

WATER MARKETING FOR WASHINGTON:  
ARE THERE LESSONS LEARNED FROM OTHER WESTERN STATES  
THAT CAN EDUCATE THIS DEBATE?

by

Lois Ann Lopez

A Thesis: Applications Project  
Submitted in partial fulfillment  
of the requirements for the degree  
Master of Public Administration  
The Evergreen State College  
June 2000

This Project for the Master of Public Administration Degree

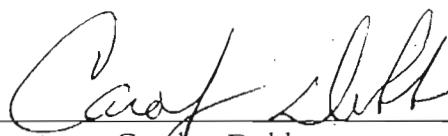
by

Lois Ann Lopez

has been approved for

The Evergreen State College

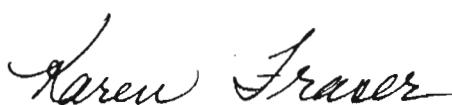
by



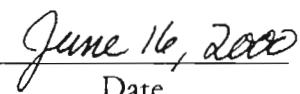
Carolyn Dobbs  
Member of the Faculty



Zahid Shariff  
Member of the Faculty



The Honorable Karen Fraser  
Washington State Senator



Date

## ABSTRACT

### Water marketing for Washington: Are there lessons learned from other western states that can educate this debate?

Lois Ann Lopez

The constraints of the West's water law, the prior appropriation doctrine, require development of new statutes to counter negative effects such as the wasting of water and the full appropriation of most streams and rivers in the Western United States. To manage the waters of the West, a few states have turned to water marketing and all western states allow the transfer of water rights to some degree. This research revealed, for the most part, very few transfers occurring, and only 3 of 18 states engaged in a formal state water marketing program of water rights. Other states have passed statutes such as conservation laws that allow water to be saved. Without this law, the 'use it or lose it' principle of the prior appropriation doctrine would require that the rights to any water that is saved be forfeited.

In response to the thesis question above, there have not been sufficient transfer or marketing activities in the West to identify policies successful in meeting the diverse demands now being placed upon water apportionment. Water markets can provide benefits and meet these diverse demands by influencing consumption when users pay the true cost of the resource, while water also seeks its highest valued use through the market. A successful policy will represent a stabilizing balance between protection of the private property rights that water rights represents and protection of the public good that is entrusted to our government. Though minimal transfer activities are taking place, the externalities caused by large transfers are well documented. The few lessons to be learned by other states relate to understanding and mitigating the impacts of large-scale transfers which can create negative externalities such as return flow effects to downstream users and effects to rural, area-of-origin communities. More analysis of these negative impacts of water rights transfers, as well as analysis of existing laws such as Oregon's conservation statute, which responds to constraints of the prior appropriation doctrine, is necessary.

## TABLE OF CONTENTS

<u>Chapter</u>	<u>Page</u>
INTRODUCTION	1
HISTORICAL PERSPECTIVE	4
FRAMEWORK FOR WATER MARKETS	8
1. Definitions	9
2. Influences Upon Markets	10
3. Necessary Elements of a Market	16
4. Creative Policies	22
5. Policy Considerations	25
DATA ANALYSIS OF WESTERN STATES' SURVEY	29
1. Water Markets or Transfers and Their Activities	31
2. Buyers and Sellers Exchanging Property	33
3. Positive or Negative Externalities	34
4. Is Environmental Quality Enhanced?	37
5. Is Public Interest Protected?	38
6. Emerging Issues of Challenge	41
CONCLUSION	42
APPENDIX A: Public Welfare Factors for Legislation	48
APPENDIX B: States' Examples of Public Welfare Factors	49
APPENDIX C: Survey Questions Submitted to Agencies	50
APPENDIX D: Western States' Responses to Survey	51
APPENDIX E: Questions for Further Examination	56
REFERENCES	59

## ACKNOWLEDGMENTS

The success of this project required the assistance of many. My many thanks to the 15 western states that provided materials and responses to the survey. This great response is an indicator of the commitment by these public servants. Special thanks to Gary Prokosh, Rich Moy, Rick Oliver, Tom Byler, Ron Duvall, Dan Beckett, Robert Morgan, and Sue Lowry. Your generous time and care in answering the survey made this project and its outcome possible. To Carolyn Dobbs, my first reader, thank you for eagerness in assisting me; I respect your opinion and your knowledge in water resources, and your advice and time have been invaluable. To Zahid Shariff, my second reader, you are a joy to know. Not many possess both intellect and wisdom, and you carry them well. To Senator Karen Fraser, my third reader and friend, I appreciate your assistance and the unselfish gift of your time to assist with this project. Mostly, however, I appreciate the unselfish gifts you have given Washington. As Washington's Secretary of State Ralph Munro would say, "You are the Best!"

As a student with some seasoning, the challenges of professional and personal life have often competed with my education. This endeavor could not have been accomplished without a most supportive and understanding partner, and a best friend. Thank you, Darryl.

## INTRODUCTION

In recent years, the doctrines and policies that direct water use in the western United States have been at the forefront of many contentious debates. The subject of water, its use and its protection, is often highly emotional. Whether these debates have arisen out of awareness and concern for the increasingly limited resource that sustains our lives, or rather, the debates are merely a progression of our changing societal values, it is crucial that we engage in this dialogue.

Some of the most pressing policy questions for the Washington State Legislature relate to water use and its allocation under the constraints of the prior appropriation doctrine. Washington is among 18 western states that employ this doctrine in governing water rights. West of the 100th Meridian where these states lie, except in the coastal lands of the Pacific Northwest, the average annual rainfall is less than 20 inches (Reisner, 1993, p. 3). However, 80 percent of the nation's water is consumed in the West (Anderson & Snyder, 1997, pp. 2-3). And our thirst is growing. Since 1960, the water tables in the Dallas-Fort Worth area have dropped 492 feet, and the water tables at Phoenix have dropped 400 feet in 50 years (Anderson & Snyder, 1997, p. 5).

Early western water law has been characterized as instrumental. The laws created in the West in the 19th century served as tools for economic development. The prior appropriation doctrine and then the reclamation laws were successful in creating an extraction-based economy dependent on the abundant natural resources of the region to support the American settlers "in the era of Manifest Destiny" (Bates, Getches, MacDonnell, & Wilkinson, 1993, pp. 128-130). In the West, non-riparian owners could transport (or divert) water as far from the river as they liked. The West also recognized and appreciated changing economic opportunities in property rights. For example, early in western water law's history, someone coming in later seeking water rights could challenge the first appropriator's use of water based on having a better economic use (Worster, 1985, pp. 90-91).

As water in the West has grown increasingly scarce, some states employing the prior appropriation doctrine have turned to markets to move water to its

highest and best use. This is accomplished because the prior appropriation doctrine apportions the right to use water, not the water itself. Hence, an important property right is granted and subsequently can be sold or traded. The logic is that price responds to water scarcity and influences “individuals to do the right things in response to the scarcity level” (Griffin & Boader, 1992, p. 268).

Like most western states, Washington presently allows the transfer of water rights. This transaction, which may or may not occur between a willing seller and willing buyer, has developed in response to changing water uses and needs, and changing water values. As population in the West has grown, bringing with it higher demand for water resources in urban areas, it was necessary that water law be amended so that changes in water use, primarily from rural to urban uses, could take place. In fact, all states employing the prior appropriation doctrine have amended their allocation laws to a certain extent.

Historian Donald Pisani writes that we have always changed the laws of the day to reflect current values, and the mid to late 1800's - when the prior appropriation doctrine was born - reflected such change. Our society went from being pastoral and communal to being self-sufficient and driven by wealth and its pursuit. Water was seen as a tremendous source of capital, and it was in this context that the prior appropriation doctrine developed (Pisani, 1996, p. 1).

Bates, et al. (1993) remind us that our laws are value-laden and incorporate our “highest philosophical ideals, collective objectives, and passions. Western water law is surely a product of the era that created it” (Bates, et al., 1993, p. 129).

Pisani writes that laws are amended to reflect the economic and cultural climate of the day, and laws are neither fixed nor can we depend on them being consistent into the future. Laws are changed as our values change (Pisani, 1996, p. 22).

Attempts to reform the prior appropriation doctrine began almost upon its creation, with three major attempts in the late 1800's (Pisani, 1996, p. 4).

Colorado was the first state to engage in water markets, shortly after it developed a water rights system in 1874 (Bates, et al., 1993, pp. 142-143). A few other states have followed suit with formal programs developed to sell or lease

water rights. Washington has no legislatively created water marketing program. With nearly half of the state arid, water scarcity is forcing the question: What are the best allocation policies for Washington? To add to the complexity of this question, we face further challenges. Washington's current strong economic position has brought us burgeoning growth and development, straining our water resources. Another urgent demand for our water resources is found swimming in Washington's streams and rivers. The dramatic decline of salmon species in Washington has placed some species under the regulatory arm of the Endangered Species Act. While Washington protects instream flows, allocation and administrative decisions can become contentious, particularly during the summer months when low instream flows threatening salmon meet head-on with high consumption demand of cities and industries, all vying for the same resources.

The subject of this applications project is one of long-held interest for me. Prior and subsequent to earning my bachelors degree at The Evergreen State College, studying water resources, I have volunteered thousands of hours as an advocate of drinking water. Some of those hours have been spent as a citizen lobbyist. I am aware of the daunting task before Washington's Legislature to resolve these emotional and often contentious issues of water allocation.

This applications project will attempt to answer the thesis question of: 'Water marketing for Washington: Are there lessons learned by other western states that can educate this debate?' These 18 states' water laws are diverse and wide-ranging in scope and authority. Learning of the activities by these states and any lessons learned, as well as the laws and policies that were implemented to administer and regulate these activities, should provide Washington's policymakers with a good background of source material. It is my hope that the information gathered for this project can be of some small benefit to those decisionmakers responsible for apportioning Washington's water.

## HISTORICAL PERSPECTIVE

Providing an overview of the social and economic context during the development of western water law is a necessary element of this applications project. Understanding our past is the vehicle that will allow us to understand our current laws and policies, and the context within which they were developed.

Since the time of early settlements, communities have worked collectively to benefit the public good, and for just as long, water has played a prominent role in the collective efforts of communities. Irrigation in the West is not a modern phenomenon, but holds a prominent position in history for representing the values of a collective society.

Actually, irrigation in North America began between 3500 and 2500 BC in what is now the Southwest. By 1000 BC, the Anasazi Indians had developed check dams and headgates to divert the waters of the West. The Hohokam Indians, also very early in history, engineered an irrigation system that included more than 125 miles of canals. Then in the 16th Century, the Spanish settlers came to the West and built irrigation ditches called acequias. Like the earlier Indian societies, the Spanish maintained strong community-based rules. Indians revered water. In the Hispanic communities, the acequia was the principal community institution, and it promoted the values of fairness and stewardship (Bates, et al., 1993, pp. 18-23).

An extension of the respect for community and working cooperatively is found in the riparian doctrine, the water law that came with the immigrants from England around the 1700's. These water rights were correlative rather than absolute; they went with the land and were conditional rights. Riparian owners could use water for industrialization or for livestock as long as they did not "injure downstream users" (Pisani, 1996, p. 1). Importantly, the doctrine under its original intention stated a river was regarded as no one individual's private property (Worster, 1985, p. 87).

However, by the early 1800's, urban needs were growing and industries were evolving. For example, after 1815, the growth of large-scale cotton mills dramatically increased the need for water power. As a result of the change from a communal, rural lifestyle to an urban, industrialized culture, it became necessary to

reform the water laws. Historian Donald Pisani writes that it was society's needs and its changes that drove the development of the prior appropriation doctrine (Pisani, 1996, pp. 7-8).

Historian Donald Worster confirms that a common and misunderstood discussion is that the West's arid climate required the settlers to break with the English common law of riparianism. However, the settlers of the West set up the doctrine of prior appropriation because they did not share the 'old world' views of nature. The adoption of the prior appropriation doctrine was part of a large shift in thinking about nature, a shift "toward instrumentalism in resource law and property rights" (Worster, 1985, p. 89). This doctrine was a product of the new capitalist culture, and these instrumental values emphasized economic growth and domination over nature (Bates, et al., 1993, p. 130).

Worster writes that while modern capitalism provides the impetus, domination over nature has several sources of influence. The period of Enlightenment in 18th Century Europe removed value from the world by helping develop the positivistic, utilitarian world view. Then there was science which could reduce nature down to explainable and logical parts. Industrialization and the growing large-scale production of goods also contributed to the sentiment of instrumentalism and dominion over nature (Worster, 1985, pp. 58-59).

Since ancient times, man's power over nature has been used to develop hydraulic societies. But this power has always been under the control of the elite. Worster (1985) writes that there have been three modes of water control throughout history. They are: 1) the local subsistence mode; 2) the agrarian state mode; and 3) the capitalist state mode. The third is found in the American West, which is the first time this mode appeared in history (Worster, 1985, pp. 35-37).

The capitalist state mode is attributed nearly entirely to technology and is the only mode where water has no intrinsic value. Water no longer represents a spiritual life-giving substance, as in the local subsistence communities. Water is no longer providing economic flow back and forth, as in the agrarian state. Water is simply a commodity that is bought and sold, and as a market-driven commodity,

the use of water has domination over nature that is absolute and without restraint (Worster, 1985, pp. 55-56).

Bates, et al. (1993) agrees with Worster and writes that western water law was developed “through a particular lens: water was a commodity that needed to be removed from the river channel and put to use” (Bates, et al., 1993, p. 4).

During this same time, the concept of property ownership also shifted. Worster explains that property moved from the agrarian concept of the right to undisturbed enjoyment, to the right of productive use (Worster, 1985, pp. 90-91).

With the help of laws passed in the West, such as the Desert Land Act of 1877 which served to promote land speculation, in conjunction with the prior appropriation doctrine, irrigation became the ‘answer’ for the arid West. Land was marketed and the growth of the West began, under the guise of romance, luxury and wealth (Pisani, 1996, p. 12). The West found many interested investors as society’s priority changed from the communal good to the individual good.

The history of the West’s irrigation and reclamation policies are well documented by Worster (1985), Pisani (1996), and Bates, et al. (1993). These authors all write extensively of the laws that facilitated the creation of monopolies and agri-businesses. Three of these contributors were the Desert Land Act of 1877, the Newlands/Reclamation Act of 1902, and the prior appropriation doctrine. A point these authors all agree upon is that these policies did not help the small farmer or the poor, but instead provided the basis for a great hydraulic society of the elite, to be subsidized by the federal government.

Worster writes of the major difference between past communities of the West and these new hydraulically-driven communities. Until this time, villages, tribes and communities survived through common ownership and use of their natural assets, such as water and land. However, what changed was the rapid growth of capitalism in the West. Individual ownership replaced communal or cooperative living. Interests became more self-serving and the concept of the benefit of the whole was abandoned. What made this pursuit a particularly negative aspect of the early West, according to Worster, was the outcome of these

individual capitalists' influence that allowed the elite and the wealthy to grow even wealthier (Worster, 1985, p. 217).

Worster concludes: "History is always easier to understand than it is to change or escape" (Worster, 1985, p. 329). He warns us that we must recognize the dilemma of stagnation; this was the plight of ancient water management-dependent civilizations, and it is true even with modern industries. They develop solutions and then are satisfied to sit back and reap the financial rewards - regardless of the resulting costs. Worster concludes with a warning that the modern West must not follow suit, and that we must become a more river-conscious people (Worster, 1985, p. 329).

## FRAMEWORK FOR WATER MARKETS

There are currently many important discussions and theories occurring that relate to water markets and water rights transfers. In the context of policymaking, after a thorough literature search, I have identified those issues discussed repeatedly by the experts of western water policy as it relates to water markets, water rights transfers, and the roles these transactions can perform in today's communities of the western United States.

It makes sense first to clarify the definition of water markets, and this is where some difficulty arises. Western states differ in their definitions just as each of these state's laws and policies differ. Second, dependent on the definitions, the difference between water markets and rights transfers can be negligible. Depending upon the state, these two transactions can be the same; simply put, a water right changes hands. Of course, this is not the only change allowed by a rights transfer, but potentially, the difference can simply be whether a framework has been developed by the state for a water market, or the market has been allowed to evolve through private enterprise. In the final chapter of this project and in Appendix D, the activities of each state related to markets or transfers, as revealed in my research, are outlined. While most states have not developed a formal water marketing program, states are experiencing water marketing of varying degrees.

At the same time, most states have statutorily defined water rights transfers and developed programs to administer these transactions. Transfers are becoming increasingly common in the West's states using the prior appropriation doctrine, and the activities of markets and transfers have some similar elements and outcomes. Once we understand there are differing definitions of these terms in nearly all of the western states, then we can become more familiar as to how these transactions work in general. As mentioned earlier, based on issues that had been repeatedly discussed by several authors, I have identified 'Influences Upon Markets,' 'Necessary Elements of a Water Market,' and provide 'Example of Creative Policies' that respond to the prior appropriation doctrine's constraints. I conclude with 'Policy Considerations' of several experts' for market-related policies and legislation.

## 1. Definitions

As the ‘Historical Context’ chapter pointed out, water markets and transfers are emerging as solutions to a number of influences, two of them being water scarcity and fully appropriated surface waters.

Water rights transfers provide a centralized method of water reallocation. [As most of the West’s waters are already allocated, markets and transfers serve to reallocate water.] Transfers refer to methods or processes of reallocation or exchanging water from one region to another through the water rights, or from one type of use to another (Kennan, Krannich, & Walker, June 1999, p. 280).

Water markets provide a more decentralized method of reallocation, moving water to its highest valued use. Many economists, citing the well-proven theories of: 1) supply and demand, and 2) scarcity driving up prices, support the development of water markets.

Simpson and Ringskog (1997) explain that with two characteristics present, water markets will evolve on their own. These are: 1) transfers are allowed to occur, and 2) differences exist between supplies and demands. “The primary function of the market system is to allow supplies to meet changing demands in a manner that reflects the economic priority of competing demands” (Simpson & Ringskog, 1997, p. 4).

Market advocates make one key claim: Markets provide critical information about the resource’s value (via prices), thereby allowing society’s members to make decisions about producing and purchasing more or less of a good, so society’s goods are always “priced” at their highest valued use (Haddad, 2000, p. 21). In water marketing, buyers and sellers trade their property rights in the form of water rights. Kennan, et al., explain: “[t]his allocation arrangement systematically determines an efficient and equitable distribution of water among competing uses” (Kennan, et al., 1999, p. 280).

In the West, private property rights are created via the prior appropriation doctrine (McNally, 1995, p. 672). The authors Bates, Getches, MacDonnell and Wilkinson (1993) explain that three concepts have historically driven the

development of the prior appropriation doctrine. They are: 1) the policy of free water, 2) the policy of capture, and 3) the policy of water as property (Bates, et al., 1993, p. 130). In this last policy, water as property, two principles arise above all the elements of property. First, water within a state is commonly called the ‘property’ of the state or of the people of the state. Second, the private right to use water is regarded as a property right, capable of ownership and transfer as with other kinds of property. Western water law distinctively grants permanent property rights to private water users (Bates, et al., 1993, pp. 144-146), and property rights is repeatedly claimed to be the most important characteristic of western water law and a logical accessory to water markets or transfers.

## 2. Influences Upon Markets

Many influences can either positively or negatively affect water markets. Because water markets are only now emerging in the West, there are few examples of long-established and successful water markets to examine. I have written about those factors that would have the greatest influence or impact on markets. These influences include: 1) the response of consumption to cost; 2) externalities; 3) government intervention; and 4) changing conditions.

### a. The response of consumption to cost

The most commonly heard statement to support placing water rights in a market is that higher costs reduce consumption, and lower or subsidized costs lead to waste. Former United States Senator Paul Simon, in his book Tapped Out (1998), uses other countries to provide examples the effect of price places upon demand. Before the two Germanies united, East Germany used 4 times as much water per capita as West Germany, because the Communist system carried no price incentives. When the countries merged, water consumption immediately dropped. In Bogor, Indonesia, water demand dropped 29 percent after the city increased its fees 30 percent (Simon, 1998, p. 126). Simon writes: “When people are charged nothing for water, or farmers get it for as little as one cent per 1,000 gallons, it should surprise no one that water is squandered” (Simon, 1998, p. 127).

Anderson and Snyder (1997) write of a 1980 study of 16 subregions in the West which "found that a 10 percent increase in the price of water would cause between a 3.75 and 12.63 percent decrease in urban residential water consumption" (Beattie & Foster, 1980 cited in Anderson & Snyder, 1997, p. 8). When water prices are low, more demands are placed on the water resources. "The additional water use will be subject to diminishing returns - the last units consumed will generate much less value than the first" (Anderson & Snyder, 1997, p. 10). In agriculture as well, when prices increase, different irrigation technology or application techniques are commonly developed to reduce water use.

b. Externalities

Influences on market-based policies of reallocation often result in externalities, some of which lead to market failures. Authors use different terminology such as secondary effects and market failures. I will use the term externalities in the broadest sense, which means the outcomes of various influences (or activities) upon a market.

Griffin and Boader (1992), in detailing water markets in Texas, explain that externalities which contribute to market failures include return flow externalities, instream values, and secondary effects (Griffin & Boader, 1992, p. 268).

Allocation and instream flow arrangements of neighboring downstream communities can impact one another through return flows. "Water users within a given basin are dependent upon the arrangement of each other's diversions and return flows" (Griffin & Boader, 1992, p. 276). Return flow externalities occur when third parties are affected by these arrangements or changes within them.

For example, a farmer may alter his irrigation technology to a more efficient system allowing him to irrigate more acreage with no increase in diversions. The result is an increase in the consumptive use of water and a decrease in return flow. Return flow is also changed when conservation practices are successful. Some literature recommends that a market fix can be reached by limiting transfers to only the consumptive portion of a water right (Griffin & Boader, 1992, p. 271).

Instream flow effects constitute another external effect. Instream flow needs, and meeting those needs, are dependent upon the activities of diverters

upstream. Though these two types of water users must rely on sharing the resource, their interests and values are different. As well, the values placed upon consumptive uses by diverters and environmental [or arguably, social] uses by instream users are calculated differently, based largely upon whether it is a diverter determining value or an instream user determining the value (Griffin & Boader, 1992, p. 272). Regardless of the type of water user, each is dependent upon the upstream user, and the complexity of this return flow externality arises due to the variants of value determinations for the two types of water users.

The third area of externalities regards secondary effects and area-of-origin concerns. The exporting region, commonly being agriculture-based, is the area-of-origin. The importing region, usually an urban area, is called the area of receipt. For the area-of-origin, the transferred water represents a lost resource base (Griffin & Boader, 1992, p. 273). The two following examples illustrate secondary effects and area-of-origin concerns.

The first example of secondary effects of moving water is discussed in a report on the water market of California, sponsored by the World Bank. Before 1991, transfers were prohibited in California, until an extended drought provided the incentive to change this law. A state program was developed to buy water rights and then rent them out through a controlled water bank. Most of the water went to municipal uses (Simpson & Ringskog, 1997, pp. 30-31). This water market program caused losses to rural economies due to the fallowing of more than 69,000 hectares of agricultural land. Social costs, such as unemployment, also rose in these areas. Environmentalists claimed loss of food and habitat for waterfowl due to the loss of crops. In addition, reduced return-flow patterns depleted instream flows, causing adverse impacts to wildlife (Simpson & Ringskog, 1997, p. 31). What is disconcerting to this writer is that, given these externalities, the World Bank report (1997) claims that many consider this California market to be a success.

The second example relates Arizona's experience of rural to urban transfers. The Arizona Groundwater Management Act of 1980 provided the mechanism for widespread transfers in that the Act required that specified metropolitan areas

prove a 100-year municipal water supply. What resulted was a rush on rural real estate by cities in order to buy up the water rights. With the effects to the rural communities not anticipated, no legislative protections were in place. Since the consequences of this legislation have been realized, Interior Secretary Bruce Babbitt, then Arizona's Governor, has lobbied on behalf of rural communities damaged by large-scale transfers. Babbitt explained to a local newspaper: "The Arizona experience is not an argument against water transfers. What it does prove is that complete freedom for cities can threaten the very existence of some conveniently situated rural communities" (B. Babbitt, "New Laws Needed to Slake West's Thirst," Albuquerque Journal, Aug. 10, 1989, cited in Ingram & Oggins, 1992, p. 533).

To help address potential market failures, Griffin and Boader (1992) offer some suggestions. They suggest creating two distinct property rights related to water. First, a water right to divert the water, and second, a water right to consume a specific quantity of water. This would extend water marketing to both types of rights, while developing incentives to modify water use. Areas of origin can be protected by allowing an appropriate authority to levy taxes upon exports and use that revenue for investment into economic development projects. Alternatively, transactions can be conducted through a Water Marketing Board that mandates the proceeds be distributed among all interests (Griffin & Boader, 1992, pp. 277-279).

### c. Government intervention

These examples of externalities and market failures are often used to justify government intervention in the marketplace. Following is a brief discussion of government's potential influence on water markets or transfers, and some authors' concerns over the resultant negative impacts.

Anderson and Snyder (1997) discuss the concerns over government attempting to mimic the market. They explain two methods that can also help resolve the concerns of government involvement in the marketplace. Of course, the complete list of concerns by free market advocates over government involvement in water markets is long. One oft-read concern is of the difference in

incentives provided public and private sectors. Many incentives of the public sector are not related to water use and the primary incentive of private sector is a smoothly operating market that results in profits. Owners of private firms must gather good information such as improving efficiencies to succeed in the market. State engineers, and other agency managers, do not depend on maximizing efficiency (Anderson & Snyder, 1997, p. 22).

One approach to water policy that can help equalize these differences is suggested by Anderson and Snyder (1997). This is the use of public choice economics that incorporates economics and political science, and recognizes the differences in incentives between the public and private sectors (Anderson & Snyder, 1997, p. 22).

Another approach for water policy is free-market environmentalism which also recognizes that public and private sectors are driven by different incentives. This method is built on two theories: 1) public choice involves bureaucrats and politicians with incentives unique to the public sector; and 2) the identification of distinct property rights (Anderson & Snyder, 1997, p. 22). This theory challenges the motivation of public planners and recognizes that incentives influence behavior. Secondly, free-market environmentalism stresses the importance of well-specified property rights to provide incentive. For example, “[a] subdivider who puts covenants on deeds to preserve open space, improve views, and harmonize development with the environment, establishes property rights to these values and captures value in higher prices” (Anderson & Leal, 1992, p. 301).

The public sector is influenced by several different incentives. Public managers often must lobby their program to the politicians who fund them, while maintaining consistent services to the public. Politicians spend a portion of their days securing future votes, appeasing special interests, and can be influenced by the length of their political term.

With or without government involvement, a successful market will be flexible and able to respond to both changing technologies and changing sentiment. Being aware of the influence that changing conditions can place upon a market and being equipped to respond to those changes is critical.

d. Changing conditions

Hanna, Folke, and Maler (1996) explain: "The basic functions of resource management - coordinating users, enforcing rights, and adapting to changing environmental conditions - cannot be fostered without a specific system of property rights" (Hanna, et al., 1996, p. 4). However, the property rights regime must be prepared to account for these changes to allow its structure to respond and adapt. Changes of resource use, such as new technology, wider market areas, or changes in weather conditions can lead to behavior changes of the resource use which then changes the property rights regimes. The public sector may not be flexible enough to adapt its rules to guide behavior. Conversely, markets respond too quickly for both regulations and short-term profit opportunities to adapt (Hanna, et al., 1996, p. 5).

Another impact of change is that while the market will change or adapt to new conditions, and this has historically been considered a benefit of markets [the market's ability to 'correct' itself], the change may not be in the direction society or the public would choose to go if it had the ability to choose. "Markets utilize the knowledge of all their participants and adapt to change without any centralized planner being in charge. This characteristic of markets is not always in a society's best interest" (Haddad, 2000, p. 45).

Humans' view of nature is linked with our culture, our dependence on those resources, and even on our economic systems. Hanna, et al. (1996), urge that we must include in policies the flexibility needed for diverse views and to respond to changing conditions, while maintaining definitive property rights (Hanna, et al., 1996, pp. 36-50).

Important influences of markets have been identified as: a) The response of consumption to cost; b) Externalities; c) Government intervention; and d) Changing conditions. These elements can affect the intended long-term outcome of a water market. Once policies are in place to respond to these factors, the critical elements necessary for a successful water market should be identified.

### 3. Necessary Elements of a Water Market

Several experts cite comparable positions in identifying necessary elements for a successful water market. Those elements I most often came across included two that have been mentioned, while the fifth is one that I consider important. These 5 elements are: 1) property rights protections, 2) flexibility, 3) common property management, 4) public good protections, and 5) a learning process. A common thread is that these elements are tied to property rights in one or more areas.

#### a. Clarity and Protection of Property Rights

Consistently cited in books and journals discussing water markets is the need for not simply property rights protections, but also the need for distinct and well defined property rights. Haddad claims that private property rights is the most important institution in a water-related market approach. He explains: "If a good is to be tradable, it should be divisible, with identifiable boundaries that can be used to apportion it among different owners" (Haddad, 2000, p. 24). The report sponsored by the World Bank (1997) agrees with Haddad and in its list of 9 elements needed for a successful market, number one is a definable product that can be measured and controlled (Simpson & Ringskog, 1997, p. 5).

A good definition of property rights in the context of natural resource management is provided by Hanna, et al., (1996). They write that different formats of property rights are the methods people use to control the use of the environment and their behavior toward others. These systems are the rules of the game which place different constraints that serve to influence human behavior, and their interaction with the environment (Hanna, et al., 1996, p. 1). These authors provide a good explanation of the interconnectedness of property rights, markets, and public goods, writing that there are two major principles of resource economics related to property rights: "1) Private property rights and markets allow for more efficient use of resources than does government ownership, and 2) private property systems and markets are chronic under-providers of public goods like environmental health" (Hanna, et al., 1996, p. 223).

b. Flexibility to Respond and Adapt to Change

An element that is also within the fabric of property rights (and discussed further on page 14) is the ability to adapt to changing conditions, flexibility is necessary. Hanna, et al. (1996), explained that adaptability to changing conditions is not possible without definable property rights (Hanna, et al., 1996, p. 5). The World Bank report also explains that rigidity reduces the effectiveness of the market. The water market and its laws must be able to evolve to changing situations (Simpson & Ringskog, 1997, p. 26).

Lastly, Griffin and Boader (1992) write that the centralization of water-related policies has led to inflexibility. They agree with economists who have emphasized the preference for a decentralized and continuous process of reallocation rather than a precise and permanent allocation at any one point in time (Griffin & Boader, Spring 1992, p. 268).

c. Management Techniques of Common Property

Another element for success that can serve to reduce externalities is managing water resources within a common property regime. A common property regime includes joint management of a resource by co-owners and should be adopted when individual behavior can result in costs upon others, or when resource use increases or grows. Though this type of governance is not easy, Hanna, et al. (1996), write that if the cost of degradation is higher than the governance, then the inconvenience of negotiating externalities must be accepted (Hanna, et al., 1996, pp. 231-232).

Hanna, et al. (1996), discuss outcomes of this management method and illustrate how well suited it is to water resource management. Common pool goods are difficult to supply and easy to deplete [such as water under the prior appropriation doctrine]. Common property regimes that include incentives are able to reduce the costs of enforcement, make protectors out of potential resource destroyers, and help keep resources from being parcelled out. Importantly, common property regimes will facilitate the internalization of externalities over a large resource system (Hanna, et al., 1996, pp. 227-228):

A common property regime will also assist in ensuring public goods are protected because it does aid in protecting the natural resource. As was cited earlier, the market's inability to consider social costs or public goods is a commonly heard argument against water entering the marketplace. While authors such as Hanna, et al. (1996), have claimed that property rights regimes can serve to efficiently manage natural resources, these same authors write that public goods are not well protected in these regimes (Hanna, et al., 1996, p. 227).

d. Public interest protections

During research for this project, there was not one other issue related to western water that had more written about it than public good protections and the public interest. The protection of the public good is of concern to many in relation to market-based policies, and is a large part of the debate as to whether to support market-based policies or to seek government oversight to ensure the public good is protected. The basis of the argument opposing a water market is that the marketplace is unable to place value upon public goods, and further, that there is no mechanism within the market in which public goods are able to be valued.

How the public is assured government oversight can (and will) protect the public good is due to the public trust doctrine, which is rooted upon ancient Roman law. This doctrine requires that the state provide additional protection than allowed by federal protections in order to protect the public good. Initially it was intended to protect navigable waters and tidelands; however, changes in society over the years have influenced changes in the courtrooms and the laws. In recent decades courts have added public interest issues such as fish and wildlife and open space protections in making judgments on water-related court cases (Ingram & Oggins, 1992, pp. 518-523). Increasingly, environmental values are coming under the protection of laws and courts, with many western states including instream flow protection in their water rights systems, and designating it a beneficial use (Ingram & Oggins, 1992, p. 526). See Appendix D for a listing of those states that this research revealed provides instream flow protections.

Ingram and Oggins (1992) cite Sax (1980) when explaining that established expectations of the community are tied to public trust. Sax (1980) explains that

the public trust will protect communities from the negative effects of rapid change which can occur due to water rights transfers. Sax (1980) writes: "The function of the public trust as a legal doctrine is to protect such public expectations against destabilizing changes just as we protect conventional private property from such changes" (Sax, J., 1980, cited in Ingram & Oggins, 1992, p. 530).

According to Ingram and Oggins (1992), the public trust doctrine has evolved and is becoming more prominent in policy development because of the need for it to be brought out and put to use. With public values changing, and courts increasingly siding with the sentiment of broader protections of the public interest, state legislatures and governments have followed suit and developed public interest statutes that mandate - to differing degrees - public interest reviews or public hearings to allow public input into proposed water uses such as reallocation or transfer. Appendix B, Examples of Public Welfare Factors in Western States' Statutes, illustrates some states' public welfare legislation, many factors of which specifically relate to water laws.

The "established expectations built around traditional and primarily agricultural water use" (Ingram & Oggins, 1992, p. 533) are reinforced by the results of a study conducted of two areas with similar characteristics. The research question was: "How do residents in two western water use communities respond toward water transfers and markets...?" (Kennan, et al., 1999, p. 281). Briefly stated, while the two communities held different attitudes toward water transfers, both agreed in their strong opposition to water marketing. Both of these communities held strong dependencies upon an agricultural base and one, Kern County of California, had been engaging in water transfers with beneficial results. The other community, Grand Valley of Colorado, had no experience with either transfers or water marketing. The results of the study were that both communities were strongly opposed to marketing and only Kern County supported water transfers as a means of allocating scarce water supplies (Kennan, et al., 1999, pp. 279-283).

The concerns of Grand Valley survey respondents over water transfers were the loss of water for future needs, and the fairness over how water is allocated for

out-of-region growth. The authors concluded that in general new market-based allocation schemes will likely face strong public opposition. They suggest further research and conclude that Kern County's support for water transfers could be due to the fact that the region's largest agri-producers are non-local, even multinational corporations, which may be influencing local sentiment due to their fiscal investment in the region, and also that Kern County produces 30 times the crop value of Grand Valley which strongly opposed both transfers and marketing. These authors conclude, as has other literature, that people's support or opposition of water markets and transfers are influenced by the social and economic characteristics of the area (Kennan, et al., 1999, pp. 282-284).

e. Engage in Continuous Learning Process

The results of the above study point to the need to develop frameworks that advance the learning process for policymakers. Just as public values, laws, doctrines, courts, and perceptions change and remain in flux, our search for the 'right' policy must continue. We have learned that flexibility is important. Also important is the willingness to go through the exhausting task of an ongoing learning process, which can be accomplished through the legislative process, negotiations, and adaptive management.

Larry Morandi of the National Conference of State Legislatures (1994) wrote that often the legislative process itself is as important, or even more so, than the content of legislation, because this is the manner in which diverse interests must come together to reach agreements (Morandi, 1994, p. v). Creative legislation can attempt to resolve controversial problems. Unlike court findings, statutes can be amended to either reflect more current or accurate sentiment or to find better solutions to the problem. The legislative process and the legislation itself both contribute to the learning process for all parties involved.

Whether legislation is the desired outcome, more investment is needed in the 'art' of negotiations. This will help address conflict and public perception, and the process itself will lend itself to learning.

Finding acceptable methods of water reallocation is the perfect venue for one of my favorite books, Kai Lee's Compass and Gyroscope: Integrating Science

and Politics for the Environment (1993). Lee makes three points: 1) We need to seek a better understanding between humans and nature; 2) we should treat economic uses of nature as experiments for learning better methods of use; and 3) we must better appreciate our relationships among all people. When all the interests come together with a focus, the result is politics, and while it is a learning process, it is also sometimes conflict. Lee warns, however, that conflict must be limited and bounded or it will destroy (Lee, 1993, p. 8). Laws and policies should not be considered 'set in stone,' but, rather, used as an adaptive management tool.

Lee (1993) also prefers informal dispute resolution processes over more formal arrangements. He believes that these processes, with diverse interests creating not an action plan, but simply the rules of the road, will lead to all parties learning which then leads to resolution. The participants are not to conclude negotiations, but develop ways to restructure the conflict so that learning among policymakers continues. Conflict is part of the adaptive management process and needs to be recognized as acceptable, even by politicians, so that even the disputing interests will come to the table (Lee, 1993, pp. 104-114).

Policymakers should agree that deriving economic benefit from the utilization of natural resources carries with it responsibility to conduct that activity in the most sustainable manner possible. Policies should remain flexible and incorporate the concept of adaptive management, with private and public managers understanding that there is a learning process in developing policy. Developing a learning process with all of the diverse interests together is important in reaching agreements. This process requires flexibility and creativity, and out of that creativity can come many answers in addressing the frequent conflict that comes with managing the prior appropriation doctrine, reallocating scarce resources, and protecting instream flows and habitat.

The next chapter details two such creative programs that have developed out of recent statutes on the reallocation of water in the West.

#### 4. Examples of Creative Policies

Actually, there are many creative policies being developed under the constraints of the prior appropriation doctrine. One of the ways some western states have responded to this doctrine is by adopting conservation laws which allow conserved, or salvaged, water to be put to a new use such as for transfer or for instream flows. The ability to capture the value of the water, such as through market transactions, provides incentive to conserve (Morandi, 1994, p. v).

Four states have developed conservation statutes, providing incentives to irrigators. These four states are California, Oregon, Montana and Idaho. Different states have taken different approaches. California and Oregon passed laws to allow vested rights of conserved water upon agency approval. Morandi (1994) writes that these states are now considering amending that requirement. Montana legislatively connected water salvage to instream flow leasing. Idaho developed a water bank system for short-term leases of excess water (Morandi, 1994, p. 3).

It is evident that good intentions do not assure success. In most states, according to Morandi (1994), few, if any, activities have occurred as a result of these new programs. I will briefly detail Oregon's experience, the obstacles, and the subsequent statutory amendments. Oregon remains historically high in interest to Washington due to its remarkable similarities in both physical and demographic characteristics. A more thorough examination of Oregon's recent conservation laws and policies is needed, and I will be conducting further research of Oregon's program upon completion of this applications project.

##### Oregon

Oregon passed legislation in 1987 to encourage and make it easier for irrigation districts and other users to conserve and reallocate water. This bill had two purposes: 1) to promote conservation, and 2) to allow that conserved water to be sold or leased to promote the highest and best use (Morandi, 1994, p. 7). One measure was to assign a priority date one minute after the original priority date which gave the conserved water higher value. This statute also required at least 25 percent of the conserved water be dedicated to maintaining instream flows. This

bill defined conservation to mean “reduction of the amount of water consumed or irretrievably lost” (Morandi, 1994, p. 7).

The 1987 statute was amended in 1993 to address several concerns. The definition of conservation was changed to mean “[t]he amount of water diverted to satisfy an existing beneficial use” (Morandi, 1994, p. 7). This change, however, could serve to adversely affect downstream rights holders by diminishing return flows, according to Morandi (1994, p. 7).

Oregon’s Water Resources Commission (WRC) proposed regulations in 1992 that would require both irrigation districts and municipal suppliers to develop comprehensive conservation plans. A plan would have to include conservation measures and a long-term water plan that includes a listing of sources including conserved water. Individual water users and small irrigation districts so strongly opposed the draft regulations that the WRC was forced to shelve these conservation plan requirements (Morandi, 1994, pp. 8-9).

As of the writing of Morandi’s report in 1994 no conservation plan or transfers had been approved under this statute. Several reasons for this are listed: 1) lack of water-use records; 2) uncertainty over the definition of ‘irretrievably lost’; 3) uncertainty over how much conserved water would be given to the state; and 4) inadequate public financing for conservation facilities (Morandi, 1994, p. 7).

### Montana

Montana’s reservation system is illustrative of changing public values. This system is the only method available in Montana to acquire in-stream rights for beneficial uses such as water quality, and fish and wildlife uses. These flows can be reserved for future use, with the appropriator able to either use it now or save the water for the future. In this system, the claimant has a priority date even if the water is being reserved (McNally & Matthews, 1995, p. 674).

Montana’s Legislature, in 1973, passed the 1973 Water Use Act as the result of increasing downstream pressures and the public goal of protecting in-stream flows. This Act: 1) recognized flows, recreation, and other uses as beneficial, and 2) provided a process for reserving water for future use. These two

elements are the construct of the state's reservation system (McNally & Matthews, 1995, pp. 674-676).

A reservation is only granted "if needed or if constraints restrict an applicant's ability to perfect a water permit. Need is established by showing a reasonable likelihood that future in-state or out-of-state competing water uses would consume, degrade, or otherwise affect available water" (McNally & Matthews, 1995, p. 676). In addition, to establish a reservation the public interest must also be considered in the beneficial use. Public interest criteria include whether benefits exceed the costs, whether reasonable alternatives exist, whether failure to reserve the water will result in an irretrievable loss of a natural resource, and whether significant adverse impacts will occur. For this reservation system only public entities are qualified applicants (McNally & Matthews, 1995, p. 677).

Reservations are conditioned and subject to periodic review to ensure objectives are being met. The water right can be modified or even revoked if objectives are not met. For approval of reallocation an applicant must show current instream flow is not required for its stated purpose and the need for reallocation outweighs the need by the original reservant. A barrier to active utilization of this statute is its complex and possibly burdensome requirements, which includes the development of an Environmental Impact Statement (McNally & Matthews, 1995, pp. 678-679).

McNally and Matthews (1995) feel that this statute may be unconstitutional by allowing the set-aside of water for future economic uses when those outside of the state, downstream, can show a current demand (McNally & Matthews, 1995, p. 688). The authors believe this reservation statute has two critical problems. The first is the ongoing ability to challenge reserved rights which serves to reduce certainty [and confidence], and secondly, the need to resolve sovereignty issues with other governments and tribes. It is likely the reservation statute will continue, but will evolve just as public interests, technologies, and the economic base will evolve.

Larry Morandi of the National Conference of State Legislatures (1994) is not as critical of Montana's reservation statute. He reminds us that just as in

California and Oregon, no water conservation took place in Montana until a water-leasing statute provided incentives. For example, these statutes have allowed an irrigation district to change from flood irrigation to sprinkler irrigation within an enclosed gravity pipeline. Some of the salvaged water is leased to the department for \$7,500 a year to maintain base flows for a cutthroat spawning ground. Another lease specifies that the district shut down its pipeline for a 48 to 60 hour period once a year to help flush newly hatched trout down the river (Morandi, 1994, p. 13).

Due to limited space and time it is not possible to detail each of the state's efforts in developing creative solutions to the challenge of reallocation of the West's scarce water resources. The 'Data Analysis' chapter of this project provides state-specific information as it relates to main points in this literature review. Specifically, the outcome of this research, detailed in the following chapter provides state-specific information on the various definitions describing these transactions; influences upon markets, such as externalities; some necessary elements of a market; public good protections; and emerging issues of the respective state.

## 5. Policy Considerations

The intent of this research project was to learn more about water markets, transfers, and the activities of other western states. This research focused on 'Influences Upon Markets' and 'Necessary Elements of a Market.' The critical issues of importance to policymakers are the impacts of engaging in markets or transfers which are externalities, and learning of important factors of a market such as property rights and public interest protections. This chapter provides some recommendations on these elements and then suggests ways to improve the transfer process, how to design a water market, and lastly, suggested elements for all water laws.

### a. Externalities

Bates, et al. (1993), write that inadequate attention has been devoted to the potential adverse effects of transfers. They write: "If these difficulties could be resolved, treating water rights as permanent property rights could be advantageous,

promoting reallocation of water by making rights to its use saleable, leasable, and otherwise transferable to more socially desirable uses" (Bates, et al., 1993, p. 157).

In a discussion paper published by the Western States Water Council, Ricky Torrey (1995) recommends methods to resolve negative externalities, some of which have been implemented by western states.

- Be aware of the effects transfers can have on instream values, groundwater recharge, and areas of origin.
- Develop methods to offset these effects, such as establishing a mitigation fund with revenue from transfer fees, and ensure all interests are included in decisionmaking, such as tribes and other ethnic minorities, rural communities, and fish and wildlife interests.
- Eliminate the appurtenance requirements for agricultural land transfers (Torrey, 1995, pp. 41-42).

b. Property Rights Definitions

For developing policy to ensure property rights are well-defined, Torrey (1995) recommends keeping in mind the four characteristics of property rights: "ownership, complete specification of rights, transferability, and enforcement" (Torrey, 1995, p. 18). Haddad (2000) writes that the most important characteristic of a water market is private property rights. He cites A.M. Honore's (1961) elements of ownership, such as the right to manage and use, the right to security, the power of transmissibility, but most important is the right to the capital, which provides the mechanism to gain value from water rights (Honore, A.M., 1961, pp. 107-147, cited in Haddad, 2000, pp. 22-23).

c. Public Interest Protections

The discussion of public interest protections is detailed in the 'Data Analysis' chapter. See also Appendix A, Public Welfare Factors Recommended for Legislation, by Susanne Hoffman-Dooley (1996).

Hoffman-Dooley explains there are several processes to utilize when developing public interest protection processes, which are: 1) defining public welfare at the Regional Water Planning level; 2) defining it via the state agency's

rulemaking process; or 3) defining it legislatively through lists of public welfare factors or through preferences of use [which many western states have done]. Hoffman-Dooley writes that this last method is by far the best, but warns because legislators tend not to be public interest experts, citizens should have ample opportunity for input (Hoffman-Dooley, 1996, pp. 120-124).

Externalities, property rights definitions, and public interest protections have repeatedly been expressed as the most important elements of a water market and important to successful rights transfers. Following are recommendations for improving the transfer process, how to design a water market, and lastly, the elements that all water laws should contain.

#### d. Improving the Transfer Process

To improve the water rights transfer process and its effects, Torrey (1995) recommends the following:

- Revise the statutory duty of water for consumptive uses.
- Allow the transfer of conserved or salvaged water.
- Revise those laws that inhibit transfers, such as district boundary limits.
- Find ways to reduce transaction costs for transfers.

#### e. Designing a Water Market

Brent Haddad (2000) provides a comprehensive list of recommendations for designing a water market, some of which are:

- Design regional markets around natural and engineered watersheds.
- Hold all parties of a proposed transfer accountable to other interested parties.
- Require a land plan for each long-term, rural to urban transfer.
- Manage the market as if it were a program requiring active management and quantitative goals (Haddad, 2000, p. 142).

Thomas Graff of the Environmental Defense Fund, an advocate of free market environmentalism for water policy, provides recommendations for three areas of reform.

- Eliminate legal and institutional barriers to voluntary sales and purchases of water rights.
- Public investment must go toward low-cost, cost-effective projects only.
- Pricing must reflect water's true cost (Anderson & Snyder, 1997, p. 17).

f. Elements for all Water Laws

In developing water law, Bates et al. (1993), urge policymakers to embrace three principles that together encompass “a coherent and lasting basis for water policy” (Bates, et al., 1993, p. 179):

- The principle of conservation.
- The principle of equity.
- The principle of ecology (Bates, et al., 1993, pp. 181-190).

Bates, et al. (1993), write that today the people of the West understand more clearly the consequences of western water law and its impacts. The sustainability of our communities is dependent upon the commitment of conservation, fairness and ecology (Bates, et al., 1993, pp. 201-202).

## DATA ANALYSIS OF WESTERN STATES' SURVEY

This chapter details the results of research conducted on those western states that employ the prior appropriation doctrine, excepting Washington State. Ten survey questions were asked of the 17 states West of the 100th Meridian. In hindsight, Washington State should have also been surveyed to better examine our state's own policies.

Appendix C lists the 10 survey questions in their entirety. All of the prior appropriation doctrine states were requested to complete the survey, including the state of Alaska. I chose to survey Alaska, though it is neither arid nor is its water resources scarce, to see if policies reflected the absence of these stressors.

The states requested to participate in this research included: Alaska, Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, and Wyoming. Half of these states completed the survey and others provided information such as statutes and reports. Only one state declined to participate at all. The valuable staff time spent responding to these questions has been greatly appreciated. Certainly without these responses there would be no comparison upon which to explore the various parameters of water marketing and transfers and the impacts of these transactions.

Ideally, this research would continue beyond this project, and include a quantitative analysis of the fiscal impacts, negative and positive, that transfers and markets have made upon communities in the West. This chapter may provide a good framework from which to begin that research.

When this research was begun, I assumed there was a vast difference between water marketing and rights transfers. I have learned this to not be true as transfers, commonly exchanged between willing buyers and sellers, may be only one policy away from a water market. The differences can be only in an exception or prohibition, such as allowing only the state to purchase water rights to maintain instream flows, and excluding all other parties.

To differentiate between water markets and transfers, I asked each state if it had a formal marketing program administered by the state, or if it only

administered water rights transfers. The appropriate statute citations were requested and each state's definition of transfer was identified, either by the respondent or by me. As water rights are considered a property through the prior appropriation doctrine, the states were asked if these transactions were taxed, and if only willing sellers and willing buyers could participate. It was asked whether these transactions had promoted economic development or if there were examples where the state's environmental quality had been enhanced. Potential marketing policies would also need to include addressing any negative impacts, so it was asked if the state had any instances where a transaction had caused these negative impacts, or externalities.

What should be important to policymakers, as discussed earlier, is public trust and protecting the public good. Three related questions were asked: 1) If public interest was protected in statute; 2) if there was a public involvement process in statute; and 3) if there were an example where public involvement had affected a proposal or decision. (Susan Hoffman-Dooley's (1996) recommendations for legislation on public welfare is at Appendix A. Appendix B identifies public welfare factors that have been included in various states' statutes.)

Lastly, the managers were asked to identify emerging issues in their state. The responses to this question can serve to substantiate certain laws and policies. This is also a question of which the responses must continuously be updated. Unfortunately, as only 8 of the 17 states completed the survey, this important information is somewhat lacking.

Appendix D breaks down the 10 questions into two parts, beginning with the responses to the first five questions of the survey, including:

1. Whether there is a formal state marketing program in place or only a framework for water rights transfers;
2. The statutory definition of transfer (or change);
3. Whether only a willing seller and buyer can conduct a transaction;
4. Whether the transaction is taxed; and
5. Whether transactions have promoted economic development or if any negative fiscal impacts have been experienced.

## 1. Water Markets or Transfers and Their Activities

Questions 1 through 3 of the survey were intended to learn the specifics of each state's legislation and activities such as exchanges between owners or changes in types of use (e.g., changing a water right from agricultural use to municipal use). The state was asked whether it has a formal water marketing program, asked to provide the relevant statute citations, and lastly, asked to provide definitions of the terms transfer or changes.

My research found only five states administering a water marketing program. They are California, Idaho (through its Water Supply Bank), Kansas, Montana, and Texas (through its Water Bank). Of these states with a formal program, Kansas and Montana's water marketing is solely related to marketing water from federal reservoirs, not water rights. Of these two, Montana's respondent reported that only 6,000 acre feet of water had been marketed since the program's creation in 1985.

Virtually all 18 western states (including Washington) allow water rights transfers; no state prohibits transfers by law. However, most states responded that they are experiencing only a few transfers and almost all of these are small in size. Of the 17 surveyed states allowing rights transfers (or changes as one state calls them), at least 14 of the transfer programs are administered by a state agency. Colorado and Wyoming administer transfers by quasi-judicial bodies, and South Dakota's transfers are approved by an appointed citizen board.

Several of the states where only transfers take place responded that there is not much activity and that the transfers are small in quantity. However, Nebraska has experienced at least 700 transfers since 1983, and Nevada receives between 800 and 1200 transfer applications a year, with 70 percent of those representing a change in use. These two states are the exception in that the general response was that there are not many transfers occurring and most transfers are small in size, with at least two respondents advising me that only four or five transfers occur each year.

In response to the minimal activity of both markets and transfers, my analysis suggests a correlation with expectations, such as illustrated by the study

results of Kern County, California and Grand Valley, Colorado residents. The researchers of this study found that for those who had experienced a positive impact, such as in Kern County where economic development benefits resulted from transfers, these residents responded that they supported transfers. However, Grand Valley residents had no experience with transfers in their community and the survey revealed they did not support transfers. Lastly, neither of these communities had experienced water markets and neither community supported water markets (Kennan, et al., 1999, pp. 279-283).

The minimal transfer activity could suggest the theory that people's support of or opposition to a policy is interwoven with their socioeconomic context, such as what economic base the community has historically been dependent upon or whether the region is economically diverse.

One key finding of this survey is in that only three states out of 17 are engaged in a formal water rights marketing program, which suggests a current lack of need for such policies. Certainly, if the public were demanding a decentralized process to facilitate the reallocation of water, these programs would begin to appear in more states. Conversely, lack of political will to move forward in what would be a controversial policy could also be a contributor.

Actually, I believe the last scenario not to be true, which is not to suggest that proposing a water market program would not be controversial. Currently, all of the 17 states researched are engaged in transfers to some degree. Some states only allow transfer of water rights within basins, others prohibit transfers outside of an irrigation district, others restrict the ability to change the type of use represented by the water right. I have no survey data to substantiate this sentiment, but feel that marketing is likely occurring in most states, with the exchanges between willing sellers and willing buyers simply not documented.

Two questions to consider: 1) If informal markets are currently in place, with transactions occurring between buyers and sellers, are there advantages to a formal state program? 2) If a program were developed, what and how could the state provide incentives to engage in a water market program?

## 2. Buyers and Sellers Exchanging Property

Question 4 asked if transactions could only occur between buyer and seller, and secondly, if these transactions were taxed. The purpose of this first question was to learn, primarily, if only willing participants were exchanging water rights. The precept of a functioning marketplace is that there are willing sellers and buyers present. This exclusive characteristic would encourage confidence in the market, and reinforce and satisfy expectations of the participants. Allowing exceptions to this exclusivity would, logically, undermine the confidence and positive influence that willing buyers and sellers create and, in turn, provide disincentives for potential participants considering entering the marketplace. Indeed, during this research I came across the exception -- several states' statutes specifically allow the taking of water rights for the benefit of the state.

Of those states responding, three answered 'yes' that transactions must occur between a willing seller and willing buyer, and three responded that they were not sure of the requirement. In hindsight, I believe the question might not have been framed correctly to elicit my intended response. I had hoped to determine whether a transaction could occur under any circumstances other than willing parties, such as through the use of eminent domain by the state. Due to shortening time, I did not search for the ability to use eminent domain in these three states who answered yes, which might have suggested by their affirmative response that the question was misunderstood.

The question of whether only willing sellers and buyers can engage in transactions was intended to examine (again) expectations by participants. There is a need for the policy framework to facilitate confidence in the marketplace. The importance of expectations by potential participants in the marketplace cannot be overstated. That several western states, including Washington, allow a water right to be taken or revoked through eminent domain, demands a review of state statutes on water law as to their applicability and current relevance. I question whether allowing citizens (or even agencies) to have the authority to take a water right can promote confidence among potential participants of a market. Conversely, this taking authority may be the mechanism in policy to protect the state's resources

from being wasted or degraded if rights owners use the water irresponsibly or disregard its finite nature.

The second part of this survey question asked whether these transactions were taxed. The prior appropriation doctrine deems water rights as property, and in every western state water rights are considered property, albeit some states have not clearly defined this characteristic. Four of the eight responding states do not tax these transactions, two respondents did not know whether taxes were charged, and the last two said there were no state taxes, but local and county taxes could be levied if that jurisdiction elected to do so.

For most states, there is no market program so no framework exists in which to collect taxes for transactions. Yet water rights are considered a property - a commodity that holds value - and taxes are levied when other types of property having value are exchanged between willing buyers and sellers.

Repeatedly, experts in the field of western water law and advocates of water markets stress the importance of well-defined and protected property rights to ensure a successful water market. I present this thought: The taxation of a transaction would reinforce, through a governmental authority, the recognition of property rights. If taxation were to occur, property rights would receive formal recognition through the process of the valuation of the property (the water right), the taxation of the property, and the transfer transaction itself. The revenue from the tax could be used exclusively to fund transfer-related costs. At least two authors cited earlier have suggested these revenues could offset the impacts to the area-of-origin from large-scale transfers. A tax could be apportioned according to size of the transfer and distance moved. Transferring out of the basin could carry a larger fee than those transfers within the basin of origin.

### 3. Positive or Negative Externalities

Next, the survey questionnaire asked if the state's activities (whether marketing or transfers) had promoted economic development and if there were instances where an activity had caused a negative fiscal impact.

For those that advocate water markets, economic development provides a most advantageous incentive. It is possible that some area-of-origin communities where large-scale transfers have taken place (especially rural or distressed communities) can enjoy a slight economic revival through the infusion of cash into their local economy. On the other hand, much has been written, as discussed earlier, on the negative externalities that can be created by moving or transferring rights rights from one region to another.

When asked whether water marketing or transfers had promoted economic development or had created a negative fiscal impact, most indicated that due to the minimal transfer activity occurring they had observed no real impacts. Three managers answered that economic development was promoted through the process of rights being exchanged. One explained that rights are increasing in value as surface water becomes fully appropriated, and this is creating economic development as more value is exchanged with the transfers. One respondent cited a specific example of positive impacts by a dismantled pulp mill that had sold its rights to another industry.

No respondent answered that any negative fiscal impacts had occurred due to transfers; the response was either ‘no,’ or not answered. This response, like prior answers, could relate to the general consensus that little activity is occurring and because the transfers taking place are for the most part small in size there have been no negative impacts.

However, municipalities across the West have been buying agricultural water rights. Secondary effects and other externalities are well documented in the resources I have reviewed, such as the experiences of rural communities in Arizona after its Groundwater Management Act was passed in 1980 that required cities assure a 100-year water supply for their residents.

The lack of response to this question by water managers may reflect the lack of information-sharing among entities, especially agencies. Each agency has its own specific goals and missions and must illustrate it can meet these goals. Information gathered by one agency is often treated as proprietary, and not freely shared among other entities. The cause for this varies, from the growing need for

agencies to compete against one another for funds and other related support, to agency employees being influenced by incentives other than optimizing water resource management.

Though the few large transfers that have taken place might or might not have negative fiscal impacts, if impacts occur, it is reasonably certain that the local elected official will be advised of these impacts by his or her constituents. The call would then go out that this region has an urgent need for rural economic development. Precipitated by agency culture, the primary cause of this negative impact to the community might not ever be identified.

At this writing, the eventuality of increasingly larger and more frequent transfers raises concern for the need of a mechanism to identify the source or cause of negative fiscal impact (or secondary effects) to a community. One prospect would be for the two state agencies responsible for water rights administration and for community development to collaborate in developing a follow-up community survey for the area-of-origin residents and businesses, in order to assess impacts at one or more times after the large-scale transfer. Both agencies must be involved to ensure the raw data is gathered and analyzed at the same informational level in a compatible format. This process will also assure that the appropriate policymakers receive identical information.

For the analysis of this survey, I have assumed only that the lack of negative fiscal impacts reported by respondents reflects the minimal number of transfers presently taking place.

The second half of Appendix D details the responses to the final five questions which asked if transfers were helping to enhance environmental quality, if public good is protected in statute or if public trust doctrine is specified. The states were asked if a public involvement process was detailed in statute or policy, and if the state could provide an example when public involvement had influenced a decision over a transfer. Lastly, the states were asked to identify emerging issues that could conflict with water marketing or transfers, or more generally, water resource management.

#### 4. Is Environmental Quality Enhanced?

Each state was asked if it could provide an example of a transaction that had helped improve or enhance environmental quality, or, if in a more general sense, transactions were serving to enhance environmental quality.

A common complaint regarding water markets and transfers is the impact that diverting water can have on the environment. Also, appropriation arrangements are long established within a basin, with downstream appropriators dependent upon the return flows. When a transfer takes place, the return flows are often altered which then effects all of the downstream users. The concern widely repeated is the potential impact of transfers upon instream flows that are needed to protect fish and salmon. I had assumed, however, that survey responses would also cover other issues, such as the major issue of the environmental impact of fallowing large parcels of agricultural land.

A manager did mention his state's growing concern over the loss of green space and that the legislature was working to slow down the conversion process. Though most transfers occurring are rural to urban transfers, the lack of discussion of fallowing land (which precipitates erosion if not mitigated by cover crops) could relate to the extent of the respective state's dependence upon agriculture. Those western states that rely on cattle ranching and grazing, and depend upon the leasing of federal lands, would not have the critical concerns about erosion and loss of green space of the more agriculturally-dependent states.

Every respondent to this question associated 'environmental quality' with instream flow needs and answered accordingly. Some provided information on the state's statutory instream protections, others advised of the state's ability to buy instream rights.

In reviewing the statutes, I identified most of the remaining states where laws are in place to protect instream flows. If there was no response with an example of improving environmental quality for that state, I then indicated whether my research found that instream flows were protected in that state. In at least 8 of the 17 states, water rights can be either bought, leased, or gifted by anyone, or owned only by the state, all with the intent to maintain adequate flows

for fish, salmon, and habitat. However, research of other authors has indicated that more than 8 states have instream flow protections, which could be correct as I lacked both time and a consistent methodology to search statutes for every state's response to the question. The state of Oklahoma's respondent did tell me that she saw Oklahoma's lack of instream flow protection as an emerging issue for the state. This was the only state that had advised me they had no instream protections in place.

A few respondents indicated that no real difference to environmental quality had been observed since transfer activities had begun. With an approximate 50 percent response rate, and some responding with 'not sure' or 'hard to say' to this question, again, it is possible that the responses are indicative of the generally few transfers taking place. As most transfers have been small in size, impacts to the environment, whether they enhance or degrade, would be difficult to assess or even identify.

The discussion of instream flow needs is a difficult one to broadly apply to all of the western states. Some states have so fully developed their water (via federal projects) that there are no fish or salmon now present in that state. Headwater states with federal water development projects have specific statutes that respond to downstream states and their respective instream flow needs. If there are no fish or salmon in the state, maintaining instream flows would have no significance. (Of course, wildlife habitat is important and is supported by adequate instream flows.) When reviewing the survey responses in Appendix D, the absence of identifying instream flow protection for a particular state may mean that related statutes do not exist because they are not necessary.

## 5. Is Public Interest Protected?

The next four questions of the survey were intended to learn the extent to which public interest is protected. Question 7(a) asked whether the public good was protected in statute or policy. Question 7(b) asked if the public trust doctrine was specifically identified in statute or policy. Question 8 asked the states if their statutes or program specified a public involvement process. Lastly, Question 9

asked if each state could provide an example where public involvement had affected a proposal or decision.

I was personally interested in learning the various levels of public interest protections provided by the western states. Initially, I had assumed that many western states were lacking in these protections due to the West's strong attitude of property rights protections and individualism, mixed in with some anti-government sentiment. This assumption was incorrect, in that while the level of statutory protection varies, nearly all western states protect the public good in statute. Of those states that did not respond, I researched the statutes to learn that 15 of the 17 states mandate protections in statutes.

Additionally, most of the public interest protections are specifically related to transfer activities. At least 13 of the 15 states included these protections in their water law chapter and required some type of review or assessment to ensure a proposed transfer does not conflict with the public interest.

For the second part of Question 7, my research did not find one state that included the public trust doctrine in the text of its statutes. This omission is not because it is not employed, however, but because it is found elsewhere. Discourse and current public interest define the public trust doctrine, which is then reflected through the judicial system. When an individual or an organization is compelled to oppose an action (or lack of action) by the state, a lawsuit may be filed. The public trust doctrine is not found in statute because it is raised in court cases, and the doctrine is presented to the court for its interpretation and subsequent ruling. After which the state agency, or other defendant (if it loses), then amends its programs and policies to adjust to the new judicial interpretation of the public trust doctrine. I do not anticipate that the public trust doctrine will ever find its way into statute, because it is not needed - it is employed elsewhere.

In response to Question 8, I was surprised at the number of states that define a public involvement process for water rights decisions, even in statute. At least 11 states include in statute a public involvement process that is specific to the relation of water rights and applications for changes and transfers.

As a frequent member of the interested public, I have learned that many problems arise when a public involvement process is not defined. The process itself is often already contentious, but without rules and parameters, confusion can create animosity. Interested parties feel excluded, which then can turn into a perceived conspiracy; ‘the decision was made before the hearing began.’

The public involvement process varies throughout the states, but most states are broad in their inclusion of interested parties. My research revealed that of the 11 states identifying a process in statute, only two placed restrictions on the protesters, allowing only an ‘affected’ person to protest a proposal or decision.

The final question regarding public good, Question 9, asked whether the state could provide an example of when public involvement had influenced or changed a decision on a proposal.

There were very few responses to this question, possibly because there simply were no examples. The two specific examples provided, where public involvement likely affected the outcome, could arguably both be related to protection of the public good. One of the two proposals has not yet been decided; however, the respondent indicated that fervent opposition could have an effect on the proposal’s success.

One application was denied due to public opposition to a federal appropriation application to serve a nuclear waste storage facility. The manager responded that so much protest was generated, legislation that related to the proposal was written and passed. The second example is a current application to pipe groundwater from the site of a former mine operation to a large city in Texas. There has been much public protest over the proposal, and it is still pending.

As water rights transfers are increasingly employed to manage scarce water resources, the number of examples, such as those above which can be perceived as counter to the public interest, will increase. This research finds that most western states should be prepared with the necessary tools to manage and protect the public interest. However, a question to consider: How well are these tools being used?

## 6. Emerging Issues of Challenge

The final question of the survey, Question 10, asked the state to identify emerging issues that could affect water markets or transfers, or could conflict with the broad mission of water resource management in the state.

This question was originally intended to help locate states with issues similar to those in Washington, such as working under the constraints of the federal Endangered Species Act (ESA). I did receive 11 responses to Question 10. Nebraska indicated it was exploring the prospect of water marketing for both surface and groundwater, attributed to the over-appropriation of several basins in the state. Nebraska has similar constraints to those in Washington. It was the only state to mention the impacts that the ESA imposes on water resource management.

Of the 11 responses, five indicated that scarce water resources, due to surface water being fully appropriated, is of great importance. Four states responded that transfers will gain in importance in the future. Alaska responded that the exportation of bulk water was an emerging issue, with two pending applications to export large volumes of water. (This issue points to the difference between Alaska and the other western states. In fact, Alaska will likely never have the population and environmental stressors most other states now experience; exporting bulk water might provide the mechanism to develop a water market in Alaska.) Several explained that the state's emerging issues are related to policy. For example, until recently, Nevada's statutes regarding water rights ownership and rights changes were very unclear, leading to omissions and inaccuracies in determining who owned what water rights. Oklahoma cited the lack of protection of instream flows in the state. Utah saw the emerging issues as the policies that relate to the validity of the right and the value of water depletion, and the need for these to be accurately assessed.

The respondents to this survey see reallocation policies becoming increasingly important. The overall message in the various states' responses is that the states must now look at creative ways to manage their fully appropriated waters. Several states are now exploring the possibility of employing transfers, markets, water banking, and water storage to manage the reallocation of their waters.

## CONCLUSION

### A New Era

I have learned through this research project that a single word or phrase can make a dramatic difference on the effect of a message. For at least one hundred years we have allocated the West's waters; gradually apportioning out the streams and rivers through water rights. But that era is coming to a close as most western states can now only reallocate water -- nearly all of the surface waters across the West are fully allocated. When this knowledge is contemplated in conjunction with growing populations, growing industries, and growing waste, it gives one pause to know we now must replace the word 'allocate' with 'reallocate.'

This new era brings with it an urgency to the importance of social context within water policies. If we are all now competing for the same resource, who will emerge as the winners and losers? How are public good protections incorporated with the reallocation of water resources? Water marketing can provide answers by influencing consumption to more closely relate to its true cost, and by allowing water to find its highest valued use. Economic development can be a positive byproduct of a water market, but not all emerge winners in a marketplace. Making the most equitable decisions for the distribution and management of resources is a basic premise of civic protection, for which we rely upon our government.

### Old Assumptions

This applications project has been a learning process. The opportunity to begin the research again with the knowledge I now have would be even more valuable. To be further in the learning process would mean not only different survey questions, but also different assumptions.

When I began this project, I assumed I would find large gaps in states' public interest policies. This belief was based on my understanding of the West's individualism, including the strong sentiment of property rights protections mixed with some anti-government sentiment. However, I learned that this was an assumption wholly inaccurate. Results of this research validate the position of

several authors who write that laws and policies of the day reflect the current priorities and values of society, in that most states protect the public interest in statute. Determining whether these statutes are being utilized has not been established, however. Another lesson learned from this applications project is that when policy is crafted, policymakers must use socioeconomic context as a guideline, as this is the context upon which society evaluates policy.

#### Negative Externalities

Water policies should be assessed for their impact on citizens and communities. This research has revealed that some policies developed to work within the constraints of the prior appropriation doctrine have created negative externalities, including secondary effects. While the transfer activity occurring in the West is minimal, there are large-scale transactions taking place, transferring water rights from an agricultural area to an urban area. It has become clear that an important need is to assess the negative impacts of these transfers. Due to the minimal transfer activity, a quantitative analysis would be difficult, but developing further case studies is justified. Washington State, and other western states, should consider supporting further analysis of negative externalities, such as secondary effects and return flow effects, as well as the development of mitigation methods for area-of-origin communities.

If negative externalities are recognized and mitigated, then the state will be better prepared for a water market. The confidence of potential partners will be established, and the expectations of communities will be satisfied through the resolution of externalities in policies and statutes.

#### Elements of a Water Market

This research has revealed critical elements of a successful water market. Most important is the need for clarity of property rights and public good protections. The review of the 17 states' statutes reveals that nearly all states in the West protect the public interest as it relates to water rights transfers. The framework appears to be in place for public interest protections. This research did

not include, however, determining the extent of each state's designation of water rights as property. This designation, and then protections and clarity of the property right, are repeatedly stated as necessary for a successful water market.

There is much more analysis and research necessary to prepare for a market, to ensure that equity is present in the marketplace and that the freedom of the market does not precipitate negative externalities from which no mitigation measures exist. The barrier to further analysis is that very little marketing is occurring in which successful policies may be assessed. Colorado with a totally free market, and southern Texas where river authorities market rights, are both actively marketing with very little government oversight. Consequently, it is likely there is little formal assessment of these markets' successes or impacts.

### The Principle of Sustainability

This research revealed only minimal transfer activity in the West. But, many of the rural communities now sought after for large-scale transfers have already suffered economic downturns due to changing economies. In the West, many of the same regions that grow large-scale crop production are also dependent upon timber or mineral extraction. These communities do not have the capacity to withstand continued loss of resources. This justifies the need for water policies that endorse the principle of sustainability, both environmentally and economically.

### Preparing for a Water Market

Without market activity, how can more research and studies be accomplished? As I wrote earlier, the lack of formal water marketing may represent the lack of its need. Markets aside, there are a sufficient number of issues to be resolved before Washington is prepared to fully engage in water rights transfers:

- Mitigation measures for externalities must be developed.
- Determining who can be participants, such as allowing only willing sellers and buyers to participate and prohibiting the use of eminent domain.

- Ensuring a water market or a rights transfer program possesses the ability to be flexible as conditions change, such as the behavior of consumers.
- Protections of participants and interested parties must be in place, through property rights and public interest protections.

### Answering the Thesis Question

There are two distinct responses to the thesis question: ‘Water marketing for Washington: Are there lessons learned from other western states that can educate this debate?’

1) The results of this research revealed too little activity occurring to identify specific policies that Washington may choose to adopt. Until water markets become more broadly developed and more experience is gained, little research on water markets are available to analyze. However, an analysis of creative policies that respond to the prior appropriation doctrine’s negative characteristics, such as Oregon’s conservation statutes, would have value to Washington’s policymakers.

2) Negative impacts of large-scale transfers that have occurred in the West are well documented. Policymakers need to become fully aware and educated on mitigating the negative externalities created by transfers.

There are positive elements of water markets that can benefit resource management decisions. But government involvement is undoubtedly necessary. Without it, both the public good and area-of-origin communities are unprotected. The remaining policy question that emerges from this applications project is: What is the appropriate balance of a market system and government involvement?

### Further Examination Necessary

My primary goal for this applications project is to assist Washington’s policymakers in providing information on those western states managing water resources under the prior appropriation doctrine. As is common, I had grand ideas

for the many important subjects to be explored in this project, but due to time constraints, important subjects have not been provided the discussion they warrant, and others have not been discussed at all. Given the time, this thesis would continue by further exploration and discussion of: 1) common pool management schemes; 2) the role that the Endangered Species Act will play in water resource management; and 3) identifying important court rulings that will affect future water rights decisions.

Appendix E, Questions for Further Examination (pp. 56-58), provides a listing of remaining issues of importance that cannot be detailed within this applications project due to lack of time. These policy questions arose during the course of this research project. Though they are not discussed in detail, these issues are not any less important, and warrant further analysis by legislators and other policymakers.

## APPENDICES

## Appendix A

### Public Welfare Factors Recommended for Legislation

---

The benefit to the applicant resulting from the proposed appropriation.

The effect of the economic activity resulting from the proposed appropriation, including the effects on local communities and traditional economies.

The effect on fish and game resources.

The effect on recreation and scenic beauty.

The effect the proposed appropriation would have on other uses, whether the proposed appropriation would result in loss of alternative uses, and which of the uses would be the highest desirable use.

The intent and ability of the applicant to complete the appropriation.

The effect on public health.

The effects on water quality.

The effect on the goal of conservation of water.

Local public interest as defined by regional land use planning and zoning boards and public welfare as defined in regional water plans.

---

Note: The sole source of this text is "Determining What is in the Public Welfare in Water Appropriations and Transfers," by S. Hoffman-Dooley, 1996, Natural Resources Journal, Vol. 36, No. p. 126.

## Appendix B

### Examples of Public Welfare Factors in Western States' Statutes

---

Alaska: Harm to other persons; losses of alternative uses; public health(1).

Arizona: Groundwater recharge(1)(2).

California: Recreation; preservation and enhancement of fish & wildlife(1); preservation of public trust lands and water to serve for scientific study; open space; fish & wildlife habitat; and scenic resources(2).

Colorado: Instream flow(2).

Idaho: Aquatic life; aesthetic beauty; water quality; assuring minimum instream flows; discouraging waste & encouraging conservation(1)(2).

Nebraska: Instream flow(1).

New Mexico: Health & safety; recreational, aesthetic, environmental, and economic interests(2).

Oregon: State water plan(2); and flood control(1)(2).

Washington: Natural resources; and public health(1)(2).

---

Note: The source of the text concluded with a (1) is "Determining What is in the Public Welfare in Water Appropriations and Transfers," by S. Hoffman-Dooley, 1996, Natural Resources Journal, Vol. 36, No. 1, p. 113. The source of the text listed with a (2) is "Implementing the Public Welfare Requirement in New Mexico's Water Code," by C. Bokum, 1996, Natural Resources Journal, Vol. 36, No. 4, p. 706.

## Appendix C

### Survey Questions Submitted to Water Agency Managers

1. Describe how the water marketing or transfer program is administered. (e.g., by a state agency, citizen board, judicial entity, etc.)

---
2. Identify unique legislation or policies created to administer the program.

---
3. How is water marketing or transfers defined in your state?

---
4. Does your program require transactions only occur between a seller and buyer? Are these transactions taxed? (e.g., using a sales excise tax)

---
5. Has water marketing in your state promoted economic development? Conversely, have there been negative fiscal impacts that can be attributed to water marketing?

---
6. Has water marketing served to improve or enhance your state's environmental quality? (e.g., fish & salmon habitat, instream flows, water quality, wildlife & recreation)

---
7. Is public good/public trust protected in your policies? Is the Public Trust Doctrine specifically identified in statute or program policy?

---
8. Is a public involvement process included in the program (or statute)?

---
9. Can you provide a specific example of how public involvement has influenced a decision on a transaction?

---
10. What are emerging issues in your state that relate to water markets or transfers, or that may conflict with the state's program and its mission?

---

**Appendix D Western States' Responses to Survey (#'s 1-5)**

	#1-Is State Marketing, or #2-Relevant Transfers?	#2-Relevant Statutes	#3-Definitions	#4a-Willing seller/buyer? #4b-Taxed?	#5a-Econ Dvlpm't? #5b-Neg. impacts
Alaska	No state marketing program, but not prohibited. Transfers administered by state agency (DNR), little activity. *Anyone may reserve water for instream needs (AS 46.15.145).	Alaska Statutes (AS) 46.15, Water Use Act (1999).	Definition is in Rules. *Transfer granted 1 year, if no protest it becomes permanent. Transfer: changes in point of withdrawal, diversion, nature of use, place of use, or withdrawal (Rules 11.030.0930).	a) Not sure; b) No state tax, although local sales tax may apply.	Minimal activity, most sales are municipalities buying existing water systems. One purchase of pulp mill rights may result in econ dvlpm't. No negative impacts.
Arizona	No state marketing program. Minimal transfers. *For transfers outside basin, all affected authorities must approve. Administered by state agency.	Arizona Revised Statutes (ARS) Chapters 45 & 46 (1980).	No specific definition of transfer or changes in statute (ARS 45-172).	no ans.	Minimal transfer activity occurring
California	*Yes, a program is administered by State Water Resources Control Board, a state agency. Water may be leased, & has protections for non-use (CWC Sec. 1020-1030)	*California Water Code (CWC) (1969).	*Transfer can be a change in point of diversion, place of use or purpose of use, but no transfer of ownership of water right, for 7 years (CWC Sec. 387).	no ans.	no ans.
Colorado	No state marketing program, but active market-driven process. Transfers require approval of a judicial Water Court.	Colorado Revised Statutes (CRS) Chapter 37-92 (1998).	*Transfer can be change in type, place, or time of use, change in point or mean of diversion, & change in storage types (CRS 37-92-103).	no ans.	no ans.
Idaho	*Yes, has a Water Supply Bank for state to obtain water rights (IS 42-1761). Administered by a citizen board, within a state agency (IS 42-1732).	*Idaho Statute (IS) Title 42 (1980).	*Transfer can be change of point of diversion, place of use, period of use, or nature of use. If exceeding 3 years, legislative approval required (IS 42-108).	no ans.	no ans.
Kansas	*Yes, Kansas Water Office, state agency, has administered water marketing 24 years. This is for water storage in federal reservoirs.	*State Water Plan Storage Act at Kansas Statutes Annotated (KSA) 82a-1301 (1974).	*Called changes; change of place of use, point of diversion, or the use, KSA 82a-708b (1988). Transfers are diversions of water.	a) no ans. b) no ans.	no ans.

**Appendix D Western States' Responses to Survey (#'s 1-5)**

	#1-Is State Marketing, or #2-Relevant Transfers?	#3-Definitions	#4a-Willing seller/buyer? #4b- Taxed?	#5a-Econ Dvlpmnt? #5b-Neg. impacts
Montana	No program for water rights, but state markets water from federal reservoirs (MCA 85-1-205). Only 6,000 a.f. since 1985. Administered by state agency. Transfers allowed.	Montana Code Annotated Chapter 85 (1947).	Transfers require ensuring no adverse effect to enviro or other rights holders. City can buy land & obtain rights, or buy the unused portion of right.	a) Yes b) No a) The intent of leasing for instream needs was to generate revenue, but there is little activity. b) Enhancing instream flows has supported fishing industry.
Nebraska	No state marketing program, but transfers allowed. 700 since 1983, with at least 2 transactions of a willing seller & buyer. Administered by state agency.	Transfers found in Nebraska Revised Statute (NRS) 46-290 to 294. Chapter 46, Surface Water (2000).	Only intrabasin rights transfers, and change within same priority category, & only change of location not use (NRS 46-290-294). Interbasin transfers are water diversions, not rights transfers.	a) Yes b) no ans. no ans.
Nevada	No state marketing program, but rights transfers administered by state agencies (Division of Water Resources, State Engineer, & Division of Water Planning)	Title 48, Nevada Water Laws (1985). Water rights are real property.	Transfers are: change of ownership, place of use, point of diversion, & manner of use (NRS 533.382). Receive 800-1200 applications a year., 70% are for changes.	a) Yes. Water rights have increased in value as they have changed from irrigation to municipal or industrial uses. b) no ans.
New Mexico	*No state marketing program, but transfers allowed (NMSA 72-1-2). Has statute on stored water, such as storing water in an aquifer (NMSA 72-5A).	*New Mexico Statutes Annotated (NMSA) Ch. 72, Water Law (1978).	*Change in ownership of rights (NMSA 72-1-2) & change in place of diversion storage or use (NMSA 72-5-24).	no ans. no ans.
No. Dakota	No state marketing program, very few transfers occurring, usually small in size.	N.D. Century Code (NDCC) Chapter 61-04 (1977).	No distinction between surface and ground waters in statute. Do prioritize uses: only allow transfer to a higher use.	no ans. Minimal transfers, small in size.
Oklahoma	No state marketing program, but allows transfers. The state does appropriate water rights. Groundwater is a property right, surface water is publicly owned; have very different laws.	Oklahoma Statute (OS) Title 82, Section 1020.1 (1973) and Section 105.1 (1988).	*Separate statutes for permitting surface & groundwater. Transfers are called amendments; no definition found.	no ans. no ans.

**Appendix D Western States' Responses to Survey (#'s 1-5)**

	#1-Is State Marketing, or #2-Relevant Transfers?	#3-Definitions	#4a-Willing seller/buyer? #4b-Taxed?	#5a-Econ Dmpmt? #5b-Neg. impacts
Oregon	No state marketing program. State agency reviews and ensures transfers are consistent with statute. *Can obtain supplemental right to augment needs (ORS 536.025 & .027).	Oregon Revised Statutes 540.505 to 540.580 & Oregon Administrative Rules Ch. 690, Div. 15 & 21 (1981).	Transfers are a change of use, or place of use, or point of diversion of a water right (ORS 540.510). *Exchanges allowed (ORS 540.533).	a) Yes b) No n/a
So. Dakota	No state marketing program. A few transfers have occurred, So. Dakota and are administered by state agency, but final approval by a citizen board.	South Dakota Codified Law (SDCL) Ch. 46-2A, SDCL 46-5-30.4, 46-5-31 & 46-5-34.1 (1996).	Transfer only allowed when original use is irrigation, must be transferred to domestic or an existing water system. Domestic use is prioritized over appropriative uses (SDCL 46-5-34).	a) No b) No Only a few transfers have taken place, so minimal impact
Texas	No state marketing program, but created Texas Water Bank, admin. by state agency, with one deposit & one sale since 1993. River authorities actively market water rights, with little state oversight.	Texas Water Code (TWC), Subtitle C, Ch. 15.701-708 (1993) (established the Texas Water Bank).	Water Bank facilitates voluntary transfers, & Water Trust allows rights to be acquired for environmental purposes. *Transfer is the conveyance of a water right (TWC 15.701).	a) Not sure. b) Transaction fee is charged. Unknown if any taxes charged. a) Not sure in some areas, but yes in the Rio Grande area where different water laws and policies apply. b) no ans.
Utah	Water marketed by private individuals, transfers administered by state agency.	Utah Annotated Statute (US) 73-3, Appropriation (1979).	Transfers can be temporary or permanent, changing point of diversion, place of use, or purpose of use (UAS 73-3-3). Export statute defines rights moving out of state (UAS Ch. 3a).	a) Not sure; b) No a) Yes. Virtually all Utah's waters are appropriated, requiring purchases of existing rights. b) no ans.
Wyoming	No state marketing program. Very few transfers, administered by Brd of Control, a quasi-judicial entity that consults with State Engineer. Ground & surface waters not distinguished	Wyoming Statutes Annotated (WSA) Title 41-3-102 through 104 (1974).	Transfers can be temporary or permanent, are change in use, or place of use, exchanges, changing point of diversion, change in location of wells.	a) No b) Not sure Not sure. Transfers are small. Only 2 or 3 large transfers each of ag to urban and ag to industrial have occurred.

\*My responses from research of statutes and program-related materials.

**Appendix D Western States' Responses to Survey (#'s 6-10)**

	#6- Enhance enviro quality?	#7a-Public good in law? #7b-Public Trust Doc't	#8-Public involvement process?	#9-Example of public affect decision	#10-Emerging issues in state
Alaska	To date, have not observed any differences. *State can sell water to augment instream flows (AS 46.15.037).	a) Strong public interest criteria in statute (AS 46.15.060(4)). b) No Public Trust Doctrine.	Not in statute. Public notice if public interest may be affected, which is economic activity, fish, game, public rec, loss of alternate uses, harm to others.	No example.	Exporting water outside of Alaska. Presently considering applications for large bulk export of water.
Arizona	*State can sell water for instream needs (ARS 46-15-037). Anyone can reserve water for instream (ARS 46-15-145).	*a) Yes, public interest in ARS 45-155 b) No Public Trust Doctrine	*Notice published for 3 weeks, Anyone can protest, then a hearings is set (ARS 45-2106).	no ans.	no ans.
California	*Any person may transfer rights to enhance wetlands, habitat, recreation, etc. (CWC Sec. 1707)	*a) Yes, transfers must be consistent with public welfare (CWC Sec. 109). b) no ans.	*Notice published, if protested a hearing is set (CWC Sec. 1703-1704)	no ans.	no ans.
Colorado	*Instream flows protected, state can acquire instream rights (CRS 37-92-102).	*a) Yes b) No Public Trust Doctrine.	Notice published. Someone who may be impacted may file protest after public notice.	no ans.	no ans.
Idaho	*Minimum streamflow is beneficial use & in public interest (IS 42-1501).	*a) Yes public interest in IS 42-1405 & 1501 b) No Public Trust Doctrine	*Yes. An aggrieved person may protest approval of application, & a hearing is set (IS 42 1701A).	no ans.	no ans.
Kansas	*Minimum streamflow protection at KSA 82a-703a	no ans.	Any party may protest approval, causing a review. Agency may have defined process.	no ans.	no ans.
Montana	Yes. Leasing rights for instream needs has enhanced the flows during drought and low flows.	a) Public trust in Montana is a contentious issue b) No Public Trust Doctrine	No public involvement process; only those adversely effected.	No. But public does influence legislation in the state.	River basins being closed to further appropriation, which encourages transfers. Individuals are buying old ag rights and building wetlands. Several basins overappropriated, so moratoriums being considered. ESA prohibit new approp. Considering water marketing for surface & groundwater.
Nebraska	no ans.	a) Yes b) No Public Trust Doctrine	*In statute, notice is published for 3 weeks, any persona may object & request a hearing (NRS 46-291).	no ans.	
Nevada	Hard to say. Several mitigating factors; some transfers have resulted in lawsuits re: instream needs.	a) Public process includes criteria for public interest. b) No Public Trust Doctrine	Notice published, if protest filed or if in public interest, State Engineer will set a hearing.	Yes. A federal appropriation applic. for a nuclear waste storage facility was denied.	Before 1995 rules on rights ownership & changes were unclear, causing inaccuracies. These issues now being resolved.

**Appendix D Western States' Responses to Survey (#'s 6-10)**

	#6- Enhance enviro quality?	#7a-Public good in law? #7b-Public Trust Doc	#8-Public involvement process?	#9-Example of public affect decision	#10-Emerging issues in state
New Mexico	no ans.	*a) Yes in several citations b) Not found	*Yes, Notice published, if protested hearing is set (NMSA 72-5-5).	no ans.	no ans.
No. Dakota	no ans.	*a) Yes, public welfare important (NDCC 61-01-26) b) no ans.	no ans.	no ans.	Sees transfers as gaining in importance.
Oklahoma	no ans.	*a) Could not find. b) No	*Yes. Notice published, anyone can protest, a hearing is held for each application filed (OS Sec. 1020.8).	no ans.	That OK does not conjunctively manage groundwater & surface water will gain in importance. No minimum flows required or instream flow protections.
Oregon	Improvement may occur as statute allows purchase, lease, or gift of rights for instream flows (ORS 537.348).	a) Public interest review considers whether transfer could injure existing rights. b) No Public Trust Doctrine.	Yes. Notice is published, & anyone can file protest. Dept. schedules hearing if protested or if potential injury (ORS 540.520).	No example, but public can influence a transfer.	New appropriations unavailable in most basins, so storage & transfers are being explored. Dept. is exploring water banking.
So. Dakota	Little or no effect. *Statute mandates waste be prevented (SDCL 46-1-4).	a) Statute states use of water is of paramount interest of the people (SDCL 46-1). b) No Public Trust Doctrine.	Notice published, State gathers info & hearing is held (after 2nd notice). Final decision by citizen board.	Public involvement process allows issues be addressed prior to decision.	SD doesn't have same pressures as other Western states, such as rapid growth. One related activity is changing irrigation use to Rapid City use
Texas	Some rights have been gifted for instream flows. *Water Trust within the Bank is for instream & habitat (TWC 15.7031).	a) Public welfare is considered if/when transfers are reviewed. b) Not sure	Hearings are required for those transactions that may impact public welfare; public can participate at hearing (TWC Subtitle B, Ch. 11, 11.134).	A proposed groundwater pipeline from a mine to San Antonio has raised public protests. Not resolved.	Interbasin transfer limitations, & reuse/recharge considerations.
Utah	Yes. Habitat is being lost, but instream flows are protected (UAS 73-3-3). Green areas being lost due to conversions, trying to slow this.	a) Yes; UAS. 73-3-8 requires transfer not be detrimental to the public welfare. b) No Public Trust Doctrine.	Notice published for nearly all applications. Anyone can protest, and a hearing is then held.	State Engineer bases his decision on several factors, but decisions are not purely democratic.	Growing population in urban areas; validity of water right; value of water depletion.
Wyoming	Not sure. Only the state is allowed to have instream water rights.	a) Yes. Transfer may be denied if demanded by the public interest, or if an injury may occur. b) No ans.	Notice published, and hearing is only required with a change of use.	In 70's & 80's & cities bought up rights, & Board denied some changes as citizens made "good arguments."	1) Public wants to obtain instream rights, 2) Currently lawsuit pending on 3-state agreement over water use and its administration. Results may have big impact on the states.

\*My responses from research of statutes and program-related materials.

## Appendix E

### Questions or Issues for Further Consideration

Cost-Benefit Analysis: Free market advocates repeatedly express concern over the use of cost-benefit analyses to determine the most efficient or highest valued use of water. While a water market can adjust itself in a ‘natural’ way, a state program must incorporate values that have been determined by analysts. These costs and benefits are subjective and have many variants. In addition, costs or benefits can be unintentionally omitted. It is frequently asserted that it is not possible to assess all of the costs and benefits of a transaction; cost-benefit analyses are not a reliable method of valuation because there will always be variants omitted.

Why are minimal transfers occurring? As mentioned earlier, the potential answer to this question is due to expectations of the communities. This question does merit further research, as the statutory tools are in place across the West. As well, the constraints that would facilitate transfers, such as fully appropriated waters, are also present across the West. Why are there not more transfers taking place?

Eminent domain of water rights: There are several states in the West, including Washington, that allow the use of eminent domain by others to take a water right. Is this statute being used? Are water users, municipalities, irrigation districts, or others, actually taking other rights holders’ water rights? Is a revision of this statute warranted? Removing this statute might promote the confidence of potential market participants.

Importance of property rights definitions: How do other western states define and protect water rights as property rights? Do other states agree with water resource experts in seeing this aspect as a critical element to successful markets and transfers? Washington’s statute is very broad in this respect and should consider revising or adding a statute to specifically designate water rights as a property right (as other western states have done).

Proprietary culture of state agencies: This agency culture must be recognized and addressed; decisionmakers need to learn more about this culture. Information-sharing is a critical aspect to the function of state agencies, in which legislators and other policymakers are heavily dependent upon. Information is often used as a weapon to withhold or to brandish depending upon the desired result. The involvement of diverse interests, multiple agencies, and more than one decisionmaker, can facilitate the sharing of critical information.

Priority of water uses: Most western states do prioritize water use, with the majority placing domestic use as the highest priority. Washington State does not prioritize its water use. It has been written that prioritizing water use contributes to successful water markets or transfers. However, listing a priority of uses for a diverse state such as Washington could constrict the wise management of our water resources. The question whether Washington should prioritize water uses is a very important one, and probably a question that should be answered soon.

Prioritization can be seen as facilitating water rights transfers and moving water to a higher valued use.

How are states responding to the Endangered Species Act? It would be beneficial to learn how other states with listed salmon and fish have responded to the ESA. How have the water rights or water resource programs been changed to adequately satisfy the federal government in protection of listed species? Are there success stories that could be used as a framework for Washington State? In what ways are reallocation decisions influenced by the presence of a listed species?

How have states designated water as property? I began reviewing statutes to learn which states have designated water as the property of the people or of the state, and if that statute also designated water rights as property. This review is not complete. The designation of water as the property of the people provides a mechanism for the protection of the public good. With this designation, people in the state have a vehicle to bring forward their concerns related to a proposed use for the property of the people. A discussion with other states to learn their assessment of this designation would be beneficial.

Funding for programs: How much funds are provided each state for water resource programs? What are the sources of these funds? What are the expenditures for each of these states' programs? There is a dramatic variance in legislatures as to the extent that each state's program or agency is funded. Learning the activities of other states, including the fiscal constraints that each state must work under, could answer questions for Washington. A couple questions: 1) Are there funding sources that have assisted other programs, such as grants, which Washington could utilize? 2) Are there programs or expenditures which other states have shown to successfully function without that could reduce expenditures for Washington?

Local jurisdictional involvement: To what extent are local jurisdictions involved and contributing in other states? Is it feasible that collaborating with other jurisdictions could assist in reducing expenditures without sacrificing success or service? Working with local governments would facilitate buy-off and positive sentiment toward decisions that effect a region or community. However, with local jurisdictions' limited resources, can they actually replace functions of a state agency?

## REFERENCES

- Anderson, T. L. & Leal, D. R. (1992). Free market versus political environmentalism. Harvard Journal of Law & Public Policy, 15(2).
- Anderson, T. L. & Snyder, P. (1997). Water markets: Priming the invisible pump. Washington, D.C.: Cato Institute.
- Arizona Revised Statutes, Chapters 45 & 46 (1980).
- Babbitt, B. (1989). New laws needed to slake west's thirst. Albuquerque Journal, A9.
- Bates, S. F., Getches, D. H., MacDonnell, L. J. & Wilkinson, C. F. (1993). Searching out the headwaters: Change and rediscovery in western water policy. Washington, D.C.: Island Press.
- Beattie, B. R. & Foster, H. S., Jr. (1980). Can prices tame the inflationary tiger? Journal of the American Water Works Association 72, 441-445.
- Bokum, C. (1996). Implementing the public welfare requirement in New Mexico's water code. Natural Resource Journal, 36(4), 706.
- California Water Code (CWC) (1969).
- Colorado Revised Statutes, Chapter 37-92 (1998).
- Griffin, R. C. & Boader, F. O. (1992). Water marketing in Texas: Opportunities for reform. Natural Resources Journal, 32(2), 265-288.
- Haddad, B. M. (2000). Rivers of gold: Designing markets to allocate water in California. Washington, D.C.: Island Press.
- Hanna, S. S., Folke, C., & Maler, K. G. (1996). Rights to nature: Ecological, economic, cultural, and political principles of institutions for the environment. Washington, D.C.: Island Press.
- Honore, A. M. (1961). Ownership, 107-147. Oxford essays in jurisprudence: A collaborative work. A. G. Guest, Editor. London: Oxford University Press.
- Hoffman-Dooley, S. (1996). Determining what is in the public welfare in water appropriations and transfers: The Intel example. Natural Resources Journal,

36(1), 103-127.

Idaho Statute, Title 42 (1980).

Ingram, H. & Oggins, C. Y. (1992). The public trust doctrine and community values in water. Natural Resources Journal, 32(3), 515-537.

Kennan, S. P., Krannich, R. S. & Walker, M. S. (1999). Public perceptions of water transfers and markets: Describing differences in water use communities. Society & Natural Resources, 12(4), 279-293.

Lee, K. N. (1993). Compass and gyroscope: Integrating science and politics for the environment. Washington, D.C.: Island Press.

McNally, M. & Matthews, O. P. (1995). Changing the balance in western water law: Montana's reservation system. Natural Resources Journal, 35(3), 671-693.

Morandi, L. (1994). Rethinking western water policy: Assessing the limits of legislation. Washington, D.C.: National Conference of State Legislatures.

North Dakota Century Code, Chapter 61 (1977).

Oklahoma Statute, Title 82 (1973).

Pisani, D. J. (1996). Water, land, and law in the west: The limits of public policy, 1850-1920. Lawrence, Kansas: University Press of Kansas.

Reisner, M. (1993). Cadillac desert: The American west and its disappearing water. New York: Penguin Group.

Sax, J. (1980). Liberating the public trust doctrine from its historical shackles. 14 U.C. Davis Law Review, 185-189.

Simon, P. (1998). Tapped out: The coming world crisis in water and what we can do about it. New York: Welcome Rain Publishers.

Simpson, L. & Ringskog, K. (1997). Water markets in the Americas. Paper presented at the Managing Water Resources, Canary Islands. Washington, D.C.: The World Bank.

State Water Plan Storage Act, Kansas Statutes Annotated, Chapter 82a (1974).

Surface Water, Nebraska Revised Statutes, Chapter 46 (2000).

- Texas Water Code, Subtitle C (1993).
- Torrey, R. S. (1995). Intrastate water transfers in the west: Approaches, problems and related issues. Discussion paper, final draft. Midvale, Utah: Western States Water Council.
- Water Law, New Mexico Statutes Annotated, Chapter 72 (1978).
- Water Use Act, Alaska Statute 46.15 (1999).
- Worster, D. (1985). Rivers of empire: Water, aridity, and the growth of the American west. New York: Oxford University Press.