

Colorado Farmer's Influence on Flexible Water Policy Decisions:
A Uniform Political Bloc?

By
Tyreen Livingston
University of Colorado at Boulder

A thesis submitted to the
University of Colorado at Boulder
In partial fulfillment
Of the requirements to receive
Honors designation in
Political Science
April 2015

Defense Committee
Nancy Billica, Political Science, Thesis Advisor
Janet L. Donovan, Political Science, Committee Chair
Derek Brown, Atmospheric and Oceanic Sciences

©2015 by Tyreen Livingston

ABSTRACT

Water in the western United States is a controversial topic because of the decreased supplies due to urban and population growth, climatic changes such as drought, and continued disagreements about how existing water supplies should be allocated. The agricultural community in Colorado uses approximately 85% of the existing water supplies and a majority of Colorado's water is located on the Western Slope. The Eastern Plains and Front Range areas are projected to see the majority of the population and development growth over the next thirty years and water supplies will continue to dwindle as more users demand more water from an already overstressed water shed. With pressure continuing to grow between the agricultural community and urban developments, Colorado is trying to establish new policies that would make sharing water between industries easier by decreasing transaction costs to change in use decrees. This research sets out to uncover what is dividing the agricultural community and what issues are separating them from passing a comprehensive water bill. This research will analyze and report on data from several sources: two surveys from agricultural water users on both sides of the continental divide, interview data from agricultural producers in two north eastern counties, and interview data from members of the Colorado State Legislature that are actively involved in deciding Colorado's water future. Qualitative research can help multiple interests understand the commonalities and differences between agricultural producers when drafting a comprehensive water bill. The legislation, preferences, and opinions expressed in this research are a first step to creating a more sustainable water future for Colorado.

ACKNOWLEDGEMENTS

I would like to thank a few people for helping with the completion of my thesis project. The first person that I would like to thank is Nancy Billica. Without your undying support and confidence that I could accomplish this feat it would never have been possible. You were there for me whenever I needed advice, guidance, or just some confidence to continue. You were able to listen to my concerns or “freak outs” and built me up so I had the strength to go on. I am honored to have had the opportunity to work so closely with such an amazing mentor.

I would also like to thank my defense committee; Derek Brown and especially Janet Donavan for helping me see the magnitude of work that was accomplished and making me feel more comfortable in the final process of this project. A special thank you to Tom Morris, P. Andrew Jones, Marylou Smith, and E. Scott Adler for your time, patience, expertise, and willingness to participate in this process.

Lastly, I owe a deepest thanks to my fiancé, Micah Slade, and my mother, Susanna Livingston. Without both of you supporting me and frankly “putting up” with my incessant nature, I may have driven myself and you crazy in these past seven months. Mom, I appreciate you helping in every aspect of my life, without that, this would not have been possible.

Table of Contents

ABSTRACT.....	II
ACKNOWLEDGEMENTS.....	III
CHAPTER 1: INTRODUCTION.....	1
CHAPTER 2: INTRODUCING COLORADO’S WATER CONTEXT.....	3
CHAPTER 3: LITERATURE REVIEW – THE WATER LAW FOUNDATION AND RECENT SCHOLARLY RESEARCH ON WATER POLICY DEVELOPMENT.....	8
CHAPTER 4: RESEARCH DESIGN.....	20
CHAPTER 5: LEGISLATION-CONTEMPORARY COLORADO WATER POLICY ISSUES	25
CHAPTER 6: LONG TERM AVAILABILITY OF WATER AND BALANCING COMPETING INTERESTS	36
CHAPTER 7: FARMER PERCEPTIONS	41
CHAPTER 8: DISCUSSION AND PRESENTATION OF KEY FINDINGS	48
CHAPTER 9: CONCLUSION-SUMMARY OF PROJECT AND ADDITIONAL QUESTIONS	57
APPENDIX A: MEETINGS AND INTERVIEWS	60
APPENDIX B: DEMOGRAPHIC SURVEY DATA.....	63
APPENDIX C: 2014 COLORADO LEGISLATIVE SESSION.....	65
APPENDIX D: 2015 COLORADO LEGISLATIVE SESSION.....	70
WORKS CITED	78

List of Figures

Figure 2-1: Population Growth in Northern Colorado.....	5
Figure 2-2: Population Growth in All Parts of Colorado.....	6
Figure 3-1: Colorado Water Ways.....	18
Figure 6-1: Drought Intensity as of 2015.....	37
Figure 8-1: Colorado Political Party Affiliation by County.....	50

List of Tables

Table 8-1: Basic Farmer Demographic Data.....	52
Table 8-2: Opinions on Water Rights and Irrigation.....	54

Chapter 1: Introduction

Water rights in the southwestern part of the United States are crucial because there is simply not enough. This presents Colorado with a major challenge: “In order to survive, all civilizations must have a consistent water supply” (Jones and Cech 2009). We have stretched our available water supplies as far as they will go and we must now start looking at a more sustainable future. Colorado’s distinctive climate provides a unique opportunity to not only influence how we as consumers use water but also develop and test water policies that others will find useful in what is essentially a desert climate.

Water is of particular importance to the farmers of Colorado because they rely on it to make their living. While more water has typically flowed in the western half of the state, farmers all across the state are concerned about the long-term availability of reliable and sufficient water supplies. Historically, the Eastern Plains were covered in prairie grass and did not become important agricultural land until the people that settled there diverted water to start farms and ranches. Without quenching this thirst there would never have been such a successful agricultural community on the eastern side of the continental divide. Today this area provides much of Colorado’s agricultural output and contributes significantly to the state food supply. This can only continue if better ways to manage water resources are found and implemented.

The specific thesis question that is examined in this piece explores the role of agricultural producers in the development of water policy with the anticipated water shortages. Given the importance of water resources to the agricultural community one would expect farmers to play a large role in the development of state water policy. However, farmers are made up of a diverse group of people with competing interests and ideologies and may not share common views or

priorities. With respect to current water policy issues, this undermines the potential for cohesive power by one strong influential political bloc to get a comprehensive water policy passed.

The research that follows sets out to answer the following questions:

1. Do Colorado farmers act as an influential political bloc in the development of state water policy?
2. What factors affect state farmer positions on water policy?
3. To what extent do the differences among state farmers fracture their collective influence in the development of statewide water policy?
4. What factors or conditions might allow farmers to overcome differences so that they might have a clear voice in the development of sustainable water policy options for the future?

Several steps were taken to grasp a wide range of evidence regarding these questions. First, existing demographic and survey data were reviewed compared and assessed to identify basic characteristics and opinions of the farmer population across the state of Colorado. Second, intensive one-on-one interviews with a range of key actors involved in state water policy development were carried out, including with state legislators, agricultural producers and water attorneys. Third, current state legislative committee hearings and debates focused on water policy proposals were observed, and major policy positions identified. Finally, these current policy discussions were compared with prior state legislative proposals to identify changes in the policy debate over time.

The research and evidence are presented as follows: Chapter 2 provides background context on Colorado water policy. This includes discussion of both historic and contemporary water distribution issues and the laws and policies that have been adopted to address these issues.

Chapter 3 reviews both the legal and social science literature that has developed over time to address water policy questions. Chapter 4 is the research design including the hypothesis that will be answered in this thesis. Chapter 5 lays out the legislative process including past and present bills. Chapter 6 addresses the long term availability of water resources and competing industries. Chapter 7 explains farmer perceptions as well as introduces the important independent variables. Chapter 8 provides the analysis of the primary, secondary, and tertiary variables as well answering the main questions and hypothesis. Finally, Chapter 9 presents the conclusions, including a summary of the important insights and additional questions that need further study.

Chapter 2: Introducing Colorado's Water Context

Colorado, like much of the American West, was once seen as a region too arid to sustain a large population. However, over the years the United States has taken on many dam, reservoir and irrigation projects in an attempt to alter the landscape and allow agriculture and urban development to take root. The state of Colorado has developed means of storing water and allocating it to its best uses, which have mainly been to support agricultural communities and our food supply. With the growth of urban development and, as some would argue, the “crush” of urban sprawl, these once almost exclusively agricultural water rights are now being needed in other areas of development.

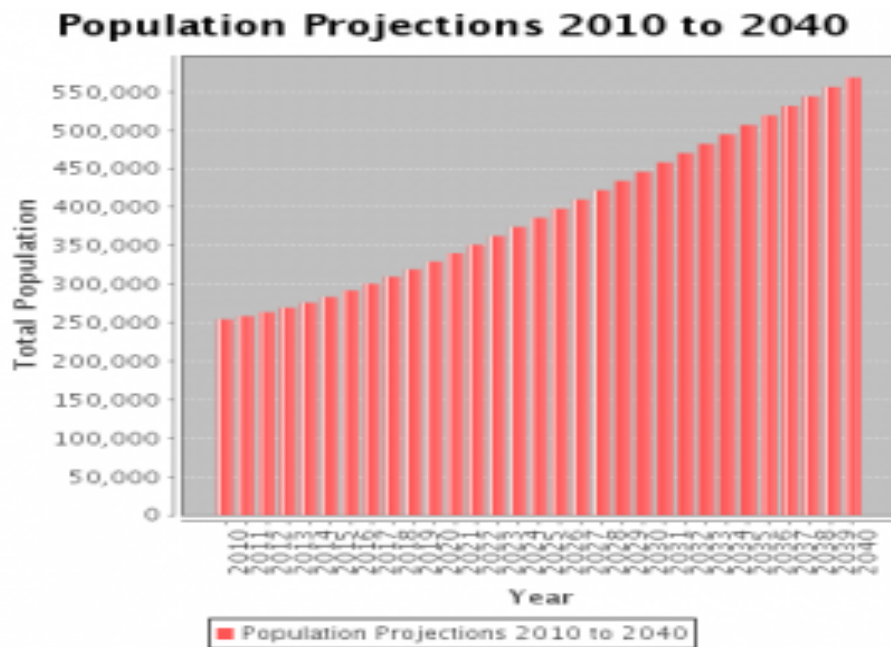
Water laws in Colorado were first established to deal with issues of scarcity. They were adopted to help decide how water should be allocated and where this resource could be used. These decisions can have far reaching impacts to different industries, as “the role of law is particularly important when so many varied needs must be recognized. An absence of order – of

clearly defined rights and rules of liability – can be dangerous. Lives have literally been lost over water disputes in the Western United States” (Getches 2009).

Water is a growing issue that puts a strain on the relationships between the agricultural communities that grow our food and the urban developments that house the majority of the state’s population. With water resources becoming scarcer due to changing climatic conditions such as droughts, which are expected to become more severe over the next century, it is time for a serious conversation about our water supplies, “The number of extreme drought events per 100 years and mean drought duration are likely to increase by factors of two and six, respectively, by the 2090s” (Intergovernmental Panel on Climate Change 2007). Denver and its surrounding areas are expected to grow by 87% in population by 2050 (America 2050 2015). This will add approximately 2.8 million people to Denver by 2030, and additional 2.3 million to the rest of the Front Range. Population growth at this rate will stretch these water supplies even farther. An example in Figure 2-1 shows the estimated population growth in Weld County in the north eastern part of Colorado. This is one of the areas where interviews were conducted with agricultural producers and they expressed their concern for new population growth considering the already overstressed rivers that feed the county. As P. Andrew Jones describes these rivers in his book, “The life of the river has changed. A free-spirited, rowdy mountain child has become a hunched-over, overworked stream. Water in the South Platte River is used multiple times as it flows through the basin. We will say it again- the South Platte is a workhorse river” (#14). Many leaders in charge of water planning as well as water attorneys argue that there is sufficient water supplies to meet our current need but that more management of our water resources is necessary if we will meet the needs of tomorrow, “Most Colorado citizens have a general sense that water is very important to the state, but few understand the magnitude of the importance or the critical

management and allocation of the state's water resources play in maintaining Colorado's economic health" (Jones and Cech 2009).

Figure 2-1: Population Growth in Northern Colorado



Weld County's population is expected to double by 2040

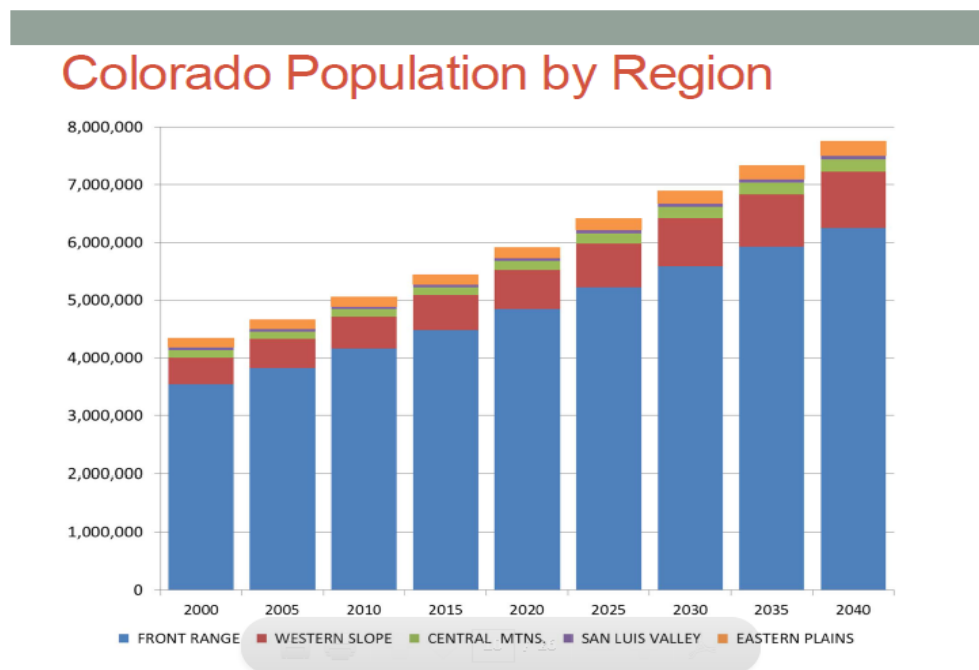
Credit State Demography Office / dola.colorado.gov

As we can see in Figure 2-1 the population in Weld County alone is expected to double from its current population of around 280,000 to around 560,000 by 2040. With water resources already greatly diminished, this will add even more strain to this overstressed agricultural community.

Figure 2-2 shows that Colorado's population is expected to grow mainly on the Front Range – the blue portion of each of the bars in the graph. These communities on the eastern side of the continental divide will be demanding more water in the future from a system that does not have much more water to give without it hurting the agricultural communities in the northern

part of Colorado such as Larimer and Weld Counties. The second largest area of growth is expected on the Western Slope; however this population is expected to remain significantly smaller than that on the Front Range. In addition, water supplies are much more abundant on the Western Slope.

Figure 2-1: Population Growth in all parts of Colorado



Source: Census 2010 and State Demography Office

Communities are competing for water supplies to help enrich their economic interests, to enable further growth, and to support recreational and tourism interests, such as establishing kayak routes along local rivers and creeks. Some of the development interests involve new demands on water supplies, such as hydraulic fracturing for natural gas and oil and increased manufacturing.

In Colorado, water rights can be retained, leased, or sold. Unfortunately, leasing water to other industries is not really an option because of the transaction costs associated with a change

in use water decree from a water court. Patterns associated with these options have different implications for Colorado's future water supplies. Past research has examined how water rights are transferred, including the potential of a more efficient water market structure (Getches 2009). Researchers have also focused on changes over time related to water transfers, such as "Buy and Dry" outcomes that have raised concerns among water planners. "Buy and Dry" situations occur when farmers ultimately sell off all of their water rights from a piece of land. The term "Buy and Dry" is defined as, "the practice of transferring agricultural water rights to thirsty cities and municipalities" (Buy and Dry in Colorado Agriculture n.d.). This has a negative effect for communities because it means that the land cannot be farmed in the future due to lack of water connected to the land.

With other industries competing for limited water supplies, it is hard for the agricultural community to have one solid voice and stand together cohesively against other industries. While most of the farmers that I spoke with would prefer to work with the cities, municipalities, ditch and irrigation companies, state officials, and lawyers to work on how to balance these interests, some would just prefer for the rest of the world to stay out of their business. This is partly because of their financial investment in their water rights but also because they may feel threatened or intimidated by conversations that may lead to some water rights changing hands. This is one reason why one would assume that the farmers in Colorado are one strong influential political bloc with regards to their water. Agricultural producers have a vested interest in the outcome of water legislation that may lead to the rules changing. While some are willing to have a conversation with other industries about the outcome or drafting of such legislation there is a clear gap between those that have the water and those that need the water.

The policy proposal before the Colorado State legislature in 2015 is a Bill that would create a more Flexible Water Market. This would allow agricultural producers the opportunity to lease off their extra water or the non-consumptive part of their water right to a user in a different industry for beneficial use. This could be looked at as a secondary crop, where the farmer could fallow for a year and lease the water for a supplemental income, or as a way to balance competing industries while still holding the water right in agriculture. There is controversy and heated debate about this type of legislation even among agricultural producers or farmers and research is needed to better understand what separates this seemingly cohesive group.

Chapter 3: Literature review – The Water Law Foundation and Recent Scholarly Research on Water Policy Development

Water Law Water law is very complicated and aims to find the most beneficial uses for this limited resource, especially in arid environments. Having water laws to dictate who gets what and when helps alleviate tensions since it is a highly demanded good that is of limited supply. Water and natural resource law expert David Getches states that:

It is very unusual for a resource to dictate law. Water has the unique job of defining how we live. It is needed by every living organism to survive, helps us thrive in areas that we would otherwise not be able to grow food, furnishes a habitat for fish and other aquatic life, as well as helps purify our air. American jurisdictions can be grouped into three different types of water law systems. These systems are Riparian Rights, Prior Appropriation Rights, and a hybrid or mixture of the two. Water law was established because there is typically not enough of it, enough of the right quality, in the right place, at the right time (Getches 2009).

There has been a great deal of legal research done on the topic of water rights but first we need to understand what a water right is. A water right is, “A group of rights designed to protect the use and enjoyment of water that travels in streams, lakes, rivers, and ponds, gathers on the surface of the earth, or collects underground. Water rights generally emerge from a person’s ownership of the land bordering the banks of a watercourse or from a person’s actual use of the watercourse” (Water Rights 2008). As Getches states, “Water is legally and historically a public resource. Although private property rights can be perfected in the use of water, it remains essentially public; private rights are always incomplete and subject to the public’s common needs.” This essentially means that water is a public commodity and acquiring land in Colorado does not necessarily entitle that person to use of water under prior appropriations; however, if this land is sold with water then it becomes the owner’s property as long as it is used for the designated beneficial use and in the amount in which the right determines, “Some states go farther and treat all water in the hands of a beneficial user as personal property that can be bought and sold, stolen, and in some circumstances subject to taxation.” (Getches 2009).

In water legislation the term “priority” refers to the seniority date in which the right was acquired compared to other water rights.¹ Senior rights are those rights that were established first and have seniority over junior rights that were established at a later date. Water is moved or diverted from the river using canals and ditches to its designated purpose and once the water right has been used it is returned to the river through seepage or return flows. The Colorado Revised Statutes definition of “diversion” or “divert” means “removing water from its natural course or location, or controlling water in its natural course or location, by means of a control structure, ditch, canal, flume, reservoir, bypass, pipeline, conduit, well, pump, or other structure

¹ Colorado Revised Statutes, Title 37. Water and Irrigation.

or device.”² This presents a problem in years of drought, especially for those with low priority rights, and there may not be enough water to go around.

Historic Legal Roots

Water rights in the United States are defined by two different legal doctrines applied on opposite sides of the country. The two different doctrines split the country down the 100th meridian. The first water rights system adopted in the U.S. was Riparian Water Rights that originated from English tradition (State of California 2014). This way of allocating water has been seen as the more logical approach because every land owner that owns a piece of riparian land, or land that abuts a water source, is entitled to access and use of that water (Archibald 1977). Riparian Law is typically seen in areas that have a wetter climate and abundant water, unlike the western United States. This water must have a certain standard of quality and quantity from upriver sources and those characteristics must stay intact. This incentivizes people upstream to be sensible with their water and not pollute it. Historically the users of upstream water were not allowed to divert it for mining, irrigation, or anything else that would cause the degradation of the water for downstream users. In recent years states have begun to adopt new laws where some water can be diverted for reasonable use as long as it does not affect the usage of other holders to that water right such as end users (Kubasek and Silverman 2014). Roughly east of Kansas City falls under Riparian Law and west of Kansas City falls under Prior Appropriations Law. “Appropriation” is defined in the Colorado Revised Statutes as “the application of a specified portion of the waters of the state to a beneficial use pursuant to the procedures prescribed by law; but no appropriation of water, either absolute or conditional, shall be held to occur when the proposed appropriation is based upon the speculative sale or transfer of the appropriative rights to persons not parties to the proposed appropriation.”³

² Colorado Revised Statutes, Title 37. Water and irrigation.

³ Colorado Revised Statutes, Title 37. Water and Irrigation.

Prior Appropriations is the water rights system that has been developed in the western half of the United States. This law is rooted in a dispute in California between two miners. One miner, Phillips, had diverted a stream to his mining operation that was situated away from the river. The diversion required hard labor over an extended period of time in the construction of a channel that would deliver sufficient water for hydraulic mining along a mountainside. A second miner, Irwin, who came along later and purchased property through which that water flowed, assumed that he would share riparian rights to the water and wanted the first miner to stop diverting what he considered to be his water. Phillips disagreed. If Irwin were to put the water to full use under assumptions of riparian rights, he would diminish the amount of water that Phillips needed for his mining operation. This dispute went to the California State Supreme Court as *Irwin v. Phillips* in 1855 and the court decided that the first farmer had more rights to the water because the first person to put this resource to reasonable and beneficial use has a senior water right over later appropriations (Archibald 1977). In particular, the court held:

“Among these [rights,] the most important are the rights of miners to be protected in the possession of their selected localities, and the rights of those who, by prior appropriation, have taken the water from their natural beds, and by costly artificial works have conducted them for miles over mountains and ravines, to supply the necessities of gold diggers... It was a matter of a universal sense of necessity and propriety.” (*Irwin v. Phillips*, 5 Cal. 140, 1855)

This is where the phrase “first in time, first in right” came about and this established the first Prior Appropriations Law in the western United States (Archibald 1977). Colorado later

adopted a version of Prior Appropriations, called the Colorado Doctrine which is explained below (Colorado Division of Water Resources 2014).

Law professor Jonathan Adler suggests that the demands of current and projected water management challenges can best be met through a greater reliance on water markets for water management. Specifically, water management must shift toward recognition of transferable rights in water that facilitate voluntary exchanges and the market pricing of water resources. He goes on to say that, “In the United States water markets emerged in many western states as an outgrowth of the Prior Appropriation Doctrine, which recognized property rights in water.” This research suggests that water markets would be an excellent alternative to allocate a limited resource to its’ highest beneficial use to protect it against waste. Likewise, scholars from the University of Arizona and University of California find that, “Farmers or other users who reduce their consumption should be allowed to lease or sell the conserved water. In the near term, states should offer short term leases of water, build basic market institutions, deploy risk mitigation tools such as dry year options, and implement basic controls such as regulating how much water can be pumped” (Glennon and Libecap 2014). Charles Howe, a University of Colorado law professor, takes a more economics-based outlook on water markets and states that the economists’ model of efficient competitive markets, if applied to water resources, would picture a smooth, relatively low-cost process of moving water from the lowest-value applications in agriculture to growing non-agriculture uses. This again predicts the value of allocating water in free market-based programs that would help eliminate misuse.

Other states have also considered and implemented water leasing programs in the western part of the United States. Most of these leasing programs have been done to help protect the fish in rivers where water has been diverted and has subsequently upset their environment. Water

leasing programs developed in Washington have helped ease the negative impacts of drought and have generally been considered beneficial in their implementation. For example, “In response to drought conditions in the Yakima River Basin in 2001, the Washington Department of Ecology and U.S. Bureau of Reclamation instituted an emergency leasing program in order to facilitate short-term water transfers and alleviate the impacts of the drought” (West Water Research 2003). This literature also provides a table that summarizes the results of this leasing program by amount of acres of water leased, number of days the lease was for, as well as the intended use of the water: “In total, 9,942 acres were fallowed in the basin to provide water supplies for higher-valued uses. The average price paid during the drought conditions was \$116 per acre-foot and \$199 per acre” (West Water Research 2003).

In 2011 the New Mexico State House of Representatives passed a water leasing program that would have allowed the Mescalero Apache Tribe to lease adjudicated water rights to raise money for programs including scholarships and social programs for the Apache reservation. The Bill describes the process and the limitations noting that “H.R. 1461 would allow the Mescalero Apache Tribe of New Mexico to enter into a lease or other temporary conveyance of its water rights. H.R. 1461 would prevent the Mescalero Apache Tribe from permanently forfeiting their water rights and would authorize leases of no more than 99 years.”⁴ The Bill goes on to describe the reasons for this leasing program which is to help the Mescalero Apache Tribe as well as areas in New Mexico that are affected by severe drought, “The Tribe intends to lease water to communities in Southeastern New Mexico that are in need of additional supplies due to severe drought. Revenue generated by such leasing would be used to improve tribal government

⁴ State of New Mexico Bill H.R. 1461: Mescalero Apache Tribe Leasing Authorization Act.

services, such as senior care, infrastructure development, and academic scholarships.”⁵ Since the State Senate did not vote on this same Bill, the program was not adopted.

Colorado Specific Water Law The Colorado Doctrine came about in 1872 when the Colorado Territorial Supreme Court ruled in the case *Yunker v. Nichols* (Hess 1916). The court ruled that a non-riparian user that puts the water to beneficial use first has senior rights over a riparian user that wants to save the water for later use. This issue was considered once again through a case first filed in the Boulder District Court in 1880 and then finally resolved in an 1882 Colorado Supreme Court decision with the landmark case of *Coffin v. Left Hand Ditch Co.* where Colorado formally adopted the appropriative law that we see today (Black 2014).

This Colorado Doctrine allocates water usage by the earliest appropriation date “First in Time, First in Right” for a specified amount of water for a specified beneficial use (Colorado Division of Water Resources 2014). This is what is known as a senior water right and nobody else is allowed to access their water rights until these senior rights have been satisfied (Getches 2009) . This means that in years of drought those holding junior water rights may or may not be able to access water for that year. A senior rights holder may do what is called a “Call”, which instructs more junior users upstream to stop getting water until the senior right holder has acquired all the water that is needed to fulfill their right. In Colorado, all surface water and groundwater tributaries that add to this surface water are controlled by this prior appropriation. The Doctrine also states that any un-appropriated water “Shall never be denied,” but the reality in Colorado is that water is over appropriated.⁶

Measures to control the use of water rights as well as provide solutions for water disputes emphasized the need for some government involvement. These involvement measures can range

⁵ State of New Mexico Bill H.R. 1461: Mescalero Apache Tribe Leasing Authorization Act.

⁶ Colorado Constitution, Article XVI. Section 6.

from water courts, to the office of the state engineer, to particular water organizations that specialize in water education such as the Colorado Water Conservation Board. To alleviate tensions over water issues the state of Colorado created the Office of the State Engineer in 1881. The State Engineer's main priority was to oversee the canal and ditch construction and measure the amount of water in the streams (Colorado Division of Water Resources 2014). By the 1900's most if not all of the water in Colorado was over-appropriated (Colorado Division of Water Resources 2014).

The Colorado Division of Water Resources (also known as the Office of the State Engineer) identifies its mission as follows:

- To provide competent and dependable distribution of water in accordance with statutes, decrees and interstate compacts.
- To ensure public safety through safe dams and property permitted and constructed water wells.
- To maintain and provide accurate and timely information concerning water.
- To promote stewardship of all human, fiscal and natural resources.
- To serve the public through the generation of creative solutions to problems.
- To help the public understand complex water issues.
- To promote stability in the use of the state's limited water resources.
- To apply modern technology to its greatest advantage.

The Division of Water Resources has recently said that, "Water rights are becoming increasingly complex. Basin of origin issues, reserved rights, wetlands, endangered species recovery and interstate water issues are all new pressures on an already limited water supply" (Colorado

Division of Water Resources 2014). This is a progressively more complex issue that requires more regulations and policies to satisfy the needs of the individuals involved.

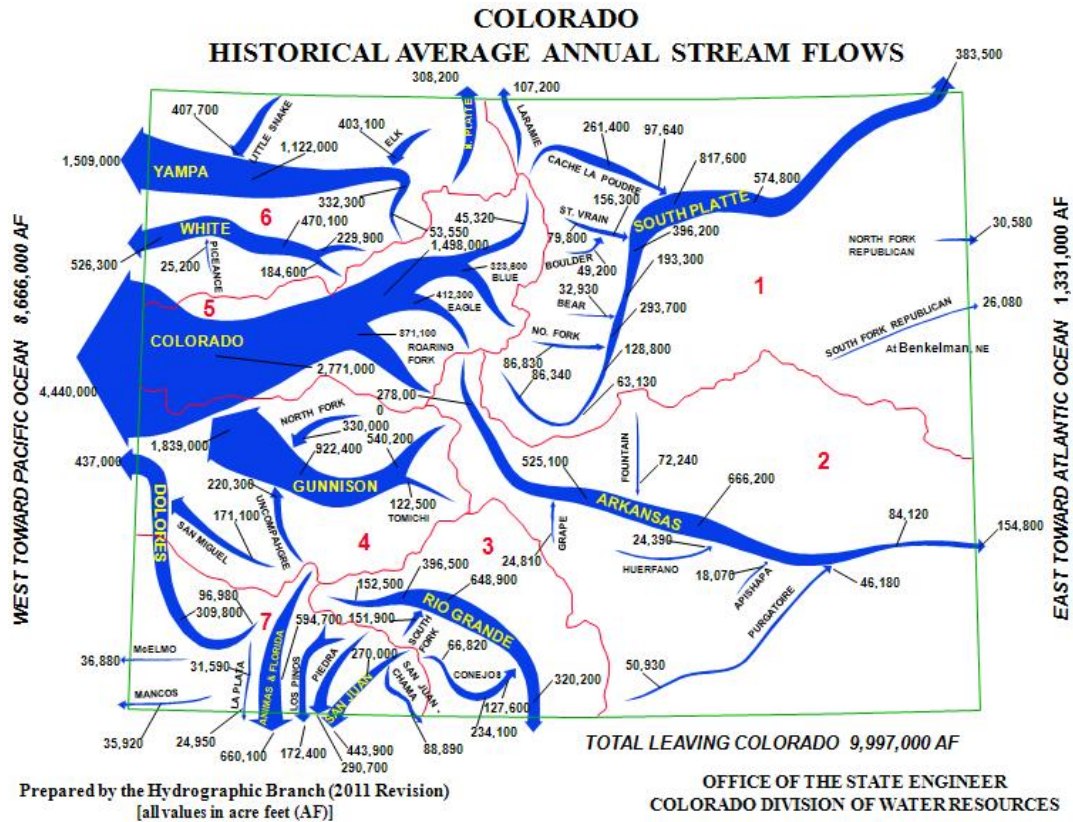
Colorado water courts, which were created in 1969, are another way to deal with water disputes. Water courts in Colorado are part of the state judiciary under the Water Right Determination and Administration Act of 1969, which created seven different water divisions based upon drainage patterns of various rivers in Colorado, “Each water division is staffed with a division engineer, appointed by the state engineer; a water judge, appointed by the Supreme Court; a water referee, appointed by the water judge; and a water clerk, assigned by a district court” (Colorado Judicial Branch 2014). The Colorado Judicial Branch defines this process: “Water judges are district judges appointed by the Supreme Court and have jurisdiction in the determination of water rights, the use and administration of water, and all other water matters within the jurisdiction of the water divisions.” As the above literature suggests, there are very complex issues revolving around the use of this disputed resource. Many are vying for control over water and that dictates the need for a process of guidelines.

The Colorado Water Conservation Board (CWCB) is another state agency that provides policy direction and informs the public about the policies that are in place to allocate water as well as up to date projects and projections. The CWCB’s mission statement is, “To Conserve, Develop, Protect and Manage Colorado’s Water for Present and Future Generations.” This organization is almost entirely self-funded and consists of a board of fifteen members who bring technical expertise regarding each of the major water basins in water planning in the state of Colorado. Meetings are held on an ongoing basis to consider existing water issues. Over the past year the CWCB has been holding what are called “Basin Roundtables” to discuss water allocation problems in the seven water districts in Colorado, including those associated with

water flexible water transfers. These Basin Roundtables will have significant influence in Colorado's Water Plan.

As can be seen in Figure 3-1 there are many rivers and streams in Colorado that do provide for the communities inside Colorado. On the other hand, a substantial amount of water leaves the state of Colorado each year. Colorado has obligations to meet the Colorado Compact on the Western Slope and this map shows that 8,666,000 AF (acre feet) leave Colorado via the Western Slope. According to the Colorado Compact agreement, the Western Slope has to allow 3.86 million AF/yr flow out of the state to the Lower Basin states (Jones and Cech 2009, #77). It also shows that 1,331,000 AF leave Colorado through the east towards the Atlantic Ocean. The Colorado Compact as well as other compacts that came in the 1940s allocated some of Colorado's northern and eastern rivers to be allocated to Wyoming, Nebraska, Kansas, and even Texas (Jones and Cech 2009, #77). This is a total of 9,997,000 AF leaving Colorado each and every year. At this time there are, "Over thirty interstate compacts with nine located in Colorado" (Jones and Cech 2009, #77).

Figure 3-1: Colorado Water Ways



Water markets in Colorado are an option for property owners but can be very controversial. Water is bought and sold in a number of different ways including water brokers, informal agreements, and online resources that connect sellers with buyers, e.g. *Water Colorado* (Red Rocket Media Group 2008). These can be individual rights or shares in groups, such as ditch companies and larger projects such as the Colorado Big Thompson Project. The downside to these sales and leases is that trying to figure out what uses are more beneficial than others can create tension because of the difference of opinions between farmers and other competing industries on how water supplies should be used (Howe and Goemans 2003). Water markets are supposed to conserve water resources and allow more discussion that should eliminate quarrels. Water Markets are a great way to distribute water resources to third parties but since this is a limited and vital resource some general governmental guidance was needed, but with limited

restrictions on the free market. Government institutions needed to acknowledge that water rights are a private property right in Colorado but that there is a need for a limited legal structure to ensure that this resource is used, leased, and sold properly and without extensive waste.

Scholars have attempted to understand the problems associated with the selling of water rights from agricultural communities to growing urban communities. Research by Howe and Goemans (2003) emphasizes the need to look at the economic problems associated with water being sold from the Arkansas River Basin and South Platte to municipalities. These two basins had different negative impacts associated with their transfers because the water was transferred out of the original watershed basin (Howe and Goemans 2003). Discussions have also focused on water transfers, change in use, and the no harm rule: "Whenever one seeks to change the point of diversion, or the place, purpose, or time of using a water right, whether or not a transfer of the right is involved, special protections against harm to other appropriators apply" (Getches 2009). Water that is transferred can only be leased by the water right holder and only up to the amount that the right pertains to: "A transfer of course may not exceed the quantity of rights held by the transferor" (Getches 2009). All of the research that has been done on water sales and water transfers has encompassed the need to address the lack of water and the need to use it efficiently.

While there has been extensive research in other states addressing water leasing the literature in Colorado is limited to larger issues surrounding the controversies. More research is needed on the particular opinions of agricultural producers all over the state to understand the complexities and differences these producers face on both sides of the continental divide.

Chapter 4: Research Design

This research was designed to examine the role of Colorado state farmers in the development of current state water policy. The Colorado State Legislature is very concerned about water resource planning and has attempted to establish fair rules for water transfers. How can we best balance agricultural interests and growing urban demands? What factors influence these decisions? Given the finality of a sale it is important to consider the adverse effects to communities when their economies are literally drying up. This situation is known as “Buy and Dry” (Getches 2009). These decisions are important to everyone in Colorado because it affects the amount of water that is available and the price they pay for it. In particular this question is important to farmers and their families in these communities because of financial responsibilities, as well as growing municipalities whose demand for water is increasing with development and population growth. This also affects other growing industries that require water for production as is the case with hydraulic fracturing or industrial manufacturing (Goodwin, et al. 2013).

The specific questions asked in this analysis:

1. Do Colorado farmers act as an influential political bloc in the development of state water policy?
2. What factors affect state farmer positions on water policy?
3. To what extent do the differences among state farmers fracture their collective influence in the development of statewide water policy?
4. What factors or conditions might allow farmers to overcome differences so that they might have a clear voice in the development of sustainable water policy options for the future?

This research aims to find out why farmers in the state of Colorado are so geographically polarized when it comes to disputes about water within the state. These issues were examined through several distinct research steps. First, existing demographics from the Colorado Census as well as survey data were compared and assessed to find differences and commonalities between farmer populations on the Western Slope and the Eastern Plains. Second, in-depth interviews were conducted to gain insights on factors influencing the development of agricultural water policy. This involved traveling to interview agricultural producers and county representatives in two counties of northern Colorado to identify and assess important decision making factors and if they are in support of proposed legislation to create a more flexible water market. Interviews also took place with State Representatives, State Senators, Legislators, and water attorneys which allowed me to grasp this problem from a statewide perspective as well as identify particular positions. The third step in this research focused on Colorado State legislation. The Colorado State Legislature is in the process of scrutinizing a new bill for the 2015 Legislative Session that opened in January that would revise water leasing rules across the state. Observations of the committee hearings and water policy debates provided information of water issues from a state perspective and allowed for district stances to be identified. Finally analyzing and comparing similar previous legislation with the proposed legislation allowed for identifying how the water debate has progressed over the past two Legislative Sessions.

The survey data used in this research comes from two separate farmer survey sources. The first is a survey of farmers from the Colorado River Basin on the Western Slope conducted in November of 2012. This was an online survey of 2,792 farmers in three selected counties that was administered by the Colorado Water Institute at Colorado State University. The second survey was a mail-in survey drawn from two counties in north eastern Colorado in December of

2014. This mail-in survey had a total of 708 respondents and included farmers located in Larimer and Weld Counties. See Appendix B for more detailed information on these two surveys. While the two sets of survey data that are compared for this analysis are not identical and thus not strictly comparable in a statistically verifiable way, many of the questions are similar and allow us to compare basic conclusions as to similarities and differences. Populations on the two sides of the Continental Divide are inherently different and somewhat biased towards their own sides needs. There is a lack of a statewide survey of farmers and others involved in agricultural production that would allow us to quantitatively compare results and more directly identify statistically significant differences across farmer groups. This would certainly be an important research step for the future.

This research included interviews with nineteen people with very different backgrounds and experience in water issues. Six farmers were interviewed in Larimer and Weld County which allowed me to understand the individual perspectives and opinions of farmers with regard to their water rights. Eight water experts were interviewed including state legislators and water attorneys that are involved in the individual circumstances of farmers and in the testimony portion of the Committee hearings on this Legislation. The two state legislators that were interviewed were both the past and present writers of the water policy bill examined in this research. Key members of the Committees with jurisdiction over water policy measures were interviewed including two State Representatives and three State Senators. Two of the State Senators were the Chair and the Vice-chair of the Senate Committee on Agriculture, Natural Resources, and Energy. While a review of aggregate-level data from surveys is useful, these interviews allowed me to gain in-depth knowledge of how various actors – including farmers, water policy experts and legislators – perceive, discuss and decide issues related to water rights. The results are

important for guiding future research because surveys can be developed that address Colorado as a whole and can be tailored to answer specific questions that most concern the farmer, as revealed in the interviews. There are certain limitations to these particular interview results because I was limited to the people that were willing to speak with me, their availability, as well as time limitations for completion of this research.

The interviews that were conducted in Larimer and Weld County allowed an overall picture of the strains on agricultural producers and their communities in northern Colorado. These two counties in particular are arguably the most water strapped counties in the state and the state relies on their agricultural production and output to help sustain the economy, “Colorado Agriculture contributes \$41 billion to the state economy and employs nearly 173,000 people” (Colorado.gov 2012). Discovering what was really incentivizing these communities to participate in “Buy and Dry” transactions can help legislators create laws that incentivize keeping water rights in agricultural hands because of the problems that are created when a farm detaches the water from the land by selling it to another industry. This water, once it is sold, will rarely return to agricultural producers unless it is leased from the industry that bought it. A set of questions was used to gauge farmers on their perception of their rights, proposed legislation, and family history. Survey data was identified and will help add to the analysis of the interviews. While aggregate data was the only information that was available, qualitative analysis of the difference and commonalities between the two geographical parts of the state will be the main focus as well as the interviews.

Hypotheses The following hypotheses regarding the role of Colorado agricultural producers in the development of current water policies were tested:

H1= If agricultural producers are from the Western Slope then they are opposed to flexible water market legislation.

H2= If agricultural producers are from the Eastern Plains then they support legislation that would make a more flexible water market.

H3= If agricultural producers on the Eastern Plains do not have children or an apprentice to hand the farm down to then they are more likely to participate in “Buy and Dry” agreements.

H4= If agricultural producers on the Eastern Plains do have children then they are less likely to participate in “Buy and Dry” agreements.

H5= If agricultural producers on the Eastern Plains do have children then they are more likely to show support for flexible water market legislation.

The chapters that follow present the findings related to the role of Colorado farmers in the development of water policy and with respect to the specific hypotheses listed here. These findings start with a discussion in Chapter 5 of the particular water policy debate faced by Colorado state legislators. This includes the insights gained through in-depth interviews with legislative committee members who crafted the policy proposal and other individuals with focused knowledge and interest in the issues. Chapter 6 presents the findings on current and anticipated water supply issues facing the state and how various interests are positioning themselves in response. The perceptions and opinions of state farmers are discussed in Chapter 7, looking in particular at whether or not the Western Slope versus Eastern Plain’s location significantly affects farmer views. Chapter 8 pulls together the knowledge gained from these

several strands of analysis to identify and discuss the most important findings resulting from this study.

Chapter 5: Legislation-Contemporary Colorado Water Policy Issues

While other western states are dealing with similar concerns, each state has adopted its own set of rules governing water transfers. For several years, the State of Colorado has been drafting and considering new legislation to avoid outcomes such as “Buy and Dry,” where agricultural areas are drying up because farmers are selling off their water rights (Colorado Corn 2009). Non-permanent water transfers such as one year leases are not widely practiced and are only used to lease water from one agricultural producer to another. Cities and municipalities also regularly lease water to agricultural producers but the supply may not be reliable from year to year depending on climate conditions such as drought or environmental issues such as the beetle kill or wildfires. The amount of water that is leased back to agricultural producers is not known until after the snowpack and runoff is calculated which can leave farmers with uncertainty about their expected water supplies and output of crops until April or May of the planting year. This makes planning growing cycles more tedious and uncertain. One agricultural producer in Larimer County relayed a story of a year when the water supply was so diminished that he had to fallow acreage, “We experienced what could happen in 2013. In 2012 the High Park Fire north and west of Fort Collins burned a big part of the water shed for the Poudre River which is where a lot of irrigation water comes from and because so much area was burned up it basically polluted the river and the municipalities weren’t able to use it. All of a sudden their water supply was unavailable to them and so they decided they were not able to rent out the water that they hold in Horsetooth Reservoir. When that portion of water was unavailable to farmers they were

hit with a low supply of Ag water. Many of the farmers in this area had to fallow quite a bit of ground. We fallowed about a third of the acres we were running and we reduced the amount on other acres. We tried to conserve the water for higher returning crops” (M. Matsuda, personal interview, 3/03/2015).

Legislation should make it easier for water to be allocated to the highest beneficial use by implementing a more flexible water leasing market where water rights can be used more efficiently. Owners can retain all of their water, implement water saving practices to use less water, and then lease the remaining water to other industries or third parties, or choose to stop farming altogether and sell off all of their water rights. Legislation aspires to prevent the latter option from happening because “Buy and Dry” has economically devastating consequences on the communities that participate in this practice. A State Representative described the need for legislation as a “Turning Point” in the future of Colorado agriculture. Without such legislation “Buy and Dry” trends will continue. (State Representative, personal interview, 1/27/2015).

Giving some power to the agricultural producer over the efficiency of their farm creates incentives for the farmer to implement water savings programs or better engineering so the extra water can be leased for a profit. An agricultural producer and owner of a very water efficient farm in Larimer County, Troy Seaworth explained that, “In the future, water preferences should be given to those producers that become the most efficient. Some agricultural producers on the Eastern Plains still participate in flood irrigation but we believe that the more water efficient a farm becomes the more water they should be able to get in the future to continue agricultural production.” Upgrading the efficiency of say a ditch to a private users land can be very expensive, however, if the water will be leased for a certain amount of time at a certain agreed upon price then it can pay for itself, and it gives the farmer certainty that the water will be leased.

Water is a limited resource and markets will be able to place this importance by allocating it to its' highest beneficial use and incentivizing smarter farming practices.

Previous research examines past and future water trends as well as the potential positive effects from water market transactions. However, legislation for flexible water markets is a relatively new conversation being carried out in the state of Colorado over the last three to five years. These water transfers have caused controversy because of how this water can be used, meaning that any negative effect on other water rights must be identified and so must the end user of the conditional lease. Pursuing a new water right in Colorado requires a difficult set of challenges. As the Water Information Program suggests, "first a survey must be conducted on the ground as well as a formal statement of the intent for beneficial use must be established. A Water Court application including the legal description of the intended diversion, the location of the water source used for diversion, the appropriation date, the amount of water to be used, as well as the intended use must be submitted and approved before a new right can be established" (Colorado Water Rights 2014).

The Colorado State Legislature is attempting to resolve these issues with representatives from all over the state to set up rules to allow for more flexible water transfers while still looking out for long term water planning. The discussions about these issues take on two major roles. This is a struggle for a limited resource from opposing interests and a more practical and structured approach is needed where all interests can discuss what it is they need. Efficient legislation is needed to help facilitate a free market system so as to safe guard against waste. The highest beneficial use is vital in this area because of its limited supply and bringing different interests to the table has been difficult but is necessary for Colorado's water future. Prominent water attorneys as well as State Representatives and State Senators have expressed a need to

work more cohesively as a state and expressed that , “There’s a truce in the water wars in the sense that Denver and some of the big municipalities taking water from the Western Slope got to the point where they realized it is more productive, more efficient, cheaper for Colorado in the long run to cooperate with the basin of origin rather than just duke it out in water court” (T. Morris, personal interview, 3/05/2015). This has been difficult because some agricultural producers are hesitant to talk about their water rights and fear they are not being represented. The costs associated with traveling to Denver may be not be an option and the legislature is just now starting to use remote testimony. Competing industries may be hesitant to look too eager for more water considering the negative connotation that may be attached to looking for more water sources that will be used in an industry that is not always widely supported in Colorado.

In the 2014 Legislative Session, HB 14-1026 was introduced. The Bill was sponsored in the House by State Representative Randy Fischer (D) of District 53 that represents the western part of Fort Collins as well as backed by the Senate sponsor, Senator Gail Schwartz (D) of Senate District 5 which covers a large area in south-central Colorado. The purpose was to put rules in place to make it easier for transfers of water to take place between the agricultural producer and another industries, “a FLEX Market is simply defined as a voluntary agreement between one or more municipal and industrial water users, and one or more agricultural water user, and one or more environmental/conservation water user to change the use of a senior irrigation right to include multiple end uses in addition to irrigation, and to establish a trading platform facilitation uses by all participants” (Lawrence Jones Custer Grasmick LLP, Brown and Caldwell 2013). This Bill was written to help ease the transaction costs associated with a “change in use” decree.

The owner of a Colorado water right can change the use of his right by time and place as long as no other senior or junior right is harmed by this change and this is what is meant by a “change in use” decree. Traditionally as an agricultural producer diverts water from the stream to satisfy his water right to irrigate his farm there will be return flows that are unaccounted for. For an explanation of how this works, P. Andrew Jones and Tom Cech elaborate in their book, “As water rights are diverted from a river or stream and applied to beneficial use, not all water diverted is consumed. For example, in a typical farming operation using flood irrigation techniques, approximately 50 percent of the water applied to crops is consumed by plants. The remaining 50 percent either runs off the end of the irrigation field on the surface, evaporates, or escapes past the crop root zone and enters the alluvial aquifer. Diverted water that is not consumed by the crop or lost to evaporation returns to the stream.” There is now a 50% return flow that is not accounted for that is used by the next farm. Time after time there is water that is unaccounted for via return flows but the farm assumes that there are no return flows. When the first farmer in this scenario decides to participate in “Buy and Dry”, the river loses those return flows. There is no longer a return of water to the river after a change in use decree and that impacts not only the original piece of land that no longer has a water right attached to its property but it also negatively impacts the entire river system. Change in use is defined by the Colorado Revised Statute as “means a change in the type, or time of use, a change in the point of diversion, a change from a fixed point of diversion to alternate or supplemental points of diversion, a change from alternate or supplemental points of diversion to a fixed point of diversion.”⁷

There was general opposition to this Bill because of the lack of clear definitions of some of the legal wording and there was a geographic pattern of opposition from Western Slope

⁷ Colorado Revised Statutes, Title 37. Water and Irrigation.

Representatives and Senators and those in the Lower Arkansas Valley Water Conservation District among others. Opponents to the Bill opened up an avenue for the Eastern Plains to acquire more water from other water basins and in particular the Western Slope via trans-mountain diversions such as the Colorado Big Thompson Project. The Western Slope is responsible for meeting the Colorado River Compact of 1922. This is the case because the Colorado River originates in the mountains of the Western Slope above Lee Ferry. The Compact states that, “The major purpose of this compact are to provide the equitable division and appointment of the use of the waters of the Colorado River System; to establish the relative importance of different beneficial uses of water, to promote interstate comity; to remove causes of present and future controversies; and to secure the expeditious agricultural and industrial development of the Colorado River Basin.”⁸ This Compact puts pressure on Western Colorado to be conscientious of their water usage to a point where uncertainty in a proposed Bill could create tension between the Western Slope and the Eastern Plains. The Western Slope is not responsible for the population boom in Colorado and this can cause them to be protective of their water supply even though they live in the same state.

There were also disagreements about how water should be used. Some from the agricultural community believed the water should stay in agriculture and any attempt to change this was met with heavy opposition. As one of the agricultural producers asserted, “Urban water use is so inappropriate in our semi arid desert that there would have to be a remarkable danger in city water use before any burden or thought of taking away Ag water is our option. Changing city policies of water use to match the availability is a must. Taking Ag water is myopic and will cause fewer people to farm” (Poudre Basin Water Sharing Working Group and Colorado Water Institute 2015).

⁸ Colorado River Compact 1922, Article 1.

There is a limited number of research papers and academic literature available in this area. Opinion pieces from newspapers seem to be more numerous but they do not provide research to back up their opinions. For example, an editorial from *The Pueblo Chieftain* in 2014 describes new Legislation (HB 14-1026) as a Trojan horse and they state, “The Pueblo Chieftain editorial board opposes the bill because it would obliterate the anti-speculation doctrine, which has been key in stopping past attempted water grabs in the Arkansas Valley” (Woodka 2014). Anti-Speculation as described by water attorney P. Andrew Jones is, “A corollary to the principle condemning waste. If a person is only allowed so much water for a bona fide purpose, then any excess water claimed or taken is considered “waste” and cannot be sold to another. The anti-speculation doctrine is an affirmation of the public nature of the waters of the West. It insures that this vital resource will be devoted to beneficial uses and is intended to prevent individuals from monopolizing water solely for financial gain.” As stated earlier, there is a specified definition to the words “appropriation”, and “Diversion” or “Divert.” The definition of “beneficial use” also needed some clarification and the Colorado Revised Statute defines it as “the use of that amount of water that is reasonable and appropriate under reasonably efficient practices to accomplish without waste the purpose for which the appropriation is lawfully made. Without limiting the generality of the previous sentence, “beneficial use” includes:

- (a) The impoundment of water for firefighting or storage for any purpose for which an appropriation is lawfully made, including recreational, fishery, or wildlife purposes;

- (b) The diversion of water by a county, municipality, city and county, water district, water and sanitation district, water conservation district, or water conservancy district for recreational in-channel diversion purposes; and

(c) For the benefit and enjoyment of present and future generations, the appropriation by the state of Colorado in the manner prescribed by law of such minimum flows between specific points or levels for and on natural streams and lakes as are required to preserve the natural environment to a reasonable degree.”⁹

This particular Bill was introduced in the House Committee on Agriculture, Livestock, and Natural Resources on January 8th, 2014. The Bill passed the House Agriculture Committee and was recommended to the Committee of the Whole on January 27th, 2014 where it passed after a third reading on February 3th, 2014. It then moved to the Senate Committee on Agriculture, Natural Resources, and Energy on February 5th, 2015 where it had witness testimony and a committee discussion. The Bill was ultimately postponed indefinitely on May 1st, 2014 in the Senate Committee on Agriculture, Natural Resource, and Energy. The uncertainty in the market with risks of speculation as well as the unintended consequences associated with changing the current way that water is allocated proved to be too much of a concern for State Representatives and State Senators, particularly on the Western Slope where meeting the Colorado Compact demands are a priority. This problem has been seen as only addressing the concerns of water users in the Northern part of the state, where water supplies are dwindling. A senior attorney for the Colorado State Legislature elaborated on this Bill and stated that some feel this legislation, “Is being pushed on us when we don’t want it” (T. Morris, personal interview, 3/05/2015).

A similar bill was revived in the 2015 Colorado Legislative Session that opened in January.¹⁰ This Bill, HB15-1038, was introduced on January 7th, 2015 by legislators from two Front Range districts: State Representative Jeni James Arndt(D) of District 53 (encompassing

⁹ Colorado Revised Statutes, Title 37. Water and Irrigation.

¹⁰ State of Colorado Bill HB 14-1026 (2014): Concerning the Authorization of Flexible Water Markets.

West Fort Collins) who replaced Rep. Fischer, and Senator Mary Hodge(D) of District 25 (covering the north Denver metropolitan I-25 corridor). The difference between the two bills is quite small but the new bill addresses issues of speculation and trans-continental diversions. The new Bill essentially put more “sideboards” on the issues that were presented in the previous legislation. As the Bill states, “Currently, water court proceedings governing an application to change the beneficial use of an irrigation water right require the application to designate a specific alternative use identified at the time of the application. This Bill creates a more flexible change in use system by allowing an applicant who seeks to implement fallowing, regulated deficit irrigation, reduced consumptive use cropping, or other alternatives to the permanent dry-up of irrigated lands to apply for a change in use to any beneficial use, without designating the specific beneficial use to which the water will be applied.”¹¹ When interviewing a senior attorney for the Colorado State Legislature Legal Services in regards to trans-mountain water grabs he stated that, “Trans-mountain diversions are hard enough as they are without having to overcome the burden of speculation, so I do not know that the east slope, west slope issues is a practical concern and if the new version of the Bill prohibits it then that takes care of it right there” (T. Morris, personal interview, 3/05/2015). This quote suggests that the Bill would legally prohibit the possibility of trans-mountain diversions in the opinion of the Legislative Legal Services who writes and prepares the legislation.

The Bill was once again met with heavy opposition with a State Representative from the Western Slope stating that, “It is something that we on the Western Slope are definitely not in favor of. What they want to do is continue more trans-mountain diversions and bring water over here so they can profit from selling the water. Well, it was our water to begin with” (D. Coram, personal interview, 2/03/2015). The previous quote is an example of the hesitance of some State

¹¹ State of Colorado Bill HB 15-1038 (2015): Flexible Water Markets.

Representatives on the Western Slope that believe the Eastern Plains will take their water through more trans-mountain diversions and then sell that water off to the highest bidder. The State Representatives that voiced their opinion in opposition to this Legislation were once again mainly from the Western Slope. Representative J Paul Brown of District 59 and Representative Don Coram from District 58 as well as others were strongly opposed to this Legislation and argued that the northeastern parts of the state are the only ones that are in support of this Bill. State Senator Ellen Roberts from Senate District 6 on the Western Slope was less hesitant but did express that the Bill had an uphill battle stating that, “I think there’s a lot of concern that it could create too much uncertainty in existing water rights and the water rights system is all about the property rights nature and making sure that there’s sideboards.” State Representative J Paul Brown introduced an amendment to the Bill that would only allow it to apply only to water district one which is the north eastern part of Colorado. Their reasoning for this amendment was that the whole state of Colorado should not have this legislation imposed on them when the problems originated and is confined to the overstressed South Platte River. A senior attorney for the Colorado Legislature stated that, “There has been a push to restrict some of the new ideas to particular water divisions” (T. Morris, personal interview, 3/05/2015). That particular amendment did not pass but it was duly noted that the Western Slope and other areas that may be negatively affected by this Legislation were opposed to it in any form. They were adamant that it was fine if this legislation went through as long as it did not apply to Colorado as a whole, “The economic effect on a community has the same effect, whether it’s buy and dry or lease and cease, it is the same result. I am okay if north eastern Colorado wants to do it but don’t force it down our throats. As a statewide initiative there is nothing they can do. My water companies, my farmers,

my ranchers, have been very vocal. They think it's a bunch of guys over here speculating on water that they plan on taking from them" (D. Coram, personal interview, 2/03/2015).

Even with strong opposition the Bill passed the House Committee on Agriculture, Livestock, and Natural Resources on February 10th, 2015 with a margin of 9 to 4. It was recommended to the Committee of the Whole, where it again passed. It was then introduced in the Senate and assigned to the Senate Committee on Agriculture, Natural Resources, and Energy on February 17th, 2015. On March 5th, 2015 it was heard in committee but had an uphill battle considering it was a 5 to 4 split opposing the Legislation before it was even discussed. Issues of speculation were again brought up as well as issues of trans-mountain diversions of water even though this new draft specifically barred against this.

I had the opportunity to speak with the Chair of the Senate Committee on Agriculture, Natural Resources, and Energy, Senator Jerry Sonnenberg, immediately following the final vote on this Bill. I was able to gather some insight into the problems that still existed. Senator Sonnenberg argued that constituents from all parts of the state, including both the Western Slope and the Eastern Plains, had expressed their hesitation with creating a market for a limited and vital resource such as water to their State Senators who in turn were hesitant to push forward such a Bill. Others have found that "A single misstep by the state's legislative, judicial, or administrative bodies that affect the viability of the state's water supplies or the systems by which they are allocated could have a ripple effect through the entire economy that affects all citizens, regardless of whether their livelihood relies on water rights" (Jones and Cech 2009).

A new bill that will address any remaining concerns is slated for introduction in the 2016 Legislative Session. Getting a comprehensive water bill passed in Colorado that addresses the limited water supply by allowing a system like the FLEX market bill will be difficult if

uncertainty of existing water rights is not addressed directly. Possibilities that will help legislation may include a pilot project in a specific area where the results can be closely monitored. This will help address the unintended consequences in the market that are unforeseen.

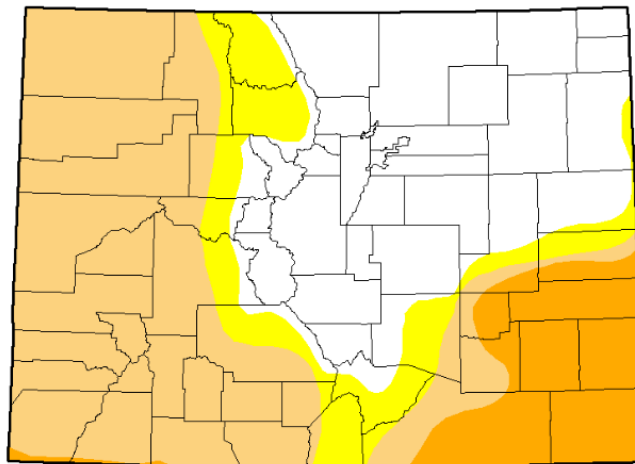
Chapter 6: Long Term Availability of Water and Balancing Competing Interests

Given the expected population growth and the potential for future climate change issues, the longevity of current water resources is uncertain. Drought is a long standing problem in the western United States and is expected to get worse as climate conditions continue to change because of the global temperature rising (EPA 2014). As evident in Figure 6-1, some areas are currently experiencing drought much harsher than others. Projections from the IPCC AR5 report indicate that, - with the weather patterns changing, many areas will become wetter or drier than they have been historically. This creates another pressure on Colorado's water supplies that is compounded by the urban growth and competing industries that need to make a living, especially those industries that need water in order to process other resources. Drought is described by the Colorado Water Conservation Board as, "A normal, recurrent feature of Colorado's climate but without adequate mitigation and response, it can be very destructive. Drought is a shortage of water associated with a lack of precipitation. It occurs when a normal amount of moisture is unavailable to satisfy an area's usual water consumption. Drought's impact on society results from the interplay between a natural event, demands for water supply, and the economic and environmental impact that can result" (Colorado Department of Natural Resources 2015).

As can be seen in Figure 6-1 from the U.S Drought Monitor, many areas of the state of Colorado are experiencing some type of drought conditions. These conditions regularly change, and it is only over the past year that much of the Eastern Plains are currently out of the drought

zone. This may change again when the snow melts and we have run off and flood conditions but Colorado will continue to deal with drought conditions throughout this year and for years to come.

6-1: Drought Intensity as of 2015



Source: U.S Drought Monitor for March 10th, 2015

- D0 - Abnormally Dry
- D1 - Moderate Drought
- D2 - Severe Drought
- D3 - Extreme Drought
- D4 - Exceptional Drought

Conditions of drought reduce the availability of water supplies that must then be balanced between competing industries, “The availability of water is low compared to the demand of industries, such as hydraulic fracturing that are competing for this resource (Goodwin, et al. 2013). Hydraulic fracturing is a contentious issue here in Colorado and it is also responsible for some of the economic growth over the past decade, “The oil and gas industry has long been a part of Northeastern Colorado’s economy, but recent advances in technology have stimulated considerable growth in the region that has increased the industry’s demand for water resources”

(Goodwin, et al. 2013). Even though the “fracking” industry is considered by some to be a huge waster of water supplies that is not exactly true in all cases. While there is a semi-hostile environment in regions that are already overstressed with their current water supplies the entire amount of water that this industry uses is less than 2% of Colorado’s over all water supplies. The fact that some uncertainties exist about the total amount of water used brings up more feelings of pressure on those that hold agricultural water rights. Environmental concerns also exist with regards to what is done with the water used for “fracking” after they are done with it. There is a possibility of contamination of drinking supplies if, for example, when there is a large scale flood such as the one experienced in September of 2013. While the hydraulic fracturing industry would like to have more water, they are playing it cautiously when it comes to acquiring these rights from farmers. Water brokers, on behalf of hydraulic fracturing companies, do contact farmers on a weekly basis to see if by chance they would be willing to sell off all of their water rights but they are aware of the contentious political atmosphere right now and do not want to be seen as possibly speculating for water. An agricultural producer in Larimer County expressed that, “Not a week goes by without someone from a water broking firm either calling me up or coming on to my property with a blank check trying to buy my water rights. Some of my neighbors have been in tough economic situations and have ended up selling all of their water to these water brokers because they needed the money. This is not a new thing in this area but now we are seeing more and more farms disappear because the price of water is so high” (R. Seaworth, personal interview, 2/17/2015). Circumstantial issues are mainly on the individual level of that farmer and will be addressed in the following chapters.

Cities and municipalities that are expected to grow because of the population boom are now under pressure to find a way to guarantee a long lasting supply of water for their inhabitants.

With education of the problems of over using this limited resource increase, city dwellers or “urbanites” are starting to use water a bit more efficiently but the connections between the larger water problems are still largely unnoticed. A variety of agricultural producers elaborated some of their views in *Water Sharing Between Agricultural Water Shareholders and Urban Utilities in Northern Colorado Survey Frequency Report*. As one commented regarding increased demand for water by utilities, “I think utility companies should operate within the confines of an arid climate. They’ve managed in the past. Maybe we should restrict building beyond the capacity of the environment. Why should farmers have to give up their water? Their system has worked in the past. The utilities get their foot in the door and they will take everything” (#3). Other comments focused on growing water demands due to increasing urban development: “Nothing bothers us more than to see nice lush lawns in the city and brown crops in the fields. Food should be of a concern to the urbanites as well. Farmers will help out farmers or urban folks in times of need. However, this option places the burden for water supply on farmers who did not cause a shortage. Nothing is stated about the actions to conserve non-agricultural first. This seems to state that food production will somehow happen, regardless of the presence of water or not” (#6).

Educating the urbanites will most likely change and become more important especially as utility water prices go up and food prices increase due to a smaller supply of agricultural products from “buy and dry” transactions . Cities such as Fort Collins have huge water projects in the works that would create a world class kayak course going right through the downtown area and would attract world class athletes and tourists to their banks. While the economic incentives to bring in more tourists help local economies it also can hurt agricultural producers as well as many others by allowing that amount of water to stay in stream. In other words, while it helps the City of Fort Collins tourist industry and environmental sustainability of inhabitants of the river it

can be considered a waste to farmers when that water could be going to produce more food.

State Representatives and State Senators that are responsible for scrutinizing present legislation represent a broad range of constituents. They have in-depth knowledge and represent not only the farmer or agricultural producer but also independent industries, everyday citizens that may have other pressing issues, cities, and municipalities. This may be one reason why the agricultural community does not feel fully represented. They may only make up less than 25% of a representatives entire constituency and this may lead to thoughts that their interests are being ignored or brushed off. If the agricultural community does not feel like their interests are being represented and their water issues are not being taken seriously then they are less likely to participate or show interest in legislative issues. This does not bode well for water legislation or interested groups that are trying to facilitate their interests to the larger political body. In response to government involvement in facilitating legislation one farmer suggested that, “It keeps an “open market” and nobody is “forced” to do anything by a government entity but government is not good at business, has huge waste and only grows regulation later down the road-historically proven” (Poudre Basin Water Sharing Working Group and Colorado Water Institute 2015). This is an example of the hesitation agricultural producers feel towards new regulations as well as new legislation.

With these issues at hand it is not too surprising that we have a fractured agricultural political bloc with many competing interests at hand. Failed previous water legislation has shown this lack of cohesiveness and unfortunately it is hard to pass new legislation without a strong political bloc from the communities that are impacted the most from new water legislation. In the following chapter, farmer’s preferences will be discussed with the incentives and disincentives

that cause this fracture in the agricultural community's support for comprehensive water legislation.

Chapter 7: Farmer Perceptions

Water in Colorado is based on a first come first serve basis and is therefore controlled by the appropriation date in which the water was first used beneficially. This puts the majority of the control of the water into the hands of those individuals that have been in Colorado the longest which are mainly farmers. Farmers use about 85% of the available water with a dramatically smaller portion going to other industries including growing urban developments (Jones and Cech 2009). This has caused an elevated level of controversy because some believe that agriculture should cut their demand for water. Some agricultural producers have suggested alternatives such as more dams in place to meet the need of these growing industries, "More dams need to be added to help in both urban and rural settings. Both settings are required. Both sides need to give when there is a drought. We have a hard time as farmers and ranchers. When you see lots of lawns with sprinklers running water down the street it's real hard to try to imagine reducing Ag water for that" (Poudre Basin Water Sharing Working Group and Colorado Water Institute 2015, #4). What these entities fail to understand is that if the farmers do cut their demand significantly by selling their water rights to other industries or to urban municipalities then there could be unintended consequences in the form of elevated food prices and diminished economic outcomes for rural communities. Right now water is flowing towards its highest demand, which in most cases is not in the agricultural community but in growing urban developments. This is a major problem because if this course of action continues we will likely see other industries owning the majority of the water rights in Colorado in the decades to come. A farmer in Larimer County

suggested that, “I think there’s a lot of other Ag people that feel the same way. If there’s a way to keep the water in Ag then by all means” (M. Matsuda, personal interview, 3/03/2015).

Agricultural producers in Colorado are not one amorphous group. They do not exhibit unified pressure on lawmakers with regards to water policy. When an agricultural producer in Larimer county was asked if farmers are one political bloc he responded by saying that, “They should be, but they never will be. I don’t think you’ll ever have a strong bloc of farmers or Ag people, they will be fairly unified but you’ll never see a solid bloc because farming brings in such independent people” (M. Matsuda, personal interview, 3/03/2015). This is the case because there are geographic differences between farmers on the Western Slope and those farmers on the Eastern Plains. The primary independent variable in the water policy discussion in Colorado is the competing opinions from a geographical standpoint. The Eastern Plains and the Western Slope do not agree on water policies, mainly because the Western Slope feels like the Eastern Plains and those living along the Front Range are taking advantage of their water supplies or essentially “taking it” without the proper consent. In order to understand these competing views we must first understand why they don’t agree.

Western Slope Farmers Differences in farmer preferences play a large role in the decisions to retain or sell their water rights. It also plays a deciding factor in how they feel about new water policies. Farmers are a diverse group that have different priorities depending on who you ask. On the Western Slope, water does not hold the importance to the urban developments as it does on the Eastern Plains or Front Range areas because a majority of the building and population growth will be on the eastern side of Colorado. The western side of Colorado is not growing at the magnitude or pace that the eastern side is and so their demand for water is similar but they do not experience the pressures that farmers on the east side of the continental divide

face. Most Western Slope farmers participate in flood irrigation, where one floods the farm land from the river and the return flows head back to the river almost immediately. They've never needed to recycle water for multiple uses or implement efficiency controls since they do not have the water supply limitations that the Eastern Slope has. The eastern side of Colorado is already using their water as efficiently as they can without adding engineering upgrades and a single drop is used multiple times for different uses. This is the difference between who has water and who needs water. Farmers on the Western Slope do not seem to worry about where their water for irrigation is coming from, and so do not have incentives to change the water policies in Colorado.

Uncertainty is cause for concern for these farmers because a change in legislation could cause uncertainty in what is their livelihoods and investments. Water rights are considered a private property right with shares going for upwards of \$80,000 per share on the open market and whenever there is discussion about changing a vital resource that is highly valued monetarily there will be controversy. As the famous quote by Mark Twain implies, "Whiskey is for drinking, water is for fighting."

Eastern Plains Farmers and the Front Range The farmers on the Eastern Plains have almost the complete opposite history of those on the Western Slope. These farmers previously had great years of crop growth and harvests due to a good amount of water resources because the population was not as massive and there was not as high of a demand. However, around the 1930's they started to realize the magnitude of growth on the Front Range and that much of the water supplies they had was over-appropriated. Those water planners and water engineers that were able to see the coming change opted to do something about it and so they built the Colorado Big Thompson Project or the CBT Project, completed in 1956, as well as

many storage reservoirs (Autobee 1996). This helped for the time being and Colorado was able to collect enough water in those reservoirs to help sustain both the agricultural community, growing urban developments, and extra for emergencies such as forest fires. The CBT Project is a case where the Eastern Plains has diverted water away from the Western Slope. The tunnel for this project is near the beginning of the Colorado River in Lake Granby that feeds the Western Slope. This does set a precedence for the argument that the Eastern Plains or Front Range will eventually take water from the Western Slope without proper consent and as State Representative Don Coram said, “75% of the Big Thompson is gone, and that was an agricultural project.” The CBT Project was extremely controversial in its day because of the trans-mountain diversion and had many of the same arguments that we see today. This is why the Western Slope has been opposed to any water legislation over the past few years even though the FLEX Market Bill precisely addresses the problem of trans-mountain diversions.

The farmers or agricultural producers and water engineers on the Eastern Slope have become fairly efficient with their water in the past few decades. The reservoirs and dams that were built sustained the growing population for decades but now those waters are becoming overstressed by the demand. There is hardly any flood irrigation done today and most farmers will tell you that they work continuously on the task of improving their water efficiency. Troy Seawoth from Larimer County has a degree in agronomy and crop science and has worked on improving his farms methods utilizing GPS and has stated that, “We were one of the first farms in the area to change our methods.” He has upgraded his farms equipment and uses satellite technology and various forms of irrigation to stretch his water supplies as needed.

Farmer Characteristics and Variables

Farmers have many personal characteristics that separate them from one another. Below is a list of the most important deciding factors in today's contemporary water policy decisions:

The primary independent variable influencing farmer positions on state water policy is the geographical differences between the Western Slope and the Eastern Plains.

This is the case because of the differences of opinions that are brought out because of the unequal amount of water that is distributed within the state. Western Slope farmers tend to view their water differently and this is partly because the Western Slope has far more water than the Eastern Plains. Around 80% of water precipitation falls on the Western Slope while 80% of the population lives on the Eastern Plains. Eastern Plain's farmers are trying to use water more efficiently but those on the Western Slope see this legislation as speculation or a water grab that will hurt the Western Slope with regards to meeting the Colorado Compact agreement. This is, and always has, been the case in Colorado with regards to water. The two sides of the state act more like two separate states when it comes to discussing water.

Secondary independent variables affecting farmer positions on state water policy are cross-generational transfers and gained income from selling future water rights.

Unfortunately, most farmers are seeing a common occurrence in their family: the lack of cross-generational transfers or children that want to stay in farming is an epidemic that affects the agricultural community across Colorado. Children are moving out of the industries that their families have always participated in and moving into more progressive industries in cities. When there are children willing to take over the family business there is an incentive to not participate in "Buy and Dry" transactions. As one farmer in Northern Colorado stated, "For me, what my niece and nephew want to do is going to play a significant role of how I want to proceed. If there

weren't any kids then that would be a different story and I would just get out" (M. Matsuda, personal interview, 3/03/2015). There is also an incentive, if you live on the Eastern Plains, to support more flexible water policies because the water right stays in the hands of the farmers and can be used by future generations. The farmer would have the opportunity to lease off some water in years when there will be a drought and they do not want to plant their entire farm anyways. This is what can be considered a secondary crop where the farmer's obtain monetary compensation for leasing their water to a second entity.

Selling rights and participating in "Buy and Dry" agreements allows these farmers to have retirement accounts similar to a 401k. In some cases, farmers are reaching an age where they do not want to farm anymore and if they do not have someone to leave the farm to then they lack many viable alternatives for retirement. This is where income can become a deciding factor. A single water right can go for upwards of \$80,000 a share and many of these longtime farmers have multiple shares. Farmers do not have many options when it comes to diversifying their portfolios and so all of their retirement money is tied up in their water rights. New legislation may create uncertainty in the market when selling these rights and this creates opposition, "I think that's how a lot of farmers look at it. If I were definitely getting out I guess I would be fearful of something like this coming down the pipe" (M. Matsuda, personal interview, 3/03/2015). Some of my interviewees expressed their anger and agitation to any changes to Colorado's current water policies for fear that it would jeopardize their retirement savings. Many on both sides of the Continental Divide see this as a problem that arises from the lack of young people interested in farming. A new flexible water market may alleviate some of these concerns by allowing farmers to diversify accounts, which would also allow the water to stay in

agriculture; however, many farmers see it as more added risk as well as added cost when the average water they have been using over the past thirty or so years is quantified.

Tertiary independent variables are those issues related to engineering costs or unintended consequences to quantification of past water use.

Engineering problems exist with becoming more efficient and the quantification of past water use. Engineering upgrades can be anything from lining their ditch so that less water is lost through seepage to installing a drip irrigation system so less water is lost to evaporation. These upgrades will cost on average in the thousands of dollar range and could end up being a negative in the long run due to the complexity of quantifying their past consumptive use. Quantifying water rights involves averaging your past use of the consumptive portion of your water right. For example, over the past thirty years, you have implemented water saving techniques to become more efficient. By doing this your farm has used less and less water each year. When these lower numbers are put into an equation your average is going to come out as a lower number because you are becoming more efficient. If you quantify now, then you may lose the portion of your water right that has not been used in the past. This creates confusion among farmers and the saying “use it or lose it” has a new meaning. One agricultural producer expressed his dissatisfaction with the quantification process by saying that he would rather turn on his taps to make it look like he is using his entire water right then risk losing it by quantification. When a senior attorney for the Colorado State Legislature was asked about the quantification of water rights he responded with, “The FLEX Bill is not going to affect somebody who doesn’t change their water rights but if you’re on the same stream as someone who makes use of it then you could be affected by it” (T. Morris, personal interview, 3/05/2015).

If farmers can afford to hold off then they can make more money in the future by quantifying their water rights when the price of water increases. Some cannot afford to hold off and therefore would rather just sell off than go through the unintended consequences surrounding the legislation. Quantification can cause farmers to lose some of the water rights that they have not been consuming. Quantification of your water right is only necessary if the Flex Market Legislation Bill or a similar bill was to pass with these requirements.

Some agricultural producers would argue that this legislation is not necessary because they can already lease to other agricultural producers but it does not include transfers to other industries or urban developments. Other agricultural producers and water attorneys would argue that this is the best way to keep the water owned by agricultural producers because it allows them to make an income by leasing off extra water while retaining the right. Once the farmer sells his rights it is hard to lease it back and it is never a guaranteed source. It is then in the hands of whoever has bought the right and they can decide that they do not have enough water (e.g., The City of Fort Collins in 2013) to lease it back to the farmer.

Chapter 8: Discussion and Presentation of Key Findings

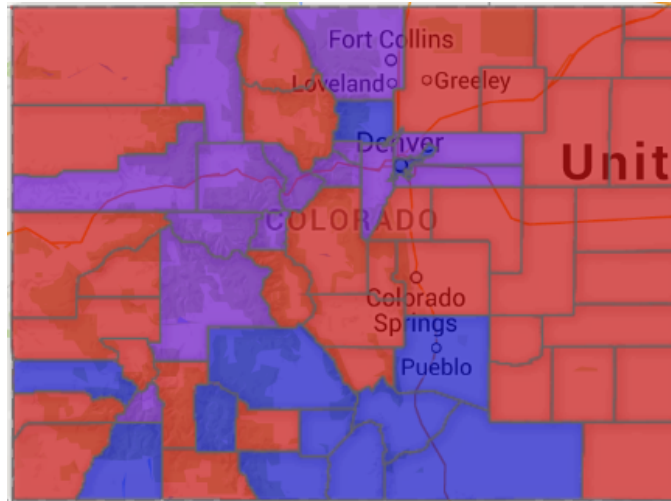
Interviewing State Representatives and State Senators as well as sitting in on the passage of this Bill allowed me to look at the basis of disagreement among Colorado farmers over the development of new water policies. By doing this field work I was able to see an existing pattern where there was a geographical split between the Western Slope and the Eastern Plains in regards to their water rights mind set. The two sides have very different outlooks on water and on the threats to their long-term access to reliable and sufficient water supplies. Arguments from the Eastern Plains versus the Western Slope sometimes sound like they are coming from two

different states entirely, “Anything that has to do with the East Slope potentially taking West Slope water, the West Slope unites” (T. Morris, personal interview, 3/05/2015). This is where I discovered the larger issue at hand and was able to tailor my research to seek out answers to this particular puzzle. A broader question was in order and has shown to be the most important barricade to passage of a comprehensive water bill to insure efficient use of water in Colorado.

Sitting in on the legislative hearings for this Bill allowed me to gather information on how individuals in different parts of the state interpret the issues and what positions they take. There were clear differences between the two geographical sides and each side had a certain way water allocation should be addressed. Attorney Tom Morris addressed the interview question related to the lack of a partisan split with, “Water has the partisan issues as well but it has this geographic focus that transcends urban and rural, the Western Slope cities are in line with the Western Slope interests, to keep Western Slope water on the Western Slope.”

Democrats and Republican alike have their opinions on both sides of the state but agriculture and water resources are not polarized according to party affiliation. This does not appear to be a party aligning issue which is evident by Figure 8-1 below from the 2014 Colorado Voter Registration, which shows high concentrations of Republicans on both the Western Slope and the Eastern Plains. Instead, the primary independent variable is the geographical differences followed by a few very specific secondary variables such as income and the lack of cross-generational transfers.

8-1: Colorado Political Party Affiliation by County



Source: *Coloradoan*.

This map shows active registered voters by party affiliation for each Colorado county as of Oct. 1, 2014. Areas shown in red have a majority of active Republicans; areas shown in blue have a majority of active Democrats; Areas shown in purple have a high proportion of unaffiliated voters.

The key findings that follow match the several specific questions that were asked in this analysis. The specific hypotheses will be answered by using both surveys that I acquired as well as interview data that was audio recorded. One survey was conducted on the Western Slope in agricultural areas that use Colorado River water and the other survey was conducted on the Eastern Plains in Larimer and Weld Counties that uses CBT water as well as Poudre River water. The surveys include opinions and demographics from both sides of the state. A brief description of both surveys is located in Appendix B.

KEY FINDINGS

1. Do Colorado farmers act as an influential political bloc in the development of state water policy?

Farmers generally do not act as one influential political bloc in the development of state water policies. This is mainly due to the different pressures and climatic situations that are exhibited on farmers on different sides of the continental divide. The Western Slope generally has more availability of water supplies due to more precipitation and do not have to worry about their future supplies as much as those on the Eastern Plains. The Eastern Plains receives far less precipitation and has far more competing industry and urban development pressures for their water resources. This has caused conflict between the geographically different parts of the state and has resulted in the lack of a comprehensive water plan that would address efficiency and the sharing of water supplies to its highest beneficial use.

2. What factors affect state farmer positions on water policy?

Common Interests There are many competing factors that affect state farmer positions on water policy. Many of these are factors that are of concern to all farmers, such as water and commodity pricing, productivity of their business or economic conditions, and the common problem of the lack of children willing to take over the family business. However, the primary factor affecting farmer positions on water policy are their geographic locations.

Differences in Demographics The Western Slope and the Eastern Plains have different general farmer demographics that push their water policy views in competing directions.

As Table 8-1 shows there are differences between farmer demographics on either side of the state. The mean age of the operators is higher on the Western Slope than on the Eastern Plains and they have been farming longer on average. This means that farmers on the Western Slope are closer to the retirement age, have been farming longer, and may be hesitant to support a change in legislation that might make the market uncertain. Farming as a primary occupation is 18% on the Western Slope and slightly higher on the Eastern Plains at 24.4%, which could also demonstrate that Western Slope farmers have other sources of income and so are less dependent on farming as their sole source of income. This may make them less likely to support new legislation that would change the rules or disrupt their current income.

Table 8-1 Basic Farmer Demographic Data

	Colorado River Basin- Western Slope	Northern Colorado Survey Frequency Report
Mean Age of Operator	61 yrs	53.5 yrs
Number of years your family has been in farming	54 yrs	45.28yrs
Farming is primary occupation	18%	24.4%

Sources: 2012 Colorado River Basin survey of irrigators on the Western Slope with 2,792 respondents and the Northern Colorado Survey Frequency Report with approximately 110 respondents.

Differences in Opinions Differences in opinions and perspectives are expected since there are differences in the demographics of farmers on the Western Slope and the Eastern Plains.

Table 8-2 shows that almost all of the sample of Colorado River Basin farmers on the Western Slope (96%) own water rights or ditch company shares to cover their irrigation needs. In contrast, only a third (37.8%) of the farmers surveyed in the Northern Colorado Eastern Plains region said that they are able to cover their irrigation needs with water that they own. While

these two questions are not identical, they still allow us to see a dramatic difference in who uses primarily their own water supplies or shares in a ditch company for agricultural purposes. These results suggest that farmers on the Western Slope are not as worried about where their water will come from because the majority of them own their own irrigation water. Eastern Plain's farmers are far more invested in sharing water because of its high demand and low supply. From my interviews, farmers on the Eastern Plains have uncertainty from year to year because they rent water from cities if they do not own their own water rights. This is one example of why farmers on the Eastern Plains are in more support of flexible market legislation.

All present farms may not survive any more squeezing of their water if the two sides of Colorado cannot come to a compromise. On the Western Slope, 11% of respondents believed that alternative water transfers are the answer while on the Eastern Plains, 61.3% of respondents believed that short term leases are beneficial. These numbers show that those on the Western Slope -tend to be opposed to water leaving the hands of the farmers while those on the Eastern Plains are more open to alternative methods such as short term leases. Interviews of farmers in Larimer and Weld Counties showed that they are open to sharing agreements between industries if the logistics can be solved.

Table 8-2 Opinions on Water Rights and Irrigation

	Colorado River Basin- Western Slope	% respondents agreed with statements	Northern Colorado Survey Frequency Report	% respondents agree with statements
	Use own water rights or ditch company shares	96%	I irrigate exclusively with water I own	37.8%
I believe...	Alternative Transfer Methods are the answer.	11% agree	Short term water leases are beneficial to community.	61.3% agree
I believe...	Agricultural water users should coordinate with other sectors in order to stretch limited water supplies	59% agree	Water sharing could be a win-win for both producers and water utilities	63.7%

Sources: 2012 Colorado River Basin survey of irrigators on the Western Slope with 2,792 respondents and the Northern Colorado Survey Frequency Report with approximately 110 respondents.

This examination of factors affecting state farmer positions on water policy allows us to answer the stated hypotheses:

H1= If agricultural producers are from the Western Slope then they are opposed to flexible water market legislation.

The evidence demonstrates that this hypothesis is generally supported by tables 8-1 and 8-2 as well as my interviews with State Representatives and State Senators from the Western Slope.

State Representative Coram is opposed to this particular legislation but suggests that, “If we can

encourage other supplies of water in the Front Range then there is less incentive to divert water from the Western Slope.” State Senator Roberts suggested that, “If a bill comes through the interim Water Committee it helps the bill, it doesn’t guarantee success but I think the fact that the Water Committee wasn’t going to go there this time, may mean that the Bill is going to struggle a little bit more.”

H2= If agricultural producers are from the Eastern Plains then they support legislation that would make a more flexible water market.

The evidence from the survey data as well as my interviews demonstrates that this is generally supported. Around 80% of my interviewees agreed with this statement. While there are tertiary variables involved in the implementation process, such as engineering issues and quantification problems, there is general support from this group for a flexible water market to help facilitate allocation of water resources. One farmer commented that, “I guess right now we’re looking to the future to find out how we will survive” (M. Matsuda, personal interview, 3/03/2015).

Longtime attorney for the Colorado State Legislature Tom Morris stated when asked about the tertiary issue of quantification that, “Historically it has always been the issue, is figuring out what you have consumed because that’s the portion of the water right that you have the right to change and consume it somewhere else for a different purpose.”

H3= If agricultural producers on the Eastern Plains do not have children or an apprentice to hand the farm down to then they are more likely to participate in “Buy and Dry” agreements.

This hypothesis is generally supported because of the financial investment in water rights and the availability of viable retirement money. Around 60% of my interviewees from the Eastern Plains agreed with this statement.

As one farmer stated, “I do not have a real choice with my water rights. I don’t have kids or anyone that wants to run my farm after me so my only choice is to sell my rights so I can retire. I need money to retire and I still need my land to live on, so what other option do I have?” (Weld County Farmer, personal interview, 2/24/2015).

H4= If agricultural producers on the Eastern Plains do have children then they are less likely to participate in “Buy and Dry” agreements.

This hypothesis is supported by my interview data. Around 95% of my interviewees from the Eastern Plains agreed with this statement. Most farmers do not want to participate in “Buy and Dry” agreements but have few alternatives for retaining their water without legislation in place allowing them to lease to other industries with lowered transaction costs.

H5= If agricultural producers on the Eastern Plains do have children then they are more likely to show support for flexible water market legislation.

This hypothesis is supported by my interview data. Around 80% of my interviewees agreed with this statement. Most aging farmers would prefer to keep the farm with the water rights attached to pass on to future generations. One agricultural producer stated that, “If children would consider staying and helping on the farm the Eastern plains would not be in such a predicament. Yes, water supplies would still need to be addressed but there would be less “Buy and Dry” happening and more talk of improving efficiency” (R. Seaworth, personal interview, 2/17/2015).

3. To what extent do the differences among state farmers fracture their collective influence in the development of statewide water policy?

The differences among farmers play a significant role in their collective influence in the development of statewide water policies. With competing opinions and perceptions of how to allocate dwindling water resources there is not a cohesive political bloc representing farmer

stances. As earlier quotes suggest, the problem of a fractured agricultural bloc is not something that will change overnight. It has been a sort of rivalry between farmers for decades and does not show signs of coming to a close. However, if both sides are willing to hash out their differences and compromise then may be a future for comprehensive water legislation.

4. What factors or conditions might allow farmers to overcome differences so that they might have a clear voice in the development of sustainable water policy options for the future?

Water policy in Colorado is so polarized with regard to the geographical differences that there needs to be a more inventive or outside the box approach to passing a comprehensive water policy for Colorado. Some of the interviews that I conducted of Western Slope Representatives and State Senators expressed that a Bill such as the FLEX Bill would gain some support if a pilot project were set up and monitored over a two or three year time span. This would address some of the concerns related to market uncertainty and speculation as well as give some evidence on the efficiency of a water market program. Evidence such as this as well as a lobby group that can speak with opposing positions may very well give it the headway that is needed in the Colorado State Legislature in future years. While current legislation is dead for the 2015 Legislative Session a new bill is surely in the works for next year.

Chapter 9: Conclusion-Summary of Project and Additional Questions

In conclusion, the results of this research have indicated that there is a complex set of problems that need to be addressed before a comprehensive water bill can be passed by the Colorado State Legislature. Addressing Colorado's expected water shortages should be a top

priority for Colorado considering the statistics on the expected population growth compared to the dwindling water supplies here on the Eastern Plains and Front Range. While legislation is needed in order to allocate this limited resource to its highest beneficial use there are obstacles to this process.

The main point of disagreement comes from the geographical and climatic differences between the Western Slope and the Eastern Plains. Both sides of the state have far different water sheds and demographics and as such cannot agree on how to allocate water within the state. In order for a comprehensive water policy to pass as law, there needs to be more discussion on issues of trans-mountain diversions and concerns of speculation. A majority of those interviewed agree that we need to continue to bring opposing sides to the table for discussions regarding water and that one day the Western Slope and the Eastern Plains may come to an agreement and start acting as a more cohesive state.

A majority of people in this research agree that issues regarding the lack of cross-generational transfers are extremely important to the future of agriculture. This is being addressed by more young farmers associations springing up across the state as well as young college students becoming involved in agricultural schooling (Colorado Corn 2009). Income is also closely related to cross-generational transfers because the lack of children greatly increases the possibility of an aging Ag community participating in “Buy and Dry” agreements as well as lack of support for new legislation that may change the rules.

While this research has helped clarify the underlying question of if farmers are one cohesive political bloc in Colorado it has also opened the floodgate for further research into how this problem can be alleviated. More research is needed on how farmers want to solve this growing problem and what incentives can be developed to create more support for a

comprehensive water bill. The future is right in front of us and if the population growth stays on board with what is expected, then there is no time like the present to continue research in this area. I propose more analyses of other states' successes and failures in their attempts to allocate water where it is most needed. A larger survey that include respondents from both sides of the state would help researchers establish more concrete evidence of the stresses individual agricultural producers are under as well as how to potentially come to a compromise. Individual responses would be best to help compare the differences and concerns from opposing sides of the state through statistical analysis. Overall, most agricultural producers across the state agree that something should be done to allow transfers between the agricultural producer and non-Ag industries but the barricades and concerns need to be addressed so Colorado can have a more sustainable water future.

Appendix A: Meetings and Interviews

Part 1: Individual Interviews

Arndt, Jeni	State Representative	1/27/2015	In person-audio recording
	District 53(D) On the House Committee of Agriculture, Livestock, and Natural Resources- Sponsor of HB15-1038		
Berman, Jennifer	State Legislator	3/5/2015	In person-notes taken
	Office of Legislative Legal Services- Drafter of HB15-1038		
Coram, Don	State Representative	2/03/2015	In person-audio recording
	District 58 (R) On the House Committee on Agriculture, Livestock, and Natural Resources		
Doherty, Todd	City of Boulder	3/5/2015	In person-notes taken
	Water Resources Administrator for the city of Boulder		
Donovan, Ryan	LJCG-water law firm	2/10/2015	In person-audio recording
	Lawrence Jones Custer Grasmick LLP		
Hodge, Mary	State Senator	2/17/2015	In person-audio recording
	District 25 (D) Senate sponsor of HB15-1038		
Holten, Tommy	Fort Lupton Mayor	2/24/2015	In person-audio recording
	Farmer- Weld County		
Jones, Andy	LJCG-water law firm	2/10/2015	In person-audio recording
	Lawrence Jones Custer Grasmick LLP		
Kernohan, Greg	Ducks Unlimited	2/12/2015	In person-audio recording
Lander, Paul	Professor of Sustainability	3/4/2015	In person-notes taken
	University of Colorado Boulder		
Matsuda, Mike	Farmer-Larimer County	3/3/2015	In person-audio recording
Morris, Tom	Senior Attorney	3/5/2015	In person-audio recording
	Office of Legislative Services		

Rademacher, Doug	Former Weld County Commissioner /Farmer	2/24/2015	In person- audio recording
Roberts, Ellen	State Senator District 6 (R) Vice-chair of the Senate Committee on Agriculture, Natural Resources, and Energy	1/27/2015	In person-audio recording
Seaworth, Richard	Farmer-Larimer County Seaworth Farms/Wildcat Farms	2/17/2015	Phone interview
Seaworth, Troy	Farmer-Larimer County Seaworth Farms/Wildcat Farms	3/3/2015	In person-audio recording
Sonnenberg, Jerry	State Senator-Farmer District 65 (R) Chair of the Senate Committee on Agriculture, Natural Resources, and Energy	3/5/2015	In person-audio recording
Thode, Zach	Ag Engineer-Larimer County Rubicon Water	2/24/2015	In person-audio recording
Wallace, George	Farmer-Larimer County Former CSU Professor for the College of Natural Resources	2/12/2015	In person-audio recording

Part 2: Meetings Attended

Poudre River Forum:

This event was held on January 31st, 2015 at The Ranch Events Complex in Loveland. This was an all day event where different interests met to discuss opportunities and challenges on the Poudre River. Their main goal is to make the Poudre River an example of one of the world's most sustainable and healthiest river systems. The interests that were represented were The City of Greeley, The City of Fort Collins, Colorado Corn, The Nature Conservancy, The New Cache La Poudre Irrigation Company, O'Dell Brewing Company, CSU Water Center, Northern Water, and many others. There were panels led by experts in different areas from how cities can grow in a sustainable way with increasing population growth to discussions about new proposed legislation. Those that attending we encourage to direct questions towards these panels in an effort to better understand each other's position with regards to water. This meeting introduced

the complex problems that Coloradoans face in the future and how we can learn to work together to support many interests.

Poudre Sharing Group:

I attended the Poudre Sharing Group on February 12th, 2015. This group was established in 2013 and aims at discussing and developing water sharing strategies in the Poudre River Valley. The group is made up of individuals from the Water Institute at CSU, ditch, irrigation, and storage companies, water attorneys, and individual water users. On this date we discussed proposed legislation including the Flex Market Bill, the results of the preliminary survey “Water Sharing Between Agricultural Water Shareholders and Urban utilities in Northern Colorado”, as well as other proposed strategies such as water banking.

House Agriculture, Livestock, and Natural Resource Committee Hearing:

This hearing took place on February 2nd, 2015 at the State Capitol. There was much debate over concerns raised by Representative Coram, and Representative J Paul Brown. Amendments were proposed to only have this law apply to water district one but that was not passed. There was an amendment to clear up some of the language in the bill that left issues up to interpretation. This hearing made it clear, at least legislatively, that there was a split in support between the Eastern Plains and the Western Slope.

Senate Agriculture, Natural Resource, and Energy Committee Hearing:

This hearing took place on March 5th, 2015 at the State Capitol. The Bill was killed in Committee and suspended indefinitely with a 5-4 vote. The Bill had too many speculative and market uncertainty concerns. It will be revised over the interim session and most likely reintroduced in the 2016 Legislative session.

Appendix B: Demographic Survey Data

Colorado River Basin survey data was collected from an online survey in 2012 that was administered by the Colorado Water Institute at CSU with 2,792 farmers responding that use water for agricultural purposes in three counties on the Western Slope. Questions that relate to individual circumstances and opinions towards potential water sharing programs were established.

Northern Colorado Survey Frequency Report was an online and mail in survey distributed in December of 2014. A total of 708 surveys were sent out to Northern Colorado irrigation company customers and there was an adjusted response rate of 15.5%. Questions related to individual circumstances as well as opinions towards potential water sharing programs. Opinions to specific questions related to “buy and dry” and short term leases among urban-rural relationships were established.

	Colorado River Basin- Western Slope	Northern Colorado Survey Frequency Report
Mean Age of Operator	61 yrs	53.5 yrs
Number of years your family has been in farming	54 yrs	45.28yrs
Farming is primary occupation	18%	24.4%

	Colorado River Basin- Western Slope	% respondents agreed with statements	Northern Colorado survey frequency report	% respondents agree with statements
	Use own water rights or ditch company shares	96%	I irrigate exclusively with water I own	37.8%
	I rent or lease water for irrigation	13%	I irrigate mostly with rented water	17.11%
I believe...	Services as a farmer are valued by general public	76% agree	Beneficial to community Improves urban-rural relationships	61.3% agree 52.9% agree
I believe...	Agricultural water users	59% agree	Water sharing could be a win-	63.7%

	should coordinate with other sectors in order to stretch limited water supplies		win for both producers and water utilities	
	I have been involved in some type of collaborative process with non-agricultural stakeholders	24% agree	Have you ever participated in a short term lease with an urban water utility	17% agree
	Influx of new people in my area is influencing how I manage my water	59% agree	This is a concern. Evidence comes from my interviews	
	There is another generation that plans to continue farming in the future	47% agree	This is a large concern. Evidence comes from my interviews	

Appendix C: 2014 Colorado Legislative Session

Second Regular Session
Sixty-ninth General Assembly
STATE OF COLORADO

INTRODUCED

LLS NO. 14-0248.01 Jennifer Berman

HOUSE BILL 14-1026

HOUSE SPONSORSHIP

Fischer,

SENATE SPONSORSHIP

Schwartz,

House Committees

Agriculture, Livestock, & Natural Resources

Senate Committees

A BILL FOR AN ACT

101 CONCERNING THE AUTHORIZATION OF FLEXIBLE WATER MARKETS.

Bill Summary

(Note: This summary applies to this bill as introduced and does not reflect any amendments that may be subsequently adopted. If this bill passes third reading in the house of introduction, a bill summary that applies to the reengrossed version of this bill will be available at <http://www.leg.state.co.us/billsummaries>.)

Water Resources Review Committee. Under the anti-speculation doctrine, current water court proceedings governing an application to change the beneficial use of an irrigation water right require the applicant to designate a specific alternative beneficial use identified at the time of the application. The bill creates a more flexible change-in-use system by allowing an applicant who seeks to implement fallowing, regulated deficit irrigation, reduced consumptive use cropping, or other alternatives to the

Shading denotes HOUSE amendment. Double underlining denotes SENATE amendment.
Capital letters indicate new material to be added to existing statute.
Dashes through the words indicate deletions from existing statute.

permanent dry-up of irrigated lands to apply for a change in use to any beneficial use, without designating the specific beneficial use to which the water will be applied.

Section 1 of the bill defines "flex use" to mean an application of the fully consumptive portion of water that has been subject to a water right change-in-use proceeding to any beneficial use. It also redefines "appropriation" to exclude flex use from the anti-speculation doctrine.

Sections 2 and 3 describe the procedures for obtaining a flex use change-in-use decree and a flex use substitute water supply plan.

1 *Be it enacted by the General Assembly of the State of Colorado:*

2 **SECTION 1.** In Colorado Revised Statutes, 37-92-103, **amend**
3 (3) (b), (4) (b), and (4) (c); and **add** (4) (d), (7.3), and (7.5) as follows:

4 **37-92-103. Definitions.** As used in this article, unless the context
5 otherwise requires:

6 (3) (b) Nothing in this subsection (3) ~~shall affect~~ AFFECTS
7 appropriations by the state of Colorado for minimum streamflows as
8 described in subsection (4) of this section OR APPROVAL OF FLEX USE.

9 (4) "Beneficial use" means the use of that amount of water that is
10 reasonable and appropriate under reasonably efficient practices to
11 accomplish without waste the purpose for which the appropriation is
12 lawfully made. Without limiting the generality of the previous sentence,
13 "beneficial use" includes:

14 (b) The diversion of water by a county, municipality, city and
15 county, water district, water and sanitation district, water conservation
16 district, or water conservancy district for recreational in-channel diversion
17 purposes; and

18 (c) For the benefit and enjoyment of present and future
19 generations, the appropriation by the state of Colorado in the manner
20 prescribed by law of ~~such~~ THE minimum flows between specific points or

1 levels for and on natural streams and lakes as are required to preserve the
2 natural environment to a reasonable degree; AND

3 (d) A FLEX USE.

4 (7.3) "FLEX CONSUMPTIVE USE" MEANS THE FULLY CONSUMPTIVE
5 PORTION OF A WATER RIGHT THAT HAS BEEN QUANTIFIED BY EITHER A
6 WATER COURT CHANGE-IN-USE DECREE OR A SUBSTITUTE WATER SUPPLY
7 PLAN APPROVAL, ENTERED OR APPROVED ON OR AFTER JUNE 1, 2014,
8 THAT:

9 (a) IDENTIFIES THE WATER RIGHT AS A FLEX USE WATER RIGHT;

10 (b) QUANTIFIES THE HISTORICAL CONSUMPTIVE USE OF THE WATER
11 RIGHT;

12 (c) PROVIDES TERMS AND CONDITIONS FOR A CHANGE IN TYPE OF
13 USE OF THE WATER RIGHT THAT PREVENT MATERIAL INJURY TO OTHER
14 VESTED WATER RIGHTS AND DECREED CONDITIONAL WATER RIGHTS,
15 INCLUDING THE RETURN FLOW OBLIGATIONS IN TIME, PLACE, AND
16 AMOUNT;

17 (d) PERMITS DELIVERY AND USE OF ALL OR A PORTION OF THE
18 CONSUMPTIVE USE ASSOCIATED WITH THE WATER RIGHT TO A FLEX USE
19 THROUGH THE IMPLEMENTATION OF FALLOWING, REGULATED DEFICIT
20 IRRIGATION, REDUCED CONSUMPTIVE USE CROPPING, OR OTHER
21 ALTERNATIVE TO PERMANENT CESSATION OF AGRICULTURAL IRRIGATION
22 ON THE PROPERTY THAT IS SERVED BY THE WATER RIGHT; AND

23 (e) ESTABLISHES A FIXED POINT OR POINTS OF DELIVERY FOR THE
24 FULLY CONSUMPTIVE PORTION OF THE WATER RIGHT.

25 (7.5) (a) "FLEX USE" MEANS AN APPLICATION OF FLEX
26 CONSUMPTIVE USE TO ANY BENEFICIAL USE.

27 (b) FOLLOWING DELIVERY OF FLEX CONSUMPTIVE USE AT THE

1 POINT OR POINTS OF DELIVERY IDENTIFIED IN THE APPLICABLE
2 CHANGE-IN-USE DECREE OR SUBSTITUTE WATER SUPPLY PLAN APPROVAL,
3 THE WATER USER MAY ACCOMPLISH FLEX USE BY DIRECT DELIVERY;
4 STORAGE; RECHARGE; EXCHANGE; WATER BANKING; WHERE APPROPRIATE,
5 NONCONSUMPTIVE USE; OR ANY OTHER LAWFUL MEANS THAT COMPLY
6 WITH APPLICABLE DECREES, STATUTORY AND OTHER LEGAL
7 REQUIREMENTS, AND ADMINISTRATION BY THE STATE ENGINEER AND
8 DIVISION ENGINEERS.

9 **SECTION 2.** In Colorado Revised Statutes, 37-92-305, **add** (3.7)
10 as follows:

11 **37-92-305. Standards with respect to rulings of the referee and**
12 **decisions of the water judge. (3.7) Flex use.** IF A CHANGE-IN-USE
13 APPLICATION SEEKS APPROVAL OF FLEX USE, THE TERMS AND CONDITIONS
14 OF THE DECREE MUST COMPLY WITH SECTION 37-92-103 (7.3) AND (7.5).
15 THE TERMS AND CONDITIONS OF THE DECREE MUST ALSO REQUIRE THAT
16 THE APPLICANT REPLACE HISTORICAL RETURN FLOWS IN TIME, PLACE, AND
17 AMOUNT TO PREVENT MATERIAL INJURY TO THE OWNERS OF VESTED
18 WATER RIGHTS AND DECREED CONDITIONAL WATER RIGHTS.

19 **SECTION 3.** In Colorado Revised Statutes, 37-92-308, **add** (12)
20 as follows:

21 **37-92-308. Substitute water supply plans - special procedures**
22 **for review - water adjudication cash fund - legislative declaration -**
23 **repeal. (12) Flex use.** IF THE STATE ENGINEER APPROVES A SUBSTITUTE
24 WATER SUPPLY PLAN APPLICATION IN WHICH THE PLAN SOUGHT IS FOR A
25 FLEX USE, THE TERMS AND CONDITIONS OF THE APPROVAL MUST COMPLY
26 WITH SECTION 37-92-103 (7.3) AND (7.5). THE TERMS AND CONDITIONS OF
27 THE APPROVAL MUST ALSO REQUIRE THAT THE APPLICANT REPLACE

1 HISTORICAL RETURN FLOWS IN TIME, PLACE, AND AMOUNT TO PREVENT
2 MATERIAL INJURY TO THE OWNERS OF VESTED WATER RIGHTS AND
3 DECREEED CONDITIONAL WATER RIGHTS.

4 **SECTION 4. Effective date.** This act takes effect June 1, 2014.

5 **SECTION 5. Safety clause.** The general assembly hereby finds,
6 determines, and declares that this act is necessary for the immediate
7 preservation of the public peace, health, and safety.

Appendix D: 2015 Colorado Legislative Session

First Regular Session
Seventieth General Assembly
STATE OF COLORADO

INTRODUCED

LLS NO. 15-0589.01 Jennifer Berman x3286

HOUSE BILL 15-1038

HOUSE SPONSORSHIP

Arndt,

SENATE SPONSORSHIP

(None),

House Committees
Agriculture, Livestock, & Natural Resources

Senate Committees

A BILL FOR AN ACT

101 CONCERNING FLEXIBLE WATER MARKETS.

Bill Summary

(Note: This summary applies to this bill as introduced and does not reflect any amendments that may be subsequently adopted. If this bill passes third reading in the house of introduction, a bill summary that applies to the reengrossed version of this bill will be available at <http://www.leg.state.co.us/bills/summaries>.)

Currently, water court proceedings governing an application to change the beneficial use of an irrigation water right require the applicant to designate a specific alternative beneficial use identified at the time of the application. The bill creates a more flexible change-in-use system by allowing an applicant who seeks to implement fallowing, regulated deficit irrigation, reduced consumptive use cropping, or other alternatives to the permanent dry-up of irrigated lands to apply for a change in use to any beneficial use, without designating the specific beneficial use to which

Shading denotes HOUSE amendment. Double underlining denotes SENATE amendment.
Capital letters indicate new material to be added to existing statute.
Dashes through the words indicate deletions from existing statute.

the water will be applied.

Section 1 of the bill defines "flex use" to mean an application of the fully consumptive portion of water that has been subject to a water right change-in-use proceeding to any beneficial use. It also redefines "appropriation" to exclude flex use from the anti-speculation doctrine.

Section 2 describes the procedures for obtaining a flex use change-in-use decree, and **section 3** describes the procedures for obtaining a flex use substitute water supply plan.

Be it enacted by the General Assembly of the State of Colorado:

SECTION 1. In Colorado Revised Statutes, 37-92-103, **amend** (3) (b), (4) (b), and (4) (c); and **add** (4) (d), (7.3), and (7.5) as follows:

37-92-103. Definitions. As used in this article, unless the context otherwise requires:

(3) (b) Nothing in this subsection (3) ~~shall affect~~ AFFECTS appropriations by the state of Colorado for minimum streamflows as described in subsection (4) of this section OR APPROVAL OF FLEX USE.

(4) "Beneficial use" means the use of that amount of water that is reasonable and appropriate under reasonably efficient practices to accomplish without waste the purpose for which the appropriation is lawfully made. Without limiting the generality of the previous sentence, "beneficial use" includes:

(b) FOR RECREATIONAL IN-CHANNEL DIVERSION PURPOSES, the diversion of water by a county, municipality, city and county, water district, water and sanitation district, water conservation district, or water conservancy district; ~~for recreational in-channel diversion purposes; and~~

(c) For the benefit and enjoyment of present and future generations, the appropriation by the state of Colorado in the manner prescribed by law of such minimum flows between specific points or levels for and on natural streams and lakes as are required to preserve the

1 natural environment to a reasonable degree; AND

2 (d) A FLEX USE.

3 (7.3) "FLEX CONSUMPTIVE USE" MEANS:

4 (a) THE FULLY CONSUMPTIVE PORTION OF A WATER RIGHT THAT
5 HAS BEEN QUANTIFIED BY EITHER A WATER COURT CHANGE-IN-USE
6 DECREE OR A SUBSTITUTE WATER SUPPLY PLAN APPROVAL, ENTERED OR
7 APPROVED ON OR AFTER JUNE 1, 2015; AND

8 (b) THE RETURN FLOWS ASSOCIATED WITH THE HISTORICAL USE OF
9 THE WATER RIGHT IF APPROPRIATED IN ACCORDANCE WITH THE LAW
10 UNDER A NEW PRIORITY DATE AND CONFIRMED BY THE WATER COURT
11 CHANGE-IN-USE DECREE IN WHICH THE FULLY CONSUMPTIVE USE PORTION
12 OF THE WATER RIGHT IS QUANTIFIED.

13 (7.5) (a) (I) "FLEX USE" MEANS DIVERSION AND USE OF FLEX
14 CONSUMPTIVE USE AT ANY POINT OF DIVERSION WITHIN THE WATER
15 DIVISION OF HISTORICAL USE IDENTIFIED IN AN EXISTING WATER COURT
16 DECREE OR STATE ENGINEER-APPROVED SUBSTITUTE WATER SUPPLY PLAN,
17 FOR ANY BENEFICIAL USES IDENTIFIED IN THE DECREE OR SUBSTITUTE
18 WATER SUPPLY PLAN. "FLEX USE" INCLUDES WATER DELIVERY TO SATISFY
19 COMPACT OBLIGATIONS.

20 (II) "FLEX USE" DOES NOT INCLUDE THE APPLICATION OF FLEX
21 CONSUMPTIVE USE TO FACILITATE THE DIVERSION OF WATER BETWEEN
22 WATER DIVISIONS BY DIRECT DIVERSION, EXCHANGE, REPLACEMENT, OR
23 OTHER MEANS.

24 (b) FOLLOWING DELIVERY OF FLEX CONSUMPTIVE USE TO THE
25 RIVER AT THE POINT OR POINTS OF DELIVERY IDENTIFIED IN THE FLEX
26 CHANGE-IN-USE DECREE OR SUBSTITUTE WATER SUPPLY PLAN APPROVAL,
27 THE WATER USER MAY ACCOMPLISH FLEX USE BY DIRECT DELIVERY;

1 STORAGE; RECHARGE; AUGMENTATION; EXCHANGE; WATER BANKING;
2 WHERE APPROPRIATE, NONCONSUMPTIVE USE; OR ANY OTHER LAWFUL
3 MEANS THAT COMPLY WITH APPLICABLE DECREES, STATUTORY AND OTHER
4 LEGAL REQUIREMENTS, AND ADMINISTRATION BY THE STATE ENGINEER
5 AND DIVISION ENGINEERS.

6 **SECTION 2.** In Colorado Revised Statutes, 37-92-305, **add** (3.7)
7 as follows:

8 **37-92-305. Standards with respect to rulings of the referee and**
9 **decisions of the water judge. (3.7) Flex use.** (a) IF A CHANGE-IN-USE
10 APPLICATION SEEKS APPROVAL OF FLEX USE, THE DECREE MUST:

- 11 (I) COMPLY WITH SECTION 37-92-103 (7.3) AND (7.5);
- 12 (II) IDENTIFY THE WATER RIGHT AS A FLEX USE WATER RIGHT;
- 13 (III) QUANTIFY THE HISTORICAL DIVERSIONS AND HISTORICAL
14 CONSUMPTIVE USE OF THE WATER RIGHT;
- 15 (IV) QUANTIFY THE RETURN FLOWS ASSOCIATED WITH THE
16 HISTORICAL USE OF THE WATER RIGHT IN TIME, PLACE, AND AMOUNT;
- 17 (V) PROVIDE TERMS AND CONDITIONS FOR A CHANGE IN THE TYPE
18 OF USE OF THE WATER RIGHT, INCLUDING THE RETURN FLOW OBLIGATIONS
19 IN TIME, PLACE, AND AMOUNT, THAT PREVENT MATERIAL INJURY TO OTHER
20 VESTED WATER RIGHTS AND DECREED CONDITIONAL WATER RIGHTS;
- 21 (VI) IF RETURN FLOWS ASSOCIATED WITH THE HISTORICAL USE OF
22 THE WATER RIGHT ARE APPROPRIATED IN ACCORDANCE WITH THE LAW
23 UNDER A NEW PRIORITY DATE, PROVIDE TERMS AND CONDITIONS
24 GOVERNING THE USE OF THE APPROPRIATED RETURN FLOWS;
- 25 (VII) PERMIT DELIVERY AND USE OF ALL OR A PORTION OF THE
26 CONSUMPTIVE USE ASSOCIATED WITH THE WATER RIGHT AND ANY
27 APPROPRIATED RETURN FLOWS TO A FLEX USE THROUGH THE

1 IMPLEMENTATION OF FALLOWING, REGULATED DEFICIT IRRIGATION,
2 REDUCED CONSUMPTIVE USE CROPPING, OR OTHER ALTERNATIVE TO
3 PERMANENT CESSATION OF AGRICULTURAL IRRIGATION ON THE PROPERTY
4 THAT IS SERVED BY THE WATER RIGHT; AND

5 (VIII) ESTABLISH A FIXED POINT OR POINTS OF DELIVERY FOR THE
6 FULLY CONSUMPTIVE PORTION OF THE WATER RIGHT AND ANY
7 APPROPRIATED RETURN FLOWS TO THE RIVER.

8 (b) A DECREED FLEX USE IS SUBJECT TO RECONSIDERATION BY THE
9 WATER JUDGE ON THE QUESTION OF INJURY TO THE VESTED WATER RIGHTS
10 OF OTHERS FOR SUCH PERIOD AFTER THE ENTRY OF THE DECREE AS IS
11 NECESSARY OR DESIRABLE TO REMEDY OR PRECLUDE INJURY.

12 (c) (I) THE GENERAL ASSEMBLY INTENDS THAT ANY DECREED FLEX
13 USE BE IMPLEMENTED IN A MANNER DESIGNED TO PROMOTE THE USE OF
14 ALTERNATIVE TRANSFER METHODS THAT ENCOURAGE AND SUPPORT
15 CONTINUATION OF IRRIGATED AGRICULTURE, WHILE APPLYING THE
16 DECREED FLEX USE TO ADDITIONAL USES. AS SUCH, A DECREED FLEX USE
17 MUST BE CONDITIONED UPON THE CONTINUATION OF IRRIGATION OF A
18 PORTION OF THE PROPERTY SERVED BY THE WATER RIGHT DECREED FOR
19 FLEX USE, SUBJECT TO FALLOWING FOR FLEX USE. THE WATER JUDGE MAY
20 ESTABLISH TERMS AND CONDITIONS COMMENSURATE WITH THE INTENT OF
21 THE GENERAL ASSEMBLY EXPRESSED IN THIS SUBPARAGRAPH (I).

22 (II) AT A MINIMUM, A CHANGE-IN-USE DECREE APPROVING A FLEX
23 USE MUST PROVIDE THAT DELIVERY OF MORE THAN FIFTY PERCENT OF THE
24 FLEX CONSUMPTIVE USE OVER ANY TEN-YEAR PERIOD FOR USES OTHER
25 THAN IRRIGATION OF THE PROPERTY SERVED BY THE WATER RIGHT OR
26 ANOTHER PROPERTY SERVED BY THE SAME DITCH SYSTEM NULLIFIES THE
27 DECREED FLEX USE WITHOUT ANY FURTHER ACTION OF THE WATER JUDGE.

1 IF SUCH NULLIFICATION OCCURS, THE WATER RIGHT MAY ONLY BE USED
2 FOR THE DECREED IRRIGATION USE UNLESS THE OWNER OF THE WATER
3 RIGHT OBTAINS A SUBSEQUENT WATER COURT CHANGE-IN-USE DECREE OR
4 SUBSEQUENT SUBSTITUTE WATER SUPPLY PLAN IDENTIFYING THE
5 SPECIFIED END USES OF THE WATER RIGHT AND ESTABLISHING ANY
6 ADDITIONAL TERMS AND CONDITIONS NECESSARY TO PREVENT INJURY.

7 **SECTION 3.** In Colorado Revised Statutes, 37-92-308, **add** (12)
8 as follows:

9 **37-92-308. Substitute water supply plans - special procedures**
10 **for review - water adjudication cash fund - legislative declaration -**
11 **repeal.** (12) (a) **Flex use.** IF THE STATE ENGINEER APPROVES A
12 SUBSTITUTE WATER SUPPLY PLAN APPLICATION IN WHICH THE PLAN
13 SOUGHT IS FOR A FLEX USE, THE APPROVAL MUST:

- 14 (I) COMPLY WITH SECTION 37-92-103 (7.3) AND (7.5);
15 (II) IDENTIFY THE WATER RIGHT AS A FLEX USE WATER RIGHT;
16 (III) QUANTIFY THE HISTORICAL DIVERSIONS AND HISTORICAL
17 CONSUMPTIVE USE OF THE WATER RIGHT;
18 (IV) QUANTIFY THE RETURN FLOWS ASSOCIATED WITH THE
19 HISTORICAL USE OF THE WATER RIGHT IN TIME, PLACE, AND AMOUNT;
20 (V) PROVIDE TERMS AND CONDITIONS FOR A CHANGE IN THE TYPE
21 OF USE OF THE WATER RIGHT THAT PREVENT MATERIAL INJURY TO OTHER
22 VESTED WATER RIGHTS AND DECREED CONDITIONAL WATER RIGHTS,
23 INCLUDING THE RETURN FLOW OBLIGATIONS IN TIME, PLACE, AND
24 AMOUNT;
25 (VI) IF RETURN FLOWS ASSOCIATED WITH THE HISTORICAL USE OF
26 THE WATER RIGHT ARE APPROPRIATED IN ACCORDANCE WITH THE LAW
27 UNDER A NEW PRIORITY DATE, PROVIDE TERMS AND CONDITIONS

1 GOVERNING THE USE OF THE APPROPRIATED RETURN FLOWS;

2 (VII) PERMIT DELIVERY AND USE OF ALL OR A PORTION OF THE
3 CONSUMPTIVE USE ASSOCIATED WITH THE WATER RIGHT AND ANY
4 APPROPRIATED RETURN FLOWS TO A FLEX USE THROUGH THE
5 IMPLEMENTATION OF FALLOWING, REGULATED DEFICIT IRRIGATION,
6 REDUCED CONSUMPTIVE USE CROPPING, OR OTHER ALTERNATIVE TO
7 PERMANENT CESSATION OF AGRICULTURAL IRRIGATION ON THE PROPERTY
8 THAT IS SERVED BY THE WATER RIGHT; AND

9 (VIII) ESTABLISH A FIXED POINT OR POINTS OF DELIVERY FOR THE
10 FULLY CONSUMPTIVE PORTION OF THE WATER RIGHT AND ANY
11 APPROPRIATED RETURN FLOWS.

12 (b) A SUBSTITUTE WATER SUPPLY PLAN APPROVING FLEX USE MUST
13 BE CONDITIONED UPON THE CONTINUATION OF IRRIGATION OF A PORTION
14 OF THE PROPERTY SERVED BY THE WATER RIGHT, SUBJECT TO FALLOWING
15 FOR FLEX USE. AT A MINIMUM, A SUBSTITUTE WATER SUPPLY PLAN
16 APPROVING FLEX USE MUST PROVIDE THAT DELIVERY OF MORE THAN FIFTY
17 PERCENT OF THE FLEX CONSUMPTIVE USE OVER ANY TEN-YEAR PERIOD FOR
18 USES OTHER THAN IRRIGATION OF THE PROPERTY SERVED BY THE WATER
19 RIGHT OR ANOTHER PROPERTY SERVED BY THE SAME DITCH SYSTEM
20 NULLIFIES THE APPROVED FLEX USE WITHOUT ANY FURTHER ACTION OF
21 THE WATER JUDGE. IF SUCH NULLIFICATION OCCURS, THE WATER RIGHT
22 MAY ONLY BE USED FOR IRRIGATION USE UNLESS THE OWNER OF THE
23 WATER RIGHT OBTAINS A SUBSEQUENT WATER COURT CHANGE-IN-USE
24 DECREE OR SUBSEQUENT SUBSTITUTE WATER SUPPLY PLAN IDENTIFYING
25 THE SPECIFIED END USES OF THE WATER RIGHT AND ESTABLISHING ANY
26 ADDITIONAL TERMS AND CONDITIONS NECESSARY TO PREVENT INJURY.

27 **SECTION 4. Effective date.** This act takes effect June 1, 2015.

1 **SECTION 5. Safety clause.** The general assembly hereby finds,
2 determines, and declares that this act is necessary for the immediate
3 preservation of the public peace, health, and safety.

Works Cited

- Archibald, Marybelle. *Appropriative Water Rights in California*. Legal Report, Sacramento: Governor's Commission to Review California Water Rights Law, 1977.
- Autobee, Robert. *Colorado-Big Thompson Project*. Bureau of Reclamation, 1996.
- Black, Elizabeth. *The Ditch Project*. Boulder, November 12, 2014.
- Buy and Dry in Colorado Agriculture. *Colorado Foundation for Water Education*.
<https://www.yourwatercolorado.org/> (accessed December 5, 2014).
- Colorado Corn. *Colorado Corn*. 2009. (accessed October 24, 2014).
- Colorado Department of Natural Resources. *Colorado Water Conservation Board*. 2015.
<http://cwcb.state.co.us/water-management/drought/Pages/main.aspx> (accessed March 12, 2015).
- Colorado Division of Water Resources. "History of Water Rights." *Colorado Division of Natural Resources*. 2014. (accessed November 2, 2014).
- . *Prior Appropriation Law*. 2014. (accessed October 23, 2014).
- Colorado Judicial Branch. "Water Courts." *Colorado Judicial Branch*. 2014. (accessed November 2, 2014).
- Colorado Secretary of State. "Colorado Voter Party Affiliation by County." *Coloradoan*. October 1, 2014.
<http://www.coloradoan.com/story/news/politics/elections/2014/10/16/map-colorado-voters-party-affiliation-by-county/17379853/> (accessed March 19, 2015).
- Colorado Water Rights. *The Water Information Program*. 2014. <http://www.waterinfo.org/rights.html> (accessed November 7, 2014).
- Credit State Demography Office. "Population Projections." Population Growth in Weld County, 2010.
- Getches, David. *Water Law*. St. Paul: West Publishing Co, 2009.
- Glennon, Robert, and Gary Libecap. "The West Needs a Water Market to Fight Drought." *The Wall Street Journal*, 2014.
- Goodwin, Carlson, Bai, Rein, Knox, and Douglas. "Improved Water Use eliminates for Drilling and Hydraulic Fracturing in Northeastern Colorado." *Journal of Water Resource and Protection*, 2013.
- Hess, Ralph. "Colorado Water Right." *Columbia Law Review*, 1916: 649-664.
- Howe, and Goemans. "Water Transfers and their Impacts: Lessons from Colorado Water Markets." *Journal of the American Water Resources Association* (Journal of the American), 2003.
- Jones, P. Andrew, and Tom Cech. *Colorado Water Law for Non-Lawyers*. Boulder: University Press of Colorado, 2009.

Kallenberger, Julie. *Understanding Beliefs and Preferences of Irrigators Towards the Use and Management of Agricultural Water in the Colorado River Basin*. Fort Collins, 2013.

Kubasek, and Silverman. *Environmental Law*. Upper Saddle River: Pearson Education Inc., 2014.

Lawrence Jones Custer Grasmick LLP, rown and Caldwell. "FLEX Market Model Project Completion Report." 2013.

Poudre Basin Water Sharing Working Group and Colorado Water Institute. *Water Sharing Between Agricultural Water Shareholders and Urban Utilities in Northern Colorado*. Survey Frequency Report, Fort Collins: Colorado State University, 2015.

Red Rocket Media Group. *Water Colorado*. 2008. (accessed October 24, 2014).

State Demography. "Census 2010." Population Growth Colorado, 2010.

State of California. *The Water Rights Process*. 2014. (accessed October 19, 2014).

United States Drought. *U.S. Drought Monitor*. Drought Monitor for Colorado, National Drought Mitigation Center, 2015.

Water Rights. *West's Encyclopedia of American Law*. 2008. (accessed November 1, 2014).

West Water Research. *Review of Western U.S Environmental Water Leasing Programs*. Laramie: West Water Research, 2003.

Woodka, Chris. "Flex Marketing Bill Advances." *The Pueblo Chieftain*. February 12, 2014.
<http://www.chieftain.com/news/politics/2281153-120/bill-lower-pueblo-winner> (accessed 16 2014, November).