” CITY & COUNTY OF DENVER BD. OF WC v. FULTON IRR. D. CO., Colo. SCt. 1972 - 506 P.2d 144 (1972). (see*:* ***Opinion in contrast*:** FARMERS’ HIGH LINE CANAL & RESERVOIR CO. ET AL. v. SOUTHWORTH., . 13

Colo. 111; 21 P. 1028; 1889 Colo. LEXIS 128: "The words ²carrier² and ²consumer² will be used throughout this opinion as in Wheeler v. Irrigation Co. 10 Colo. 582, meaning the canal company and tiller of the soil, respectively. The word ²co-consumer² will also, for convenience, be applied exclusively to consumers taking from the same artificial stream. [*120] .

"The constitution recognizes priorities only among those taking water from [**1034] natural streams. Therefore, to constitute an appropriation such as is recognized and protected by that instrument, the essential act of diversion, with which is coupled the essential act of use, must have reference to the natural stream. But the [***14] consumer himself makes no diversion from the natural stream. The act of turning water from the carrier's canal into his lateral cannot be regarded as a diversion within the meaning of the constitution; nor can this act of itself, when combined with the use, create a valid constitutional appropriation. There is therefore no escape from the conclusion hitherto announced by this court that in cases like the present the carrier's diversion from the natural stream must unite with the consumer's use in order that there may be a complete appropriation within the meaning of our fundamental law."

FURTHERMORE: "The foregoing view is not a recognition of ownership in the carrier, save of its canal; nor does it in the slightest manner detract from the consumer's constitutional right of user. The carrier in and of itself has no independent priority (though the irrigation statutes use language that might give this impression), and any rights it may hold in connection with the water diverted depend for their continuance upon the use made by consumers. The carrier becomes the consumer's agent, and its labors clearly inure [***16] to his benefit. By taking from its canal the consumer recognizes and ratifies its acts of construction and diversion, making them his own. And the situation, so far as this question is concerned, is not different from what it would have been had the consumer in fact employed the carrier to construct the canal for himself alone." [[FARMERS' HIGH LINE CANAL & RESERVOIR CO. ET AL. v. SOUTHWORTH, 13 Colo. 111; 21 P. 1028; 1889]].

◇ COLORADO SUPREME COURT DECLARATIONS THAT THE COURTS WERE NOT BOUND BY PRIOR COURT DECLARATIONS ("*STARE DECISIS*") WITH REGARD TO WATER RESOURCE DEVELOPMENT MATTERS. [["Accordingly, we are not governed by, and find little assistance in, prior Colorado decisions." - opinion of the Colorado Supreme Court in City of Thornton v. Bijou Irrigation Co., 1996 - see @ pg. 71 * 71.]] . . . [[CONTRAST: Stare Decisis: " In common law legal systems, a **precedent** or **authority** is a principle or rule established in a previous legal case that is either binding on or persuasive for a court or other tribunal when deciding subsequent cases with similar issues or facts. The general principle in common law legal systems is that similar cases should be decided so as to give similar and predictable outcomes, and the principle of precedent is the mechanism by which that goal is attained. Black's Law Dictionary defines "precedent" as a "rule of law established for the first time by a court for a particular type of case and thereafter referred to in deciding similar cases."[1] Common law precedent is a third kind of law, on equal footing with statutory law (statutes and codes enacted by legislative bodies), and regulatory law (regulations promulgated by executive branch agencies)."

◇ LEGISLATIVE DECLARATIONS THAT THE WATERS OF THE PEOPLE IN COLORADO NEED NOT BE PUT TO USE IN ORDER TO PERFECT A "WATER USE RIGHT" AND THAT A "CONDITIONAL WATER USE RIGHT" COULD PROCEED TO A PERFECTED WATER USE RIGHT BY A USER STORAGE ACT. (see SENATE BILL 13-041). *CONCERNING THE PROTECTION OF STORED WATER, AND, IN CONNECTION THEREWITH, PRESERVING SUPPLIES FOR DROUGHT AND LONG-TERM NEEDS.* :

(a) Declares that the purpose of section 37-92-301 (4) (e), Colorado Revised Statutes, is to allow a conditional storage right to be made absolute for all decreed purposes once water is stored pursuant to the water right in the subject decreed storage facility, thus avoiding additional diligence proceedings that would otherwise be required after the storage facility is in place and water has been stored; and

(b) Determines that: The storage of water in a reservoir under a conditional water storage decree effectuates the beneficial use of the decreed storage right."

◇ DECLARATIONS IN STATUTE THAT "ECONOMIC REASONABLENESS" GOVERNS REGULATION OF A WATER USE: The *Colorado Water Quality Control Act*, section 25-8-102(1), 11A C.R.S. (1989), which states: "[I]t is declared to be the policy of this state to prevent injury to beneficial uses made of state waters, to maximize the beneficial uses of water, and to develop waters to which Colorado and its citizens are entitled and, within this context, to achieve the maximum practical degree of water quality in the waters of the state consistent with the welfare of the state.

The Act further provides that: "No provision of this article shall be interpreted so as to supersede, abrogate, or impair rights to divert water and apply water to beneficial uses in accordance with the provision of sections 5 and 6 of article XVI of the constitution of the state of Colorado...." "§ 25-8-104(1), 11A C.R.S. (1989).

The *Water Quality Control Act* establishes that the General Assembly consider the need to protect the quality of the water of the state . . . :

"Although environmental [[sic. public health, ed. note]] factors might provide a reasonable and sound basis for altering existing law, we have previously held: "If a change in long established judicial precedent is desirable, it is a legislative and not a judicial function to make any needed change." and; "The General Assembly has addressed the accommodation of the policy of maximum utilization of water and the policy of preservation of natural resources, but only in a limited way. It has expressed its concern that maximum utilization of water be balanced by preservation of the natural environment "to a reasonable degree" by authorizing appropriations on behalf of the people of the state of Colorado for that latter purpose. §§ 37-92-102(3) and 103(4), 15 C.R.S. (1973).... Id."

FURTHERMORE: [[see 720,000 Pounds of Toxic Chemicals Dumped into Colorado's Rivers]]. CONSERVATIONIST, FARMERS, KAYAKERS AND ANGLERS RELEASE NEW ENVIRONMENT COLORADO RESEARCH & POLICY CENTER REPORT DOCUMENTING WATER POLLUTION AND ITS IMPACTS. Thursday, March 22, 2012 *Denver, Colorado*—"***Industrial facilities dumped over 700,000 pounds of toxic chemicals into Colorado's waterways, more than a third of which went into the South Platte***,

according to a new report released today by Environment Colorado Research & Policy Center. *Wasting Our Waterways: Industrial Toxic Pollution and the Unfulfilled Promise of the Clean Water Act* also reports that 226 million pounds of toxic chemicals were discharged into 1,400 waterways across the country. Environment Colorado Research & Policy Center compiled toxic chemical releases as reported to the U.S. EPA's Toxics Release Inventory for 2010 (the most recent data available). Cargill Inc. was the biggest polluter in Colorado, dumping over 235,000 of the nearly 250,000 pounds of toxic pollution discharged into The South Platt alone.

"From the mighty Arkansas river to our smaller streams, Colorado's waterways are a haven of beauty. However, right now they are also a safe-haven for polluters— where polluters dump over 700,000 pounds of toxic chemicals in 2010 alone," said Bessie Schwarz, Field Organizer with Environment Colorado Research & Policy Center. "We must turn the tide of toxic pollution by restoring Clean Water Act protections to our waterways."

◇ REFORM OF THE COLORADO RULES OF CIVIL PROCEDURE - see especially C.R.C.P. 90 - THE COLORADO RULES OF CIVIL PROCEDURE FOR COURTS OF RECORD IN COLORADO, CHAPTER 10, GENERAL PROVISIONS - Rule 90. *Dispositions of Water Court Applications* - Uniform Local Rules for All State Water Court Divisions: "*Procedural Requirements.*" Standing, and notification of proposals to modify the diversions and uses of waters of the public in any judicial hearing seeking any modification of diversion or of use, need changed so that public notice would be achieved, . . . and a manner by which any State of Colorado District Water Court might hold, and enforce, navigability of any water course, and a manner by which any State of Colorado District Water Court would mandate and enforce any "change of use / change of point of diversion" water use proposal notice so that standing within a State of Colorado District Water Court would be a public right needs recognized. Modification, in favor of full public participation in the affairs and effects of "The Water Right Determination and Administration Act" that creates levels of adversary involvement in a water adjudication involving a

proposed plan for augmentation or a change of water right should assert: (1) any person has permission to file a statement of opposition; and has (2) standing to assert injury effectively nullifying holding in Application of Turkey Canon Ranch Ltd., 937 P.2d 739 (Colo. 1997). Specific penalties for procedural non-compliance should be adopted / should be mandated.

◇ SUBSTANTIVE DUE PROCESS GUARANTEES OF THE PUBLIC RIGHT TO HEALTH, SAFETY AND WELFARE NEED NOT ONLY FORMAL RECOGNITION IN ANY AND ALL LAND USE / MINERAL RESOURCE DEVELOPMENT ACTIVITITY DECISIONS BUT ALSO NEED FORMAL RECOGNITION BY THE STATE OF COLORADO OF THE PRIMACY OF THOSE SUBSTANTIVE DUE PROCESS RIGHT GUARANTEES IN THE SAFETY CLAUSE OF ALL LEGISLATION REGARDING IMPACTS TO INDIVIDUALS AND COMMUNITIES.

A statement to the effect that private economic development interests do not trump citizen and community civil rights, do not have dominance over public health safety and welfare interests as a necessary condition in state law making proposals. In Colorado - without any definitive enunciation to the contrary, and with current "guidance" from the faulted *VOSS* decision [[see Voss v. Lundvall Bros., Inc., 830 P. 2d 1061 - Colo: Supreme Court 1992]] - developer "property" interests are now trumping public health, safety, and welfare interests in natural resource development conflicts - even in populated areas. The proposal, put forward here, would make as state-announced policy that local governments would be "the deciders", and that community-wide and individual-interests would be held superior to, and restrictive of, developer's property "rights" should a competing situation occur that involved health, safety, and welfare, and, that, even though judicially announced, "statewide interest" in economic resource extraction would be subordinate to local control and to citizen and community-wide concerns and civil rights. The quest is for a "fair adjustment" of the interests of developer owners when they conflict with the interests of other

owners and with society as a whole. The proposal suggests certain precepts within a Colorado Substantive Due Process Doctrine:

- that is it the sense of the Legislature that no ownership of property accommodates the concept that an owner of property can act in a manner that is harmful to adjoining other property owners or property users;
- that the "nature" of "state interest" in land use decisions is already incorporated in the *Colorado Land Use Act* (see CRS 24- 65.1-101 et. seq.), and that the provisions therein have enabled Colorado political subdivisions to designate "matters of state interest" and "activities of state concern" by nominating certain designated specified actions / activities as being subject to special consideration in their review under local government regulatory capacity statutes;
- that there be mandated "1041" powers (*Colorado Land Use Act*, see CRS 24-65.1-101 et. seq.)) for local governments and local government control that should specifically state that these "1041" powers, and associated "1034" powers (*Local government Land Use Enabling Act* (CRS 29-20-101 et. seq.)) authorities pre-empt rules adopted pursuant to the Colorado Oil and Gas Act (see *Oil and Gas Conservation Act* - Colo. Rev. Stat. § 34-60-100, et seq.), and that any rules promulgated by the Colorado Oil and Gas Conservation Commission (COGCC) (2 CCR 404-1, et seq.) be held null if in conflict with adopted "1041" and "1034" local government powers of a local government or of a "home rule" authority.

Gov. Hickenlooper orders work to begin on Colorado Water Plan

DENVER — Wednesday, May 15, 2013 — Gov. John Hickenlooper today directed the Colorado

Water Conservation Board (CWCB) to begin work on a draft Colorado Water Plan that will support agriculture in rural Colorado and align state policy to the state's water values.

"Colorado deserves a plan for its water future use that aligns the state's many and varied water efforts and streamlines the regulatory processes," Hickenlooper said. "We started this effort more than two years ago and are pleased to see another major step forward. We look forward to continuing to tap Colorado's collaborative and innovative spirit to address our water challenges."

An executive order signed by Hickenlooper directs the CWCB to utilize the work of the state's grassroots water process, the Basin Roundtables and Interbasin Compact Committee, in developing a draft report by December 2014. A final report should be completed one year later.

The Colorado Water Plan is necessary to address a variety of issues, including:

- The gap between water supply and water demand. The Statewide Water Supply Initiative forecasts that this gap could exceed 500,000 acre feet by 2050. Moreover, the largest regional gap is set to occur in the South Platte Basin, the most populous as well as the largest agriculture-producing basin.
- Colorado's drought conditions threaten to hasten the impact of the water supply gap. Indeed, the past two decades have been Colorado's warmest on record, dating back to the 1890s.
- Colorado's water quantity and quality questions can no longer be thought of separately. Each impacts the other and state water policy should address them conjunctively.
- Interstate water concerns are as pressing as ever and require Colorado to be vigilant in protecting its interstate water rights pursuant to its nine interstate compacts and two equitable apportionment decrees.

The Executive Order directs the CWCB to work with its sister agencies within the Colorado Department of Natural Resources as well as the Colorado Department of Public Health and Environment, the Colorado Water Resources and Power Development Authority, the Colorado Department of Agriculture, the Colorado Energy Office, and other relevant state agencies as needed. Each of these agencies is directed to cooperate with the CWCB as needed on the Colorado Water Plan.

"Throughout our state's history, other water plans have been created by federal agencies or for the purpose of obtaining federal dollars," the order says. "We embark on Colorado's first water plan written by Coloradans, for Coloradans. Nevertheless, our past and current data and studies will aid in developing a plan for the future."

PUBLIC INPUT

ITEM 7

November 20, 2014

Colorado Water Conservation Board
1313 Sherman Street, Room 718
Denver, CO 80203

via email: cowaterplan@state.co.us

Madam Chair and Members of the Board,

Thank you for the opportunity to address the Board at your November 19 meeting in Berthoud. I wanted to provide a written copy of my testimony for your records.

- Will focus my comments on urban conservation and efficiency (in section 6.3)
- Compliment your staff on chapter as a whole, positive language about the effectiveness of conservation to meet growing needs, and several good state actions, two examples:
    - State incentives for outdoor conservation, how about a tax credit?
    - Expand funding options, like through the loan program and WSRA
- Couple that with suggesting there is strong desire from the public for more conservation than the plan suggests, three proof points:
    - Education campaign from conservation community generated over 19,000 comments to the board that can be boiled down to three basic points
        - Health of our rivers should be the plan's utmost priority
        - Large, new TMDs hurt our rivers and not the way forward in CO
        - We need to implement stronger conservation actions
    - Public opinion poll mirrors public comments (POS Strategies, available at: http://waterforcolorado.org/resources/2014-colorado-water-poll/
        - 90% of voters say a priority for the water plan should be to keep Colorado's rivers healthy and flowing
        - 78% of voters prefer using water conservation and recycling instead of diverting water from rivers in Western Colorado to the Front Range
        - 88% of voters support a statewide goal of urban use 10 percent by 2020
    - SB 115 Summary Report, previously addressed by Rep. Fischer
        - 515 attendees across CO
        - 1st point: citizens want a "robust statewide commitment toward achieving increased levels of municipal, commercial, and industrial water conservation as one of top priorities for meeting future water demands"

- 10% by 2020 goal as desired by public
    - The high conservation goal is equivalent to 1%/yr
    - SWSI demonstrates an 18% reduction in per capita use statewide in less than a decade, nearly 2%/yr reduction on average
    - New USGS report says 25% reduction in per capita use between 2000 and 2010
    - Conservation plans on file with state suggest nearly 2%/yr for coming decade
- So why is our goal for conservation savings in the plan little more than 0.5%/yr
    - This is ¼ the rate of the status quo
    - Described in plan as "minimum amount necessary"
    - Why plan for minimum amount - conservation is the cheapest, fastest, and most flexible way to meet future needs
- End with positive that the plan also has an action to consider a "stretch goal"
    - My organization, our partner groups, and multiple-thousand members of the public would like to see the Board adopt the high conservation scenario as its goal
    - We can do better, together

Thank you again, and please be in touch if I can provide any clarification to the comments above.

Sincerely,

Drew Beckwith
Water Policy Manager
Western Resource Advocates
drew.beckwith@westernresources.org
720-763-3726

PUBLIC INPUT
ITEM 9a

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2.0 DRAFT The Legal & Institutional Setting

2.2 Interstate Compacts and Equitable Apportionment Decrees

Colorado is a headwaters state where the major rivers flow to downstream states on both sides of the Continental Divide. As Colorado and other downstream states developed those rivers in the late nineteenth and early twentieth centuries, disputes arose regarding the authority of one state to control the use of an interstate stream that originates within another state.[1] Initially, downstream states sought to resolve water disputes through litigation before the United States Supreme Court.[2] Two cases decided by that Court persuaded Colorado water leaders that negotiated interstate water agreements were better than litigation.[3] Colorado is a party to nine formal interstate water agreements, called compacts, and these compacts place limits on Colorado's ability to use all of the water supplies that originate in Colorado.

In the 1907 case of *Kansas v. Colorado*, arising from the contention that water users in Colorado were depriving users in Kansas their fair share of flows in the Arkansas River, the Supreme Court announced the doctrine of equitable apportionment.[4] The doctrine provides that the principle of "equality of right" should apply to determine how states should share rivers, so that each state should receive equal benefit.[5] The court dismissed Kansas' claim because it could not show sufficient injury from Colorado's diversions, but allowed Kansas to bring a new action in the event of a "material increase in the depletion of the waters of the Arkansas by Colorado."[6] *Kansas v. Colorado* left future disagreements about river use to the uncertain and expensive process of protracted, Supreme Court litigation. A similar dispute over Colorado's proposed diversions from the Laramie River to the detriment of downstream senior appropriators in Wyoming led to the case of *Wyoming v. Colorado*.[7] Resolving the dispute in Wyoming's favor, the Supreme Court ruled in 1922 that between two states using the prior appropriation doctrine, the doctrine should be applied to determine relative priorities on an interstate basis.[8] Thus, this decision required junior water users in Colorado to honor senior water rights in Wyoming.[9]

Colorado's Interstate Compacts
Colorado River Compact, 1922
La Plata River Compact, 1922
South Platte River Compact, 1923
Rio Grande River Compact, 1938
Republican River Compact, 1942
Upper Colorado River Compact, 1948
Arkansas River Compact, 1948
Costilla Creek Compact, 1963
Animas La-Plata Compact, 1969

One of the attorneys representing Colorado in the Wyoming litigation was a visionary who recognized that the law resulting from the *Kansas* and *Wyoming* decisions put Colorado's future at great risk.[10] Delph Carpenter of Greeley, an experienced irrigation litigator as well as a rancher and former state senator, was appointed interstate streams commissioner in 1913.[11] As an attorney for the state, he worked on negotiations with Nebraska regarding the South Platte River.[12] During this time, he formulated the leading theory on the rights

and authorities for entering into interstate compacts that guided the creation of the nine compacts ultimately signed by Colorado.[13]

Carpenter became especially concerned about the Colorado River. California, a prior appropriation state, was growing rapidly.[14] Carpenter feared that without an agreed apportionment between the states, California farmers and municipalities would appropriate the river to the point that Colorado could not provide for future development.[15] To protect Colorado, Carpenter was the principal force in the negotiation of the Colorado River Compact and went on to negotiate additional compacts on behalf of Colorado.[16] [17]Carpenter's model guided other negotiators of interstate water compacts, which provided certainty to water users in all participating states.[a]

Interstate water compacts are formal agreements among the participating states, authorized by the United States Constitution, and ratified by the legislatures of the states and the United States Congress. Under this framework, compacts are considered federal law, state law, and legally binding contracts among the signatory parties. The nine water compacts, along with two court decrees, are fundamental elements of Colorado's Water Plan because they dictate how the water is shared among the states and therefore identify and impose the rights to and limitations of use and future development of every stream in Colorado.

Colorado's Interstate Decrees
Laramie River Decree, 1957
North Platte Decree, 2001

Overview of Colorado's Interstate Compacts and Interstate Equitable Apportionment Decrees

Colorado River Compact

The Colorado River Compact is the foundation for a complicated set of legal requirements regarding use and management of the Colorado River, known as the "Law of the River."[b] The negotiators of this compat signed it on November 24, 1922, and the U.S. Congress approved it by passage of the Boulder Canyon Project Act in 1929.[18]

Generally, the compact apportions the right to consume water for beneficial use from the Colorado River System among the upper basin states (Colorado, Utah, Wyoming, and New Mexico) and the lower basin states (California, Arizona, Nevada).[19] The dividing point between the basins is Lee Ferry, Arizona.[20] The compact recognizes each basin's right to the beneficial consumptive use of 7.5 million acre-feet of water per year in perpetuity.[21] The lower basin states may increase their beneficial consumptive use by one million acre-feet per year.[22] The compact also obligates the

[a] Carpenter also negotiated the South Platte River Compact and the La Plata River Compact. Other negotiators of interstate water compacts include: Clifford H. Stone (Upper Colorado River Compact and original Costilla Creek Compact); M.C. Hinderlider (Rio Grande River Compact and Republican River Compact); J.E. Whitten (amended Costilla Creek Compact); Henry C. Vidal, Gail L. Ireland and Harry B. Mendenhall (Arkansas River Compact); and multiple negotiators (Animas La-Plata Compact).

[b]The "law of the river" is a colloquial term that generally refers to the collective body of treaties, compacts, decrees, statutes, regulations, contracts and other legal documents and agreements applicable to the allocation, appropriation, development, exportation and management of the waters of the Colorado River.

upper division states to "not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75 million acre-feet for any period of ten consecutive years."[23] Anticipating a potential treaty between the United States and Mexico, the compact further specifies that the states are to address any obligation to deliver water to Mexico under a future treaty by using water surplus to the apportionments between the basins.[24] If no surplus exists, the upper and lower basins are to share equally in meeting any such deficiency.[25] In addition to the apportionment provisions, the Colorado River Compact provides that present perfected rights are not affected by the compact and recognizes the states' respective authority to regulate and control the appropriation, use, and distribution of water within their boundaries.[26] Complete text of the compact can be found here.

Upper Colorado River Basin Compact

The Upper Colorado River Basin Compact apportions the right to beneficial consumptive use of the Colorado River among the Upper basin states (Colorado, Wyoming, Utah, New Mexico, and Arizona).[27] The compact was signed by these states on October 11, 1948 and ratified by Congress in 1949.[28] The compact allocates the consumptive use as follows: Colorado 51.75 percent, New Mexico 11.25 percent, Utah 23 percent, Wyoming 14 percent, and Arizona 50,000 acre-feet per year.[29] In addition to the allocation provisions, the compact outlines parameters for the upper division states to assure compliance with the flow obligation at Lee Ferry under the Colorado River Compact, and establishes a Commission to implement and administer the compact.[30] Each of the four upper division states and the federal government may appoint a Commissioner to the Commission.[31]

The Upper Colorado River Basin Compact also sets forth specific terms for apportioning the use among the states of interstate tributaries to the Colorado River, including the Yampa, San Juan, Little Snake, and Henry's Fork.[32] The compact also recognizes water use according to the La Plata River Compact and accounts for such uses as part of the Upper Colorado River Compact.[33] Complete text of the compact can be found here.

Arkansas River Compact

Colorado Recognizing the value of settling uncertainties associated with the equitable apportionment decree from *Kansas v. Colorado*, the two states signed the Arkansas River Compact on December 14, 1948, which Congress ratified in 1949.[34] This compact does not impose any fixed delivery obligation.[35] Instead, it protects water uses in existence in 1949, and limits future development in either Colorado or Kansas to the extent it would cause any material depletion of useable stateline flow.[36] The compact also addresses allocation of benefits from use of storage at John Martin Reservoir, which was completed the same year the compact was approved.[37] Specifically, the compact directs that John Martin Reservoir be operated for the benefit of both states and provides specific terms for operation.[38] Based on the compact, storage periods are divided between winter (November 1 to March 31) when all inflows are stored and summer (April 1 to October 31), when generally only large flood flows are stored.[39] The compact also establishes the Arkansas River Compact Administration with certain designated roles and responsibilities.[40]

Based on its authorities and obligations, the Administration adopted the 1980 Operating Plan for John Martin Reservoir, which substantially modifies the storage and release of water from the reservoir to improve the efficiency of water delivery to users in both states.[41] Recent litigation in

Kansas v. Colorado provides more specific guidance for administration of the river, within the framework established in the compact and Operating Plan.[42] Complete text of the compact can be found here.

Animas-La Plata Project Compact

Signed on June 7, 1969, this compact between Colorado and New Mexico is designed to inform the operation of the Animas-La Plata Project.[43] This compact recognizes New Mexico's right to divert and store water from the Animas and La Plata Rivers with the same priority as those diversions under the Animas La Plata Project for Colorado users.[44] The compact further clarifies that any use by New Mexico of these waters is counted toward its allocation under the Upper Colorado River Basin Compact.[45] Complete text of the compact can be found here.

La Plata River Compact

Following on the heels of the Colorado River Compact, the La Plata River Compact was signed by New Mexico and Colorado on November 27, 1922, and approved by Congress in 1925.[46] The La Plata River Compact designates the location and operation of two gages on the river and defines the calculation for the flows of the La Plata River.[47] This compact allows both states unrestricted use of the river between December 1 and February 15 of each year.[48] During the rest of the year, each State has unrestricted use of the water when the Interstate gage station is greater than 100 cubic feet per second.[49] When the interstate gage station is less than 100 cubic feet per second, Colorado must deliver half of the mean flow measured at the Hesperus gage Station (but no more than 100 cubic feet per second) to New Mexico.[50] Additionally, the compact allows for alternating periods of use between the two states in times of low flow and specifies that minor deviations from the required water deliveries will not be considered a violation.[51] Complete text of the compact can be found here.

Republican River Compact (citation from Scott Steinbecker, check NE/KA sites)

Colorado, Kansas, and Nebraska signed the Republican River Compact on December 31, 1942, which Congress ratified in 1943.[52] The compact quantifies the average annual "Virgin Water Supply" (defined as water within the basin "undepleted by the activities of man") within the basin and its tributaries as 478,900 acre-feet of water per year.[53] For beneficial consumptive use each year, the compact allocates 54,100 acre-feet of water to Colorado, 190,300 acre-feet of water to Kansas, and 234,500 acre-feet of water to Nebraska.[54] In addition, the entire water supply originating in the basin downstream from the lowest crossing of the river at the Nebraska-Kansas state line is allocated for beneficial consumptive use in Kansas.[55] If the water supply of any sub-basin varies by more than 10 percent of the period of record used as a basis for the compact, the allocations also change by the same percentage.[56]

Instead of establishing principles for dispute resolution, the compact calls for each state to administer the compact through its respective water administration officials, and acknowledges that those three officials may, by unanimous action, adopt rules and regulations consistent with the compact.[57] Consequently, in 1959 the states established the Republican River Compact Administration (RRCA).[58] Each year, by unanimous action, the three RRCA members compute the Virgin Water Supply within the basin and the beneficial consumptive use of each state.[59] Under the

accounting procedures established by the RRCA, Colorado's allocation for beneficial consumptive use in the Republican River sub-basins under normal conditions includes 10,000 acre-feet from the North Fork of the Republican, 15,400 acre-feet from the Arikaree River, 25,400 acre-feet from the South Fork of the Republican, and 3,300 acre-feet from the Beaver Creek. Kansas and Nebraska may each consume 190,300 acre-feet and 234,500 acre-feet of water, respectively.[60]

Despite efforts to avoid litigation and promote interstate comity by entering into the Republican River Compact, the states have been involved in formal disputes regarding compact compliance and interpretation since 1999. Currently, the lack of unanimity regarding accounting procedures and compact compliance has formed the basis of several non-binding arbitrations and litigation before the U.S. Supreme Court. Complete text of the compact can be found here.

Rio Grande Compact

The Rio Grande Compact allocates beneficial use of water from the Rio Grande among Colorado, New Mexico, and Texas. These states signed the Rio Grande Compact on March 18, 1938, and it was approved by Congress the following year.[61] The compact defines the boundaries of the Rio Grande River Basin and establishes the operation of six gage stations and recorders near reservoirs built after 1929.[62] It requires that Colorado deliver a certain amount of water at the New Mexico and Colorado state line annually based on an index schedule, and includes provisions for New Mexico to deliver certain amounts to Elephant Butte Reservoir based on a similar but separate index schedule.[63] The compact envisions a normal release of 790,000 acre-feet from Elephant Butte to irrigate lands in southern New Mexico and Texas and provide water to Mexico consistent with the 1906 Treaty.[64] Additionally, the compact creates a system of water credits and debits, storage, spills, and releases from the Rio Grande Project at Elephant Butte and further places restrictions on storage within Colorado and New Mexico.[65] The compact also establishes a commission for compact administration purposes. Colorado's State Engineer serves as Colorado's Commissioner.[66] Complete text of the compact can be found here.

South Platte River Compact

Colorado signed the South Platte River Compact shortly after the La Plata River Compact on April 27, 1923, but Congress did not fully ratify the compact until 1926.[67] This compact allocates the waters of the South Platte River between Colorado and Nebraska.[68] It relies on the west boundary of Washington County to separate the upper and lower Sections of the South Platte River within Colorado and establishes a gage at Julesburg to measure flow.[69] The South Platte Compact gives Colorado unrestricted use of water in the Lower Section between October 15 and April 1 and includes several provisions relating to Nebraska's canals. Between April 1 and October 15, the compact stipulates that Colorado must curtail diversions in the lower section by appropriators with decrees junior to June 14, 1897 when the mean flow as measured at the Julesburg gage is less than 120 cubic feet per second.[70] Like the La Plata Compact, the South Platte Compact specifies that minor irregularities in water delivery will not constitute a violation of the compact.[71] Complete text of the compact can be found here.

Amended Costilla Creek Compact

Colorado and New Mexico signed the Costilla Creek Compact on September 30, 1944, and amended the compact in 1963.[72] The Costilla Creek Compact is intended to establish integrated operations between Colorado and New Mexico for existing and prospective irrigation facilities and to equalize the benefits of the water and its beneficial use between the two states.[73] The compact defines May 16 to September 30 as the irrigation season, designates October 1 to May 15 as the storage season, and prohibits direct flow diversions during the storage season.[74] The compact further sets forth the amount of water to be delivered among the water users of both states, and provides for allocation of surplus flows and storage in reservoirs constructed after the compact took effect.[75] Deliveries to water users in Colorado are to be made from flows of Costilla Creek downstream of where it leaves the mountains.[76] Moreover, the compact allocates 36.5 percent of the usable capacity of the Costilla Reservoir to Colorado and 63.5 percent to New Mexico.[77] The 1963 amendment to the compact allows for a change in point of diversion for the Cerro Ditch, where delivery from Costilla Reservoir is made.[78] A commission comprised of the State Engineers for both Colorado and New Mexico oversees the compact.[79] Complete text of the compact can be found here.

Laramie River Decree

The decree in *Wyoming v. Colorado*, 353 U.S. 953 (1957), permits Colorado to divert 49,375 acre-feet of water per calendar year from the Laramie River and its tributaries provided that no more than 19,875 acre-feet per calendar year of that total amount of water may be diverted by Colorado outside the Laramie River Basin.[80] Further, no more than 1800 acre-feet may be diverted by Colorado after July 31 of each year for use within the basin. All waters diverted for use within the Laramie River Basin in Colorado are restricted to irrigation use on those lands designated by the court at the time of the decree, while waters diverted for use outside the basin are not subject to that restriction. The waters of Sand Creek are specifically excluded from the operation of this decree.[81] Complete text of the decree can be found here.

North Platte Decree

The amended decree in *Nebraska v. Wyoming,* 534 U.S. 40 (2001), equitably apportions water in the North Platte River among Colorado, Nebraska, and Wyoming.[82] The decree limits Colorado's diversion of water from the North Platte River in Jackson County for irrigation of no more than 145,000 acres during one irrigation season (May 1 to September 30) and from storing no more than 17,000 acre-feet of water for irrigation purposes between October 1 of any year and September 30 of the following year. The decree also limits total water exports from the North Platte River Basin in Colorado to no more than 60,000 acre-feet during any 10-year period. The decree does not affect or restrict the use or diversion of water for ordinary and usual domestic, municipal, and stock watering purposes.[83] Complete text of the decree can be found here.

Other Institutional Interstate and Federal Agreements

In addition to the compacts and interstate equitable apportionment decrees described above, Colorado has entered into many interstate agreements (rather than more formalized compacts) to manage water resources. Two such agreements, which are described below, are Memoranda of Understandings between Colorado and neighborhing states involving Pot Creek (Utah) and Sand Creek (Wyoming). In addition, Colorado has remained actively involved in interstate and federal

water matters to protect the State's rights and interests in water resources. Recognizing that formal disagreements or disputes among states regarding enforcement, interpretation or implementation of the interstate compacts or reconsideration of equitable apportionment decisions rise directly to the U.S. Supreme Court as state to state controversies ,and inevitably result in expensive, protracted litigation, the last two decades have seen an unprecedented amount of cooperation and interstate consensus among the State of Colorado, the federal government, and downstream states. Their actions have allowed for many disputes to be handled in a cooperative manner, and ultimately resolved through interstate agreements.

Pot Creek Agreement

Colorado and Utah used a Memorandum of Understanding (MOU) to define their relationship regarding Pot Creek, rather than an interstate compact.[84] Originating in the Uinta Mountains in Utah, Pot Creek flows for eight miles within Colorado before joining the Green River. The Pot Creek MOU was signed on April 1, 1958 and sought to establish an equitable and workable division of water between the two states. This MOU stipulated that both Colorado and Utah believed that a compact was eventually necessary to appropriate the water for the two states, but that the MOU would help develop a functioning system prior to the formulation of an eventual interstate compact. One aspect of the Pot Creek MOU was to define the parameters for appointing a water commissioner who possessed the authority to administer water in both Colorado and Utah, the expenses of which would be split with Utah bearing 80 percent of the costs and Colorado 20 percent. Additionally, this MOU states that direct flow diversions may not be exercised before May 1 of each year and establishes a schedule of priorities for use in the two states.[85]

Sand Creek Agreement

Sand Creek originates in the Laramie Mountains of Colorado and flows into Wyoming where it joins the Laramie River.[86] To equitably apportion Sand Creek, Colorado and Wyoming signed a MOU on March 13, 1939. The Sand Creek MOU allocated waters according to the priority water rights in Colorado and Wyoming, recognizing that Wyoming was entitled to 50.68 cubic feet per second prior to any Colorado diversions. This provision was later revised on August 7, 1997 to require the delivery of 40 cubic feet per second by Colorado over a seven day period at the beginning of the irrigation season, after which Colorado was required to deliver 35 cubic feet per second. Finally, the Sand Creek MOU limited the diversions of the Sand Creek Ditch and the Wilson Supply Ditch to amounts of water in excess of the water allocated to Wyoming.[87]

Colorado River

Within the Colorado River Basin, there have been extraordinary strides toward cooperation in the last several decades. For example, the Upper Colorado River Recovery Program and the San Juan River Recovery Implementation Program enable Colorado to fully use its compact entitlements, while striving to achieve the recovery of endangered fish species. These programs are further described in this water plan.

In 2006, Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming also signed the Range-Wide Conservation Agreement and Strategy for Roundtail Chub, Bluehead Sucker, and Flannelmouth Sucker (Three Species Agreement).[88] The states created this agreement to expedite the

implementation of conservation measures for the three species through a collaborative and cooperative interstate effort. The Three Species Agreement sought to minimize the potential threats to the species that could result in a federal listing using coordinated State-driven preventative measures.[89]

In 2007, the states navigated substantial disagreement to collectively support the Bureau of Reclamation's Record of Decision on Interim Guidelines for Lower Basin Shortages and Coordinated Operation of Lakes Powell and Mead through 2026.[90] Among other things, these guidelines: 1) set forth coordinated, operational protocols between Lakes Mead and Powell to allow the system to operate more efficiently during drought; 2) establish shortage guidelines in the Lower Basin; and 3) implement the Intentionally Created Surplus mechanism for banking water in Lake Mead.[91]

Continued cooperative efforts have helped Lower Basin interest to use water more efficiently. Such efforts include the creation of Intentionally Created Surplus, the pilot operation of the Yuma Desalting Plant, and the construction and operation of Brock Reservoir.

The states and federal government have also continued to develop a working relationship with Mexico, resulting in Minutes 316-319 to the 1944 Water Treaty.[92] These Minutes identify and implement voluntary options for creating more system water, enhancing environmental values, providing Mexico access to storage in the United States, providing better management of drought for both countries, and establishing the foundation for developing and implementing cooperative projects for the benefit of both countries consistent with the 1944 Water Treaty and the Law of the River.

In response to the basin-wide drought beginning in 2000, there has also been increased interstate activity in the field of weather modification. Weather modification, or cloud seeding, is designed to increase winter precipitation through aerial and ground-based techniques. The Colorado Basin States are pursuing winter cloud seeding efforts in Colorado, Wyoming, and Utah. Additionally, New Mexico helps fund Colorado's weather modification program in southwest Colorado to increase run-off and flow in the Colorado River.[93]

Most recently, the Colorado River Basin States have turned their attention to collaborating on contingency planning to protect certain reservoir thresholds in the event of continued drought conditions, protecting power generation, and ensuring the continued use and development of existing water supplies.

Platte River

On the South and North Platte Rivers, Colorado, Wyoming, and Nebraska are currently working with the Department of the Interior to collectively manage the river with the dual goals of endangered species recovery and water development protection. The Platte River Recovery Implementation Program, established in 1997, seeks to restore habitat, provide for increased stream flows, and encourage an adaptive management approach to river operations.[94] This program is further described in this water plan.

Republican River

Within the Republican River Basin, the state of Colorado continues to be involved with Colorado water users, as well as Nebraska and Kansas, to identify reasonable methods for future compact

compliance by all parties. The Compact Compliance Pipeline was recently constructed to facilitate Colorado's ongoing and future compact compliance while mitigating impacts to Colorado water users. Before it can be fully operated, Nebraska, Kansas, and Colorado must agree on how to account for the water under the compact. This includes negotiating, and in some instances arbitrating, appropriate changes to compact accounting procedures and implementation of new operations in the basin. When a final agreement or decision is implemented water delivery from the CCP will be counted towards Colorado's compact obligation to Nebraska and Kansas.

Rio Grande River

On the Rio Grande, the state continues to work with intrastate and interstate issues related to groundwater administration and endangered species act and compact compliance. Groundwater issues are being addressed in the San Luis Valley through the establishment of basin sub-districts and ongoing efforts to end groundwater administration rules for the Rio Grande Basin in Colorado. Additionally, the state continues to work with the federal government and stakeholders to address survival and recovery efforts of endangered and threatened species in a manner that respects and remains consistent with existing Colorado water rights as well as interstate compact rights and authorities. The state is also involved in an interstate lawsuit before the U.S. Supreme Court concerning groundwater pumping and usage between Texas and New Mexico below Elephant Butte Reservoir. Because interpretation and enforcement of the Compact may form the basis for part of the controversy between Texas and New Mexico, Colorado, as a signatory to the Compact, is a named party to the lawsuit.[95]

San Juan/Dolores River

In the San Juan/Dolores Basin, a major project is underway to assist Colorado in meeting its compact obligations to New Mexico. The Long Hollow Reservoir is being constructed to both supplement the irrigation needs for the region and to assist in compact requirements. This reservoir will allocate 300 acre-feet of annual storage to be used for deliveries to New Mexico during summer low-flow months. In addition, the Animas La-Plata Project was recently completed. The water purchased by CWCB for this project will be importat to the state in the future.

2.3 Colorado's Local-Control Structure

Being Drafted

2.4 Local, State, Tribal, and Federal Water Planning, Approval, & Permitting Institutions

Introduction

To implement a water project in Colorado, many local, state, and federal entities are needed. These partnerships are critical to ensure the right checks and balances are in place for a project to move forward. Traditionally, these organizations include the entities listed below.

Local Entities

- *Project Proponents* include a wide array of water users and water providers including, but not limited to, local governments that run a utility, private water companies that act as a

local utility, special districts, ditch companies, or regional water conservancy and conservation districts that sell water to local water providers. These entities are responsible for working with state and federal permitting entities to successfully permit their water project.

- *Local Governments* have jurisdiction and authority over parts of development projects and can request mitigation of any impacts for proposed water projects because of their 1041 powers, which are detailed below under the state planning section.[96]
- *Cooperating Agencies* are entities interested in a water project that request cooperating agency status under the NEPA process.[97]

State Entities:

- *Colorado Water Quality Control Division* is housed within the Colorado Department of Public Health and Environment. The agency reviews water quality certifications under Section 401 of the federal Clean Water Act.
- *Colorado Parks and Wildlife (CPW)* is a division within the Colorado Department of Natural Resources. CPW reviews state wildlife mitigation plans under Colorado's state statutes, known as 122.2 plans.[98]
- *Colorado Water Conservation Board (CWCB)* is a division within the Colorado Department of Natural Resources. CWCB sets water policy and planning in Colorado.[99]
- *Colorado Division of Water Resources (DWR)* is housed in the Colorado Department of Natural Resources and is responsible for water administration. DWR ensures that a project can be administered. New water rights and well permits must be filed with DWR.
- *Colorado Attorney General's Office* is the legal authority regarding matters of law, including whether or not a particular project or agreement is legal under Colorado law.

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Tribal Entities

- *Southern Ute Indian Tribe and Ute Mountain Ute Tribe* are federally-recognized Tribal governments with responsibilities for the protection and use of water on the Southern Ute Indian Reservation and the Ute Mountain Ute Reservation. [Add internal cross-citation to Tribal settlement section?]
- *Ute Mountain Environmental Programs Department* is a Ute Mountain Ute Tribal department and is responsible for implementing Tribal water quality standards (including antidegradation provisions under Section 303 of the Clean Water Act) and for federal permitting under Section 401 of the Clean Water Act for projects located on the Ute Mountain Ute Reservation.
- *Southern Ute WaterResources Division* is a division of the Southern Ute Indian Tribe overseeing: water resoucres planning, project implementation including cooperative projects with the non-Indian community, coordinating tribal actions in Colorado's water courts, and overseeing the Tribe's role in the cooperative and coordinated administration of the Tribe's water rights.

Federal Entities:

The following can all act as lead agencies responsible for National Environmental Policy Act (NEPA) compliance and oversight.

- *Environmental Protection Agency (EPA)* is the federal agency responsible for oversight of permitting related to wetland mitigation, described under section 404 of the Clean Water Act.
- *U.S. Army Corps of Engineers* is responsible for 404 permitting under the Clean Water Act.
- *U.S. Forest Service* manages United States forests and has substantial land holdings in Colorado (role related to water rights described in Section 2.5).
- *U.S. Fish and Wildlife Service* manages threatened and endangered species recovery programs and regulates actions impacting threatened or endangered species under the Endangered Species Act. This agency is responsible for determining if a project exceeds the bounds of any programmatic opinions regarding further water development. Under the Fish and Wildlife Coordination Act, federal agencies responsible for coordinating NEPA must consult with the Fish and Wildlife Service regarding the project's potential impacts to fish and wildlife species.
- *U.S. Bureau of Reclamation (BOR)* is the agency that built, and now manages, several water projects, such as Blue Mesa Reservoir and the Fry-Ark project. The BOR is responsible for contracting water out of these federal projects.
- *U.S. Bureau of Land Management (BLM)* has substantial land holdings within Colorado.
- *U.S. National Park Service (NPS)* has substantial land holdings within Colorado. (role related to water rights described in Section 2.5).
  Federal Energy Regulatory Commission (FERC) is responsible for FERC licensing associated with hydropower projects.

State Planning

The CWCB is the primary state agency responsible for statewide water planning. Water planning illustrates what types of water projects and how much water will be needed in the future to service Colorado's growing population. The basin roundtables and the Interbasin Compact Committee were created in 2005 and are key parts of CWCB's statewide water planning efforts.

The Interbasin Compact Committee is made up of two representatives from each basin roundtable, six governor appointees, and two appointees from the state legislature. Their charge is to develop agreements among basins and to brainstorm statewide policy issues.

Both the basin roundtables and the Interbasin Compact Committee provide critical input not only to Colorado's Water Plan, but also to the Statewide Water Supply Initiative (SWSI). SWSI creates a technical foundation and a common technical platform that stakeholders and Colorado's Water Plan may rely and build on. The report is periodically updated with the latest technical information and tracks Colorado's changing water related needs.

In addition, the basin roundtables and CWCB have developed a forum where project proponents can find technical and financial support. The forum also provides project proponents with resources to understand the issues and stakeholder concerns regarding a new water project. The goal of this collaborative approach is to help the entities traditionally involved in project permitting quickly and efficiently understand the issues.

Section 122.2

C.R.S. § 37-60-122.2 is the Fish and Wildlife Resources Fund and Authorization that declares fish and wildlife resources are a matter of statewide concern and that impacts on such resources should be reasonably mitigated by applicants proposing water diversion, delivery, or storage projects.[100] A plan is generally required when an applicant seeks a permit or license from the federal government for the specified types of water projects, with some exceptions as noted in the statute. Applicants must submit a mitigation proposal to the CPW commission for review and approval.[101] Once the applicant and the commission agree on the plan, it is forwarded to the CWCB for Board adoption as the official state position on the plan.[102] A plan is generally required when an applicant seeks a permit or license from the federal government for the specified types of water projects, with some exceptions as noted in the statute. Grants to help implement the mitigation plans are available for applicants. Examples of completed or in process Section 122.2 plans are Southern Delivery System (SDS), Windy Gap firming project, Moffat Collection project, and Chatfield Reservoir Reallocation project.

401 Water Quality Certification

Comment [CH1]: See bullets above. Are additional sections or revisions warranted here on the UMUT's 401 cerfication jurisdiction?

The Colorado Water Quality Control Division (WQCD) is an agency under the Colorado Department of Public Health and Environment. The WQCD reviews water quality certifications under Section 401 of the federal Clean Water Act (CWA) and issues permits accordingly.[103] The WQCD also examines actions or projects that fall under the Colorado 401 Certification Regulation. Any federal license or permit issued to construct or operate a facility, which may result in any fill or discharge into the navigable waters of the United States, needs a CWA 401 certification.[104] The certification

process includes a preliminary review of the proposed project, a 30-day public notice, review of public comments, and a final certification decision for the proposed project.[105]

1041 Local Permits

In 1974, the Colorado General Assembly enacted measures to further define state and local government's authority to make planning decisions for matters of statewide interest. House Bill 74-1041 establishes local powers over certain activities of state interest.[106] These are commonly referred to as 1041 powers and allow local governments to identify, designate, and regulate areas and activities of state interest through a local permitting process.[107] The 1041powers allow local governments to maintain their control over particular aspects of development projects, even when the development project has statewide impacts.[108] For a development project to proceed, it needs to be consistent with the environmental and developmental goals of the local communities, as outlined in their 1041 regulations.

The impacts from the construction and operation of large-scale water projects is particularly important to many local governments. House Bill 74-1041authorizes local governments to designate activities of state interest as follows: 1) site selection and construction of major new domestic water and sewage treatment systems; 2) major extension of existing domestic water and sewage treatment systems; 3) site selection and development of new communities; and, 4) efficient use of municipal and industrial water projects.[109] Local governments may not pass regulations that prohibit the construction of municipal water facilities and the expansion of existing projects. House Bill 74-1041 outlines that a locality must have a permit, and designate conditions of the permit before construction of a project with state interest.[110]

Cooperating Agency Status

Federal agencies actively consider designation of cooperating agencies in the preparation of analyses and documentation required by NEPA and they participate as cooperating agencies in other agency's NEPA processes.[111] The Council on Environmental Quality regulations addressing cooperating agencies status implement the NEPA mandate that Federal agencies responsible for preparing NEPA analyses and documentation do so "in cooperation with State and local governments" and other agencies with jurisdiction by law or special expertise.[112]

Stakeholder involvement is important in ensuring that decision makers have the environmental information necessary to make informed and timely decisions. Cooperating agency status is a major component of agency stakeholder involvement in the NEPA process. The benefits of enhanced cooperating agency participation in the preparation of NEPA analyses include: disclosing relevant information early in the analytical process; applying available technical expertise and staff support; avoiding duplication with other federal, state, tribal and local procedures; and establishing a mechanism for addressing intergovernmental issues, and other benefits. The state of Colorado has and continues to participate as both a non-federal project sponsor and as a Cooperating Technical Agency on a case-by-case basis for water projects in the state.

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NEPA and Section 404 Permitting

NEPA establishes the broad national framework for protecting the environment.[113] NEPA's basic policy is to ensure that all branches of government give proper consideration before undertaking any major federal action that substantially affects the environment.[114] NEPA requirements are invoked when significant projects are proposed having a federal nexus. The primary NEPA requirements are Environmental Assessments and Environmental Impact Statements, which are required from all federal agencies and assess the likelihood of impacts from alternative courses of action.[115] Depending on the various aspects of a given project, a variety of federal agencies can serve as the "lead agency" for NEPA purposes, as mentioned above.[116]

In 1972, Section 404 of the Clean Water Act established a program to regulate the discharge of dredged or fill material into waters of the United States.[117] The program is jointly administered by the U.S. Army Corps of Engineers and the Environmental Protection Agency. The Corps is responsible for the day-to-day administration and permit review, and EPA provides program oversight. The goal of the program is to ensure that no discharge of dredged or fill material is permitted if there is an alternative that would be less damaging to the aquatic resources, or if substantial degradation would occur to the nation's waters. The permit review process is sequential and encourages avoiding impacts, then minimizing impacts and, finally, requiring mitigation for unavoidable impacts to the aquatic environment.[118] The state of Colorado is involved in both NEPA processes and 404 permitting processes at various levels on a case-by-case basis.

Moving Forward

Colorado is committed to strengthening partnerships within state government and among federal, state, Tribal, and local entities to make the permitting process more effective and efficient. Section 5.10 of Colorado's Water Plan illustrates recent developments among federal, state, and local partners. The section provides a framework for developing a more efficient permitting process that is better aligned with Colorado's water values

2.5 Tribal and Federal Reserved Water Right Issues within Colorado

Introduction

In addition to the patchwork of local, state, and federal agencies involved in water planning, described in Section 2.4, many federal agencies and Native American tribes hold water rights that serve as part of the existing institutional setting for water planning. Colorado is home to a substantial amount of tribal and federally held lands. Of the 66, 485,760 acres that form the state of Colorado, the federal government holds title to approximately one-third of the lands ~~(24,086,075).~~[119] Specific federal agencies with major federal land holdings in Colorado include: the United States Forest Service, the United States Bureau of Land Management, the United States National Park Service, and the United States Fish and Wildlife Service. In addition, two different Native American tribes have reservations located within Colorado borders. Both the Southern Ute Tribe and the Ute Mountain Ute Tribe are located in Southwestern Colorado (and the Ute Mountain Ute Reservation also includes lands in northwestern New Mexico and in southeastern Utah). The Southern Ute Tribe is governed by the Tribal Council whose Constitution was approved in 1936. The Ute Mountain Ute Tribe is governed by the Tribal Council whose constitution was approved in

Comment [CH2]: My initial reading of this document (especially footnote 1) is that the number for Colorado does not include Indian lands. The UMU Reservation is approximately 600,000 acres and SUIT Reservation is approximately 310,000 acres.

1940. [120] [121] Besides the two tribes, only the Forest Service, National Park Service, and Fish and Wildlife Service have pursued substantial reserved water rights associated with their landholdings in Colorado.

The history of federal and tribal water rights, as they relate to these land holdings in Colorado, is unique and complicated. Any discussion of federal water rights must begin with a discussion of "the Winters Doctrine."[122] The Winters Doctrine, established by the U.S. Supreme Court in 1908, generally provides that when the United States sets aside an Indian Reservation, it impliedly reserves the minimum amount of water necessary to fulfill the purposes of the reservation, with the priority date established as of the date of the reservation.[123] The Winters decision was a land mark case for it was the first time the federal government deviated from the established convention that water law was purely a state matter.[124] [125] The Court subsequently expanded application of the Winters Doctrine beyond tribal reservations to apply to federal lands withdrawn from the public domain to the extent water is deemed either expressly or impliedly necessary to satisfy the primary purposes of the federal reservation. [126] This expanded version of the judicially created Winters Doctrine resulted in what is generally referred to as "federal reserved water rights."

Federal reserved rights differ from rights acquired under state law in that reserved rights typically but not always rest on the date a reservation was created—not when the water was first put to beneficial use—and cannot be lost through non-use. Moreover, before 1952, the United States avoided and was not required to have its federal claims to water either formally listed or made the subject of any decree or permit within the state water administration system. Instead, federal reserved water rights existed outside of and separate from the ~~orderly~~ procedure for administering all other water rights within the states. The ~~ablity~~ability, therefore, of the state systems to function to avoid conflict and create ~~certain~~certainty in water supply through a comprehensive and cohesive water administration system was ~~threatened~~complicated by the ~~judicially created~~ federal reserved water ~~right under the Winters Doctrine~~rights.

As a direct response to this unintended uncertainty, Congress adopted the McCarran Amendment in 1952 to rectify the fact that "the extent and priority of federal water rights, including federal reserved rights, were unknown and not the subject to adjudication or determination in state courts." To overcome this complication, the Amendment provides a limited waiver of the United States' sovereign immunity for ~~purposes~~purposes of including the United States (on behalf of itself or tribes) in state stream adjudications and water administration suits.[127] Since then, Colorado has settled and adjudicated tribal reserved rights claims asserted on behalf of the Southern Ute and Ute Mountain Ute Tribes in Colorado (the only two tribes that have reservations established within Colorado) as well as claims for federal reserved water rights by federal agencies throughout the state. The state ~~administers~~and the Tribes administer the reserved rights recognized by these proceedings in priority in conjunction with state-based water rights.

Federal Agencies

Water rights held by the U.S. Forest Service, the U.S. Fish and Wildlife Service, and the U.S. National Park Service have a very complicated history.[128] Each agency has sought substantial federal reserved water rights in a variety of locations throughout the western United States. In Colorado, the U.S. Forest Service has filed for reserved water rights in all seven water divisions. In Water Division Nos. 1 and 2, the Forest Service claims for non-consumptive reserved rights were denied,

and withdrawn with prejudice, respectively.[129] [130] [131] In Water Division No. 3, the U.S. Forest Service reached a stipulated decree settlement for both consumptive and non-consumptive reserved ~~ritghts~~rights in 2000.[132] Stemming from the Colorado Supreme Court decision in *U.S. v. Denver*, the U.S. Forest Service may not claim federal reserved water rights for instream flow purposes in Water Division Nos. 4, 5 and 6.[133] [134] [135] The U.S. Forest Service's applications for federal water rights are still pending in Water Division 7.[136] [137]

The U.S. National Park Service has obtained federal reserved water rights for the Rocky Mountain National Park, the Great Sand Dunes National Park ~~and~~, Colorado National Monument, the Black Canyon of the Gunnison, and the Mesa Verde National Park.[138] [139] [140] [141] [142] There is also a wild and scenic river designation for the upper reaches of the Cache La Poudre under the Wild and Scenic Rivers Act that includes a federal reserved water right.[143]

Tribes [see suggested replacement section]

The Southern Ute and Ute Mountain Ute Tribes filed claims through the United States in 1976 to water in over twenty-five streams in southwest Colorado. Rather than litigate each of these claims, the Tribes, the state of Colorado, the United States, and other parties negotiated settlements for each river, which were combined and incorporated into the Colorado Ute Indian Water Rights Final Settlement Agreement dated December 6, 1986 (1986 Settlement Agreement).[144]

The Final Settlement Agreement quantifies the entitlements of the tribes to reserved water rights in the state of Colorado and provides for administration of those reserved rights. A critical component of the 1986 Settlement Agreement is provision of water to the tribes from the Animas-La Plata Project, a participating project of the Colorado River Storage Project Act, authorized by the Colorado River Basin Project Act, in satisfaction of the Tribes' reserved rights claims from the Animas and La Plata Rivers.[145]

The United States Congress authorized the 1986 Settlement Agreement in the Colorado Ute Indian Water Rights Settlement Act of 1988, Pub. L. No.100-585 (102. Stat. 2973) (1988 Settlement Act), and Colorado's District Court, Water Division 7, entered stipulated Consent Decrees for the Tribes' water on December 19, 1991. However, complications with endangered species, water quality and other concerns prevented implementation of the 1986 Settlement Agreement, 1988 Settlement Act, and 1991 Consent Decrees on the Animas and La Plata Rivers. To address these concerns, Congress modified its authorization of the Animas La Plata Project, and amended the 1988 Settlement Act in the Colorado Ute Settlement Act Amendments of 2000, Pub. L. No. 106-554, 114 Stat. 2763A 258 (2001), (2000 Amendments).[146] According to these Amendments, water use from the Animas La Plata Project is limited to municipal and industrial (M&I) uses. Moreover, the U.S. Attorney General is required to have the Colorado District Court amend the Consent Decrees to incorporate the modifications in the 2000 Amendments. Under this framework, construction of the Animas-La Plata Project began in 2001. The Colorado District Court's amendments to the 1991 Consent Decrees were effectuated in 2006 to reflect the changes in the 2000 Amendments, and the reservoir for the Animas-La Plata Project filled in 2011.[147]

The purposes of this Final Settlement Agreement were to: (1) determine finally all rights of the Southern Ute and Ute Mountain Ute Indian Tribes, and of the persons claiming under the tribes, to beneficially use water for, or to beneficially use water on, under, adjacent to or otherwise

appurtenant to, the Southern Ute and Ute Mountain Ute Indian Reservations within the state of Colorado; (2) settle existing disputes and remove causes of future controversy among the tribes and the State, among the tribes and the United States, and among Indians of the reservations or their successors and other persons, concerning the rights to beneficially use water in southwestern Colorado; (3) settle all claims by the tribes and by the United States on behalf of the tribes in the water adjudication proceedings pending in the Colorado District Court for Water Division No. 7; (4) to secure for the tribes an opportunity to derive an economic benefit or generate revenue from the use of the project and non—project reserved water rights secured in this agreement; (5) to enhance the tribe's ability to meet their repayment obligations under this agreement; and (6) to authorize the tribes to sell, exchange, lease or otherwise temporarily dispose of their water.[148]

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PUBLIC INPUT
ITEM 9b

The following language is suggested in the context of creating a basic definition of how the two Ute Tribes fit into the "Legal and Institutional Setting" (Chapter 2).

Replacement for Tribal Water Section in State Water Plan, pages 15-16 of Draft Chapter

In 1868, the United States signed a treaty with the Confederated Ute bands setting aside a reservation that encompassed roughly the western third of what is now the State of Colorado. During the next 30 years, the implementation of federal policies and laws and the development of non-Tribal communities in Colorado resulted in the rapid diminishment of the 1868 Confederated Ute Reservation. In 1895, the United States established the Southern Ute Indian Reservation in southwest Colorado and the Ute Mountain Ute Reservation in the southwest corner of Colorado and northern New Mexico (later adding lands in southeastern Utah).

In 1976, the United States, on behalf of the Southern Ute Indian Tribe and the Ute Mountain Ute Tribe, filed claims to water in southwest Colorado in order to resolve reserved rights claims for the two reservations. Through an enormous effort of the Ute Tribes, the State of Colorado, the United States, water districts, and local water users, all the parties were able to resolve the Tribal litigation claims in 11 river basins through negotiated settlement (resulting in the 1986 Colorado Ute Indian Water Rights Final Settlement Agreement). In 1988, Congress passed the Colorado Ute Indian Water Settlement Act, Pub. L. No. 100-585, 102 Stat. 2973 (Nov. 3, 1988) approving the 1986 Settlement Agreement. The settlement included shared responsibilities for administration of some of the tribal rights.

In the early 1990s, complications with endangered species, water quality, and other concerns prevented the full implementation of the 1986 Settlement Agreement as it related to the Animas and La Plata Rivers and for the second time, the parties forged a new compromise related to the down-sizing of the Animas-La Plata Project. Congress approved the modifications and amended the 1988 Settlement Act. Colorado Ute Settlement Act Amendments of 2000, Pub. L. No. 106-554, 114 Stat. 2763 (Dec. 21, 2000).

The institutional framework agreed to by the Ute Tribes, the State of Colorado and the United States in the overall settlement establishes quantities of water rights, priorities of tribal rights, permitting requirements, conditions for changing water rights, conditions for leasing, and other terms. Most importantly, it recognized the need for a cooperative and coordinated administration of water rights arising under State law and under the reserved water rights secured to the Tribes.

PUBLIC INPUT

ITEM 10

BIG BEND STATION
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5 December 2014
RE: *Draft Colorado Water Plan*

Esteemed Governor Hickenlooper and Colorado Water Conservation Board members:

Thank you for your attention to the challenges of Colorado's future water management. Solutions are much more difficult than criticism, so I apologize, but owning a farm downstream from Metro Denver, my take on the draft Colorado Water Plan is:

Yikes!

Already, the deferred downsides of Colorado's unfettered "growth" are expensive and alarming – floods, ruinous drought, food industries that precipitate illness, imperiled wildlife, disappearing forests and wetlands, increasingly contaminated air and water, Colorado's soil on its way to the Gulf or locked under concrete.

Coloradans can't blame Amazonian deforestation or Washington. We've inflicted these problems ourselves. "Growth" is no longer synonymous with good.

Why then is "growth" at the center of the Colorado Water Plan?

Remember this guy?

Thomas Robert Malthus*

Six baseline assumptions in the draft Colorado Water Plan terrify me:

1) That population growth is inevitable,
2) That food production remains elective rather than mandatory,
3) That the financial internalities and externalities of water transfers (from ag or the Western Slope) and increased water use do not demand redress,
4) That the Front Range municipal interests are more knowledgeable than other Coloradans,
5) That Coloradans are not responsible parties for changing climate and
6) That all Colorado businesses and residents are not summoned to be agents of positive, radical change.

* In 1798, Malthus published *An Essay on the Principle of Population*, which hypothesized that unchecked population growth would quickly exceed ***carrying capacity***, leading to overpopulation and social problems.

Under these circumstances, why bother to plan?

The following enumerated sections refute the assumptions just listed.

1. Colorado's population need not increase.

Does Colorado strive to emulate Beijing and Delhi?

U.S. birth rates and immigration are down, so why does the plan welcome double the population to Colorado? Our state won't grow. It'll just get more crowded.

According to the State Demography Office, the draft Colorado Water Plan's population projections are initiated on an economic forecast, which counts how many people Colorado anticipates in its labor force and their income to support already quantified industry and consumer service. Migration, fertility and survival are factored in afterward.

This focus mimics best practices nationwide, but I am asking myself if standard econometric models are comprehensive, given that our state, like other states, *is of finite dimensions and finite resources.* Also, many industries have extreme downsides. We know that job growth and expenditures in these industries have led to resource depletion and contamination. A model that begins with these, as this population projection does, will lead to more resource depletion and contamination. If population projections took place within a "carrying capacity" framework, instead of counting Coloradans it-take to screw in more light bulbs, we'd realize that our backs are to the wall.

These predictions might be very different if they derived from Coloradans' expectations for the future of their state. Do Coloradans want their slice of the state halved? That's what will happen with double the population. Or is there an alternative? Why not use the plan as an opportunity to *reshape Colorado's economy around resource regeneration instead of depletion?*

2. Food cultivation is not optional.

Everything we eat is made of water, which is why ag allocations are big.

Farming and ranching create resources, and changes can make this sustainable. Second only after water, agriculture is an essential infrastructure of any viable civilization. Yet, most people believe food comes from supermarkets, not from American farmers and ranchers! And not from healthy soil and water?

Dryland agriculture is not an answer. Growing a single apple takes 40 gallons of water. Cultivating a third of a pound of beef requires 600 gallons (waterfootprint.org). Farmers and ranchers don't need gratuitous gestures. They need partners!

We have only to look at the 2006 divestiture of groundwater use on 100,000 acres of Colorado agriculture land – legally yet without remuneration – to know that Colorado is not serious about preserving its citizens' food supplies. According to the USDA Ag Census, three-quarters of a million acres of farms disappeared in Colorado between 1997 and 2012. Without dramatic changes, this increase will dry up forty percent of agriculture

and associated wetlands in the South Platte Basin and thirty percent of the Arkansas Basin. The United States and Coloradans, in particular, cannot allow our food cultivation to be outsourced!

3. Increased water use precipitates astronomical expenses

Population increase will not "grow" Colorado. Crowding the state will stress it.

The assumption that very dense cities consume less per capita depends on the metrics. All cities, whether Hong Kong and Singapore or Metro Denver of today and tomorrow, draw resources from a much larger footprint, because they require food, water, energy and raw materials. This "draw" has climatic, environmental and political ramifications not included in the plan's analysis. This paradigm also has social ramifications, as cities become the imperial powers ruling the rural hinterland.

A responsible Colorado Water Plan should have a bulletproof financial commitment to paying the real costs of the commodity, which include:

My great, great grandfather, the "farmer governor" Benjamin Harrison Eaton, widely credited with bringing irrigation to northeastern Colroado.

- Forfeited ecosystem services,
- The cost of remunerating donor populations, not just for the water, but for restoring environments beleaguered or desertified by water exports,
- Treating recovered water and safely reusing biosolids,
- Addressing soils left saline by conservation methods, and
- Other externalities and internalities promulgated by more intensive water use, reclamation and reuse.

This accounting quickly makes transferring any acre-foot of water many, many times more expensive.

4. Front Range decision makers do not know water better than those who cultivate the land. They just have more money, more attorneys and more clout.

Metro Denver decision makers say agriculture communities and Western Slope interests are "territorial" and "parochial." (*Wall Street Journal*, 11/20/14) Conditions and economics outside thriving, water-intensive Metro Denver are fraught. How can name-calling by agencies viewed as predatory do other than cultivate dissent? Condescension and patronizing are just part of the overall dysfunction. Regions and factions need to recognize their interdependence and treat each other with respect. A statewide plan requires recognition of shared responsibility.

More reservoir storage (Metro Denver's Gross Reservoir expansion, as an example) comes at the expense of wildlife as well as forest and riparian resources. Stop it! We need less water above ground not more.

5. Coloradans' land and water development and behavior contribute to climate change and water scarcity.

Climate change, pollution and resource depletion are not squishy maybes. They have reached category-five disaster levels. Sixty-five percent of Colorado's wetlands disappeared in the dozen years between 1986 and 1998. Drought and bark beetle have wiped out 200,000 acres of forest along the Front Range, near cities and towns. There is nothing standing between 2013 and another devastating flood.

This draft water plan assumes that present economic trends snowball. However, as social activist and author Naomi Klein warns in *This Changes Everything*, the status quo is no longer an option. The status quo created the problem!

6. Colorado businesses and residents must become agents of change *together*.

Leaving decisions about resource utilization up to "social values" is tantamount to leaving guns in cribs.

Yes, as the plan states, resource use may trend "green" or toward more intense resource utilization (Section 6). However, the masses are either entirely or relatively unaware of the *consequences* of their resource use. That the plan leaves them unaware is murderously irresponsible. All water users need to know that passivity is no longer an option.

Colorado is the fountainhead, supplying water to 18 additional states, plus Mexico. For its own sake, for national food security, and for the millions who count on Rocky Mountain water, the state must make a spectacularly powerful U-turn. It must exhort its passive citizens, wherever they live, into a cooperative unit. Rural Coloradans and urban Coloradans should be partners. Environmentalists and farmers and ranchers should be partners. The present draft is a tug of war, with whoever has the most lawyers winning. We should all be on the same side, respectfully.

I object strongly to the short-term solutions proposed.

"No and low regret" are neither.

Characterizing short-term actions such as ag transfers and transmountain diversions as "no and low regret" is grossly irresponsible. And untrue! Many if not most farmers and ranchers find these actions very objectionable, as do western Coloradans of my acquaintance. Your directive, Governor Hickenlooper, was to *avoid these solutions*. How can the Colorado Water Plan find them other than hugely regrettable?

For pages and pages the plan speaks against ag-to-urban water transfers, then recommends them. Temporary water transfers and other ATMs (Section 6) are ag-to-urban transfers in lipstick. They are likely to cause administrative havoc, confound

priority, stave dependent wildlife and diminish return flows. Voluntary or not, temporary or not, they will still put cropland out of production.

Is there anything in the water plan protecting "public" water providers from selling to water privatizers like Veolia, Suez or the like?

The special-districts -- can they sell? Already Mr. Lembke is in business with San Diego-based Summit Water Development Group. Seems as if there's a real risk of public water being shanghaied.

Please take farmers and ranchers out of the crosshairs.

Our mutual ditch company is spending $250,000 yearly defending the water ditch shareholders already own in a state where speculation is illegal. This ditch water is for affordable food cultivation not waterparks. This predation must stop!

Relatedly, I want to work on the South Platte Basin Implementation Plan, but this investment requires an assurance that upstream municipalities stop turning the lower Platte into an Augean Stables. Farms, ranches and communities downstream of Front Range cities must already deal with municipalities' contaminated water supplies, their biosolids, diminished habitat, high water-tables from urban recharge, reduced groundwater, flood waters, and being edged out of augmentation opportunities by municipal aug projects. The South Platte Basin ag communities are not getting a fair or equal voice, allotment, rights, anything. We're not.

My objections require much more of Coloradans than the existing draft prescribes. I know this. I also know that I may seem naïve. Naïve or not, please allow me to point out the obvious: ***presuming Colorado's population must grow is unsupportable*** because Colorado lacks sufficient resources to sustain its existing population in a safe, healthful environment and to grow its food. Colorado is in a horrendous crisis. This cannot be ignored . . . but it is.

In 1838 Pierre-François Verhulst conceived the "logistic equation," where the rate of reproduction is proportional to the existing population and available resources.

The draft is more of the same, an additional power grab. Please do not approve it. Instead, please exert your leadership to demand that all Coloradans conceive new, sustainable approaches to income, and consumption, without adding people, without decoupling water from land. Since not even Vermont has managed not to grow, Colorado must take the lead, as is its legacy. **Time to get creative, rather than multiplying tax base numbers!**

Thank you sincerely,

Tershia d'Elgin

CC: Kayla Young, *Greeley Tribune*
Lauren Glendenning, *Post Independent*
Jonathan Thompson, *High Country News*
Bruce Finley, *Denver Post*
Andrew Revkin, *The New York Times*

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ITEM 13

EAGLE RIVER WATER & SANITATION DISTRICT
UPPER EAGLE REGIONAL WATER AUTHORITY
846 Forest Road ◆ Vail, Colorado 81657
Phone (970) 476-7480 ◆ FAX (970) 476-4089
www.erwsd.org

December 18, 2014

Colorado Water Conservation Board
1313 Sherman Street, Room 721
Denver, CO 80203

Re: Eagle River Water & Sanitation District and Upper Eagle Regional Water Authority Comments on the Draft Colorado Water Plan

Dear Directors:

As the west slope's second largest municipal water providers, we appreciate the opportunity to comment on the draft Colorado Water Plan. While we appreciate the effort that went into this draft, we believe that this draft plan is more of a report, and is deficient as it fails to discuss the major issues of concern to Colorado's western slope. A water plan that does not raise and propose a range of solutions to the State's water quantity and quality problems will not achieve one of its most important objectives. That is to craft a document that encourages discussion of the State's most difficult water issues and ultimately that assists in arriving at a consensus of solutions.

Second, the draft plan is far too long to be of use. Too much time is spent on a recital of Colorado water law and other issues that already exist in other documents. For a water plan to be useful, it must be read and few people are going to read a 419 page document that doesn't get to a discussion of, and range of solutions to the State's most pressing water issues. We respectfully suggest that the plan get right to the point and begin with a synopsis of the State's water demands and gaps in supplies in the various regions. In setting forth the water demands and the resulting gaps in supplies, the numbers should be set forth in consumptive use and not diversion amounts. Characterizing the gap in terms of diversion requirements gives a false impression of the size of the gap because diversion numbers do not take into account large variations in consumption. This leads to a misplaced conclusion that additional transmountain diversions or agricultural dry ups are inevitable. The state-wide gap is largely within the municipal use category, which is one of the least consumptive uses. It is also the category of use which has the most potential to meet its future needs through efficiencies gained by controlling highly consumptive landscape irrigation. Attaining such efficiencies should be prioritized within the plan above agricultural transfers and transbasin diversions, and can be accomplished in the long-term through land use regulations that limit outdoor water use for new and redeveloped areas.

The second section of the plan should then set forth suggested State policies for meeting these water demands. These could include discouraging reliance on further irrigation purchases and dry ups, and the avoidance of new transmountain diversions that would adversely impact the State's compliance with the Colorado River Compact delivery

requirements. The third section should contain a range of solutions to the various water demands that are consistent with the State's policies, and include a discussion of the pros and cons of each of these possible solutions. Finally, the last section should propose a structure or methods to achieve a compromise, or to build a consensus on the ultimate solutions to meeting the State's water demands and goals. The methods or structure may be different depending on the region. The foregoing sections should total a maximum of 50 pages to insure that it is read, and most of the existing chapters of the draft water plan can simply be included as appendices.

We hope that the foregoing comments will be useful to you in developing the final draft of the water plan, and look forward to working with the State to achieve the goal of developing and implementing sound policies and solutions that meet Colorado's future water needs.

Sincerely,

Frederick P. Sackbauer, IV,
as Chairman of the Board of the Eagle River Water & Sanitation District

George Gregory,
as Chairman of the Board of the of the Upper Eagle Regional Water Authority

cc: James Eklund
Linn Brooks
Glenn Porzak
Eric Kuhn
Senator-elect Kerry Donovan

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ITEM 15

Individual Comments on Colorado Water Plan, from John Wiener, 14 October 2014, in addition to previously submitted individual comments.

6.5 – Municipal, Industrial and Agricultural Infrastructure Projects and Methods (previously ch 5)

6.6 – Environmental and Recreational Projects and Methods (previously 5.9)

7.1 – Watershed Health and Management (previously 5.3)

9.1 – Economics and Funding (previously ch 7)

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Comment for Other Sources of Water and JDW personal: Three comments, 14 October 2014, John D. Wiener

FIRST COMMENT -- INVASIVE PHREATOPHYTE WATER USE LIKELY TO INCREASE; thoughtful policy is needed!

Re: Chap 6.5: Municipal, Industrial and Agricultural Infrastructure Projects and Methods and Chap 6.6: Environmental and Recreational Projects and Methods –

"Semiarid and arid western North American riparian ecosystems are likely to change dramatically under increased CO2 and climate change." Perry et al. 2011: 836.

Throughout the Draft Water Plan, the complexities of phreatophyte and invasive vegetation are insufficiently noted. (It is also disturbing that phreatophytes are mentioned so infrequently in the South Platte and Arkansas Basin Draft Implementation Plans). This is particularly important because of the over-simplified water law affecting – and preventing – water "salvage" from non-beneficial consumptive use on private land which cannot be economically farmed (this is indeed the Shelton Farms case, as discussed by Justice Hobbs in his University of Denver Water Law Review 1997 historic overview and several of the updates subsequently published). The water right owner who has not lost "control and dominion" of the water in its decreed beneficial use, on the decreed place of use, may re-use "tail water" or other flows which are not applied to another non-decreed use and which have not left the decreed place. One argument is that policy results would be negative, for allowing transfer of water which would be non-beneficially consumed and not used by the water right holder or a subsequent water right holder (in terms of priority and physical flows). One famous water figure is cited for saying there would be a good market in Tamarisk if it could be used to increase water rights – by being removed. The following discussion is based on the citations following this comment. But that goes way back to afar less-informed time…

The subject is raised because of the unknown quantity of water which may be involved; Waskom, 2013, found that in excess of a half million acre-feet may be involved in the South Platte alone (Waskom 2013). Because of the wide variation in the presence or dominance of the invasives in different locations, measurement is extremely challenging (Nagler et al. 2011, Perry et al. 2012, Shafroth, Brown

and Merritt Eds., 2010) and the value of the information given the changing conditions is dubious compared to the value of other relevant research. But the value of the water and ecology is undoubted and will very likely increase over time.

The counter-argument for more thoughtful policy is that Tamarisk (several spp. of Tamarix) and Russian olive have increased quite successfully without a market or any incentives on the part of humans. These plants are reported to be "the third and fourth most frequently occurring woody riparian plants, and the second and fifth most abundant species (out of 42 native and non-native species) along rivers in the western United States." (Nagler et al. 2011: 509; emphasis added).

Whether these invasives are "good or bad" is not a simple question. It is increasingly evident that Saltcedar (as a general term for Tamarix spp.) and Russian olive are ecologically supportive of more generalist avian and faunal communities, and may be detrimental to specialist species which may be highly valued (Perry et al. 2011). But, the physical structural role of dense vegetation may be important for streambank stability and erosion reduction. The amount of water used by these species, even in stand dominance or very simplified dense stands, may be quite close to the amount that would be used by native species communities of the Cottonwood-Willow community (see especially Shafroth, Brown and Merritt Eds., 2010), were they extant in a given place.

So, the policy-relevant questions are: (1) Why is the land in question occupied by phreatophytes? And, (2), what factors may change which species are present or dominant? And, (3) is there a policy intervention, such as Oregon's "water salvage" law, which would serve Colorado? (The Oregon law is discussed in law review articles and other sources, such as Getches, D., 2009, Water Law in a Nutshell; Minneapolis: West; Amos, A., 2008, Freshwater Conservation in the Context of Energy and Climate Policy: Assessing Progress and Identifying Challenges in Oregon and the Western United States. 12 U. of Denver Water Law Review 1–137.)

(1) The question about phreatophyte occupation is highly place specific; one can easily observe both floodplain and terrace areas where riparian vegetation would be expected, and also formlery farmed but now economically unfarmable areas, too small, or irregular and some not accessible on a reliable basis by modern farm equipment or for irrigation (see Tamarisk Coalition for information, proceedings of conferences, etc.). Those lands would be candidates for consideration of preference of vegetation, possibly affected by such issues as ESA and wetlands goals. A great deal of money has been spent on this, though an estimate of the total is not available.

Where the land will not farmable, expensive efforts to remove invasives may be futile where the conditions that favored establishment – most importantly in the past, flow regulation – are not changed. Therefore, the first relevant policy question may concern the watershed management plan.

Watershed plans should explicitly note the under-appreciated values of the ecosystem services provided by riparian areas (for compilation and methodology, see Earth Economics 2014). A substantial part of riparian vegetation in Colorado is now affected by or dominated by the invasives, which provide somewhat altered ecosystem services but still services which support filtration, denitrification and other water quality benefits as well as biodiversity to some extent.

(2) The second question about drivers of change is detailed in the articles cited below, including in particular Stromberg et al. 2012, Perry et al. 2011. Most critically important for the Colorado Water Plan are flow regulation, which has played an enormous role in changing riparian environments in the past, and for the present and the future, increasing drought frequency, weather and climate variability, and increasing water scarcity. Invasives may be more strongly favored than ever as flow regulation is simulated and made even more important by reduced flows and flow variability with increasing capture of flows for storage of all kinds. Warmer temperatures may particularly favor Tamarisk varieties. Lower flood flows and different rates of recession of flood flows may particularly disadvantage the very small-seeded Cottonwoods (Populus spp.)

The ecology is place-specific and may change rapidly. Saltcedar is highly salt-tolerant (halophytic) and favored by salinity which adversely affects its completion. As salinity increases with decreased flows and less return flow from more efficient irrigation, halophytes will be increasingly favored. Earlier beliefs that Saltcedar competes with other species by exuding salt and increasing concentrations may be partially confirmed in some situations but not others (Perry et al, 2011; Shafroth, Brown and Merritt Eds., 2010). Establishment and dominance are affected by and in turn affect shading, fuel loads, and stability. The ecological impacts and drivers of establishment of these invasive phreatophytes are complex, and relate to soils and sediments, the annual flow pattern and extent of variability, drought intensity, timing and frequency, vegetation interactions with fire, and the central role of the history and on-going modifications of flow.

So, the riparian communities have been changed and will continue to be changed, and with scarcity of usable water, humans may continue to influence this situation dramatically.

(3) There are long odds that the amounts of water involved will increase and that the value of that water will increase. The importance of sustainaing eco-system services will also very likely increase state-wide as scarcity drives further withdrawal and more efficient agricultural and municipal use with higher consumption. Because of the very high place-specificity of situations, there are also inextricable questions about most likely uses of adjacent and connected lands, future human water uses in agriculture affecting the place, and so forth. We may very badly want to encourage “salvage” in some cases, and need to provide incentives without cash.

Meanwhile, pp 10-11 of draft Chap. 6.6 notes that riparian and wetland areas identified as valued for non-consumptive water uses for several reasons amount to 18,767 miles of stream reach, but only 2 % are directly protected, with indirect protection of 23%, leaving 3/4 unprotected. These estimates may be optimistic about the strength of protection under changed conditions, and may underestimate the value of places subject to increased stress and part of a set of environments which may be sharply reduced.

Therefore, it is very unlikely that the only good policy choices – now or in the near future – will be subsidized removal of invasives on a variable basis with shifting Federal funding and policy goals, and denial of the risk of contrived salvage to unfairly enlarge a water right. The range of choice simply has to become larger, and the Colorado Water Plan should reveal and recognize this.

Note: This comment is submitted in October and does not change the comments submitted earlier, including those about the very important role of return flows in supporting the present riparian environment and the ecosystems supported by these agricultural distributions.

Earth Economics, 2014: Nature's Value in the Colorado River Basin. Tacoma, WA: Earth Economics. (www.eartheconomics.org; accessed September 2014).

Merritt, D.M., and P.B. Shafroth, 2012, Edaphic, Salinity and Stand Structural Trends in Chronosequences of Native and Non-native Dominated Riparian Forests along the Colorado River, USA. Biological Invasions (2102) 14: 2665-2685.

Nagler, P.L., E.P. Glenn, C.S. Jarnevich and P.B. Shafroth, 2011, Distribution and Abundance of Saltcedar and Russian Olive in the Western United States. Critical Reviews in Plant Sciences: 30: 508-523.

Perry, L.G., D.C. Andersen, L.V. Reynolds, S.M. Nelson and P. B. Shafroth, 2011, Vulnerability of Riparian Ecosystems to Elevated CO2 and Climate Change in Arid and Semiarid Western North America. Global Change Biology (2012): 18: 821-842.

Stromberg, J.C., P.B. Shafroth, and A.F. Hazelton, 2012, Legacies of Flood Reduction on a Dryland River. River Research and Applications 28: 143-159.

Shafroth, P.B., C.A. Brown, and D.M. Merritt, Eds., 2010, Saltcedar and Russian Olive Control Demonstration Act Science Assessment: U.S. Geological Survey Scientific Investigations Report 2009-5247, 143 p. Washington, D.C.: U.S. Geological Survey.

Waskom, R.M., 2013, Report to the Colorado Legislature: Concerning HB12-1278 Study of the South Platte River Alluvial Aquifer. Fort Collins, CO: Colorado State University Colorado Water Institute. http://www.cwi.colostate.edu/southplatte

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Re: Chap 6.5 and 6.6, and Re Draft Chap. 7.1

Second Comment: SHOW ME THE MONEY: APPLES, ORANGES AND KUMQUATS: More comparability needed in next efforts.

The reviews of the projects and methods are artfully written but they illustrate the need for more comparable information about the projects and methods which the Basin Roundtables have considered. There is great value in the social process which has produced important increases in mutual understanding within and across the Basins. Now, with far less money easily available than will be needed, it is important to undertake a process of specification of how to do effective and credible cost-benefit analyses, facing difficult but unavoidable issues of how to evaluate ecosystem services, long futures, and public interests. There has been substantial progress, due to world-wide concern with valuation problems, and there is substantial expertise. One approach may be a transparent public process for proposal of methods.

The choice of methods often determines the outcome, where a method includes a term for valuing the future costs and benefits. This is quite important for state decision-making. (There is a very large literature on this). Credibility is critical for outside and private investment. There could be a low-cost but powerful answers. For example, I would nominate use of University of Colorado economists Charles Howe and Nicholas Flores, and Colorado State University economists John Loomis and Christopher Goemans with an additional party on whom they agree to define a pair of discount rates and methods for benefits transfer analysis for ecosystem valuations; (see Earth Economics (www.eartheconomics.org) for introduction to the issues.)

The need for comparability is clear; this is not to disparage the values and progress from the Basin processes, but to support the next steps; there is more at stake than the $19 Billion mentioned in draft Chap. 7.1.

There is also a need for more explicit attention to the valuation of ecosystem services and external benefits which are provided by irrigation and agriculture. Ditches handle more water than all of the other systems in Colorado, and affect a very great deal of the environment of Colorado. There is clearly a need for more usefully approaching the public interests in supporting these services and developing means to collaborate with the owners of these resources in order to support benefits for everyone.

Average-cost pricing is also relevant to the economics. Despite the marginal costs of growth, the sharp increases in infrastructural costs for new standards, and the repeated histories of systems being pushed past desirable limits and finally replaced on a rushed basis, the high subsidy for growth provided by average cost pricing is ignored. This is simply folly. The citrizens should be informed about the real costs of growth, including hidden subsidies under a pretense of "fairness" as well as more open subsidies which promote stress on the water systems and through them, the whole State.

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Third Comment: Re: Draft Chap. 7.1 and Draft Chap. 9

– WATER QUALITY VULNERABILITIES

There is ubiquitous vulnerability of water supply systems and many other uses to degradations of water quality. The costs of treatment are highly vulnerable to changed conditions which are not in the direct control of water users. Part of the response to this is the emergence f watershed groups; and the increasingly common "payment for ecosystem services" in which water users support water quality by payment to help avoid degradation rather than more expensive and much less beneficial water treatment; the City of New York is a leading example.

The relevance to the Colorado Water Plan is that taxpayers and water consumers have much greater cost risks than they may understand, and that education is clearly needed and fortunately has begun. But the sheer financial consequences of ecosystem service degradation must be acknowledged and made prominent in the Plan, because this is so important in mobilizing the public support needed to make a good plan and to make it come true.

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ITEM 17

WP3 EX-POST Case studies

The Development of An Efficient Water Market in Northern Colorado, USA

Charles W. (Chuck) Howe, University of Colorado-Boulder

Deliverable no.: D3.1 - Review reports
18 December 2011

(formated by Martina Gambaro 3/20/12, edits by Howe 3/23/12, 5/09/12, 8/07/14)

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Abstract.

An efficient water market has been established in a large water district in northern Colorado, USA. This is the most active water market in the U.S. in terms of number of transactions per year. The water being traded is imported from another basin, a feature that, under western U.S. water law, allows the importer to consume the water completely without concern for downstream impacts. The ownership instruments are homogeneous shares that allow the owner to share proportionally in water available to the District. Transfers of the shares must be within the District and require approval only by the District Board (as opposed to typical State level administration of transfers). These two features result in low transaction costs that stimulate frequent small trades. Since irrigated agriculture consumes 85% of Colorado's total supply, typical transactions involve permanent share transfers from agricultural uses to industrial and urban uses but temporary leases for one year are frequent, especially among agricultural users. Environmental groups and some towns have increasingly contributed or loaned their shares to instream flow and riparian ecosystem maintenance. Prices of these shares have risen rapidly with high population and commercial growth of the region.

Key words: water law; water markets; inter-basin transfers; transaction costs; indirect impacts.

!. Introduction: the Region and the Legal Framework.

The EPI of this case study is the market for water shares that has been established in Northern Colorado, USA. This water market allows owners of shares in the Northern Colorado Water Conservation District (NCWCD) to trade shares with other water users within the boundaries of the District that covers roughly 1000 square miles. The market is unusual in that transfers of shares can take place quickly with low transactions costs, thus facilitating the transfer of water to its highest-valued uses and resulting in frequent small trades.

Colorado established its "prior appropriation" water law in 1876 that defined water rights as personal property subject to purchase and sale. (Getches, 1997). Informal water trading has existed since that date. At the State level, the administration of water rights and transfers is through a system of water courts that supervise transfers to guarantee "no injury" to other water users. This process is frequently time consuming and costly.

The water supplies being traded in the NCWCD market are those produced by the Colorado-Big Thompson Project (C-BT), a federally funded project initiated in the 1930's as relief from an extended drought that affected all the of the western U.S. The C-BT Project transfers water from the headwaters of the Colorado River on the western side of the Rocky Mountain Range to the much drier South Platter River Basin on the eastern side of the mountains where the most productive agriculture and the majority of the State's population exist. The diverted water is distributed through an extensive network of canals, pipelines and natural rivers to the owners of shares in the NCWCD. The shares (known as allotments) being traded represent proportional shares in the water available to the Project each year.

The water is thus "interbasin water" or "foreign water", i.e. new to the South Platte Basin. As noted above, under state water laws in the western U.S., imported "foreign water " can be fully consumed by the importing agency, implying that return flows from any use are owned by the importing agency and thus cannot be claimed as water rights by downstream users. The importer and subsequent users thus are not responsible for protecting return flows when transfers take place, i.e. not subject to the "no injury rule". Transfers of the imported water thus by-pass the State water court review process.

No water market was contemplated in the C-BT Project plans. The market for shares in the NCWCD evolved through trial and error to provide flexibility in the allocation of water over time. The C-BT Project was completed in 1957 following wartime interruptions and the Northern Colorado Water Conservancy District (NCWCD) was established under Colorado law to distribute the Project water and to take responsibility for the repayment of a portion of construction costs to the Federal Government. The funds for this repayment were to come from fees imposed on NCWCD share owners plus property taxes on all agricultural and urban lands within

the District. As financial arrangements of the District evolved through discussions with water users, user charges were kept at a low level while property taxes have provided the majority of revenues, implying that the user charges do not reflect the scarcity value of the water. That important function is provided by the water market.

The U.S. Bureau of Reclamation that built the Project had insisted on the property taxes in addition to user charges to assure sufficient revenues for construction cost repayment. In addition, the Bureau pressed the District to attempt to sell or rent the return flows from the initial users[1], again to assure sufficient revenue. The District wisely declined to do this because of the complexity of identifying and quantifying the return flows. This meant that downstream users could not establish legal claims to the return flows from C-BT Project users and thus could not claim injury as a result of transfers. Transfers thus are allowed to take place without legal concern about injury to other users and thus did not have to be overseen by the Water Courts.

The effect of these arrangements has been to allow the evolution of a continuous smoothly working market in the District shares. Typical transfers involve small numbers of shares moving from agriculture to other uses since transaction costs are low and buyers historically have known that shares would be available on the market when needed, guaranteed by the willingness of marginal agricultural users to sell some of their shares. This easy availability may be changing as the volume of C-BT water owned by agriculture decreases (currently 33% and falling 2% to 5% per year)[2]. The market continues to permit small farm operations, businesses and towns to acquire water in needed quantities and assure towns of available supplies for growth and during drought.

The existence of the NCWCD market means that all users of Project water know that they can buy and sell shares easily and quickly. They are continually confronted with the opportunity cost of the water they are using which is many times the minimal user charge made by the District. This is particularly important in agriculture since irrigated agriculture accounts for 80% of consumptive water use in the District and throughout the western U.S..

The largest volume of transfers of NCWCD shares has been from agriculture to municipal and industrial uses. Because of low transaction costs and the speed of market transactions in this market, the typical size of share transfers is small in comparison with the size of transfers in traditional water rights markets. This reduces the negative impacts on the agricultural economy and minimizes needed adjustments in agriculturally- linked sectors. The region served by the NCWCD market is quite diversified and prosperous, so that agriculture-to-urban transfers reinforce regional economic growth.

Towns typically protect against drought by buying water rights in excess of average annual use so that supplies, while curtailed during drought, will be adequate to

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[1] Howe et. al," Innovations in Water management: an Ex-Post Analysis of the Colorado-Big Thompson Project and the Northern Colorado Water Conservancy District", unpublished book ms, June, 1982.

[2] Thanks to Brian Werner of NCWCD for these observations on the changing market scene.

serve priority needs. The existence of an active efficient water market means that urban utilities can usually acquire added water during drought, thus reducing the need for excess water rights as drought protection. Thus the NCWCD market has facilitated beneficial water transfers for both municipal and agricultural users. Since all transactions are on a willing seller-willing buyer basis, transfers are mutually advantageous and generally in the larger region's economic interest. (Howe & Goemans, 2003).

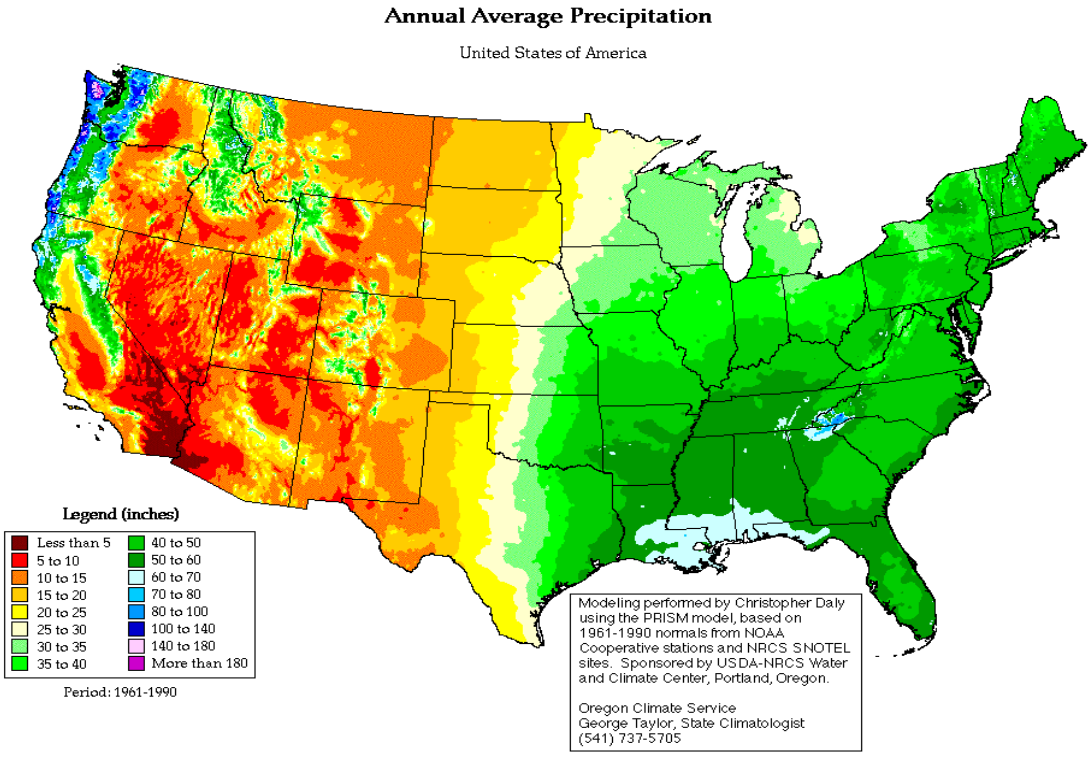
Positive environmental impacts of the NCWCD market take the forms of more prosperous farming operations that can afford conservation practices, particularly regarding soil conservation and the application of fertilizers and other chemicals. Crop farms (as opposed to animal operations) close to urban areas are valued for aesthetic reasons and for increasingly popular farm-to-market horticultural supplies. As noted earlier, Colorado has a very active "instream flow program" under which water rights can be temporarily or permanently devoted to riparian ecosystem and recreational purposes.

This water market has proved to be an efficient allocation mechanism some or all of which can be adapted to water allocation in other settings in the western U.S. and similar climatic regions. There are questions regarding the role of water markets in some situations (Young, 1986; Dellapenna,2005).

2. Characteristics of the Efficient Market Region

The Northern Colorado Water Conservation District (NCWCD) was established in 1937 to contract with the Federal Government to build a large trans-mountain water transfer project, The Colorado-Big Thompson Project (C-BT) that transfers water from the water plentiful western side of the Rocky Mountains in Colorado to the much drier eastern side of the mountains. NCWCD is responsible for the diversion works of the project and for the allocation of water on the eastern side of the mountains. C-BT is one of hundreds of federal water projects undertaken by the U.S. Bureau of Reclamation under authorization of the 1902 Reclamation Act that was intended to provide subsidized water for the continuing economic development of the western U.S., especially for irrigated agriculture. The climate conditions of the U.S. are shown in Fig. 1.

.Figure 1: U. S. Annual Average Precipitation.



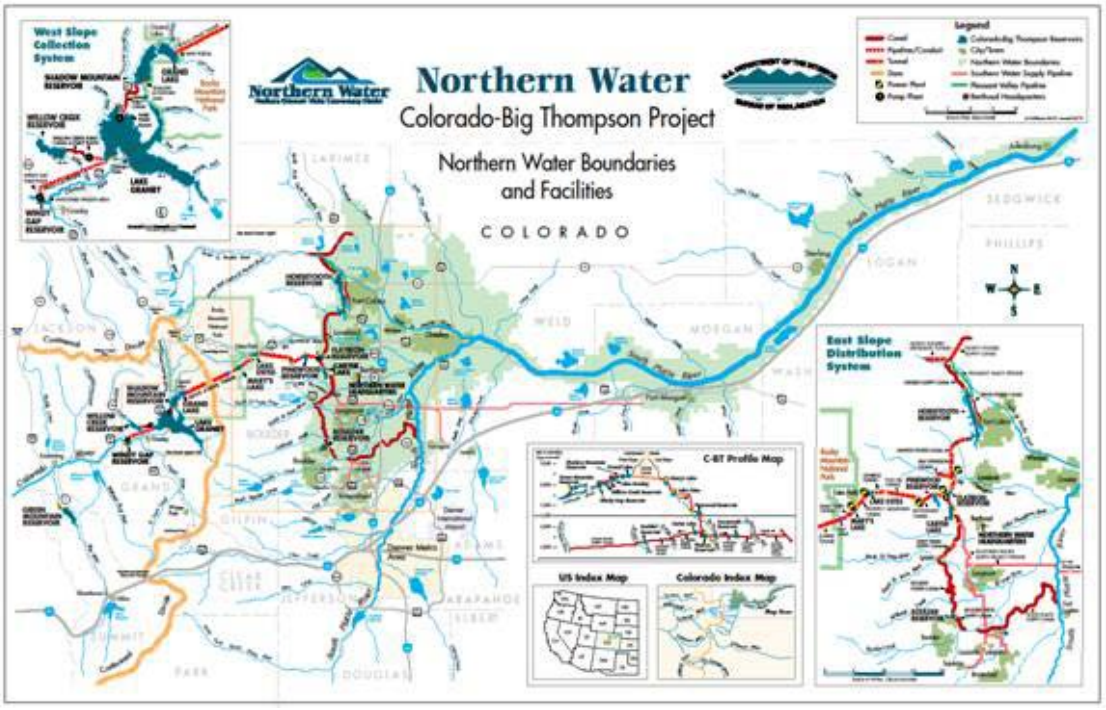
Source: U.S. Geological Survey.

The State of Colorado is divided into two distinct regions: the eastern, dry plains starting at roughly 105 degrees west longitude and the western areas that start with the Rocky Mountains and extend through rugged lands to the western border of the State. Rainfall and snow are heavy on the western side of the Rockies, while the eastern slopes of the mountains (the "East Slope") and the plains are semi-arid.

2.1 The Northern Colorado Water Conservancy District

The NCWCD is located in the northeastern quadrant of Colorado as shown in Figure 2. The District serves cities all along the eastern side of the mountains, the richest farmlands of Colorado in Larimer and Weld Counties and agricultural lands bordering the South Platte River to the northeastern corner of the State.

Figure 2: NCWCD & the Colorado-Big Thompson Project



Source: NCWCD website.

NCWCD contains 1.6 million acres (1000 square miles) in portions of Boulder, Larimer, Weld, Broomfield, Morgan, Logan, Washington and Sedgwick counties. The District was established as the local agency to contract with the federal government to build the Colorado-Big Thompson Project under the federal Reclamation Program. The project stores water from the Colorado River headwaters in a series of reservoirs on Colorado's West Slope and is transported, via the 13-mile Alva B. Adams Tunnel, through the mountains in Rocky Mountain National Park to the District's eight-county service area on the East Slope.

2.2 The Colorado-Big Thompson Project

The Colorado-Big Thompson Project is the largest transmountain water diversion project in Colorado. Built between 1938 and 1957, the C-BT Project provides supplemental water to 33 cities and towns and is used to provide supplemental irrigation to 640,000 acres of northeastern Colorado farmland. The complex collection, distribution and power system is comprised of twelve reservoirs, 35 miles of tunnels, 95 miles of canals and 700 miles of transmission lines. The C-BT system spans roughly 150 miles east to west and 65 from north to south.

West of the Continental Divide, a system of reservoirs at increasing altitude collects and stores the water of the upper Colorado River. The water flows by gravity into Grand Lake from which a pioneering tunnel (the 13.2 mile Alva B. Adams Tunnel) transports the water under the Continental Divide to the East Slope.

Once the water reaches the East Slope, it is used to generate electricity as it falls almost half a mile through five power plants on its way to Colorado's Front Range where three major reservoirs store the water. C-BT water is released as needed to supplement native water supplies in the South Platte River basin.

An interesting feature of the C-BT Project is the Green Mountain Reservoir on the western side of the mountains that provides replacement water for the Colorado River Basin, Green Mountain. This replacement water was required to be completed before C-BT began operation in deference to Western Slope interests who had objected to C-BT. This was an innovative form of compensation to the basin of origin. Compensation to the basin-of-origin is now required for all out-of-basin diversions in Colorado (Howe,2000).

The C-BT Project annually delivers an average of 213,000 acre feet of water for agricultural, municipal and industrial uses.

3. EPI Background: Evolution and Operation of the Allotment Market

3.1 Conditions Leading to the Establishment of NCWCD and C-BT

The 1927-37 period was a dry period with severe drought from 1931 through 1935, part of the infamous "dust bowl" of the Great Plains. Flows in the Colorado River (from which C-BT water is diverted) were high from1896-1929, followed by a 38 year dry period from 1930 -1968, illustrating the decadal variation in climate conditions. The lowest flow on record of only 5.6 million acre-feet occurred in 1934. The U.S. Bureau of Reclamation estimated that 75% of the 615,000 acres potentially served by C-BT had inadequate (for full yield) water supplies.

Because of these persistent drought conditions, an application was made in August, 1933 to the Federal Government for the planning and construction of a supplemental water supply project that would bring water through the mountains to supplement eastern supplies. In addition, an organization to represent the water users of the region and having broad legal powers to contract with the Federal Government was needed. NCWCD was established in 1937. The contract with the Federal Government prescribed the following features for NCWCD:

1. An intended delivery of 310,000 acre-feet annually;
2. A highly subsidized repayment of construction costs;
3. A minimum tax rate on property in the District plus (minimal) annual payments by the water users;
4. District ownership of and arrangements for managing return flows from uses of project water-a key issue.

It was clear that the relative water needs would differ among different types of users and areas. Thus all potential users were allowed to subscribe voluntarily for shares in the District (which are called allotments) at very low prices starting in 1939. The 310,000 allotments available [3] were not fully subscribed until 1955. Finally, in 1957 an allotment was legally defined as a freely transferable contract between the District and the holder, subject to demonstrated beneficial use within the District.

Proposed buyers and sellers make a transfer application to the District Board. Beneficial use must be demonstrated except for municipal users who are allowed to hold "conditional water rights" in anticipation of future growth. Some brokers buy allotments at favorable prices, applying the water temporarily to some agricultural land until a favorable buyer is located. This "packaging" of allotments is probably beneficial (Howe, 2008).

3.2 Current Operations of the Allotment Market

As water scarcity increases everywhere, flexibility in the allocation of existing supplies becomes increasingly important. In the U.S., there is a long history of water marketing, especially in the states of Texas, California, Arizona, Nevada and Colorado. Table 1 shows recent evidence of market transfer activity.

Table 1. Where are transfers occurring?

In the western U.S., the vast majority of water transactions over the last 5 years were completed in 5 states.

- Colorado: 471 transactions (53% of the 5-year total)
- California: 112 transactions (14% of the 5-year total)
- Texas: 63 transactions (7% of the 5-year total)
- Nevada: 49 transactions (6% of the 5-year total)
- Arizona: 49 transactions (6% of the 5-year total)

These 5 states accounted for 84 to 87% of the water transfer activity in each of the last 5 years and 86% of the total activity over the 5-year period.

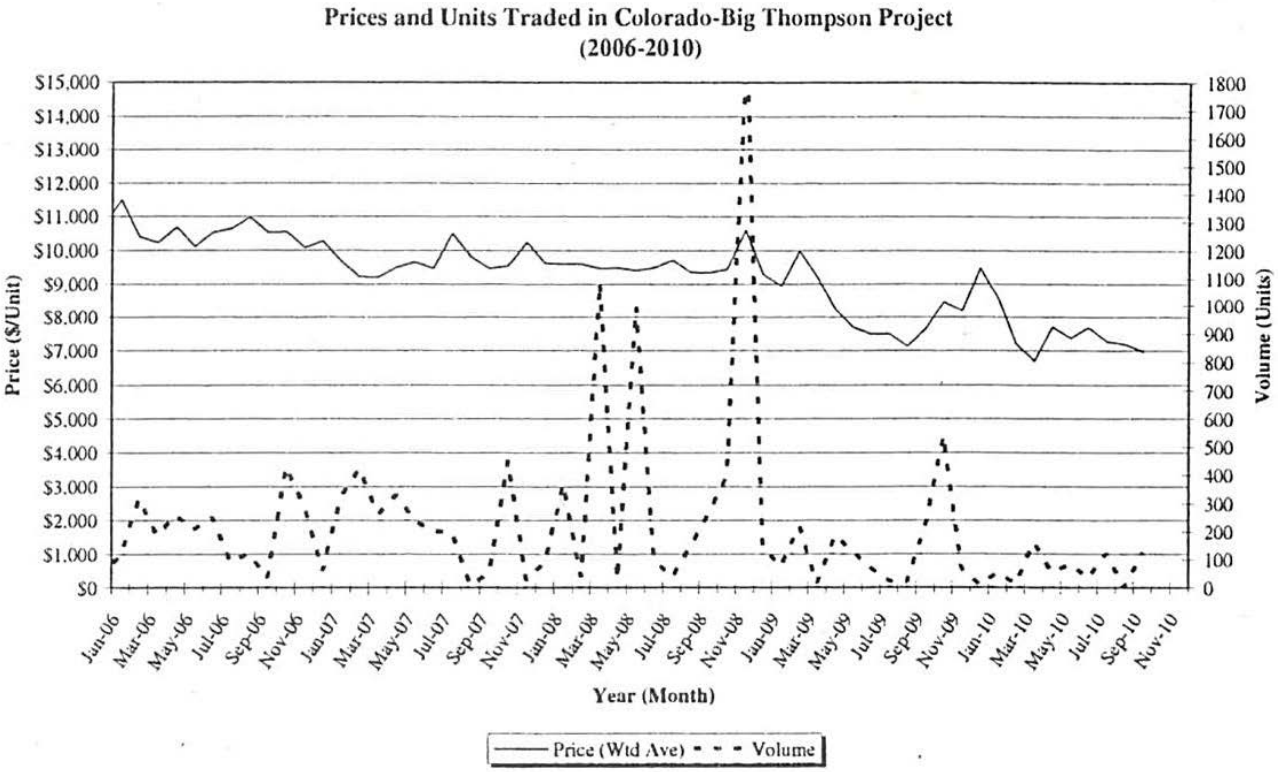
Source: Rodney T. Smith, Strategic Water Group LLC.

[3] The anticipated yield of the Project was 310,000 acre-feet, so 310,000 shares (allotments) were made available with the expectation that each allotment would represent on acre-foot of water.

It is clear that Colorado ranks first among the western states. Further, NCWCD's allotment market dominates Colorado transactions. As a result of the active NCWCD market and rapid urban growth, ownership of the District allotments has shifted steadily toward urban users. While ownership has shifted, changes in actual use has been less dramatic. Cities typically buy water rights in excess of average needs to protect against drought. In non-drought years, they then rent substantial amounts of water back to agriculture.

The long term effect of increases in urban and industrial demand has been to drive up the prices of C-BT allotments as shown in Figure 3 shows the trends in volume of transfers and prices of those transfers since 2006. Volumes and prices are in terms of C-BT allotments. Historically, an allotment has delivered an average of 0.7 acre-feet. The amount delivered depends not only on physical availability but on the "quota" declared annually by the NCWCD Board that allots larger amounts in dry years and less in wet years. For example, the volume traded in November of 2009 was roughly 500 units or 350 acre-feet while prices in that month were in the neighborhood of $ 8000 per unit or roughly $11,500 per acre-foot in perpetuity.

Figure 3. Trends: Price & Volume in the CBT Market



Source: Smith, ibid

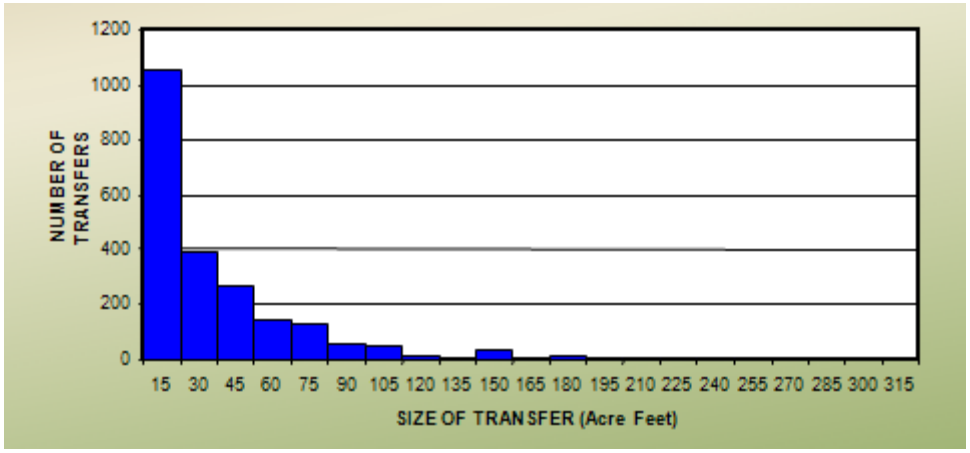
The large changes in volumes are due to weather conditions and spurts of urban growth. Curiously there has been a downward trend in prices since 2006. This is largely attributable to very effective programs of urban conservation that appear to have permanently reduced urban water use in spite of continued population growth.

3.3 Comparative Characteristics of NCWCD Transfers

It is clear that share transfers and leases out of agriculture are the predominant type of transfer, but an important feature in the NCWCD market is the high percentage of agriculture-to-agriculture transfers that occur as a result of the fast, low cost transfers. This is critical for irrigated agriculture in semi-arid areas.

The size distributions of transfers in NCWCD is exhibited in Figure 4. A striking comparison is that, while the median size of transfer in the South Platte traditional water rights market has been about 367 acre-feet (with a mean of 3425, not shown), in the NCWCD market over the same period, the median has been only 16.8 acre-feet with a mean of 34 acre-feet (Howe & Goemans,2003; Michelsen, 1994).

Figure 4. NCWCD Distribution of Water Rights Transfers by Size



Notes: Data period: 1979-1995. Median: 16.8 acre-feet, Mean 34.0 acre-feet.
Source: Howe & Goemans, 2003.

The differences in the size distributions are attributable to the low cost and continuity of the NCWCD market. Cities operating in traditional water markets typically prefer to buy large quantities of agricultural rights in a single transaction because a large part of transaction costs is fixed. In the NCWCD market, however, there is a continuous market in which allotments averaging 0.7 acre-feet/year can usually be purchased at predictable prices, although this situation is changing as more water is transferred to urban and environmental uses. Thus historically, water

users have had no need to engage in large, expensive transfers in anticipation of future needs: an important effect of the efficient, low cost NCWCD market.

Records of lease transactions and prices are limited and definitive data are not available. However, some studies have shown that, on the average over time, nearly 50% of the C-BT water available to allotment owners is rented annually, most from cities to agriculture. The volume and direction of rentals are sensitive to weather conditions, with cities withholding water from agriculture and charging somewhat higher prices during drought. Lease prices tend to increase in the late season when farmers often need added water to "finish" a crop and when traditional surface supplies are low. The District favors keeping rental prices low to assist farmers in need. However, while low rental prices help the farmers who manage to find rental water, it also restricts the supplies that farmers and cities are willing to rent (Goemans & Kroll, 2012).

4. Assessment Criteria

The EPI in this case study is the efficient water market that has evolved within the administration of the Northern Colorado Conservancy District. The District and the market have evolved together so it is not possible to identify or isolate the environmental, economic or distributional effects of each totally separately. Important lessons would be lost if the institutional lessons from the evolution of the NCWCD were to be omitted.

4.1 Environmental Outcomes

The NCWCD and its later market were not started with environmental objectives in mind other than overcoming the effects of serious drought in the 1930's. Nonetheless, the environmental dimensions of importance to the NCWCD and the surrounding counties and towns can be identified as:

1. Preservation of the long term productivity of agricultural lands in terms of crops, broader soil and ecosystem maintenance and aesthetic values;
2. Protection of water quality in the soil, in the aquifers and in surface streams;
3. Maintenance of healthy seasonal streamflows for the preservation of riparian ecosystems, sports fisheries and other forms of water based recreation, especially rafting and kayaking;

Agricultural water use constitutes over 80% of total use in Colorado and about 65% in the NCWCD, both in terms of withdrawals and consumption. As seen in the earlier graphs, while agricultural water use has been declining (urban use expanding), agriculture remains the largest user of NCWCD water. The District has pursued educational and demonstration projects to assist farmers in achieving economic water conservation. These programs are carried out in cooperation with

the Agricultural Extension Service and Experiment Stations of the U.S. Department of Agriculture. A major step has been the stimulation of efficient irrigation techniques like the drop line sprinkler. Adoption of such techniques is stimulated by the active water market that "puts a price on water".

As urban use of C-BT water expands, it is increasingly important to establish economic conservation in the urban setting. Roughly 50% of urban water use is for the irrigation of lawns, gardens and trees. The major conservation steps encouraged by NCWCD and followed by towns in the District include:

1. Establishment of monthly "water budgets" for residential, commercial industrial and institutional customers;
2. Establishment of increasing block rate structures in conjunction with the water budgets;
3. Issuance of "smart readers" to customers so that the customer can determine current rates of use & cumulative use compared with the budget;
4. Subsidies to installation of water-saving appliances: toilets, washing machines, shower and bath fittings, etc.

Educational programs are provided for urban users that center on efficient outdoor use, including demonstration gardens.

These urban conservation programs have resulted in a permanent 30% reduction in per capita water use in the District's service area. The saved water results in higher stream flows with positive impacts on riparian ecosystems, water related recreation and irrigation water supplies.

The efficient, continuous market means that urban areas can acquire water as needed rather than buying large volumes of agricultural water rights that results in drying up large areas. The environmental and aesthetic values of agriculture are increasingly recognized in all areas of public decision-making.

4.2. Economic Assessment Criteria: the Economic Efficiency of NCWCD Market Arrangements.

The importance of the special provisions governing return flows was not appreciated at the time of project design and construction. Under western U.S. water law, return flows "belong to the stream" and cannot be claimed by the water right holder who made the diversion. Because the Bureau of Reclamation had obtained the needed water rights on the Colorado River and because the water would be new to the South Platte Basin, the contract allowed NCWCD to claim ownership of all return flows for recapture and reuse-a feature critical to the subsequent evolution of the NCWCD efficient water market as has been noted above.

The Bureau of Reclamation initially pressured NCWCD to sell the return flows to guarantee further revenues that would help repayment of the construction costs[4]. The District resisted this because it would be impossible to estimate the volume and timing of the return flows with sufficient accuracy to establish clear property rights. The "bookkeeping" would be difficult and subject to challenge.

The most profound effect of the District's refusal to sell return flows (which it owned) was that it left the District free to approve proposed transfers anywhere in the District without recourse to the Water Court procedures that are typically required of water right transfers to guarantee "no injury" to other water users. Only District Board approval is required, subject to Bureau of Reclamation review-usually a formality. While there is no legal obligation to protect return flows, they are largely protected because transfer volumes are limited to the former consumptive use, thus leaving the return flows "in place".

The issue of loses or gains to activities economically linked to Project water users (secondary or indirect effects), e.g. suppliers of agricultural inputs or users of agricultural products, is complicated and has been treated in an extensive literature (Howe & Goemans, 2003; R. Young, various; others). The consensus of that literature (in this author's opinion) is that, in a depressed region where there is long term unemployment of resources and capacities, the expansion or contraction of a primary water-using activity (e.g. irrigated crops) can generate "real" (national) economic gains or losses in forward and backward- linked activities by productively employing those resources.

However, in the case of NCWCD, the regional economy is quite prosperous with highly productive irrigated agriculture and expanding urban, industrial and commercial activities. Many water transfers are initiated by changes in land use as urban and commercial activities expand onto farm land. Thus the reduction of agricultural activities does not have negative secondary effects and, indeed, supports the continued expansion of the region's most progressive activities. Thus negative externalities are not a serious issue for NCWCD and the C-BT Project.

Where does this leave us regarding the overall efficiency of the transfer process in NCWCD? The question is whether the advantages of an easy, low cost transfer process are likely to more than offset any net adverse third party effects. Transfers within the agricultural sector are mostly temporary rentals within the same ditch or canal to even out supplies at the end of the crop season. No third party effects are created. When permanent transfers take place within the agricultural sector, it is again likely to be between water users on the same ditch or canal or between users on adjacent ditches, obviating third party effects. Any minor positive and negative

[4] This concern about further revenues to help repay construction costs must be understood in light of the depressed economy of the 1930's. While large subsidies were included in the repayment contract (a 50 year repayment period with no interest on the unpaid balance, no adjustments for inflation and 50% of the costs being repaid in the last 10 years of the repayment period), there was still concern about the District's ability to meet the required payments.

effects are likely to be experienced in similar types of agriculture, one offsetting the other. Return flows are likely to return to the same stream (Howe, 1987).

Similarly, if the transfer is from agriculture to urban use, third party return flow effects will be specific to the source and destination locations. However, towns are also increasingly reusing their water supplies, (Binney, various) thus increasing the net value of ag-to-urban transfers (National Research Council, 1992; Oggins and Ingram, 1989).

4.3 Distributional Effects and Social Equity

The existence of the flexible, efficient market through which small amounts of water could be purchased at any time at predictable prices helped to maintain small-scale agriculture and related businesses. In other regions where high transaction costs result only in large water transfers, agriculture tends to be dominated by very large agricultural operators.

4.4 Institutions

The evolution of the NCWCD has been covered in earlier sections. The institutional framework of NCWCD has been vital to the evolution of the efficient market (Howe, 2008).

4.5 Policy Implementability

This remains an issue. First, the establishment of an efficient market is limited to legal regimes in which water rights are clearly defined and considered to be tradable property, properties of regimes adopting some version of the appropriations doctrine. In the U.S. and Canada, regions that have used other legal frameworks like the old English riparian doctrine are increasingly changing to more flexible rules, e.g. tradable water extraction permits in the eastern U.S..

The other issue is the level of transaction costs. In the present case, transaction costs have been kept low because of the return flow arrangements described earlier, i.e. that the C-BT water was imported and NCWCD thus owned the return flows. This relieved NCWCD of "no injury" obligations related to transfers and thus avoided formal court review. There are, however other designs that could lower transaction costs, e.g. establishing sealed bid double auction markets where the volume of trades warranted.

4.6 Transaction Costs

This has been treated in previous sections. Indeed, low transaction costs including speedy processing is the key to effective, efficient market arrangements (Howe et al, 1990).

4.7. Uncertainty

The uncertainty (more likely, risk) involved in establishing and operating almost any water market stems from climate and hydrology. Most watersheds have long records of streamflow and climate data, these days extended to hundreds of years through dendrochronology. Thus the density functions for historic annual and monthly streamflows are available. A major question facing water planning is the relevance of these historic traces to future conditions under climate change (Omek et al, 2010;Wensley, 1998).

The main mechanism for dealing with hydrologic risk is storage. There are limits to the effectiveness of storage in providing reliable supplies. In the case of NCWCD, there are large reservoirs in both West Slope and Eastern Slope regions. This largely eliminates hydrologic variability but weather continues to create some uncertainty on the demand side: if there is an extended dry period, demands will increase and the reverse will happen during wet periods. This causes problems of balancing the supply system, i.e. having the water where and when needed.

The conjunctive management of surface and ground waters can be effective in regions with large groundwater stocks in tributary aquifers. During dry periods, the groundwater can be called on to replace surface supplies. While this strategy should be obvious, in some jurisdictions the surface and groundwaters are administered by different agencies and covered by different sets of law (see Howe 2008).

5. Conclusions: Lessons Learned

1. The existence of a flexible water market motivates efficient water use by all users by confronting the users with the real opportunity cost of the water. It can thus overcome the distorting effects of inappropriate pricing policies that are often in place.

2. The existence of an efficient, continuous water market permits transfers among users on an "as needed" incremental basis rather than infrequent large transfers, thus facilitating transfer funding and easing the indirect economic adjustments that follow from the initiating change in water use.

3. An efficient rental (lease) market is especially valuable to agriculture in the face of critical demands at different stages of crop growth and variable local supplies. Different water supply agencies (e.g. "ditch companies", conservancy districts, rural water companies) have different sources of supply and may experience different micro-climate effects. Cross-agency balancing of supplies and demands on a quick turn-around basis is possible with the NCWCD type of water market.

4. Efficient water markets can reduce conflicts that frequently exist between requirements of State water law and putting water to its most valuable uses. Many examples can be found where low-value senior rights call out high value junior rights for extended periods of time (Howe, 2008). A water market with low transaction costs has the potential for reducing these conflicts by motivating the shift of low-valued senior rights to higher valued junior rights.

5. The direct and indirect economic impacts on the transfer area of origin depend on (1) whether the new uses are in the same economic region (usually the same basin) and on (2) the economic vitality of the economy of the area of origin. If water transfers are being induced by the growth of new local economic activity, the transfers reinforce growth. In depressed areas of origin, transfers out of the area reduce activity with no opportunities for investing the water sales proceeds in local activities.

6. In the case of water transfers out of a depressed region of origin, extra compensation to that region by the buyer is warranted. When C-BT was built, additional reservoir storage (Green Mountain Reservoir) was provided to compensate the Colorado River for reduced streamflows and their effects. Today, urban and commercial buyers frequently negotiate cash payments to local governments in the area of origin to compensate for reduced tax bases.

7. Cumulative impacts of transfers out of an agricultural region cause increasingly negative impacts, sometimes approaching a "tipping point" at which agriculturally-related businesses begin to fail (Oamek et al. 2010).

8. Recent experimental research on water markets (Goemans and Kroll) shows that markets for permanent transfers of water rights interact with water rental markets since the two are, to some extent, substitutes. Where efficient, expeditious leasing arrangements are available, a likely result will be that water rights prices are depressed to some extent.

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PUBLIC INPUT

ITEM 18

Comments by Tom Easley, Director of Programs
The Rocky Mountain Climate Organization
On Draft Colorado State Water Plan
October 15, 2014

Thank you for the opportunity for the Rocky Mountain Climate Organization (RMCO) to provide these comments on the current draft of the state water plan.

The state water plan provides an important and historic opportunity for the Colorado state government to address one of our state's greatest challenges – how to meet our water needs in a future that may be very different from the past because of human-caused climate change. We applaud Governor Hickenlooper for calling for this first-ever state water plan, and we applaud the Colorado Water Conservation Board (CWCB), the Interbasin Compact Committee (IBCC), basin roundtables, and the many stakeholders and interested Coloradans who are working to shape the plan.

Our comments address how information on climate change is presented in the draft state water plan and how climate change impacts should be addressed in the plan. We have nine major comments.

1. The water plan should clearly acknowledge that climate change greatly increases the state's water risks, and give these impacts the priority and urgency they deserve.

The current draft water plan provides far too little attention to climate change, with the issue not even mentioned in the introduction and several other chapters, and giving only cursory treatment elsewhere. The final plan should clearly lay out the ways in which climate change magnifies Colorado's water challenges, as that information is necessary to document why new actions are needed to meet our water needs in the future.

Western Water Assessment's recent update of its 2008 report for the CWCB, Climate Change in Colorado, provides much excellent information about how Colorado's climate may change and how those changes may affect our water resources. We suggest in particular that key information about projected climate changes (from section 5 of that report and from the supplemental online information on the WWA website) be included in the water plan.

2. The water plan should clearly acknowledge that there are different possible future pathways for the extent of climate change and its impacts on Colorado water resources.

The scenarios being considered along with the current plan drafts are an important way in which possible futures are being identified and considered as part of the water plan process. (See our comment 5 below.) However, nowhere in any of the current draft chapters is there even a single sentence indicating that there are different possible futures before us in terms of the extent of climate change and its impacts on Colorado water resources. This is one of the most important facts about climate change and should be clearly indicated. The Western Water Assessment's 2014 update of Climate Change in Colorado and WWA's online supplemental information (with additional detail on

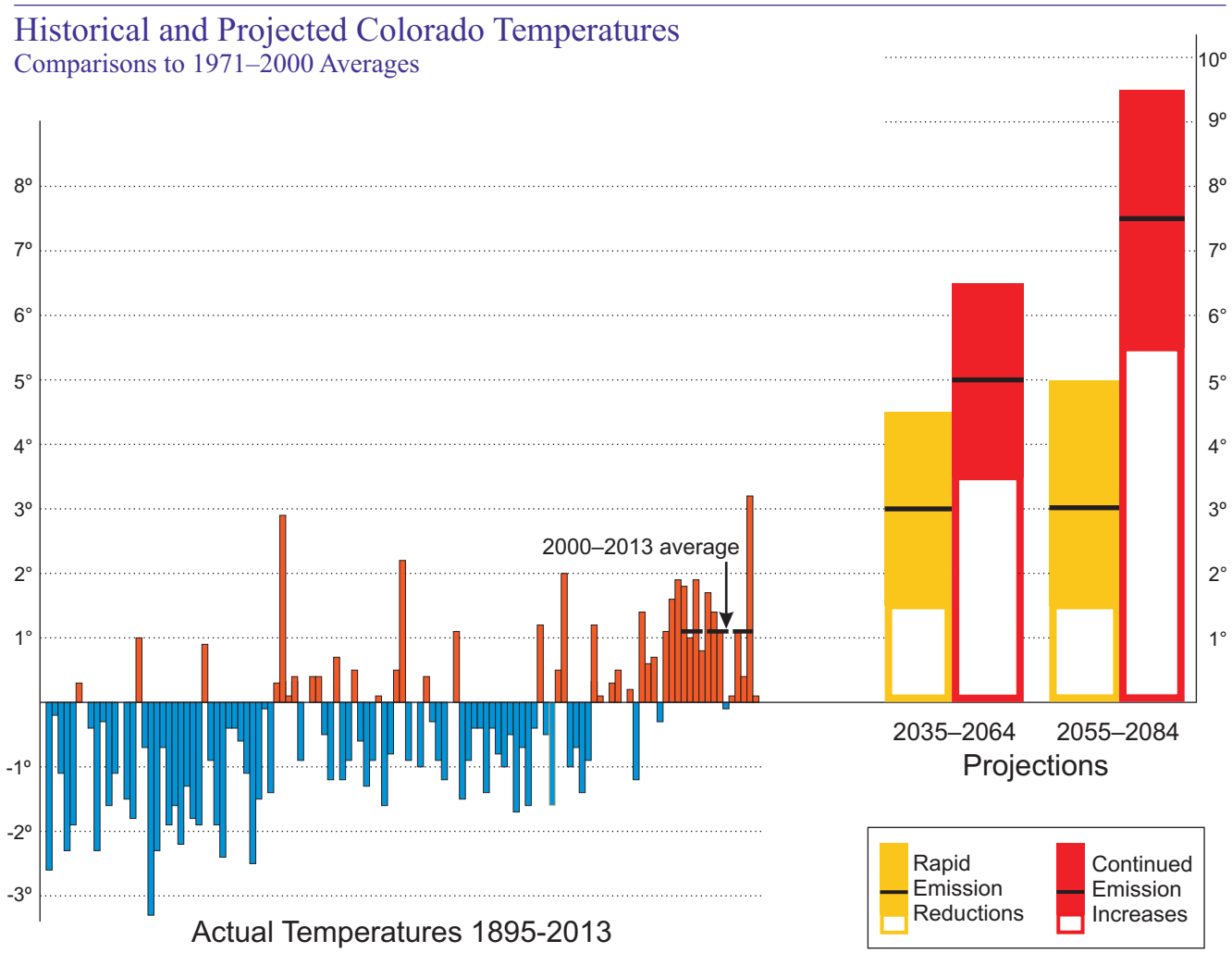

Figure 1. On the left, average statewide Colorado temperatures compared to 1971–2000, in degrees Fahrenheit. Temperatures in 2000–2013 averaged 1.2° higher. On the right, projections of statewide temperatures, again compared to 1971-2000, for two future periods, each with one scenario of rapid reductions in heat-trapping pollution (known as "representative concentration pathway," or RCP, 2.6) and another of continued increases as in recent years (RCP 8.5). The solid colors show the 10th to the 90th percentiles of projections from 23 climate models for RCP 2.6 and 34 for RCP 8.5; the black lines show the averages. Historical data from the National Oceanic and Atmospheric Administration (NOAA), analysis by the Rocky Mountain Climate Organization (RMCO); projections from Western Water Assessment (WWA), University of Colorado at Boulder, using Coupled Model Intercomparison Project (CMIP5) models, as reported in *Climate Change in Colorado,* second edition 2014, and supplemental online information. Figure by RMCO.

WWA's new climate projections) makes this clear. The figure above, prepared by RMCO using NOAA data on observed Colorado temperatures (for context) and WWA's data on projected temperatures, illustrates the range of temperature increases we may face, according to the latest generation of climate models, depending on future levels of emissions of heat-trapping pollution. This range of temperature increases would lead to a range of potential impacts on Colorado water resources, and the water plan should convey that there is such a range of potential impacts, not one single climate-change future. Doing the latter would be implicitly misleading to Coloradans.

3. The water plan should summarize the substantial information on how climate change may affect our water supplies.

The current draft water plan now includes only four sentences about how climate change may affect

water supplies. This is woefully inadequate to explain to Coloradans the nature and dimensions of the risk that climate change poses to our water supplies. We note that Jim Lochhead, the CEO/Manager of Denver Water, in his comments on the draft plan, wrote that while the draft primarily focuses on how population growth may lead to water supply gaps, “climate change is potentially an equal or greater factor in the state’s future water gap.”

To properly define and convey to Coloradans how climate change may affect water supplies, the water plan should summarize such information as:

- The CWCB’s Colorado River Water Availability Study, phase one, examined five representative climate-change scenarios, three of which showed substantial decreases in Colorado River flows, with the “hot and dry” scenario suggesting a 43 percent average decline by 2025-2054 in main stem river flows near the Colorado-Utah state line.
- The Joint Front Range Climate Change Vulnerability Study, using the same five representative scenarios, showed that four would lead to reductions in South Platte River flows, with the “hot and dry” scenario suggesting a 32 to 42 percent decline in river flows at South Platte.
- The U.S. Bureau of Reclamation’s Upper Rio Grande Impact Assessment presents an average projection based on climate-change models that climate change could reduce Upper Rio Grande basin water supplies by one-third by 2100. In Colorado, about a 25 reduction in water use would need to occur to continue satisfying New Mexico’s entitlement under the Rio Grande interstate compact (Bureau of Reclamation 2013).

The plan should convey a key point from scientific studies: that the higher future emissions of heat-trapping pollution are, the greater the impacts on water supplies are projected to be. For example, the Bureau of Reclamation’s Colorado River Basin Water Supply and Demand Study shows that with low future emissions, the average projection is that Colorado River flows at Lees Ferry will be 8 percent lower in both 2041-2070 and 2071-2095, but with medium-high emissions will be 10 percent and 13 percent lower, respectively (Bureau of Reclamation 2012). For another example, the Assessment of Climate Change in the Southwest United States, a regional input to the U.S. government’s third national climate assessment, includes projections for statewide Colorado April 1 snowpack, April-July runoff, and June 1 soil moisture, which show that the median projections for decreases in all those values are smaller with low future emissions than with medium-high future emissions (Cayan and others 2013).

4. The water plan should summarize the currently limited information on how climate change may affect water demands.

The current draft water plan provides only a too-short statement that climate change may increase water demands. The impacts on water demands, however, may well equal or exceed the much more studied impacts on water supplies, and also are more certain, as higher temperatures increase the needs of virtually all water users, from crops, livestock, lawns, to power plants.

The current draft water plan has essentially a placeholder for information from a forthcoming report for the CWCB (Harding 2014), and detailed information from that ongoing work is important to add to the plan. The plan also should summarize such other existing information as:

- The CWCB’s Colorado River Water Availability Study, phase one, projected that in all five studied representative climate change scenarios, Western Slope irrigation requirements would increase, by 7 to 27 percent in 2025-2054 and by 18 to 37 percent in 2055-2084.
- The Bureau of Reclamation’s 2012 Colorado River Basin Water Supply and Demand Study examined the impacts on basin water demands from 112 combinations of climate models and emission scenarios, and virtually all projected increased demands. The average projection is

for an increase in water demands of about 500,000 acre-feet per year, which would push the seven-state basin into a greater imbalance between available water supplies and demand for that water (Bureau of Reclamation 2012).

- Research published by the Water Research Foundation projects that the demand for water supplied by Colorado Springs Utilities could increase as a result of climate change by 6 to 23 percent by 2055 and by 7 to 45 percent by 2090 (Kiefer and others 2013).

As with the impacts on water supplies, the state water plan should make clear that the extent of projected increases in water demands depends on the future extent of climate change.

5. The scenarios used by the CWCB and basin roundtables for the water plan and basin implementation plan should include quantified possible impacts of climate change. The CWCB also should provide explicit guidance to basin roundtables on the consideration of climate change and the scenarios.

Although the current draft plan chapters do not now include them, short, subjective descriptions of possible future scenarios, based on several key factors including climate change, are being used by the CWCB, IBCC, basin roundtables, and others in considering the draft water plan. RMCO supports the use of multiple scenarios and the inclusion of climate change impacts on both water supplies and water demands as components shaping those scenarios. We think it is important that one scenario is based on high population growth and significant climate change impacts that both reduce water supplies and increase water demands, with the latter taken from the high end of the best current projections that are available. Such a scenario would represent a nearly worst-case situation, but one that is plausible and merits consideration. In addition, it appears that, so far, no quantified climate change analyses have gone into shaping the scenarios. One early document stated that a specified high level of future municipal and industrial demand for water, taken from analyses done for the 2010 Statewide Water Supply Initiative and used in the then-current hottest and driest scenario, could result from either high population growth or from climate change. However, SWSI 2010 clearly stated that the demand analyses done for that report did not consider climate change, and that climate change should be considered in future water planning. Obviously, it would not be sound to take a calculation of increase in water demand that could result from high population growth and use it to represent a hot, dry climate-change future. We understand that the CWCB staff continues to consider whether and how to base the current scenarios on quantitative analyses, and that much further thought and work may well have gone into the development of the scenarios. We recommend that quantified analyses of climate change effects on both water supplies and water demands should be used to define the scenarios in the final state water plan, and that the underlying analyses should be clearly explained and made available.

So far, the CWCB and IBCC have allowed basin roundtables to consider climate change essentially however they choose. Predictably, the results are widely divergent, from the North Platte Basin Implementation Plan, which does not even mention climate change, to the Rio Grande Basin Implementation Plan, in which climate change is given full attention, with other roundtables giving climate change consideration in varying ways and to varying extents. As the approach taken in the development of the state water plan is to largely defer to the basin roundtables, and as climate change is overriding importance across the state, RMCO believes that the CWCB and the IBCC should provide new guidance on how climate change should be considered, including by the roundtables. The best way to do this probably is through the development and use of the scenarios with clearly quantified assumptions of climate change impacts on both water supplies and water demands, as we recommend above.

6. The water plan should acknowledge how climate change greatly increases the risks of curtailments under interstate compacts of Colorado water rights.

Ultimately, Colorado's greatest water risk is that the exercise of existing in-state water rights may be curtailed because of the operation of interstate compacts. Particularly for the Colorado River, this risk is greatly magnified by climate change, as compact compliance is determined by flows at Lees Ferry, which depend on runoff from across the entire Upper Basin, including lower-elevation areas in other states which may be even more vulnerable to the effects of climate change on snowpacks than Colorado's higher mountains are. However, nowhere in the current draft is the interplay between compacts and climate change even addressed. The water plan should clearly acknowledge this potential impact of climate change, as it arguably is the strongest reason why new actions may be needed to meet our water needs in a changed future.

7. The water plan should acknowledge how climate change may affect environmental and recreational needs, watershed health, and other water-dependent values.

The current draft chapters of the state water plan on water-related environmental and recreational needs and watershed health do not even mention climate change impacts on those values, although those impacts could be substantial, even transformational.

For example, scientists have projected that with just a medium level of future emissions of heat-trapping pollution, changes in water temperatures and streamflows could lead to declines in western populations of cutthroat trout of 28 percent by the 2040s and 58 percent by the 2080s (Wenger and others 2011, Fleishman and others 2013). This is a matter of significant statewide importance, and also raises the need to examine the adequacy of the Colorado Water Conservation Board's current instream flow rights, which may need to be readdressed to meet the needs of trout and other species (needs which in the future will be defined as water not only for minimum flows but also deep enough to maintain acceptable water temperatures in a hotter environment).

As another example, other scientists have projected that even a very modest additional 1.8 degree Fahrenheit increase in average temperature could lead to a 656 percent increase in the area burned by wildfires in Colorado (Littell and others 2009, National Research Council 2011). Areas burned by wildfires are at far greater risk of flooding and flows of sedimentation into water supplies, so this, too, is a threat to our water resources.

8. The water plan should acknowledge how climate change may affect natural disasters.

The current draft of the chapter on natural resources includes more information on climate change impacts (such as effects on flooding and wildfires) than other chapters do. We applaud the CWCB staff for including the information in the current draft. Some of the information in the current draft needs updating, as new sources and information have become available since the chapter was drafted; in general, however, we think that this chapter in terms of climate change is much more complete and adequate than others.

9. The water plan should provide an overall framework for state consideration of and adaptation to climate change impacts on water resources, and guidance to water utilities (especially smaller ones) on how they may consider and adapt to climate change impacts.

The current draft water plan consists primarily of background information on Colorado water resources and a compilation of possible actions identified by the various basin roundtables. Other states have used a water plan to identify a much more comprehensive framework of actions that are needed to

adapt to climate change impacts, as well as other challenges. An example is the 2013 draft update to the California water plan (California Department of Water Resources 2013). In Colorado, a full framework of actions to adapt to climate change impacts on water resources would include, for example, state assistance to water utilities (especially smaller ones, those with fewer staff and other resources) to help them adapt to climate change in their operations. There are effective methods available for climate change adaptation by water utilities (Means and others 2010). Most smaller utilities, however, have not begun the process of adapting to climate change (Udall and others 2013). Information and technical assistance from the CWCB could be important in assisting them. As another example, the Colorado state government could do more in cooperation with other states and other parties to identify multi-state, basin-wide actions to address climate change impacts.

10. The water plan should identify key gaps in the available information and analysis needed to understand and address climate change impacts on water resources, and identify how those gaps can and will be filled.

The current draft plan does not identify gaps in data, information, and analyses that are needed to help state government agencies, water utilities, and others understand and address climate change impacts on water resources. Identifying and addressing these needs, such as through data collection, monitoring, and modeling, is an important part of building the capacity to meet our water needs in a changed future (Brekke and others 2011, Udall and others 2013). We recommend that the CWCB and the IBCC include in the plan areas in which more data, information, and analyses are needed, and how those needs will be met. These areas likely would include analyses to identify climate change impacts on agricultural and on municipal and industrial water demands, the possible effects of climate change on potential interstate compact calls, and more.

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PUBLIC INPUT
ITEM 33

The New York Times

E.P.A. to Veto Huge Colorado Dam

By MARTIN TOLCHIN, Special to The New York Times

Published: November 24, 1990

The Administrator of the Environmental Protection Agency said today that he would veto construction of the Two Forks Dam in Colorado, a large water project sought by developers and opposed by environmentalists.

The Administrator, William K. Reilly, said in an interview that the proposed $1 billion dam, which would be the most expensive dam in American history entirely financed by a state and localities, would cause "unacceptable environmental damage."

The project was intended to augment long-term water supplies for Denver and surrounding communities, but Mr. Reilly said there were other, more acceptable sources of water that would not destroy valuable wetlands, wildlife areas and a scenic canyon. Mr. Reilly, who previously served as president of the Conservation Foundation and the World Wildlife Fund, two leading environmental groups, had spoken against the dam before.

The veto, under a provision of the Clean Water Act, would be a milestone, but not necessarily the last word, in a decade long struggle between Western developers and local officials, on the one hand, and environmentalists, on the other. In previous disputes, Federal policies favored growth.

The dam was championed by Republican lawmakers in the West. Senator William L. Armstrong, Republican of Colorado, said that although the veto was expected "we're very disappointed, discouraged and upset." No Federal Money for Project

The proposed project was a huge one. The 615-foot dam was to have been built on the South Platte River near its confluence with its North Fork, about 25 miles southwest of Denver. The dam, as big as Hoover Dam, would flood six towns as well as much of Cheesman Canyon, a wilderness area beloved by trout fishers, hikers, campers and boaters, and would have turned the canyon into a 7,300-acre reservoir, creating the largest lake in Colorado. The project was to be financed locally, without any Federal money.

Officials in Denver and its suburbs contended that the area's population would nearly double to three million people by the year 2000, and that the dam was vital to insure the region's water supply. Mr. Armstrong said that without the dam other water sources would be found, and he warned that Weld County, a lush farming region, would be deprived of water it needs for agriculture to continue. "What it means is that some rather serious environmental and economic damage is likely to occur in my state," he said.

He said the population would keep growing whether or not the dam was built, and added: "What's really at stake are the lawns, parks and trees of the state. There will be plenty of water for drinking and bathing. The question is whether there will be the environmental amenities."

The dam was first proposed in the 1930's, but intense planning began only a decade ago. More than 40 units of government, including cities, towns, water districts, were involved in the planning, at a cost of $40 million.

The Reagan Administration had supported the project. The Army Corps of Engineers approved a permit to build the dam.

PUBLIC INPUT

ITEM 35

RECEIVED

DEC 2 2 2014

Colorado Water
Conservation Board

December 22, 2014

Dear James Eklund and CWCB Board:

This letter provides a summary for your records of offline comments directed to the CWCB regarding the Colorado Water Plan from Colorado residents. These concerned Coloradans took action online. The efforts were facilitated by Conservation Colorado in order to engage the public with the water plan.

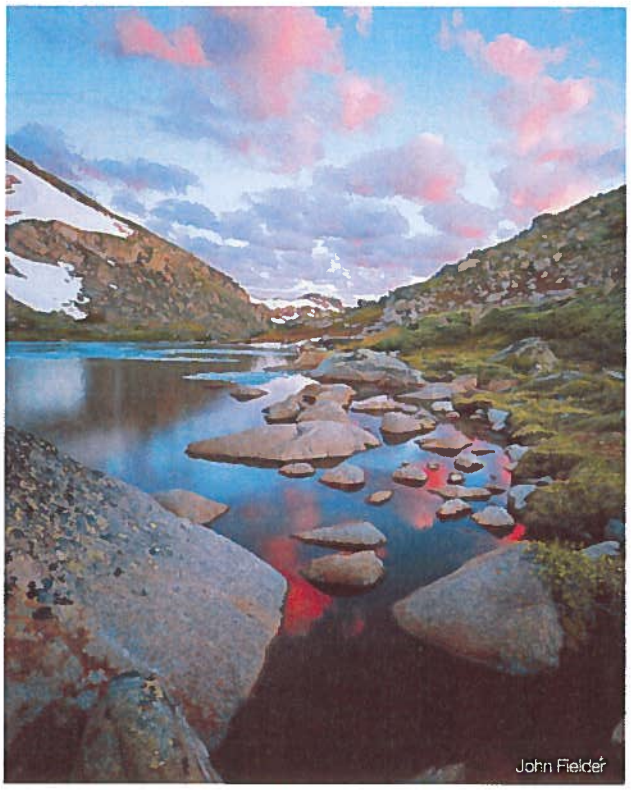
The text of the original message signed by over 900 Colorado residents reads:

Dear Colorado Water Conservation Board,

As a Coloradan, I know how important water is to our state. That's why I'm signing onto this petition to ensure we must keep Colorado's rivers healthy and flowing for economic and environmental reasons.

As our state's communities grow, our rivers are becoming increasingly strained. Maximizing our current water supply and using it more wisely through conservation and efficiency are proven to work. We can meet the most of our new demands with cost-effective conservation, re-use and other common-sense solutions. This keeps our rivers flowing and helps support river-dependent fish and wildlife, tourism, and outdoor recreation.

Colorado's Water Plan has the potential to chart an innovative path forward for our state and to break from the status quo of building transmountain pipelines and drying up our farms. I urge you to stand up for measures to protect and restore our rivers, push for conservation, and for cities to live within their means. We need to help agriculture modernize and increase efficiency, and stop looking to the Western Slope and our farms to solve our water issues. We need to maintain agriculture, support our communities, and protect river health.



Please ensure that Colorado's Water Plan uses our state's ingenuity to be prepared for our water future.

We appreciate the opportunity to provide this summary of the comments from citizens across Colorado concerned about the future of water in our state.

Sincerely,

Kristin Green
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